GENESIS ENERTRAG KOUP 1 WIND FARM (PTY) LTD

Proposed Development of the Koup 1 Wind Energy Facility (WEF) and Associated Infrastructure near Beaufort West in the Western Cape Province

Draft Scoping Report

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Author:	Michelle Guy (EAP) *Pr.Sci.Nat Reg No. 126338* *EAPASA Reg No. 2019/868* *Luvanya Naidoo (EAP)* *Pr.Sci.Nat Reg No. 126107* *EAPASA Reg No. 2019/1404*
Checked by:	Michelle Nevette *Cert.Nat.Sci Rev No. 120356* *EAPASA Reg No. 2019/1560*
Approved by:	Michelle Nevette *Cert.Nat.Sci Rev No. 120356* *EAPASA Reg No. 2019/1560*
Signature:	
Client:	Genesis Enertrag Koup 1 Wind Farm (PTY) LTD

Confidentiality Statement

KEY PROJECT INFORMATION

Component	Description / Dimensions
Location of site (centre point)	32°51'41.01"S 22°27'24.65"E
Application site area	4279,398492 ha
Turbine development area	Hard standing Area = 60m*30m*28 turbines = 5.4 Ha
SG codes	C06100000000023100000 C00900000000037400011 C00900000000037400015 C00900000000038000005 C00900000000038000010 C00900000000038000011
Export capacity	Up to 140MW
Proposed technology	Wind turbines and associated infrastructure
Hub height from ground	Up to 200m
Rotor diameter	Up to 200m
Substation and O&M building area	Approximately 2.25 hectare (ha)
Construction laydown area	Approximately 22 500m^2
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 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	Between approximately 8m and 10m
Length of internal access roads	To be determined based on final layout
Site Access	Access to the Koup 1 WEF site will be from the existing access, located ±1 430m west from the surfaced N12 National Road (Road No: TR03305) and falls under the jurisdiction of the Western Cape Provincial Administration. The existing access is located at Km 51.80 and provides access to the farms situated on both east and west of the N12 Freeway. The access to this development is towards the west from the N12 Freeway and traverses over the Remainder of Portion 4 of the farm 374 as a gravel access road up to the existing farm access.
2.25Proximity to grid connection	Approximately 1km from application site
Height of fencing	Approximately 1m – 1.5m high
Type of fencing	Galvanized steel

GENESIS ENERTRAG KOUP 1 WIND FARM (PTY) LTD

KOUP 1 WIND ENERGY FACILITY (WEF)

DRAFT SCOPING REPORT

EXECUTIVE SUMMARY

INTRODUCTION AND PROJECT DESCRIPTION

Genesis Enertrag Koup 1 Wind Farm (Pty) Ltd (hereafter referred to as 'Genesis Koup 1 Wind Farm') is proposing to construct the Koup 1 Wind Energy Facility (WEF) and associated infrastructure near the town of Beaufort West in the Beaufort West and Prince Albert Local Municipalities, 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 a 140 megawatt (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 Koup 2 WEF and associated infrastructure.

The proposed development requires an EA from the National Department Forestry, Fisheries and the Environment (DFFE).. The EIA for the proposed development will be conducted in terms of the EIA Regulations, 2014 (as amended) promulgated in terms of Chapter 5 of the NEMA. In terms of these regulations, a full EIA process is required for the proposed development. All relevant legislation and guidelines will be consulted during the EIA process and will be complied with at all times.

The above-mentioned proposed development forms one (1) of two (2) WEFs that are being proposed on adjacent properties by Genesis. The other WEF being proposed includes the following:

- 140MW Koup 1 WEF – **DFFE Reference Number:** To be Announced (part of a separate EIA process / application).

In addition, a 132kV overhead power line and on-site switching substation and/or combined collector substation (namely the associated grid connection infrastructure) is also being proposed to feed the electricity generated by the proposed Koup 1 WEF into the national grid. Two grid connection infrastructure developments linked to the WEFs are proposed. These projects, which from a part of separate applications, are as follows:

- Koup 1 WEF Substation and Power Line – **DFFE Reference Number:** To be Allocated (part of separate BA process / application).

- Koup 2 WEF Substation and Power Line – **DFFE Reference Number:** To be Allocated (part of separate BA process / application).

The associated grid connection infrastructure will however require a separate Environmental Authorisations (EA) and is subject to a separate Basic Assessment (BA) processes to allow for handover to Eskom. The on-site switching and/or collector substation will include an Eskom portion and an Independent Power Producer (IPP) portion, hence the substation has been included in the WEF EIA and in the associated electrical infrastructure BA to allow for handover to Eskom. Following construction, the substation will be owned and managed by Eskom. The current applicant will remain in control of the low voltage components (i.e. 33kV components) of the substation, while the high voltage components (i.e. 132kV components) of this substation will likely be ceded to Eskom shortly after the completion of construction.

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. two (2) WEF EIAs and two (2) 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 IN 2017)

The following activities are applied for:

Activity No(s):	Relevant Basic Assessment Activities as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended
11 (i)	**GN R. 983 (as amended) Item 11:** The development of facilities or infrastructure for the transmission and distribution of electricity— (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts.
12 (ii) (a) (c)	**GN R. 983 (as amended) Item 12:** The development of: ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs- (a) within a watercourse; (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.
14	**GN R. 983 (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.
19	**GN R. 983 (as amended) Item 19**: The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;
24 (ii)	**GN R. 983 (as amended) Item 24:** The development of a road - ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres.
28 (ii)	**GN R. 983 (as amended) Item 28:** Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development: (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;

31 (i)	**GN R. 983 (as amended) Item 31:** The decommissioning of existing facilities, structures or infrastructure for - (i) any development and related operation activity or activities listed in this Notice, Listing Notice 2 of 2014 or Listing Notice 3 of 2014;
48 (i) (a) (c)	**GN R. 983 (as amended) Item 48:** The expansion of- (i) infrastructure or structures where the physical footprint is expanded by 100 square metres or more; where such expansion occurs— (a) within a watercourse; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;
56 (ii)	**GN R. 983 Item 56:** The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre - (ii) where no reserve exists, where the existing road is wider than 8 metres –
Activity No(s):	**Relevant Scoping and EIA Activities as set out in Listing Notice 2 of the EIA Regulations, 2014 as amended**
1	**GN R. 984 (as amended) Item 1:** The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more,
15	**GN R. 984 (as amended) Item 15:** The clearance of an area of 20 hectares or more of indigenous vegetation.
Activity No(s):	**Relevant Basic Assessment Activities as set out in Listing Notice 3 of the EIA Regulations, 2014 as amended**
4 i. (ii) (aa)	**GN R. 985 (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;
10	**GN R. 985 (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: (aa) Areas containing indigenous vegetation
12	**GN R. 985 (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. **i. Western Cape** ii. Within critical biodiversity areas identified in bioregional plans;
14	**GN R. 985 (as amended) Item 14:** The development of— (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs— (a) within a watercourse; (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;

	excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour. **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;
18 i. ii. (aa)	**GN R. 985 (as amended) Item 18:** The widening of a road by more than 4 meters, or the lengthening of a road by more than 1 kilometer- **i. Western Cape** ii. All areas outside urban areas: (aa) Areas containing indigenous vegetation
23	**GN R. 985 (as amended) Item 23:** The expansion of— (ii) infrastructure or structures where the physical footprint is expanded by 10 square metres or more; where such expansion occurs— (a) within a watercourse; (b) in front of a development setback adopted in the prescribed manner; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour. **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;

DETAILS OF ALTERNATIVES CONSIDERED

No location alternatives are being considered for the Koup 1 Wind Farm as these sites were selected prior to the commencement of the EIA Process.

The preliminary layout that was prepared for the Koup 1 WEF has been assessed by specialists to identify potential impacts that may arise from the development. Based on the findings of the specialists and the potential impacts identified, the preliminary layout has been updated to include constraints. This layout will be further refined based on the outcomes of the public participation process of the Scoping phase. The final layout will then be assessed by all specialists in the EIA Phase.

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 in Section **Error! Reference source not found.**. Based on the specialist’s assessment, no s ignificant 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 PREFERRED ALTERNATIVE

Planning

Environmental Aspect	Potential Impact during Planning
Geotechnical	None
Social	None
Transport	None
Visual	None
Avifaunal	None
Bat	None
Agricultural	Compliance Statement
Surface Water	None
Heritage – Archaeological	Damage to 2 sites containing graves The graves and burial grounds are mostly localised near farm roads within the proposed development area. The expansion of existing farm roads may impact these sites.
	Damage to 3 historical farmsteads/structures • One structure is located near farm roads within the proposed development area. The expansion of existing farm roads may impact the site. • Two sites are located within the proposed grid corridor area.
	Unidentified heritage resources Due to the size of the area assessed, there's a possibility of encountering heritage features in un-surveyed areas.
Heritage – Cultural Landscape	Ecological Inappropriate infrastructure layout planning degrades ecological elements of the cultural landscape.
	Aesthetic Inappropriate infrastructure layout planning negates aesthetic and sense of place requirements of the cultural landscape.
	Historic Inappropriate infrastructure layout planning degrades historic elements of the cultural landscape.
	Socio-economic 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.
Noise	• Noise impacts relating to planning activities - Light delivery vehicles moving around onsite
Biodiversity	None

Construction

Environmental Aspect	Potential Impact during Construction
Geotechnical	• Displacement of natural earth material and overlying vegetation. • Increase stormwater velocity. • Increase in soil and wind erosion due to clearing of vegetation. • Construction and earthmoving vehicles may displace soil during operations. • Creation of drainage paths along access tracks. Potential oil spillages from heavy plant. • Sedimentation of nonperennial features and excessive dust. • Potential groundwater and drainage feature contamination.
Social	• Air quality
	• Noise
	• Increase in crime
	• Increased risk of HIV infections
	• Influx of construction workers
	• Hazard exposure
	• Disruption of daily living patterns
	• Disruptions to social and community infrastructure
	• Job creation and skills development
	• Socio-economic stimulation.
Transport	• Additional Traffic Generation - Increase in Traffic
	• Additional Traffic Generation - Increase of Incidents with pedestrians and livestock
	• Additional Traffic Generation - Increase in Dust from gravel roads
	• Additional Traffic Generation - Increase in Road Maintenance
	• Abnormal Loads - Additional Abnormal Loads
	• Internal Access Roads - Increase in Dust from gravel roads
	• Internal Access Roads - New / Larger Access points
Visual	• 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	• 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.
Bat	• Clearing and excavation of natural habitat - The destruction of active bat roosts and/or features that could serve as potential roosts, such as rock formations and the removal of trees on site. The destruction of derelict holes, such as

Environmental Aspect	Potential Impact during Construction
	aardvark holes and any fragmentation of woody habitat which include dense bushes. The removal of limited trees and bushes would have an impact on all bats that could potentially roost in trees and on the foraging of clutter and clutter-edge species.
	• Excavation and building new structures - Creating new habitat amongst the turbines which might attract bats. This includes buildings with roofs that could serve as roosting space or open water sources from quarries or excavation where water could accumulate.
	• Noise and light disturbance - Construction noise, especially during night-time, as well as lightening disturbance.
Agricultural	Agricultural Compliance Statement
Surface Water	Loss of aquatic species of special concern: • During construction activities within watercourses could result in the disturbance or destruction of any listed and or protected plant or animal species. However none of these aquatic obligate species were observed during this assessment
	Damage or loss of riparian and or drainage line systems i.e. disturbance of the waterbodies in the construction phase: • Construction could result in the loss of drainage systems that are fully functional and provide an ecosystem services 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
	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
Heritage – Cultural Landscape	Ecological Fragmentation and destruction of the landscape degrading the environment and thus continuous relationship between man and environment
	Aesthetic WEF infrastructure construction and decommissioning activity degrades the character of the cultural landscape and the sense of place
	Historic

Environmental Aspect	Potential Impact during Construction
	Integrity of farmsteads and farm roads degraded by insensitive construction or decommissioning activities.
	Socio-economic Integrity of local residents to continue their patterns of land use is degraded by the construction and decommissioning activities.
Heritage – Paleontological	Fossil heritage resources Disturbance, damage or destruction of fossils at or beneath the ground surface due to surface clearance and bedrock excavations
Noise	• 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
	• Noise impacts at night - Construction activities relating to civil works as well as erection of wind turbines
	• Noise impacts during the day - Construction of access roads
	• Noise impacts during the day - Noises relating to construction traffic
Biodiversity	Vegetation and protected plant species Vegetation clearing for access roads, turbines and their service areas and other infrastructure will impact on vegetation and protected plant species.
	Faunal disturbance and habitat loss Increased levels of noise, pollution, disturbance and human presence during construction will be detrimental to fauna. Sensitive and shy fauna are likely to move away from the area during the construction phase as a result of the noise and human activities present, while some slow-moving species would not be able to avoid the construction activities and might be killed.

Operational

Environmental Aspect	Potential Impact during Operation
Geotechnical	Removal of subsoils (soil, rock) • Displacement of natural earth material. • Increase in soil erosion. • Potential oil spillages from maintenance vehicles. • Sedimentation of non-perennial features caused by soil erosion.
Social	• Health and social wellbeing - Noise
	• Health and social wellbeing - Shadow flicker
	• Health and social wellbeing - Blade glint
	• Health and social wellbeing - Electromagnetic field and RF interference
	• Health and social wellbeing - Hazard exposure
	• Quality of the living environment - Transformation of the sense of place
	• Economic - Job creation and skills development
	• Economic - Socio-economic stimulation.
Transport	• Additional Traffic Generation - Increase in Traffic
	• Additional Traffic Generation - Increase of Incidents with pedestrians and livestock
	• Additional Traffic Generation - Increase in Dust from gravel roads

Environmental Aspect	Potential Impact during Operation
	• Additional Traffic Generation - Increase in Road Maintenance
	• Abnormal Loads - Additional Abnormal Loads
	• Internal Access Roads - New / Larger Access points
Visual	• The development may be perceived as an unwelcome visual intrusion, particularly in more natural undisturbed settings. • The proposed WEF and associated infrastructure will alter the visual character of the surrounding area and expose potentially sensitive visual receptor locations to visual impacts. • 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 will be altered as a result of operational and security lighting at the proposed WEF.
Avifaunal	• Mortality of priority species due to collisions with the wind turbines.
	• Mortality of priority species due to electrocutions on the overhead sections of the internal 33kV cables.
	• Mortality due to collisions with the overhead sections of the internal 33kV cables.
Bat	• Direct collision or barotrauma - Fatality through direct collision or barotrauma of resident bats occupying the airspace amongst the turbines. The turning blades of the turbines during operation are the most important aspect of the project that would impact negatively on bats. High flying species have predominantly been confirmed at the proposed Koup 1 WEF site.
	• Bat migrations - Bat fatality during migration. A limited number of calls like Miniopterus natalensis (Natal Long-fingered bat), a Near Threatened migration species, have been recorded. Not much research has been conducted on migration of bats in South Africa, and some of the other species occurring on site could also migrate.
Agricultural	Agricultural compliance statement
Surface Water	Impact on aquatic systems through the possible increase in surface water runoff on form and function during the operational phase • Increase in hard surface areas, and roads that require stormwater management will increase through the concentration of surface water flows that could result in localised changes to flows (volume) that would result in form and function changes within aquatic systems, which are currently ephemeral. • This then increases the rate of erosions and sedimentation of downstream areas.
Heritage – Cultural Landscape	Ecological Inappropriate operational activities degrade the significant ecological elements of the cultural landscape
	Aesthetic Inappropriate operational activities degrade the significant aesthetic elements of the cultural landscape altering the character and sense of place
	Historic Inappropriate operational activities degrade the significant historic elements of the cultural landscape altering the character and sense of place

Environmental Aspect	Potential Impact during Operation
	Socio-economic Inappropriate operational activities degrade the significant socio-economic opportunities of the cultural landscape
Noise	• Noise Impacts during the day - Noises from operating wind turbines
	• Noise Impacts at night - Noises from operating wind turbines
Biodiversity	Faunal disturbance and habitat degradation Fauna will be negatively affected by the operation of the wind farm due to the human disturbance, the presence of vehicles on the site and possibly by noise generated by the wind turbines as well.
	Increased potential for soil erosion Following construction, the site will remain vulnerable to soil erosion for some time due to the disturbance created by site clearing and likely low natural revegetation of disturbed areas thereafter. It is important to note that while the site is arid, such areas can experience significant soil erosion as plant cover is low and occasional heavy showers generate large amounts of runoff.
	Ecological degradation due to alien plant invasion.
	Negative impact on ESAs, CBAs and broad-scale ecological processes. Transformation and presence of the facility will contribute to cumulative habitat loss within CBAs and impacts on broad-scale ecological processes such as fragmentation.

Decommissioning

Environmental Aspect	Potential Impact during decommissioning
Geotechnical	Removal of subsoils (soil, rock) • Decommissioning of the structure will disturb the geological environment. • Increase in soil and wind erosion due to clearance of structures. • Construction and earthmoving vehicles will displace the soil. • Creation of drainage paths. • Potential oil spillages from vehicles. • Excessive sediments in non-perennial features.
Social	None
Transport	• Additional Traffic Generation - Increase in Traffic
	• Additional Traffic Generation - Increase of Incidents with pedestrians and livestock
	• Additional Traffic Generation - Increase in Dust from gravel roads
	• Additional Traffic Generation - Increase in Road Maintenance
	• Abnormal Loads - Additional Abnormal Loads
	• Internal Access Roads - New / Larger Access points
Visual	• 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.

Environmental Aspect	Potential Impact during decommissioning
	• 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. • 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	• Displacement due to disturbance associated with the dismantling of the wind turbines and associated infrastructure.
Bat	• Removal of turbines - Bat disturbance due to decommissioning activities and associated noise, especially during night-time
Agricultural	Agricultural Compliance Statement
Surface Water	Loss of aquatic species of special concern: • During construction activities within watercourses could result in the disturbance or destruction of any listed and or protected plant or animal species. However none of these aquatic obligate species were observed during this assessment
	Damage or loss of riparian and or drainage line systems i.e. disturbance of the waterbodies in the construction phase: • Construction could result in the loss of drainage systems that are fully functional and provide an ecosystem services 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
	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
Heritage – Archaeological	Heritage Resources • The extent that the addition of this project will have on the overall impact of developments in the region on heritage resources.
	• Noise impacts during the day - Decommissioning activities relating to removal of infrastructure and wind turbines, rehabilitation of disturbed areas
Biodiversity	None

Cumulative

Environmental Aspect	Potential Cumulative Impact
Geotechnical	None
Social	• Health and social wellbeing - Noise • Health and social wellbeing - Shadow flicker • Health and social wellbeing - Blade glint • Health and social wellbeing - Risk of HIV and AIDS • Quality of the living environment - Sense of place • Quality of the living environment - Service supplies and infrastructure • Economic - Job creation and skills development • Economic - Socio-economic stimulation
Transport	• Additional Traffic Generation - Increase in Traffic
	• Additional Traffic Generation - Increase of Incidents with pedestrians and livestock
	• Additional Traffic Generation - Increase in Dust from gravel roads
	• Additional Traffic Generation - Increase in Road Maintenance
	• Abnormal Loads - Additional Abnormal Loads
	• Internal Access Roads - New / Larger Access points
Visual	• 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.
Avifaunal	• 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
Bat	• Destruction of active roosts - Cumulative effect of destruction of active roost of several wind farms as well as features that could serve as potential roosts.
	• Direct collision and barotrauma - Cumulative bat mortality due to direct collision with the blades or barotrauma during foraging of resident bats at several WEF sites.
Agricultural	Agricultural Compliance Statement
Surface Water	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 (Enertrag SA) and or review of the past assessments as part of any required Water Use Licenses (Atlantic Energy Partners & Mainstream projects).
Heritage – Cultural Landscape	Ecological Inappropriate cumulative development degrade the significant ecological elements of the cultural landscape
	Aesthetic

Environmental Aspect	Potential Cumulative Impact
	Inappropriate cumulative development degrades the significant aesthetic elements of the cultural landscape altering the character and sense of place
	Historic Inappropriate cumulative development degrades the significant historic elements of the cultural landscape altering the character and sense of place
	Socio-economic Inappropriate cumulative development degrade the significant socio-economic opportunities of the cultural landscape
Heritage – Palaeontological	Fossil heritage resources Disturbance, damage or destruction of fossils at or beneath the ground surface due to surface clearance and bedrock excavations
Noise	• Increased noise levels - Cumulative noises due to operating wind turbines from other wind energy facilities in the area
Biodiversity	Cumulative impacts on fauna and flora Wind energy development in the wider area around the Koup 1 site will generate cumulative impacts on habitat loss and fragmentation for fauna and flora.

PUBLIC PARTICIPATION PROCESS

Notification of EIA process to be undertaken as follows:

- Issuing of the notifications and initial landowner consultation (to be circulated to all I&APs in November 2021 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 2 July 2021 (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) in November 2021, 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

- Price Albert Public Library, 27 Church Street, Prince Albert, Western Cape.

PLAN OF STUDY

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

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

The following specialist studies have been undertaken for the project and the significant environmental aspects will be further 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 consult with DFFE as follows:

- Pre-application meeting with DFFE.
- 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.
- A site visit with DFFE is proposed once the Final Scoping Report has been submitted.

- 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.
- Apart from the above mentioned occasions, further consultation with authorities will occur whenever necessary.

GENESIS ENERTRAG KOUP 1 WIND FARM (PTY) LTD

KOUP 1 WIND ENERGY FACILITY (WEF)

DRAFT SCOPING REPORT

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KOUP 1 WIND ENERGY FACILITY (WEF)

DRAFT SCOPING REPORT

1. INTRODUCTION

Genesis Enertrag Koup 1 Wind Farm (Pty) Ltd (hereafter referred to as 'Genesis Koup 1 Wind Farm') is proposing to construct the Koup 1 Wind Energy Facility (WEF) and associated infrastructure near the town of Beaufort West in the Beaufort West and Prince Albert Local Municipalities, 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 140 megawatt (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 Koup 1 WEF and associated infrastructure. The proposed development requires an EA from the National Department 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 EIA for the proposed development will be conducted in terms of the EIA Regulations, 2014 (as amended) promulgated in terms of Chapter 5 of the NEMA. In terms of these regulations, a full EIA process is required for the proposed development. All relevant legislation and guidelines will be consulted during the EIA process and will be complied with at all times.

The above-mentioned proposed development forms one (1) of two (2) WEFs that are being proposed on adjacent properties by Genesis. The other WEF being proposed includes the following:

- 140MW Koup 2 WEF – **DFFE Reference Number:** To be Announced (part of a separate EIA process / application).

In addition, a 132kV overhead power line and on-site switching substation and/or combined collector substation (namely the associated grid connection infrastructure) is also being proposed to feed the electricity generated by the proposed Koup 1 WEF into the national grid. Two grid connection infrastructure developments linked to the WEFs are proposed. These projects, which from a part of separate applications, are as follows:

- Koup 1 WEF Substation and Power Line – **DFFE Reference Number:** To be Allocated (part of separate BA process / application).

- Koup 2 WEF Substation and Power Line – **DFFE Reference Number:** To be Allocated (part of separate BA process / application).

The associated grid connection infrastructure will require a separate Environmental Authorisations (EA) and is subject to a separate Basic Assessment (BA) processes to allow for handover to Eskom. The on-site switching and/or collector substation will include an Eskom portion and an Independent Power Producer (IPP) portion, hence the substation has been included in the WEF EIA and in the associated electrical infrastructure BA to allow for handover to Eskom. Following construction, the substation will be owned and managed by Eskom. The current applicant will remain in control of the low voltage components (i.e. 33kV components) of the substation, while the high voltage components (i.e. 132kV components) of this substation will likely be ceded to Eskom shortly after the completion of construction.

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. two (2) WEF EIAs and two (2) grid connection infrastructure BAs]. The potential environmental impacts associated with all of the developments will be assessed as part of the cumulative impact assessment.

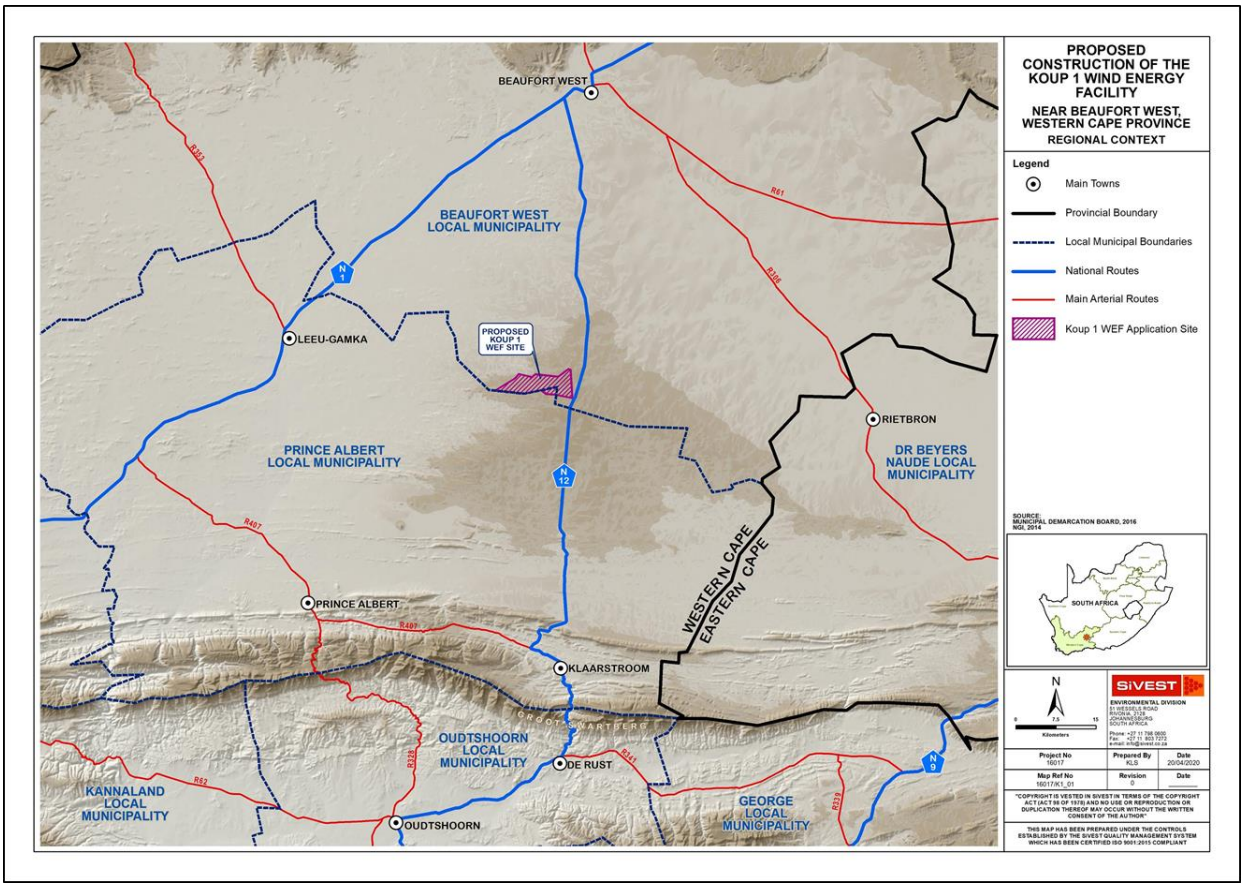


Figure 1: Koup 1 Regional Context

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;	**Error! Reference s ource not found.**
(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;	**Error! Reference s ource not found.**
(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 **Error! Reference s ource not found.**
(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;	11
(g) a full description of the process followed to reach the proposed preferred activity, site and location of the development footprint within the site, including - (i) details of all the alternatives considered; (ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs; (iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them; (iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; (v) the impacts and risks which have informed the identification of each alternative, including the nature, significance, consequence, extent, duration and probability of such identified impacts, including the degree to which these impacts- (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and	12

Content Requirements	Applicable Section
(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;	
(h) a plan of study for undertaking the environmental impact assessment process to be undertaken, including- (i) a description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity; (ii) a description of the aspects to be assessed as part of the environmental impact assessment process; (iii) aspects to be assessed by specialists; (iv) a description of the proposed method of assessing the environmental aspects, including aspects to be assessed by specialists; (v) a description of the proposed method of assessing duration and significance; (vi) an indication of the stages at which the competent authority will be consulted; (vii) particulars of the public participation process that will be conducted during the environmental impact assessment process; and (viii) a description of the tasks that will be undertaken as part of the environmental impact assessment process; (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.	**Error! Reference s ource not found.**
(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	**Error! Reference s ource not found.**
(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.

Content Requirements	Applicable Section
(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 Koup 1 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	Genesis Enertrag Koup 1 Wind Farm (Pty) Ltd
Physical Address	39 de Villiers Street, Kommetjie
Postal Address	P.O. Box 363, Newlands, Cape Town
Postal Code	7725
Telephone	083 460 3898
Fax	086 689 0583
Email	davin@genesis-eco.com

4. DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTIONER AND SPECIALISTS

4.1 Name and contact details of the Environmental Consultant

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

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

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

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 *(Cert.Sci.Nat.)*	MEnvMgt. (Environmental Management)	SACNASP Registration No. 120356 EAPASA Registration No. 2019/1560 IAIA	19
Michelle Guy *(Pr.Sci.Nat)*	MSc Environmental Science	SACNASP Registration No. 126338 EAPASA Registration No. 2019/868 IAIA	9
Luvanya Naidoo *(Pr.Sci.Nat)*	BSc Geography	SACNASP Registration No. 126107 EAPASA Registration No. 2019/1404 IAIA	12

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

4.3 Names and expertise of the specialists

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

Table 5: Names of specialists involved in the project

Company	Name of representative of the specialist	Specialist	Educational Qualifications	Experience (years)
SiVEST SA (Pty) Ltd	Kerry Schwartz	Visual Impact Assessment	BA (Geography) GTc GISc 1187	25
SiVEST SA (Pty) Ltd	Merchandt Le Maitre	Transportation Impact Assessment	N Dip: Civil Engineering B Tech: Civil Engineering Pr.Tech.Eng. (Reg. No. 2018300094)	16
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) Palaeontological Society of South Africa, Associated of Professional Heritage (W Cape)	40

Company	Name of representative of the specialist	Specialist	Educational Qualifications	Experience (years)
	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
JG Afrika (Pty) Ltd	Khuthadzo Bulala	Desktop Geotechnical Assessment	BSc (Hons) (Geology)	5
Johann Lanz Consulting	Johann Lanz	Agriculture and Soils Impact Assessment (desktop)	M.Sc. (Environmental Geochemistry)	24
Enviro Acoustic Research	Morné de Jager	Noise Impact Assessment	B. Ing (Chemical) SAAI, ASA	14
Dr. Neville Bews & Associates	Dr Neville Bews	Social Impact Assessment (desktop)	D Litt et Phil	20
EnviroSci (Pty) Ltd	Dr Brian Colloty	Surface Water Impact Assessment	Ph D (Botany – Estuaries & Mangroves) Pr. Sci. Nat. 400268/07	25
3Foxes Biodiversity Solutions	Simon Todd	Biodiversity Impact Assessment	MSc (Conservation Biology) Pr.Sci.Nat 400425/11	20
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 (Masters 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
C06100000000023100000	FARM RIET POORT NO 231
C09000000000037400011	PORTION 11 OF THE FARM BRITS EIGENDOM NO 374
C09000000000037400015	PORTION 15 OF THE FARM BRITS EIGENDOM NO 374
C09000000000038000005	PORTION 5 OF THE FARM KAATJIES KRAAL NO 380
C09000000000038000010	PORTION 10 OF THE FARM KAATJIES KRAAL NO 380
C09000000000038000011	PORTION 11 OF THE FARM KAATJIES KRAAL NO 380

5.2 Coordinates of the site

The coordinates for the sites are as follows:

- Latitude: 32°51'41.01"S
- Longitude: 22°27'24.65"E

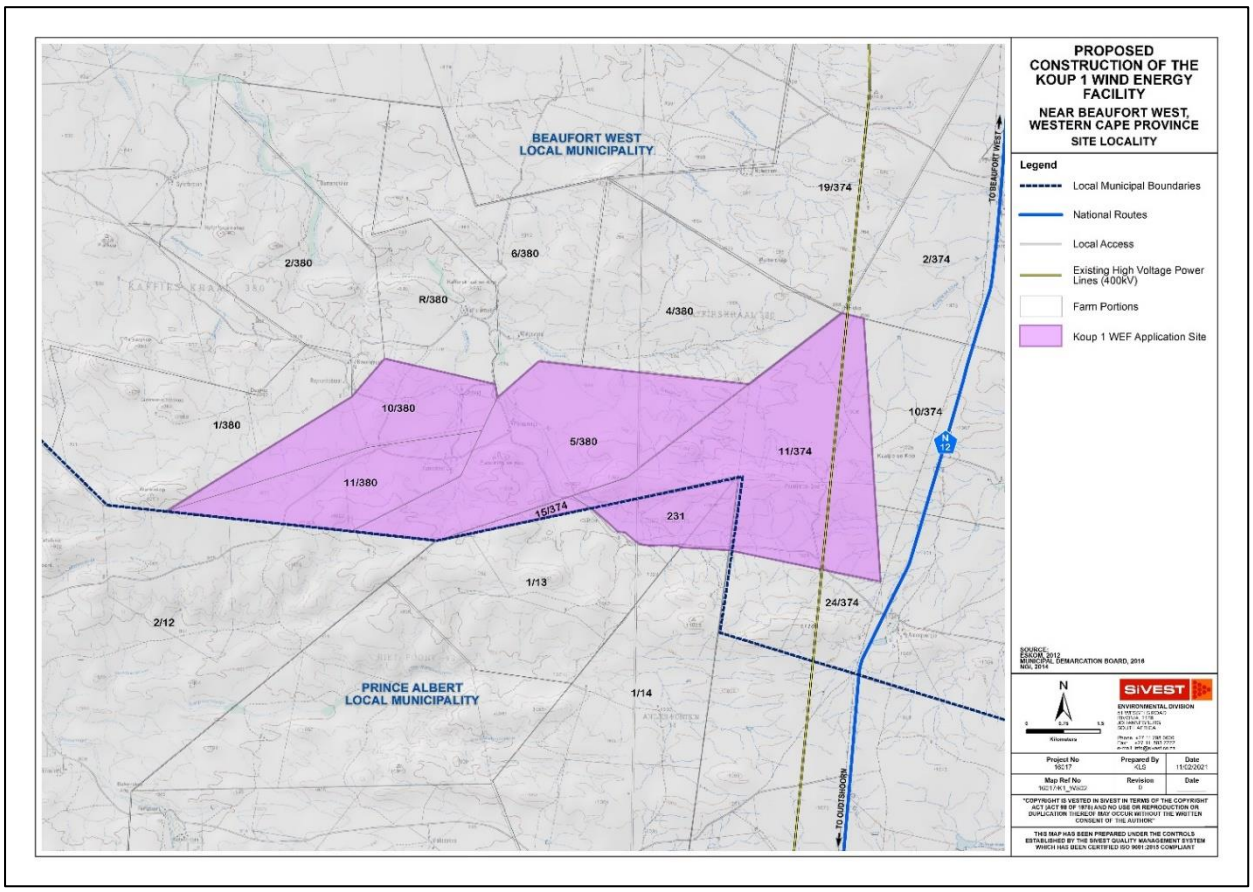


Figure 2: Site locality

6. ACTIVITY INFORMATION

6.1 Project Description

It is anticipated that the proposed Koup 1 WEF will comprise twenty-eight (28) wind turbines with a maximum total energy generation capacity of up to approximately 140MW. 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 Koup 1 WEF will include the following components:

- Up to 28 wind turbines, each between 5.6MW and 6.6MW, with a maximum export capacity of approximately 140MW. 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 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 500m^2) 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 adjacent to each wind turbine (typical footprint of up to approximately 2m x 2m) to step up the voltage to 33kV;
- One (1) new 33/132kV on-site substation and/or combined collector substation, occupying an area of approximately 1.5 ha.
- The wind turbines will be connected to the proposed substation via medium voltage (33kV) cables. Cables will be buried along access roads wherever technically feasible.
- A Battery Energy Storage System (BESS) will be located next to the onsite 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;
- Internal roads with a width of between 8m and 10m will provide access to each wind turbine. Existing site roads will be used wherever possible, although new site roads will be constructed where necessary. 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 an existing gravel road from the N12 National Route;
- One (1) construction laydown / staging area of up to approximately 2.25ha. 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;
- One (1) permanent Operation and Maintenance (O&M) building, including an on-site spares storage building, a workshop and an operations building to be located on the site identified for the construction laydown area.
- A wind measuring lattice (approximately 120m 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 will be trucked in, should the boreholes located within the application site be limited.

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

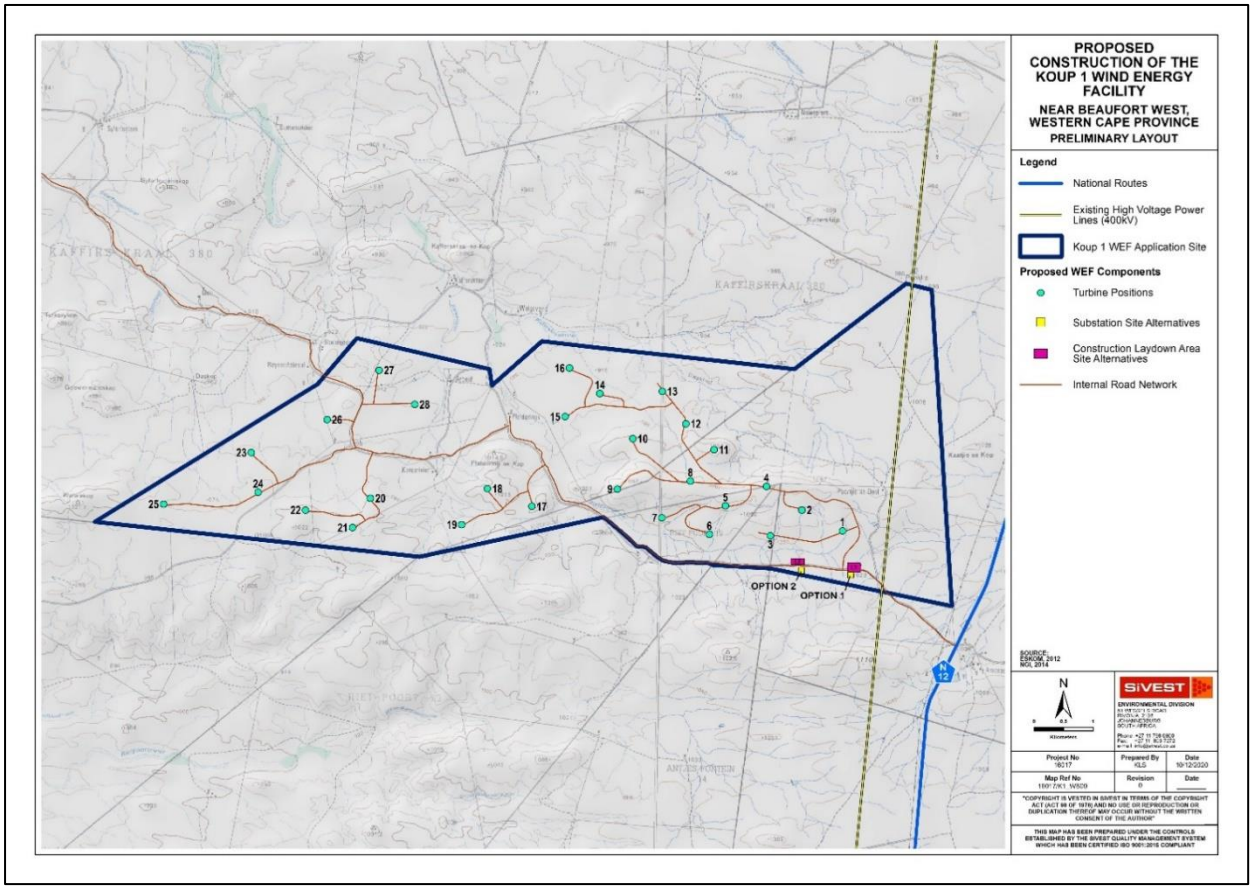


Figure 3: Preliminary layout showing proposed location of wind turbines

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 4** below for the typical components of a wind turbine.

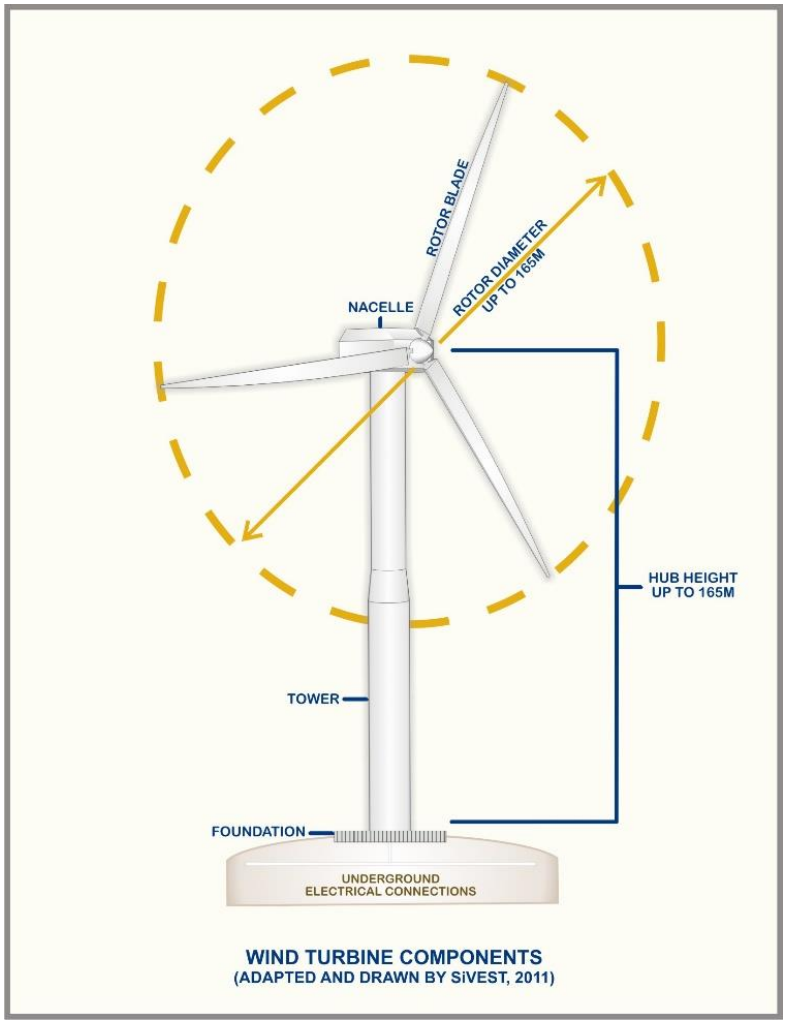


Figure 4: Typical components of a Wind Turbine

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

Table 7: Technical Detail Summary

Component	Description / Dimensions
Location of site (centre point)	32°51'41.01"S 22°27'24.65"E
Application site area	4279,398492 ha
Turbine development area	Hard standing Area = 60m*30m*28 turbines = 5.4 Ha
SG codes	C06100000000023100000 C00900000000037400011 C00900000000037400015 C00900000000038000005 C00900000000038000010 C00900000000038000011
Export capacity	Up to 140MW
Proposed technology	Wind turbines and associated infrastructure
Hub height from ground	Up to 200m
Rotor diameter	Up to 200m

Component	Description / Dimensions
Substation and O&M building area	Approximately 2.25 hectare (ha)
Construction laydown area	Approximately 22 500m²
Permanent laydown area	To be determined based on final layout
Hard stand areas	Approximately 4 500m²
Battery Energy Storage System (BESS)	A Battery Energy Storage System (BESS) will be located next to the onsite 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	Between approximately 8m and 10m
Length of internal access roads	To be determined based on final layout
Site Access	Access to the Koup 1 WEF site will be from the existing access, located ±1 430m west from the surfaced N12 National Road (Road No: TR03305) and falls under the jurisdiction of the Western Cape Provincial Administration. The existing access is located at Km 51.80 and provides access to the farms situated on both east and west of the N12 Freeway. The access to this development is towards the west from the N12 Freeway and traverses over the Remainder of Portion 4 of the farm 374 as a gravel access road up to the existing farm access.
Proximity to grid connection	Approximately 1km from application site
Height of fencing	Approximately 1m – 1.5m high
Type of fencing	Galvanized steel

6.2 NEMA Listed Activities

The amended EIA Regulations promulgated under Section 24(5) of the National Environmental Management Act, Act 107 of 1998 and published in Government Notice No. R. 326 list activities which may not commence without environmental authorization from the Competent Authority. The proposed activity is identified in terms of Government Notice No. R. 327, 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 in 2017), 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. 983 (as amended) Item 11:** The development of facilities or infrastructure for the transmission and distribution of electricity— (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts.	One (1) new on-site substation and/or collector substation will be constructed within the proposed application site as part of the proposed development. The proposed substation will be located outside urban areas and will have a capacity of 33/132kV (33kV yard subject to this EIA / application). In addition, the

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.
		substation will occupy a footprint of up to approximately 1.5 hectares (ha). The proposed development will also involve the construction of medium voltage (i.e. 33kV) cables which will connect the wind turbines to the proposed substation. These cables will be located outside an urban area and will be buried along access roads, wherever technically feasible. The proposed substation will be a shared substation which will consist of a 33kV voltage yard which will be owned and operated by the Applicant as well as a 132kV yard which will be owned and operated by Eskom. The substation will therefore be included in the WEF EIA (this application) and in the associated grid connection infrastructure BA (part of separate application) to allow for handover of the 132kV yard to Eskom. The substation will be constructed by the Applicant, however, ownership of the 132kV yard portion will be ceded to Eskom after construction.
12 (ii) (a) (c)	**GN R. 983 (as amended) Item 12:** The development of: ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs- (a) within a watercourse; (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.	The proposed development will entail the construction of a WEF and associated infrastructure (including an on-site substation and BESS) within the proposed application site which will have a physical footprint of approximately 100m^2 or more and will occur within some of the surface water features / watercourses identified within the application site or within 32m of some of the surface water features / watercourses identified within the application site. The infrastructure associated with the proposed development will avoid the surface water features / watercourses identified within the application site where possible, although some structures (such as internal site roads) will occur within some of the surface water features / watercourses identified within the application site and/or within 32m of some of the surface water features / watercourses identified within the application site.
14	**GN R. 983 (as amended) Item 14:** The development and related operation of facilities	The proposed development will include the construction of an on-site Battery

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.
	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.	Energy Storage System (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. The preferred technology is Lithium Ion. 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.
19	**GN R. 983 (as amended) Item 19**: The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;	The proposed development involves the construction of a WEF as well as other associated infrastructure (including an on-site substation and BESS) within the proposed application site. The Surface Water Impact Assessment revealed that there are surface water features / watercourses located within the application site. As such, the proposed development will involve the infilling or depositing of any material of more than 10m^3 into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10m^3 from some of the identified surface water features / watercourses. Although the layout of the proposed development has been designed to avoid the identified surface water features / watercourses as far as possible, some of the internal site roads to be constructed (as required) will need to traverse some of the identified surface water features / watercourses. In addition, during construction of these roads (as required), soil will need to be removed from some of the identified surface water features / watercourses.
24 (ii)	**GN R. 983 (as amended) Item 24:** The development of a road - ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres.	Internal roads are required within the application site in order to provide access to each wind turbine, the on-site and/or collector substation and the BESS, as well as to facilitate access throughout the WEF. Existing site roads will be used wherever possible, although new site roads will be constructed where necessary. In addition, turns will have a radius of up to approximately 50m for abnormal loads (especially turbine

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.
		blades) to access the various wind turbine positions. As such, the proposed development will involve the construction of new internal roads within the application site, as required. It is proposed that these new internal access roads will be between approximately 8m and 10m wide.
28 (ii)	**GN R. 983 (as amended) Item 28:** Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development: (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;	The proposed development site is currently zoned for agricultural land use, however, the property is no longer actively used for agricultural activities. The proposed development will result in special zoning being required, as an area greater than 1ha will be transformed into industrial / commercial use.
31 (i)	**GN R. 983 (as amended) Item 31:** The decommissioning of existing facilities, structures or infrastructure for - (i) any development and related operation activity or activities listed in this Notice, Listing Notice 2 of 2014 or Listing Notice 3 of 2014;	Should the proposed development's Power Purchase Agreement (PPA) not be renewed after 20 years (anticipated operational lifespan of proposed development), the proposed development would need to be decommissioned. This would include the decommissioning of the entire WEF, including the medium voltage lines connecting the wind turbines to the on-site substation.
48 (i) (a) (c)	**GN R. 983 (as amended) Item 48:** The expansion of- (i) infrastructure or structures where the physical footprint is expanded by 100 square metres or more; where such expansion occurs— (a) within a watercourse; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;	Internal roads are required within the application site in order to provide access to each wind turbine, the on-site and/or collector substation and the BESS, as well as to facilitate access throughout the WEF. Existing site roads will be used wherever possible, and will be upgraded and expanded where necessary. The Surface Water Impact Assessment revealed that there are surface water features / watercourses located within the application site. Although the layout of the proposed development has been designed to avoid the surface water features / watercourses identified within the application site as far as possible, some of the internal roads to be upgraded and expanded will need to traverse some of the surface water features / watercourses identified within the application site and construction will occur within some of the surface water features / watercourses identified within

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.
		the application site and/or be within 32m of some of the surface water features / watercourses identified within the application site. As such, the proposed development will entail the expansion (upgrading) of roads and other infrastructure by 100m^2 or more within some of the surface water features / watercourses identified within the application site or within 32m from the edge of a surface water features / watercourses identified within the application site.
56 (ii)	**GN R. 983 Item 56:** The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre - (ii) where no reserve exists, where the existing road is wider than 8 metres –	Internal roads are required within the application site in order to provide access to each wind turbine, the on-site and/or collector substation and the BESS, as well as to facilitate access throughout the WEF. Existing site roads will be used wherever possible, although new site roads will be constructed where necessary. It is proposed that these new internal access roads will be between approximately 8m and 10m wide. The existing internal roads will thus need to be upgraded by widening them more than 6m, or by lengthening them by more than 1km.
Relevant Scoping and EIA Activities as set out in Listing Notice 2 of the EIA Regulations, 2014 as amended		
1	**GN R. 984 (as amended) Item 1:** The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more,	The proposed development will entail the development of a WEF, on-site substation and BESS with a maximum generation capacity of up to 140MW. In addition, the proposed development will be located outside an urban area.
15	**GN R. 984 (as amended) Item 15:** The clearance of an area of 20 hectares or more of indigenous vegetation.	The proposed WEF development will involve the clearance of more than 20ha of indigenous vegetation. Clearance will also be required for the proposed on-site substation, BESS, internal roads and other associated infrastructure. A Terrestrial Ecology Impact Assessment has been undertaken to assess the impacts of the proposed development on indigenous vegetation.
Relevant Basic Assessment Activities as set out in Listing Notice 3 of the EIA Regulations, 2014 as amended		
4 i. (ii) (aa)	**GN R. 985 (as amended) Item 4:** The development of a road wider than 4 metres with a reserve less than 13,5 metres.	Internal roads are required within the application site in order to provide access to each wind turbine, the on-site and/or collector substation and the BESS, as

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.
	i. Western Cape ii. Areas outside urban areas; (aa) Areas containing indigenous vegetation;	well as to facilitate access throughout the WEF. Existing site roads will be used wherever possible, although new site roads will be constructed where necessary. It is proposed that these new internal access roads will be between approximately 8m and 10m wide. In addition, turns will have a radius of up to approximately 50m for abnormal loads (especially turbine blades) to access the various wind turbine positions. The above-mentioned internal roads (existing and new roads to be constructed, where required) within the application site will occur within the Western Cape Province, outside urban areas. In addition, the proposed development site contains indigenous vegetation.
10	**GN R. 985 (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: (aa) Areas containing indigenous vegetation	The proposed development will include the construction of an on-site Battery Energy Storage System (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. 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.
12	**GN R. 985 (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. **i. Western Cape** ii. Within critical biodiversity areas identified in bioregional plans;	The proposed WEF development will involve the clearance of more than 300 square metres or more of indigenous vegetation. Clearance will also be required for the proposed on-site substation, BESS, internal roads and other associated infrastructure.
14	**GN R. 985 (as amended) Item 14:** The development of— (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs—	The proposed energy facility will entail the development of roads and other infrastructure with a physical footprint of 10m^2 or more within a watercourse or within 32m from the edge of a watercourse. Although the layout of the proposed development will be designed to avoid the identified surface water

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.
	(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; excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour. **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;	features as far as possible, some of the internal and access roads, will likely need to traverse the identified surface water features.
18 i. ii. (aa)	**GN R. 985 (as amended) Item 18:** The widening of a road by more than 4 meters, or the lengthening of a road by more than 1 kilometer- **i. Western Cape** ii. All areas outside urban areas: (aa) Areas containing indigenous vegetation	Internal roads are required within the application site in order to provide access to each wind turbine, the on-site and/or collector substation and the BESS, as well as to facilitate access throughout the WEF. Existing site roads will be used wherever possible, although new site roads will be constructed where necessary. It is proposed that these new internal access roads will be between approximately 8m and 10m wide. Existing internal roads will thus need to be upgraded as part of the proposed development (where required). Internal roads will be widened by more than 4m or lengthened by more than 1km. These roads located within the application site will occur within the Western Cape Province, outside urban areas. In addition, the proposed development site contains indigenous vegetation.
23	**GN R. 985 (as amended) Item 23:** The expansion of— (ii) infrastructure or structures where the physical footprint is expanded by 10 square metres or more; where such expansion occurs— (a) within a watercourse; (b) in front of a development setback adopted in the prescribed manner; or	The proposed development will entail the development and expansion of roads and other infrastructure by 10m^2 or more within a watercourse or within 32m from the edge of a watercourse. Although the layout of the proposed development will be designed to avoid the identified surface water features as far as possible, some of the existing internal and access roads may likely need to traverse some of the identified surface water features. The proposed development occurs within CBAs, and is located outside an urban

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.
	(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour. **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;	area. An ecological impact assessment (Appendix 6) was undertaken to assesses the impacts of the proposed development on CBAs. In addition, a surface water impact assessment (Appendix 6) was undertaken to assesses the impacts of the proposed development on the identified surface water features.

7. DESCRIPTION OF THE PHYSICAL ENVIRONMENT

7.1 Geographical

The proposed WEF is located approximately 55km 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 *5*** below.

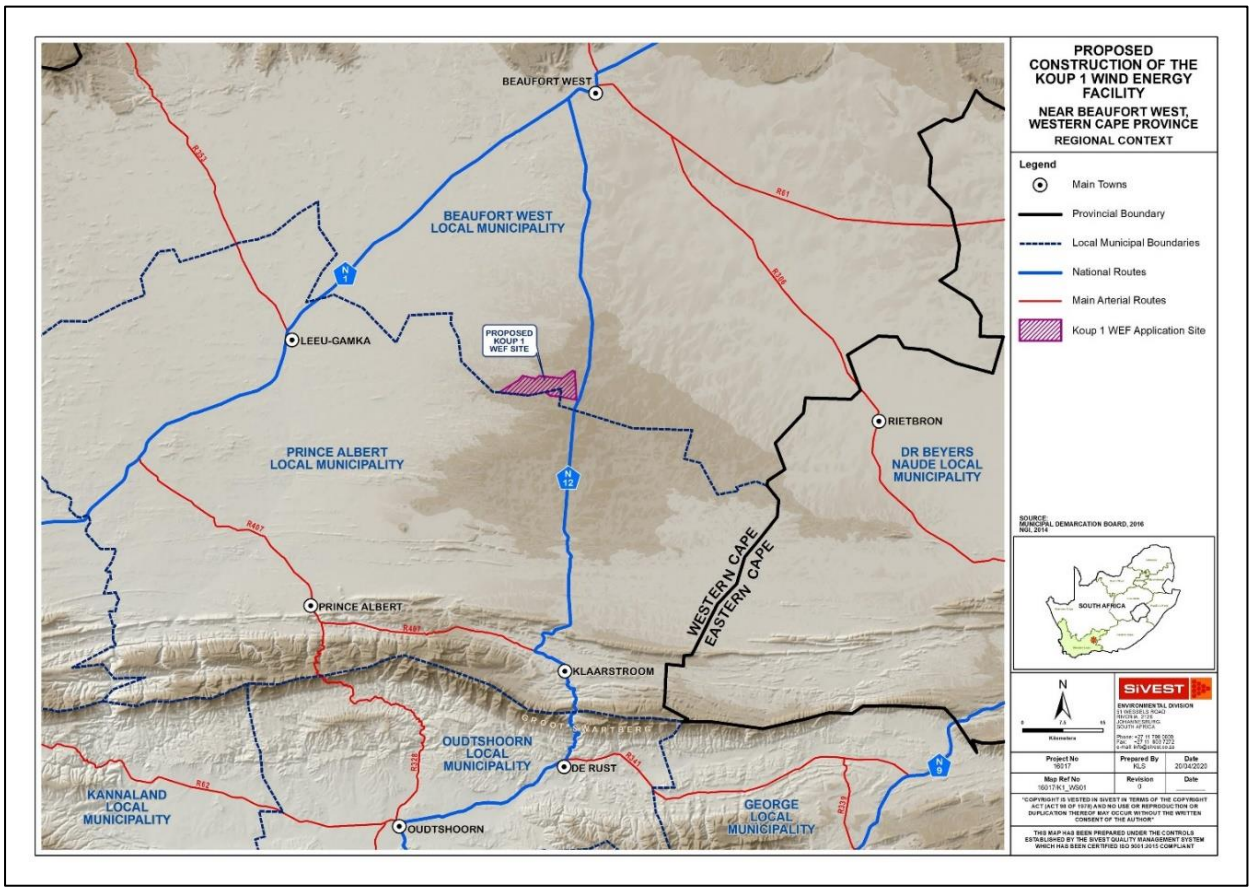


Figure 5: Regional context

7.2 Land Use

According to the South African National Land Cover dataset (Geoterraimage 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***Error! Reference source not found.).

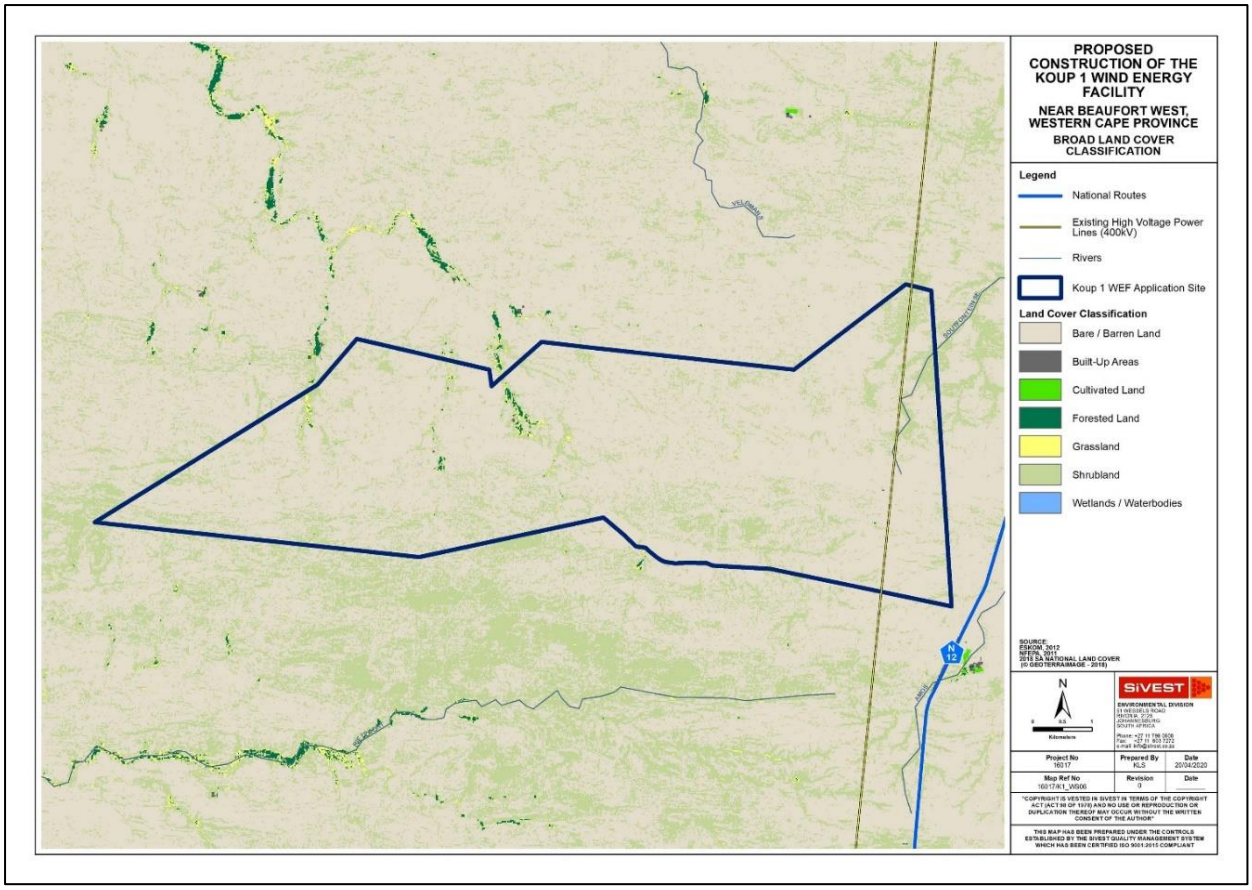


Figure 6: Land Cover Classification

Agricultural activity in the area is restricted by the arid nature of the local climate and areas of cultivation are largely confined to relatively limited areas distributed along drainage lines. As such, the natural vegetation has been retained across much of the study area. Livestock (mostly sheep) and game farming (**Figure 7**) is the dominant activity although the climatic and soil conditions have resulted in low densities of livestock and relatively large farm properties across the area. Thus the area has a very low density of rural settlement, with relatively few isolated farmsteads in evidence (**Figure *8***). Built form in much of the study area is limited to isolated farmsteads, including farm worker's dwellings and ancillary farm buildings, gravel access roads, telephone lines, fences and windmills (**Figure 9**).

Figure 7: Game farm just south of the Koup 1 WEF

Figure 8: Isolated farmsteads typical of the Koup 1 WEF study area

Figure 9: Farm buildings and associated infrastructure south-west of the Koup 1 WEF application site.

Further human influence is visible in the area in the form of the N12 national route which traverses the study area in a north to south direction (**Figure 10**). In addition, existing, power lines, both 22kV (**Figure *11***) and 400kV power lines (**Figure *12***) in this area are also significant man-made features in an otherwise undeveloped landscape. These lines bisect the study area in a north to south alignment, relatively close to the N12.

Figure 10: View southwards along the N12 National Route on the eastern boundary of Koup 1 WEF application site.

Figure 11: 22kV power lines and associated substation south of the Koup 1 WEF application site, adjacent to the N12.

Figure 12: View of 400kV power lines to the east of the Koup 1 WEF application site.

The closest built-up area is the town of Beaufort West which is situated approximately 55km north of the Koup 1 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.

7.3 Climate

The study area is characterized by a hot semi-arid climate with a “BSk” classification according to the Köppen-Geiger climate classification. 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.

7.4 Topography

The site proposed for the Koup 1 WEF development is located in an area largely characterised by flat to gently undulating plains interspersed with low ridges and dry river courses. Areas of greater relief are largely

concentrated to the south east of the study area. According to by the slope gradient map prepared by JG Afrika (July 2021) as part of the Geotechnical Report (**Figure *13***), *the site is characterised by flat to gentle terrain (0.40˚ – 8.7˚ slopes). Spot heights indicate elevation values in the range of 901m to 1060m above mean sea level. Flat to undulating terrain prevails across much of the WEF development site, although steep slopes associated with a low ridge in the south-eastern sector of the site result in some areas of greater relief.*

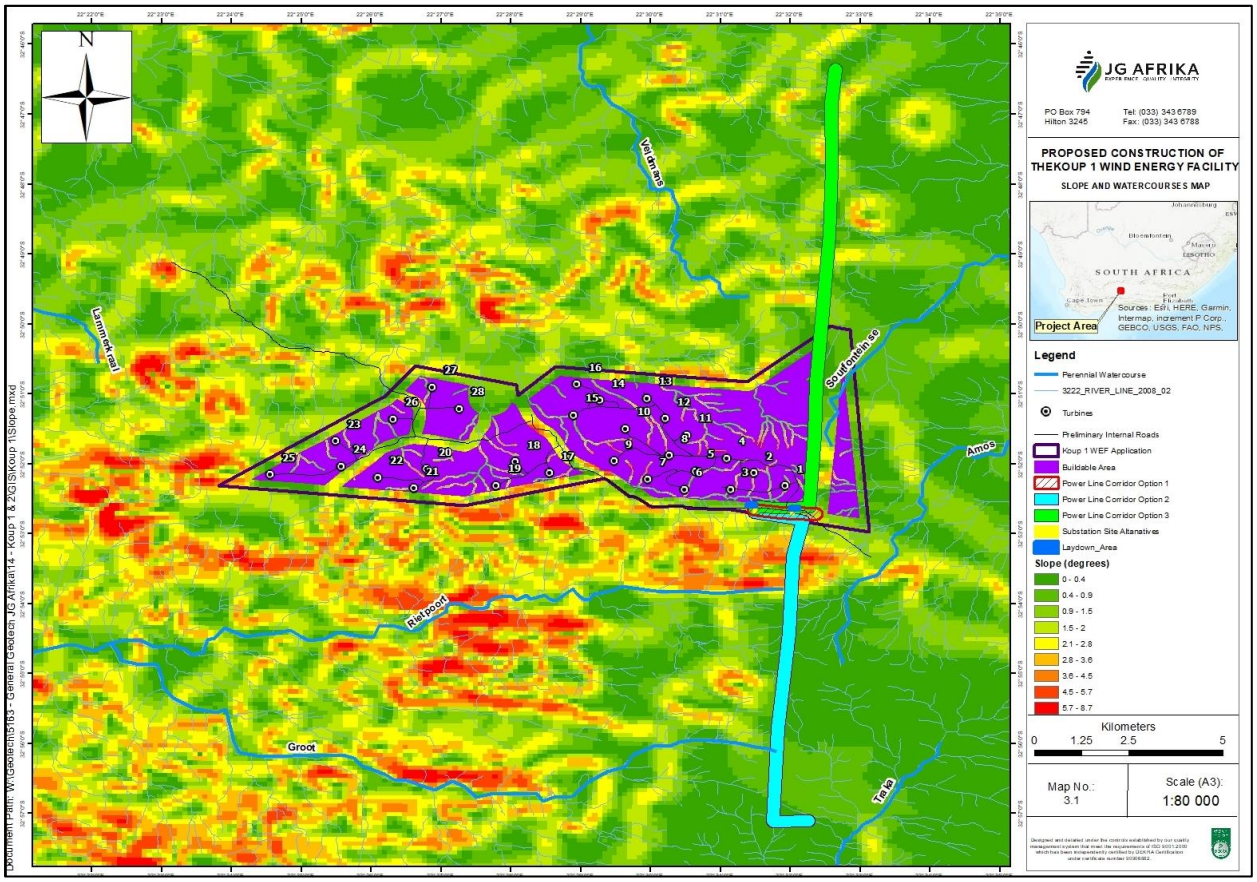


Figure 13: Topography

7.5 Geology and Soils

A desktop geotechnical report was undertaken by JG Afrika (Pty) Ltd (July 2021). According to the report, *the study area is underlain by rock units of the Teekloof Formation (Pt), which is underlain by rock units of the Abrahamskraal (Pa) Formation* (**Figure *14***). *These rock units form part of the Adelaide Subgroup of the Beaufort Group, of the greater Karoo Supergroup.*

The Abrahamskraal Formation (Pa) is represented by grey and green mudstone, siltstone and subordinate sandstone. Thin chert beds are common on the lowermost red mudstones of the Abrahamskraal Formation. These rock units are overlain by the Teekloof Formation (Pt) which is represented by mudstone, siltstone and fine to very fine grained wackes and arenites.

Quaternary alluvial deposits overlie the geological formations over localised areas in the east and south east of the site.

Regional measurements indicate that the Teekloof sedimentary strata dip at between 10° and 12° in an easterly direction. The Abrahamskraal sedimentary bedding displays axial dips of 9° in a westerly and 20° in

an easterly direction. The sedimentary rocks in the area have been acted upon by numerous tectonic forces associated with fold features. Based upon the geology map, one reverse fault occurs in the centre of the site trending east to west. Six axial fault features are located within the study area. The faults trend in an E-W direction and represent localized synclines and anticlines.

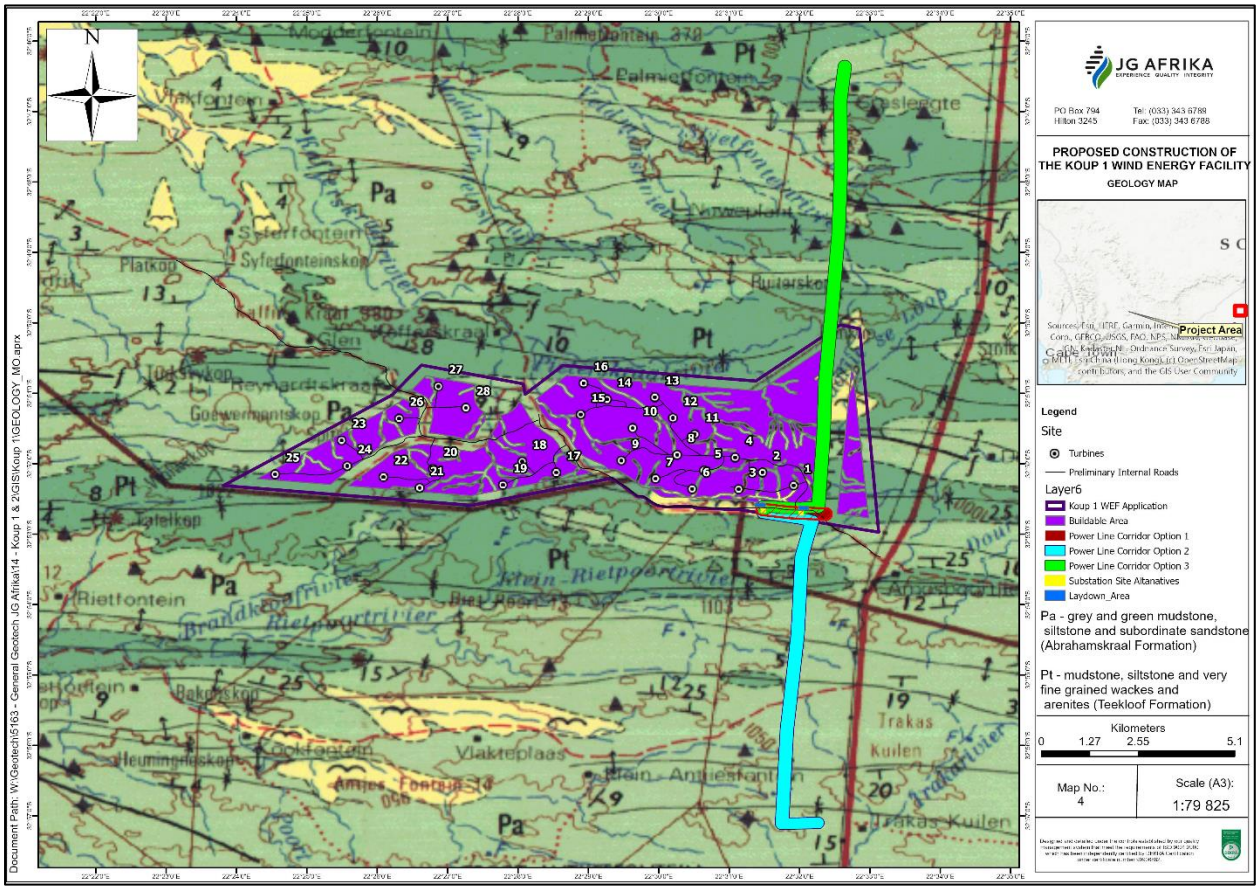


Figure 14: Geology

7.6 Geohydrology

According to the desktop geotechnical report undertaken by JG Afrika (Pty) Ltd (July 2021), *the study area lies within the L12C catchment area which receives a mean annual precipitation of 152mm.*

According to the 1: 3 000 000 scaled Groundwater Harvest Potential Map of South Africa, Regional yields of sustainable groundwater abstraction rates, indicate values of 2500 - 4000 m3/km2/annum.

Regional hydrogeological data indicate that the area is characterised by fractured aquifer types. The south eastern aquifer is classed as 'b2' which indicate relatively low yields, estimated to be in the range of 0.1-0.5 l/s. The major proportion of the site is classed as "b3" which indicates low yields of 0.5-2.0l/s. Fractured aquifer (designation b) form as a result of discontinuities, such as faults, fractures and joints, in hard bedrock. These form the primary porosity in which groundwater moves.

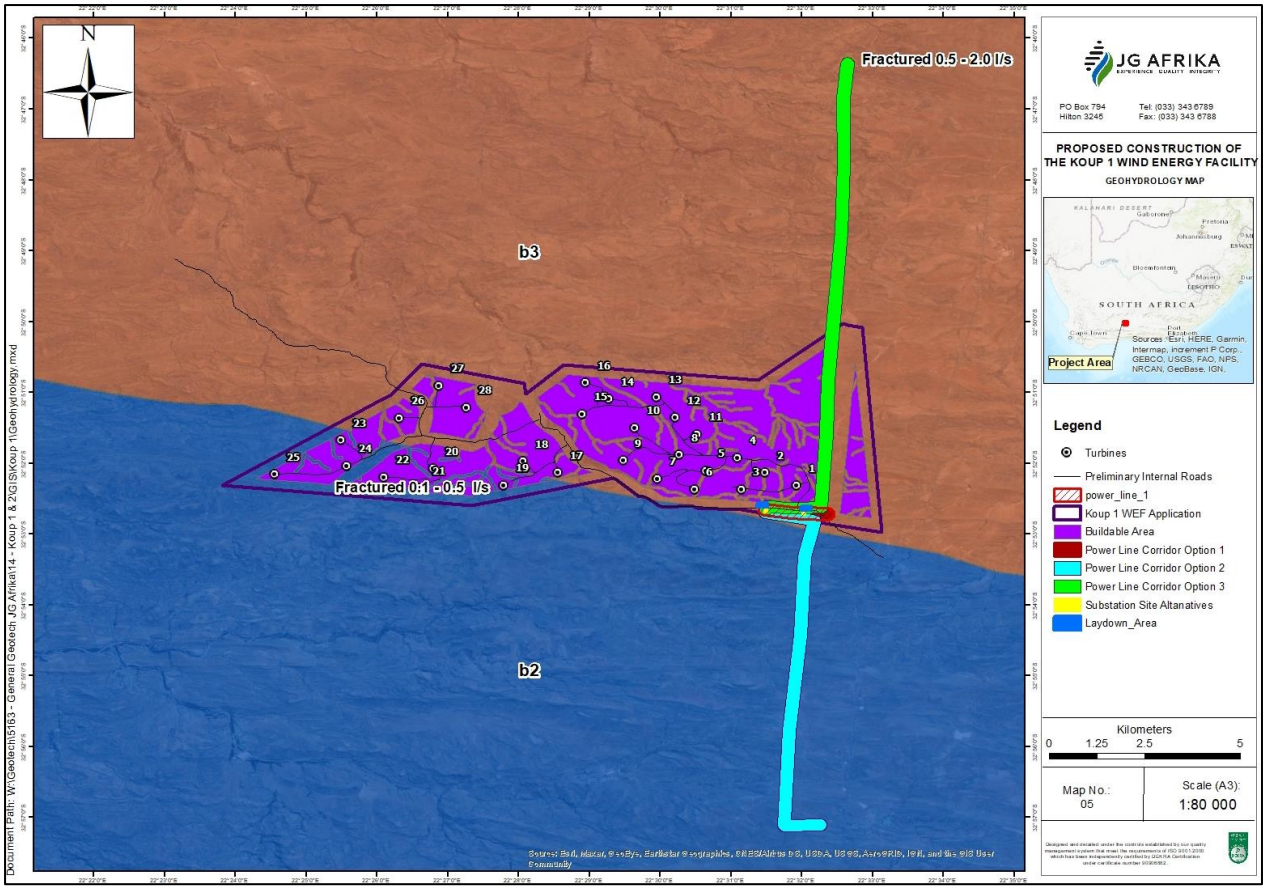


Figure 15: Geohydrology

7.7 Surface Water

An Aquatic Impact Assessment was undertaken by EnviroSci (Pty) Ltd (July 2021). 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 17** & **Figure 18**). These ranged from narrow channels within small canyons with steep cliffs to broad flood plain areas in the lower valleys. Some of these did contain small seeps/fountains which sustained small pools of water inhabited by invertebrates and amphibians. However, broad riparian zones are only found within the lower valley areas, dominated by a small number of trees, while obligate instream vegetation is limited to a small number of sedges (nut grasses).*
- *Minor drainage lines (**Figure 19**), with no obligate aquatic vegetation and were mostly 2 – 8m in width*
- *Dams or weirs (**Figure 20**) 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 westerly region, forming part of a tributary of the Veldmans River (J21E) Quinary Catchment of the Great Karoo Ecoregion in the Breede-Gouritz Catchment Management Agency (George Regional Office). The Veldmans River in turn drains into the Gamka River.

Figure 21 *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 May 2021 survey data, noting that due to the complex nature of the topography and geology, the features were digitised at a scale of 1:10 000 to provide greater accuracy when in close proximity to the proposed infrastructure (**Figure 22**).

As indicated previously, two main natural aquatic systems were observed within the study area, namely the broader non-perennial rivers 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 turbines and most of the proposed buildings.

Substation Option 2 and Laydown Options 1 & 2 are however located within minor drainage lines, and for this reason should be relocated and or avoided in the selection process (**Figure 23**).

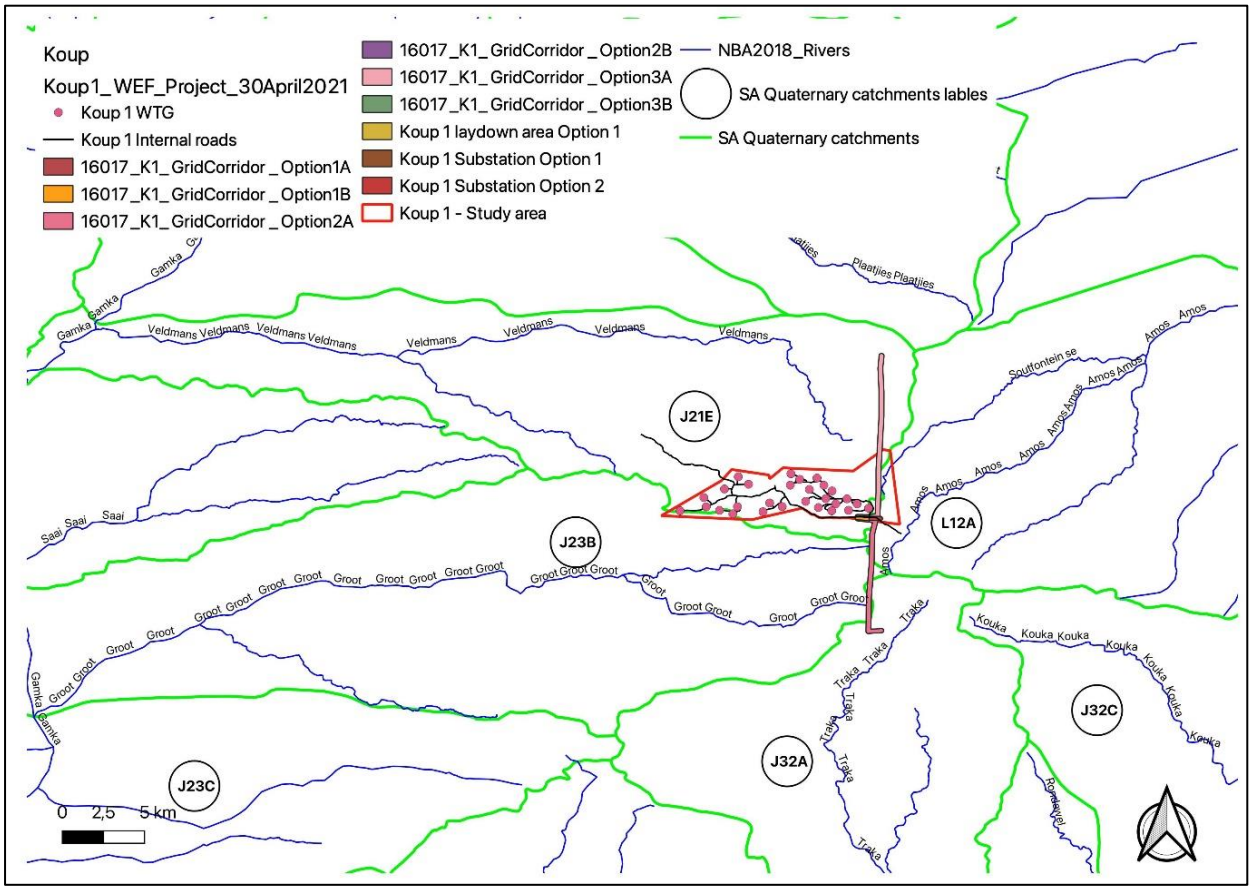


Figure 16 Project locality map indicating the various quaternary catchments and mainstem rivers (Source DWS and NGI) within the project boundary

Figure 17: A broad alluvial watercourse with defined riparian zone

Figure 18: Alluvial channel with undefined channel and or riparian zon

Figure 19: A view of a minor drainage line observed on the upper plateaux where most of the proposed internal roads are located, thus crossings will mostly occur in these areas of the aquatic systems

Figure 20: Several small weirs were found within the steeper valleys through-out the study area, most no longer functional

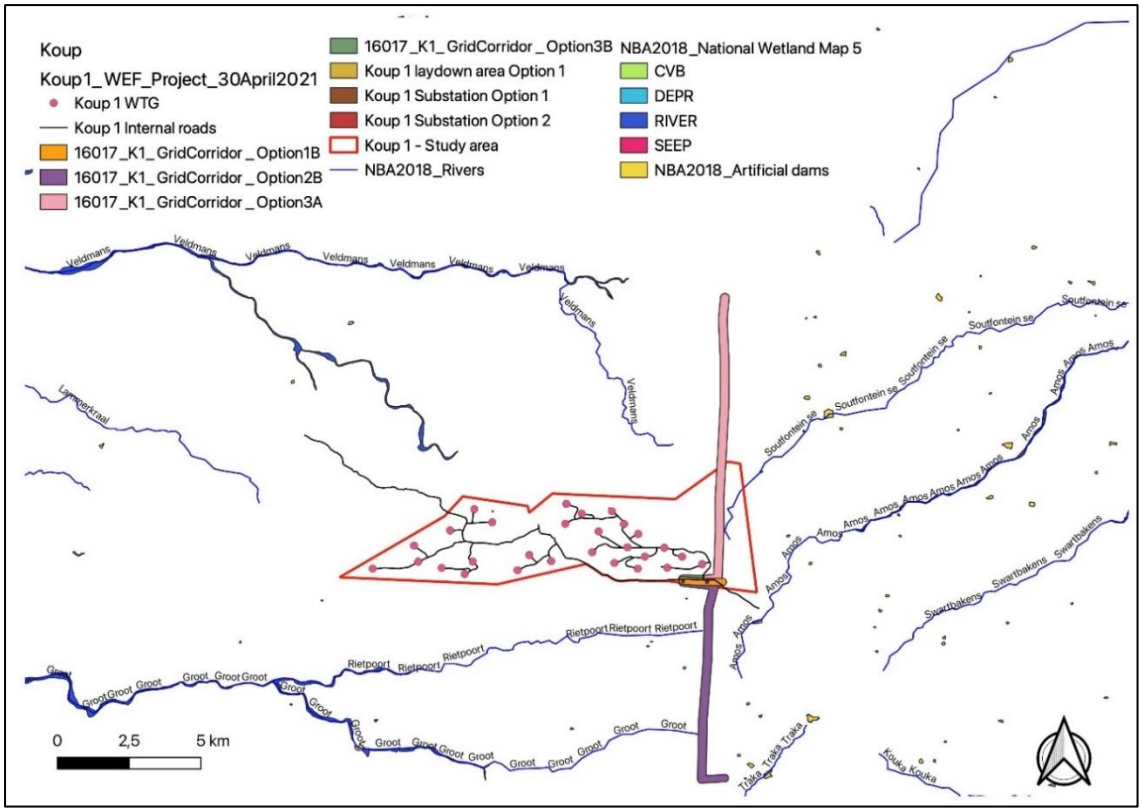


Figure 21: National Wetland Inventory wetlands and waterbodies (van Deventer et al., 2020)

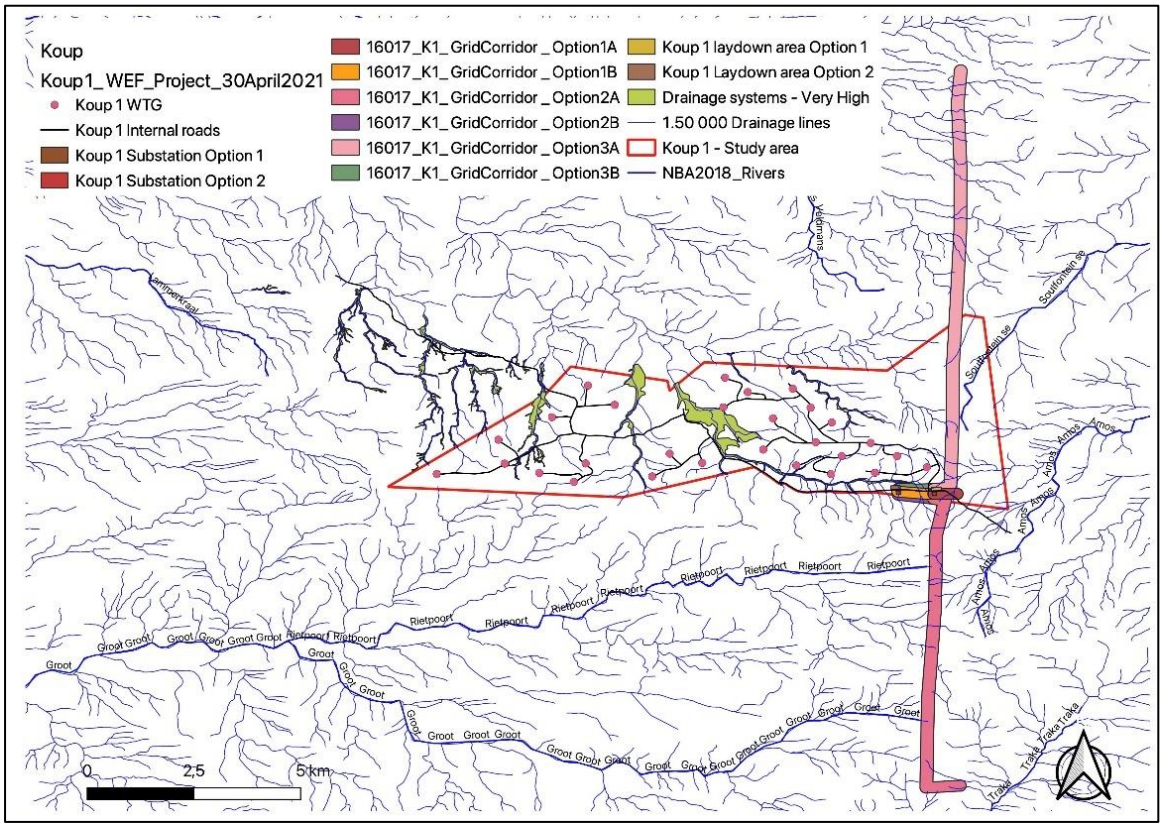


Figure 22: Waterbodies delineated in this assessment based on groundtruthing information collected

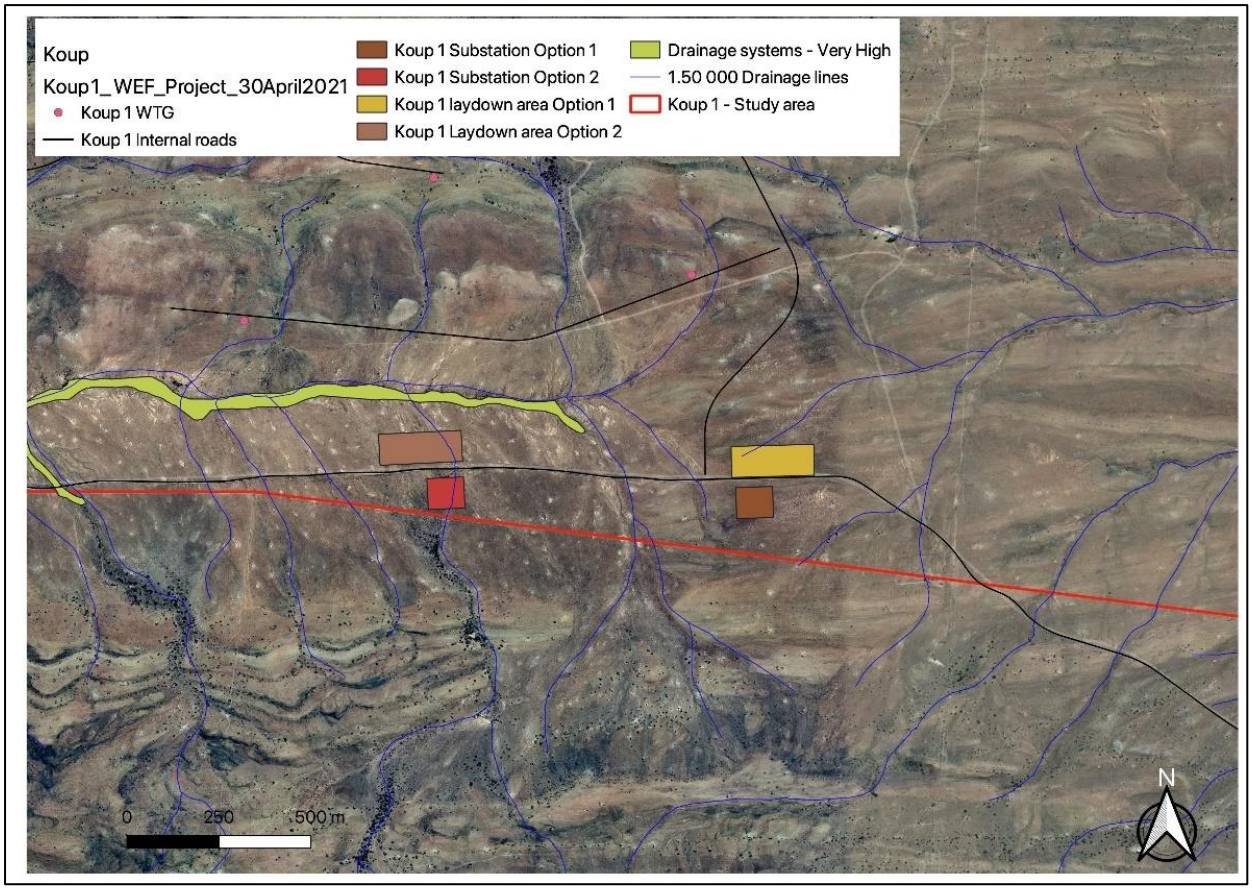


Figure 23: Confirmed and delineated waterbodies in relation to the proposed Substation and laydown area localities.

7.8 Biodiversity

An Ecological Study was underatekn by Simon Todd (September 2021). According to the report, *the Koup 1 site falls entirely within the Gamka Karoo vegetation type and consists of open gravel plains and low hills dissected by numerous drainage lines. Vegetation cover is generally very low and dominated by low shrubs and scattered low trees. In general, the vegetation of the Koup 1 site is considered low sensitivity and there are few species of concern present. In terms of fauna, the diversity of mammals, reptiles and amphibians is considered relatively low, even by Karoo standards. Although the site falls within the broad distribution of the Riverine Rabbit, the drainage lines of the site do not have extensive floodplains with dense riparian vegetation that represent the typical habitat of this species in the area. The Koup 1 site is therefore considered unsuitable for this species and the development is considered highly unlikely to have any impact on the Riverine Rabbit. The site also falls within the range of the Karoo Padloper and if present it would be associated with the hills of the site with sufficient loose rock and coarse rubble to provide shelter. The low vegetation cover and paucity of such habitat suggests that the site is not an important area for this species and no evidence of this species was observed on the site.*

While the smaller drainage features of the site are classified as Ecological Support Areas, there is only one small area of CBA in the east of the site that would be minimally impacted by the development. As such impacts on CBAs are considered acceptable. In terms of cumulative impacts, the wider area currently has a low development impact from renewable energy and the contribution of the Koup 1 WEF to cumulative impact

at 50ha is considered relatively low and would not generate significant broad-scale impact and as such is considered acceptable.

In terms of the sensitivity mapping and the set limits of acceptable change, the development is mostly within the limits of acceptable change although the footprint within the High sensitivity areas currently exceeds the stated threshold and it is recommended that the layout and in particular the turbine access roads are adjusted slightly so as to reduce the overall footprint within these areas to within the acceptable limits.

7.9 Agricultural

An agricultural compliance statement and site sensitivity verification was undertaken by Johann Lanz (13 August 2021). According to the report, *the site has low agricultural potential because of, predominantly, rainfall constraints, but also due to soil constraints. It is totally unsuitable for cultivation, and agricultural land use is limited to low density grazing. The land is predominantly of low agricultural sensitivity.*

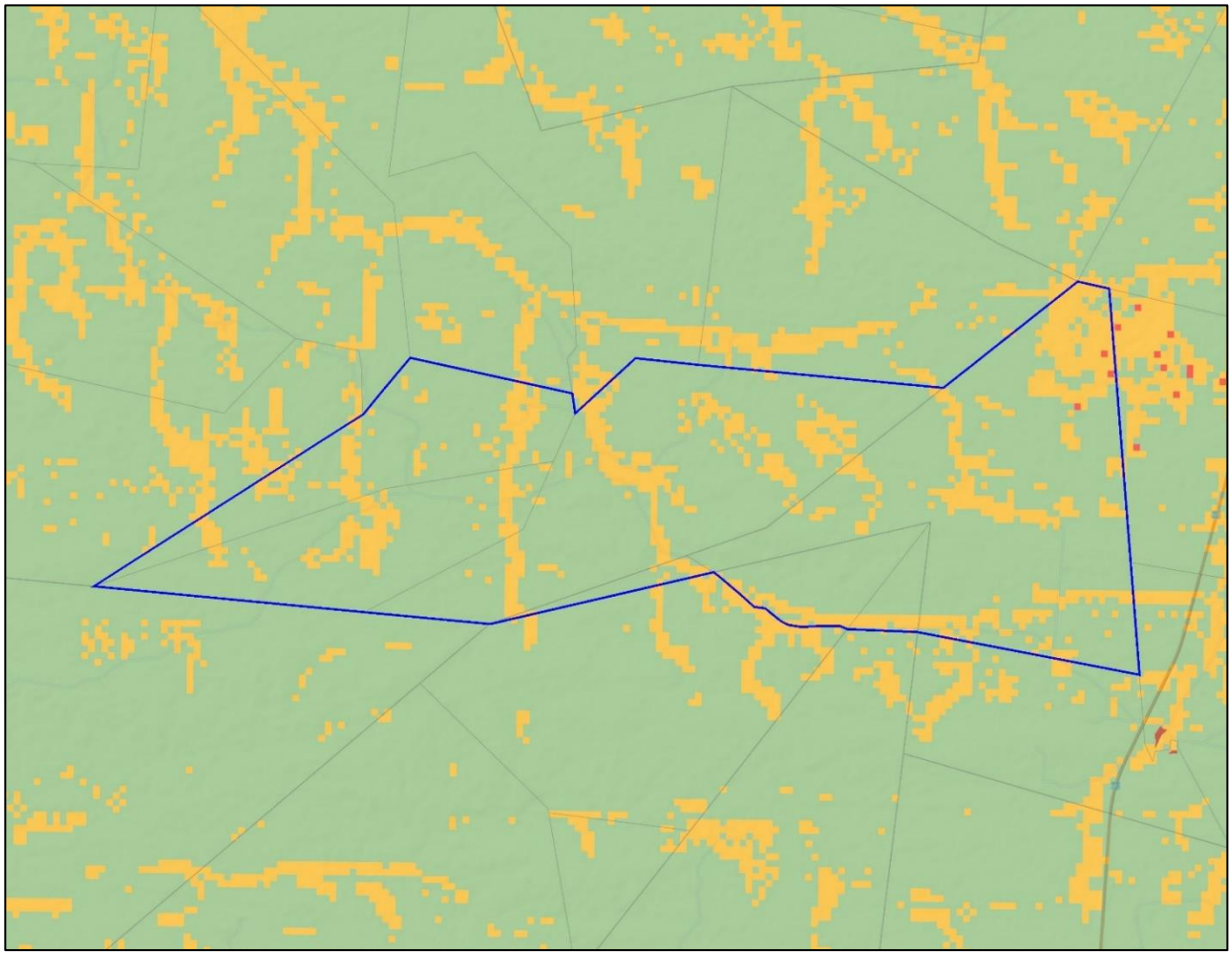


Figure 24: Agricultural sensitivity as given by the screening tool (green = low; yellow = medium; red = high; dark red = very high).

7.10 Avifauna

An Avifaunal Assessment was undertaken by Chris van Rooyen Consulting (July 2021). According to the assessment, *it is estimated that a total of 155 bird species could potentially occur in the broader area. Of these, 16 species are classified as priority species for wind development. 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 9** *below list all the priority species and the possible impact on the respective species by the proposed WEF.*

LC = Least Concern
NT = Near threatened
VU = Vulnerable
EN = Endangered

H = High
M = Medium
L = Low

Table 9: Wind energy priority species recorded in the broader area.

Species	***Taxonomic name***	***Reporting rate***		***Status***		***Recorded during surveys***	***Likelihood of occurrence***	***Habitat***		
		Full protocol	***Ad hoc protocol***	***Global status***	***Regional status***			***Nama Karoo***	***Surface water***	***HV lines***
Kori Bustard	*Ardeotis kori*	*5.17*	*0.68*	*NT*	*NT*		*M*	*x*	*x*	
Ludwig's Bustard	*Neotis ludwigii*	*12.07*	*2.05*	*EN*	*EN*	*x*	*H*	*x*		
Common Buzzard	*Buteo buteo*	*1.72*	*0.00*				*L*	*x*	*x*	*x*
Jackal Buzzard	*Buteo rufofuscus*	*1.72*	*0.00*				*L*	*x*	*x*	*x*
Blue Crane	*Grus paradisea*	*1.72*	*0.00*	*VU*	*NT*		*L*	*x*	*x*	
Booted Eagle	*Hieraaetus pennatus*	*3.45*	*0.00*				*M*	*x*	*x*	*x*
Martial Eagle	*Polemaetus bellicosus*	*5.17*	*0.00*	*EN*	*EN*	*x*	*H*	*x*	*x*	*x*
Verreaux's Eagle	*Aquila verreauxii*	*3.45*	*1.37*	*LC*	*VU*		*L*	*x*	*x*	*x*
Spotted Eagle-Owl	*Bubo africanus*	*8.62*	*2.05*				*M*	*x*		
Lanner Falcon	*Falco biarmicus*	*1.72*	*0.00*	*LC*	*VU*		*M*	*x*	*x*	*x*
Pale Chanting Goshawk	*Melierax canorus*	*50.00*	*14.38*			*x*	*H*	*x*	*x*	*x*
Black Harrier	*Circus maurus*	*3.45*	*0.00*	*EN*	*EN*		*L*	*x*	*x*	
Yellow-billed Kite	*Milvus aegyptius*	*1.72*	*0.00*				*L*	*x*	*x*	
Karoo Korhaan	*Eupodotis vigorsii*	*72.41*	*25.34*	*LC*	*NT*	*x*	*H*	*x*		
Southern Black Korhaan	*Afrotis afra*	*0.00*	*0.68*	*VU*	*VU*		*L*	*x*		
Secretarybird	*Sagittarius serpentarius*	*3.45*	*0.00*	*EN*	*VU*		*M*	*x*	*x*	

The results of preconstruction bird monitoring conducted at the application site and control area are presented below:

7.10.1 Transects

The results of the transect counts are tabled in **Figure 10** and **Figure 11**:

Table 10: The results of the drive transects

DRIVE TRANSECTS				
	Total number of records - all species	*Total number of records – wind priority species only*	*Total number of species*	*Total number of wind priority species*

Wind farm	*658*	*31*	*56*	*2*
Control site	*389*	*10*	*39*	*2*

Table 11: The results of the walk transects

WALK TRANSECTS				
	Total number of records - all species	*Total number of records – wind priority species only*	*Total number of species*	*Total number of wind priority species*
Wind farm	*934*	*49*	*39*	*2*
Control site	*1065*	*42*	*49*	*1*

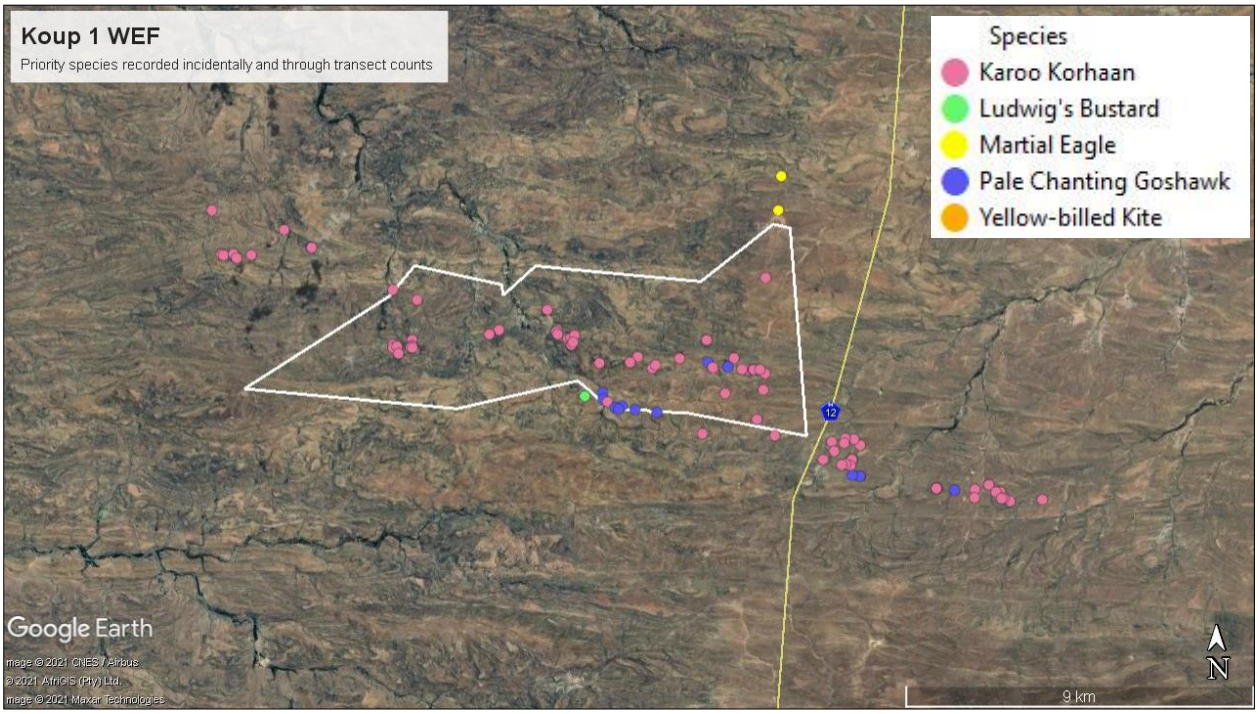


Figure 25: The location of priority species recorded at the proposed WEF through transect counts and incidental sightings.

7.10.2 Focal points

The Martial Eagle nest on Tower 108 was identified as a focal point and monitored over a period of four seasonal surveys. The nest was inactive during the spring monitoring surveys period (September - October 2019). The nest was still inactive during the summer monitoring surveys (January 2020), which is to be expected as it fell outside the breeding season. In May 2020, both adult birds were observed perching on the towers around the nest, indicating that the territory is active, and that breeding may take place that year. However, the birds were not observed at the nest during the winter surveys in July 2020, indicating that breeding did not happen. The most likely reason for the absence of breeding was the exceptionally dry conditions that year. Martial Eagles do not necessarily breed every year, therefore the absence of breeding should not be interpreted as a sign that the territory has been abandoned. Nests may remain vacant for several years just to be re-occupied again when conditions are favourable (personal observation).

A focal point was identified at the control site, namely a farm dam, and monitored over four seasons. All the dams were dry during the spring monitoring survey period; therefore, no birds were recorded. During the summer surveys in January 2020, the dam was full after the area received some rain. During the autumn surveys in May 2020, the dam was about 60% full. In July 2020, the dam was about 30% full. No wind priority

species were recorded in the course of four seasons of monitoring, but the following non-priority species were recorded:

- *South African Shelduck*
- *Egyptian Goose*
- *African Spoonbill*
- *Pied Avocet*
- *Black-winged Stilt*
- *Three-banded Plover*
- *Cape Teal*
- *Red-billed Teal*
- *Little Grebe*

7.10.3 Vantage point observations

A total of 192 hours of vantage point watches were completed at four vantage points in order to record flight patterns of priority species. In the four sampling periods, the duration of priority species flights amounted to 9 minutes and 30 seconds. A total of 11 individual flights were recorded, all at low altitude i.e. below rotor height. The passage rate for priority species was 0.06 birds/hour, which is the fourth lowest passage rate measured for the 50 instances where we did a year vantage point watches at a project site. This amounts to less than one bird per day.

7.10.4 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 12** and **Figure 26** below.

Table 12: 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	*0.005*	*70*	*0.08*
Pale Chanting Goshawk	*0.002*	*65*	*0.04*
Average	*0.003*	*67.5*	*0.06*

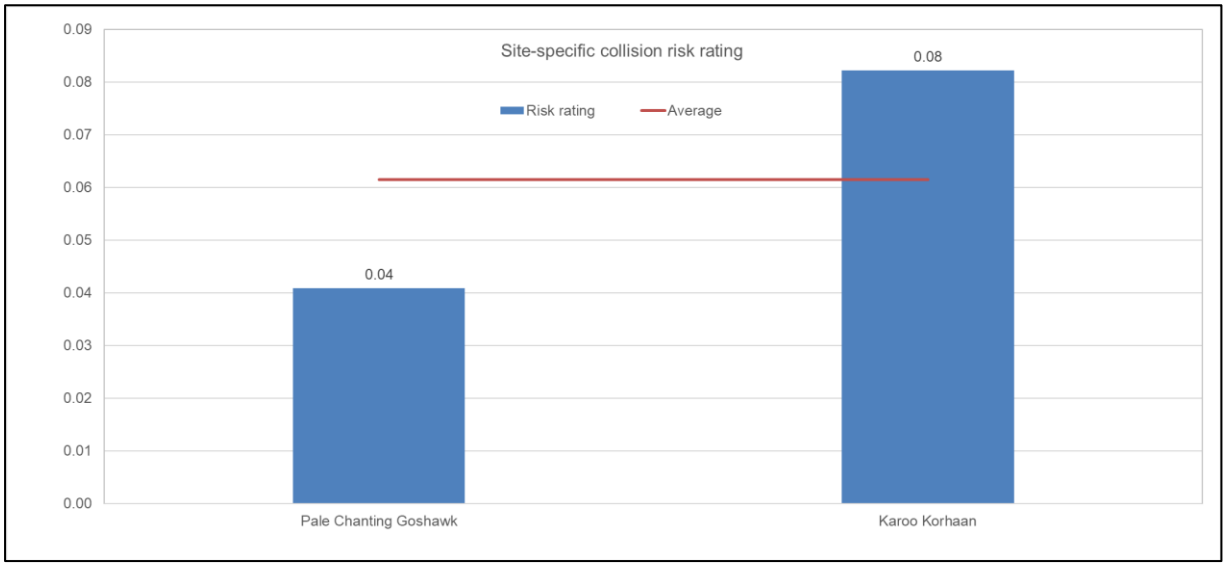


Figure 26: Site specific collision risk rating for priority species. The red line indicates the average collision risk rating for priority species at the application site, based on recorded flight behaviour in four seasonal surveys.

7.10.5 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 27** and **Figure 28**).

Figure 27: Intensity of flight activity of Karoo Korhaan over four seasons of monitoring

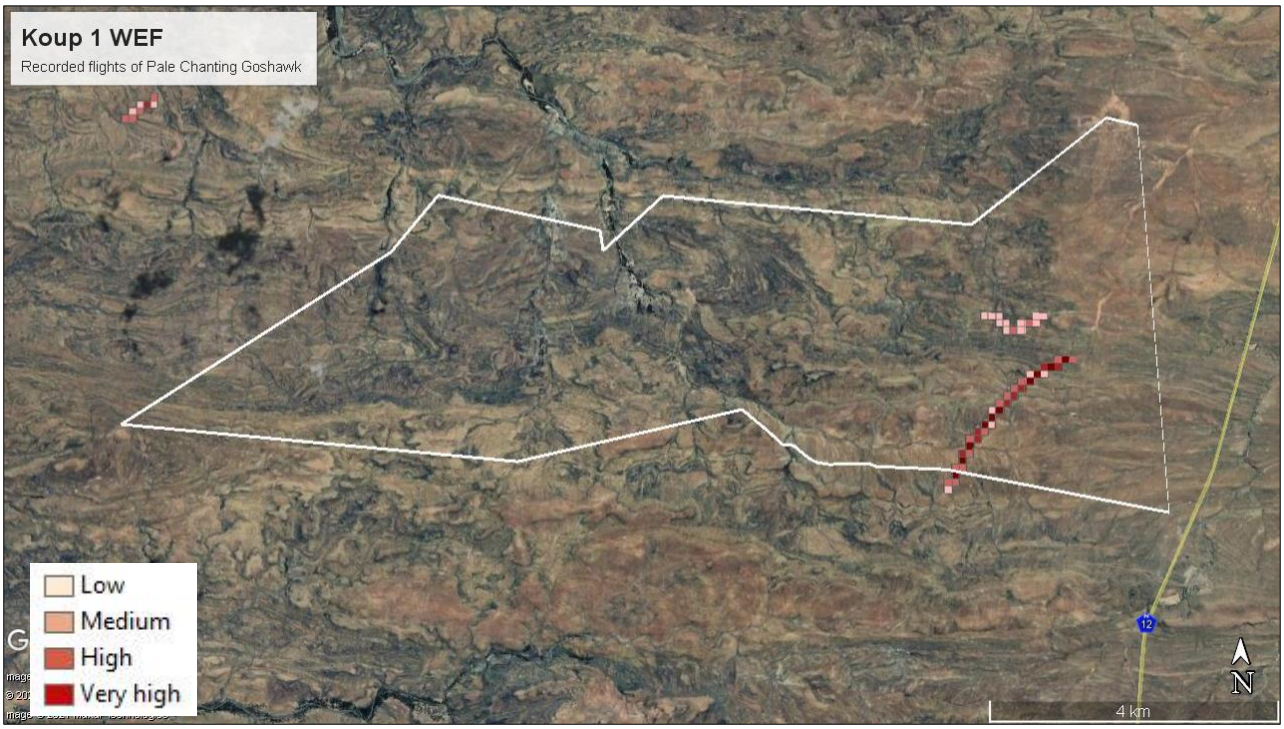


Figure 28: Intensity of flight activity of Pale Chanting Goshawk over four seasons of monitoring

7.11 Bat

A bat specialist study was undertaken by EkoVler (August 2021). *Bats are adversely affected by the wind turbines that encroach on air space where they forage and commute. The most important aspect of the project that would affect bat populations negatively is the wind turbines themselves, through direct collisions and*

barotrauma. Other potential negative impacts to bats due to WEF developments include loss of existing and potential roosts and foraging area. The extent to which bats may be affected by the proposed wind farm will depend on the extent to which the proposed development area is used as a foraging site or as a flight path by local bats.

A summary of bat species distribution, their feeding behaviour, preferred roosting habitat, and conservation status is available in the report attached in Appendix F. The bats mentioned in the report have distribution ranges covering the Koup 1 WEF development and bats that had been confirmed up to now on the site itself or other wind farms in the area, are marked as such. The proposed wind farm falls within the distributional ranges of six families and approximately 12 species.

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. Eptesicus hottentotus (the Long-tailed serotine) and Cistugo seabrae (the Angolan wing-gland bat) are endemic to Southern Africa, mainly due to agricultural activities and have limited suitable habitat left (Monadjem, 2010).

According to the likelihood of fatality risk, as indicated by the latest pre-construction guidelines (Sowler, et al., 2017), two species, namely Tadarida aegyptiaca (Egyptian free-tailed) and (Sauromy petrophilus) Roberts's flat-headed bat, have a high risk of fatality due to its foraging habitat at high altitudes. Five more species, Miniopterus natalensis (Natal long-fingered bat), Neoromicia capensis (Cape serotine bat) and Myotis tricolor (Temminck's myotis bat), and the 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 a high risk in the dry Koup 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.

8. DESCRIPTION OF THE SOCIO- ECONOMIC ENVIRONMENT

8.1 Socio economic characteristics

8.1.1 Central Karoo District Municipality

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 km^2 in 2016. The district is bordered by the Pixley Ka Seme DM in the north, Namakwa DM in the north-west, Garden Route DM in the south, Sarah Baartman DM in the east and Cape Winelands DM in the west and incorporated the following local municipalities.

- Beaufort West Local Municipality
- Laingsburg Local Municipality
- Prince Albert Local Municipality.

The following cities/towns are also located within the Central Karoo district.

- Beaufort West
- Klaarstroom
- Laingsburg
- Leeu Gamka
- Matjiesfontein
- Merweville
- Murraysburg
- Nelspoort
- Prince Albert
- Welgemoed

The main economic sectors of the district are:

- Agriculture (47%)
- Finance and business services (22%)
- Community services (19%)
- Construction (7%).

With a population of 74 247 people, the Central Karoo district has a population density of 1.9/km^2. 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.

8.1.2 Prince Albert Local Municipality

The Prince Albert Local Municipality covers a geographical area of 8 156.9/km^2 making it the smallest of the 3 municipalities in the district. The following towns are within the municipal area.

- Klaarstroom
- Leeu Gamka
- Prince Albert and
- Prince Albert Road.

The main economic sectors of the municipality are.

- Agriculture and
- Tourism.

With a population of 14 272 people, the Prince Albert LM has a population density of 1.7/km^2. According to Census, 2016 the district has a sex ratio of 94.8 with 23.5% of the population being under 15 years; 69% being between 15 and 64 years and 7.5% being over 65 years of age.

8.1.3 Beaufort West Local Municipality

The Beaufort West Local Municipality covers a geographical area of 21 931.6/km2 making it the largest of the 3 municipalities in the district. The following towns are within the municipal area.

- Beaufort West
- Merweville
- Murraysburg and
- Nelspoort.

The main economic sectors of the municipality are:

- Transport and communication (25.3%)
- Wholesale and retail trade (16.8%)
- General government services (14.4%)
- Manufacturing (10.9%)
- Agriculture (7.7%).

With a population of 51 080 people, the Beaufort West LM has a population density of 2.3/km^2. According to Census, 2016 the district has a sex ratio of 92.7 with 26.6% of the population being under 15 years; 66.5% being between 15 and 64 years and 6.9% being over 65 years of age.

8.2 Cultural/Historical Environment

8.2.1 Archaeological

An Archaeological Impact Assessment was undertaken by PGS Heritage Pty Ltd (September 2021). *The fieldwork conducted for the evaluation of the possible impact of the new Koup 1 WEF and associated grid connection infrastructure has revealed the presence of 20 heritage resources.*

The find spots were only documented where more than 5 identifiable modified lithics were observed within a 5-metre radius. Most of the find spots were found to coincide with ridges and sheet wash plains which were characterised by low density scatters of lithics consisting mainly of flakes, debitage and cores. This observation also correlates with the findings of the previous heritage studies undertaken in the Beaufort West region. Raw materials utilised included silicified mudstone, siltstone and sandstones. Mostly MSA flakes and debitage were identified, although some ESA and LSA artefacts were observed within the study area. Additionally, single isolated artefacts were also observed across portions of the study area.

8.2.2 Cultural Landscape

A Cultural Landscape Assessment was undertaken by Hearth Heritage as part of the Heritage Impact Assessment (September 2021). *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 Koup 1 WEF is considered as having a high cultural landscape heritage significance.

The Koup 1 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.

8.2.2.1 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 dolorite 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 viewscapes 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 Meiringspoort Pass, 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.*

8.2.3 Palaeontological

A Palaeontological Heritage Report was undertaken Natura Viva cc (September 2021). According to the report, *the Koup 1 WEF project area is underlain by continental (fluvial / lacustrine) sediments of the Abrahamskraal and Teekloof Formations (Lower Beaufort Group, Karoo Supergroup) which are of Middle to Late Permian age and are provisionally assigned a Very High sensitivity on the SAHRIS palaeosensitivity map as well as the DFFE screening map. These bedrocks contain sparse, unpredictable to locally concentrated vertebrate fossils as well as rare trace fossils (e.g. tetrapod burrows) and plant material that are of scientific and conservation value. A significant number of new fossil vertebrate sites (cranial and post-cranial material of large-bodied dinocephalians, small dicynodonts, rare tetrapod burrow casts) have been recorded within the combined Koup WEF / grid connection project areas during a 5-day site visit, while several fossil sites have previously been mapped shortly outside its margins. These 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 aroiund 260 million years ago.*

Scientifically-valuable and legally-protected fossil heritage resources preserved at or beneath the ground surface within the project footprint are potentially threated by surface clearance and bedrock excavations during the construction phase of the WEF and grid connection (e.g. for access roads, wind turbine foundations). The majority of the recorded fossil sites lie outside the project footprint but most of the WEF and grid connection footprint has yet to be palaeontologically surveyed on foot. A significant number of unrecorded sites are likely to exist within or very close to the project footprint.

No Very High Sensitivity or No-Go palaeontological sites or areas have been identified within the WEF and grid connection. Since all known fossil sites can be readily mitigated through professional recording and collection of fossil material in the pre-construction phase, no recommendations for micro-siting of infrastructure such as wind turbine, pylon positions or access roads are therefore made here. There are no

preferences on palaeontological heritage grounds for specific site options for the Koup 1 WEF on-site substation and construction laydown area.

8.3 Noise

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

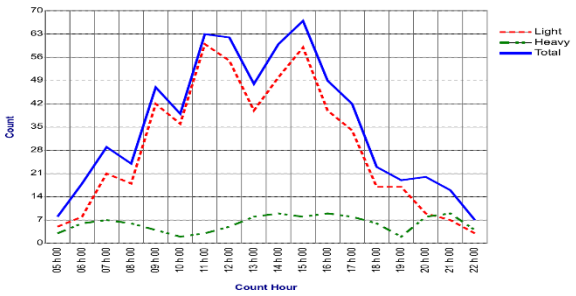
All the data indicated an area with a high potential to be quiet both day and night. The visual character of the study area is rural and it was accepted that the SANS 10103 noise district classification could be rural during low wind conditions. Considering sound level data measured in similar areas,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

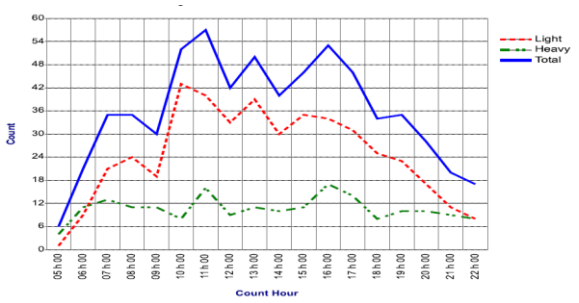
8.4 Transport

A Transportation Impact Assessment was undertaken by SiVEST SA (Pty) Ltd (August 2021). According to the report, *the Western Cape Provincial Government makes use of a Traffic Counting System (TCS) and serves 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 13: Traffic Station Data / Counts

	Light Vehicles	*Heavy Vehicles*	*Total Vehicles*	*Station Count Chart*
N12 @ DR02304 INTERCHANGE Km79.41 Station No: 2126A Date: 12/09/2016				
Morning 7:00-8:00	*19*	*6*	*25*	
Afternoon 16:00-17:00	*35*	*8*	*43*	
Average Annual Daily Trips	*629*	*136*	*765*	

N12 @ DR02301 INTERCHANGE *Km33.23* *Station No: 2125C* *Date: 25/10/2017*				
Morning 7:00-8:00	*19*	*6*	*25*	
Afternoon 16:00-17:00	*35*	*8*	*43*	
Average Annual Daily Trips	*629*	*136*	*765*	

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.

8.5 Visual

A Visual Impact Assessment was undertaken by SiVEST SA (Pty) Ltd (July 2021). According to the report, *WEF and power line developments are not features of the natural environment, but are rather a representation of human (anthropogenic) alteration. As such, these developments are likely to be perceived as visually intrusive when placed in largely undeveloped landscapes that have a natural scenic quality and where tourism activities are practised that are dependent on the enjoyment of, or exposure to, the scenic or aesthetic character of the area. Residents and visitors to these areas could perceive the development to be highly incongruous in this context and may regard the development as an unwelcome intrusion which degrades the natural character and scenic beauty of the area, and which could potentially even compromise the practising of tourism activities in the area. In this instance however, the area is not typically valued for its tourism significance and no formal protected areas were identified in the broader area. In addition, very few, leisure-based tourism activities, and no recognized tourism routes were identified in the study area.*

In addition, it should be noted that the experience of the viewer is highly subjective and there are those who may perceive wind turbines, for example, as striking elements in an otherwise barren landscape.

The presence of other anthropogenic features associated with the built environment may not only obstruct views but also influence the perception of whether a development is a visual impact. In industrial areas for example, where other infrastructure and built form already exists, the visual environment could be considered to be 'degraded' and thus the introduction of a WEF and associated grid connection infrastructure into this setting may be considered to be less visually intrusive than if there was no existing built infrastructure visible.

9. POLICY AND LEGISLATIVE CONTEXT

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

9.1 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.

9.2 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.

9.3 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.

9.4 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**.**

9.5 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 6th October 2021.

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.

9.6 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 Natrure) will be invited to provide comments with regards to the proposed development.

9.7 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.

9.8 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 Natrure) will be invited to provide comments with regards to the proposed development.

9.9 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.

9.10 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 (**Appendix 6**) has been conducted to explore how the proposed development may impact on the agricultural production potential of the proposed site.

9.11 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.

9.12 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. It is not however anticipated that any approvals will be required.

9.13 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.

9.14 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).

9.15 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.

9.16 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.

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

The Strategic Environmental Assessment (SEA) for Wind and Solar PV Energy in South Africa (CSIR, 2015) originally identified eight (8) formally gazetted[1] Renewable Energy Development Zones (REDZs) that are of strategic importance for large-scale wind and solar PV development in terms of Strategic Integrated Project 8: Green Energy in Support of the South African Economy, as well as associated strategic transmission corridors2, including the rollout of its supporting transmission and distribution infrastructure, in terms of Strategic Integrated Project 10: Electricity Transmission and Distribution.

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

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

[1] Formally gazetted on 16 February 2018 (Government Notice 114)

[2] Formally gazetted on 16 February 2018 (Government Notice 113)

[3] Formally Gazetted on 26 February 2021 (Government Notice 144)

Table 14: The SEA for Wind and Solar PV Energy in South Africa (Phase 1 and Phase 2) (CSIR, 2015; CSIR, 2019) identified the following eleven (11) geographic areas for REDZs

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

It should be noted that a portion of the proposed development is located within the Central Corridor of the Strategic Transmission Corridors, as defined and in terms of the procedures laid out in Government Gazette No. 41445**Error! Bookmark not defined.** and No. 44191[4] Ultimately, the proposed development will be s ubject to a EIA process in terms of the NEMA, as amended, and the EIA Regulations, 2014 (as amended). Since the proposed project falls within one (1) of the Strategic Transmission Corridors, it is expected to contribute towards the requirement of renewable energy highlighted by the development of these zones.

9.18 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];
- Subdivision of Agricultural Land Act, 70 of 1970, and
- Mineral and Petroleum Resource Development Act (Act No. 28 of 2002, as amended) [MPRDA].

[4] Formally Gazetted on 26 February 2021 (Government Notice 145)

10. KEY DEVELOPMENT STRATEGIES AND GUIDELINES

In his 2020 State of the Nation Address, President Cyril Rhamaposa announced government are taking the following measures to rapidly and significantly increase generation capacity outside of Eskom:

- *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 National Energy Regulator will continue to register small scale distributed generation for own use of under 1 MW, for which no licence is required.*
- *The National Energy Regulator will ensure that all applications by commercial and industrial users to produce electricity for own use above 1MW are processed within the prescribed 120 days. It should be noted that there is now no limit to installed capacity above 1MW.*
- *We will open bid window 5 of the renewable energy IPP and work with producers to accelerate the completion of window 4 projects.*
- *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 20000MW 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)

The proposed project is also well aligned with the Prince Albert Municipality IDP and the Beaufort West Local Municipality IDP (refer section 10.2.1-2).

10.1 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).

10.1.1 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).

10.2 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.

10.2.1 Prince Albert Municipality Integrated Development Plan (2020/21 Draft Review)

With Eskom struggling to provide in all energy demands, the Municipality is in the process of exploring alternate energy sources for Commercial, Residential and Industrial use. This will have a direct impact on the Municipality's income and will need to be undertaken with careful consultations and input from the local communities.

In terms of access to electricity, the Prince Albert Municipality also mentions that it will investigate the possibility of renewable energy and the inclusion of Small-Scale Embedded Generation (SSEG) onto the electricity distribution network so that "*safety, power quality, grid operation and municipal revenue issues are adequately addressed, and that the local renewable energy industry and green economy is promoted at the same time, supporting job creation*".

The Prince Albert Local Municipality recognises that the area has " …*vast land, long Karoo sunshine days and high quality of sunrays inspires the development of solar parks* (Prince Albert Municipality, 2018, p. 123). Although not specifically mentioned in the IDP, the potential to expand this resource to encompass wind energy is likely to be a viable option.

10.2.2 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*".

11. NEED AND DESIRABILITY

11.1 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.

11.2 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.

11.3 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).

11.4 Site Suitability

The location of the proposed Koup 1 WEF (this application) and proposed on-site Switching / Collector Substation and associated 132kV Power Line development that will serve the Koup 1 WEF (part of separate respective BA process). included several key aspects including wind resource, grid connection suitability as well as environmental, competition, topography and access.

1. Wind resource is the first of the main drivers of project viability across South Africa.

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.

   While the smaller drainage features of the site are classified as Ecological Support Areas, there is only one small area of CBA in the east of the site that would be minimally impacted by the development.

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 applicant is in discussions with Eskom with regards to a Collector Substation that is envisaged. One scenario includes a Collector at the Koup 1 SS footprint.

Should Eskom decide to place the Collector SS on the windfarm to the north or to the south; lines will run from Koup 1 on-site SS to the Collector. The Collector will then link into the 400kV line.

4. Other key criteria which refines the site selection on a micro level include competition, topography and access.

   The site proposed for the Koup 1 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.

   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 to 36 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.

   Access to the Koup 1 WEF site will be from the existing access, located ±1 430m west from the surfaced N12 National Road (Road No: TR03305) and falls under the jurisdiction of the Western Cape Provincial Administration. The existing access is located at Km 51.80 and provides access to the farms situated on both east and west of the N12 Freeway. The access to this development is towards the west from the N12 Freeway and traverses over the Remainder of Portion 4 of the farm 374 as a gravel access road up to the existing farm access.

11.5 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 (CO_2) and sulphur dioxide (SO_2). Both these gases have been shown to contribute to the worsening climate crisis. Wind is a free and infinite resource that occurs naturally in the environment. Converting wind energy into electricity releases no harmful by-products into the environment and will reduce the dependency on fossil fuels.

11.6 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.
According to the Social Impact Assessment, *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 Genesis Enertrag Koup 1 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).

11.7 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), t*he 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 300-400 jobs associated with the construction phase of the project and 20 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.

11.8 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.

11.9 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.

12. DETAILS OF PROCESS FOLLOWED TO REACH THE PREFERRED OPTION

12.1 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.

12.1.1 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. A met mast was installed on the project site and the proposed site has been deemed suitable in terms of wind resource. 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. Access to the Koup 1 WEF site will be from the existing access, located ±1 430m west from the surfaced N12 National Road (Road No: TR03305), the existing access is located at Km 51.80 and provides access to the farms situated on both east and west of the N12 Freeway. The site is therefore considered highly suitable for the proposed development of a WEF and no other locations have been considered.

12.1.2 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.

12.1.3 The technology to be used in the activity

The choice of technology selected for the Koup 1 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.

12.1.4 Design or layout of the activity

The preliminary layout 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. These included two alternatives for the Substation locations and two alternatives for the construction / laydown area.

Based on the findings of the specialist, the layout has been 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.

12.1.5 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.

The no-go option would also mean that the social environment is not affected as the status quo remains. Ona 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. According to the Social Impact Assessment (May 2021), the Intergovernmental Panel on Climate Change (6 October 2018, p. 15) has warned that the Co2 emissions need to be reduced by 45% from the 2010 levels by 2030 and to zero by 2050, which means that coal must go in the immediate future.

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

12.2 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.

12.2.1 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;
- Department of Agriculture;
- Department of Environmental Affairs;
- Department of Public Works;
- Department of Transport and Public Works WC
- Eskom Transmission Limited;
- Heritage Western Cape;
- Prince Albert Municipality
- SALT – The Southern African Large Telescope;
- South African Weather Services;
- South African Astronomical Observatory;
- Telkom SA;
- WESSA;
- Witzenburg Local Municipality.
- Air Traffic Navigation Services;
- Beaufort West Local Municipality;
- Breede Gouritz Catchment Management Agency;
- BVM Municipality;
- Cape Winelands District Municipality;
- DAFF Provincial Department;
- Department of Environmental Affairs and Development Planning;
- Department of Mineral Resources;
- Department of Transport;
- Department of Water and Sanitation;
- EWT;
- 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.

12.2.2 Responsibilities of interested and affected parties (I&AP's)

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

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

12.2.3 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 in November 2021 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 2 July 2021 (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) in November 2021, as required according to Regulation 41(2) (c) of the EIA Regulations (2014), as amended. Proof to be included in the Final Scoping and 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
    - Price Albert Public Library, Church Street, Prince Albert, Western Cape.
-

12.2.4 Summary of issues raised

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

12.3 Impact Assessment

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

12.3.1 Planning

Environmental Aspect	Potential Impact during Planning	Mitigation
Geotechnical	None	n/a
Social	None	n/a
Transport	None	n/a
Visual	None	n/a
Avifaunal	None	n/a
Bat	None	n/a
Agricultural	Compliance Statement	
Surface Water	None	n/a
Heritage – Archaeological	Damage to 2 sites containing graves The graves and burial grounds are mostly localised near farm roads within the proposed development area. The expansion of existing farm roads may impact these sites.	• Demarcate sites as no-go areas (50m buffer) • Demarcate and fence during construction if construction activities area to happened within 50 meters from a site. • 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.
	Damage to 3 historical farmsteads/structures • One structure is located near farm roads within the proposed development area. The expansion of existing farm roads may impact the site. • Two sites are located within the proposed grid corridor area.	• Demarcate sites as no-go areas (30m buffer) • Demarcate and fence during construction if construction activities area to happened within 30 meters from a site. • 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
	Unidentified heritage resources Due to the size of the area assessed, there's a possibility of encountering heritage features in un-surveyed areas.	• A management plan, after a walkdown of the final layout, for the heritage resources needs to be compiled and approved for implementation during construction and operations.
Heritage – Cultural Landscape	Ecological Inappropriate infrastructure layout planning degrades ecological elements of the cultural landscape.	• Critical Biodiversity Areas, and Ecological Support Areas (along drainage lines), should be protected from development of the wind turbines or any associated development during all phases. • No wind turbines should be placed within the 1:100-year flood line of the watercourses. In the context of the sensitivity to soil erosion in the area, as well as potential archaeological resources, it would be a risk to include any structures close to these drainage lines. • Identified medicinal plants used for healing or ritual purposes should be conserved during all phases if threatened for use and continued access to these resources be maintained. • Careful planning should incorporate areas for stormwater runoff where the base of the structure disturbs the natural soil. Local rocks found on the site could be used to slow stormwater (instead of concrete, or standard edge treatments), and prevent erosion that would be an unfortunate consequence that would alter the character of the site. By using rocks from site it helps to sensitively keep to the character.
	Aesthetic Inappropriate infrastructure layout planning negates aesthetic and sense of place requirements of the cultural landscape.	• Where additional infrastructure (i.e. roads) is needed, the upgrade of existing roads to accommodate the development should be the first consideration. • Avoid development of infrastructure (such as buildings, wind turbines and power lines), on crests or ridgelines due to the impact on the visual sensitivity of skylines. The visual impact of turbines can be reduced by distancing them from viewpoints such as roads and farmsteads, and placing them in lower lying plains to reduce their impact on the surrounding sensitive cultural landscape. • Significant and place-making viewsheds of surrounding ridgelines and distant mountain should be maintained by limiting the placement of turbines or associated infrastructure on opposing sides of any of the regional roads, so that at any time a turbine-free view can be found when travelling through the landscape or at the historic farmsteads. • Retain view-lines and vistas focused on prominent natural features such as mountain peaks or hills, such as Platdoring se Kop and the Koup 1 poort, as these

Environmental Aspect	Potential Impact during Planning	Mitigation
		are important place making and orientating elements for experiencing the cultural landscape. • Prevent the construction of new buildings/structures/ new roads on visually sensitive, steep, elevated or exposed slopes, ridgelines and hillcrests. • Turbine and new road placement to avoid slopes steeper than 10% with existing farm roads to be used for access to turbines as far possible. • Proposed turbines 4, 5, 6 and 8 are not feasible in their current proposed locations due to steep slope gradients and high and visually prominent ridge lines in these locations which will have an overwhelming negative impact on the historic farm road. • Proposed turbine 9 is not feasible in the current proposed location due to a combination of factors that cumulatively overwhelm the cultural landscape: o Prominent location in relation to the Koup 1 landscape poort. o Location at the top of a steep slope classified as 10% and higher. o Location at one of the highest points in the Koup 1 landscape at close to 1050masl. • Due to the scenic and historic significance of the regional road, a buffer of 1000m to either side of the N12 should be maintained for no development associated with the WEF other than sensitive road upgrades, which must not impact on the views from the road. The visual impact of the turbines will be 50% less at 1km distance and therefore this distance will greatly reduce the negative visual impact of the turbines on the experience of the historic road and the values that give it significance. • Due to the nature of the landscape being largely devoid of high vertical elements such as the proposed turbines, and the introduction of these turbines fundamentally altering the sense of place and character of the landscape for those living there, location of majority of turbines should be limited to a 1km buffer around the farmsteads. The current turbine layout supports this recommendation in that there is nowhere more than a single turbine at the edge of these buffer zones. • Due to the historic and local experience of the landscape from the farm roads, which link the historically significant farmsteads across the region, a buffer of 300m from the farm roads should be maintained for no development associated with the WEF other than sensitive road upgrades which must not impact on the views from the road. • Alternatives Option 1(sub1) for the grid corridor and Option 1 for the laydown area, are preferred in terms of cultural landscape assessment as they limit the

Environmental Aspect	Potential Impact during Planning	Mitigation
		construction to a smaller footprint on the landscape and locate the infrastructure far enough from the N12 and out of the Koup 1 landscape as far possible. They should be moved as far away from the farm road as possible without impacting on a riverine corridor flood line or a slope over 3%. • The substation location should be located on the same side as other development infrastructure and to the north of the farm road so as to limit the visual impact to one viewshed. As there is a ridge behind this development area, for which turbine placement is proposed, location of the substation to the north of the farm road contains the impact to one side of the road and the infrastructure will not interrupt view lines of the mountain ranges in the distance. • 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.
	Historic Inappropriate infrastructure layout planning degrades historic elements of the cultural landscape.	• Due to the scenic and historic significance of the regional road, a buffer of 1000m to either side of the N12 should be maintained for no development associated with the WEF other than sensitive road upgrades, which must not impact on the views from the road. The visual impact of the turbines will be 50% less at 1000m distance and therefore this distance will greatly reduce the negative visual impact of the turbines on the experience of the historic road and the values that give it significance. • The integrity of the historic farmsteads and their associated cultivated areas and relationship to the riverine corridors and other natural elements, such as Platdoring se Kop, should be maintained and protected. Due to the nature of the landscape being largely devoid of high vertical elements such as the proposed turbines, the introduction of turbines will fundamentally alter the sense of place and character of the landscape for those living there. Location of proposed turbines should be limited to a 1000m buffer around the farmsteads as far possible to limit impact to the farmsteads. The current turbine layout supports this recommendation in that there is nowhere more than a single turbine at the edge of these buffer zones. • Any development that impacts the inherent character of the werf component should be discouraged and a development buffer of 50m around the outer

Environmental Aspect	Potential Impact during Planning	Mitigation
		boundary of farm werfs and 200m around any graded heritage structure, must be maintained, including the associated cultivated areas, cemeteries and unmarked graves, for all new infrastructure. • Due to the historic and local experience of the landscape from the farm roads, which link the historically significant farmsteads across the region, a buffer of 300m from the farm roads should be maintained for no development associated with the WEF other than sensitive road upgrades which must not impact on the views from the road. • The existing names of places, routes, watercourses and natural features in the landscape that are related to its use, history and natural character should be retained and used as heritage resources related to intangible heritage. • Burial grounds and places of worship are automatically regarded as Grade IIIa or higher. Any development that threatens the inherent character of family burial grounds must be assessed and should be discouraged. No development closer than 100m from the boundary of any burial grounds or unmarked graves. No turbines have been proposed for placement near known unmarked burials or family cemeteries. A preconstruction micro-survey of each turbine footprint and any new access roads should be conducted to ensure no further unmarked graves are threatened. • Commonages and outspans were located at water points, and these places were likely gathering points before the arrival of colonists and continued to provide communal resources. In the mid-20th century, many old commonages came under the ownership of the Municipality, and have since been rented out to private individuals or organisations. The Municipality should facilitate the use of common land in a way that promotes the well-being and quality of life of the public. These sites can play a restorative role within the community, for instance for those who have limited alternative opportunities for recreation. • Respect existing patterns, typologies and traditions of settlement-making by promoting the continuity of heritage features. These include: (a) indigenous; (b) colonial; and (c) current living heritage in the form of tangible and intangible associations to place. • Alterations and additions to conservation-worthy structures should be sympathetic to their architectural character and period detailing.
	Socio-economic Non-landowner residents' lack of representation in planning and public participation process leads to loss of	• The findings of this report must be shared with identified interested and affected parties, including non-landowner residents on the development properties, in the EIA public participation process in order to further ascertain any intangible cultural resources that may exist on the landscape that have not been identified. The

Environmental Aspect	Potential Impact during Planning	Mitigation
	local knowledge, socio-economic empowerment and character of the cultural landscape.	findings should inform the recommendations for appropriate mitigation for impacts to the cultural landscape. • The continued use of the landscape for human habitation and cultivation by historic residents of the area, should be retained and encouraged as far possible to sustain the continual use pattern and human-environment relationship which is the ultimate significance of this cultural landscape element. The WEF development must allow and support this, including financially, and not degrade this continued relationship. • The local community on and around the development should benefit from job opportunities created by the proposed development and the development should not cause reduction in economic viability of surrounding properties in excess of those offered by the development. Short-term job opportunities at the expense of long term economic benefit and local employment opportunities must be prevented. • Local residents must be offered employment on the construction/ decommissioning and operational phases before 'importing' staff from elsewhere. • Local residents must be offered employment training opportunities associated with WEF developments at all phases.
Noise	• Noise impacts relating to planning activities - Light delivery vehicles moving around onsite	• No mitigation measures recommended for the planning stage.
Biodiversity	None	n/a

12.3.2 Construction Phase

Environmental Aspect	Potential Impact during Construction	Mitigation
Geotechnical	• Displacement of natural earth material and overlying vegetation. • Increase stormwater velocity. • Increase in soil and wind erosion due to clearing of vegetation. • Construction and earthmoving vehicles may displace soil during operations.	• Identify protected areas prior to construction. • Construction of temporary berms and drainage channels to divert surface water. • Minimize earthworks and fills. • Use existing road network and access tracks. • Rehabilitation of affected areas (such as regrassing, mechanical stabilization). • Correct engineering design and construction of gravel roads and water crossings.

Environmental Aspect	Potential Impact during Construction	Mitigation
	• Creation of drainage paths along access tracks. Potential oil spillages from heavy plant. • Sedimentation of nonperennial features and excessive dust. • Potential groundwater and drainage feature contamination.	• Correct construction methods for foundation installations and cut to fill configurations. • Vehicle repairs to be undertaken in designated areas. • Control stormwater flow
Social	• Noise	• Refer to the mitigation measures suggested by the noise specialist.
	• Increase in crime	• Ensure that construction workers are clearly identifiable. All workers should carry identification cards and wear identifiable clothing. • Fence off the construction sites and control access to these sites. • Appoint an independent security company to monitor the site; Encourage local people to report any suspicious activity associated with the construction sites through the establishment of a community liaison forum. • Prevent loitering within the vicinity of the construction camp as well as construction sites.
	• Increased risk of HIV infections	• Ensure that an onsite HIV Infections Policy is in place and that construction workers have easy access to condoms. • Expose workers to a health and HIV/AIDS awareness educational program. • Extend the HIV/AIDS program into the community with a specific focus on schools and youth clubs.
	• Influx of construction workers	• Communicate the limitation of opportunities created by the project through Community Leaders and Ward Councillors. • Draw up a recruitment policy in consultation with the Community Leaders and Ward Councillors of the area and ensure compliance with this policy.
	• Hazard exposure	• Ensure that all construction equipment and vehicles are properly maintained at all times. • Ensure that operators and drivers are properly trained and make them aware, through regular toolbox talks, of any risk they may pose to the community. Place specific emphasis on the vulnerable sector of the population such as children and the elderly. • Ensure that fires lit by construction staff are only ignited in designated areas and that the appropriate safety precautions, such as not lighting fires in strong winds

Environmental Aspect	Potential Impact during Construction	Mitigation
		and completely extinguishing fires before leaving them unattended, are strictly adhered to. • Make staff aware of the dangers of fire during regular toolbox talks.
	• Disruption of daily living patterns	• Ensure that, at all times, people have access to their properties as well as to social facilities.
	• Disruptions to social and community infrastructure	• Regularly monitor the effect that construction is having on infrastructure and immediately report any damage to infrastructure to the appropriate authority. • Ensure that where communities' access is obstructed that this access is restored to an acceptable state.
	• Job creation and skills development	• Wherever feasible, local residents should be recruited to fill semi and unskilled jobs. • Women should be given equal employment opportunities and encouraged to apply for positions. • A skills transfer plan should be put in place at an early stage and workers should be given the opportunity to develop skills which they can use to secure jobs elsewhere post-construction.
	• Socio-economic stimulation.	• A procurement policy promoting the use of local business should, where possible, be put in place to be applied throughout the construction phase.
	• Additional Traffic Generation - Increase in Traffic	• 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.
Transport	• Additional Traffic Generation - Increase of Incidents with pedestrians and livestock	• 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.
	• Additional Traffic Generation - Increase in Dust from gravel roads	• 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.
	• Additional Traffic Generation - Increase in Road Maintenance	• Implement a road maintenance program under the auspices of the respective transport department.

Environmental Aspect	Potential Impact during Construction	Mitigation
		• Construction of an on-site batching plant to reduce trips.
	• Abnormal Loads - Additional Abnormal Loads	• Ensure abnormal vehicles travel to and from the proposed development in the 'off peak' periods or stagger delivery. • Adequate enforcement of the law
	• Internal Access Roads - Increase in Dust from gravel roads	• Enforce a maximum speed limit on the development • Use of dust suppressant techniques • Adequate watering by means of water bowser
	• Internal Access Roads - New / Larger Access points	• Adequate road signage according to the SARTSM • Approval from the respective roads department
	• 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	• Carefully plan to mimimise the construction period and avoid construction delays. • Inform receptors within 1km of the WEF development area of the construction programme and schedules. • Minimise vegetation clearing and rehabilitate cleared areas as soon as possible. • Vegetation clearing should take place in a phased manner. • Maintain a neat construction site by removing rubble and waste materials regularly. • Position storage / stockpile areas in unobtrusive positions in the landscape, where possible. • Where possible, underground cabling should be utilised. • Make use of existing gravel access roads where possible. • Limit the number of vehicles and trucks travelling to and from the construction site, where possible. • Ensure that dust suppression techniques are implemented: - on all access roads; - in all areas where vegetation clearing has taken place; • on all soil stockpiles.

Environmental Aspect	Potential Impact during Construction	Mitigation
	disturbed areas could result in dust which would have a visual impact.	
Visual	• Potential alteration of the visual character and sense of place. • Potential visual impact on receptors in the study area. • Displacement due to disturbance associated with the construction of the wind turbines and associated infrastructure.	• Construction activity should be restricted to the immediate footprint of the infrastructure as far as possible. Access to the remainder of the area should be strictly controlled to prevent unnecessary disturbance of priority species. - Measures to control noise and dust should be applied according to current best practice in the industry.
Avifaunal	• Displacement due to habitat transformation associated with the construction of the wind turbines and associated infrastructure.	• Removal of vegetation must be restricted to a minimum and must be rehabilitated to its former state where possible after construction. • Construction of new roads should only be considered if existing roads cannot be upgraded. • The recommendations of the ecological and botanical specialist studies must be strictly implemented, especially as far as limitation of the activity footprint is concerned.
	• Clearing and excavation of natural habitat - The destruction of active bat roosts and/or features that could serve as potential roosts, such as rock formations and the removal of trees on site. The destruction of derelict holes, such as aardvark holes and any fragmentation of woody habitat which include dense bushes. The removal of limited trees and bushes would have an impact on all bats that could potentially roost in trees and on the foraging of clutter and clutter-edge species.	• Construction activities to be kept out of all high bat sensitive areas. • Rock formations occurring along the ridge lines in the should be avoided during construction, as these serve as roosting space for bats. • Destruction of limited trees should be avoided during construction. • Care should be taken if any dense bushes are destroyed. • Aardvark holes or any large derelict holes or excavations should not be destroyed before careful examination for bats. The Environmental Control Officer (ECO) or a responsible appointed person or site manager should contact a bat specialist before construction commences so that they know what to look out for during construction.
Bat	• Excavation and building new structures - Creating new habitat amongst the turbines which might	• Completely seal off roofs of new buildings (e.g., substations and site buildings). Note a small bat species could enter a hole the size of 1 cm2.

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	attract bats. This includes buildings with roofs that could serve as roosting space or open water sources from quarries or excavation where water could accumulate.	• Roofs need to be regularly inspected during the lifetime of the wind farm and any new holes need to be sealed. • Excavation areas or artificial depressions should be filled and rehabilitated to avoid creating areas of open water sources which could attract bats during rainy spells.
	• Noise and light disturbance - Construction noise, especially during night-time, as well as lightening disturbance.	• Nightly construction activities should be avoided, or if necessary, minimised to the shortest period possible. • With the exception of compulsory civil aviation lightning, artificial lightening during construction should be minimised, especially bright lights or spotlights. • Lights should avoid skyward illumination. Turbine tower lights should be switched off when not in operation, where possible.
Agricultural	Compliance Statement	
Surface Water	Loss of aquatic species of special concern: During construction activities within watercourses could result in the disturbance or destruction of any listed and or protected plant or animal species. However none of these aquatic obligate species were observed during this assessment	• Develop and implement an Aquatic 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.
	Damage or loss of riparian and or drainage line systems i.e. disturbance of the waterbodies in the construction phase: • Construction could result in the loss of drainage systems that are fully functional and provide an ecosystem services within the site especially where new access roads are	• 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. • Where roads and crossings are upgraded, the following applies:

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	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.	• 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.
	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	• 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

Environmental Aspect	Potential Impact during Construction	Mitigation
	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	• All stockpiles must be protected and located in flat areas where run-off will be minimised and sediment recoverable;
	Ecological • Fragmentation and destruction of the landscape degrading the environment and thus continuous relationship between man and environment	• Critical Biodiversity Areas, and Ecological Support Areas (along drainage lines), should be protected from development of the wind turbines or any associated development during all phases. • No wind turbines should be placed within the 1:100-year flood line of the watercourses. In the context of the sensitivity to soil erosion in the area, as well as potential archaeological resources, it would be a risk to include any structures close to these drainage lines • Remaining areas of endemic and endangered natural vegetation should be conserved. • Critical Biodiversity Areas, and Ecological Support Areas (along drainage lines), should be protected from development of the wind turbines or any associated development during all phases. • Areas of critical biodiversity should be protected from any damage during all phases; where indigenous and endemic vegetation should be preserved at all cost. • Areas of habitat are found among the rocky outcrops and contribute to the character, as well as biodiversity of the area. Care should be taken that habitats are not needlessly destroyed. • Identified medicinal plants used for healing or ritual purposes should be conserved during all phases if threatened for use.

Environmental Aspect	Potential Impact during Construction	Mitigation
		• Careful planning should incorporate areas for stormwater runoff where the base of the structure disturbed the natural soil. Local rocks found on the site could be used to slow stormwater (instead of concrete, or standard edge treatments), and prevent erosion that would be an unfortunate consequence that would alter the character of the site. By using rocks from site it helps to sensitively keep to the character. •
Heritage – Cultural Landscape	Aesthetic WEF infrastructure construction and decommissioning activity degrades the character of the cultural landscape and the sense of place	• 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.
	Historic Integrity of farmsteads and farm roads degraded by insensitive construction or decommissioning activities.	• Historic farmsteads must be protected from the impacts of heavy construction vehicles and increased numbers of people. No construction traffic should pass through or closer than 50m to the outer boundaries of a farm werf, or 200m from graded structures, which includes the associated historically cultivated lands, cemeteries, unmarked burials. The most appropriate use of existing farm roads must be found to avoid farm werfs as far as possible and reduce construction impact on these heritage features.

Environmental Aspect	Potential Impact during Construction	Mitigation
		• 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. • Accommodation of construction staff must not negatively impact on existing farm residents or degrade the integrity of the farmstead complexes and should, without negative impact to ecological or aesthetic resources, be located outside of the farmstead complexes or site. Farm residents should be consulted on the preferable location for construction staff accommodation. • Traditional planting patterns should be protected by ensuring that existing trees are not needlessly destroyed, as these signify traces of cultural intervention in a harsh environment. These planting patterns include the trees planted around the werfs and along travel routes. Interpretation of these landscape features as historic remnants should occur. A buffer of 50m around such planting patters should be maintained. • Burial grounds and places of worship are automatically regarded as Grade IIIa or higher. Any development that threatens the inherent character of family burial grounds must be assessed and should be discouraged. No turbines have been proposed for placement near known unmarked burials or family cemeteries. A preconstruction micro-survey of each turbine footprint and any new access roads should be conducted to ensure no further unmarked graves are threatened. • Mountain slopes have been used for traditional practices for many years, and care should be taken that any significant cultural sites, such as burials and veldkos/medicinal plant resources, are not disturbed. • Farms in the area followed a system of stone markers to demarcate the farm boundaries in the area. Where these structures are found on the site, care should be taken that they are not needlessly destroyed, as they add to the layering of the area. • Roads running through the area have historic stone way markers. Where these are found care should be taken that they are left intact and in place. Road

Environmental Aspect	Potential Impact during Construction	Mitigation
		upgrades must not move or threaten their position and they should be visible from the road they are related to by passing travellers. • Where the historic function of a building/site is still intact, the function has heritage value and should be protected. Surviving examples (wagon routes, outspans, and commonage), where they are owned in some public or communal way (or by a body responsible for acting in the public interest) and where they are found to be actively operating in a communal way, will have cultural and heritage value and should be enhanced and retained. The historic route running through Koup 1 should be maintained and integrity as a communal road for farm residents must be retained.
	Socio-economic Integrity of local residents to continue their patterns of land use is degraded by the construction and decommissioning activities.	• An updated cultural landscapes impact assessment report must be completed should the WEF continue to be used after the term granted in this application. This report should include a detailed assessment of the socio-economic impacts to the cultural landscape and its outcomes and recommendations need to be considered in the decision for recommissioning and be implemented if recommissioning is approved. • The continued use of the landscape for human habitation and cultivation by historic residents of the area, should be retained and encouraged as far possible to sustain the continual use pattern and human-environment relationship which is the ultimate significance of this cultural landscape element. The WEF development must allow and support this, including financially, and not degrade this continued relationship. • The local community on and around the development should benefit from job opportunities created by the proposed development and the development should not cause reduction in economic viability of surrounding properties in excess of those offered by the development. Short-term job opportunities at the expense of long-term economic benefit and local employment opportunities must be prevented. • Local residents must be offered employment on the construction/ decommissioning and operational phases before 'importing' staff from elsewhere. • Local residents must be offered employment training opportunities associated with WEF developments at all phases. • Sheep, cattle or game farming should be allowed to continue below the wind turbines, or be rehabilitated to increase biodiversity in the area.

Environmental Aspect	Potential Impact during Construction	Mitigation
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	Fossil heritage resources Disturbance, damage or destruction of fossils at or beneath the ground surface due to surface clearance and bedrock excavations	Pre-construction walkdown (with fossil recording / collection) of final footprint by specialist palaeontologist. Chance Fossil Finds Procedure during construction phase.
Heritage – Paleontological	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	No mitigation measures recommended for construction activities at the WTG locations or for substations
Noise	• Noise impacts at night - Construction activities relating to civil works as well as erection of wind turbines	• Night-time construction activities closer than 1,000 m from and NSD to be minimized.
	• Noise impacts during the day - Construction of access roads	• Access routes to the relocated further than 240 m from dwellings used for residential purposes at night.
	• Noise impacts during the day - Noises relating to construction traffic	• Access routes to the relocated further than 240 m from dwellings used for residential purposes at night.
	Vegetation and protected plant species • Vegetation clearing for access roads, turbines and their service areas and other infrastructure will impact on vegetation and protected plant species.	1) There should be no turbines within the Very High Sensitivity areas. 2) The footprint within drainage lines should be minimized as much as possible. 3) Preconstruction walk-though of the approved development footprint to ensure that sensitive habitats and species are avoided where possible. 4) Ensure that lay-down and other temporary infrastructure is within low sensitivity areas, preferably previously transformed areas if possible. 5) Minimise the development footprint as far as possible and rehabilitate disturbed areas that are no longer required by the operational phase of the development. 6) A large proportion of the impact of the development stems from the access roads and the number of roads should be reduced to the minimum possible and routes should also be adjusted to avoid areas of high sensitivity as far as possible, as informed by a preconstruction walk-though survey.

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		7) Preconstruction environmental induction for all construction staff on site to ensure that basic environmental principles are adhered to. This includes topics such as no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimizing wildlife interactions, remaining within demarcated construction areas etc. • 8) Demarcate all areas to be cleared with construction tape or other appropriate and effective means. However, caution should be exercised to avoid using material that might entangle fauna.
Biodiversity	Faunal disturbance and habitat loss Increased levels of noise, pollution, disturbance and human presence during construction will be detrimental to fauna. Sensitive and shy fauna are likely to move away from the area during the construction phase as a result of the noise and human activities present, while some slow-moving species would not be able to avoid the construction activities and might be killed.	1) Preconstruction walk-through of the facility to micro-site roads and turbines. 2) During construction any fauna directly threatened by the construction activities should be removed to a safe location by the ECO or other suitably qualified person. 3) The illegal collection, hunting or harvesting of any plants or animals at the site should be strictly forbidden. Personnel should not be allowed to wander off the construction site. 4) No fires should be allowed within the site as there is a risk of runaway veld fires. 5) No fuelwood collection should be allowed on-site. 6) If any parts of site such as construction camps must be lit at night, this should be done with low-UV type lights (such as most LEDs) as far as practically possible, which do not attract insects and which should be directed downwards. 7) All hazardous materials should be stored in the appropriate manner to prevent contamination of the site. Any accidental chemical, fuel and oil spills that occur at the site should be cleaned up in the appropriate manner as related to the nature of the spill. 8) No unauthorized persons should be allowed onto the site and site access should be strictly controlled 9) All construction vehicles should adhere to a low-speed limit (40km/h for cars and 30km/h for trucks) to avoid collisions with susceptible species such as snakes and tortoises and rabbits or hares. Speed limits should apply within the facility as well as on the public gravel access roads to the site.

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		All personnel should undergo environmental induction with regards to fauna and in particular awareness about not harming or collecting species such as snakes, tortoises and snakes which are often persecuted out of fear or superstition.

12.3.3 Operational Phase

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Geotechnical	Removal of subsoils (soil, rock) • Displacement of natural earth material. • Increase in soil erosion. • Potential oil spillages from maintenance vehicles. • Sedimentation of non-perennial features caused by soil erosion.	• Use of existing roads and tracks where feasible. • Rehabilitation of affected areas (such as erosion control mats). • Correct engineering design and construction of roads and water crossings. • Vehicle repairs to be undertaken in designated areas. • Maintenance of stormwater system.
Social	• Health and social wellbeing - Noise	• Refer to the mitigation measures suggested by the noise specialist.
	• Health and social wellbeing - Shadow flicker	• Identifying receptor points and applying appropriate technical measures such as computer modelling in siting the wind turbines to limit the effect of shadow flicker. • Where necessary and appropriate apply tracking technology that will automatically shutoff and restart the affecting wind turbine to eliminate shadow flicker. • Consider the application of appropriate screening measures to reduce the effect of shadow flicker.
	• Health and social wellbeing - Blade glint	• Calculate and factor in the risk of blade glint in siting the wind turbines. • Coat wind turbine blades with non-reflective coating to reduce blade glint. • Where appropriate adjust the angle of turbine blades to reduce blade glint.
	• Health and social wellbeing - Electromagnetic field and RF interference	• Wind turbine mechanisms will be elevated and the risk of EMFs will be minimal. Notwithstanding this, it would be pertinent to regularly monitor the levels of EMFs emitted by

Environmental Aspect	Potential Impact during Operation	Mitigation
		the turbines and, if necessary, make the appropriate adjustments to ensure that these levels remain within acceptable parameters. • Ensure that power lines are not routed in close proximity (with 300 meters) of residential areas to limit the effect off EMFs. • Consult with the appropriate telecommunication authorities to ensure that the telecommunication installations identified within the vicinity of the project are not compromised through RFI.
	• Health and social wellbeing - Hazard exposure	• Install early detection techniques to avoid or reduce structural damage. • Install lighting protection systems. • Install fire prevention and control measures.
	• Quality of the living environment - Transformation of the sense of place	• Apply the mitigation measures suggested in the Visual Impact Assessment Report. • Communicate the benefits associated with renewable energy to the broader community. • Ensure that all affected landowners and tourist associations are regularly consulted. • A Grievance Mechanism should be put in place and all grievances should be dealt with transparently. • The mitigation measures recommended in the Heritage and Palaeontology Impact Assessment should be followed.
	• Economic - Job creation and skills development	• Implement a training and skills development programme for locals. • Work closely with the appropriate municipal structures regarding establishing a social responsibility programme.
	• Economic - Socio-economic stimulation.	• Ensure that the procurement policy supports local enterprises. • Establish a social responsibility programme either in line with the REIPPP BID guidelines or equivalent. • Work closely with the appropriate municipal structures regarding establishing a social responsibility programme.

Environmental Aspect	Potential Impact during Operation	Mitigation
		• Ensure that any trusts or funds are strictly managed in respect of outcomes and funds.
Transport	• Additional Traffic Generation - Increase in Traffic	• The increase in traffic for this phase of the development is negligible and will not have a significant impact
	• Additional Traffic Generation - Increase of Incidents with pedestrians and livestock	• The increase in traffic for this phase of the development is negligible and will not have a significant impact
	• Additional Traffic Generation - Increase in Dust from gravel roads	• The increase in traffic for this phase of the development is negligible and will not have a significant impact
	• Additional Traffic Generation - Increase in Road Maintenance	• The increase in traffic for this phase of the development is negligible and will not have a significant impact
	• Abnormal Loads - Additional Abnormal Loads	• The increase in traffic for this phase of the development is negligible and will not have a significant impact
	• Internal Access Roads - New / Larger Access points	• Adequate road signage according to the SARTSM
Visual	• Potential alteration of the visual character and sense of place. • Potential visual impact on receptors in the study area. • Potential visual impact on the night time visual environment. • The development may be perceived as an unwelcome visual intrusion, particularly in more natural undisturbed settings. • The proposed WEF and associated infrastructure will alter the visual character of the surrounding area and expose potentially sensitive visual receptor locations to visual impacts. • 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 will be altered as a result of operational and security lighting at the proposed WEF.	• Design Phase • Ensure that wind turbines are not located within 1km of any farmhouses in order to minimise visual impacts on these dwellings. • Where possible, fewer but larger turbines with a greater output should be utilised rather than a larger number of smaller turbines with a lower capacity. • Where possible, the operation and maintenance buildings and laydown areas should be consolidated to reduce visual clutter. • Where possible, underground cabling should be utilised. • Operational Phase • Turbine colours should adhere to CAA requirements. Bright colours and logos on the turbines should be kept to a minimum. • Inoperative turbines should be repaired promptly, as they are considered more visually appealing when the blades are rotating (or at work) (Vissering, 2011). • If turbines need to be replaced for any reason, they should be replaced with the same model, or one of equal height and scale to lessen the visual impact.

Environmental Aspect	Potential Impact during Operation	Mitigation
		• As far as possible, limit the number of maintenance vehicles which are allowed to access the site. • Ensure that dust suppression techniques are implemented on all gravel 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. • Where possible, the operation and maintenance buildings should be consolidated to reduce visual clutter. • The operations and maintenance (O&M) buildings should not be illuminated at night. • The O&M buildings should be painted in natural tones that fit with the surrounding environment.
Avifaunal	• Mortality of priority species due to collisions with the wind turbines.	• 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 108 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 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

Environmental Aspect	Potential Impact during Operation	Mitigation
		implemented which could include shut down on demand or other proven measures.
	• Mortality of priority species due to electrocutions on the overhead sections of the internal 33kV cables.	• Underground cabling should be used as much as is practically possible. • If the use of overhead lines is unavoidable due to technical reasons, the Avifaunal Specialist must be consulted timeously to ensure that a raptor friendly pole design is used, and that appropriate mitigation is implemented pro-actively for complicated pole structures e.g., insulation of live components to prevent electrocutions on terminal structures and pole transformers. • Regular inspections of the overhead sections of the internal reticulation network must be conducted during the operational phase to look for carcasses, as per the most recent edition of the Best Practice Guidelines at the time.
	• Mortality due to collisions with the overhead sections of the internal 33kV cables.	• Bird flight diverters should be installed on all the overhead line sections for the full span length according to Eskom guidelines - five metres apart. • Light and dark colour devices must be alternated to provide contrast against both dark and light backgrounds respectively. • These devices must be installed as soon as the conductors are strung.
Bat	• Direct collision or barotrauma - Fatality through direct collision or barotrauma of resident bats occupying the airspace amongst the turbines. The turning blades of the turbines during operation are the most important aspect of the project that would impact negatively on bats. High flying species have predominantly been confirmed at the proposed Koup 1 WEF site.	• All turbines and turbine components, including the rotor swept zone, should be kept out of all High sensitivity zones, and preferably High-medium sensitivity zones. • Mitigation as proposed should be applied as soon as the turbines start turning. • Mitigation as proposed for High-medium sensitivity zones proposed, must be adhered to as soon as the turbines start operating. Close operational monitoring should inform whether mitigation for medium sensitivity zones, should be applied.

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		• A bat specialist should be appointed before the turbines start to turn and operational bat monitoring should start immediately when the turbines start to turn. Careful observation should take place during the operational phase and mitigation should be discussed between the bat specialist and developer. Mitigation should be adapted and implemented without delay. Where high bat mortality occurs, those turbines should be mitigated, using Section 9 as a starting point for discussions. • Except for compulsory lightning required in terms of civil aviation, artificial lightning should be minimised, especially bright lights. Lights should rather be turned downwards. Turbine tower lights should be switched off when not in operation, if possible. • At least two years of post-construction bat monitoring is to be conducted and must be performed according to the South Africa Good Practice Guidelines for Operational Monitoring for Bats at Wind Energy facilities (Aronson, et.al., 2020) or later versions of the guidelines valid at the time of monitoring, as well as other relevant South African guidelines as applicable during the monitoring period. • It is understood that static bat monitoring equipment on turbines has a cost implication. Although it is not a requirement at this stage, as it depends on whether the Met mast will be deployed for the life span of the turbines but having more refined static data from sampling points at height, would aid in interpreting future bat fatality records of the Koup 1 WEF; therefore, the installation of more than one monitoring system at height, will be recommended. • The use of ultrasound as a mitigation measure to deter bats is now being used at two WEFs in South Africa. This should be investigated for use at turbines displaying high mortality at the Koup 1 WEF site.

Environmental Aspect	Potential Impact during Operation	Mitigation
	• Bat migrations - Bat fatality during migration. A limited number of calls like Miniopterus natalensis (Natal Long-fingered bat), a Near Threatened migration species, have been recorded. Not much research has been conducted on migration of bats in South Africa, and some of the other species occurring on site could also migrate.	• Care should be taken during post construction monitoring to verify the activity of M. natalensis, especially within the rotor swept area of the turbine blades. Carcasses should be identified so as to establish the fatality of this species. • All turbines and turbine components, including the rotor swept zone, should be kept out of all High sensitivity zones, and preferably High-medium sensitivity zones. • Mitigation as proposed should be applied as soon as the turbines start turning. • Mitigation as proposed for high sensitivity zones proposed must be adhered to as soon as the turbines start operating. Close operational monitoring should inform whether mitigation for medium sensitivity zones should be applied. • Careful observation should take place during the operational phase and mitigation should be discussed between the bat specialist and developer. Mitigation should be adapted and implemented without delay. Where high bat mortality occurs, those turbines should be mitigated, using Section 9 as a starting point for discussions. • Except for compulsory lightning required in terms of civil aviation, artificial lightning should be minimised, especially bright lights. Lights should rather be turned downwards. Turbine tower lights should be switched off when not in operation, if possible. • At least two years of post-construction bat monitoring is to be conducted and must be performed according to the South Africa Good Practice Guidelines for Operational Monitoring for Bats at Wind Energy facilities (Aronson, et.al., 2020) or later versions of the guidelines valid at the time of monitoring, as well as other relevant South African guidelines as applicable during the monitoring period. • Although it is not a requirement at this stage, as it depends on whether the Met mast will be deployed, for the life span of the turbines but having more refined static data from sampling

Environmental Aspect	Potential Impact during Operation	Mitigation
		points at height, would aid in interpreting future bat fatality records of the Koup 1 WEF; therefore, the installation of more than one monitoring system at height, will be recommended. • The use of ultrasound as a mitigation measure to deter bats is now being used at two WEFs in South Africa. This should be investigated for use at turbines displaying high mortality at the Koup 1 WEF site.
	Loss of bats of conservation value. A limited number of calls like the red data Miniopterus natalensis have been recorded, as well as the endemic Eptesicus hottentotus.	• Loss of bats of conservation value. A limited number of calls like the red data Miniopterus natalensis have been recorded, as well as the endemic Eptesicus hottentotus. Proven mitigation measures, such as curtailment, should be applied if high activity of bats of conservation value is recorded, or if high numbers of carcasses are collected, during post-construction. • All turbines and turbine components, including the rotor swept zone, should be kept out of all the High sensitivity zones, and preferably out of the High-medium sensitivity. • Mitigation should be applied for turbines situated in High-medium sensitivity zones as indicated. • Mitigation as proposed for medium sensitivity zones proposed, must be adhered to if bat fatality is high. The post construction bat specialist could adapt these as deemed necessary and as operational data becomes available. • Careful observation should take place during the operational phase and mitigation should be discussed between the bat specialist and developer. Mitigation should be adapted and implemented without delay. Where high bat mortality occurs, those turbines should be mitigated. • Except for compulsory lightning required in terms of civil aviation, artificial lightning should be minimised, especially bright lights. Lights should rather be turned downwards. Turbine tower lights should be switched off when not in operation, if possible.

Environmental Aspect	Potential Impact during Operation	Mitigation
		• At least two years of post-construction bat monitoring is to be conducted and must be performed according to the South Africa Good Practice Guidelines for Operational Monitoring for Bats at Wind Energy facilities (Aronson, et.al., 2020) or later versions of the guidelines valid at the time of monitoring, as well as other relevant South African guidelines as applicable during the monitoring period. • Although it is not a requirement at this stage, as it depends on whether the Met mast will be deployed, for the life span of the turbines but having more refined static data from sampling points at height, would aid in interpreting future bat fatality records of the Koup 1 WEF; therefore, the installation of more than one monitoring system at height, will be recommended. • The use of ultrasound as a mitigation measure to deter bats is now being used at two WEFs in South Africa. This should be investigated for use at turbines displaying high mortality at the Koup 1 WEF site.
	Bat mortality due to the attraction of bats to wind turbines (Horn, et al. 2008). Bats have been shown to sometimes be attracted to wind turbines out of curiosity or reasons still under investigation.	• Bat mortality due to the attraction of bats to wind turbines (Horn, et al. 2008). Bats have been shown to sometimes be attracted to wind turbines out of curiosity or reasons still under investigation. • Except for compulsory lightning required in terms of civil aviation, artificial lightning should be minimised, especially bright lights. Lights should rather be turned downwards. Turbine tower lights should be switched off when not in operation, if possible. • Little is known about this impact and mitigation could be adapted if more research becomes available.
	Loss of habitat and foraging space during operation of the wind turbines.	• . Refer above (direct collision or barotrauma)
	Reduction in the size, genetic diversity, resilience and persistence of bat populations. Bats have low reproductive rates and populations are susceptible to reduction by	• Proven mitigation measures, such as curtailment, should be applied if high activity of bats of conservation value is recorded, or if high numbers of carcasses are collected, during post-construction.

Environmental Aspect	Potential Impact during Operation	Mitigation
	fatalities other than natural death. Furthermore, smaller bat populations are more susceptible to genetic inbreeding.	• All turbines and turbine components, including the rotor swept zone, should be kept out of all the High sensitivity zones, and preferably out of the High-medium sensitivity. • Mitigation should be applied for turbines situated in High-medium sensitivity zones as indicated. • Mitigation as proposed for medium sensitivity zones proposed, must be adhered to if bat fatality is high. The post construction bat specialist could adapt these as deemed necessary and as operational data becomes available. • Careful observation should take place during the operational phase and mitigation should be discussed between the bat specialist and developer. Mitigation should be adapted and implemented without delay. Where high bat mortality occurs, those turbines should be mitigated. • Except for compulsory lightning required in terms of civil aviation, artificial lightning should be minimised, especially bright lights. Lights should rather be turned downwards. Turbine tower lights should be switched off when not in operation, if possible. • At least two years of post-construction bat monitoring is to be conducted and must be performed according to the South Africa Good Practice Guidelines for Operational Monitoring for Bats at Wind Energy facilities (Aronson, et.al., 2020) or later versions of the guidelines valid at the time of monitoring, as well as other relevant South African guidelines as applicable during the monitoring period. • Although it is not a requirement at this stage, as it depends on whether the Met mast will be deployed, for the life span of the turbines but having more refined static data from sampling points at height, would aid in interpreting future bat fatality records of the Koup 1 WEF; therefore, the installation of more than one monitoring system at height, will be recommended. • The use of ultrasound as a mitigation measure to deter bats is now being used at two WEFs in South Africa. This should

Environmental Aspect	Potential Impact during Operation	Mitigation
		be investigated for use at turbines displaying high mortality at the Koup 1 WEF site.
Agricultural	Compliance Statement	
Surface Water	Impact on aquatic systems through the possible increase in surface water runoff on form and function during the operational phase • Increase in hard surface areas, and roads that require stormwater management will increase through the concentration of surface water flows that could result in localised changes to flows (volume) that would result in form and function changes within aquatic systems, which are currently ephemeral. • This then increases the rate of erosions and sedimentation of downstream areas.	• A stormwater management plan must be developed in the preconstruction phase, detailing the stormwater structures and management interventions that must be installed to manage the increase of surface water flows directly into any natural systems. • This stormwater control systems must be inspected on an annual basis to ensure these are functional. Effective stormwater management must include effective stabilisation (gabions and Reno mattresses) of exposed soil and the re-vegetation of any disturbed riverbanks
Heritage – Cultural Landscape	Ecological Inappropriate operational activities degrade the significant ecological elements of the cultural landscape	• Areas of endemic and endangered natural vegetation should be conserved. • Critical Biodiversity Areas, and Ecological Support Areas (along drainage lines), should be protected. • Areas of habitat are found among the rocky outcrops and contribute to the character, as well as biodiversity of the area. Care should be taken that habitats are not needlessly destroyed. • Identified medicinal plants used for healing or ritual purposes should be conserved during all phases if threatened for use. Access to these resources should be made available to those who have had historic access to them.
	Aesthetic Inappropriate operational activities degrade the significant aesthetic elements of the cultural landscape altering the character and sense of place	• 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

Environmental Aspect	Potential Impact during Operation	Mitigation
		slopes, ridgelines and hillcrests or within 1000m of the farmsteads and N12 and 300m of the 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.
	Historic Inappropriate operational activities degrade the significant historic elements of the cultural landscape altering the character and sense of place	• Historic farmsteads must be protected from the impacts of operational facility vehicles and increased numbers of people. No WEF operations traffic should pass through or closer than 50m to the outer boundaries of a farm werf, or 200m from graded structures, which includes the associated historically cultivated lands, cemeteries, unmarked burials. The most appropriate use of existing farm roads must be found to avoid farm werfs as far as possible and reduce construction impact on these heritage features.

Environmental Aspect	Potential Impact during Operation	Mitigation
		• Traditional planting patterns should be protected by ensuring that existing trees are not needlessly destroyed, as these signify traces of cultural intervention in a harsh environment. These planting patterns include the trees planted around the werfs and along travel routes. Interpretation of these landscape features as historic remnants should occur. • Burial grounds and places of worship are automatically regarded as Grade IIIa or higher. Any development that threatens the inherent character of family burial grounds must be assessed and should be discouraged and a buffer of 100m around all burial ground or unmarked graves should be in place. No turbines have been proposed for placement near known unmarked burials or family cemeteries. A preconstruction micro-survey of each turbine footprint and any new access roads should be conducted to ensure no further unmarked graves are threatened. • Mountain slopes have been used for traditional practices for many years, and care should be taken that any significant cultural sites, such as burials and veldkos/medicinal plant resources, are not disturbed. • Farms in the area followed a system of stone markers to demarcate the farm boundaries in the area. Where these structures are found on the site, care should be taken that they are not needlessly destroyed, as they add to the layering of the area. • Roads running through the area may have historic stone way markers. Where these are found care should be taken that they are left intact and in place. Road upgrades must not move or threaten their position and they should be visible from the road they are related to by passing travellers. • Where the historic function of a building/site is still intact, the function has heritage value and should be protected. • Surviving examples (wagon routes, outspans, and commonage), where they are owned in some public or

Environmental Aspect	Potential Impact during Operation	Mitigation
		communal way (or by a body responsible for acting in the public interest) and where they are found to be actively operating in a communal way, will have cultural and heritage value and should be enhanced and retained. The historic route running through Koup 1 should be maintained and integrity as a communal road for farm residents must be retained. • Accommodation of WEF staff must not negatively impact on existing farm residents or degrade the integrity of the farmstead complexes and should, without negative impact to ecological or aesthetic resources, be located outside of the farmstead complexes or site. Farm residents should be consulted on the preferable location for construction staff accommodation. • 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.
	Socio-economic Inappropriate operational activities degrade the significant socio-economic opportunities of the cultural landscape	• The local community on and around the development should benefit from job opportunities created by the proposed development and the development should not cause reduction in economic viability of surrounding properties in excess of those offered by the development. Short-term job opportunities at the expense of long term economic benefit and local employment opportunities must be prevented. • The continued use of the landscape for human habitation and cultivation by historic residents of the area, should be retained and encouraged as far possible to sustain the continual use pattern and human-environment relationship which is the ultimate significance of this cultural landscape element. The WEF development must allow and support this, including financially, and not degrade this continued relationship.

Environmental Aspect	Potential Impact during Operation	Mitigation
		• Local residents must be offered employment on the construction/ decommissioning and operational phases before 'importing' staff from elsewhere. • Local residents must be offered employment training opportunities associated with WEF developments at all phases. • Crop cultivation, sheep, cattle or game farming should be allowed to continue below the wind turbines, or be rehabilitated to increase biodiversity in the area.
Noise	• Noise Impacts during the day - Noises from operating wind turbines	• No mitigation measures recommended for daytime operational activities
	• Noise Impacts at night - Noises from operating wind turbines	• No mitigation measures recommended for night-time operational activities
Biodiversity	Faunal disturbance and habitat degradation Fauna will be negatively affected by the operation of the wind farm due to the human disturbance, the presence of vehicles on the site and possibly by noise generated by the wind turbines as well.	1) Management of the site should take place within the context of an Open Space Management Plan. 2) No unauthorized persons should be allowed onto the site. 3) Any potentially dangerous fauna such snakes or fauna threatened by the maintenance and operational activities should be removed to a safe location. 4) The collection, hunting or harvesting of any plants or animals at the site should be strictly forbidden by anyone except landowners or other individuals with the appropriate permits and permissions where required. 5) If any parts of the site need to be lit at night for security purposes, this should be done with downward-directed low-UV type lights (such as most LEDs or HPS bulbs) as far as possible, which do not attract insects. 6) All hazardous materials should be stored in the appropriate manner to prevent contamination of the site. Any accidental chemical, fuel and oil spills that occur at the site should be cleaned up in the appropriate manner as related to the nature of the spill.

Environmental Aspect	Potential Impact during Operation	Mitigation
		7) All vehicles accessing the site should adhere to a reduced speed limit (30km/h for heavy vehicles and 40km/h for light vehicles) to avoid collisions with susceptible species such as snakes and tortoises. 8) If parts of the facility such as the substation are to be fenced, then no electrified strands should be placed within 30cm of the ground as some species such as tortoises are susceptible to electrocution from electric fences as they do not move away when electrocuted but rather adopt defensive behaviour and are killed by repeated shocks. Alternatively, the electrified strands should be placed on the inside of the fence and not the outside.
	Increased potential for soil erosion Following construction, the site will remain vulnerable to soil erosion for some time due to the disturbance created by site clearing and likely low natural revegetation of disturbed areas thereafter. It is important to note that while the site is arid, such areas can experience significant soil erosion as plant cover is low and occasional heavy showers generate large amounts of runoff.	1) Erosion management at the site should take place according to the Erosion Management Plan and Rehabilitation Plan. 2) All roads and other hardened surfaces should have runoff control features which redirect water flow and dissipate any energy in the water which may pose an erosion risk. 3) Regular monitoring for erosion post construction to ensure that no erosion problems have developed as result of the disturbance, as per the Erosion Management and Rehabilitation Plans for the project. Monitoring should take place every 6 months in the first year after construction and annually thereafter. 4) All erosion problems observed should be rectified as soon as possible, using the appropriate erosion control structures and revegetation techniques. 5) All cleared areas should be revegetated with indigenous perennial shrubs and succulents from the local area. Dead material from site clearing can be used to encourage this process and can be set aside during clearing and later placed on the cleared areas to encourage recovery.
	Ecological degradation due to alien plant invasion.	1) There should be regular monitoring for alien plants within the development footprint as well as adjacent areas which receive runoff from the facility as there are also likely to be prone to invasion problems. Monitoring every 6 months for the first 2

Environmental Aspect	Potential Impact during Operation	Mitigation
		years post-construction is recommended, followed by annual monitoring thereafter. 2) Regular alien clearing should be conducted using the best-practice methods for the species concerned. The use of herbicides should be avoided as far as possible.
	Negative impact on ESAs, CBAs and broad-scale ecological processes. Transformation and presence of the facility will contribute to cumulative habitat loss within CBAs and impacts on broad-scale ecological processes such as fragmentation.	1) Minimise the development footprint within the high sensitivity areas. 2) There should be an integrated management plan for the development area during operation, which is beneficial to fauna and flora. 3) All disturbed areas that are not used such as excess road widths, should be rehabilitated with locally occurring shrubs and grasses after construction to reduce the overall footprint of the development. 4) Noise and disturbance on the site should be kept to a minimum during operation and maintenance activities.

12.3.4 Decommissioning

Environmental Aspect	Potential Impact during decommissioning	Mitigation
Geotechnical	Removal of subsoils (soil, rock) • Decommissioning of the structure will disturb the geological environment. • Increase in soil and wind erosion due to clearance of structures. • Construction and earthmoving vehicles will displace the soil. • Creation of drainage paths. • Potential oil spillages from vehicles.	• Use of temporary berms and drainage channels to divert surface water were feasible. • Minimize earthworks and demolish footprints. • Use of existing roads and tracks were feasible. • Rehabilitation of affected areas (such as regrassing). • Develop a chemical spill response plan. • Develop dust and demolition fly suppression plan. • Vehicle repairs to be undertaken in designated areas. • Reinstate channelized drainage features.

Environmental Aspect	Potential Impact during decommissioning	Mitigation
	• Excessive sediments in non-perennial features.	
Social	Same as Construction Phase	Same as Construction Phase
Transport	• Additional Traffic Generation - Increase in Traffic	• 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.
	• Additional Traffic Generation - Increase of Incidents with pedestrians and livestock	• 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.
	• Additional Traffic Generation - Increase in Dust from gravel roads	• 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.
	• Additional Traffic Generation - Increase in Road Maintenance	• Implement a road maintenance program under the auspices of the respective transport department. • Construction of an on-site batching plant to reduce trips.
	• Abnormal Loads - Additional Abnormal Loads	• Ensure abnormal vehicles travel to and from the proposed development in the 'off peak' periods or stagger delivery. • Adequate enforcement of the law
	• Internal Access Roads - New / Larger Access points	• Enforce a maximum speed limit on the development • Use of dust suppressant techniques • Adequate watering by means of water bowser
Visual • Potential visual intrusion resulting from vehicles and equipment involved in the	• Vehicles and equipment required for decommissioning will alter the natural character of the study area and expose visual receptors to visual impacts.	• 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.

Environmental Aspect	Potential Impact during decommissioning	Mitigation
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.	• 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. • 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.	• Rehabilitated areas should be monitored post-decommissioning and remedial actions implemented as required.
Avifaunal	• Displacement due to disturbance associated with the dismantling of the wind turbines and associated infrastructure.	• Dismantling activity should be restricted to the immediate footprint of the infrastructure as far as possible. Access to the remainder of the area should be strictly controlled to prevent unnecessary disturbance of priority species. • Measures to control noise and dust should be applied according to current best practice in the industry.
Bat	• Removal of turbines - Bat disturbance due to decommissioning activities and associated noise, especially during night-time	• Nightly decommissioning activities should be avoided, or if necessary, minimised to the shortest period possible. Except for compulsory lightening required in terms of civil aviation, artificial lightening during construction should be minimised, especially bright lights or spotlights. Lights should avoid skyward illumination.
Agricultural	Compliance Statement	
Surface Water	• Same as construction phase	• Same as construction phase

Environmental Aspect	Potential Impact during decommissioning	Mitigation
Heritage – Archaeological	Heritage Resources • The extent that the addition of this project will have on the overall impact of developments in the region on heritage resources.	• It can clearly be noted that the area in general is abundant with Stone Age and historical remains. • However, until a regional detailed study is commissioned by HWC or SAHRA. No further mitigations measures can be proposed other than those already recommended for the site-specific mitigation of sites in this report.
	• Noise impacts during the day - Decommissioning activities relating to removal of infrastructure and wind turbines, rehabilitation of disturbed areas	• No mitigation measures recommended for decommissioning activities for WTGs or substations
Biodiversity	None	n/a

12.3.5 Cumulative

The proposed WEF is located adjacent to several other WEFs within 35km of Koup 1 WEF. SiVEST undertook every effort to obtain the information (including specialist studies, BA / EIA / Scoping and EMPr Reports) 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 the figure below:

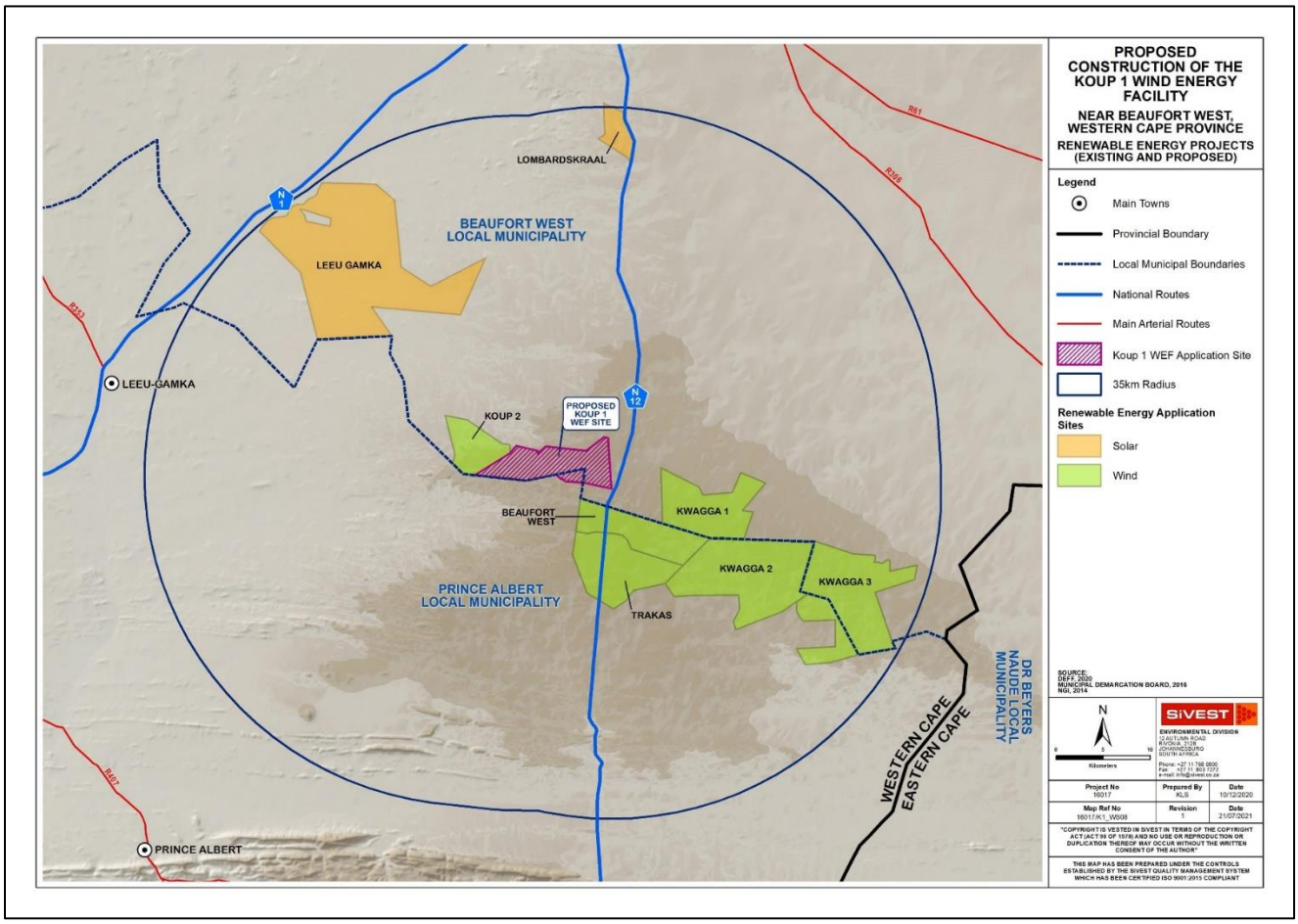

Figure 29: Renewable Energy Projects within 35km of the Koup 1 WEF

Cumulative Impacts

Environmental Aspect	Potential Cumulative Impact	Mitigation
Geotechnical	None	n/a
Social	• Health and social wellbeing - Noise • Health and social wellbeing - Shadow flicker • Health and social wellbeing - Blade glint • Health and social wellbeing - Risk of HIV and AIDS • Quality of the living environment - Sense of place • Quality of the living environment - Service supplies and infrastructure • Economic - Job creation and skills development • Economic - Socio-economic stimulation	With regard to the cumulative impacts, mitigation can only be considered and implemented through a readiness action plan at a regional level and will need to be driven on a provincial and municipal basis; underpinned by national government, private sector and public support. In this regard the Draft Consolidated Intergovernmental Readiness Report for large development scenarios in the Central Karoo (Western Cape Government Environmental Affairs and Development Planning, 2019) acknowledges the need to prepare for large-scale, or regional, development proposals and to enlist national government, private sector and public participation.
Transport	• Additional Traffic Generation - Increase in Traffic	• Ensure a large portion of vehicles traveling to and from the proposed development travels in the 'off peak' periods or by bus. • Construction of an on-site batching plant to reduce trips. • Coordination between all developers in the area
	• Additional Traffic Generation - Increase of Incidents with pedestrians and livestock	• 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 batching plant to reduce trips. • Coordination between all developers in the area
	• Additional Traffic Generation - Increase in Dust from gravel roads	• Reduction in speed of the vehicles • Use of dust suppressant techniques • Implement a road maintenance program under the auspices of the respective transport department.

Environmental Aspect	Potential Cumulative Impact	Mitigation
		• Construction of an on-site batching plant to reduce trips. • Coordination between all developers in the area
	• Additional Traffic Generation - Increase in Road Maintenance	• Implement a road maintenance program under the auspices of the respective transport department. • Construction of an on-site batching plant to reduce trips. • Coordination between all developers in the area
	• Abnormal Loads - Additional Abnormal Loads	• Ensure abnormal vehicles travel to and from the proposed development in the 'off peak' periods. • Adequate enforcement of the law
	• Internal Access Roads - New / Larger Access points	• Enforce a maximum speed limit on the development • Use of dust suppressant techniques • Adequate watering by means of water bowser
Visual • Potential alteration of the visual character and sense of place in the broader area. • Potential visual impact on receptors in the study area. • Potential visual impact on the night time visual environment.	• 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	• 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. • 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 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.

Environmental Aspect	Potential Cumulative Impact	Mitigation
	multiple renewable energy facilities in the broader area.	• The operations and maintenance (O&M) buildings should not be illuminated at night. • The O&M buildings should be painted in natural tones that fit with the surrounding environment.
Avifaunal	• 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	• All the mitigation measures listed in the various bird specialist studies compiled for the eight (8) renewable energy facilities within a 35km radius around the project.
Bat	• Destruction of active roosts - Cumulative effect of destruction of active roost of several wind farms as well as features that could serve as potential roosts.	• Although Genesis Eco-Energy do not have any control over other wind energy development, project specific mitigation as included in the BA or EIA or in the respective Bat Impact Assessments of the projects in the surrounding area should be adhered to for each renewable energy project. • Post construction monitoring as per the relevant South African guidelines.
	• Direct collision and barotrauma - Cumulative bat mortality due to direct collision with the blades or barotrauma during foraging of resident bats at several WEF sites.	• Although not enforceable on the Koup 1 applicant, all REFs must adhere to their project specific mitigation measures, especially buffer zones and sensitivity areas and recommended mitigation, for each renewable energy project. • Post construction monitoring as per the relevant South African Bat Guidelines applicable at the time is of crucial importance.
Agricultural	Compliance Statement	
Surface Water	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 (Enertrag SA) and or review of the past assessments as part of any required Water Use Licenses (Atlantic	The premise of all the reviewed or assessed projects has been the avoidance of impacts on the aquatic environment, 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.

Environmental Aspect	Potential Cumulative Impact	Mitigation
	Energy Partners & Mainstream projects).	
Heritage – Cultural Landscape	Ecological Inappropriate cumulative development degrade the significant ecological elements of the cultural landscape	In addition to the proposed recommendations of this CLA the cumulative negative impact of the proposed WEFs on the cultural landscape can be reduced with the following recommendations on WEF development for the regional cultural landscape. • To reduce the negative cumulative impact of the proposed WEFs on the N12 scenic route and the character and sense of place of the cultural landscape of the Koup region, it is recommended that WEF turbines be constructed either to the west or east of the N12 and not on either side along the same stretch of N12. • The WEFs should read as separate developments with vast spaces 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. • Following the existing natural ridgelines that run east to west may reduce the impact of the cumulative WEF developments on the cultural landscape as the turbines, although out of scale and form with the surrounding area due to their verticality, may follow the skyline and break the views where they have historically been reduced already by the height of the ridges. The turbines, if placed sensitively and far away enough from the N12 and not on the ridgeline or steep slopes, so as not to feel overwhelming, can emphasise the experience of the poort elements of the cultural landscape if placed to follow the natural undulating landform. • These recommendations should allow for the continued opportunity by travellers to experience the vistas of the vast open wilderness spaces and views of the mountain ranges in the distance at all points along the N12 scenic drive.
	Aesthetic Inappropriate cumulative development degrades the significant aesthetic elements of the cultural landscape altering the character and sense of place	
	Historic Inappropriate cumulative development degrades the significant historic elements of the cultural landscape altering the character and sense of place	
	Socio-economic Inappropriate cumulative development degrade the significant socio-economic opportunities of the cultural landscape	
Heritage – Palaeontological	Fossil heritage resources Disturbance, damage or destruction of fossils at or beneath the ground surface due to surface clearance and bedrock excavations	(N.B. Vary between projects) Pre-construction walkdown (with fossil recording / collection) of final footprint by specialist palaeontologist. Chance Fossil Finds Procedure during construction phase.

Environmental Aspect	Potential Cumulative Impact	Mitigation
Noise	• Increased noise levels - Cumulative noises due to operating wind turbines from other wind energy facilities in the area	• No mitigation measures recommended
Biodiversity	Cumulative impacts on fauna and flora Wind energy development in the wider area around the Koup 1 site will generate cumulative impacts on habitat loss and fragmentation for fauna and flora.	1) There should be no turbines within the Very High Sensitivity areas. 2) The footprint within drainage lines should be minimized as much as possible. 3) Preconstruction walk-though of the approved development footprint to ensure that sensitive habitats and species are avoided where possible. 4) Ensure that lay-down and other temporary infrastructure is within low sensitivity areas, preferably previously transformed areas if possible. 5) Minimise the development footprint as far as possible and rehabilitate disturbed areas that are no longer required by the operational phase of the development. 6) A large proportion of the impact of the development stems from the access roads and the number of roads should be reduced to the minimum possible and routes should also be adjusted to avoid areas of high sensitivity as far as possible, as informed by a preconstruction walk-though survey. 7) Preconstruction environmental induction for all construction staff on site to ensure that basic environmental principles are adhered to. This includes topics such as no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimizing wildlife interactions, remaining within demarcated construction areas etc. 8) Demarcate all areas to be cleared with construction tape or other appropriate and effective means. However, caution should be exercised to avoid using material that might entangle fauna.

12.3.6 Comparative Assessment of Alternatives

A preliminary comparative assessment of the alternatives is provided in the table below and further detailed in the respective specialist studies:

Key:

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

Table 15: Preliminary Assessment of Layout Alternatives

	Substation and BESS Site		Construction Laydown and O&M Area	
	Option 1	**Option 2**	**Option 1**	**Option 2**
Geotechnical Assessment	No Preference	No Preference	No Preference	No Preference
Social Impact Assessment	No Preference	Least Preferred	No Preference	Least Preferred
Transport Assessment	No Preference	No Preference	No Preference	No Preference
Visual Assessment	Favourable	Favourable	Favourable	Favourable
Avifaunal Assessment	No Preference	No Preference	No Preference	No Preference
Bat Assessment	Preferred	Least Preferred	Preferred	Least Preferred
Agricultural Assessment;	No Preference	No Preference	No Preference	No Preference
Surface Water Assessment	Preferred	Favourable	Least Preferred	Least Preferred
Heritage Assessment – Archaeological	No Preference	No Preference	No Preference	No Preference
Heritage Assessment – Paleontological	No Preference	No Preference	No Preference	No Preference
Heritage Assessment – Cultural Landscape	Favourable	Least Preferred	Favourable	Least Preferred
Noise Assessment;	No Preference	No Preference	No Preference	No Preference

	Substation and BESS Site		Construction Laydown and O&M Area	
	Option 1	Option 2	Option 1	Option 2
Biodiversity Assessment	Preferred	Favourable	Preferred	Least Preferred

12.4 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 Koup 1 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 preliminary layout (and options) have been assessed by the specialists in their respective specialist studies. All constraints as indicated in the sensitivity mapping below (**Figure 30**) have been taken into account to inform the proposed final layout for the Koup 1 WEF (included as **Figure 31**) which will be further assessed in the EIA Phase.

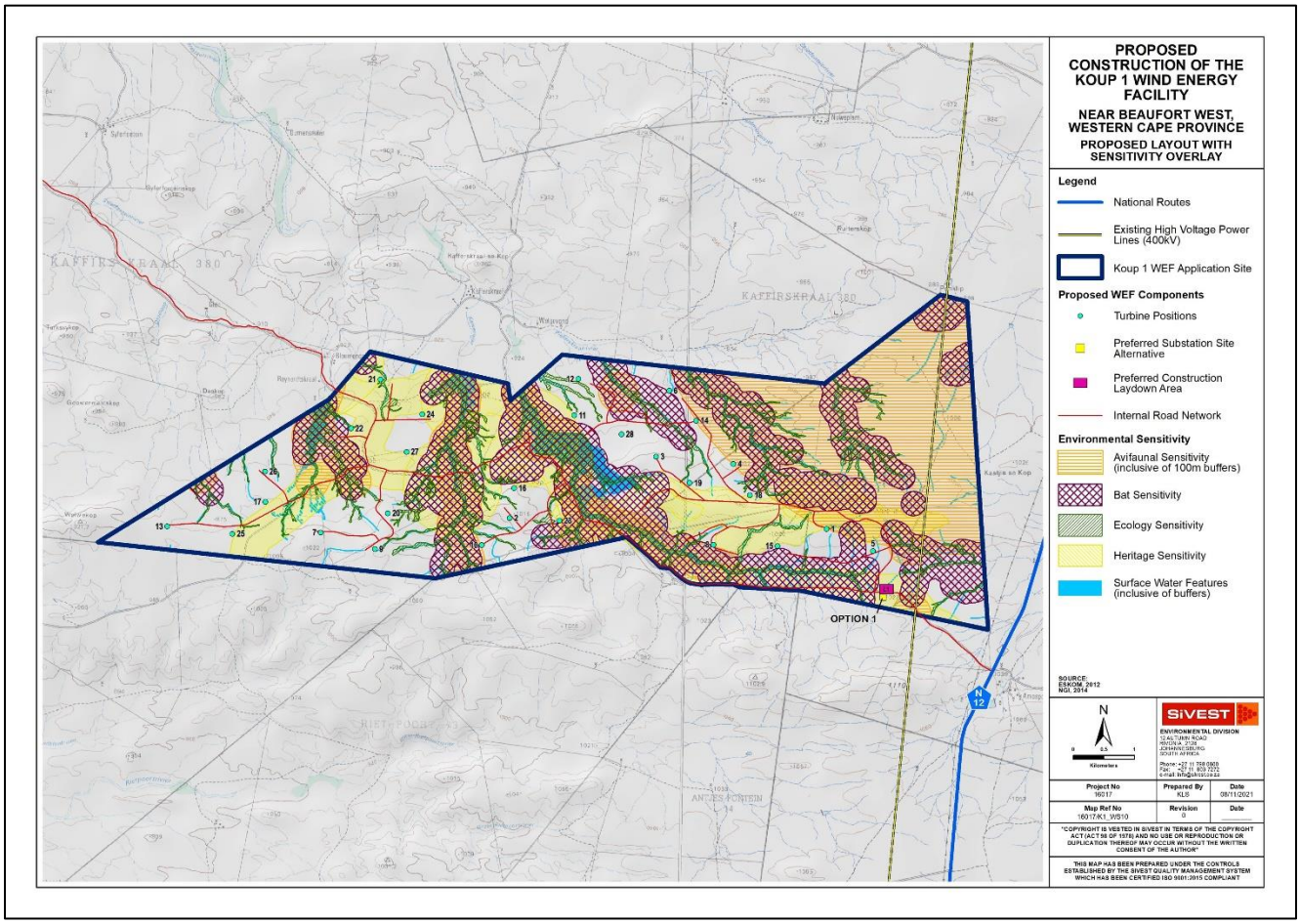

Figure 30: Sensitivity Mapping

13. PLAN OF STUDY FOR EIA

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

The purpose of the EIA Phase is to:

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

The EIA Phase consists of the following processes:

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

13.1 Tasks to be undertaken

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

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

13.2 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.

13.2.1 Location Alternatives

As mentioned in Section 12.1.1, no location alternatives are being considered for the Koup 1 Wind Farm as these sites were selected prior to the commencement of the EIA Process.

13.2.2 Layout Alternatives

The preliminary layout that was prepared for the Koup 1 Wind Farm (**Figure 3**) has been assessed by specialists to identify potential impacts that may arise from the development. Based on the findings of the specialists and the potential impacts identified, the preliminary layout has been updated to include constraints (**Figure 31**). This layout will be further refined based on the outcomes of the public participation process of the Scoping phase. The final layout will then be assessed by all specialists in the EIA Phase.

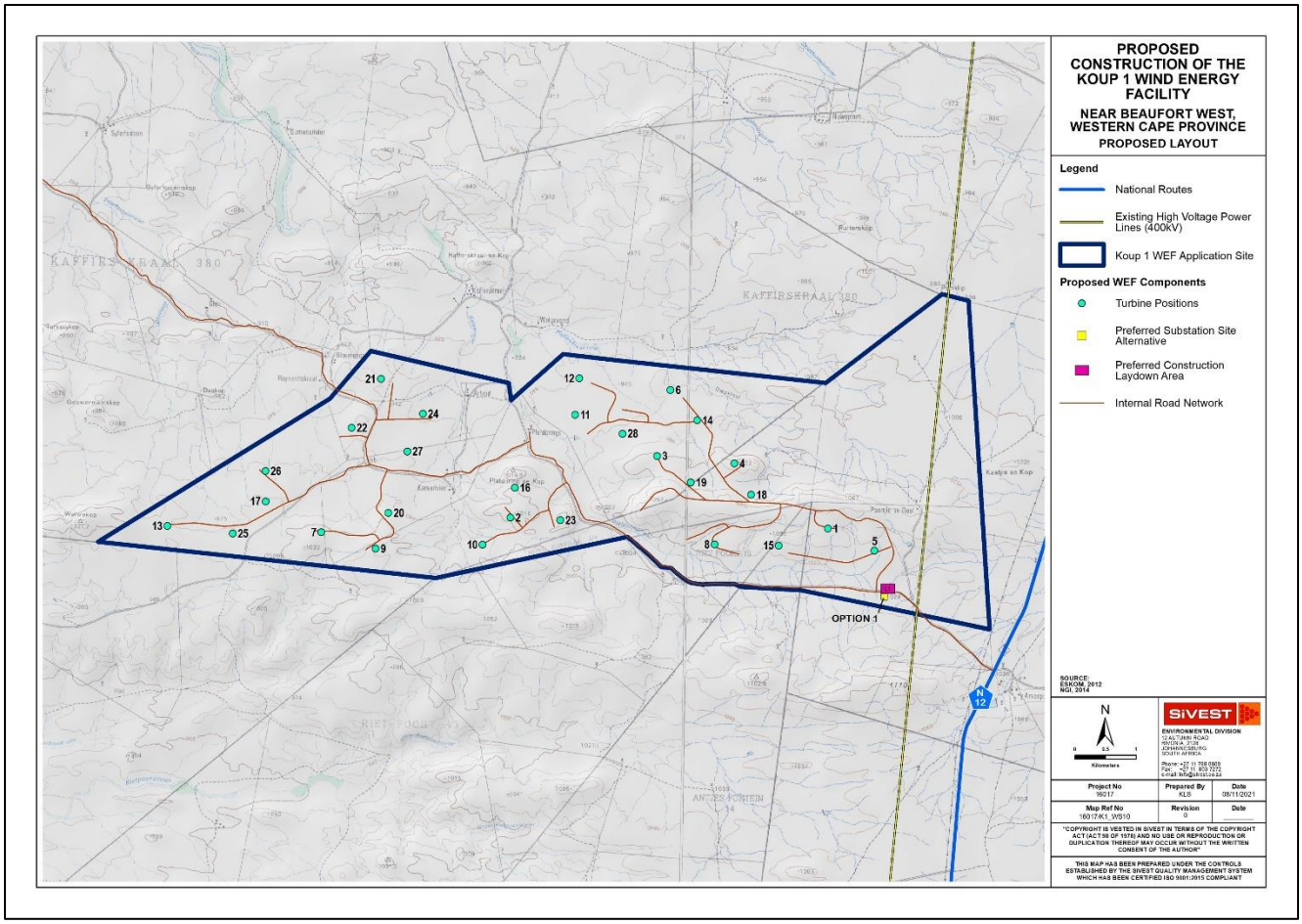

Figure 31: Proposed Layout

13.2.3 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.

13.2.4 No-go Alternatives

The option of not implementing the activity, or the "no-go" alternative and associated potential impacts, have been discussed in **Section** Error! Reference source not found.. Based on the specialist's assessment, no s ignificant 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.

13.3 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 16: 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 Koup 1 WEF and the associated grid connection infrastructure (132kV overhead power line on-site switching / collector substation). The report should however include separate assessment and impact rating chapters/sections for the WEF and the grid connection proposals respectively. 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.

13.4 EIA methodology

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

13.5 Consultation with Competent Authority

SiVEST will consult with DFFE as follows:

- Pre-application meeting with DFFE.
- 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.
- A site visit with DFFE is proposed once the Final Scoping Report has been submitted.
- 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.

13.6 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.

13.6.1 Updating of IAP Database

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

13.6.2 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.

13.6.3 Public meetings/consultation

No public meetings are proposed due to CoVID-19 Regulations. Virtual meetings if required will be conducted using an appropriate platform agreeable to all parties (such as Zoom, Skype or Microsoft Teams).

13.6.4 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.

13.6.5 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.

14. 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**.

15. INFORMATION REQUIRED BY CA (IF APPLICABLE)

Currently n/a.

16. CONCLUSION

This Scoping Report has covered activities and findings related to the scoping process for the proposed Koup 1 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.

Based on the findings of the specialists and the potential impacts identified, the preliminary layout has been updated to include constraints (**Figure 31**). This layout will be further refined based on the outcomes of the public participation process of the Scoping phase. The final layout will then be assessed by all specialists in the EIA Phase.

17. WAY FORWARD

The Draft Scoping Report is currently being circulated for public participation for a period of 30 days (excluding public holidays) from **22 November 2021** until **12 January 2022.**

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.co.za

Fax: (011) 803 7272

Website: www.sivest.com

Please reference '*Koup 1 WEF'* in your correspondence, should your comments be project specific. SiVEST shall keep all registered I&APs / key stakeholders informed of the EIA process.

SiVEST Environmental Division
4 Pencarrow Crescent,
La Lucia Ridge Office Estate,
Umhlanga Rocks, 4320
PO Box 1899, Umhlanga Rocks, 4320
KwaZulu-Natal, South Africa

Tel +27 31 581 1579
Email info@sivest.co.za
www.sivest.co.za

Contact Person: Michelle Guy
Email: michelleg@sivest.co.za