




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

**Proposed Development of the Patatskloof
Wind Energy Facility (WEF), Battery
Energy Storage System and Associated
Infrastructure located near Ceres in the
Witzenberg Local Municipality, Cape
Winelands District, in the Western Cape
Province of South Africa**

Draft Basic Assessment Report

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KEY PROJECT INFORMATION

PROJECT DESCRIPTION

The proposed Patatskloof WEF will comprise up to thirty-five (35) wind turbines with a maximum export capacity of up to approximately 250MWac. The electricity generated by the proposed WEF development will be fed into the national grid via a 132kV overhead power line. In summary, the proposed Patatskloof WEF will include the following components:

- Up to 35 wind turbines, each between 4MW and 6.6MW, with a maximum export capacity of approximately 250MWac within the buildable area..
- Each wind turbine will have a hub height of between 120m and 200m and rotor diameter of up to approximately 200m;
- Permanent compacted hardstanding areas / platforms (also known as crane pads) of approximately 100m x 100m (total footprint of approx. 10000m²) 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 30m in diameter. In addition, the foundations will be up to approximately 4m in depth;
- Electrical transformers (690V/33kV) adjacent to each wind turbine (typical footprint of up to approximately 3m x 2.5m) to step up the voltage to between 11kV and 33kV;
- One (1) new 11kV - 33/132kV on-site substation consisting of two (2) portions: IPP portion / yard (33kV portion of the shared 33kV/132kV portion) and an Eskom portion (132kV portion of the shared 33kV/132kV portion) including associated equipment and infrastructure, occupying a total area of approximately 25ha (i.e. 250 000m²) i.e. 12.5 ha for the IPP Portion and 12.5 ha for the Eskom Portion. The Eskom portion will be ceded over to Eskom once the IPP has constructed the onsite substation. The necessary Transfer of Rights will be lodged with DFFE when required;
- A Battery Energy Storage System (BESS) will be located next to the IPP portion / yard of the shared onsite 33/132kV substation and will be included as part of the 12.5ha. The storage capacity and type of technology would be determined at a later stage during the development phase, but most likely comprise an array of containers, outdoor cabinets and/or storage tanks;
- The wind turbines will be connected to the proposed substation via 11 to 33kV underground cabling and overhead power lines.
- Road servitude of 8m and a 20m underground cable or overhead line servitude.
- Internal roads with a width of up to approximately 5m wide will provide access to each wind turbine. Existing site roads will be used wherever possible, although new site roads will be constructed where necessary. Turns will have a radius of up to 50m for abnormal loads (especially turbine blades) to access the various wind turbine positions. It should be noted that the proposed application site will be accessed via the DR1475 District Road and DR1475, MR316 and MR319 WCG provincial Roads;
- One (1) construction laydown / staging area of up to approximately 3ha to be located on the site identified for the substation. It should be noted that no construction camps will be required in order to house workers overnight as all workers will be accommodated in the nearby town;
- Operation and Maintenance (O&M) buildings, including offices, a guard house, operational control centre, O&M area / warehouse / workshop and ablution facilities to be located on the site identified for the substation. This will be included in the 33kV portion/yard of the substation area i.e.12.5 ha of the IPP portion of the onsite substation;
- 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; A new permanent mast will be located on the site and may be at a different location to the current mast.

- 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.
- Optic fibre overhead or underground line from the Adamskraal Substation or Kappa substation to the proposed on-site substation

The applicant is proposing a buildable area within the site boundary which has been informed by and assessed by the specialists as part of this Basic Assessment Process. The above-mentioned components will be constructed within the proposed development area.

TECHNICAL DETAIL SUMMARY

Component	Description / Dimensions
Location of site (centre point)	<ul style="list-style-type: none"> • Latitude: S33° 7' 44.260" • Longitude: E20° 8' 29.109"
Application site area	The project site is approximately 6612 hectares (ha) in extent.
Buildable area	A smaller buildable area (2905.4 ha) has been identified within the project site where the WEF is planned to be located.
Turbine development area	100m x 100m (total footprint of approx. 10000m ²)
SG codes	C0190000000024600000 C0190000000025000000 C0190000000025100001
Export capacity	Up to 250MWac
Proposed technology	Wind turbines and associated infrastructure
Hub height from ground	Between 120m and 200m
Rotor diameter	Up to approximately 200m
Substation and O&M building area	Approximately 25 hectare (ha) of which 12.5 is the IPP portion and is included in this WEF EIA and the other 12.5 ha will be the Eskom portion which will be ceded to Eskom once the IPP has constructed the onsite substation. The IPP portion of the substation is being undertaken in a separate BA assessment
Construction laydown area	3 ha included within the onsite substation area.
Permanent laydown area	To be determined based on final layout
Electrical transformers	Electrical transformers with a capacity of 690V/33 kV will be situated adjacent to each of the proposed wind turbines in order to step up the voltage to 11kV and 33kV. It should be noted that the typical footprint of such a transformer is approximately 2 m x 2 m.
Underground cabling	Underground 33kV cables, buried along access roads where feasible; and outside of the road footprints and where topography and environmental concerns preclude underground cabling, overhead 33kV power lines will be used.
Battery Energy Storage System (BESS)	A BESS will be located next to the IPP portion / yard of the shared onsite 33/132kV substation and will be included as part

Component	Description / Dimensions
	of the 12.5ha. The storage capacity and type of technology would be determined at a later stage during the development phase, but most likely comprise an array of containers, outdoor cabinets and/or storage tanks.
On-site Substation	One (1) new 11kV - 33/132kV on-site substation consisting of two (2) portions: IPP portion / yard (33kV portion of the shared 33kV/132kV portion) and an Eskom portion (132kV portion of the shared 33kV/132kV portion) including associated equipment and infrastructure, occupying a total area of approximately 25ha (i.e. 250 000m ²) i.e. 12.5 ha for the IPP Portion and 12.5 ha for the Eskom Portion. The Eskom portion will be ceded over to Eskom once the IPP has constructed the onsite substation. The necessary Transfer of Rights will be lodged with DFFE when required.
Width of internal access roads	Up to 5m
Length of internal access roads	Existing internal roads may require widening by more than 6m or lengthening by more than 1km. 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.
Site Access	The proposed application site will be accessed via the N1 National Route and DR1475, MR316 and MR319 Western Cape Government (WCG) provincial Roads.
Proximity to grid connection	The following options have been identified and are being assessed in a separate Grid Infrastructure BA Process: <ul style="list-style-type: none"> • Power Line Corridor Option 1 is approximately 16km in length, linking either Substation Option 1 or Substation Option 2 to Kappa Substation. • Power Line Corridor Option 2 is approximately 24km in length, linking either Substation Option 1 or Substation Option 2 to Kappa Substation. • Power Line Corridor Option 3 is approximately 8km in length, linking either Substation Option 1 or Substation Option 2 to Adamskraal Substation. • Power Line Corridor Option 4 is approximately 25km in length, linking either Substation Option 1 or Substation Option 2 to Kappa Substation. • Power Line Corridor Option 5 is approximately 24km in length, linking either Substation Option 1 or Substation Option 2 to Kappa Substation. It should be noted that the assessment corridor applied to a short section of this route alignment serving Substation Option 2 has been widened to 300m. • Power Line Corridor Option 6 is approximately 8km in length, linking either Substation Option 1 or Substation Option 2 to Adamskraal Substation.
Fencing	No new fencing is envisaged at this stage. Current fencing is standard farm fence approximately 1-1.5m in height. Fencing

Component	Description / Dimensions
	might be upgraded (if required) to be up to approximately 2m in height.
Other	<p>One (1) construction laydown / staging area of up to approximately 3ha to be located on the site identified for the substation. It should be noted that no construction camps will be required in order to house workers overnight as all workers will be accommodated in the nearby town.</p> <p>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.</p> <p>Optic fibre overhead or underground line from the Adamskraal Substation/Kappa to the proposed on-site substation.</p>

COORDINATES

PATATSKLOOF WEF: APPLICATION SITE COORDINATES AT CORNER POINTS (DD MM SS.sss)

POINT	SOUTH	EAST
1	S33° 3' 50.226"	E20° 9' 16.741"
2	S33° 4' 50.666"	E20° 9' 29.345"
3	S33° 5' 53.952"	E20° 11' 16.718"
4	S33° 6' 54.863"	E20° 12' 22.286"
5	S33° 7' 15.207"	E20° 10' 30.659"
6	S33° 7' 19.946"	E20° 9' 43.478"
7	S33° 7' 58.634"	E20° 9' 43.183"
8	S33° 9' 53.826"	E20° 9' 59.404"
9	S33° 10' 2.423"	E20° 10' 2.694"
10	S33° 10' 20.082"	E20° 9' 53.672"
11	S33° 10' 24.748"	E20° 8' 45.608"
12	S33° 10' 27.287"	E20° 8' 41.984"
13	S33° 10' 39.394"	E20° 7' 38.566"
14	S33° 9' 58.402"	E20° 7' 27.321"
15	S33° 11' 29.878"	E20° 7' 12.654"
16	S33° 11' 31.178"	E20° 6' 47.194"
17	S33° 10' 26.009"	E20° 6' 3.253"
18	S33° 10' 1.931"	E20° 6' 4.248"
19	S33° 9' 44.787"	E20° 5' 24.741"

**PATATSKLOOF WEF: APPLICATION SITE
COORDINATES AT CORNER POINTS (DD MM SS.sss)**

POINT	SOUTH	EAST
20	S33° 9' 20.528"	E20° 5' 28.451"
21	S33° 7' 6.477"	E20° 7' 23.923"
22	S33° 6' 46.732"	E20° 7' 2.401"
23	S33° 5' 0.973"	E20° 7' 23.458"

PATATSKLOOF GRID CONNECTION		
SUBSTATION SITE COORDINATES		
COORDINATES AT CENTRE POINT (DD MM SS.sss)		
SITE ALTERNATIVE	SOUTH	EAST
<i>SUBSTATION OPTION 1</i>	<i>S33° 5'41.80"</i>	<i>E20° 7'31.04"</i>
<i>SUBSTATION OPTION 2</i>	<i>S33° 7'10.50"</i>	<i>E20° 7'52.89"</i>

SOUTH AFRICA MAINSTREAM RENEWABLE POWER DEVELOPMENTS (PTY) LTD

PATATSKLOOF WIND ENERGY FACILITY (WEF)

DRAFT BASIC ASSESSMENT REPORT

EXECUTIVE SUMMARY

INTRODUCTION

South Africa Mainstream Renewable Power Developments (Pty) Ltd (hereafter referred to as 'Mainstream') is proposing to construct the Patatskloof Wind Energy Facility (WEF), Battery Energy Storage System (BESS) and associated infrastructure located near the town of Ceres in the Witzenberg Local Municipality, in the Cape Winelands 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, which will be procured under either the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP), other government run procurement programmes or potential private offtake entities. The proposed development will have a maximum total generation capacity of up to a 250 megawatt (MWac) and will be referred to as the Patatskloof WEF.

SiVEST Environmental Division has been appointed as the independent Environmental Assessment Practitioner (EAP) to undertake the Basic Assessment (BA) process for the proposed construction of the Patatskloof WEF and associated infrastructure. The proposed development requires an Environmental Authorisation (EA) from the National Department of Forestry, Fisheries and the Environment (DFFE). The BA for the proposed development will be conducted in terms of the Environmental Impact Assessment (EIA) Regulations, 2014 (as amended) promulgated in terms of Chapter 5 of the National Environmental Management Act, Act No. 107 of 1998 (NEMA)[as amended]. The provincial authority (i.e. the Western Cape Department of Environmental Affairs and Development Planning - WC DEA&DP) will also be consulted.

The proposed WEF, BESS and associated grid infrastructure is located within the Komsberg Renewable Energy Development Zone (REDZ 2), as published in terms of Section 24(5) of the NEMA in GN R114 of 16 February 2018. Accordingly, a BA process as contemplated in terms of the EIA Regulations (2014, as amended) is being undertaken in respect of the proposed WEF project.

Two (2) options have been identified for the 33kV portion/yard of the shared 33/132kV onsite substation and six (6) grid corridors have been identified for the 132kV overhead line and 132kV portion/yard of the shared 33kV/132kV onsite substation – these applications will be prepared and assessed under separate BA application processes. The proposed powerline options are described below:

- **Power Line Corridor Option 1** is approximately 16km in length, linking either Substation Option 1 or Substation Option 2 to Kappa Substation.

- **Power Line Corridor Option 2** is approximately 24km in length, linking either Substation Option 1 or Substation Option 2 to Kappa Substation.
- **Power Line Corridor Option 3** is approximately 8km in length, linking either Substation Option 1 or Substation Option 2 to Adamskraal Substation.
- **Power Line Corridor Option 4** is approximately 25km in length, linking either Substation Option 1 or Substation Option 2 to Kappa Substation.
- **Power Line Corridor Option 5** is approximately 24km in length, linking either Substation Option 1 or Substation Option 2 to Kappa Substation. It should be noted that the assessment corridor applied to a short section of this route alignment serving Substation Option 2 has been widened to 300m.
- **Power Line Corridor Option 6** is approximately 8km in length, linking either Substation Option 1 or Substation Option 2 to Adamskraal Substation.

It should be noted that Mainstream is proposing the 250MW Karee WEF adjacent to the proposed Patatskloof WEF. This WEF will be assessed under a separate BA process / application:

- **200MW Karee WEF** – DFFE Reference Number: To be Allocated (part of a separate BA process / application).

Although the WEF and associated grid connection infrastructure will be assessed separately, a single (1) public participation process is being proposed to consider all of the proposed developments i.e. Two (2) WEF BA and two (2) grid connection infrastructure BAs. The potential environmental impacts associated with all of the proposed developments mentioned above will be assessed as part of the cumulative impact assessment.

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

The amended EIA Regulations promulgated under Section 24(5) of the NEMA, 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 Basic Assessment Process. The project will trigger the following listed activities:

Activity No(s):	Relevant Activity(ies)
Basic Assessment Activity(ies) as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended	
11 (i)	GN R. 327 (as amended) Item 11: The development of facilities or infrastructure for the transmission and distribution of electricity— (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts.
12 (ii) (a) (c)	GN R. 327 (as amended) Item 12: The development of: ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs- (a) within a watercourse; (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.

Activity No(s):	Relevant Activity(ies)
14	GN R. 327 (as amended) Item 14: The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80m ³ or more but not exceeding 500m ³ .
19	GN R. 327 (as amended) Item 19: The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;
24 (ii)	GN R. 327 (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. 327 (as amended) Item 28: Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development: (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;
56 (ii)	GN R. 327 Item 56: The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre - (ii) where no reserve exists, where the existing road is wider than 8 metres –
Scoping and EIA Activity(ies) as set out in Listing Notice 2 of the EIA Regulations, 2014 as amended	
1	GN R. 325 Item 1: The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 MW or more, excluding where such development of facilities or infrastructure is for photovoltaic installations and occurs – (a) within an urban area; or (b) on existing infrastructure.
15	GN R. 325 Item 56: The clearance of an area of 20 ha or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for — (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.
Basic Assessment Activity(ies) as set out in Listing Notice 3 of the EIA Regulations, 2014 as amended	
4 i. (ii) (aa)	GN R. 324 (as amended) Item 4: The development of a road wider than 4 metres with a reserve less than 13,5 metres. i. Western Cape ii. Areas outside urban areas; (aa) Areas containing indigenous vegetation;
12 i. ii.	GN R. 324 (as amended) Item 12: The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. i. Western Cape ii. Within critical biodiversity areas identified in bioregional plans;
14	GN R. 324 (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—

Activity No(s):	Relevant Activity(ies)
	<p>(a) within a watercourse; (b) in front of a development setback; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;</p> <p>excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.</p> <p>i. Western Cape i. Outside urban areas: (aa) A protected area identified in terms of NEMPAA, excluding conservancies; (bb) National Protected Area Expansion Strategy Focus areas; (ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</p>
18 i. ii. (aa)	<p>GN R. 324 (as amended) Item 18: The widening of a road by more than 4 meters, or the lengthening of a road by more than 1 kilometer-</p> <p>i. Western Cape ii. All areas outside urban areas: (aa) Areas containing indigenous vegetation</p>

SPECIALIST STUDIES

The following specialist assessments were conducted as part of the BA process in order to identify and assess the issues associated with the proposed development:

- Agriculture and Soils Impact Assessment (desktop)
- Avifaunal Impact Assessment
- Bat Impact Assessment
- Biodiversity Impact Assessment
- Heritage Impact Assessment
 - Paleontological Impact Assessment
 - Archaeological Assessment
 - Cultural Landscape Assessment
- Geotechnical Assessment (desktop)
- Noise Impact Assessment
- Social Impact Assessment (desktop)
- Surface Water Impact Assessment
- Transportation Impact Assessment
- Visual Impact Assessment

These studies were undertaken to inform the impact assessment of the proposed grid development. The specialists assessed the relevant alternatives as part of their respective assessments and also focused on specific impacts of the proposed grid infrastructure development in detail. The table below summarises the specialist findings for the entire proposed development both pre and post mitigation.

Specialist Study	Findings	Recommendations
Agricultural	<p>The site has very low agricultural potential predominantly because of climate constraints. As a result of the constraints, the site is totally unsuitable for cultivation, and agricultural land use is limited to grazing. The land is predominantly of low agricultural sensitivity, but includes some areas of medium sensitivity.</p> <p>Three potential negative agricultural impacts were identified as follows: loss of agricultural land use, land degradation, and the impact of dust, but all are of low significance.</p> <p>The recommended mitigation measures are implementation of an effective system of stormwater run-off control; maintenance of vegetation cover; and stripping, stockpiling and re-spreading of topsoil.</p> <p>The conclusion of this assessment is that the proposed development will not have an unacceptable negative impact on the agricultural production capability of the site. The proposed development is therefore acceptable. This is substantiated by the facts that the land is of very limited land capability and is not suitable for the production of cultivated crops, the amount of agricultural land loss is within the allowable development limits prescribed by the agricultural protocol, the proposed development offers some positive impact on agriculture by way of improved financial security for farming operations, as well as wider, societal benefits, and that the proposed development poses a low risk in terms of causing soil degradation.</p>	<p>The recommended mitigation measures are implementation of an effective system of stormwater run-off control; maintenance of vegetation cover; and stripping, stockpiling and re-spreading of topsoil.</p> <p>From an agricultural impact point of view, it is recommended that the development be approved.</p> <p>The conclusion of this assessment on the acceptability of the proposed development and the recommendation for its approval is not subject to any conditions, other than recommended mitigations provided.</p>
Avifaunal	<p>The Cedarberg - Koue Bokkeveld Complex Important Bird Area (IBA) SA101 is the closest IBA and is located approximately 40km north-west of the development areas at its closest point. The development is not expected to have any impact on the avifauna in this IBA due to the distance from the development area.</p>	<p><u>High sensitivity No-turbine buffer: Surface water.</u></p> <ul style="list-style-type: none"> ▪ Included in this category are areas within 200m of water troughs and earth dams, and 150m from all major drainage lines. Surface water in this arid habitat is crucially important for priority avifauna, including several

Specialist Study	Findings	Recommendations
	<p>The proposed Patatskloof WEF will have several potential impacts on priority avifauna. These impacts are the following:</p> <ul style="list-style-type: none"> • Displacement of priority species due to disturbance linked to construction activities in the construction phase. • Displacement due to habitat transformation in the construction phase. • Collision mortality caused by the wind turbines in the operational phase. • Electrocutation on the 33kV MV overhead lines (if any) in the operational phase. • Collisions with the 33kV MV overhead lines (if any) in the operational phase. • Displacement of priority species due to disturbance linked to dismantling activities in the decommissioning phase. <p>In term of these impacts, the proposed WEF will have a moderate impact on avifauna which, in most instances, could be reduced to a low impact through appropriate mitigation. The alternative substation and laydown locations are all situated in essentially the same habitat, i.e. Karoo scrub. The habitat is not particularly sensitive, as far as avifauna is concerned, therefore any of the alternative locations will be acceptable. No fatal flaws were discovered during the onsite investigations. The development is therefore supported, provided the mitigation measures listed in this report are strictly implemented</p>	<p>Red Data species such as Martial Eagle, Lanner Falcon and Secretarybird, and many non-priority species, including several waterbirds. Drainage lines when flowing attract waterbirds on occasion, as do the large pools that remain in the channel after the flow has stopped. Wind turbines that are placed near these sources of surface water pose a collision risk to birds using the water for drinking and bathing, and drainage lines, when flowing, are natural flight paths for birds.</p> <p><u>Medium sensitivity Restricted turbine buffer: Red Data species nests.</u></p> <ul style="list-style-type: none"> ▪ Any planned turbines within the 3.7 – 5.2km circular medium-risk buffer zone around any of the Verreaux’s Eagle nests must be subjected to an additional year of monitoring to determine the risk that these turbines pose to Verreaux’s Eagles, to establish whether they could be effectively mitigated, or will have to be removed. If they cannot be removed, pro-active mitigation must be implemented at these turbines in the form of proven measures such as Shutdown on Demand (SDoD)
Bat	<p>Although the combined impact during the operational phase, namely after mitigation, is predicted to be Medium Negative, it should be noted that the bat activity on the project site, according to the bat threshold for Succulent Karoo, is high and the</p>	<p><u>It is recommended that the following mitigation measures be included in the Environmental Authorisation (EA):</u></p> <ul style="list-style-type: none"> • The final layout must be informed by the sensitivity map provided in Section 7 of the main report, and turbine

Specialist Study	Findings	Recommendations
	<p>negative impact on bats during the operational phase could thus be high. This must be confirmed during operational bat monitoring, but the developer should prepare for turbine specific curtailment and/or installing bat deterrents when more information is available.</p> <p>As expected in an area where several back-to-back wind farms are developed, cumulative impacts on bat populations before mitigation are predicted to be High Negative, specifically when the threshold for bats in the Succulent Karoo is considered. Even with mitigation measures, the cumulative impact is expected to be High Negative. This has been confirmed by the general estimated mortality (GenEst) through carcass searches on operating wind farms in the Succulent Karoo. Despite the negative cumulative impact, this is not considered to be a fatal flaw if all the wind farms apply appropriate mitigation measures.</p> <p>It should be noted that one year of pre-construction bat monitoring is required by legislation in South Africa. However, the semi-desert Succulent Karoo environment is subject to erratic weather conditions, which vary from year to year. These changes usually result in changes in the bat situation which might not have been observed in this survey. This is not a limitation which would greatly affect the results of this bat monitoring programme, especially seen in the light of relatively good rainfall during the monitoring period. The overall potential negative impact of the proposed Patatskloof WEF on bats, combined for all the development phases, is predicted to be Medium Negative without mitigation. The combined impact remains overall Medium Negative with mitigation, but the significance rating is lower.</p> <p>Based on the findings of the one-year pre-construction monitoring</p>	<p>positions must avoid no-go and high sensitivity zones.</p> <ul style="list-style-type: none"> • A bat specialist must be appointed before the commercial operation date (COD). • A mitigation scheme, as per Section 9 in the main report, must apply to operational turbines from the start, after turbines have been tested and have started to turn. • Turbines must be feathered below cut-in speed, and although they need not be at a complete standstill, there should be minimum movement so that bats are not at risk when turbines are not generating power. • All newly built structures that have bat conducive features must be rehabilitated to discourage bat presence. This includes roofs of new buildings, open quarries and borrow pits. • A minimum of two year's operational bat monitoring must be conducted after commencement of operations at the WEF, as per the guidance of the latest operational South African Bat Assessment Association (SABAA) guidelines.

Specialist Study	Findings	Recommendations
	<p>undertaken at the proposed Patatskloof WEF project site, the bat specialist is of the opinion that no fatal flaws exist which would prevent the construction and operation of the WEF. EA may thus be granted, subject to the implementation of the recommendations made in this report.</p>	
Biodiversity	<p>The project overall has a small footprint spread out over a large area, allowing for retention of much of the natural environment so that the systems should remain largely unaffected. Therefore, the wind farm is such that it carries a low intensity impact, but requiring the clearing of areas with terrestrial vegetation, especially when considering the associated roads, cables and other infrastructure.</p> <p>A variety of environmental features were observed within the study area and these were mapped and buffered as necessary for their protection. The current layout has the potential, to a large degree, avoided these sensitive features and buffer areas, greatly reducing the potential overall impact and environmental risk. The overall and cumulative impacts, as assessed, are linked to instances where complete avoidance was not possible, or the nature of the activities involve a potential risk to biodiversity resources even at great distance.</p> <p>Overall, it is expected that the impact on the environment would be Low (-). Noteworthy areas, that should be avoided, include the Very High Sensitivity areas as shown in this report.</p>	<p>Based on the findings of this study, the specialist finds no reason to withhold to an authorisation of any of the proposed activities, assuming that key mitigations measures are implemented and provided, that all the Very High sensitivity systems could be avoided, while making use of existing tracks.</p> <p>The buildable area has taken cognizance of the various sensitivities i.e., the buildable areas will impact on Low sensitivity area, thus resulting in Low impact ratings as discussed in this assessment.</p> <p>It is noted that the buildable area are not contiguous and would have to cross some sensitive areas in particular access roads, cables and overhead lines. Therefore, any mitigations around route selections mentioned in this report must be considered (e.g., use existing tracks) and must be considered in the walkdown surveys post authorisation.</p>
Aquatic	<p>The project overall has a small footprint spread out over a large area, allowing for retention of much of the natural environment so that the systems should remain largely unaffected. Therefore, the wind farm is such that it carries a low intensity impact on aquatic resources, but requiring the clearing of areas with</p>	<p>In summary the proposed development area must avoid all of the observed aquatic and terrestrial habitat, however, this must all still be assessed in detail once the roads layout, hard stand and other temporary works areas have been provided, coupled to a micro-siting walkdown once all information is available post authorization</p>

Specialist Study	Findings	Recommendations
	<p>terrestrial vegetation, especially when considering the associated roads, cables and other infrastructure.</p> <p>A variety of environmental features were observed within the study area and these were mapped and buffered as necessary for their protection. The current layout has , to a large degree, avoided these sensitive features and buffer areas, greatly reducing the potential overall impact and environmental risk. The overall and cumulative impacts, as assessed, are linked to instances where complete avoidance was not possible, or the nature of the activities involve a potential risk to aquatic resources even at great distance.</p> <p>Overall, it is expected that the impact on the environment would be Low (-). Noteworthy areas, that should be avoided, including the Very High Sensitivity areas as shown in this report. Existing crossings may be used and/or upgraded that intersect these systems however, but these crossings, detailed monitoring plan must be developed in the pre-construction phase.</p>	<p>before the EMPr and Final Layout are approved.</p> <p>Going forward, the turbine, roads and ancillary structures should thus take this into account, however it is noted that the development area are not contiguous and would have to cross some sensitive areas in particular access roads, cables and overhead lines. Therefore, any mitigations around route selections mentioned in this report must be considered (e.g. use existing tracks) and must be considered in the walkdown surveys post authorisation.</p> <p>Based on the findings of this study, the specialist finds no reason to withhold to an authorisation of any of the proposed activities, assuming that key mitigations measures are implemented. Lastly no preference is provided with regard the grid connections, as it assumed based on the characteristics of the site, that all the aquatic systems could be spanned, while making use of existing tracks, however technical considerations have resulted in Substation Option 2 being selected, which is supported as Option 1 is located within a watercourse.</p>
Geotechnical	<p>The assessment area is underlain by rock units of Dwyka Group ad Ecca Group of the Karoo Supergroup and locally by faulted rock units of the Cape Supergroup. Some geotechnical constraints have been identified, primarily shallow bedrock which may cause excavation difficulties, thick alluvium and steep slopes. These constraints may be mitigated via standard engineering design and construction measures. Spread footings are considered suitable to support the structures on majority of the site.</p> <p>No fatal flaws or 'no-go' areas have been identified that would render any assessment areas unsuitable from a geological and geotechnical perspective.</p>	<p>The proposed developments are assessed to have a "Negative Low impact - the anticipated impact will have negligible negative effects provided that the recommended mitigation measures are implemented. These include avoiding development on the steeper sections of the site. The remaining mitigation measures provided to minimise the impacts relate to the appropriate engineering design of earthworks and site drainage, erosion control and topsoil and spoil material management. These do not exceed civil engineering and construction best practice.</p> <p>Further intrusive geotechnical investigations should be undertaken to</p>

Specialist Study	Findings	Recommendations
		confirm the engineering recommendations provided in this report.
Heritage – Archaeological	<p>A total of two (2) burial grounds were identified on the farm Upper Stinkfontein. The two burial grounds (PK43, PK44) were rated as having high heritage significance.</p> <p>A total of twenty-four (24) structures were identified, including ten (10) houses (including farmsteads, labourer houses, and old stone houses with associated kraals) seven (7) kraals, two (2) dam walls, one (1) reservoir, two (2) stone packed cairns, and two (2) circular stone hunting shelters.</p> <p>Four of these sites (PK-06, PK-15, PK 20, PK 24) where of medium heritage significance but located more than 100m away from the proposed development. As a result, no impact is expected from the proposed development on these sites.</p> <p>A total of twenty-three (23) archaeological resources/areas were identified, including seventeen (17) that can be classified as find spots with varying collections of LSA and some MSA material present. Three (3) areas that can be classified as archaeological sites due to the presence of stone tools and other cultural material such as OES beads, three (2) sites consisted of a rock shelter with rock art, and one (1) site containing a possible rock art as indicated by residents.</p> <p>Three archaeological sites (PK-29, PK-42, PK 46) was rated as having a high heritage significance and three sites (PK 09, PK 37, PK 41) medium heritage significance. All of these are located more than 100m away from the proposed development. As a result, no impact is expected from the proposed development on these sites.</p>	<p>The following mitigation measures will be required:</p> <ul style="list-style-type: none"> ▪ An archaeological walk down of the final approved layout will be required before construction commences; ▪ Implement a 50-meter buffer around all structures with a rating of IIIC and higher. ▪ Implement a 500-meter buffer around the farmstead site at PK 06 and PK 15. ▪ Implement a 200-meter buffer around the rock art sites at PK 29, PK 42 and PK 46. ▪ Demarcate the resources rated as IIIB- IIIA no-go areas. ▪ A management plan for the heritage resources needs then to be compiled and approved for implementation during construction and operations. ▪ A chance finds protocol must be developed that includes the process of work stoppage, site protection, evaluation and informing HWC of such finds and a final process of mitigation implementation.
Heritage – Cultural	The Ceres Karoo region is a significant cultural landscape that reflects the relationship between man and nature over a period of time. This relationship has	<u>Recommended heritage indicators and development buffers :</u>

Specialist Study	Findings	Recommendations
	<p>generally been sustainable, where biodiversity and ecological systems have been maintained in the utilisation of the landscape expressed in specific land use patterns. The surrounding land use indicates a social appreciation of the natural environment with low impact stock farming with limited farmstead crop cultivation. The vastness and relative homogenous nature of the cultural landscape is, however, often undervalued. If careful contextual planning is not followed, it will rapidly result in a cluttered wasteland. This does not mean that development is discouraged, but rather that the implementation of wind and solar energy farms should be planned holistically. It is the duty of the planning department to consider this application in terms of other renewable energy developments that are planned/proposed for the Komsberg area, notably the proposed RE developments included in the cumulative impact section of this report.</p> <p>Conservation: to protect the natural resources (water, air, land, sand, fishes, etc.), ecosystems (reefs, fynbos), biological abundance (flora and fauna), landscapes and the local culture.</p> <p>Development: to protect social and economic progress, without damaging or depleting the natural resources (sustainable development).</p> <p>The findings of this report, coupled with the proposed layout for development of wind turbines, which considers appropriate placement in terms of wind energy capacity, concludes that the development can be permitted within the site if the report's recommendations are followed. The mitigating recommendations in this report consider the ecological, aesthetic, historic and socio-economic value lines that underpin the layers of significance that</p>	<ul style="list-style-type: none"> • Landscape units D and E are suitable for sensitive WEF infrastructure development; • A 500m buffer to either side of the district road for turbine and infrastructure placement (Patatskloof WEF does not propose turbines or infrastructure within this buffer); • 300m buffer to either side of identified significant historic farm roads (pink) for turbine placement, substation and laydown areas; • The historic route (yellow) that passes through Stinkfontein site is no longer in use as such, but should be reinstated as a walking trail and open to public access. • 1000m buffer around historic farmsteads (red circles) for turbine placements; and • 50m outer boundary buffer for roads and infrastructure around farmsteads including cultivated areas and graves – integrity of farmstead complex as a whole should be retained and no WEF roads running through farmstead complexes; • 200m freestanding graded heritage structure buffer for new roads and infrastructure; • 100m buffer from cemetery or unmarked burial for all development; • 400m buffer around water management bio-cultural landscape elements (blue circles); • 600m buffer around significant Stinkfontein site (orange circle); • existing roads to be used with minimal upgrade as far as possible; • riverine corridors 100yr flood line buffer (ecological) or 100m buffer (archeological) whichever is further (buffers not indicated). • CBA and ESA no-go areas for all development (green shading – turbines 5, 23, 18), unless otherwise recommended by the biodiversity and

Specialist Study	Findings	Recommendations
	<p>combine to create the character of the place and the cultural landscape of the Ceres Karoo. These recommendations include road and farmstead complex buffers which incorporate cultivated areas and graves, steep slope and ridgeline no-go areas as well as consideration of the unique land form of the site, CBA and ESA no-go areas, as well as mechanisms to support the non-landowner residents that live on the site in being bale to continue their indigenous land use patterns, knowledge and social systems. These mitigations will reduce the impact on the surrounding landscape and heritage resources but due to the high visual impact of the turbines, largely a result of their height, the negative impact to the cultural landscape cannot be removed, only reduced from very high to moderate.</p>	<p>environmental specialist studies for this site;</p> <ul style="list-style-type: none"> • Pienaarspoort gateway buffer included in the 300m farm road buffer and unit A. • Further, the following changes to the layout is recommended: <ul style="list-style-type: none"> ▪ The substation option 1 and Gridline alternative 3 should be located out of the CBA, without impacting on the riverine corridor flood line and slopes over 3%. • The proposed buildable area considers and adheres to most of the cultural landscapes buffers and sensitivities contained in the April 2022 CLA report other than slope, which has not been included. As indicated in the CLA report (April 2022), all slopes over 10% need to be avoided for development of turbines and new road infrastructure. Slopes over 3% need to be avoided for other infrastructure development.
Heritage – Paleontological	<p>The Patatskloof WEF project area is underlain by several basinal to shallow marine sedimentary formations of the Witteberg Group (Cape Supergroup), Dwyka Group and Eccca Group (Karoo Supergroup) of Palaeozoic age. All these units are potentially fossiliferous but only two – the Early Carboniferous Waaipoort Formation and the Early Permian Whitehill Formation – are generally regarded as of high palaeosensitivity due to their record of well-preserved fish, mesosaurid reptiles, crustaceans and plant fossils in the Tanqua - Ceres Karoo region and elsewhere.</p> <p>A recent 2-day palaeontological field survey shows that the Waaipoort Formation is very poorly exposed within the WEF project area, although potentially fossiliferous phosphatic carbonate concretions do occur here, while the</p>	<p><u>Recommended mitigation:</u></p> <ol style="list-style-type: none"> (1) The Environmental Site Officer (ESO) should be made aware of the possibility of important fossil remains (bones, teeth, fish, petrified wood, plant-rich horizons etc) being found or unearthed during the construction phase of the development. (2) Monitoring for fossil material of all major surface clearance and deeper (> 1m) excavations by the Environmental Site Officer on an on-going basis during the construction phase is therefore recommended. (3) Significant fossil finds should be safeguarded and reported at the earliest opportunity to Heritage Western Cape for recording and sampling by a professional palaeontologist.

Specialist Study	Findings	Recommendations
	<p>uppermost several meters of the Whitehill Formation are intensely weathered. The only fossil remains recorded during the site visit comprise (a) occasional stromatolitic carbonate erratics within the Dwyka Group and (2) low-diversity, poorly-preserved trace fossil assemblages in the Floriskraal and Collingham Formations. These fossils occur widely within the outcrop areas of the formations concerned and are not of high scientific interest or conservation value.</p> <p>As a consequence of (1) the paucity of irreplaceable, unique or rare fossil remains within the WEF and project area, as well as (2) the extensive superficial sediment cover overlying most potentially-fossiliferous bedrocks here, the overall impact significance of the construction phase of the proposed Patatskloof WEF regarding legally-protected palaeontological heritage resources is assessed as LOW (negative status), with and without mitigation. There is therefore no preference on palaeontological heritage grounds for any specific layout (e.g. location of on-site substation, construction laydown area, grid connection corridor) among those under consideration. No significant further impacts on fossil heritage are anticipated during the operational and decommissioning phases of the renewable energy developments. The No-Go alternative would probably have a neutral impact on palaeontological heritage.</p> <p>No palaeontological High Sensitivity or No-Go areas have been identified within the WEF project area. None of the recorded fossil sites lies within the development footprint as currently defined. Pending the potential discovery of significant new fossil material here during the construction phase, no specialist palaeontological monitoring or mitigation is recommended for these developments.</p>	<p>(4) A protocol for Chance Fossil Finds is appended to this report (Appendix 3). These recommendations must be included within the Environmental Management Programmes (EMPrs) for the Patatskloof WEF, BESS and grid connection developments.</p>

Specialist Study	Findings	Recommendations
Noise	<p>The potential noise impact of the proposed Patatskloof WEF was evaluated using a sound propagation model. Conceptual scenarios were developed for the construction and operation phases. It was determined that the potential noise impact would be of a:</p> <ul style="list-style-type: none"> • low significance for daytime activities related to the construction of the substation, hard standing areas, digging foundations, civil work as well as the erection of the wind turbines; • low significance for night-time activities relating to the construction of civil work as well as the erection of the wind turbines. Mitigation is proposed and available to reduce the significance to low; • low significance for both day- and night-time operational activities; • low significance for potential cumulative noises during the operational phase; and, • low significance for potential decommissioning noises. <p>The potential noise impact of the decommissioning phase is based on the potential noise impact during daytime construction activities (low significance). The development of the Patatskloof WEF will not increase cumulative noises in the area and the significance of the noise impact will be low.</p>	<p>It is recommended that the developer:</p> <ul style="list-style-type: none"> • investigate any reasonable and valid noise complaint if registered by a receptor staying within 2,000 m from the location where construction or operational activities are taking place; • evaluate the potential noise impact should the layout be revised where any proposed wind turbines are located closer than 1,000 m from a confirmed noise Sensitive Development (NSD); or • if the developer decides to use a different wind turbine that has a sound power emission level higher than that of the Wind Turbine Generator (WTG) used in this report (sound power emission level exceeding 115.0 dBA re 1 pW).
Social	<p>While the project will create employment for local communities during the construction and operational phases, the more significant positive impact of the project will be the contribution it will make towards renewable energy infrastructure. Research recently published by Meridian Economics, in collaboration with the CSIR, indicates that “[in all realistic mitigation scenarios, the majority of new build capacity is wind and solar PV]” Invalid source specified., and highlights an urgent need for the country to accelerate the RE build pathway. In addition, the</p>	<p>Considering all social impacts associated with the project, it is evident that, at the social level, the positive elements outweigh the negative and that the project carries with it a significant social benefit at a national level and is therefore supported. In addition, no compelling preference emerges in respect of the alternatives and it would be socially acceptable for the authorisation of either power line alternative.</p>

Specialist Study	Findings	Recommendations
	<p>South African Climate Change Coordinating Commission, is considering a more ambitious emissions target and is suggesting changes to the country's energy plan Invalid source specified..</p> <p>Considering the impacts discussed above, it is evident that the cumulative impacts associated with changes to the social environment of the region are more significant than those attached to any one project. The initiative to address these cumulative impacts lies at a far higher level than at an individual project level. In this regard, the Western Cape Government has undertaken an exercise to address intergovernmental readiness for the large development scenarios in the Central Karoo; which is a positive step towards addressing the cumulative impact of these developments Invalid source specified..</p>	
Surface Water	<p>The project overall has a small footprint spread out over a large area, allowing for retention of much of the natural environment so that the systems should remain largely unaffected. Therefore, the wind farm is such that it carries a low intensity impact on aquatic resources, but requiring the clearing of areas with terrestrial vegetation, especially when considering the associated roads, cables and other infrastructure.</p> <p>A variety of environmental features were observed within the study area and these were mapped and buffered as necessary for their protection. The current layout has the potential, to a large degree, to avoid these sensitive features and buffer areas, greatly reducing the potential overall impact and environmental risk. The overall and cumulative impacts, as assessed, are linked to instances where complete avoidance was not possible, or the nature of the activities involve a potential risk to aquatic resources even at great distance.</p>	<p>Based on the findings of this study, the specialist finds no reason to withhold to an authorisation of any of the proposed activities, assuming that key mitigations measures are implemented. Lastly no preference is provided with regard the grid connections, as it assumed based on the characteristics of the site, that all the aquatic systems could be spanned, while making use of existing tracks.</p> <p>Further it is recommended that WTG 23 and 24 are relocated to avoid the watercourses (Very High). While WTG 5, 18, 20, 23, 24, and 31 positions are adjusted to avoid the Critical Biodiversity Area (CBA 1) associated with aquatic systems. Similarly, Substation 1, while Substation 2 is also located within a delineated system.</p> <p>However, this must all still be assessed once the roads layout has been provided, coupled to a micro-siting walkdown once all information is available.</p>

Specialist Study	Findings	Recommendations
	<p>Overall, it is expected that the impact on the environment would be Low (-). Noteworthy areas, that should be avoided, include the Very High Sensitivity areas as shown in this report. Existing crossings may be used and/or upgraded that intersect these systems however, but these crossings, detailed monitoring plan must be developed in the pre-construction phase.</p>	
Transportation	<p>The development is located in close proximity to an existing road network. A number of existing access points are located along Road OP06121 and in order to accommodate the adjusted land use, the access position will be relocated in order to obtain the recommend sight distances and remove it from its current position. An approval and a wayleave application will be required from the Western Cape Department of Transport & Public Works prior to work commencing. Additional upgrades to the external access road will also be required on Road DR01475 from the adjacent Perdekraal East WEF up to the development on Road OP06121, including the intersection between the two roads.</p> <p>The construction phase or Balance of Plant phase of this development will typically generate the highest number of additional vehicles. Of these additional vehicles, ±57 trips / hour will occur in the morning and afternoon outside of the peak period, while ±4 trips / hour will occur during the midday peak for construction material and abnormal loads. The impact will however be temporary and are considered to be nominal if adequately mitigated.</p> <p>During the operation phase, it is expected that the facility will accommodate ±30 employees and generate an additional ±10 trips / day in the morning and afternoon peak period. This impact is considered to be nominal.</p>	<p>All external road upgrades require approval and a wayleave application from the Western Cape Department of Transport & Public Works prior to work commencing.</p> <p>A more comprehensive route analysis be completed prior to construction in order to get a better understanding of the works required and the potential risks.</p>

Specialist Study	Findings	Recommendations
	A number of mitigation measures are proposed to accommodate the development and to reduce the impact to the surrounding road network.	
Visual	<p>The VIA has determined that the study area has a largely natural visual character with some pastoral elements. The area has however seen very limited transformation or disturbance and as such the proposed Patatskloof WEF development is expected to alter the visual character of the area and contrast significantly with the typical land use and / or pattern and form of human elements present. The level of contrast will however be reduced by the presence of the Kappa Substation, high voltage power lines and Perdekraal East WEF within the study area.</p> <p>A broad-scale assessment of visual sensitivity, based on the physical characteristics of the study area, economic activities and land use that predominates, determined that the area would have a moderate visual sensitivity</p> <p>From a visual perspective, the proposed Patatskloof WEF and associated grid infrastructure project is deemed acceptable and the Environmental Authorisation (EA) should be granted.</p> <p>The visual impacts associated with the construction, operation and decommissioning phases can be mitigated to acceptable levels provided the recommended mitigation measures are implemented.</p>	None identified

DETAILS OF ALTERNATIVES CONSIDERED

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 site was based on environmental constraints as well as technical and economic considerations.

The proposed layout has been assessed by the specialists in their respective specialist studies. All constraints identified to date have been taken into account and the layout has been refined to avoid all no-go areas.

PUBLIC PARTICIPATION PROCESS TO BE UNDERTAKEN FOR THE EIA PHASE

The Public Participation Process has been undertaken in line with Chapter 6 of the EIA Regulations 2014 (as amended 2017).

I&AP's and key stakeholders will be notified via email of the availability of the report. Site notices in English and Afrikaans (as per regulations) were placed along the entrance road to the application site and around the site itself. Media Adverts were placed in a local newspaper (namely Die Courier) on the **02 December 2022**.

Copies of the Draft Basic Assessment Report will be located and available for review at the following locations:

- SiVEST Website;
- John Steyn Public library, 33 Owen Street (opposite post office and shopping centre), Ceres, Western Cape, South Africa.

Interested and affected persons (I&AP's) will be afforded a thirty (30) day comment period from the date of availability of the Draft BA Report (DBAR) to provide comment on the DBAR. An I&AP register will be opened and will be attached to this report. A summary of the issues raised during the public participation process will be documented in the Comments and Responses Report. This report will be updated following the comment period and attached to the Final BAR (FBAR).

POSITIVE AND NEGATIVE IMPACTS OF THE PROPOSED PATATSKLOOF WEF

A summary of the impacts pre-mitigation and post-mitigation are provided below:

Impact	Pre-mitigation	Post-mitigation
PLANNING		
Impacts to Biophysical Systems		
Aquatic / Freshwater – None Identified		
Terrestrial Ecology- None Identified		
Agricultural – Compliance Statement		
Bat - None Identified		
Impacts to Socio-Economic Component		
Social		
Corruption	Medium	Medium
Heritage		
Construction activities close to these identified structures can damage and cause irreparable damage or destroy the resource	High	Medium
Destruction or damage to previously unidentified archaeological or historical resources	High	Medium
Disturbance, damage or destruction of fossils at or beneath the ground surface due to surface clearance and bedrock excavations	Low	Low
Inappropriate infrastructure layout planning degrades ecological elements of the cultural landscape.	High	Low
Inappropriate infrastructure layout planning negates aesthetic and sense of place requirements of the cultural landscape.	Very High	Medium

Impact	Pre-mitigation	Post-mitigation
Inappropriate infrastructure layout planning degrades historic elements of the cultural landscape.	Very High	Low
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.	Very High	Low
Heritage (Palaeontology) – None Identified		
Noise		
Light delivery vehicles moving around onsite.	Low	Low
Heritage-(Archaeology)		
Construction activities close to these resources can damage and cause irreparable damage or destroy the resource. Rock art sites are extremely sensitive to human actions and are easily damaged.	High	Medium
Destruction or damage to previously unidentified archaeological or historical resources	High	Low
Heritage: Cultural Landscape		
Inappropriate infrastructure layout planning degrades ecological elements of the cultural landscape.	High	Low
Inappropriate infrastructure layout planning negates aesthetic and sense of place requirements of the cultural landscape.	Very High	Medium
Inappropriate infrastructure layout planning degrades historic elements of the cultural landscape.	Very High	Low
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	Very High	Low
Visual – None Identified		
CONSTRUCTION		
Impacts to Biophysical Systems		
Aquatic / Freshwater		
Impact 1: Loss of aquatic species of special concern	Low	Low
Impact 2: Damage or loss of riparian and alluvial systems in the construction phase	Medium	Low
Impact 3: Potential impact on localised surface water quality (construction materials and fuel storage facilities) during the construction and decommissioning phases	Medium	Low
Terrestrial Ecology		
Impact 1: Loss of species of special concern	Low	Low
Impact 2: Loss of terrestrial habitats – flora and vegetation	Medium	Low
Impact 3: Loss of terrestrial species - fauna	Medium	Low
Agricultural – Compliance Statement		
Avifauna		
Displacement due to disturbance associated with the construction of the wind turbines and associated infrastructure.	Medium	Low
Displacement due to habitat transformation associated with the construction of the wind turbines and associated infrastructure.	Low	Low
Bat		
The destruction of 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 relative dense bushes. The removal of limited trees and bushes would have an impact on all bats that could potentially roost in and or the foraging habitat of clutter and clutter-edge species.	Medium	Low
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.	Low	Low
Construction noise, especially during night-time, as well as lighting disturbance.	Low	Low
Geotech		
Ground disturbance during access road construction, foundation earthworks, platform earthworks	Low	Low
Increased erosion due to vegetation clearing, alteration of natural drainage	Low	Low
Impacts to Socio-Economic Component		
Social		
Availability of community services	Low	Low

Impact	Pre-mitigation	Post-mitigation
Cultural and historic resources	Medium	Medium
Social and community infrastructure	Low	Low
Annoyance, dust and noise	Low	Low
Crime and security	Medium	Low
Daily living patterns	Low	Low
Employment and business opportunities	Low	Low
Farming operations	Low	Low
Fire hazard	Low	Low
Hazard exposure	Low	Low
STDs, HIV and AIDS	Medium	Medium
Risk to livestock	Low	Low
Temporary influx of construction workers	Low	Low
Informal development and settlements	Low	Low
Heritage (Archaeology)		
Construction activities close to these identified structures can damage and cause irreparable damage or destroy the resource	High	Low
Construction activities close to these resources can damage and cause irreparable damage or destroy the resource. Rock art sites are extremely sensitive to human actions and are easily damaged.	High	Medium
Construction activities close to these identified structures can damage and cause irreparable damage or destroy the resource	Very high impact	Low
Destruction or damage to previously unidentified archaeological or historical resources	High	Low
Heritage (Palaeontology)		
Disturbance, damage or destruction of fossils at or beneath the ground surface due to clearance and bedrock excavations.	Low	Low
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.	Low	Low
Noise		
Construction activities relating to hardstand areas, digging of foundations for wind turbines, civil works as well as erection of wind turbines	Low	Low
Construction activities relating to civil works as well as erection of wind turbines	Low	Low
OPERATIONAL		
Impacts to Biophysical Systems		
Aquatic / Freshwater		
Impact 4 Impact on aquatic systems through the possible increase in surface water runoff on form and function during the operational phase	Medium	Low
Terrestrial Ecology		
Although most of the species observed are mobile, the increase in vehicle movement could result in an increase in road mortalities.	Medium	Low
Agricultural – Compliance Statement		
Avifauna		
Mortality of priority species due to collisions with the wind turbines.	Medium	Low
Mortality of priority species due to electrocutions on the overhead sections of the internal 33kV cables.	Medium	Low
Mortality due to collisions with the overhead sections of the internal 33kV cables.	Medium	Low
Bat		

Impact	Pre-mitigation	Post-mitigation
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 Patatskloof WEF site.	High	High
Bat fatality during migration. A limited number of calls like <i>Miniopterus natalensis</i> (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.	Medium	Low
Some calls like the red data <i>Miniopterus natalensis</i> have been recorded, as well as the endemic <i>Eptesicus hottentotus</i> .	Medium	Low
Loss of habitat and foraging space during operation of the wind turbines.	Medium	Medium
Bat mortality due to the attraction of bats to wind turbines. Bats have been shown to sometimes be attracted to wind turbines out of curiosity or reasons still under investigation.	Medium	Low
Reduction in the size, genetic diversity, resilience and persistence of bat populations. Bats have low reproductive rates and populations are susceptible to reduction by fatalities other than natural death. Furthermore, smaller bat populations are more susceptible to genetic inbreeding.	High	Medium
Geotech		
Increased erosion due to alteration of natural drainage	Low	Low
Impacts to Socio-Economic Component		
Social		
Vulnerability of small enterprises	Low	Low
Land use	Low	Low
Livelihoods and ecosystem services	Low	Low
Blade glint (only applicable to WEF)	Low	Low
Electromagnetic field (EMFs)	Low	Low
Employment after construction	Low	Low
Shadow flicker (only applicable to WEF)	Low	Low
Transformation of the sense of place	Medium	Medium
Security of electricity supply	High	High
Heritage (Archaeology)		
Uncontrolled access to such structures could result in damage that cannot be reversed.	High	Low
Uncontrolled access to such archaeological resources could result in damage that cannot be reversed. Rock Art site are significantly more susceptible for damage	High	Medium
Uncontrolled access to such structures could result in damage that cannot be reversed.	High	Low
Heritage (Cultural Landscapes)		
Inappropriate operational activities degrade the significant ecological elements of the cultural landscape	High	Low
Inappropriate operational activities degrade the significant aesthetic elements of the cultural landscape altering the character and sense of place	High	Medium
Inappropriate operational activities degrade the significant historic elements of the cultural landscape altering the character and sense of place	Very High	Medium
Inappropriate operational activities degrade the significant socio-economic opportunities of the cultural landscape	Very High	Medium
Noise		
Cumulative noises due to operating wind turbines from other wind energy facilities in the area	Low	Low
Transport		
Increase in Traffic	Low	Low
Increase of Incidents with pedestrians and livestock	Low	Low
Increase in Dust from gravel roads	Low	Low
Increase in Road Maintenance	Low	Low
Additional Abnormal Loads	Low	Low
New / Larger Access points	Low	Low
Visual		

Impact	Pre-mitigation	Post-mitigation
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.	Medium	Medium
DECOMMISSIONING		
Impacts to Biophysical Systems		
Aquatic / Freshwater		
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	Medium	Low
Terrestrial Ecology		
The construction activities will result in the disturbance of both aquatic and terrestrial habitats that may contain listed and or protected plant or animal species. However, none of these were observed during this assessment within the tower positions proposed	Low	Low
The construction of the proposed infrastructure will require the need to clear vegetation which could then have a secondary impact on ecological connectivity and especially Critical Biodiversity Areas, linked to the large riverine corridors.	Medium	Low
Although most of the species observed are mobile, the increase in vehicle movement could result in an increase in road mortalities.	Medium	Low
Agricultural- Compliance Statement		
Avifauna		
Displacement due to disturbance associated with the dismantling of the wind turbines and associated infrastructure	Low	Low
Bat		
Bat disturbance due to decommissioning activities and associated noise, especially during night-time.	Low	Low
Geotech		
Ground disturbance during platform earthworks, road rehabilitation, removal of subsurface infrastructure	Low	Low
Increased erosion due to ground disturbance during rehabilitation activities	Low	Low
Impacts to Socio-Economic Component		
Social – None Identified		
Heritage (Cultural Landscapes)		
Fragmentation and destruction of the landscape degrading the environment and thus continuous relationship between man and environment	High	Low
WEF infrastructure construction and decommissioning activity degrades the character of the cultural landscape and the sense of place	High	Medium
Integrity of farmsteads and farm roads degraded by insensitive construction or decommissioning activities.	Very High	Low
Integrity of local residents to continue their patterns of land use is degraded by the construction and decommissioning activities.	Very High	Low
Noise		
Decommissioning activities relating to removal of infrastructure and wind turbines, rehabilitation of disturbed areas	Low	Low
Visual		
Vehicles and equipment required for decommissioning will alter the natural character of the study area and expose visual receptors to visual impacts.	Low	Low

Impact	Pre-mitigation	Post-mitigation
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.		
Transport		
Increase in Traffic	Medium	Low
Increase of Incidents with pedestrians and livestock	Medium	Low
Increase in Dust from gravel roads	Low	Low
Increase in Road Maintenance	Low	Low
Additional Abnormal Loads	Low	Low
Increase in Dust from gravel roads	Low	Low
New / Larger Access points	Low	Low
CUMULATIVE		
Impacts to Biophysical Systems		
Aquatic / Freshwater		
The cumulative assessment considers the various proposed renewable projects that occur within a 35km radius of this site, where the author has either been involved in the assessment of these projects and or review of the past assessments as part of any required Water Use Licenses	Low	Low
Terrestrial Ecology		
The cumulative assessment considers the various proposed renewable projects that occur within a 35km radius of this site, where the author has either been involved in the assessment of these projects and or review of the past assessments as part of any required Water Use Licenses	Low	Low
Agricultural- Compliance Statement		
Avifauna		
1. Mortality due to collisions with the wind turbines 2. Displacement due to disturbance during construction and operation of the wind farm 3. Displacement due to habitat change and loss at the wind farm 4. Mortality due to electrocution on the electrical infrastructure	Medium	Low
Bat		
Cumulative effect of destruction of active roost of several WEFs as well as features that could serve as potential roosts.	High	Low
Cumulative bat mortality due to direct collision with the blades or barotrauma during foraging of resident bats at several WEF sites.	High	High
Cumulative bat mortality of migrating bats due to direct blade impact or barotrauma during foraging of migrating bats on several WEFs	High	Medium
Habitat loss over several WEFs	High	High
Cumulative reduction in the size, genetic diversity, resilience, and persistence of bat populations	High	High
Impacts to Socio-Economic Component		
Social		
Vulnerability of small enterprises	Medium	
Availability of community services	Medium	
Cultural and historic resources	Medium	
Land use	Medium	
Livelihoods and ecosystem services	Low	
Social and community infrastructure	Low	
Annoyance, dust and noise	Medium	
Blade glint	Medium	
Crime and security	Medium	
Daily living patterns	Low	
Electromagnetic field (EMFs)	Low	
Employment after construction	Medium	
Employment and business opportunities	Medium	

Impact	Pre-mitigation	Post-mitigation
Farming operations	Medium	
Fire hazard	Medium	
Hazard exposure	Medium	
Shadow flicker	Medium	
STDs, HIV and AIDS	High	
Risk to livestock	Medium	
Transformation of the sense of place	Medium	
Corruption	Medium	
Security of electricity supply	High	
Temporary influx of construction workers	Medium	
Informal development and settlements	Medium	
Heritage (Archaeology)		
The Patats WEF facility will add to the cumulative impact on such structures as identified in the larger Roggeveld Region. The impact will not be as obvious as that on the cultural landscape. However, a significant number of such resources was identified in the region and can be impacted by these projects.	Medium	Low
The Patats WEF facility will add to the cumulative impact on such structures as identified in the larger Roggeveld Region. The impact will not be as obvious as that on the cultural landscape. However, a significant number of such resources was identified in the region and can be impacted by these projects	Medium	Low
The Patats WEF facility will add to the cumulative impact on such structures as identified in the larger Roggeveld Region. The impact will not be as obvious as that on the cultural landscape. However, a significant number of such resources was identified in the region and can be impacted by these projects	Medium	Low
Heritage (Palaeontology)		
Disturbance, damage or destruction of fossils at or beneath the ground surface due to clearance and bedrock excavations.	Low	Low
Heritage (Cultural Landscapes)		
Inappropriate cumulative development degrade the significant ecological elements of the cultural landscape	Very High	Medium
Inappropriate cumulative development degrades the significant aesthetic elements of the cultural landscape altering the character and sense of place	Very High	Medium
Inappropriate cumulative development degrades the significant historic elements of the cultural landscape altering the character and sense of place	Very High	Medium
Inappropriate cumulative development degrade the significant socio-economic opportunities of the cultural landscape	Very High	Medium
Transport		
Increase in Traffic	Medium	Medium
Increase of Incidents with pedestrians and livestock	Medium	Medium
Increase in Dust from gravel roads	Medium	Low
Increase in Road Maintenance	Low	Low
Additional Abnormal Loads	Medium	Low
Increase in Dust from gravel roads	Medium	Low
New / Larger Access points	Low	Low
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.	Medium	Medium
No-Go		
Impacts to Biophysical Systems		
Aquatic / Freshwater		
Should the project not proceed, then current status quo with regard the environment would remain unchanged. Overall, the area is largely in a natural state. But present		Low

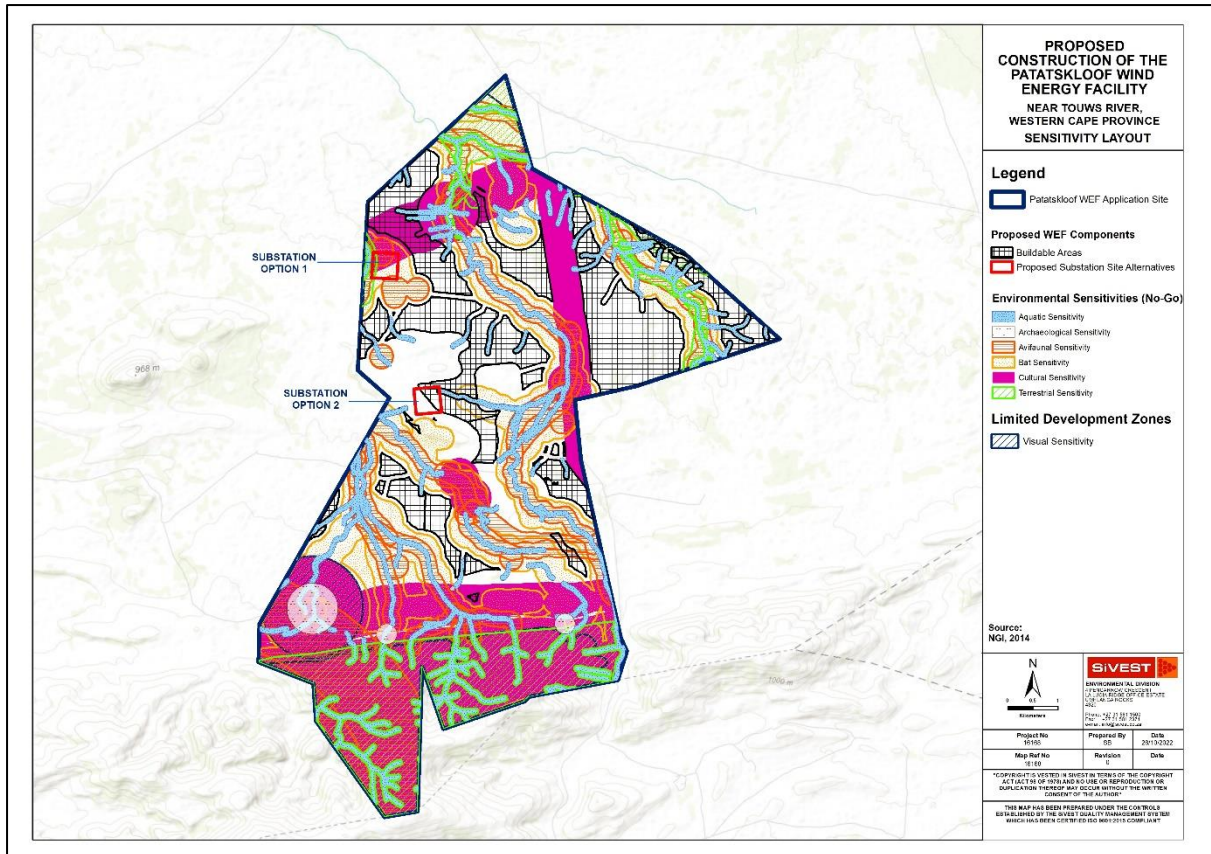
Impact	Pre-mitigation	Post-mitigation
day impacts do occur in localised areas and included the following: <ul style="list-style-type: none"> • Increase in unpalatable species due to past grazing activities Erosion as a result of road crossings; <ul style="list-style-type: none"> • Several farm dams; and • Undersized culverts within present day road crossings. 	Low	
Terrestrial Ecology		
Should the project not proceed, then current status quo with regard the environment would remain unchanged. Overall, the area is largely in a natural state. But present day impacts do occur in localised areas and included the following: <ul style="list-style-type: none"> • Increase in unpalatable species due to past grazing activities Erosion as a result of road crossings; <ul style="list-style-type: none"> • Several farm dams; and • Undersized culverts within present day road crossings. 	Low	Low
Agricultural		
Impacts to Socio-Economic Component		
Heritage		
If the Patats WEF will not be implemented and operational	Low	Low
Noise		
Residual noise levels to remain as is.	Low	Low

ENVIRONMENTAL IMPACT STATEMENT

Mainstream is proposing to construct the Patatskloof WEF and associated infrastructure. 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 Patatskloof WEF will comprise of thirty-five (35) wind turbines with a maximum total energy generation capacity of up to approximately 250MWac. 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 this BA process.

Taking into consideration the findings of the BA process for the proposed development and the fact that specialist recommendations have been used to inform the project design and buildable area of the facility, it is the opinion of the Environmental Assessment Practitioner (EAP) that the majority of the negative impacts associated with the implementation of the proposed project can be mitigated to acceptable levels. While there are potential negative environmental impacts associated with the proposed development, the extent of the positive benefits associated with the implementation of the project in terms of renewable energy supply and positive local and regional economic impact are considered to outweigh the negative impacts.

A layout of the development and the environmental site sensitivities is included below:



Final proposed development area with site sensitivities

The implementation of the Patatskloof WEF and associated infrastructure will assist expected growth in demand for installed power generation capacity. This in turn will assist with the increasing economic growth and social development within South Africa. Coupled with this, is the growing awareness of environmental impact, climate change and the need for sustainable development. 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. Wind is a free and infinite resource that occurs naturally in the environment. The Patatskloof WEF will assist by converting wind energy into electricity, thereby releasing no harmful by-products into the environment which will in turn reduce the dependency on fossil fuels.

The specialist assessments were conducted to address the potential impacts relating to the proposed development in order to ascertain the level of each identified impact, as well as mitigation measures which may be required. The results of the specialist assessments have indicated that all alternatives (including the preferred alternative) contain no fatal flaws that should prevent the proposed project from proceeding. In light of this, it is the EAP’s reasoned opinion that authorisation be granted and that the layout being proposed as part of this BA process also be authorised (provided there are no concerns raised during the public participation process).

The following specialist studies have been undertaken for the project:

- Agriculture and Soils Impact Assessment (desktop)
- Avifaunal Impact Assessment
- Bat Impact Assessment

- Biodiversity Impact Assessment
- Heritage Impact Assessment
 - Paleontological Impact Assessment
 - Archaeological Assessment
 - Cultural Landscape Assessment
- Geotechnical Assessment (desktop)
- Noise Impact Assessment
- Social Impact Assessment (desktop)
- Surface Water Impact Assessment
- Transportation Impact Assessment
- Visual Impact Assessment

A summary of the main findings of the specialists are included in **Section 16** above.

The **agricultural assessment** (refer to **Appendix 6**) concluded that the proposed development will not have an unacceptable negative impact on the agricultural production capability of the site and is therefore acceptable. This is substantiated by the facts that the land is of very limited land capability and is not suitable for the production of cultivated crops, the amount of agricultural land loss is within the allowable development limits prescribed by the agricultural protocol, the proposed development offers some positive impact on agriculture by way of improved financial security for farming operations, as well as wider, societal benefits, and that the proposed development poses a low risk in terms of causing soil degradation. From an agricultural impact point of view, the specialist recommended that the development be approved and that the approval is not subject to any conditions.

The **avifaunal assessment** (refer to **Appendix 6**) concluded that the proposed Karee WEF will have a moderate impact on avifauna which, in most instances, could be reduced to a low impact through appropriate mitigation. The alternative substation and laydown locations are all situated in essentially the same habitat, i.e. Karoo scrub. The habitat is not particularly sensitive, as far as avifauna is concerned, therefore any of the alternative locations will be acceptable. No fatal flaws were discovered in the course of the onsite investigations. The development is therefore supported, provided the mitigation measures listed in this report are strictly implemented.

According to the **bat assessment** undertaken for the project (refer to **Appendix 6**), the overall potential negative impact of the proposed Patatskloof WEF on bats, combined for all the development phases, is predicted to be Medium Negative without mitigation. The combined impact remains overall Medium Negative with mitigation, but the significance rating is lower. Based on the findings of the one-year pre-construction monitoring undertaken at the proposed Patatskloof WEF project site, the bat specialist is of the opinion that no fatal flaws exist which would prevent the construction and operation of the WEF. EA may thus be granted, subject to the implementation of the recommendations made in this report

The **aquatic assessment** (refer to **Appendix 6**) revealed that there is no reason to withhold an authorisation of any of the proposed activities, assuming that key mitigations measures are implemented. Lastly no preference is provided with regard the grid connections, as it assumed based on the characteristics of the site, that all the aquatic systems could be spanned, while making use of existing tracks, however technical considerations have resulted in Substation Option 2 being selected, which is supported as Option 1 is located within a watercourse.

The **biodiversity assessment** (refer to **Appendix 6**) revealed that there is no reason to withhold to an authorisation of any of the proposed activities, assuming that key mitigations measures are

implemented and provided, that all the Very High sensitivity systems could be avoided, while making use of existing tracks.

According to the **geotechnical assessment** undertaken for the project (refer **Appendix 6**), no fatal flaws or 'no-go' areas have been identified that would render any assessment areas unsuitable from a geological and geotechnical perspective. However further intrusive geotechnical investigations should be undertaken to confirm the engineering recommendations provided in this report. The impact of the WEF was found to be negative low impact as the anticipated impact will have negligible negative effects and will require little to no mitigation provided that the recommended mitigation measures are implemented. The site from a desktop level geotechnical study perspective is considered suitable for the proposed WEF and the specialist therefore recommended that the proposed activity be authorised.

According to the **archaeological impact assessment** (refer to **Appendix 6**), The final proposed buildable area took the specialist recommendations identified during the 2021 and 2022 field assessments into consideration. From an archaeological and historical structure perspective, the proposed footprint areas will not change the impact on the identified heritage resources in the AIA. We have no objection to the proposed buildable area associated with the Patatskloof WEF project

The **cultural impact assessment** (refer to **Appendix 6**) has confirmed that with the buffers in place and all other recommendations followed, the overall impact to the cultural landscape for the proposed Patatskloof WEF and associated grid connection and infrastructure can be reduced from very high to moderate. There are no fatal flaws and the development can proceed with CLA recommendations and mitigation in place

The **palaeontological report** (refer to **Appendix 6**) concluded that the proposed Patatskloof WEF development is not fatally flawed and, on condition that the recommended mitigation measures are included within the EMPr and implemented in full, there are no objections on palaeontological heritage grounds to their authorization.

The **noise assessment** (refer to Appendix 6) confirmed that with the low significance of the potential noise impacts (with mitigation, inclusive of cumulative impacts) for the proposed WEF and associated infrastructure, it is recommended that the proposed Patatskloof WEF be authorized.

According to the **social impact assessment** (refer to **Appendix 6**), considering all social impacts associated with the project, it is evident that, at the social level, the positive elements outweigh the negative and that the project carries with it a significant social benefit at a national level and is therefore supported. In addition, no compelling preference emerges in respect of the alternatives and it would be socially acceptable for the authorisation of either power line alternative.

According to the **transportation assessment** (refer to **Appendix 6**), the Patatskloof Wind Energy Facility and associated grid infrastructure will have a nominal impact on the existing traffic network. The project is therefore deemed acceptable from a transport perspective, provided the recommendations and mitigations measures proposed are implemented, and hence the Environmental Authorisation (EA) should be granted for the BA application.

The **visual impact assessment** (refer to **Appendix 6**) concluded that the potential visual impacts associated with the proposed Patatskloof WEF and associated grid infrastructure development are negative and of moderate significance. Given the low level of human habitation and the relative absence of sensitive receptors, the project is deemed acceptable from a visual perspective and the EA should be granted. The specialist is of the opinion that the impacts associated with the construction, operation

and decommissioning phases can be mitigated to acceptable levels provided the recommended mitigation measures are implemented.

No location alternatives are being considered for the Patatskloof Wind Farm as these sites were selected prior to the commencement of the BA Process. The preliminary layout that was prepared for the Patatskloof WEF has been assessed by specialists to identify potential impacts that may arise from the development. Based on the findings of the specialists, the potential impacts identified, the layout has been updated to avoid environmental sensitivities where possible to produce a draft layout. No further layout alternatives have been considered as part of the BA process. Impact assessments have been undertaken on the revised layout. 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 substation site locations have been based on proximity to the WEF and have been assessed by the specialists in their respective specialist studies. The location of the Substations are constrained by a number of sensitivities as well as riverine habitat and the most feasible option has been selected taking all site sensitivities into account. Based on the results of the comparative assessment of substation site alternatives, Option 2 is the most preferred substation location from a specialist point of view, as identified by the bat and visual specialists. Further based on the site sensitivity mapping, it is located outside of all no-go areas. The cultural specialist identified Option 1 substation as preferable (but must be located outside of CBA without impacting on a riverine corridor flood line or a slope over 3%.) and Option 2 as least preferred (as it is located on sensitive raised elevation in landscape unit B) with the remaining specialists having no preference on the location of the substation. The developer has not indicated a preference. Both are deemed acceptable for authorisation since none are fatally flawed. It is therefore requested that Substation Option 2 be authorised as part of the proposed development (with micro-siting to be undertaken) (should the EA be granted).

The buildable area, within which the infrastructure will be placed is recommended for authorisation. The buildable area will be further refined prior to construction based on the technology at the time and micro-siting.

WAY FORWARD

The Draft Basic Assessment Report is currently being circulated for public participation for a period of 30 days (excluding the period of **15 December 2022 to 5 January 2023**) from **05 December 2022** until **26 January 2023**.

All comments received will be responded to in a C&RR, which will be included prior to submission of the Final Basic Assessment Report (FBAR) 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 FBAR. Once the FBAR has been submitted and the DFFE have acknowledged receipt thereof, a decision to either grant or refuse the EA for the proposed development will be made by the DFFE. In addition, once a decision regarding the EA has been received from the DFFE, it will be made available to the public and all registered I&APs, stakeholders and OoS / authorities will be notified accordingly and provided details regarding the appeal process. The BA process will thus come to an end once appeals (if any) have been dealt with adequately and the appeal process closes. 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:

SOUTH AFRICA MAINSTREAM RENEWABLE POWER DEVELOPMENTS (PTY) LTD

Prepared by:



Project No. 16168
Description Patatskloof WEF DBAR
Revision No. 2

Date: 05 December 2022

Page xxix

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

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

PATATSKLOOF WIND ENERGY FACILITY (WEF)

DRAFT BASIC ASSESSMENT REPORT

TABLE OF CONTENTS

1.	INTRODUCTION.....	1
1.1	Content Requirements for an Environmental Impact Assessment Report	4
2.	PROJECT TITLE	7
3.	DETAILS OF APPLICANT.....	7
3.1	Name and contact details of the Applicant	7
4.	DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER AND SPECIALISTS.....	7
4.1	Name and contact details of the Environmental Consultant	7
4.2	Names and expertise of the Environmental Assessment Practitioner (EAP)	7
4.3	Names and expertise of the specialists	8
5.	LOCATION OF THE ACTIVITY	9
5.1	21 Digit Surveyor General Codes and Farm names of the sites	10
5.2	Coordinates of the site	10
6.	SITE LAYOUT/ ROUTE ALIGNMENT PLAN	12
7.	ACTIVITY INFORMATION.....	13
7.1	Project Description.....	13
7.1.1	WEF and Associated Infrastructure.....	13
7.1.2	Service Provisions: Water, Sewage and Waste requirements	18
7.2	NEMA Listed Activities.....	20
8.	NATIONAL WEB BASED ENVIRONMENTAL SCREENING TOOL.....	24
9.	DESCRIPTION OF THE RECEIVING ENVIRONMENT	28
9.1	Geographical	28
9.2	Climate	28

9.3	Land Use	28
9.4	Agricultural.....	30
9.5	Topography	32
9.6	Geology and Soils.....	33
9.7	Geohydrology	34
9.8	Surface Water.....	34
9.9	Biodiversity	41
9.9.1	Vegetation and flora	42
9.9.2	Fauna.....	45
9.10	Avifauna.....	50
9.10.1	Results of pre-construction monitoring.....	50
9.10.2	Findings and Assessment	51
9.10.3	Summary and Conclusion	52
9.11	Bat.....	53
9.11.1	Transects.....	53
9.11.2	Findings.....	55
9.11.3	Conclusion and Impact Statement.....	57
10.	DESCRIPTION OF THE SOCIO-ECONOMIC ENVIRONMENT	59
10.1	Socio economic characteristics	59
10.1.1	Cape Winelands District Municipality	59
10.1.2	Witzenberg Local Municipality	60
10.2	Cultural/Historical Environment.....	61
10.2.1	Archaeological	61
10.2.2	Cultural Landscape.....	63
10.2.3	Palaeontological n	68
10.3	Noise	69
10.4	Transport	70
10.5	Visual.....	72
11.	POLICY AND LEGISLATIVE CONTEXT.....	74
11.1	The Constitution.....	74
11.2	National Environmental Management Act (107 of 1998)	75
11.3	Environmental Impact Assessment (EIA) Guideline for Renewable Energy Projects, DFFE Notice 989 of 2015.....	76
11.4	National Water Act (Act 36 of 1998).....	76
11.5	The National Heritage Resources Act 1999 (25 of 1999)	77
11.6	National Environmental Management: Biodiversity Act (NEM:BA) (Act No. 10 of 2004, as amended).....	78

11.7	National Environmental Management: Protected Areas Act, 2003 (Act No.57 of 2003 as amended).....	79
11.8	National Forests Act (NFA) (Act No. 84 of 1998).....	79
11.9	National Veld and Forest Fire Act (Act No. 101 of 1998).....	80
11.10	Conservation of Agricultural Resources Act (CARA) (Act No. 43 of 1983)	80
11.11	National Road Traffic Act (NRTA) (Act No. 93 of 1996, as amended)	81
11.12	Civil Aviation Act (CAA) (Act No. 13 of 2009).....	81
11.13	Astronomy Geographic Advantage Act (Act No. 21 of 2007).....	81
11.14	National Energy Act (Act No. 34 of 2008).....	82
11.15	Electricity Regulation Act (Act No. 4 of 2006).....	82
11.16	Renewable Energy Development Zones (REDZs) and Strategic Transmission Corridors.....	83
11.17	Protection of Public Information Act (Act No. 4 of 2013).....	84
11.18	Additional Relevant Legislation	84
12.	KEY DEVELOPMENT STRATEGIES AND GUIDELINES	85
12.1	Western Cape Strategic Plan 2019 - 2024	86
12.1.1	The Western Cape Spatial Development Framework (SDF) 2014	86
12.2	Cape Winelands District Municipality Integrated Development Plan, 2022/23 – 2026/27.....	87
12.2.1	Witzenberg Local Municipality Integrated Development Plan (2013 – 2016)	87
13.	NEED AND DESIRABILITY	88
13.1	National Renewable Energy Requirement.....	88
13.2	National Renewable Energy Commitment.....	89
13.3	Wind Power Potential in South Africa and Internationally	90
13.4	Site Suitability	90
13.5	Reduced dependency on fossil fuels	91
13.6	Stimulate the economy	92
13.7	Job opportunities and household livelihoods	92
13.8	Skills development	93
13.9	Proximity to substation	93
14.	DETAILS OF PROCESS FOLLOWED TO REACH THE PREFERRED OPTION.....	94
14.1	Details of alternatives	94
14.1.1	Introduction	94
14.1.2	Location/Site alternatives	94
14.1.3	Activity/technology alternatives	94
14.1.4	Design or Layout alternatives	95

14.1.5	No – go option	95
14.1.6	Comparative Assessment of Alternatives.....	96
14.2	Motivation and concluding statement for preferred alternative	76
14.3	Public Participation Process undertaken.....	80
14.3.1	Identification of Key Stakeholder and I&AP's	81
14.3.2	Responsibilities of interested and affected parties (I&AP's).....	81
14.3.3	Steps taken to notify key stakeholders and potential I&APs	81
14.3.4	Summary of issues raised	82
14.3.5	Details of notification of landowners	82
15.	IMPACTS AND RISKS IDENTIFIED FOR THE PREFERRED ALTERNATIVE	82
15.1	Planning	83
15.2	Construction	103
15.3	Operation.....	123
15.4	Decommissioning.....	150
15.5	Cumulative	166
16.	POSITIVE AND NEGATIVE IMPACTS OF THE PATATSKLOOF WEF PROJECT	177
16.1	Mitigation Measures.....	183
17.	SUMMARY OF SPECIALIST FINDINGS AND RECOMMENDATIONS	184
18.	ENVIRONMENTAL IMPACT STATEMENT.....	197
19.	ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR) AND CONDITIONS TO BE INCLUDED IN ENVIRONMENTAL AUTHORISATION	201
20.	ASPECTS WHICH WERE CONDITIONAL TO THE FINDINGS OF THE ASSESSMENT EITHER BY THE EAP OR SPECIALIST WHICH ARE TO BE INCLUDED AS CONDITIONS OF AUTHORISATION.....	202
21.	UNCERTAINTIES, ASSUMPTIONS AND GAPS IN KNOWLEDGE	202
22.	AUTHORISATION OF THE PROPOSED PATATSKLOOF WEF PROJECT	202
23.	EAP DECLARATION.....	203
24.	INFORMATION REQUIRED BY CA (IF APPLICABLE).....	203

25.	CONCLUSION	203
26.	WAY FORWARD	203

APPENDICES

Appendix 1:	CV's of EAP's involved in the process and EAP declaration
Appendix 2:	Locality Map
Appendix 3:	Site Development Plan
Appendix 4:	Photographs
Appendix 5:	Proof of public participation
Appendix 6:	Specialist studies and declarations
Appendix 7:	SiVEST Impact Rating System
Appendix 8:	Environmental Management Programme
Appendix 9:	DFFE Screening Tool

LIST OF FIGURES

Figure 1: Patatskloof WEF Regional Context	3
Figure 2: Site Locality	10
Figure 3: Development area assessed within the BA process showing the affected properties	14
Figure 4: Typical components of a Wind Turbine	17
Figure 5: Conceptual WEF electricity generation process showing electrical connections	18
Figure 6: Regional context	28
Figure 7: Land Cover Classification	30
Figure 8: Agricultural sensitivity as given by the screening tool (green = low; yellow/orange = medium; red = high; dark red = very high).....	31
Figure 9: Topography	33
Figure 10: Geology (Extract of 1:250000 scale Geological Map 3320 Ladismith and 3319 Worcester- Gage Consulting)	34
Figure 11: Project locality map indicating the various quinary catchments and mainstem rivers (Source DWS and NGI) within the project boundary	35
Figure 12: A broad watercourse with defined riparian zone associated with Groot River	36
Figure 13: Sandy / pebble alluvial channel associated with the tributaries of the Adamskraal River that will be traversed by internal access roads	36
Figure 14: One of the few artificial impoundments within the study area, with no aquatic species or wetlands associated.....	37
Figure 15: Delineated aquatic zones and respective sensitivities	38
Figure 16: Habitat sensitivity map (with no-go identified in red)	40
Figure 17: National Vegetation Map as per Mucina and Rutherford (2007) amended NBSA 2018	42
Figure 18: Tanqua Karoo Vegetation Unit.....	43
Figure 19: sparsely vegetated shale / quartzite plains in the western portion of the site.....	43
Figure 20: Vegetation units at a finer scale	44
Figure 21: Critical Biodiversity Areas.....	45
Figure 22: One of the many Angulate tortoises (Chersina angulata) observed on site that had succumbed to the previous drought conditions.....	47

Figure 23: Another common siting within the region, namely the Puffadder (Bitis arietans arietans), with two (2) sited during the assessment on site	47
Figure 24: Habitat sensitivity map inclusive of terrestrial and aquatic habitats	49
Figure 25: The location of priority species recorded at the proposed WEF through transect counts and incidental sightings	50
Figure 26: Verreux Eagle nests recorded during nest searches conducted in March 2022.....	51
Figure 27: Layout and avifaunal sensitivities	52
Figure 28: Transect results of 3 November 2021, showing high bat activity	54
Figure 29: Bat sensitivity for the Karee WEF	55
Figure 30: Patatskloof WEF updated bat sensitivity map.....	57
Figure 31: Location of the Cape Winelands District in relation to other District Municipalities (Cape Winelands Integrated Development Plan (IDP), Draft 5 th Generation IDP 2022/23 – 2026/27)	59
Figure 32: Location of heritage resources within the study area	62
Figure 33: Location of heritage resources within the study area (inset A)	62
Figure 34: Location of heritage resources within the study area (inset B)	63
Figure 35: Regional landscape	64
Figure 36: Cultural landscape assessment heritage indicators and buffers	68
Figure 37: Aerial Image indicating site sensitivity and closest identified Noise-sensitive developments.....	69
Figure 38: Existing Road OP06121 – North Approaching.....	71
Figure 39: Potentially sensitive receptor locations within 10kms of the Patatskloof WEF application site	73
Figure 40: Sensitivity Analysis	74
Figure 41: Proposed Layout showing the substation locations	97
Figure 42: Final proposed development area overlain on the identified environmental sensitivities	79
Figure 43: Final proposed development area	80
Figure 44: Final proposed development area with site sensitivities	197

LIST OF TABLES

Table 1: Content requirements for a Basic Assessment Report.....	4
Table 2: Name and contact details of the applicant	7
Table 3: Name and contact details of the Environmental Consultant who prepared the report	7
Table 4: Names and details of the expertise of the EAP's involved in preparing this report	8
Table 5: Names of specialists involved in the project	8
Table 6: 21 Digit Surveyor General Code	10
Table 7: Coordinates at corner points.....	11
Table 8: Coordinates for substation, BESS, construction laydown and O&M buildings	12
Table 9: Technical Detail Summary	15
Table 10: Listed activities in terms of NEMA: EIA Regulations 2014 (as amended in 2017), applicable to the proposed project.....	20
Table 11: Site Sensitivity Verification.....	24

Table 12: Results of sensitivity rating / constraints assessment	38
Table 13: Sensitivity rating / constraints assessment	48
Table 14: Incidental sightings of priority species made in the course of the seasonal surveys	51
Table 15: Karee WEF winter and spring transect data	54
Table 16: Curtailment schedule to apply as necessary during the operational phase.....	57
Table 17: 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	83
Table 18: Summary of comparative assessment of substation, BESS and construction laydown area site alternatives	75
Table 19: Impact Assessment Tables	83
Table 20: Summary of positive and negative impacts	177
Table 21: Summary of specialist findings and recommendations.....	184

GLOSSARY OF TERMS

Acceptability: The evaluation of the risk in comparison to certain known level of risk in other areas.

Alternative: Alternatives can refer to any of the following but are not limited to: alternative sites for development, alternative projects for a particular site, alternative site layouts, alternative designs, alternative processes and alternative materials.

Alluvial: Resulting from the action of rivers, whereby sedimentary deposits are laid down in river channels, floodplains, lakes, depressions etc.

Archaeological resources: This includes:

- material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years including artefacts, human and hominid remains and artificial features and structures;
- rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation;
- wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the republic as defined in the Maritimes Zones Act, and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation;
- features, structures and artefacts associated with military history which are older than 75 years and the site on which they are found.

Biodiversity: The diversity of genes, species and ecosystems, and the ecological and evolutionary processes that maintain that diversity.

Buildable Area: The development area is the identified area which is located within the project site where the Renewable Energy Facility is planned to be located. This area has been selected as a practicable option for the facility, considering technical preference and constraints.

Critical Biodiversity Areas: Areas required to meet biodiversity targets of representivity and persistence for ecosystems, species and ecological processes, determined by a systematic conservation plan. They may be terrestrial or aquatic, and are mostly in a good ecological state. These areas need to be maintained in a natural or near-natural state, and a loss or degradation must be avoided. If these areas were to be modified, biodiversity targets could not be met.

Cultural landscape: A representation of the combined worlds of nature and of man illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal (World Heritage Committee, 1992). Includes and extends beyond the study site boundaries.

Cultural significance: This means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance.

Cumulative Impact: In relation to an activity, cumulative impact means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

Development: This means any physical intervention, excavation, or action, other than those caused by natural forces, which may in the opinion of the heritage authority in any way result in a change to the nature, appearance or physical nature of a place or influence its stability and future well-being, including:

- construction, alteration, demolition, removal or change in use of a place or a structure at a place;
- carrying out any works on or over or under a place;
- subdivision or consolidation of land comprising a place, including the structures or airspace of a place;
- constructing or putting up for display signs or boards;
- any change to the natural or existing condition or topography of land; and
- any removal or destruction of trees, or removal of vegetation or topsoil

Development Footprint: Means any evidence of physical alteration as a result of the undertaking of any activity.

Ecosystem services: The benefits that people obtain from ecosystems, including provisioning services (such as food and water), regulating services (such as flood control), cultural services (such as recreational benefits), and supporting services (such as nutrient cycling, carbon storage) that maintain the conditions for life on Earth.

Endemic: Restricted or exclusive to a particular geographic area and occurring nowhere else. Endemism refers to the occurrence of endemic species.

Environmental Management Programme (EMPr): A legally binding working document, which stipulates environmental and socio-economic mitigation measures which must be implemented by several responsible parties throughout the duration of the proposed project.

Fossil: Mineralised bones of animals, shellfish, plants and marine animals. A trace fossil is the track or footprint of a fossil animal that is preserved in stone or consolidated sediment.

Habitat: The area of an environment occupied by a species or group of species, due to the particular set of environmental conditions that prevail there.

Heritage: That which is inherited and forms part of the National Estate (historical places, objects, fossils as defined by the National Heritage Resources Act 25 of 1999).

Heritage Resources: This means any place or object of cultural significance and can include (but not limited to) as stated under Section 3 of the NHRA,

- places, buildings, structures and equipment of cultural significance;
- places to which oral traditions are attached or which are associated with living heritage;
- historical settlements and townscapes;
- landscapes and natural features of cultural significance;
- geological sites of scientific or cultural importance;
- archaeological and palaeontological sites;
- graves and burial grounds, and
- sites of significance relating to the history of slavery in South Africa;

Kilovolt (kV): a unit of electric potential equal to a thousand volts (a volt being the standard unit of electric potential. It is defined as the amount of electrical potential between two points on a conductor carrying a current of one ampere while one watt of power is dissipated between the two points).

Landscape character: A distinct, and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.

Mitigate: The implementation of practical measures to reduce adverse impacts or enhance beneficial impacts of an action.

"No-Go" option: The "no-go" development alternative option assumes the site remains in its current state, i.e. there is no construction of a Wind energy facility and associated infrastructure in the proposed project area.

Palaeontology: Any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace.

Project site/ proposed development: The project site is defined as the total extent of the land parcels for the proposed project.

Red Data Species: All those species included in the categories of endangered, vulnerable or rare, as defined by the International Union for the Conservation of Nature and Natural Resources.

Red List: A publication that provides information on the conservation and threat status of species, based on scientific conservation assessments.

Rehabilitation: Less than full restoration of an ecosystem to its pre-disturbance condition.

Restoration: To return a site to an approximation of its condition before alteration.

Riparian: The area of land adjacent to a river or stream that is, at least periodically, influenced by flooding.

Sense of place: The unique quality or character of a place, whether natural, rural or urban. It relates to uniqueness, distinctiveness or strong identity.

Species of Special / Conservation Concern: Species that have particular ecological, economic or cultural significance, including but not limited to threatened species.

Threatened Ecosystems: An ecosystem that has been classified as Critically Endangered, Endangered or Vulnerable, based on analysis of ecosystem threat status. A threatened ecosystem has lost, or is losing, vital aspects of its structure, composition or function. The Biodiversity Act makes provision for the Minister or Environmental Affairs, or a provincial MEC of Environmental Affairs, to publish a list of threatened ecosystems.

Threatened Species: A species that has been classified as Critically Endangered, Endangered or Vulnerable, based on a conservation assessment using a standard set of criteria developed by the IUCN for determining the likelihood of a species becoming extinct. A threatened species faces a high risk of extinction in the near future.

Visual character: The pattern of physical elements, landforms and land use characteristics that occur consistently in the landscape to form a distinctive visual quality or character.

Visual impact: The effect of an aspect of the proposed development on a specified component of the visual, aesthetic or scenic environment within a defined time and space.

Visual receptors: An individual, group or community that is subject to the visual influence of the proposed development but is not necessarily adversely impacted by it. They will typically include commercial activities, residents and motorists travelling along routes that are not regarded as scenic.

Visual sensitivity: The inherent sensitivity of an area to potential visual impacts associated with a proposed development. It is based on the physical characteristics of the area (visual character), spatial distribution of potential receptors, and the likely value judgements of these receptors towards the new development, which are usually based on the perceived aesthetic appeal of the area.

ACRONYMS

AAA	- Astronomy Advantage Area
ATNS	- Air Traffic and Navigation Services Company Limited
AIA	- Archaeological Impact Assessment
APHP	- Association of Professional Heritage Practitioners
ASAPA	- Association of Southern African Professional Archaeologists
BA	- Basic Assessment
BESS	- Battery Energy Storage System
CAA	- Civil Aviation Act (Act No. 13 of 2009)
CARA	- Conservation of Agricultural Resources Act (Act No. 43 of 1983)
CBA	- Critical Biodiversity Area
CBD	- Convention on Biodiversity
CLA	- Cultural Landscape Assessment
CSP	- Concentrating Solar Power
DBAR	- Draft Basic Assessment Report
DEA	- Department of Environmental Affairs
DFA	- Development Facilitation Act (Act No. 67 of 1995)
DFFE	- Department of Forestry, Fishery and the Environment
DoE	- Department of Energy
DWS	- Department of Water and Sanitation
EA	- Environmental Authorisation
EAP	- Environmental Assessment Practitioner
EAPASA	- Environmental Assessment Practitioner Association of South Africa
ECA	- Environmental Conservation Act (ECA) (Act No. 73 of 1989)
EIA	- Environmental Impact Assessment
EMPr	- Environmental Management Programme
ERA	- The Electricity Regulation Act No. 4 of 2006
ESA	- Ecological Support Area
FBAR	- Final Basic Assessment Report
GA	- General Authorisation
GHG	- Green House Gases
GIS	- Geographic Information System
GW	- Gigawatts
HIA	- Heritage Impact Assessment
HAS	- Hazardous Substances Act (Act No. 15 of 1973)
HWC	- Heritage Western Cape
IAIASa	- International Association for Impact Assessment South Africa
I&AP(s)	- Interested and/or Affected Party/Parties
IDP	- Integrated Development Plan
IPP(s)	- Independent Power Producers
IRP	- Integrated Resource Plan
kV	- Kilo Volt
Mainstream	- South Africa Mainstream Renewable Power Developments (Pty) Ltd
MER	- Municipal Energy Resilience
MPRDA	- Mineral and Petroleum Resource Development Act (Act No. 28 of 2002, as amended)
MSA	- Municipal Systems Act (Act No. 32 of 2000)
MW	- Megawatt
NEA	- The National Energy Act (Act No. 34 of 2008)
NEMA	- National Environmental Management Act (Act No. 107 of 1998)
NEM:AQA	- National Environmental Management: Air Quality Act (Act No. of 2004)
NEM:BA	- National Environmental Management: Biodiversity Act (Act No. 10 of 2004)

NEM:PAA	- National Environmental Management: Protected Areas Act (Act No. 57 of 2003)
NEM:WA	- National Environmental Management: Waste Act (Act No. 59 of 2008, as amended)
NFA	- The National Forest Act (Act No. 84 of 1998)
NFEPA	- National Freshwater Ecosystem Priority Areas
NHRA	- National Heritage Resources Act (Act No. 25 of 1999)
NPAES	- National Parks Area Expansion Strategy
NRTA	- National Road Traffic Act (Act No. 93 of 1996)
NSBA	- National Spatial Biodiversity Assessment
NSD	- Noise Sensitive Development
NWA	- National Water Act (Act No. 36 of 1998)
O&M	- Operation and Maintenance
OHSA	- Occupational Health and Safety Act (Act No. 85 of 1993)
PAIA	- Promotion of Access to Information Act, 2000
PIA	- Palaeontological Impact Assessment
PPA	- Power Purchase Agreement
PPP	- Public Participation Process
POPIA	- Protection of Public Information Act (Act No. 4 of 2013)
PV	- Photo Voltaic
REDZ	- Renewable Energy Development Zone
REIPPPP	- Renewable Energy Independent Power Producer Procurement Programme
RE	- Renewable Energy
RSA	- Road Safety Act (Act No. 93 of 1996)
SA	- South Africa
SACAA	- South African Civil Aviation Authority
SACNASP	- South African Council for Natural and Scientific Professions
SAHRA	- South African Heritage Resources Agency
SAHRIS	- South African Heritage Resources Information System
SALA	- Subdivision of Agricultural Land Act (Act No. 70 of 1970)
SALT	- Southern African Large Telescope
SANBI	- South African National Biodiversity Institute
SANS	- South African National Standards
SAWEA	- South African Wind Energy Association
SDF	- Spatial Development Framework
SKA	- Square Kilometre Array
TCS	- Traffic Counting System
VIA	- Visual Impact Assessment
WCDEADP	- Western Cape Department of Environmental Affairs and Development Planning
WCG	- Western Cape Government
WEF	- Wind Energy Facility
WMA	- Water Management Area
WSA	- Water Services Act (Act No. 108 of 1998)
WUL	- Water Use License
WULA	- Water Use License Application

SOUTH AFRICA MAINSTREAM RENEWABLE POWER DEVELOPMENTS (PTY) LTD

PATATSKLOOF WIND ENERGY FACILITY (WEF)

DRAFT BASIC ASSESSMENT REPORT

1. INTRODUCTION

South Africa Mainstream Renewable Power Developments (Pty) Ltd (hereafter referred to as 'Mainstream') is proposing to construct the Patatskloof Wind Energy Facility (WEF), Battery Energy Storage System (BESS) and associated infrastructure located near the town of Ceres in the Witzenberg Local Municipality, in the Cape Winelands 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, which will be procured under either the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP), other government run procurement programmes or potential private offtake entities. The proposed development will have a maximum total generation capacity of up to a 250 megawatt (MWac) and will be referred to as the Patatskloof WEF.

SiVEST Environmental Division has been appointed as the independent Environmental Assessment Practitioner (EAP) to undertake the Basic Assessment (BA) process for the proposed construction of the Patatskloof WEF and associated infrastructure. The proposed development requires an Environmental Authorisation (EA) from the National Department of Forestry, Fisheries and the Environment (DFFE). The BA for the proposed development will be conducted in terms of the Environmental Impact Assessment (EIA) Regulations, 2014 (as amended) promulgated in terms of Chapter 5 of the National Environmental Management Act, Act No. 107 of 1998 (NEMA)[as amended]. The provincial authority (i.e. the Western Cape Department of Environmental Affairs and Development Planning - WC DEA&DP) will also be consulted.

The proposed WEF, BESS and associated grid infrastructure is located within the Komsberg Renewable Energy Development Zone (REDZ 2), as published in terms of Section 24(5) of the NEMA in GN R114 of 16 February 2018. Accordingly, a BA process as contemplated in terms of the EIA Regulations (2014, as amended) is being undertaken in respect of the proposed WEF project.

The on-site substation will be a step-up substation and will include an Independent Power Producer (IPP) portion (33kV portion/yard of the shared 33/132kV onsite substation) and an Eskom portion (132kV portion/yard of the shared 33kV/132kV onsite substation – this portion will be ceded to Eskom once the onsite substation is constructed and the necessary transfer of rights undertaken), hence the IPP portion (33kV portion/yard of the shared 33/132kV onsite substation) has been included in the WEF BA process (i.e. this application) and the Eskom portion (132kV portion/yard of the shared 33kV/132kV onsite substation) and associated 132kV overhead line, included in a separate grid connection infrastructure BA process. This will facilitate an ease of transfer over to Eskom once the onsite substation is constructed.

Two (2) options have been identified for the 33kV portion/yard of the shared 33/132kV onsite substation and six (6) grid corridors have been identified for the 132kV overhead line and 132kV portion/yard of the shared 33kV/132kV onsite substation – these applications will be prepared and assessed under separate BA application processes. The proposed powerline options are described below:

- **Power Line Corridor Option 1** is approximately 16km in length, linking either Substation Option 1 or Substation Option 2 to Kappa Substation.
- **Power Line Corridor Option 2** is approximately 24km in length, linking either Substation Option 1 or Substation Option 2 to Kappa Substation.
- **Power Line Corridor Option 3** is approximately 8km in length, linking either Substation Option 1 or Substation Option 2 to Adamskraal Substation.
- **Power Line Corridor Option 4** is approximately 25km in length, linking either Substation Option 1 or Substation Option 2 to Kappa Substation.
- **Power Line Corridor Option 5** is approximately 24km in length, linking either Substation Option 1 or Substation Option 2 to Kappa Substation. It should be noted that the assessment corridor applied to a short section of this route alignment serving Substation Option 2 has been widened to 300m.
- **Power Line Corridor Option 6** is approximately 8km in length, linking either Substation Option 1 or Substation Option 2 to Adamskraal Substation.

It should be noted that Mainstream is proposing the 250MW Karee WEF adjacent to the proposed Patatskloof WEF. This WEF will be assessed under a separate BA process / application:

- **200MW Karee WEF** – DFFE Reference Number: To be Allocated (part of a separate BA process / application).

Although the WEF and associated grid connection infrastructure will be assessed separately, a single (1) public participation process is being proposed to consider all of the proposed developments i.e. Two (2) WEF BA and two (2) grid connection infrastructure BAs. The potential environmental impacts associated with all of the proposed developments mentioned above will be assessed as part of the cumulative impact assessment.

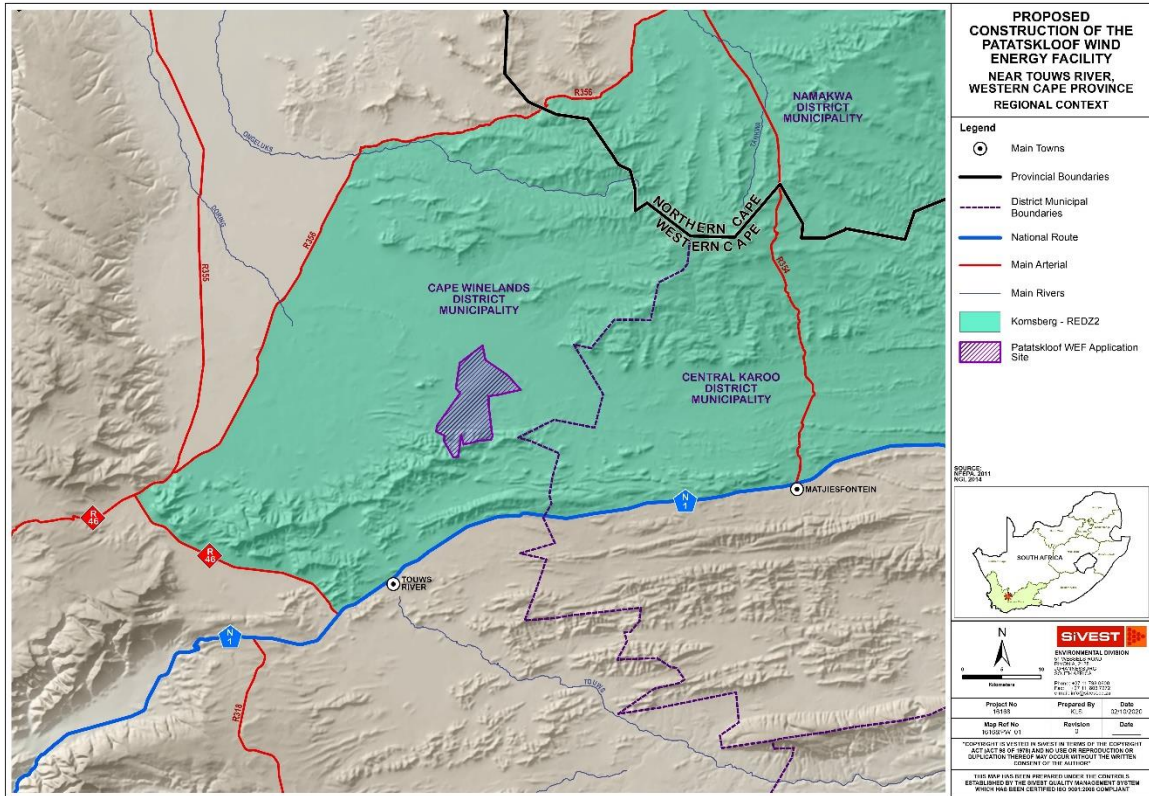


Figure 1: Patatskloof WEF Regional Context

1.1 Content Requirements for an Environmental Impact Assessment Report

A Basic Assessment Report must contain the information that is necessary for the competent authority to consider and come to a decision on the application and must include a proper understanding of the process, informing all preferred alternatives, the scope of the assessment, an assessment of the significant impacts, findings of the specialists and proposed mitigation measures, and the consultation process followed through the BA process. The content requirements for a Basic Assessment Report (as provided in Appendix 1 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 Basic Assessment Report

2014 EIA Regulations, as amended.	Requirements for Basic Assessment Reports	Location in this Basic Assessment Report
Appendix 1, Section 3 (1)	A basic assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include—	Refer below.
Appendix 1, Section 3 (a)	Details of – (i) The EAP who prepared the report; and (ii) The expertise of the EAP, including a curriculum vitae.	Section 4
Appendix 1, Section 3 (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, coordinates of the boundary of the property or properties	Section 5 Section 6
Appendix 1, Section 3 (c)	A plan which locates the proposed activity or activities applied for as well as associated structures and infrastructure 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.	Section 5 Section 6
Appendix 1, Section 3 (d)	A description of the scope of the proposed activity, including – (i) All listed and specified activities triggered and being applied for; and (ii) A description of the activities to be undertaken, including associated structures and infrastructure.	Section 7
Appendix 1, Section 3 (e)	A description of the policy and legislative context within which the development is proposed including- (i) an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and have been considered in the preparation of the report; and (ii) How the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments;	Section 11 and 12
Appendix 1, Section 3 (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;	Section 13
Appendix 1,	a motivation for the preferred site, activity and technology alternative;	Section 14

2014 EIA Regulations, as amended.	Requirements for Basic Assessment Reports	Location in this Basic Assessment Report
Section 3 (g)		
Appendix 1, Section 3 (h)	<p>A full description of the process followed to reach the proposed preferred activity, site and location within the site, including-</p> <p>(i) Details of all alternatives considered;</p> <p>(ii) Details of the Public Participation Process undertaken in terms of Regulation 41 of the Regulations, including copies of the supporting documents and inputs;</p> <p>(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;</p> <p>(iv) The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;</p> <p>(v) The impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration, and probability of the impacts, including the degree to which the impacts-</p> <p>(aa) Can be reversed;</p> <p>(bb) May cause irreplaceable loss of resources; and</p> <p>(cc) Can be avoided, managed, or mitigated.</p> <p>(vi) The methodology used in deterring and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;</p> <p>(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 geographic, physical, biological, social, economic, heritage and cultural aspects;</p> <p>(viii) The possible mitigation measures that could be applied and level of residual risk;</p> <p>(ix) The outcome of the site selection matrix;</p> <p>(x) If no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such and;</p> <p>(xi) A concluding statement indicating the preferred alternatives, including preferred location of the activity.</p>	<p>Section 14</p> <p>Section 14</p> <p>Section 14.3</p> <p>TBC in Final BAR Section 14.3.4</p> <p>Section 9 and 10</p> <p>Section 15</p> <p>Appendix 7</p> <p>Section 16</p> <p>Section 15</p> <p>Section 14</p> <p>Not Applicable</p> <p>Section 14</p>
Appendix 1, Section 3 (i)	<p>A full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including-</p> <p>(i) A description of all environmental issues and risks that were identified during the environmental impact assessment process; and</p> <p>(ii) An assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures.</p>	Appendix 7 and Section 15
Appendix 1, Section 3 (j)	<p>An assessment of each identified potentially significant impact and risk, including-</p> <p>(i) Cumulative impacts;</p> <p>(ii) The nature, significance and consequences of the impact and risk;</p> <p>(iii) The extent and duration of the impact and risk;</p> <p>(iv) The probability of the impact and risk occurring;</p> <p>(v) The degree to which the impact and risk can be reversed;</p>	Section 15

2014 EIA Regulations, as amended.	Requirements for Basic Assessment Reports	Location in this Basic Assessment Report
	(vi) The degree to which the impact and risk may cause irreplaceable loss of resources; and (vii) The degree to which the impact and risk can be avoided, managed or mitigated.	
Appendix 1, Section 3 (k)	Where applicable, a summary of the findings and impact management measures identified in any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final report.	Section 17
Appendix 1, Section 3 (l)	An environmental impact statement which contains- (i) A summary of the key findings of the environmental impact assessment; (ii) A map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and (iii) A summary of the positive and negative impacts and risks of the proposed activity and identified alternatives.	Section 18
Appendix 1, Section 3 (m)	Based on the assessment, and where applicable, impact management measures from specialist reports, the recording of the proposed impact management outcomes for the development for inclusion in the EMPr.	Refer attached in Appendix 8
Appendix 1, Section 3 (n)	Any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation.	Section 20
Appendix 1, Section 3 (o)	A description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed;	Section 21
Appendix 1, Section 3 (p)	A reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation.	Section 18 and Section 22
Appendix 1, Section 3 (q)	Where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required, the date on which the activity will be concluded, and the post construction monitoring requirements finalised.	Section 22
Appendix 1, Section 3 (r)	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 the comments and inputs from stakeholders and interested and affected parties; (iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and (iv) Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties.	Section 23
Appendix 1, Section 3 (s)	Where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts.	Not Applicable at this stage
Appendix 1, Section 3 (t)	any specific information required by the Competent Authority.	Section 24
Appendix 1, Section 3 (u)	Any other matter required in terms of section 24(4) (a) and (b) of the Act.	None
Appendix 1 Section 3 (2)	Where a government notice gazetted by the Minister provides for the basic assessment process to be followed, the requirements as indicated in such a notice will apply.	Noted and applied with

2. PROJECT TITLE

Proposed Development of the 250MWac Patatskloof Wind Energy Facility (WEF), Battery Energy Storage System (BESS), and associated infrastructure located near Ceres in the Witzenberg Local Municipality, Cape Winelands District Municipality in the Western Cape Province.

3. DETAILS OF APPLICANT

3.1 Name and contact details of the Applicant

Name and contact details of Applicant:

Table 2: Name and contact details of the applicant

Business Name of Applicant	South Africa Mainstream Renewable Power Developments (Pty) Ltd
Physical Address	4th Floor Mariendahl House, Newlands on Main, Cnr Main Road and Campground, Claremont, Cape Town
Postal Address	PO Box 45063, CLAREMONT, Cape Town
Postal Code	7735
Telephone	073 871 5781
Fax	021 671 5665
Email	eugene.marais@mainstreammrp.com

4. DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER AND SPECIALISTS

4.1 Name and contact details of the Environmental Consultant

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

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

Business Name of EAP	SiVEST SA (PTY) Ltd
Name of Lead EAP	Rendani Rasivhetshela
Physical Address	12 Autumn Road, Rivonia
Postal Address	PO Box 2921, Rivonia
Postal Code	2128
Telephone	011 798 0600
Email	rendanir@sivest.com

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

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

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

Name of representative of the EAP	Educational Qualifications	Professional Affiliations	Experience (years)
Michelle Nevette	MEnvMgt. (Environmental Management)	SACNASP Registration No. 120356 EAPASA Registration No. 2019/1560 IAIAsa	19
Natalie Pullen	MSc (Environmental Biotechnology)	EAPASA IAIAsa	18
Rendani Rasivhetshela	BSc Honours Environmental Management	EAPASA Registration No. 2019/1729	6

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

4.3 Names and expertise of the specialists

Specialist studies have been conducted in terms of the Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(A) and (H) and 44 of the NEMA when applying for EA, as well as the EIA Regulations, 2014 (as amended). The table below provides the names of the specialists involved in the project which have also been guided by the DFFE National Screening Tool:

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 with the Association of Southern African Professional Archaeologists (ASAPA) 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
	Nikki Mann	Archaeological Assessment	Msc Archaeology Professional Archaeologist with ASAPA	7

Company	Name of representative of the specialist	Specialist	Educational Qualifications	Experience (years)
	Emmylou Bailey	Cultural Landscape Assessment	MA Archaeology and Heritage Management APHP, ASAPA	15
Gage Consulting	Duan Gage	Desktop Geotechnical Assessment	Professional registered SACNASP, PrNatSci (137543), MSAIEG, Master of Science (Engineering Geology), *Doctoral Candidate (Engineering Geology)	4
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
		Biodiversity Impact Assessment		
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

The proposed WEF, BESS and associated grid infrastructure is located approximately 18km north-east of Touws River in the Western Cape Province and is within the Witzenberg Local Municipality, in the Cape Winelands District Municipality (**Figure 2**). The project site, defined as the total extent of the land parcels for the proposed project, is approximately 6612 hectares (ha) in extent. A smaller development area (2905.4 ha) has been identified within the project site where the WEF is planned to be located

The application site for the proposed WEF development incorporates the following three (3) farm portions / properties:

- Remainder of the Farm Upper Stinkfontein No 246
- Remainder of the Farm Upper Melkbosch Kraal No 250; and

- Portion 1 of the Farm Drinkwaters Kloof No 251.

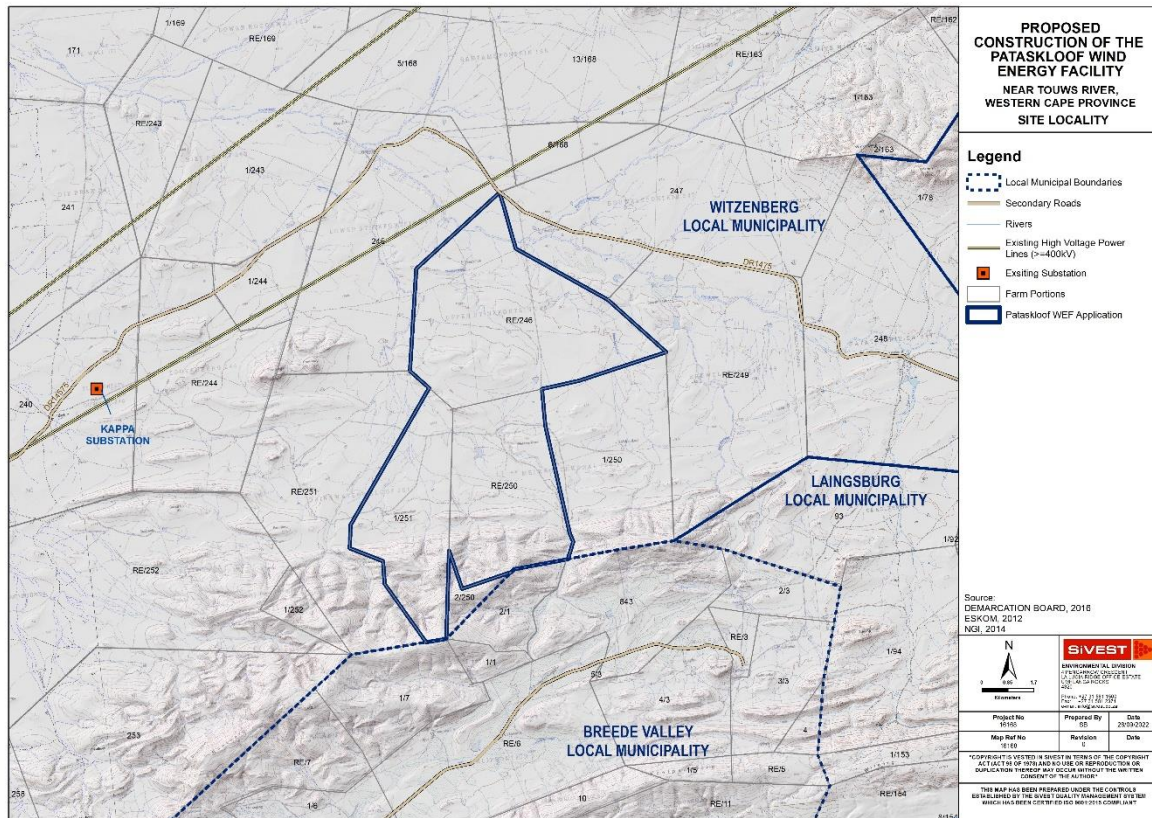


Figure 2: Site Locality

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

Table 6: 21 Digit Surveyor General Code

SG CODE	DESCRIPTION
C01900000000024600000	REMAINDER OF THE FARM UPPER STINKFONTEIN NO 246
C01900000000025000000	REMAINDER OF THE FARM MELKBOSCH KRAAL NO 250
C01900000000025100001	PORTION 1 OF THE FARM DRINKWATERS KLOOF NO 251

5.2 Coordinates of the site

The centre point coordinates for the project sites is as follows:

- Latitude: 33° 7' 44.260" S
- Longitude: 20° 8' 29.109" E

All bend points have been included in Table 7 below:

Table 7: Coordinates at corner points

PATATSKLOOF WEF: APPLICATION SITE		
COORDINATES AT CORNER POINTS (DD MM SS.sss)		
POINT	SOUTH	EAST
1	S33° 3' 50.226"	E20° 9' 16.741"
2	S33° 4' 50.666"	E20° 9' 29.345"
3	S33° 5' 53.952"	E20° 11' 16.718"
4	S33° 6' 54.863"	E20° 12' 22.286"
5	S33° 7' 15.207"	E20° 10' 30.659"
6	S33° 7' 19.946"	E20° 9' 43.478"
7	S33° 7' 58.634"	E20° 9' 43.183"
8	S33° 9' 53.826"	E20° 9' 59.404"
9	S33° 10' 2.423"	E20° 10' 2.694"
10	S33° 10' 20.082"	E20° 9' 53.672"
11	S33° 10' 24.748"	E20° 8' 45.608"
12	S33° 10' 27.287"	E20° 8' 41.984"
13	S33° 10' 39.394"	E20° 7' 38.566"
14	S33° 9' 58.402"	E20° 7' 27.321"
15	S33° 11' 29.878"	E20° 7' 12.654"
16	S33° 11' 31.178"	E20° 6' 47.194"
17	S33° 10' 26.009"	E20° 6' 3.253"
18	S33° 10' 1.931"	E20° 6' 4.248"
19	S33° 9' 44.787"	E20° 5' 24.741"
20	S33° 9' 20.528"	E20° 5' 28.451"
21	S33° 7' 6.477"	E20° 7' 23.923"
22	S33° 6' 46.732"	E20° 7' 2.401"
23	S33° 5' 0.973"	E20° 7' 23.458"

The centre point coordinates for the two (2) onsite substation location alternatives are listed in **Table 8** below. It is reiterated that the onsite substation consisting of two (2) portions: IPP portion / yard (33kV portion of the shared 33kV/132kV portion) and an Eskom portion (132kV portion of the shared 33kV/132kV portion) including associated equipment and infrastructure, occupying a total area of approximately 25ha (i.e. 250 000m²) i.e. 12.5 ha for the IPP Portion and 12.5 ha for the Eskom Portion. Within the IPP portion, BESS, Construction laydown and Operation and Maintenance (O&M) Buildings will be located:

Table 8: Coordinates for substation, BESS, construction laydown and O&M buildings

PATATSKLOOF GRID CONNECTION		
SUBSTATION SITE COORDINATES		
COORDINATES AT CENTRE POINT (DD MM SS.sss)		
SITE ALTERNATIVE	SOUTH	EAST
SUBSTATION OPTION 1	S33° 5'41.80"	E20° 7'31.04"
SUBSTATION OPTION 2	S33° 7'10.50"	E20° 7'52.89"

Highlighted option represents the preferred alternative.

6. SITE LAYOUT/ ROUTE ALIGNMENT PLAN

The Site Layout/Route Alignment Plan is attached in **Appendix 3**.

Photographs of the site are included in **Appendix 4**.

7. ACTIVITY INFORMATION

7.1 Project Description

7.1.1 WEF and Associated Infrastructure

The proposed Patatskloof WEF will comprise up to thirty-five (35) wind turbines with a maximum export capacity of up to approximately 250MWac. The electricity generated by the proposed WEF development will be fed into the national grid via a 132kV overhead power line. In summary, the proposed Patatskloof WEF will include the following components:

- Up to 35 wind turbines, each between 4MW and 6.6MW, with a maximum export capacity of approximately 250MWac within the buildable area..
- Each wind turbine will have a hub height of between 120m and 200m and rotor diameter of up to approximately 200m;
- Permanent compacted hardstanding areas / platforms (also known as crane pads) of approximately 100m x 100m (total footprint of approx. 10000m²) 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 30m in diameter. In addition, the foundations will be up to approximately 4m in depth;
- Electrical transformers (690V/33kV) adjacent to each wind turbine (typical footprint of up to approximately 3m x 2.5m) to step up the voltage to between 11kV and 33kV;
- One (1) new 11kV - 33/132kV on-site substation consisting of two (2) portions: IPP portion / yard (33kV portion of the shared 33kV/132kV portion) and an Eskom portion (132kV portion of the shared 33kV/132kV portion) including associated equipment and infrastructure, occupying a total area of approximately 25ha (i.e. 250 000m²) i.e. 12.5 ha for the IPP Portion and 12.5 ha for the Eskom Portion. The Eskom portion will be ceded over to Eskom once the IPP has constructed the onsite substation. The necessary Transfer of Rights will be lodged with DFFE when required;
- A Battery Energy Storage System (BESS) will be located next to the IPP portion / yard of the shared onsite 33/132kV substation and will be included as part of the 12.5ha. The storage capacity and type of technology would be determined at a later stage during the development phase, but most likely comprise an array of containers, outdoor cabinets and/or storage tanks;
- The wind turbines will be connected to the proposed substation via 11 to 33kV underground cabling and overhead power lines.
- Road servitude of 8m and a 20m underground cable or overhead line servitude.
- Internal roads with a width of up to approximately 5m wide will provide access to each wind turbine. Existing site roads will be used wherever possible, although new site roads will be constructed where necessary. Turns will have a radius of up to 50m for abnormal loads (especially turbine blades) to access the various wind turbine positions. It should be noted that the proposed application site will be accessed via the DR1475 District Road and DR1475, MR316 and MR319 WCG provincial Roads;
- One (1) construction laydown / staging area of up to approximately 3ha to be located on the site identified for the substation. It should be noted that no construction camps will be required in order to house workers overnight as all workers will be accommodated in the nearby town;
- Operation and Maintenance (O&M) buildings, including offices, a guard house, operational control centre, O&M area / warehouse / workshop and ablution facilities to be located on the site identified for the substation. This will be included in the 33kV portion/yard of the substation area i.e.12.5 ha of the IPP portion of the onsite substation;
- 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; A new permanent mast will be located on the site and may be at a different location to the current mast.

- 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.
- Optic fibre overhead or underground line from the Adamskraal Substation or Kappa substation to the proposed on-site substation

The applicant is proposing a buildable area within the site boundary which has been informed by and assessed by the specialists as part of this Basic Assessment Process (**Figure 3** below). The above-mentioned components will be constructed within the proposed development area. Photographs of the site are included in **Appendix 4**.

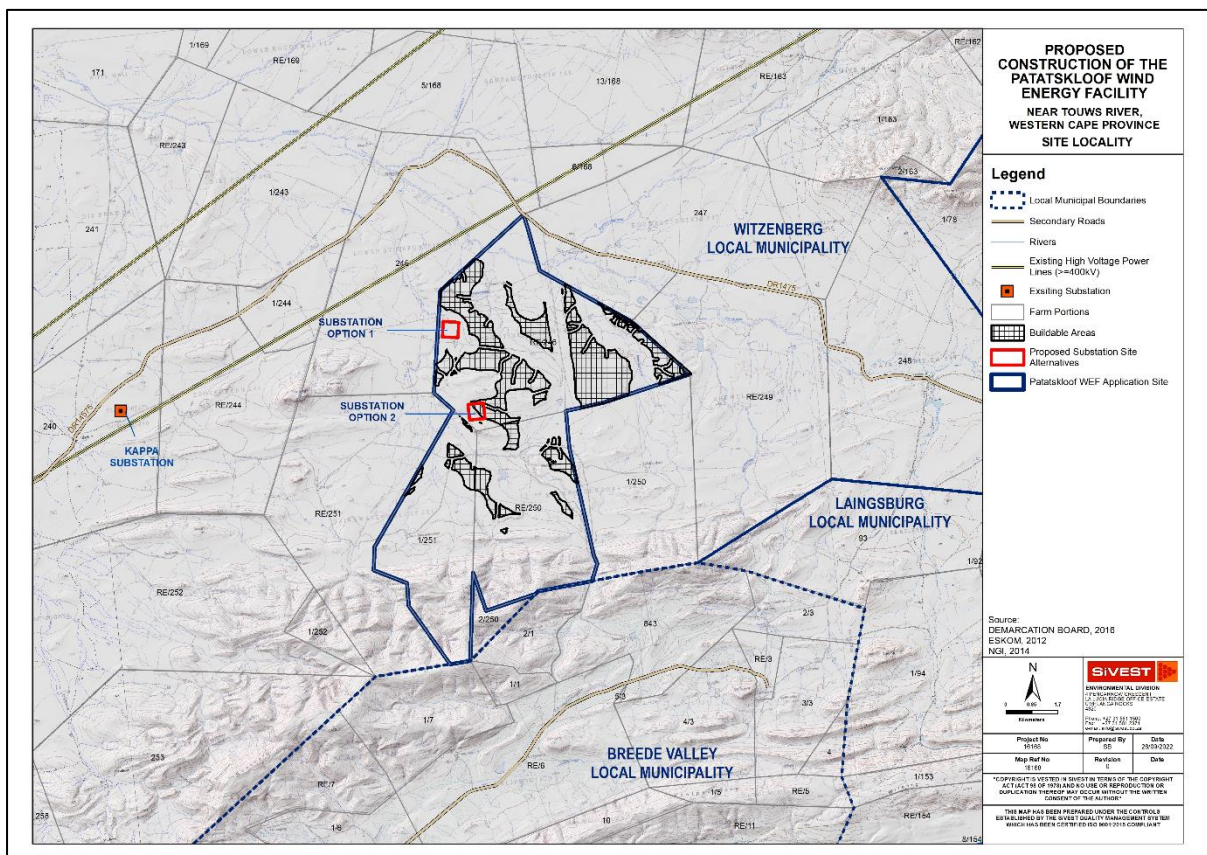


Figure 3: Development area assessed within the BA process showing the affected properties

A summary of the project technical details is provided in the table below.

Table 9: Technical Detail Summary

Component	Description / Dimensions
Location of site (centre point)	<ul style="list-style-type: none"> Latitude: S33° 7' 44.260" Longitude: E20° 8' 29.109"
Application site area	The project site is approximately 6612 hectares (ha) in extent.
Buildable area	A smaller buildable area (2905.4 ha) has been identified within the project site where the WEF is planned to be located.
Turbine development area	100m x 100m (total footprint of approx. 10000m ²)
SG codes	C0190000000024600000 C0190000000025000000 C0190000000025100001
Export capacity	Up to 250MWac
Proposed technology	Wind turbines and associated infrastructure
Hub height from ground	Between 120m and 200m
Rotor diameter	Up to approximately 200m
Substation and O&M building area	Approximately 25 hectare (ha) of which 12.5 is the IPP portion and is included in this WEF EIA and the other 12.5 ha will be the Eskom portion which will be ceded to Eskom once the IPP has constructed the onsite substation. The IPP portion of the substation is being undertaken in a separate BA assessment
Construction laydown area	3 ha included within the onsite substation area.
Permanent laydown area	To be determined based on final layout
Electrical transformers	Electrical transformers with a capacity of 690V/33 kV will be situated adjacent to each of the proposed wind turbines in order to step up the voltage to 11kV and 33kV. It should be noted that the typical footprint of such a transformer is approximately 2 m x 2 m.
Underground cabling	Underground 33kV cables, buried along access roads where feasible; and outside of the road footprints and where topography and environmental concerns preclude underground cabling, overhead 33kV power lines will be used.
Battery Energy Storage System (BESS)	A BESS will be located next to the IPP portion / yard of the shared onsite 33/132kV substation and will be included as part of the 12.5ha. The storage capacity and type of technology would be determined at a later stage during the development phase, but most likely comprise an array of containers, outdoor cabinets and/or storage tanks.
On-site Substation	One (1) new 11kV - 33/132kV on-site substation consisting of two (2) portions: IPP portion / yard (33kV portion of the shared 33kV/132kV portion) and an Eskom portion (132kV portion of the shared 33kV/132kV portion) including associated equipment and infrastructure, occupying a total

Component	Description / Dimensions
	area of approximately 25ha (i.e. 250 000m ²) i.e. 12.5 ha for the IPP Portion and 12.5 ha for the Eskom Portion. The Eskom portion will be ceded over to Eskom once the IPP has constructed the onsite substation. The necessary Transfer of Rights will be lodged with DFFE when required.
Width of internal access roads	Up to 5m
Length of internal access roads	Existing internal roads may require widening by more than 6m or lengthening by more than 1km. 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.
Site Access	The proposed application site will be accessed via the N1 National Route and DR1475, MR316 and MR319 Western Cape Government (WCG) provincial Roads.
Proximity to grid connection	The following options have been identified and are being assessed in a separate Grid Infrastructure BA Process: <ul style="list-style-type: none"> • Power Line Corridor Option 1 is approximately 16km in length, linking either Substation Option 1 or Substation Option 2 to Kappa Substation. • Power Line Corridor Option 2 is approximately 24km in length, linking either Substation Option 1 or Substation Option 2 to Kappa Substation. • Power Line Corridor Option 3 is approximately 8km in length, linking either Substation Option 1 or Substation Option 2 to Adamskraal Substation. • Power Line Corridor Option 4 is approximately 25km in length, linking either Substation Option 1 or Substation Option 2 to Kappa Substation. • Power Line Corridor Option 5 is approximately 24km in length, linking either Substation Option 1 or Substation Option 2 to Kappa Substation. It should be noted that the assessment corridor applied to a short section of this route alignment serving Substation Option 2 has been widened to 300m. • Power Line Corridor Option 6 is approximately 8km in length, linking either Substation Option 1 or Substation Option 2 to Adamskraal Substation.
Fencing	No new fencing is envisaged at this stage. Current fencing is standard farm fence approximately 1-1.5m in height. Fencing might be upgraded (if required) to be up to approximately 2m in height.
Other	One (1) construction laydown / staging area of up to approximately 3ha to be located on the site identified for the substation. It should be noted that no construction camps will be required in order to house workers overnight as all workers will be accommodated in the nearby town.

Component	Description / Dimensions
	<p>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.</p> <p>Optic fibre overhead or underground line from the Adamskraal Substation/Kappa to the proposed on-site substation.</p>

The wind turbines and all other project infrastructure as listed above have been placed strategically within the development area based on environmental constraints and specialist findings.

Please refer to **Figure 4** below for the typical components of a wind turbine. The wind turbines will be connected to the proposed on-site substation via 11 to 33kV underground cabling and overhead power lines (**Figure 5**). The associated power line and substation will be assessed in a separate BA process.

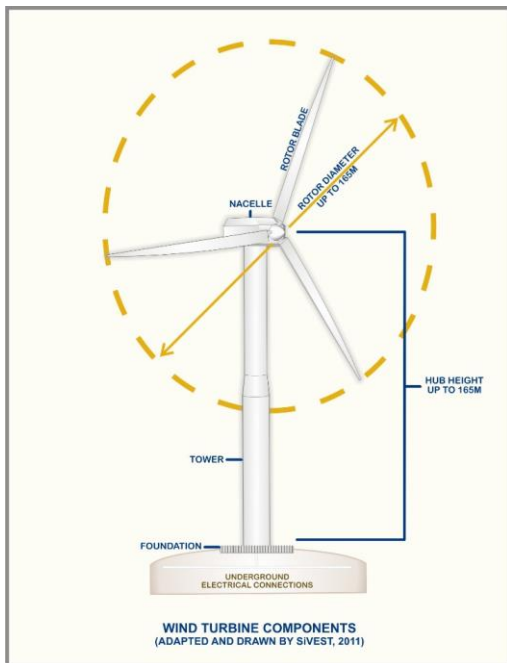


Figure 4: Typical components of a Wind Turbine

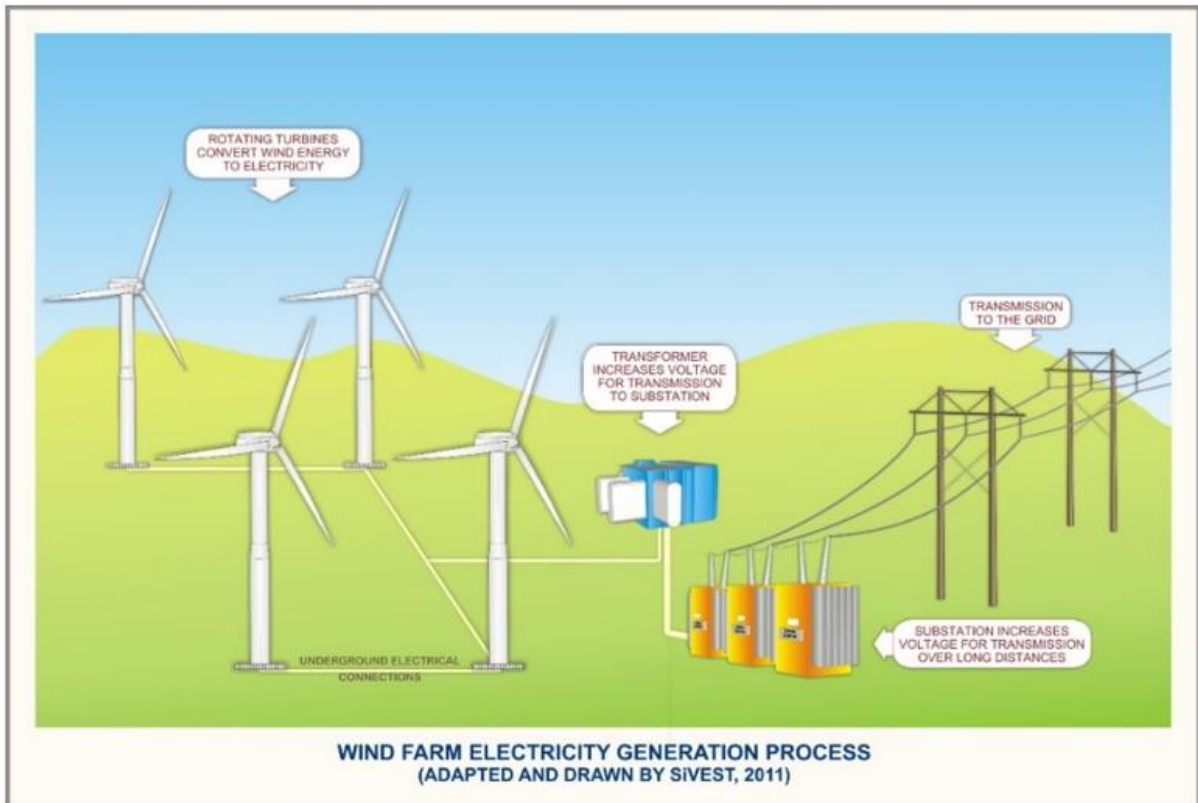


Figure 5: Conceptual WEF electricity generation process showing electrical connections

7.1.2 Service Provisions: Water, Sewage and Waste requirements

The proposed project will require service provisions and infrastructure for the duration of the project such as water, sewage and waste. Mainstream will consult with the Witzenberg Local Municipality to confirm the supply of services (in terms of water, waste removal, sewage and electricity) for the proposed project. The municipalities will also be consulted as part of the 30-day public review period of the Draft Basic Assessment Report (DBAR).

An outline of the services that will be required is discussed in detail below.

7.1.2.1 Water Usage

During the construction phase of the proposed project, water will be obtained from either a registered service provider, existing boreholes within the project site or through surface water abstraction. The anticipated water usage will be for:

- Drinking;
- Ablution facilities;
- Access Road construction;
- Dust suppression
- Fire-fighting reserve

- Cleaning of facilities and components; and
- Construction of foundations for the Wind Turbines etc.

During the operation phase, water will be supplied either by a registered service provider, boreholes within the project site or through abstraction.

Approval for water usage will form part of a separate water use authorization approvals process.

7.1.2.2 Sewage Usage

The project will require sewage services during the construction and operational phases. Low volumes of sewage or liquid effluent are estimated during both phases. Liquid effluent will be limited to the ablution facilities during the construction and operational phases. Portable sanitation facilities (i.e. chemical toilets) will be used during the construction and operational phases, which will be regularly serviced and emptied by a suitable (private) contractor on a weekly basis. It is anticipated that sewage will be disposed of in the municipal waterborne sewage system, if the municipality confirms capacity.

7.1.2.3 Solid Waste Generation

During the construction phase, the following waste materials are expected:

- Packaging material, such as the cardboard, plastic and wooden packaging and off-cuts;
- Hazardous waste from empty tins, oils, cement bags, soil containing oil and diesel (in the event of spills), and chemicals;
- Building rubble, discarded bricks, wood and concrete;
- Domestic waste generated by personnel; and
- Vegetation waste generated from the clearing of vegetation.

Solid waste will be managed via the Environmental Management Programme (EMPr) (**Appendix 8**), which incorporates waste management principles. General waste will be collected and temporarily stockpiled in skips in a designated area on site and thereafter removed, emptied into trucks, and disposed at a registered waste disposal facility on a regular basis by an approved waste disposal Contractor (i.e. a suitable Contractor). Any hazardous waste (such as contaminated soil as a result of spillages) will be temporarily stockpiled (for less than 90 days) in a designated area on site (i.e. placed in leak-proof storage skips), and thereafter removed off site by a suitable service provider for safe disposal at a registered hazardous waste disposal facility.

Waste disposal slips and waybills will be obtained for the collection and disposal of the general and hazardous waste. These disposal slips (i.e. safe disposal certificates) will be kept on file for auditing purposes as proof of disposal. The waste disposal facility selected will be suitable and able to receive the specified waste stream (i.e. hazardous waste will only be disposed of at a registered/licensed waste disposal facility). The details of the disposal facility will be finalised during the contracting process, prior to the commencement of construction. Where possible, recycling and re-use of material will be encouraged. Waste management is further discussed in the EMPr. During the operational phase of the

proposed Patatskloof WEF, waste generation will be minimal and will be disposed of a licensed landfill site.

7.1.2.4 Electricity Requirements

In terms of electricity supply for the construction phase, the developer will utilise a combination of generators and solar systems. During the operational phase, the wind farm will have minimal electricity requirements as the project itself will generate and distribute electricity.

7.2 NEMA Listed Activities

The amended EIA Regulations promulgated under Section 24(5) of the NEMA, 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 Basic Assessment Process. The project will trigger the following listed activities:

Table 10: Listed activities in terms of NEMA: EIA Regulations 2014 (as amended in 2017), applicable to the proposed project

Activity No(s):	Relevant Activity(ies)	Describe the portion of the proposed project to which the applicable listed activity relates.
Basic Assessment Activity(ies) as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended		
11 (i)	<p>GN R. 327 (as amended) Item 11: The development of facilities or infrastructure for the transmission and distribution of electricity—</p> <p>(i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts.</p>	<p>One (1) new 11kV - 33/132kV on-site substation consisting of two (2) portions: IPP portion / yard (33kV portion of the shared 33kV/132kV portion) and an Eskom portion (132kV portion of the shared 33kV/132kV portion) including associated equipment and infrastructure, occupying a total area of approximately 25ha (i.e. 250 000m²) i.e. 12.5 ha for the IPP Portion and 12.5 ha for the Eskom Portion. The Eskom portion will be ceded over to Eskom once the IPP has constructed the onsite substation. The necessary Transfer of Rights will be lodged with DFFE when required.</p>
12 (ii) (a) (c)	<p>GN R. 327 (as amended) Item 12: The development of:</p> <p>ii) infrastructure or structures with a physical footprint of 100 square metres or more;</p> <p>where such development occurs-</p> <p>(a) within a watercourse;</p> <p>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.</p>	<p>The proposed development will entail the construction of a WEF and associated infrastructure (including the IPP portion/yard of the 33kV/132kV shared on-site substation and BESS) within the proposed project site which will have a physical footprint of approximately 100m² or more and may 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.</p>

Activity No(s):	Relevant Activity(ies)	Describe the portion of the proposed project to which the applicable listed activity relates.
		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. 327 (as amended) Item 14: The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80m ³ or more but not exceeding 500m ³ .	The proposed development will include the construction of an on-site BESS. The storage capacity and type of technology for the proposed BESS will be determined at a later stage during the development phase, but most likely 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.
19	GN R. 327 (as amended) Item 19: The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;	The proposed development involves the construction of a WEF as well as other associated infrastructure (including the IPP portion/ yard of the 33kV/132kV shared on-site substation and BESS) within the proposed project site. Although the buildable area 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. 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. 327 (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 project site in order to provide access to each wind turbine, the shared 33kV/132kV on-site substation and the BESS, as well as to facilitate access throughout the WEF.

Activity No(s):	Relevant Activity(ies)	Describe the portion of the proposed project to which the applicable listed activity relates.
		<p>Existing 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 blades) to access the various wind turbine positions.</p> <p>During construction the roads will be up to 13.5m in some parts (i.e. for bringing in transformers etc), after construction they will be rehabilitated back down to 8m or less.</p> <p>It should be noted that the proposed application site will be accessed via the DR1475 District Road and DR1475, MR316 and MR319 WCG provincial Roads.</p>
28 (ii)	<p>GN R. 327 (as amended) Item 28: Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development:</p> <p>(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;</p>	<p>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.</p>
56 (ii)	<p>GN R. 327 Item 56: The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre -</p> <p>(ii) where no reserve exists, where the existing road is wider than 8 metres –</p>	<p>Internal roads are required within the application site in order to provide access to each wind turbine, the shared 33kV/132kV on-site substation and the BESS, as well as to facilitate access throughout the WEF.</p> <p>Existing internal roads may require widening by more than 6m, or lengthening by more than 1km.</p>
Scoping and EIA Activity(ies) as set out in Listing Notice 2 of the EIA Regulations, 2014 as amended		
1	<p>GN R. 325 Item 1: The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 MW or more, excluding where such development of facilities or infrastructure is for photovoltaic installations and occurs –</p> <p>(a) within an urban area; or (b) on existing infrastructure.</p>	<p>The proposed development It is proposed that a wind farm with an export capacity up to 250MWac will be constructed.</p>
15	<p>GN R. 325 Item 56: The clearance of an area of 20 ha or more of indigenous</p>	<p>The proposed development will transform more than 20 hectares of indigenous</p>

Activity No(s):	Relevant Activity(ies)	Describe the portion of the proposed project to which the applicable listed activity relates.
	vegetation, excluding where such clearance of indigenous vegetation is required for — (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	vegetation. Clearance will also be required for the proposed 33/132kV shared on-site substation, O&M building, internal access roads and other associated infrastructure.
Basic Assessment Activity(ies) as set out in Listing Notice 3 of the EIA Regulations, 2014 as amended		
4 i. (ii) (aa)	GN R. 324 (as amended) Item 4: The development of a road wider than 4 metres with a reserve less than 13,5 metres. i. Western Cape ii. Areas outside urban areas; (aa) Areas containing indigenous vegetation;	The development of the WEF facilities and associated infrastructures is likely to require the development of roads wider than 4m with a reserve of less than 13.5m in areas containing indigenous vegetation. Internal roads with a width of up to approximately 5m wide will provide access to each wind turbine. These roads will occur within the Western Cape Province, outside urban areas.
12 i. ii.	GN R. 324 (as amended) Item 12: The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. i. Western Cape ii. Within critical biodiversity areas identified in bioregional plans;	The proposed WEF development will involve the clearance of more than 300m ² 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. 324 (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	The proposed energy facility will likely 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 features as far as possible, some of the internal and access roads, will likely need to traverse the identified surface water features. The construction of roads and other infrastructure for the development will occur within Critical Biodiversity Areas (CBAs) located outside of urban areas.

Activity No(s):	Relevant Activity(ies)	Describe the portion of the proposed project to which the applicable listed activity relates.
	i. Outside urban areas: (aa) A protected area identified in terms of NEMPAA, excluding conservancies; (bb) National Protected Area Expansion Strategy Focus areas; (ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;	
18 i. ii. (aa)	GN R. 324 (as amended) Item 18: The widening of a road by more than 4 meters, or the lengthening of a road by more than 1 kilometer- i. Western Cape ii. All areas outside urban areas: (aa) Areas containing indigenous vegetation	Internal roads are required within the development envelop in order to provide access to each wind turbine, the 33kV/132kV shared on-site 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. 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 area contains indigenous vegetation.

8. NATIONAL WEB BASED ENVIRONMENTAL SCREENING TOOL

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

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

Table 11: Site Sensitivity Verification

Theme	Sensitivity	Comment
Agriculture Theme	High (WEF)	The Agricultural Compliance Statement and Site Sensitivity Verification is included in Appendix 6 of the Draft Basic Assessment Report. The site is classified by the national web-based environmental screening tool as mostly medium and low sensitivity for impacts on agricultural resources, except for a few pixels that are indicated as high sensitivity, but are considered insignificant. The buildable areas are predominantly on land

Theme	Sensitivity	Comment
		of low agricultural sensitivity. Only a small proportion is on land of medium agricultural sensitivity and none of it falls on any land higher than medium. The sensitivity attributed to the site by the screening tool is confirmed by this assessment. The motivation for confirming the sensitivity is predominantly that the climate data (low rainfall of approximately 250 mm per annum and high evaporation of approximately 1,450 mm per annum) proves the area to be arid, and therefore of limited land capability. In addition, the land type data shows the dominant soils to be shallow, sandy soils on underlying rock or hard-pan carbonate. A predominantly low agricultural sensitivity is entirely appropriate for this land which is unsuitable for crop production. This site sensitivity verification verifies the entire buildable area as being of low to medium agricultural sensitivity. The required level of agricultural assessment is therefore confirmed as an Agricultural Compliance Statement.
Animal Species Theme	High (WEF)	The Terrestrial Ecological Report is included in Appendix 6 of the Draft Basic Assessment Report. High related to a potential occurrence of the Critically Endangered Riverine Rabbit (<i>Bunolagus monticularis</i>). Several birds are also listed but these are discussed in the Avifaunal report. The study area contained three types of sensitivity, namely Very High, Medium and Low. However, the extent of the Very High Sensitivity areas was found to be greater in extent.
Aquatic Biodiversity Theme	Very High (WEF)	The Aquatic Report is included in Appendix 6 of the Draft Basic Assessment Report. The DFFE screening tool indicated that several Very High aquatic sensitivity features were located within the study area. The DFFE ratings were based on the presence of Aquatic Critical Biodiversity Areas (CBA), Rivers, and Freshwater Ecosystem Priority Area quinary catchments (NFEPAs). The presence of these Very High Sensitivity features was confirmed during this assessment, but also extended to include additional areas.
Archaeological and Cultural Heritage Theme	Low to Medium (WEF)	The Heritage Report is included in Appendix 6 of the Draft Basic Assessment Report. The Archaeological and Cultural Heritage sensitivity of the Patatskloof WEF and associated grid connection project areas has been evaluated, based on desktop studies and a 5-day site visit. It is concluded that the low rating as provided by the Environmental Screening Tool likely reflects the scarcity of heritage reports conducted in the region.
Avian (Wind) Theme	Medium (WEF)	The Avifaunal Report is included in Appendix 6 of the Draft Basic Assessment Report. According to the DFFE national screening tool, the habitat within the PAOI is classified as Low and Medium sensitivity for birds according to the Avian Wind theme, and High and Medium according to the Terrestrial Animal Species theme. The Medium classification according to the Wind theme is linked to the presence of a powerline of $\geq 132\text{kV}$ within 5km of the PAOI which is likely to attract sensitive raptors into the area. The classification of High in the Terrestrial Animal Species theme is linked to the potential presence of species of conservation concern (SCC), namely Southern Black Korhaan <i>Afrotis afra</i> (Globally and Regionally Vulnerable), Verreaux's Eagle <i>Aquila verreauxii</i> (Regionally Vulnerable), and Lanner Falcon <i>Falco biarmicus</i> (Regionally Vulnerable), and the classification of Medium is

Theme	Sensitivity	Comment
		linked to the potential presence of Ludwig's Bustard <i>Neotis ludwigii</i> (Globally and Regionally Endangered) and Verreaux's Eagle. The PAOI contains confirmed habitat for species of conservation concern (SCC) as defined in the Protocol for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial animal species (Government Gazette No 43855, 30 October 2020). The occurrence of SCC was confirmed during the integrated pre-construction monitoring programme, with observations of Ludwig's Bustard, Southern Black Korhaan, Karoo Korhaan and Verreaux's Eagle recorded within the PAOI and its immediate surrounds. Based on the field surveys to date, a classification of High sensitivity for avifauna in the screening tool is therefore appropriate.
Bats (Wind) Theme	High (WEF)	The Bat Report is included in Appendix 6 of the Draft Basic Assessment Report. As indicated in the Screening Tool Site Sensitivity Map, the project site is classified as high sensitivity , partly due to the presence of numerous riverbeds. Near-ground and high-altitude bat activity is in the upper class of the bat activity threshold for Succulent Karoo (MacEwan, et al. 2018), thereby confirming the classification of the site as high sensitivity. The Site Sensitivity Verification Report indicates the Patatskloof WEF area as having high bat sensitivity. The various drainage lines are particularly conducive to bat activity. This is confirmed by the 12-month bat monitoring study. In addition to what is portrayed on the Site Verification Report Map, the southern and northern areas are also high bat activity environments, with the mountainous areas in the south and the Grootrivier in the north. These areas are classified as high sensitivity areas in the Bat Monitoring Report and are therefore identified as 'no-go' areas for development.
Civil Aviation (Wind) Theme	Medium (WEF)	The closest airport is the Ceres Airfield and Robertson Airfield.
Defence (Wind) Theme	Low (WEF)	No negative impacts on the defence installation are expected in low sensitivity areas. It is unlikely for further assessment and mitigation measures to be required.
Flicker Theme	Very High (WEF)	The Visual Report is included in Appendix 6 of the Draft Basic Assessment Report. The flicker theme demarcates areas (1 km buffers) of sensitivity around identified receptors in the area. Under this theme, several "receptors" have been identified on the site, the majority of which are located on the site boundaries. As a result of the buffers demarcated around these receptors, portions of the site have been assigned a "very high" sensitivity rating. The presence of receptors, either on the Patatskloof WEF application site, or within 1km of the site boundary, was confirmed by the site sensitivity verification exercise. However, an assessment of receptor locations using Google Earth showed that there were no receptors present at some of the locations identified by the National Screening Tool. The remaining (confirmed) receptors were factored into the sensitivity analysis, together with a 1km buffer.
Landscape (Wind) Theme	Very High (WEF)	The Visual Assessment is included in Appendix 6 of the Draft Basic Assessment Report. Under the Landscape Theme, the tool identifies areas of Very High sensitivity in respect of WEF development on the Patatskloof WEF site.

Theme	Sensitivity	Comment
		According to the Screening Tool, the high sensitivity rating applied to the Patatskloof WEF site is associated with the presence of natural features such as mountain tops, high ridges and steep slopes. Based on these criteria, a significant portion of the southern sector of the site would be ruled out for WEF development. The areas of Very High and High Sensitivity identified by the Screening Tool on the Patatskloof WEF application site largely align with the ridges and mountain-tops identified in the sensitivity analysis undertaken and confirmed by the site sensitivity verification exercise for this site. These areas have been excluded from the preliminary WEF development area.
Palaeontology Theme	High (WEF)	<p>The Palaeontology Report is included in Appendix 6 of the Draft Basic Assessment Report.</p> <p>The overall palaeontological sensitivity of the Patatskloof WEF project area is inferred to be generally LOW due to (1) poor sedimentary bedrock exposure, (2) high levels of tectonic cleavage development and (3) deep chemical weathering of mudrock facies. No high sensitivity fossil sites or palaeontological heritage No-Go areas were identified here during the present field survey. The provisional palaeosensitivity mapping shown by the DFFE Screening Tool is therefore contested here.</p>
Noise Theme	Very High (WEF)	<p>The Noise Site Sensitivity Verification Report is included in Appendix 6 of the Draft Basic Assessment Report.</p> <p>The online screening tool identified a number of potential noise-sensitive areas in the vicinity of the proposed development. This area is considered to be noise-sensitive (verified during the June 2021 site visit) due to permanent or temporary residential activities. There are permanent residential activities located within 2,000 m from a potential wind turbine and considered to have a “Very High” sensitivity to noise. There are a number of areas identified (by the online screening tool) to have a “Very High” sensitivity to noise. The site assessment highlighted that these are not sensitive to noise, as there are no structures used for residential activities or any other use that are considered to be noise sensitive.</p>
Plant Species Theme	High (WEF)	<p>The Terrestrial Ecological Report is included Appendix 6 of the Draft Basic Assessment Report.</p> <p>Medium sensitivity due to the potential presence of several importance species listed by the screening tool results. Noting that most are species associated with fynbos vegetation units located in the southern portion of the study area, and not affected by the proposed layout. The protocol does not allow for the listing of the names of some of these species under threat within public documents and is only made known to the specialist conducting the assessment. No rare or listed plant species were observed during the survey period.</p>
RFI (Wind Theme)	High (WEF)	The screening tool described the study area as High Radio Frequency Interference Theme (RFI) sensitivity, however the cluster does not fall within the Square Kilometre Array (SKA) Karoo Central Radio Astronomy Advantage Area buffer. No further specialist study required.
Terrestrial Biodiversity Theme	Very High (WEF)	<p>The Terrestrial Ecological Report is included Appendix 6 of the Draft Basic Assessment Report.</p> <p>Very High sensitivity related to the presence of CBAs, Ecological Support Area (ESA) and the NFEPA. The extent of the Very High sensitivity areas was found to be greater than the extent in the Screening Tool.</p>

9. DESCRIPTION OF THE RECEIVING ENVIRONMENT

9.1 Geographical

The proposed WEF, BESS and associated grid infrastructure is located approximately 18km north-east of Touws River in the Western Cape Province and is within the Witzenberg Local Municipality, in the Cape Winelands District Municipality (**Figure 6**).

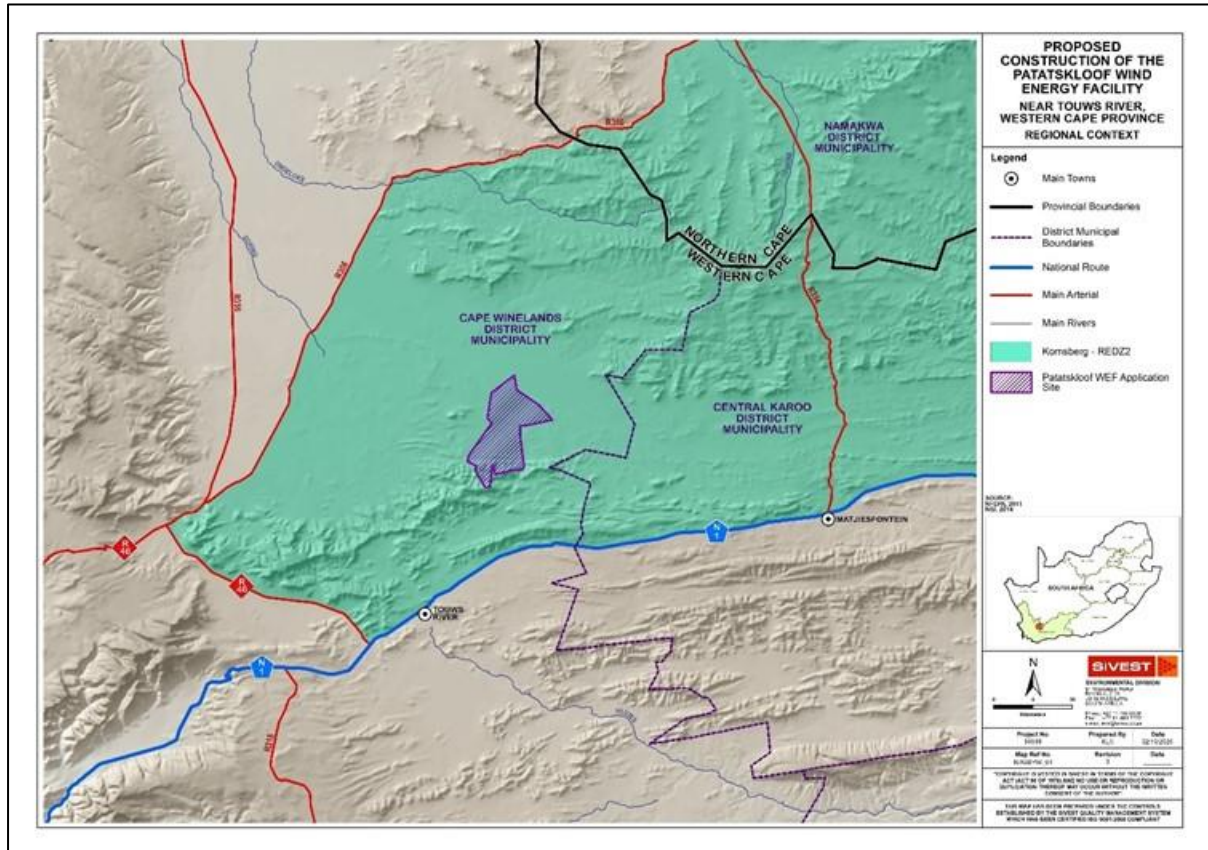


Figure 6: Regional context

9.2 Climate

The climate of area is characterized as semi arid with hot, drier, summers and cold, wetter, winters. Precipitation is controlled by cold fronts and orographic rainfall, with rainfall generally lowest in January (ave. 10 mm) and greatest in June (ave. 31 mm). The hottest month is February and coldest is July with average temperatures of 21°C and 8.9°C, respectively.

9.3 Land Use

According to the South African National Land Cover dataset (Geoterraimage 2020), much of the assessment area is characterised by natural vegetation which is dominated by low shrubland (Fynbos), interspersed with grassland. Patches of land classified as “Bare / Barren Land” occur in the north-

western sector of the study area. 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.

Agricultural activity in the area is restricted by the arid nature of the local climate and areas of cultivation are largely confined to relatively small stretches of land, mostly distributed along drainage lines. As such, the natural vegetation has been retained across much of the study area. Livestock (mostly sheep) farming 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. 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.

Existing high voltage power lines in the study area however form significant man-made features in an otherwise undeveloped landscape. These power lines include 765kV power lines and 400kV power lines, all of which bisect the study area (and the application site) in a south-west to north-east alignment. In addition, the Kappa 765/400kV substation, situated 7kms north-east of the application site, is a substantial anthropogenic feature with a distinctly more industrial character, resulting in a significant degree of transformation in the landscape. In addition, the Perdekraal East WEF which is located on the north-western boundary of the Patatskloof WEF application site has resulted in a significant degree of transformation in the landscape in this area. The DR1475 District Road which traverses the study area is another prominent feature in the landscape, although this is a gravel road and thus largely conforms to the typical natural rural character of the study area.

Further human influence is visible in the southern sector of the study area where the N1 national route traverses the study area in a north-west to south-east direction. The N1 is however physically separated from the Patatskloof WEF development by the Bontberg range which provides a visual divide, and as such the road is not expected to influence the overall character of the study area to any significant degree.

The closest built-up area is the town of Touws River which is situated approximately 18km south-west of the proposed application site while Matjiesfontein is some 40kms to the south-east. These small towns are well outside the visual assessment zone and are not expected to have an impact on the visual character of the study area.

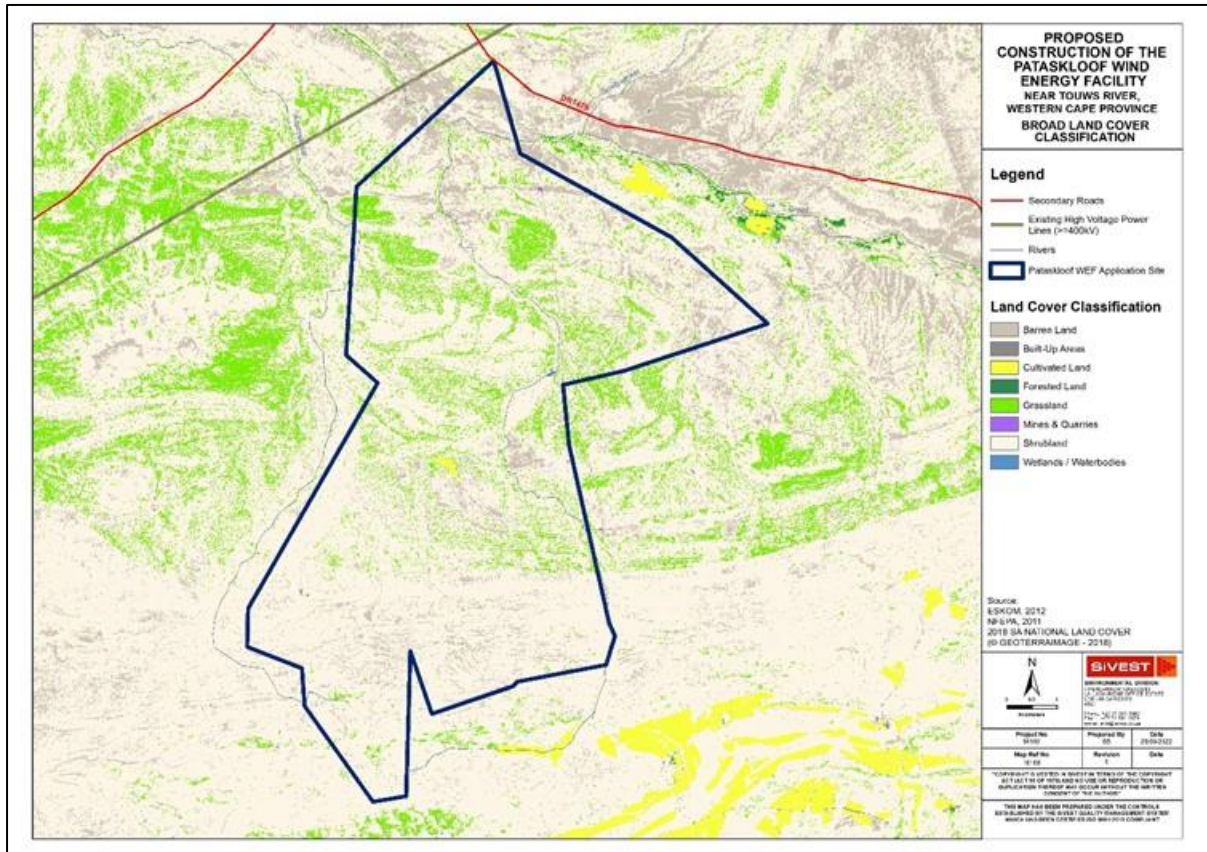


Figure 7: Land Cover Classification

The area can be considered to be a typical Karoo or “platteland” landscape that would characteristically be encountered across the high-lying dry western and central interior of South Africa. Much of South Africa’s dry Karoo interior consists of wide-open, uninhabited spaces sparsely punctuated by widely scattered farmsteads and small towns. Over the last couple of decades, an increasing number of tourism routes have been established within the Karoo, and in a context of increasing urbanisation in South Africa’s major centres, the Karoo is being marketed as an undisturbed getaway. Examples of this may be found in the “Getaway Guide to Karoo, Namaqualand and Kalahari” (Moseley and Naude-Moseley, 2008).

9.4 Agricultural

An agricultural compliance statement and site sensitivity verification was undertaken by Johann Lanz (November 2022). According to the report, “*Grazing of both sheep and game is the dominant agricultural land use in the area. Grazing capacity of the site is very low at 70 hectares per large stock unit. There is almost no cultivation in the area and what there is, is confined to small, isolated patches of land along water courses*”.

The site is classified by the national web-based environmental screening tool as mostly medium and low sensitivity for impacts on agricultural resources, except for a few pixels that are indicated as high sensitivity, but are considered insignificant. There is only one small, isolated patch of land within the

application area that is classified as cultivated land and therefore given high agricultural sensitivity (red in Figure below).

Across the rest of the site, agricultural sensitivity is purely a function of land capability. The land capability of the site on the screening tool is predominantly 5, but varies from 1 to 7. Values of 1 to 5 translate to a low agricultural sensitivity, and values of 6 to 7 translate to a medium agricultural sensitivity.

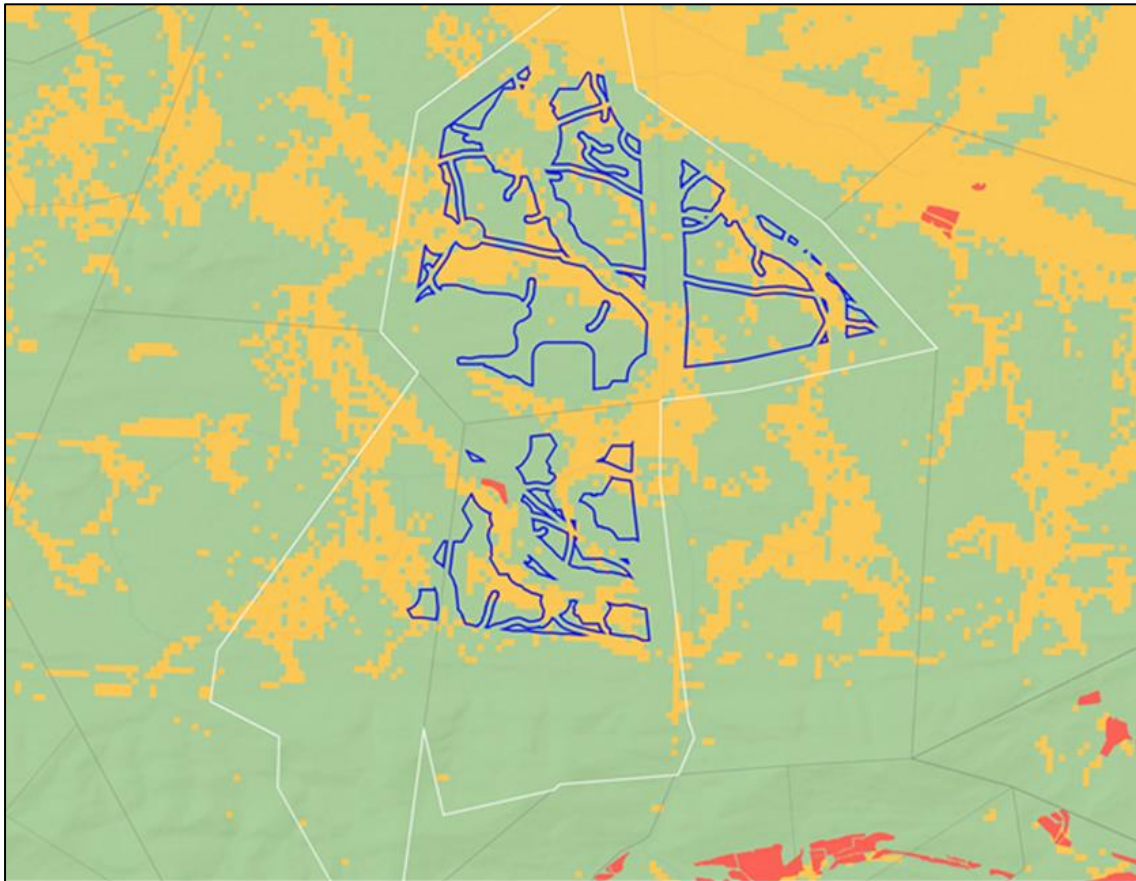


Figure 8: Agricultural sensitivity as given by the screening tool (green = low; yellow/orange = medium; red = high; dark red = very high).

The small scale differences in land capability across the project area are not very significant and are more a function of how the land capability data is generated by modelling, than actual meaningful differences in agricultural potential on the ground.

The agricultural footprint of the development, which is the total footprint of the facility that actually excludes agricultural land use, is predominantly on land of low agricultural sensitivity. Only a small proportion is on land of medium agricultural sensitivity and the footprint does not fall on any land higher than medium.

The allowable development limit on land of less than high agricultural sensitivity, as this site has been verified to be, is 2.5 ha per MW. This would allow a 250 MW facility to occupy 625 hectares. This is designed to allow solar PV developments on such land. Solar PV developments have agricultural

footprints that are typically eight times the size of wind farm ones. It can therefore be confirmed that the agricultural footprint of this development will be well within the allowable limit. It will in fact be approximately eight times smaller than what the development limits allow.

The proposed development will have a low and therefore acceptable negative impact on the agricultural production capability of the site. This is substantiated by the facts that the land is of very limited land capability and is not suitable for the production of cultivated crops, the amount of agricultural land loss is within the allowable development limits prescribed by the agricultural protocol, the proposed development offers some positive impact on agriculture by way of improved financial security for farming operations, as well as wider, societal benefits, and that the proposed development poses a low risk in terms of causing soil degradation.

From an agricultural impact point of view, it is recommended that the development be approved.

9.5 Topography

The site proposed for the Patatskloof WEF development is located in the scenic Karoo region of the Western Cape which is generally associated with wide vistas and mountainous landscapes. According to the Geotechnical specialist, "The topography in the general area surrounding the site to the north is characterised by flat plains with areas of slightly more undulating relief, including some local ridges. The topography over the assessment area is undulating but generally gently with minor areas of moderately steep to steep slopes at the ridges (greater than 1:10 based on the local topo-cadastral map). The southern portion of the site and surrounding area is characterised by mountainous areas with steeped side valleys.

The chart shows the site is generally flatter than 1:20 but, areas that exceed 1:10, and as steep as 1:5, exist within the proposed WEF area and grid corridors (Figure 9).

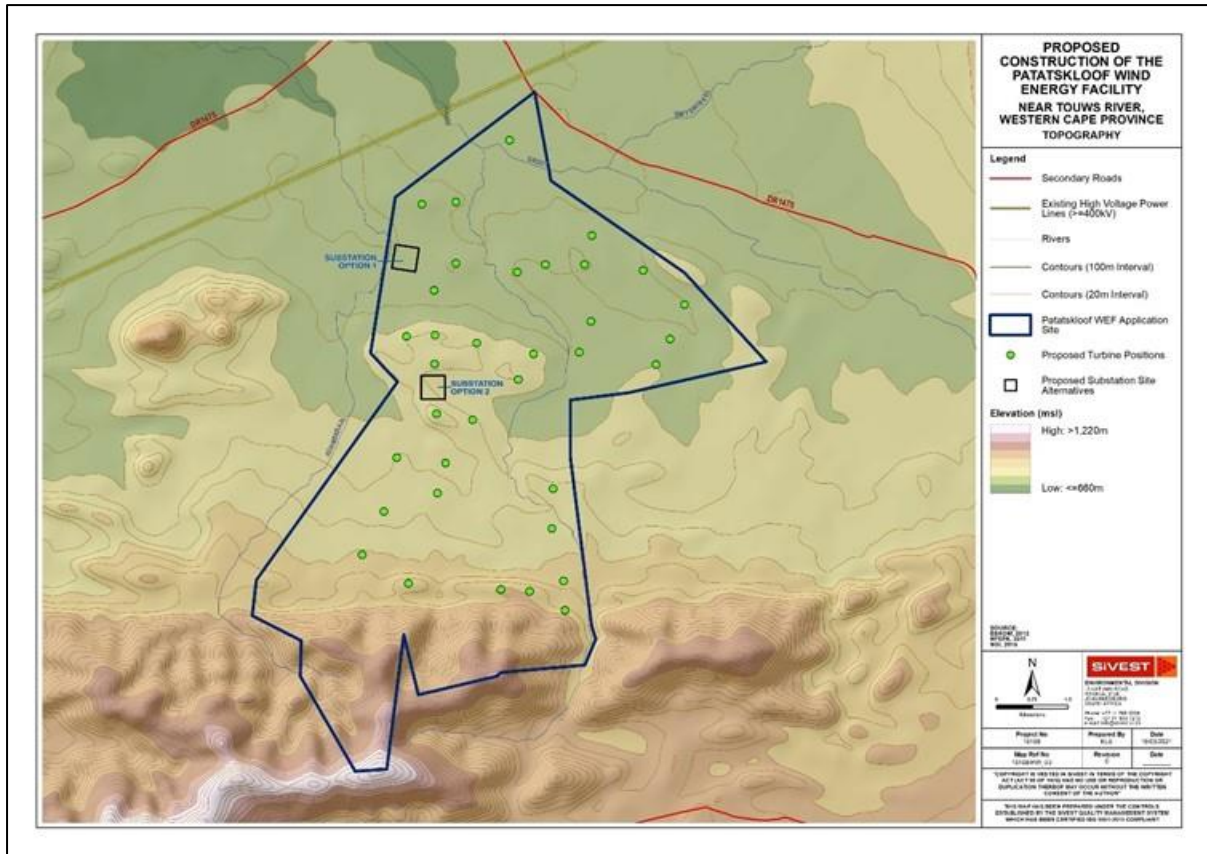


Figure 9: Topography

9.6 Geology and Soils

A desktop geotechnical report was undertaken by Gage Consulting (Pty) Ltd (October 2020). According to the report, “The site area is dominantly underlain by rock units of Dwyka Group (designated C-Pd). The Dwyka Group comprises of “tillite, boulder shale, sandstone, siltstone, shale, varved shale” of glacial, sub-glacial and subaqueous origin. The most common lithology is the massive diamictite facies, comprising of generally clast-rich diamictite (Johnson et.al., 2006) also referred to as tillite...

The extreme northern portion of the site is underlain by dark grey to black carbonaceous shale and medium to fine- to medium-grained feldspathic arenite and wacke of the Prince Albert Formation (designated Pp), dark grey shale, with cherty siltstone beds of the Whitehill Formation (designated Pw), siltstone, chert and sandstone with interbedded shale and yellow-weathering mudstone/tuff of the Collingham Formation (designated Pc), and dark grey shale and siltstone of the Tierberg Formation (designated Pt), all forming part of the Ecca Group...

The southern portion of the site is underlain by geological units of the Cape Supergroup. The area is underlain by shale, siltstone and thin sandstone of the Waaipoort Formation (designated Cw), sandstone alternating with shale and siltstone and subordinate grit beds with pebbles of the Floriskraal Formation (designated Cf), thinly laminated shale of the KweekVlei Formation (designated Ck) and

quartzitic sandstone with thin siltstone beds of the Witpoort Formation (designated Dwi), forming the upper Wittenberg Group.

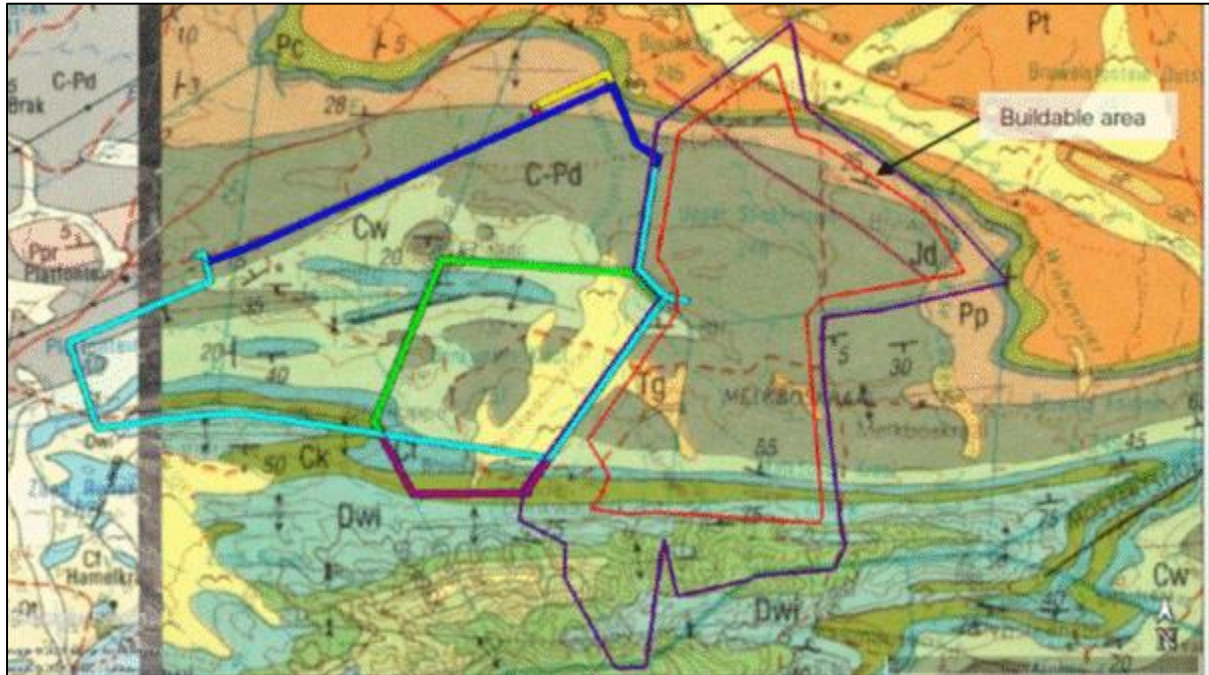


Figure 10: Geology (Extract of 1:250000 scale Geological Map 3320 Ladismith and 3319 Worcester- Gage Consulting)

9.7 Geohydrology

A desktop geotechnical report was undertaken by Gage Consulting (Pty) Ltd (October 2020). Accordingly: *“The site is located in the Olifants/Doorn Water Management Area (WMA). The southern portion of the WMA is characterised by fractured bedrock aquifer within which the permanent groundwater table is found at depth.*

The local farmers are reliant on groundwater extraction for farming activities. There are no boreholes that are registered with the Department of Water and Sanitation (DWS) near the site”.

9.8 Surface Water

An Aquatic Impact Assessment was undertaken by EnviroSci (Pty) Ltd (November 2022).

According to the assessment, *“The study area contains a variety of aquatic features associated with the region, characterised as follows:*

- *Non perennial rivers alluvial channels with tree dominated vegetation and broad floodplain / alluvial areas associated with the Groot River. These areas are also linked to a defined Vegetation Map vegetation unit namely Tanqua Wash Riviere (Azi 7) and known habitat for the Riverine Rabbit (Discussed in more detail in the Terrestrial assessment).*
- *Non perennial rivers alluvial dominated channels with or without riparian vegetation. These ranged from narrow channels to broad flood plain areas. The mainstem watercourse such as the*

Adamskraal River and contained elements of a riparian zone. These although not very broad contained several tree and shrub species that stood out from the general landscape, i.e. any sporadic runoff in these systems is able to support larger tree and shrub specimens versus the very low growing vegetation beyond the watercourse (i.e. terrestrial areas).

- Minor drainage lines, with no obligate aquatic vegetation and were mostly 2 – 8m in width
- Dams or weirs with no wetland or aquatic features, although not many of these were located within the study area.

The features listed above, drain the study area in a northerly region, forming part of the E22B Quinary Catchment, and forms part of the headwaters of the Doring River, which flows beyond the site (**Figure 11**). Furthermore, the study area is located within portions of the Great Karoo, Southern Folded Mountains and Western Folded Mountains Ecoregions of the Berg/Olifants Water Management Area.

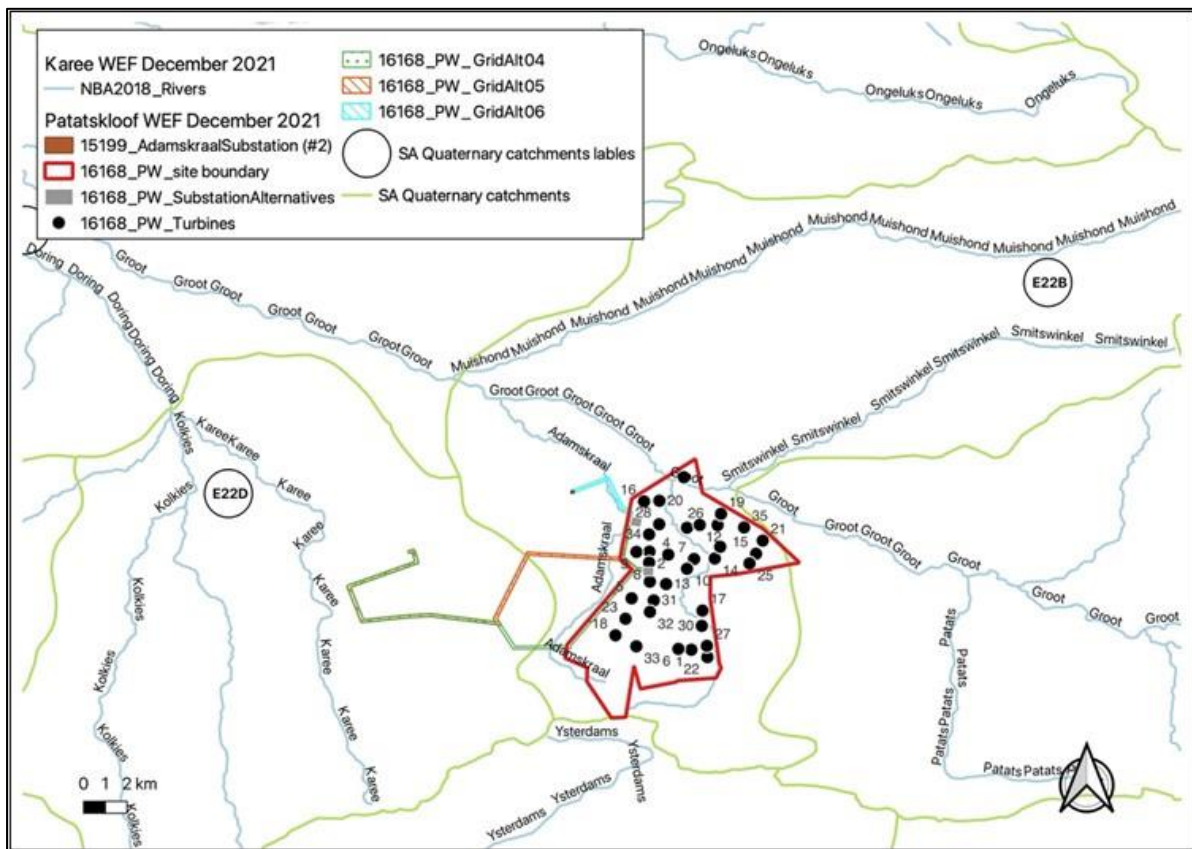


Figure 11: Project locality map indicating the various quinary catchments and mainstem rivers (Source DWS and NGI) within the project boundary

No wetlands were found within the proposed development areas, only the riverine features and those with any riparian thickets were dominated by *Vachellia karroo*, *Searsia lancea*, *Euclea undulata*, *Galenia africana*, *Erianthus capensis*, *Sporobolus fimbriatus*, *Cynodon incompletes*, *Eragrostis curvula*, *Erharta calcynia*, *Merxmullera disticha*, and *Cynodon dactylon*.



Figure 12: A broad watercourse with defined riparian zone associated with Groot River



Figure 13: Sandy / pebble alluvial channel associated with the tributaries of the Adamskraal River that will be traversed by internal access roads



Figure 14: One of the few artificial impoundments within the study area, with no aquatic species or wetlands associated

Three 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 for 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. This also includes the previously indicated 50m buffer, used in defining the buildable areas shown later in this report.

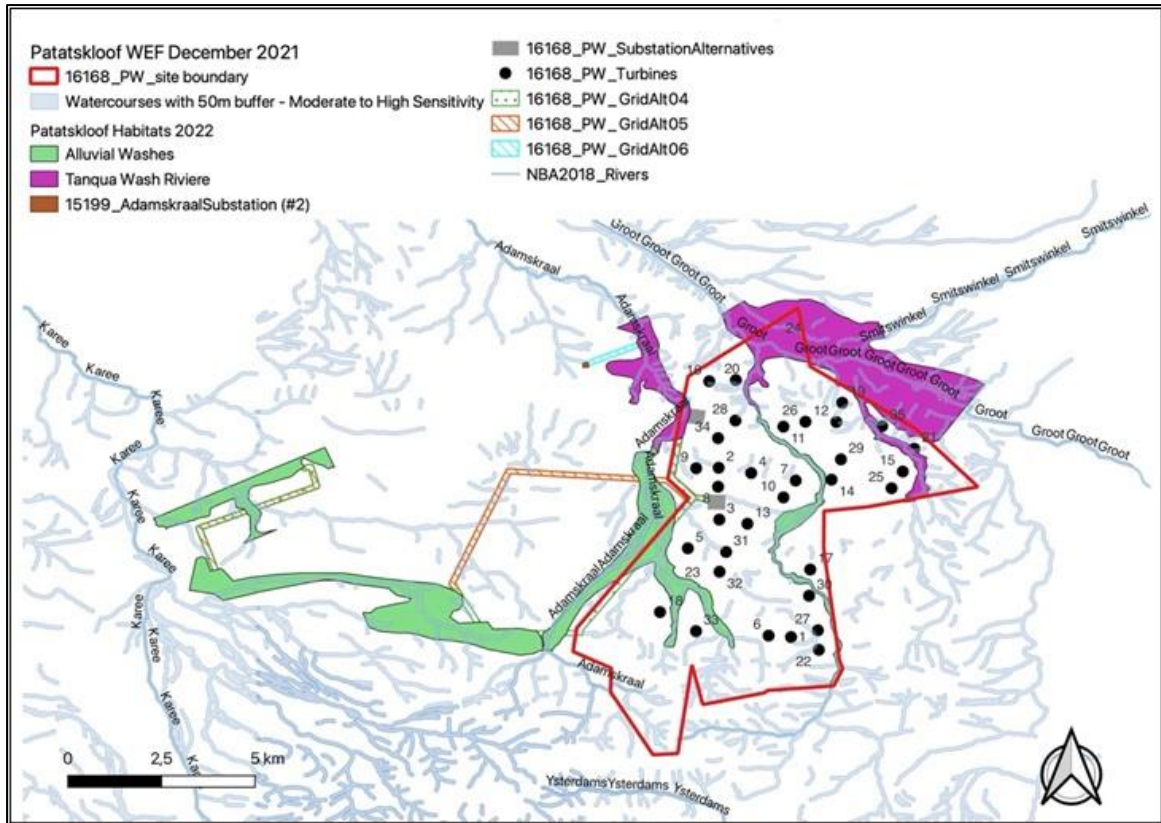


Figure 15: Delineated aquatic zones and respective sensitivities

In terms of the Present Ecological State, the catchment areas and subsequent rivers / watercourse are largely natural in state with localised impacts to some areas which includes erosion and sedimentation due to existing road crossings as well as impeded water flow due to several channel farm dams.

The present layout except for several new watercourse crossings, within or near existing roads/tracks, the overall layout (turbines and temporary/permanent building areas) could avoid the Very High sensitivity areas shown in the figure above. The study area is also not located within an International Bird Area (IBA) or a Strategic Water Resource Area and did not contain any wetland clusters or listed Threatened Ecosystems. Similarly, no standing pools were observed within any of the observed systems within the study area, such as those found Groot/Doring systems that are known to have small populations of indigenous fish.

The following sensitivity constraints have been identified:

Table 12: Results of sensitivity rating / constraints assessment

Development Component	Waterbody type	Sensitivity rating of the respective waterbody type against the development type and the required buffer	Sensitivity rating override if an impact such as a road already occurs within the proposed footprint
WTG areas	Alluvial Wash Floodplains with or without riparian vegetation	No-Go with 50m buffer	

Development Component	Waterbody type	Sensitivity rating of the respective waterbody type against the development type and the required buffer	Sensitivity rating override if an impact such as a road already occurs within the proposed footprint
	Watercourses with or without channels / riparian vegetation	No-go with 50m buffer	
	Artificial dams	Not Applicable = If these systems have no biological value, structures could be placed within the dams, or dams could be demolished if required	
Hardstands, Buildings / Substations & BESS	Alluvial Wash Floodplains with or without riparian vegetation	No-Go with 50m buffer	
	Watercourses with or without channels / riparian vegetation	No-go with 50m buffer	
	Artificial dams	Not Applicable = If these systems have no biological value, structures could be placed within the dams, or dams could be demolished if required	
Roads	Alluvial Wash Floodplains with or without riparian vegetation	No-Go with 50m buffer No-go with 50m buffer	LOW if an existing crossing / road or impact is already present, that must then be included in the potential road network
	Watercourses with or without channels / riparian vegetation		
	Artificial dams	Not Applicable = If these systems have no biological value, structures could be placed within the dams, or dams could be demolished if required	
Overhead Lines	Alluvial Wash Floodplains with or without riparian vegetation	Assumption is that the overhead lines could span these areas, but the towers/pylons should adhere to the buffer distances as indicated where possible as some of the alluvial system are very broad	
	Watercourses with or without channels / riparian vegetation		
	Artificial dams		

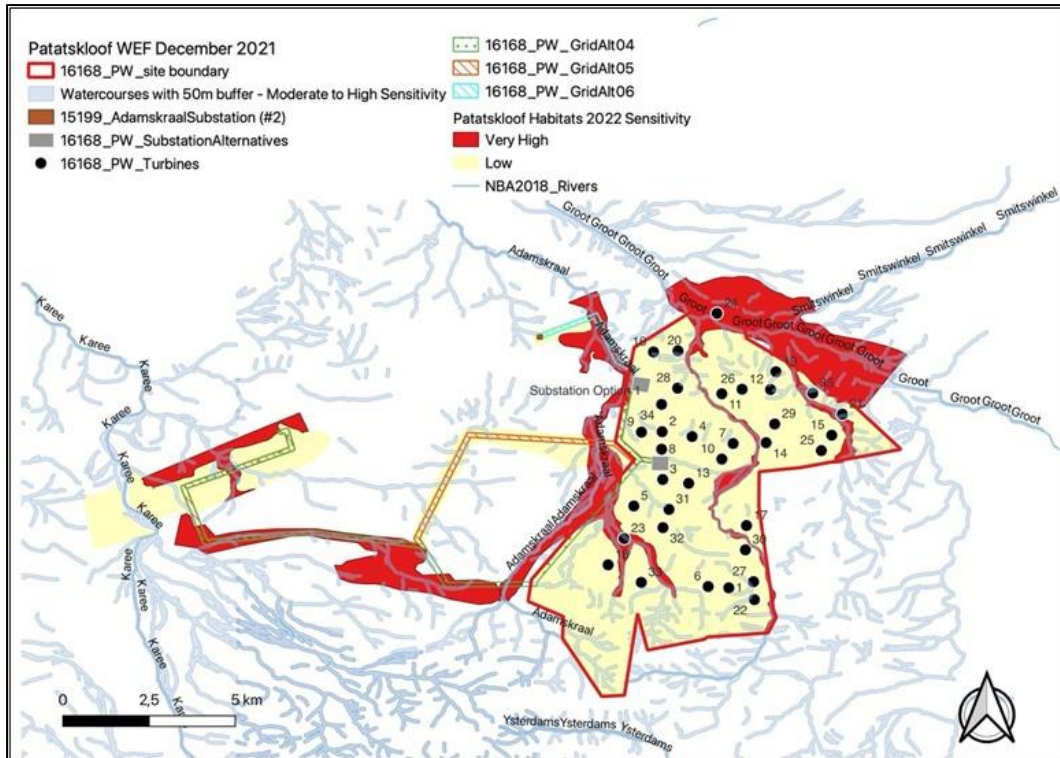


Figure 16: Habitat sensitivity map (with no-go identified in red)

The project overall has a small footprint spread out over a large area, allowing for retention of much of the natural environment so that the systems should remain largely unaffected. Therefore, the wind farm is such that it carries a low intensity impact on aquatic resources, but requiring the clearing of areas with terrestrial vegetation, especially when considering the associated roads, cables and other infrastructure.

A variety of environmental features were observed within the study area and these were mapped and buffered as necessary for their protection. The current layout has the potential, to a large degree, avoided these sensitive features and buffer areas, greatly reducing the potential overall impact and environmental risk. The overall and cumulative impacts, as assessed, are linked to instances where complete avoidance was not possible, or the nature of the activities involve a potential risk to aquatic resources even at great distance.

In conclusion, with the results of this assessment, the terrestrial study and various other constraints determinations, a final Buildable Area was developed in October 2022. This was then compared to the various sensitivities of the habitats observed and found to have taken cognizance of these, i.e., the buildable areas will impact on Low sensitivity area, thus resulting in Low impact ratings as discussed in this assessment.

Going forward, the turbine, roads and ancillary structures should thus take this into account as three buildable areas are located within Alluvial Washes, while it is also noted that the buildable areas are not contiguous and would have to cross some sensitive areas in particular access roads, cables and overhead lines. Therefore, any mitigations around route selections mentioned in this report must be considered (e.g. use existing tracks) and must be considered in the walkdown surveys post authorisation

9.9 Biodiversity

According to the Terrestrial Biodiversity Assessment undertaken by Brian Colloty of EnviroSci, “the site is dominated by three terrestrial vegetation types and one associated with the aquatic environment, spanning Karoo, Fynbos and Renosterveld habitat types. According to Mucina and Rutherford (2007 – amended 2018), the following vegetation units have been described for the site (refer Figure below):

- Tanqua Karoo SKV5
- Majtiesfontein Quartzite Fynbos FFq3
- Majtiesfontein Shake Renosterveld FRs6
- Tanqua Wash Riviere (Azi 7)

According to the specialist, “No rare or listed plant species were observed during the survey period within the proposed turbine positions; however, several species are protected in terms of the Western Cape legislation.”.

A potential 1571 species has been previously recorded in the Quarter Degree Square grids that cover the site (3319bb & 3320aa), of which ca. 80% are plant species. The remainder, which excludes birds and bats as these are assessed separately, include the following taxa:

- Mammals 36 Species
- Reptiles 35 Species
- Amphibians 8 Species
- Fish 5 Species
- Insects 90 Species
- Spiders / Scorpions 5 Species
- Fungi 11 Species

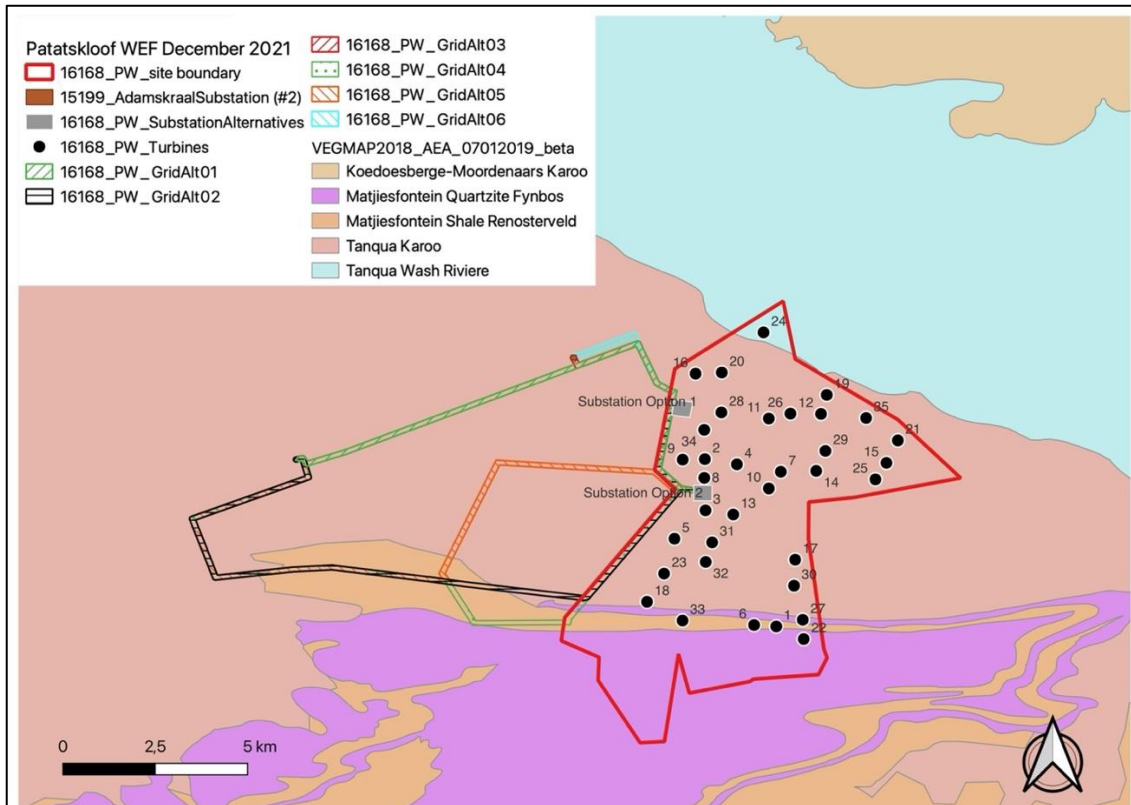


Figure 17: National Vegetation Map as per Mucina and Rutherford (2007) amended NBSA 2018

9.9.1 Vegetation and flora

The species composition clearly followed a gradient from the higher lying areas in the south, with a marked reduction in plant species diversity and abundance in habitats observed in the northern parts of the study area, i.e., the shale dominated areas associated with the Tanqua Karoo vegetation unit was rather depauperate (Figure 18) when compared to both the Matjiesfontein vegetation units in the south (Figure 19).



Figure 18: Tanqua Karoo Vegetation Unit



Figure 19: sparsely vegetated shale / quartzite plains in the western portion of the site

Figure 20 represents the finer scale mapping of the habitats/vegetation units found on site and could be summarised as follows:

- Ruschia quartzites
- Tanqua karoo - Pteronia pallens / Zygophyllum shrubland
- Renosterveld & Fynbos

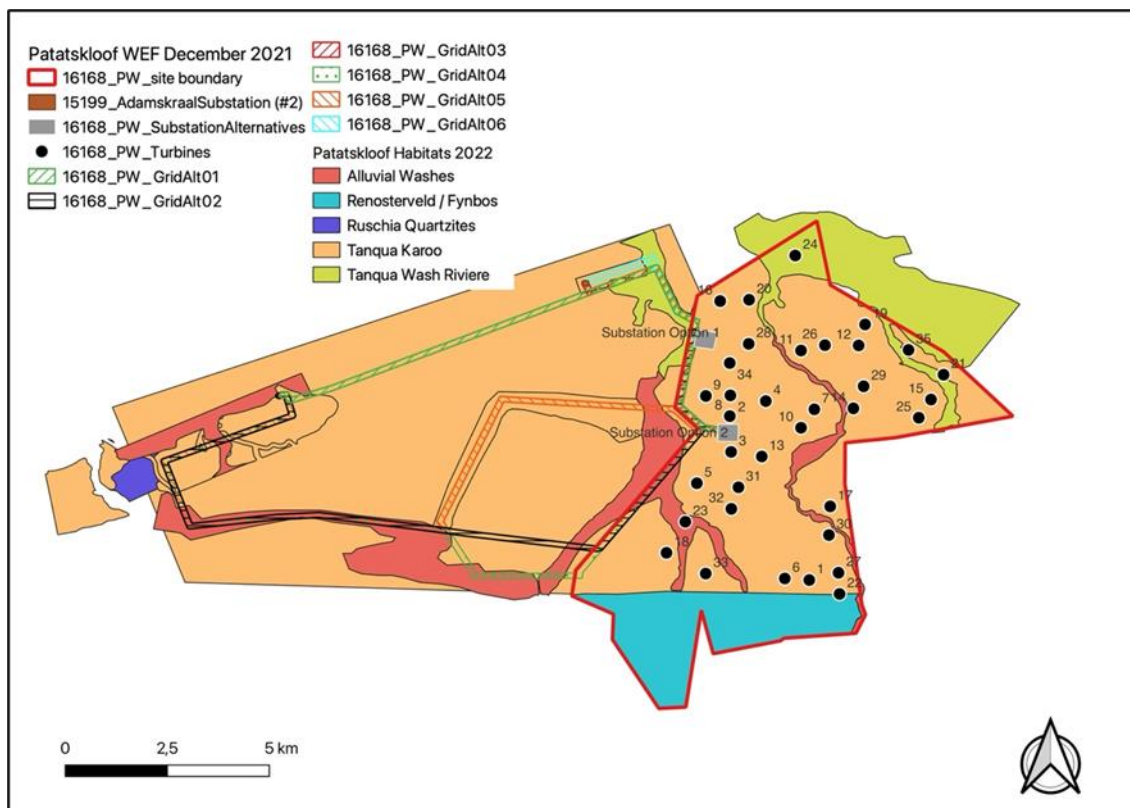


Figure 20: Vegetation units at a finer scale

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

In terms of the provincial Biodiversity Spatial Plan Critical Biodiversity Area (CBA) spatial layers (**Figure 21**), the aquatic systems associated with the study area have been rated as Critical Biodiversity Areas Type 1, Ecological Support Areas (Type 1 & 2), associated with aquatic/riverine systems.

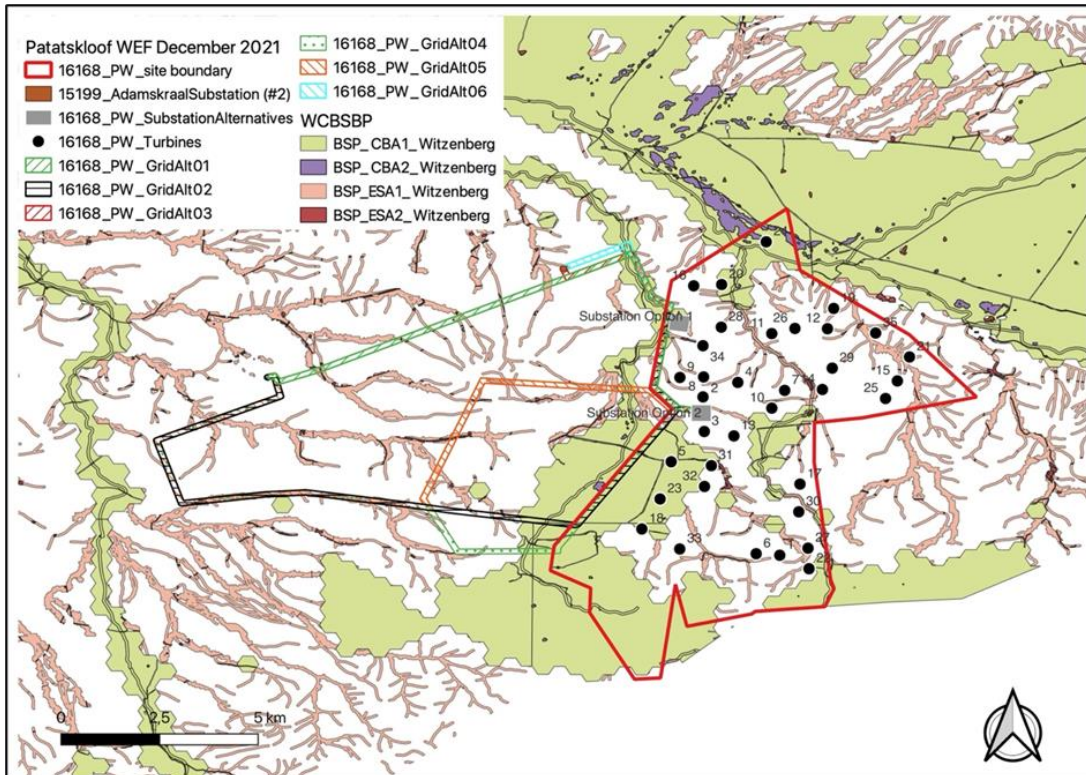


Figure 21: Critical Biodiversity Areas

9.9.2 Fauna

Approximately 179 animal species have been previously observed within the two quarter degrees square areas associated with the study area. These are predominantly Mammal (20%), Reptile (19%) and Insect species (50%), which for the most part highly mobile and or habitat specific. These as listed in the Species Checklist created for the assessment (Appendix 3) were then searched for during the site visit. The only exception being the fish and amphibian species as no permanent or suitable habitat was observed within the study area, although habitats do occur downstream of the project area.

The DFFE screening tool results only include one important species (High & Medium Sensitivity), namely the Critically Endangered Riverine Rabbit (*Bunolagus monticularis*). Riverine rabbits are habitat-specific associated with dense patches of riverine bush along seasonal rivers similar to those found downstream of the site (Doring & Groot rivers). The Riverine rabbit is the only indigenous burrowing species in Africa, and thus requires deep, soft alluvial soils. It is therefore important that the Tanqua Was Riviere and Alluvial Wash Floodplains with riparian areas, which also contain both *Lycium* and *Salsola* plant species, a favoured food source for this rabbit, are avoided as far as possible by the proposed development. Roads should be kept to minimum these areas and any unavoidable crossings must be groundtruthed by the specialist. The Riverine Rabbit has been observed within a 15-20km radius of the site.

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

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

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

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

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

- All tortoises [3 species observed which include Angulate tortoise (*Chersina angulate* - Plate 3), Karoo Padloper (*Homopus femoralis*) & Southern Tent Tortoise (*Psammobates tentorius tentorius*)];
- All lizards;
- All frogs;
- Most snakes [4 species have been observed in the past on site, namely Cape cobra (*Naja nivea*), Mole snake (*Pseudoaspis cana*), Karoo sand snake (*Psammophylax rhombeatus rhombeatus*), and Puff adder (*Bitis arietans arietans* – Plate 4);
- All indigenous antelope;
- Aardvark;
- Most small carnivores such as Honey Badger, Cape Fox, Bat-eared Fox;
- Large Grey Mongoose etc.

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



Figure 22: One of the many Angulate tortoises (*Chersina angulata*) observed on site that had succumbed to the previous drought conditions



Figure 23: Another common siting within the region, namely the Puffadder (*Bitis arietans arietans*), with two (2) sited during the assessment on site

The following sensitivities have been identified:

Table 13: Sensitivity rating / constraints assessment

Development Component	Waterbody type	Sensitivity rating of the respective waterbody type against the development type and the required buffer	Sensitivity rating override if an impact such as a road already occurs within the proposed footprint
WTG areas	Renosterveld / Fynbos	No-go	
	Tanqua Wash Riviere & Alluvial washes	No-go	
	Shale plains, Tanqua Karoo and Ruschia Quartzites	Low – thus acceptable	
Hardstands, Buildings / Substations & BESS	Renosterveld / Fynbos	No-go	
	Tanqua Wash Riviere & Alluvial washes	No-go	
	Shale plains, Tanqua Karoo and Ruschia Quartzites	Low – thus acceptable	
Roads	Renosterveld / Fynbos	No-go	LOW if an existing tracks / road or impact is already present, that must then be included in the potential road network
	Tanqua Wash Riviere & Alluvial washes	No-go	
	Shale plains, Tanqua Karoo and Ruschia Quartzites	Low – thus acceptable	
Overhead Lines	Renosterveld / Fynbos	Assumption is that the overhead lines could span these areas, but the towers/pylons should adhere to the buffer distances as indicated where possible as some of the alluvial system are very broad. This however may not be achievable for the majority of the proposed grid options – See Section 6 below.	
	Tanqua Wash Riviere & Alluvial washes		
	Shale plains, Tanqua Karoo and Ruschia Quartzites		

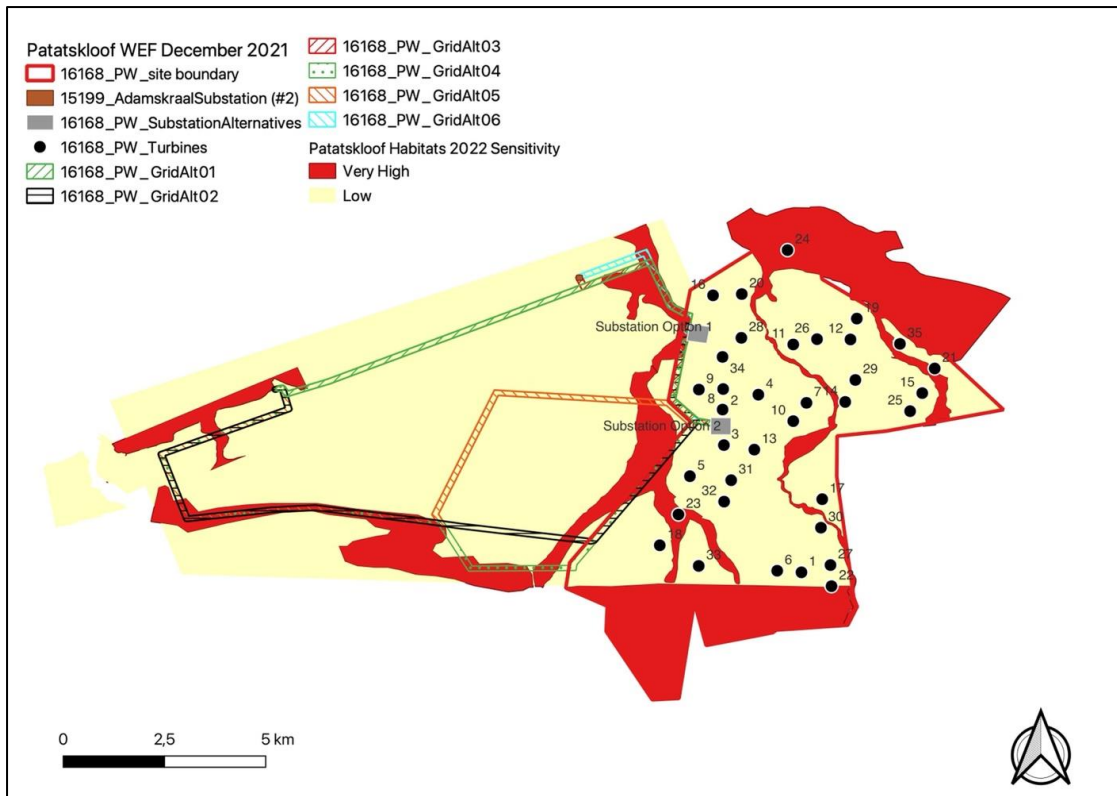


Figure 24: Habitat sensitivity map inclusive of terrestrial and aquatic habitats

The project overall has a small footprint spread out over a large area, allowing for retention of much of the natural environment so that the systems should remain largely unaffected. Therefore, the wind farm is such that it carries a low intensity impact, but requiring the clearing of areas with terrestrial vegetation, especially when considering the associated roads, cables and other infrastructure.

A variety of environmental features were observed within the study area and these were mapped and buffered as necessary for their protection. The current layout has the potential, to a large degree, avoided these sensitive features and buffer areas, greatly reducing the potential overall impact and environmental risk. The overall and cumulative impacts, as assessed, are linked to instances where complete avoidance was not possible, or the nature of the activities involve a potential risk to aquatic resources even at great distance.

Overall, it is expected that the impact on the environment would be Low (-). Noteworthy areas, that should be avoided, include the Very High Sensitivity areas as shown in this report.

Based on the findings of this study, the specialist finds no reason to withhold to an authorisation of any of the proposed activities, assuming that key mitigations measures are implemented and provided, that all the Very High sensitivity systems could be avoided, while making use of existing tracks.

In conclusion, the results of this assessment, the aquatic study and various other constraints determinations, a final Buildable Area (Go – Area) was developed in October 2022. This was then compared to the various sensitivities of the habitats observed and found to have taken cognizance of these, i.e. the buildable areas will impact on Low sensitivity area, thus resulting in Low impact ratings as discussed in this assessment.

Going forward, the turbine, roads and ancillary structures should thus take this into account, while it is also noted that the buildable areas are not contiguous and would have to cross some sensitive areas in particular access roads, cables and overhead lines. Therefore, any mitigations around route selections mentioned in this report must be considered (e.g., use existing tracks) and must be considered in the walkdown surveys post authorisation.

9.10 Avifauna

An Avifaunal Assessment was undertaken by Chris van Rooyen Consulting (August 2022). According to the assessment, *it is estimated that a total of 135 bird species could potentially occur in the broader area. Of these, 18 species are classified as priority species for wind development and 38 are classified as sensitive species for powerlines. The Cedarberg - Koue Bokkeveld Complex Important Bird Area (IBA) SA101 is the closest IBA and is located approximately 26km north-west of the development areas 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 development area.*

9.10.1 Results of pre-construction monitoring

The location of the priority species recorded at the proposed WEF are shown in the table below:



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

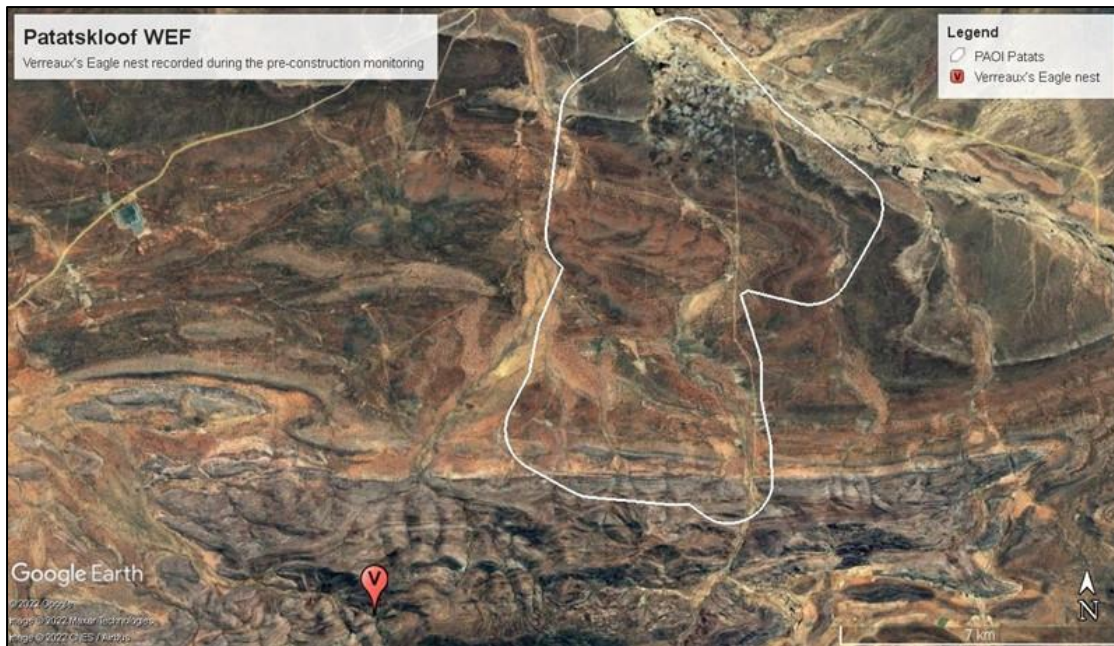


Figure 26: Verreaux Eagle nests recorded during nest searches conducted in March 2022

The table below provides an overview of the incidental sightings of priority species during the four seasonal surveys:

Table 14: Incidental sightings of priority species made in the course of the seasonal surveys

Species	Scientific name	Survey1	Survey2	Survey3	Survey4	Grand Total
Pale Chanting Goshawk	<i>Melierax canorus</i>	1	4	7	4	16
Greater Kestrel	<i>Falco rupicoloides</i>		1			1
Booted Eagle	<i>Hieraaetus pennatus</i>		1			1
Southern Black Korhaan	<i>Afrotis afra</i>				1	1
Ludwig's Bustard	<i>Neotis ludwigii</i>				3	3
Karoo Korhaan	<i>Eupodotis vigorsii</i>				1	1
Jackal Buzzard	<i>Buteo rufofuscus</i>				1	1

9.10.2 Findings and Assessment

The priority species which could occur with some regularity at the proposed Patatskloof WEF can be classified as either terrestrial species, soaring species or occasional long-distance fliers. Terrestrial species spend most of the time foraging on the ground. They do not fly often and when they do, they generally fly for short distances at low to medium altitude. At the application site, Ludwig Bustard, Southern Black Korhaan, Karoo Korhaan and Double-banded Courser are included in this category. Occasional long-distance fliers generally behave as terrestrial species but can and do undertake long distance flights on occasion. Species in this category is Ludwig's Bustard. Soaring species spend a significant time on the wing in a variety of flight modes including soaring, kiting, hovering and gliding at medium to high altitudes. At the project site, these include all the raptors which could occur i.e., Lanner Falcon, Booted Eagle, Martial Eagle, Greater Kestrel, Pale Chanting Goshawk, Secretarybird, Verreaux's Eagle and Black-chested Snake-Eagle. Based on the time spent potentially flying at rotor height, soaring species are likely to be at greater risk of collision.

It is anticipated that most birds at the proposed Patatskloof WEF will avoid the wind turbines, as is generally the case at all wind farms (SNH 2010). Exceptions already mentioned are raptors that engage in hunting which might serve to distract them and place them at risk of collision, birds engaged in display behaviour or inter- and intraspecific aggressive interaction. Complete macro-avoidance of the wind farm is unlikely for any of the priority species likely to occur at the proposed WEF.

The proposed Patatskloof WEF will pose a collision risk to several priority species which could occur regularly at the site. Species exposed to this risk are large terrestrial species i.e., mostly bustards such as Karoo Korhaan and Southern Black Korhaan, although generally seem to be not as vulnerable to turbine collisions as was originally anticipated (Ralston-Paton & Camagu 2019). Soaring priority species, i.e., raptors such as Martial Eagle, Pale Chanting Goshawk, Lanner Falcon, Booted Eagle and Greater Kestrel are most at risk of all the priority species likely to occur regularly at the project site. Verreaux's Eagle might also be at risk to some extent, although the species is unlikely to venture regularly into the PAOI.

9.10.3 Summary and Conclusion

The proposed Patatskloof WEF will have a moderate impact on avifauna which, in most instances, could be reduced to a low impact through appropriate mitigation. The alternative substation and laydown locations are all situated in essentially the same habitat, i.e. Karoo scrub. The habitat is not particularly sensitive, as far as avifauna is concerned, therefore any of the alternative locations will be acceptable. No fatal flaws were discovered in the course of the onsite investigations. The development is therefore supported, provided the mitigation measures listed in this report are strictly implemented.

In November 2022, the specialists were presented with a final buildable area which incorporates all of the proposed sensitivity buffers (Figure 27). The final buildable area was assessed accordingly from an avifaunal impact perspective, and the impact ratings and conclusions reached in this study as far as the WEF infrastructure is concerned, remain unchanged.

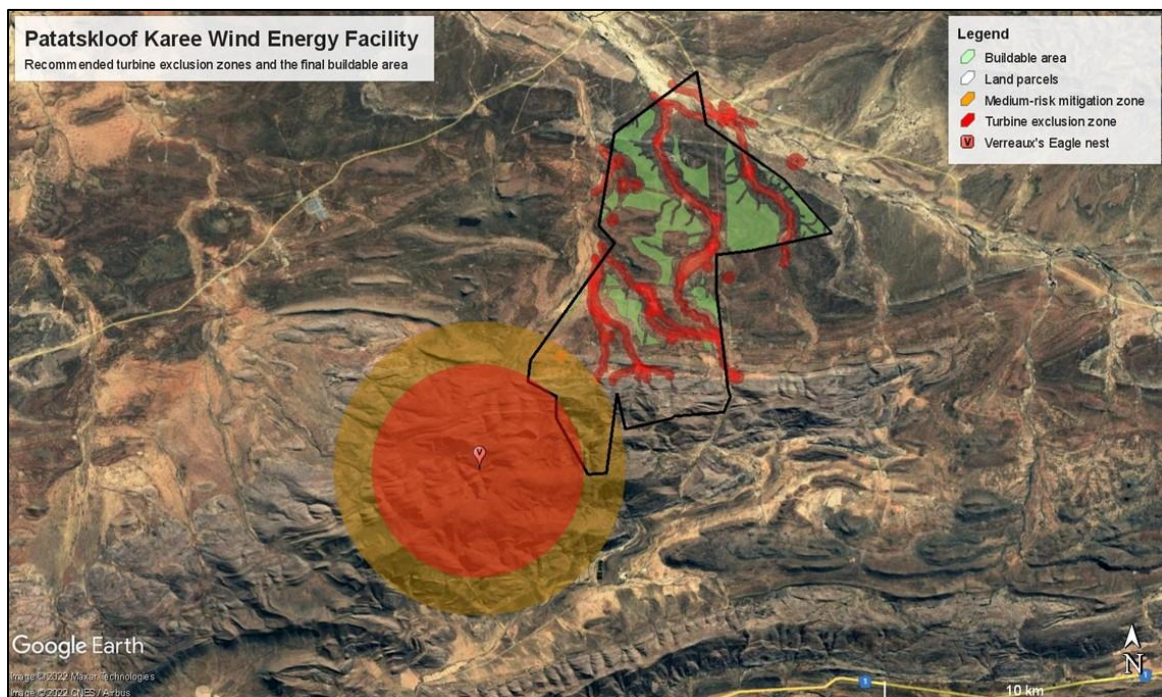


Figure 27: Layout and avifaunal sensitivities

9.11 Bat

A bat specialist study was undertaken by EkoVler (September 2022).

The extent to which bats may be affected by the proposed WEF will depend on the extent to which the proposed development area is actively 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 included in the report. The bats mentioned have distribution ranges that cover the proposed Patatskloof WEF development and bats that had been confirmed on the project site itself or on other wind farms in the area, are marked as such.

Of the 12 species which have distribution ranges 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. *Rhinolophus capensis* (Cape horseshoe bat), *Eptesicus hottentotus* (Long-tailed serotine) and *Cistugo seabrae* (Angolan wing-gland bat) are endemic to Southern Africa, and mainly due to agricultural activities have limited suitable habitat left (Monadjem, 2010).

According to the likelihood of fatality risk, as indicated in the latest Pre-Construction Guidelines (Sowler *et al.*, 2017), four species, namely *Miniopterus natalensis* (Natal long-fingered bat), *Tadarida aegyptiaca* (Egyptian free-tailed), *Sauromys petrophilus* (Roberts's flat-headed bat) and *Neoromicia capensis* (Cape serotine), have a high risk of fatality. The high risk of fatality for *T. aegyptiaca* and *S. petrophilus* are due to their foraging habitat at high altitudes. *Myotis tricolor* (Temminck's myotis bat) has a medium to high risk of fatality while *E. hottentotus* has a medium risk of fatality.

The two Pteropodidae species, with a medium to high risk of fatality are not expected to roost on the project site itself, as this environment is not expected to be their preferred habitat, but they could traverse over the project site during migration and are therefore included.

9.11.1 Transects

Transects are a snapshot in time but do confirm species present at the project site. Transects were conducted during seasons when high bat activity was expected, and also when colder conditions prevail. The transects were conducted with a SM4BAT and a SMMU2 microphone mounted on a pole on the vehicle. The value of transects are debated at present and two seasonal transects were conducted, one during cold weather conditions and one when the weather conditions were already warmer.

Bat calls were plotted with MayotisSoft to show the positions where bats were recorded on the transect route. Note that when bats were recorded close to one another, individual calls are plotted on top of each other and not clearly displayed. One could nevertheless establish where high bat activity was recorded.

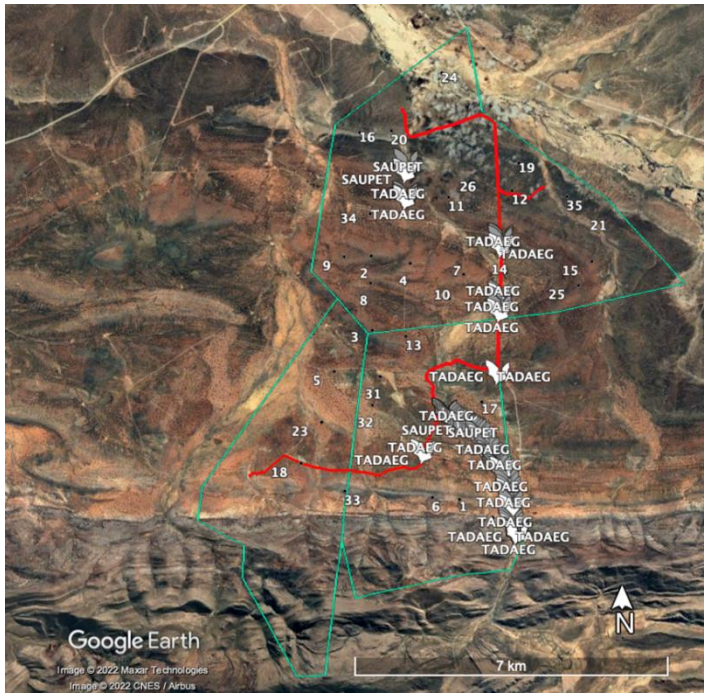


Figure 28: Transect results of 3 November 2021, showing high bat activity

The table below depicts transect details. Although September is officially spring, the weather conditions were still cold, and this transect was therefore classified as still in wintertime. An extra section of road, where high bat activity was expected, was driven during the November transects. One bat was recorded during the two transects in winter, while a total of 148 bats were recorded during the November transect. 80 bat passes were recorded on the set route, while another 68 bat passes were recorded on the extra section. The November transects showed an exceptionally high bat activity recorded during a transect. Bats were recorded all along the transect route, showing an even distribution of bat activity all over the project site during this transect. The transect mirrors the high activity recorded during springtime at the stationary monitoring systems. Of importance is the high activity of *Sauromys petrophilus* (Robert's flat-headed bat), which was the second most recorded species on the transect. This bat species seems to be sometimes relatively more active on the project site than was portrayed by the stationary systems.

Table 15: Karee WEF winter and spring transect data

Date	Temperature	Weather	Wind	Results
Winter				
1 September 2021	11 °C	Partly cloudy	Between 1,6 m/s and 3,3 m/s	1 X <i>T. aegyptiaca</i>
2 September 2021	8 °C	Cloudy	Between 3,4 m/s and 5,5 m/s	No bat calls
Spring (with extra road section)				
3 November 2021	Between 18 °C and 21 °C	Clear	0,9 m/s to 1,6 m/s	78 X <i>T. aegyptiaca</i> 2 x <i>S. petrophilus</i>
Extra section of road added to the transect				44 X <i>T. aegyptiaca</i> 19 X <i>S. petrophilus</i> 1 x <i>N. capensis</i>

9.11.2 Findings

Sensitivity zones are based on buffer zones, as indicated by the *South African Good Practice Guidelines for Surveying Bats at Wind Energy Facility Developments – Pre-construction* (MacEwan, et al. 2020). These zones are refined through field visits when physically visiting the bat-conducive environments occurring at the development sites, as well as static and active monitoring data.

The minimum buffer recommendation from SABAA is a 200 m buffer around all potentially bat-important features. The below figure has therefore incorporated 200 m buffers as a minimum. Due to the high bat activity at the project site, larger buffers have been applied to some high sensitivity zones at the proposed Patatskloof WEF project site.

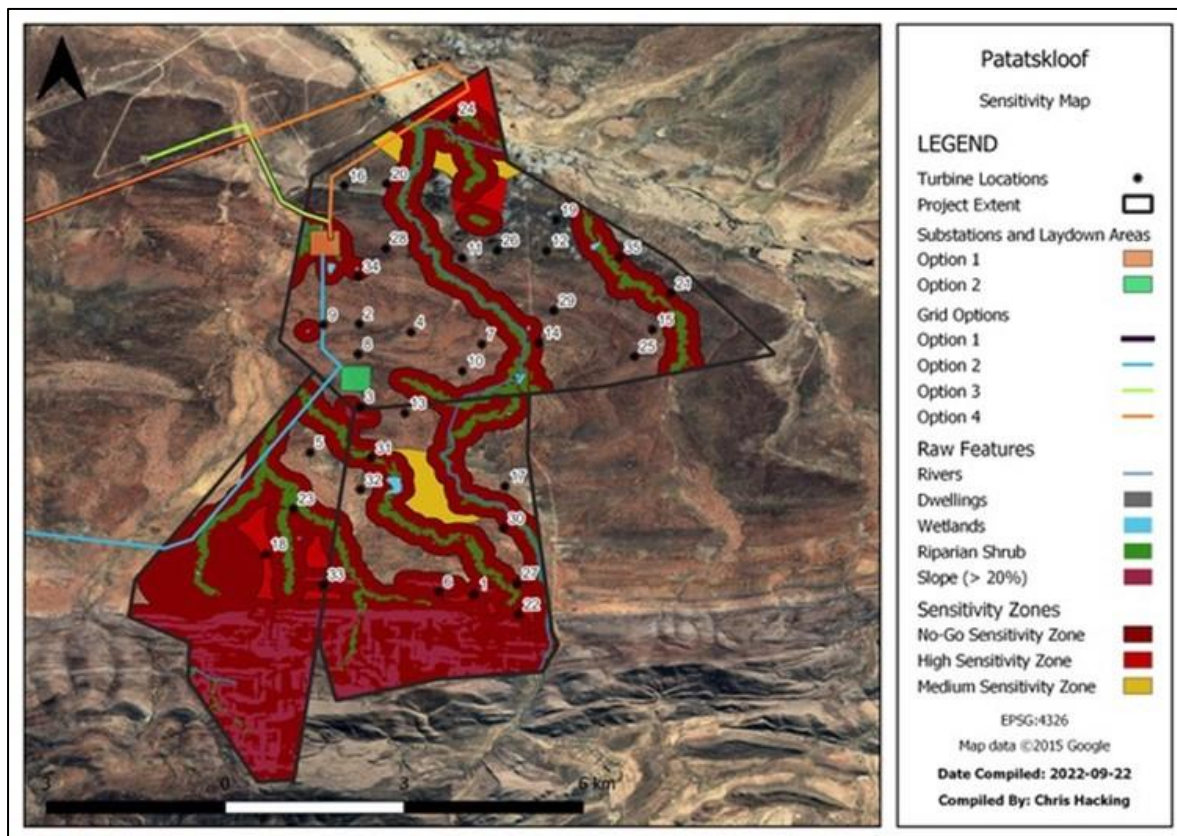


Figure 29: Bat sensitivity for the Karee WEF

Sensitivity zones are relevant to all components of the turbines, including the tips of the turbine blades; therefore, should a turbine be installed within proximity to a medium sensitivity zone and the turbine tip encroaches the medium sensitivity zone, then the mitigation of the medium zone should be applied to that turbine. Should the tip fall in a 'no-go' area or a high bat sensitivity zone, the turbines should be shifted out of that zone. It is recommended that these areas constitute 'no-go' development areas, i.e., where turning turbine components are not allowed. Medium sensitivity zones could be developed (turbines and associated infrastructure), but with mitigation.

No-Go Zones

'No-go' zones are areas which should be avoided at all costs, not only for placing turbine positions, but as far as possible also for laydown areas and other supporting infrastructure, with exception of roads. 'No-go' zones are recommended for the following:

- The northern section of the WEF site, with mountainous areas and a lot of roosting opportunities for bats;
- Dry riverbeds with historical riparian shrub;
- 500 m buffer around human dwellings; and
- 200 m buffer around water sources, including water troughs for livestock, reservoirs, dams, and some clumps of isolated trees.

Some of these features could be historic, and might not present riparian shrub at present, but the precautionary principle is valid for periods with increased rainfall, as per the bat guidelines.

High sensitivity zones

It is recommended that high sensitivity zones should be avoided for turbine development, but components of supporting infrastructure might occur in these areas, if no bat roosts are disturbed. The following are included in high sensitivity zones:

- Areas between no-go zones which could serve as flight corridors.

Medium sensitivity zones

It is recommended that medium sensitivity zones are kept free from development as far as possible but could be developed with mitigation measures. These zones are as follow:

- Areas of vegetation which are conducive to bat activity.
- Areas surrounding high sensitivity areas. This is to protect bats that fly, for example, beyond their roost area.
- Areas which could be sensitive to bats, but do not need a no-go or high sensitivity classification

Low sensitivity zone

When considering the high bat activity at the proposed Patatskloof WEF according to the threshold classification for Succulent Karoo, there are no low sensitivity areas on Patatskloof WEF. Low sensitivity is therefore considered relevant to the project site itself. These areas could be developed without turbine-specific mitigation at this stage of the project, although the mitigation measures for the project site, as described above, must be implemented. Because of the high bat activity recorded, the developer should budget for mitigation such as bat deterrents or curtailment, so that specific turbines could be targeted for operational mitigation when more data is available.

Updated buildable area comments

After specialist input was considered, the developer is proceeding with a buildable area instead of a detailed turbine layout. An updated bat sensitivity map is provided in **Figure 30** with no further infringement of turbine positions.

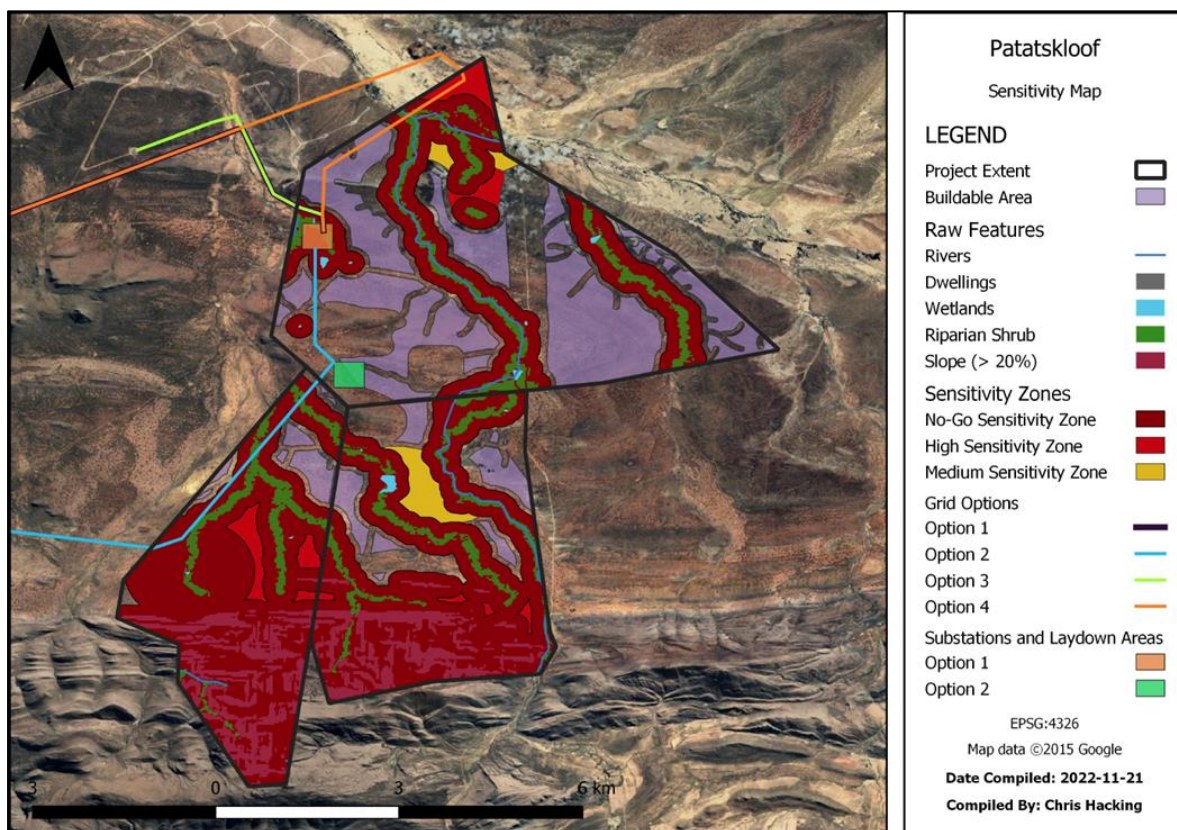


Figure 30: Patatskloof WEF updated bat sensitivity map

Curtailment for turbines in the medium sensitivity zones

It is recommended that curtailment is applied during the specified time periods when the relevant temperatures, wind speeds and humidity prevail. Fatality risk at the high mast indicates curtailment is required from September to March.

Table 16: Curtailment schedule to apply as necessary during the operational phase

Months	Time period	Temperature (°C)	Wind speed (m/s)	Humidity (%)	Curtailment
Beginning October to middle March	2 hours after sunset, up to 7 hours before sunrise	Above 15°C	Below 10 m/s	Between 40% and 70% humidity	Raise cut-in speed to 7 m/s

9.11.3 Conclusion and Impact Statement

Bat activity on the project site, according to the bat threshold for Succulent Karoo, is high and the negative impact on bats during the operational phase could thus be high. This must be confirmed during operational bat monitoring, but the developer should prepare for turbine specific curtailment and/or installing bat deterrents when more information is available

It should be noted that one year of pre-construction bat monitoring is required by legislation in South Africa. However, the semi-desert Succulent Karoo environment is subject to erratic weather conditions,

which vary from year to year. These changes usually result in changes in the bat situation which might not have been observed in this survey. This is not a limitation which would greatly affect the results of this bat monitoring programme, especially seen in the light of relatively good rainfall during the monitoring period.

The overall potential negative impact of the proposed Patatskloof WEF on bats, combined for all the development phases, is predicted to be Medium Negative without mitigation. The combined impact remains overall Medium Negative with mitigation, but the significance rating is lower.

Based on the findings of the one-year pre-construction monitoring undertaken at the proposed Patatskloof WEF project site, the bat specialist is of the opinion that no fatal flaws exist which would prevent the construction and operation of the WEF. EA may thus be granted, subject to the implementation of the recommendations made in this report.

10. DESCRIPTION OF THE SOCIO-ECONOMIC ENVIRONMENT

10.1 Socio economic characteristics

10.1.1 Cape Winelands District Municipality

The Cape Winelands District is a land locked municipality and covers an area of 21 472.67 km² (approximately 16.6 % of the total Western Cape Province). It borders the following Districts as depicted in **Figure 31**:



Figure 31: Location of the Cape Winelands District in relation to other District Municipalities (Cape Winelands Integrated Development Plan (IDP), Draft 5th Generation IDP 2022/23 – 2026/27)

The Cape Winelands District incorporates the following local municipalities:

- Breede Valley
- Drakenstein
- Langeberg
- Stellenbosch and
- Witzenberg.

The following towns are also located within the Cape Winelands:

- | | | | |
|------------------------|---------------|-------------|-------------|
| • Ashton | • Bonnievale | • Ceres | • De Doorns |
| • Franschhoek | • Gouda | • Klapmuts | • McGregor |
| • Montagu | • Op-Die-Berg | • Paarl | • Pniel |
| • Prince Alfred Hamlet | • Rawsonville | • Robertson | • Saron |

- Stellenbosch
- Stellenbosch Farms
- Touws River
- Tulbagh
- Wellington
- Wolseley
- Worcester

The district is regarded as the premier wine growing area with an ideal microclimate created by the mountains surrounding the towns of Stellenbosch and Franschhoek. The following sectors contribute economically to the district:

- Finance and business services (23.9%)
- Manufacturing (19.6%)
- Wholesale and retail trade (15.2%)
- Agriculture, forestry and fishing (13.1%)
- Transport and communication (9%)
- Construction (4.5%).

The district also attracts a large number of tourists to its wine industry.

With a population of 787 490 people, the Cape Winelands District Municipality has a population density of 36.7/km². According to Census, 2011 the district has a sex ratio of 97.2 with 25.8% of the population being under 15 years; 69.0% being between 15 and 65 years and 5.1% being over 65 years of age.

10.1.2 Witzenberg Local Municipality

Witzenberg Local Municipality is situated some 150 km north-east of Cape Town and covering an area of 10 753 km². Witzenberg is the largest of the local municipalities within the Cape Winelands district. The vision of the municipality is “*A Municipality that cares for its community, creating growth and opportunities*” (Witzenberg IDP 2022 -2023).

The following towns are within Witzenberg:

- Op-die-Berg
- Prince Alfred Hamlet
- Tulbagh and
- Wolseley.

The municipality also administers the following rural areas:

- Agter-Witzenberg
- The northern portion of the Breede River Valley (Het Land van Waveren)
- Koue Bokkeveld and
- Warm Bokkeveld.

The following economic sectors form the basis of the municipal economy:

- Agriculture, forestry and fishing (29.1%)
- Finance, insurance
- Real estate and business services (22%)
- Manufacturing (16.2%)
- Wholesale and retail trade, catering and accommodation (10%)
- General government (8.4%)

- Transport, storage and communication (8%)
- Community, social and personal services (3.5%).

With a population of 115 946 people the Witzenberg Local Municipality has a population density of 1 078/km². According to Census, 2011 the district has a sex ratio of 105.6 with 25.4% of the population being under 15 years; 70.4% being between 15 and 65 years and 4.2% being over 65 years of age.

10.2 Cultural/Historical Environment

10.2.1 Archaeological

An Archaeological Impact Assessment (AIA) was undertaken by PGS Heritage Pty Ltd (June 2022).

The fieldwork conducted for the evaluation of the possible impact of the new Patatskloof WEF has revealed the presence of forty-seven (47) heritage resources:

Burial Grounds and graves

A total of two (2) burial grounds were identified on the farm Upper Stinkfontein. The two burial grounds (PK43, PK44) were rated as having high heritage significance.

Historical Structures

A total of twenty-four (24) structures were identified, including ten (10) houses (including farmsteads, labourer houses, and old stone houses with associated kraals), seven (7) kraals, two (2) dam walls, one (1) reservoir, two (2) stone packed cairns, and two (2) circular stone hunting shelters.

Four of these sites (**PK-06, PK-15, PK 20, PK 24**) were of medium heritage significance but located more than 100m away from the proposed development. As a result, no impact is expected from the proposed development on these sites.

Archaeological features

A total of twenty-three (23) archaeological resources/areas were identified, including seventeen (17) that can be classified as find spots with varying collections of LSA and some MSA material present. Three (3) areas that can be classified as archaeological sites due to the presence of stone tools and other cultural material such as OES beads, three (2) sites consisted of a rock shelter with rock art, and one (1) site containing a possible rock art as indicated by residents.

Three archaeological sites (**PK-29, PK-42, PK 46**) were rated as having a high heritage significance and three sites (**PK 09, PK 37, PK 41**) medium heritage significance. All of these are located more than 100m away from the proposed development. As a result, no impact is expected from the proposed development on these sites.

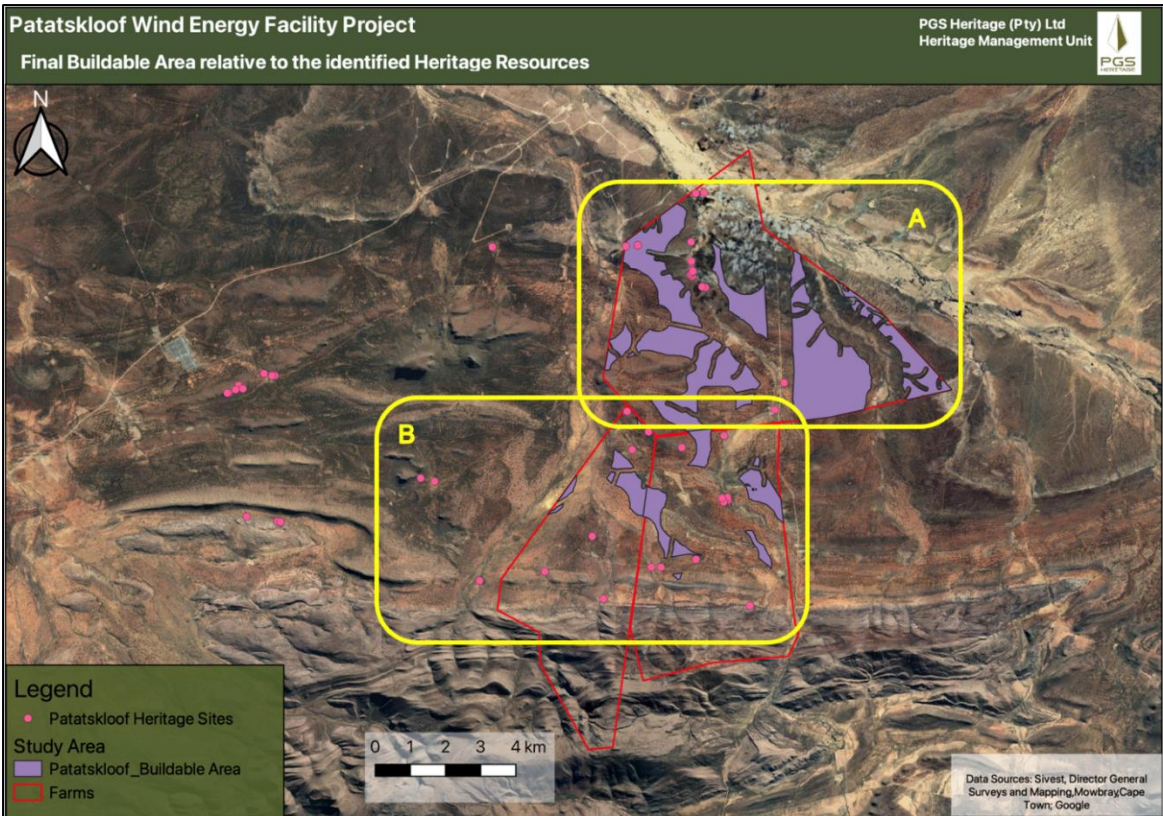


Figure 32: Location of heritage resources within the study area

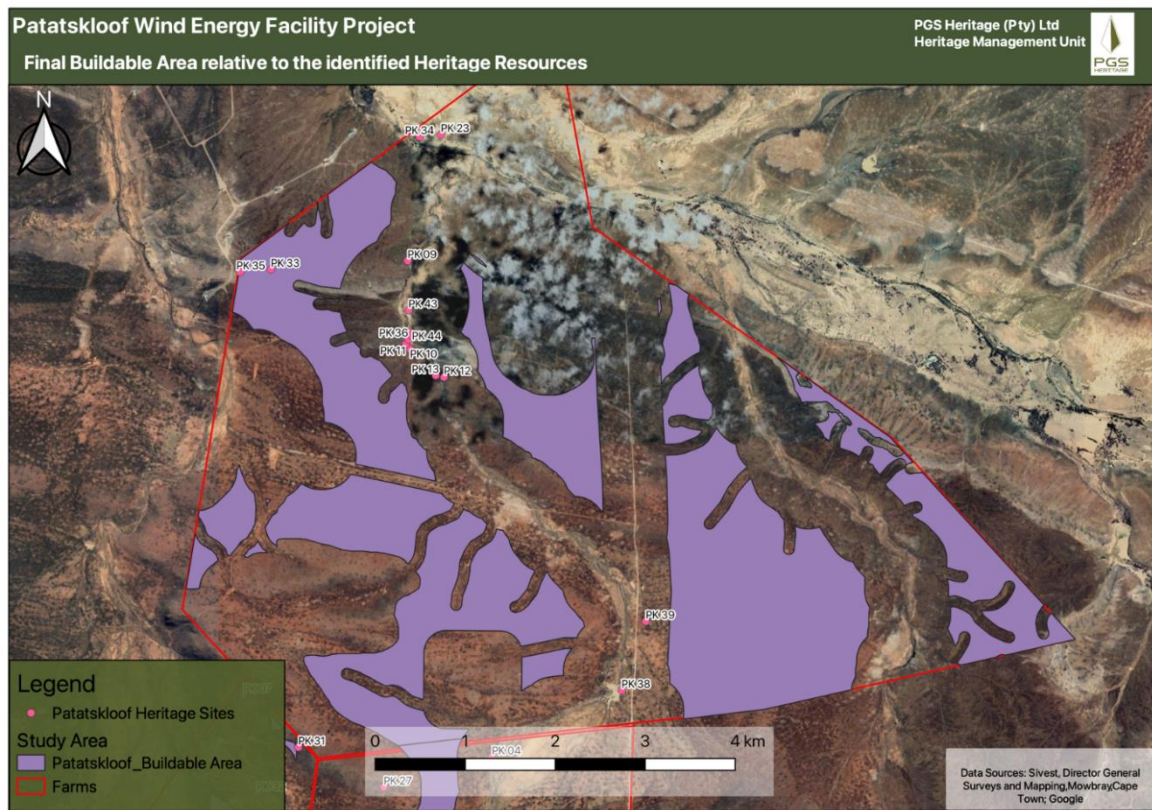


Figure 33: Location of heritage resources within the study area (inset A)

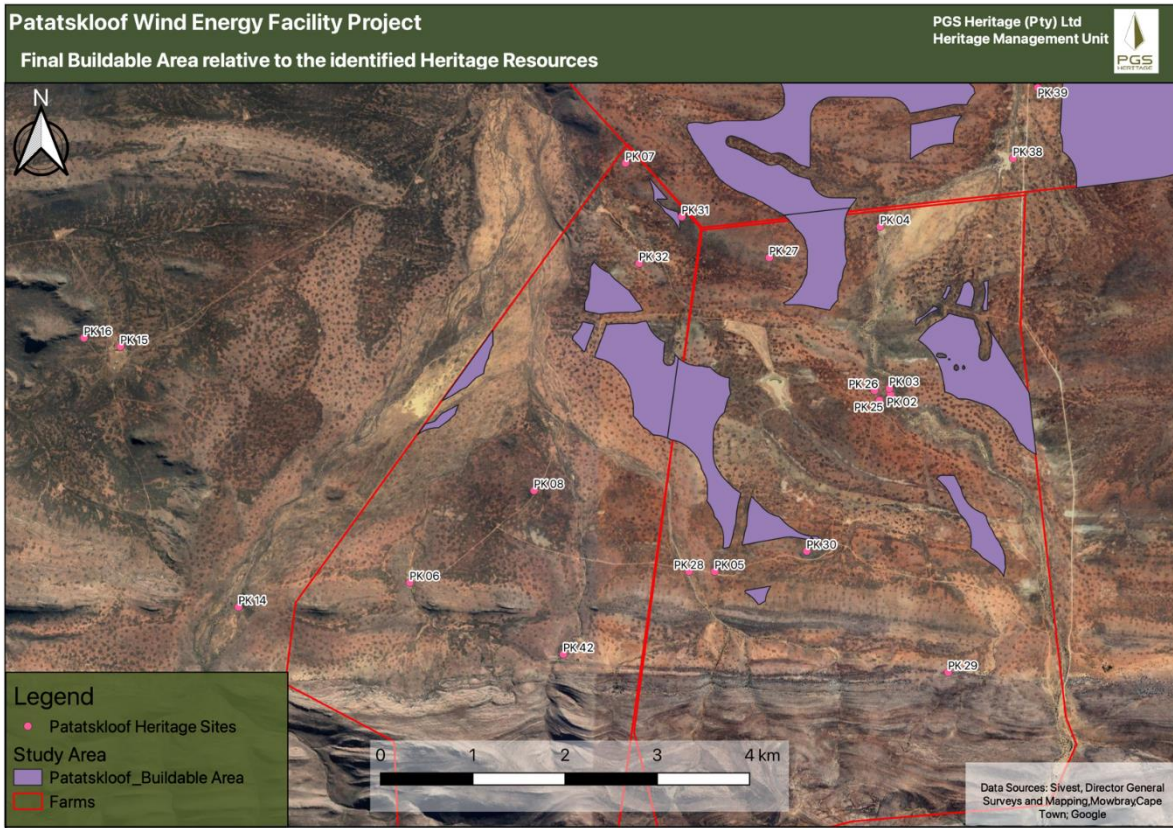


Figure 34: Location of heritage resources within the study area (inset B)

Recommendations

- An archaeological walk down of the final approved layout will be required before construction commences;
- Implement a 50-meter buffer around all structures with a rating of IIIC and higher.
- Implement a 500-meter buffer around the farmstead site at **PK 06 and PK 15**.
- Implement a 200-meter buffer around the rock art sites at **PK 29, PK 42 and PK 46**.
- Demarcate the resources rated as IIIB-IIIA no-go areas.
- A management plan for the heritage resources needs then to be compiled and approved for implementation during construction and operations.
- A chance finds protocol must be developed that includes the process of work stoppage, site protection, evaluation and informing HWC of such finds and a final process of mitigation implementation

10.2.2 Cultural Landscape

A Cultural Landscape Assessment (CLA) was undertaken by Hearth Heritage as part of the Heritage Impact Assessment (April 2022) and indicated the following:

The area proposed for development is located within an undulating Ceres Karoo landscape within which the predominant land use is game grazing. It is a semi-arid region and the vegetation is characteristic of the Succulent Karoo Biome. The Ceres Karoo region is a significant cultural landscape that reflects

the relationship between man and nature over a period of time. This relationship has generally been sustainable, where biodiversity and ecological systems have been maintained in the utilisation of the landscape expressed in specific land use patterns. The surrounding land use indicates a social appreciation of the natural environment with low impact stock and game farming with limited farmstead crop cultivation.

The area is sparsely populated with a few farmsteads and their associated structures located on the valley floors, usually adjacent to water courses and linked by a series of crisscrossing farm tracks and historic roads that are material remains of the important connections and linkages between the people travelling across the vast landscape and living isolated lives. Sites of habitation are usually layered in their historic signature, with various periods of habitation evident on the same site over time, such as stone age sites (rock art and localised stone age scatter) farmsteads, stone kraals with their herder's cottages and more recent 20th century associated farm structures (sheds and seasonal labourers residence) and tourist cottages.

Sheep, cattle and other livestock farms exist alongside game farms and other game reserve areas populated with game species.

The historic R356 which runs from Karoopoort through the Ceres Karoo on towards Sutherland is evident in most historic maps and the subject of a well-known non-fiction book, *The Forgotten Highway to the North* (Mossop, 1927). Along this historic route, travellers experience the vastness and dramatic sense of place of the surrounding area that has long been the subject of romantic explorers' descriptions, as well as the low saddles and water courses that have been crossed by people with various plans and motives over centuries.

The Komsberg region is a significant cultural landscape that reflects the relationship between man and nature over a period of time. This relationship has generally been sustainable, where biodiversity and ecological systems have been maintained in the utilisation of the landscape expressed in specific land use patterns. The surrounding land use indicates a social appreciation of the natural environment with low impact stock and game farming with limited farmstead crop cultivation. The vastness of the cultural landscape is, however, often undervalued. If careful contextual planning is not followed, it will rapidly result in a cluttered wasteland. This does not mean that development is discouraged, but rather that the implementation of wind and solar energy farms should be planned holistically.



Figure 35: Regional landscape

Regional Cultural Landscape Elements

- This part of the Karoo is prized for its wide open spaces and expansive vistas. It is precisely the lack of development that gives this landscape its significance; a landscape which has supported continued patterns of use for millennia.
- The distinct remoteness of the semi-arid Karoo provided a refuge for the displaced San and later the Khoekhoen. This remote desert wilderness is an essential element to the 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 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, due to the presence of non-perennial water and includes stone tool scatters, rock paintings 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.
- Distinct topographic features which can be seen from a distance over the vast plains between the mountain ranges have been used for millennia for navigation over the homogenous and flat terrain. These koppies have been critical in the survival and success of inhabitants and travellers over time, giving sense of place and orientation, most likely taking on spiritual significance for some groups. The shade and potential water source that they offer would have further raised the reliance on these features by inhabitants of the landscape.
- Scenic historic movement routes, tarred and gravel, connect the regional towns over the Komsberg 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 system of historic outspans that functioned as areas of rest for man and beast on the long and arduous journeys to the interior can be found in the area. The most notable being the one associated to Karooport. Two others are found at Platfontein and Brewelsfontein on the southern gravel route running parallel with the Bonteberg between Karooport and Matjiesfontein.
- A combination of the poort and scenic historic route elements, the historic Karooport, is an identified historic scenic route and declared Provincial Heritage Site. 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).

- The historic farms boundaries of the area date back to the late 19th century. As elements of historic land management, which would have considered access to water sources and grazing, these boundaries are part of the cultural landscape and the fencing and stone markers that mark these boundaries are considered of IIC heritage significance.
- 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.
- 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.
- The names of places and farms are testament to the relationship between man and nature, with illustrative Khoi, San, Afrikaans and Dutch names describing the interpretation and representation of the area.
- 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. Sadawa Private Game Reserve, Fair Game Farm, Sand River Conservancy, Vaalkloof Private Nature Reserve, Shamballa Sanctuary, Inverdoorn Game Reserve, Kareekloof Conservancy & Guest Farm all offer ecotourism opportunities with accommodation. Sothemba Lodge Guest Farm, Ibhadi Game Lodge, Snyderskloof, Keurkloof Cottage, Miskloof Farm Getaway, Blue Berry Hill Guest Farm offer accommodation and landscape-oriented experiences.
- Historic town settlements and landscapes, such as Ceres, Matjiesfontein, Touwsrivier and Laingsburg, 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.
- Industrial elements of transmission lines, wind turbines and associated infrastructure are evident in the landscape and are fast altering the sense of place in the area.

Findings and Recommendations

The findings of this report, coupled with the proposed layout for development of wind turbines, which considers appropriate placement in terms of wind energy capacity, concludes that the development can be permitted within the site if the report's recommendations are followed. The mitigating recommendations in this report consider the ecological, aesthetic, historic and socio-economic value lines that underpin the layers of significance that combine to create the character of the place and the cultural landscape of the Ceres Karoo. These recommendations include road and farmstead complex buffers which incorporate cultivated areas and graves, steep slope and ridgeline no-go areas as well as consideration of the unique land form of the site, CBA and ESA no-go areas, as well as mechanisms to support any non-landowner residents that live on the site in being able to continue their indigenous land use patterns, knowledge and social systems, although none were identified during this fieldwork. These mitigations will reduce the impact on the surrounding landscape and heritage resources but due

to the high visual impact of the turbines, largely a result of their height, the negative impact to the cultural landscape cannot be removed, only reduced from very high to moderate.

The conclusion of this CLA study has culminated in a map showing the location of proposed turbines and WEF infrastructure with the following heritage indicators and development buffers:

- Landscape units D and E are suitable for sensitive WEF infrastructure development;
- A 500m buffer to either side of the district road for turbine and infrastructure placement (Patatskloof WEF does not propose turbines or infrastructure within this buffer);
- 300m buffer to either side of identified significant historic farm roads (pink) for turbine placement, substation and laydown areas;
- The historic route (yellow) that passes through Stinkfontein site is no longer in use as such, but should be reinstated as a walking trail and open to public access.
- 1000m buffer around historic farmsteads (red circles) for turbine placements; and
- 50m outer boundary buffer for roads and infrastructure around farmsteads including cultivated areas and graves – integrity of farmstead complex as a whole should be retained and no WEF roads running through farmstead complexes;
- 200m freestanding graded heritage structure buffer for new roads and infrastructure;
- 100m buffer from cemetery or unmarked burial for all development;
- 400m buffer around water management bio-cultural landscape elements (blue circles);
- 600m buffer around significant Stinkfontein site (orange circle);
- existing roads to be used with minimal upgrade as far as possible;
- riverine corridors 100yr flood line buffer (ecological) or 100m buffer (archeological) whichever is further (buffers not indicated).
- CBA and ESA no-go areas for all development (green shading – turbines 5, 23, 18), unless otherwise recommended by the biodiversity and environmental specialist studies for this site;
- Pienaarspoort gateway buffer included in the 300m farm road buffer and unit A.
- Further, the following changes to the current proposed layout is recommended:
- 18 current proposed turbine placements (red) have been found unacceptable for their negative impacts but could be accommodated in landscape unit D where appropriate;
- The substation option 1 and Gridline alternative 3 should be located out of the CBA, without impacting on the riverine corridor flood line and slopes over 3%.

Updated buildable area comments

The proposed buildable area considers and adheres to most of the cultural landscapes buffers and sensitivities contained in the April 2022 CLA report other than slope, which has not been included. As indicated in the CLA report (April 2022), all slopes over 10% need to be avoided for development of turbines and new road infrastructure. Slopes over 3% need to be avoided for other infrastructure development.

The map below overlays the CLA sensitivities map with the 14/11/2022 proposed buildable area and includes the slope sensitivities that need to be avoided for WEF development.

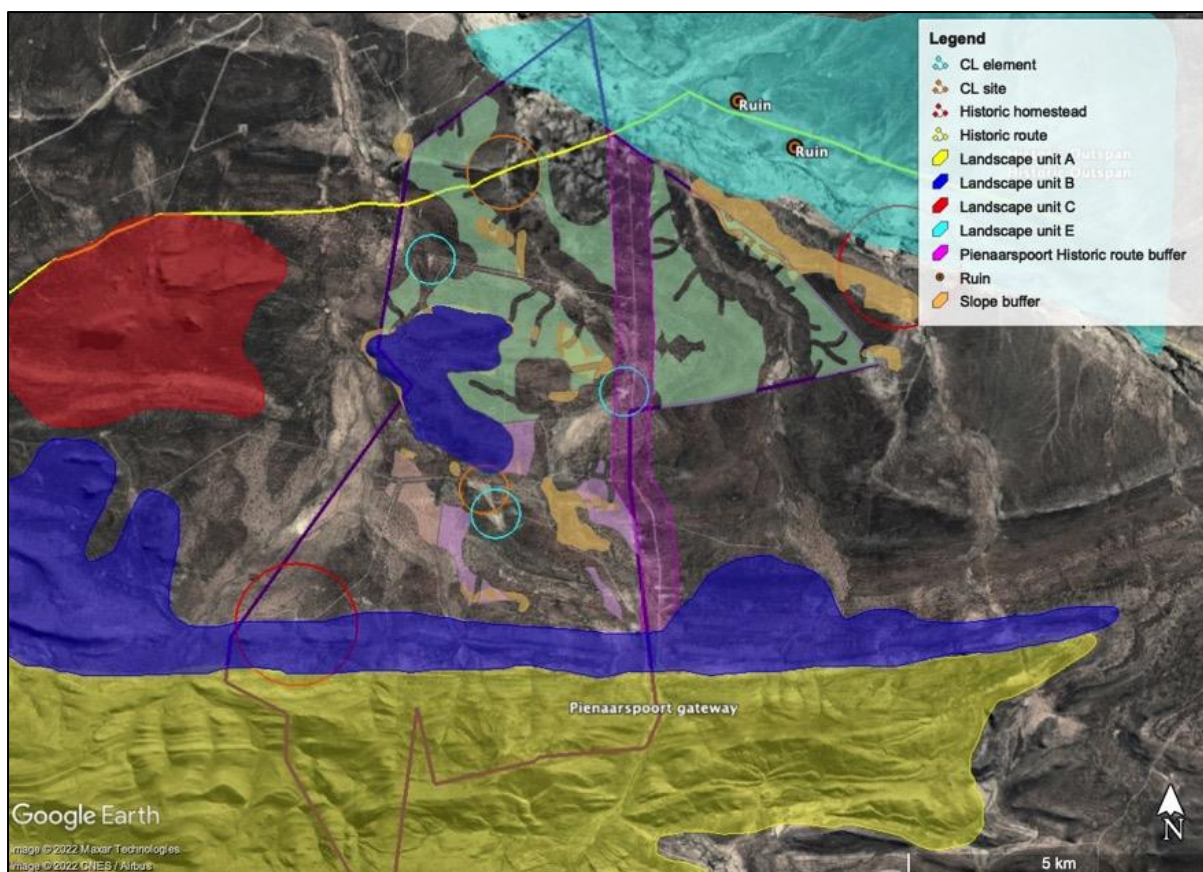


Figure 36: Cultural landscape assessment heritage indicators and buffers

10.2.3 Palaeontological n

A Palaeontological Impact Assessment (PIA) Report was undertaken Natura Viva cc (April 2022).

The Patatskloof WEF project area is underlain by several basinal to shallow marine sedimentary formations of the Witteberg Group (Cape Supergroup), Dwyka Group and Ecca Group (Karoo Supergroup) of Palaeozoic age. All these units are potentially fossiliferous but only two – the Early Carboniferous Waaipoort Formation and the Early Permian Whitehill Formation – are generally regarded as of high palaeosensitivity due to their record of well-preserved fish, mesosaurid reptiles, crustaceans and plant fossils in the Tanqua - Ceres Karoo region and elsewhere. A recent 2-day palaeontological field survey shows that the Waaipoort Formation is very poorly exposed within the WEF project area, although potentially fossiliferous phosphatic carbonate concretions do occur here, while the uppermost several meters of the Whitehill Formation are intensely weathered. The only fossil remains recorded during the site visit comprise (a) occasional stromatolitic carbonate erratics within the Dwyka Group and (2) low-diversity, poorly-preserved trace fossil assemblages in the Floriskraal and Collingham Formations. These fossils occur widely within the outcrop areas of the formations concerned and are not of high scientific interest or conservation value.

As a consequence of (1) the paucity of irreplaceable, unique or rare fossil remains within the WEF and project area, as well as (2) the extensive superficial sediment cover overlying most potentially-fossiliferous bedrocks here, the overall impact significance of the construction phase of the proposed Patatskloof WEF regarding legally-protected palaeontological heritage resources is assessed as LOW (negative status), with and without mitigation. There is therefore no preference on palaeontological

heritage grounds for any specific layout (e.g. location of on-site substation, construction laydown area, grid connection corridor) among those under consideration. No significant further impacts on fossil heritage are anticipated during the operational and decommissioning phases of the renewable energy developments. The No-Go alternative would probably have a neutral impact on palaeontological heritage.

No palaeontological High Sensitivity or No-Go areas have been identified within the WEF project area. None of the recorded fossil sites lies within the development footprint as currently defined. Pending the potential discovery of significant new fossil material here during the construction phase, no specialist palaeontological monitoring or mitigation is recommended for these developments

10.3 Noise

A Noise Impact Assessment was undertaken by Enviro-Acoustic Research (July 2021). Ambient (background) noise levels were measured in September 2016 and again in September 2020 in accordance with the South African National Standards (SANS), also considering the protocols defined in Government Gazette 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 the available data and guidelines.

Potential NSDs in the area were initially identified using aerial images as well as the Online Environmental Screening Tool, with the statuses of NSDs defined based on the experience gained during previous site visits. The NSDs as identified are highlighted below.

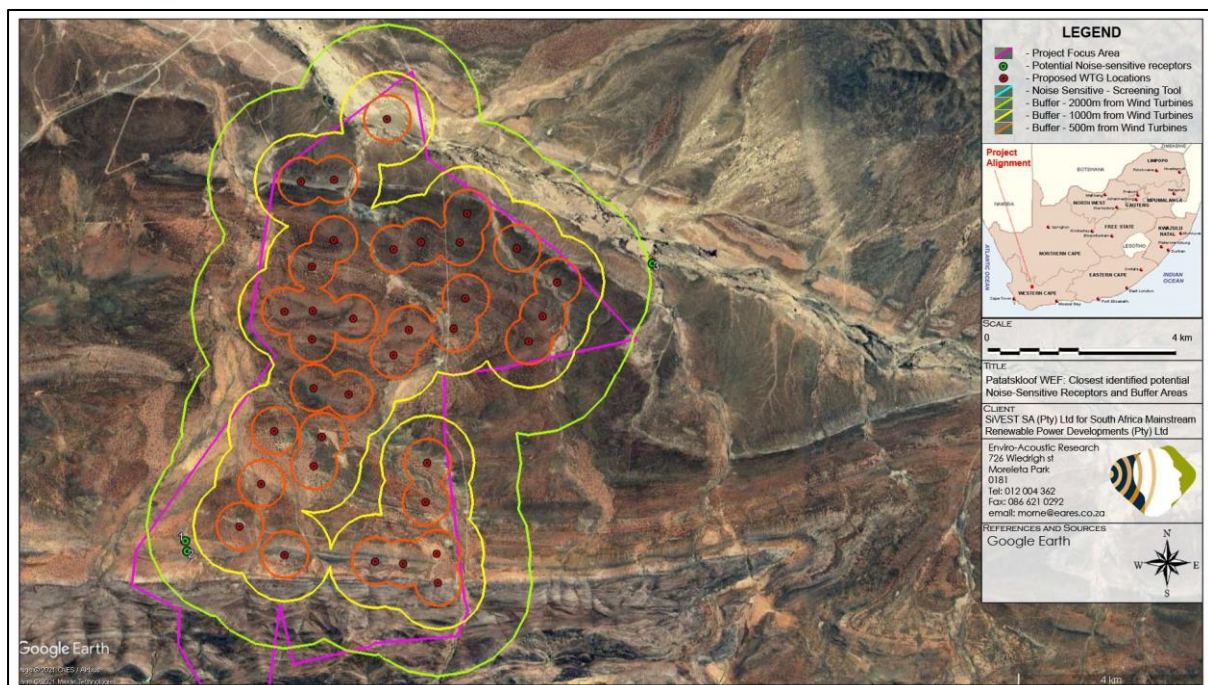


Figure 37: Aerial Image indicating site sensitivity and closest identified Noise-sensitive developments

The potential noise impact of the proposed Patatskloof WEF was evaluated using a sound propagation model. Conceptual scenarios were developed for the construction and operation phases. It was determined that the potential noise impact would be of a:

- low significance for daytime activities related to the construction of the substation, hard standing areas, digging foundations, civil work as well as the erection of the wind turbines;
- low significance for night-time activities relating to the construction of civil work as well as the erection of the wind turbines. Mitigation is proposed and available to reduce the significance to low;
- low significance for both day- and night-time operational activities;
- low significance for potential cumulative noises during the operational phase; and,
- low significance for potential decommissioning noises.

The potential noise impact of the decommissioning phase is based on the potential noise impact during daytime construction activities (low significance). The development of the Patatskloof WEF will not increase cumulative noises in the area and the significance of the noise impact will be low.

Considering the low significance of the potential noise impacts (with mitigation, inclusive of cumulative impacts) for the proposed WEF and associated infrastructure, it is recommended that the proposed Patatskloof WEF be authorized.

Potential Noise Impact – Layout associated with the potential buildable area

After considering the input from all the specialists on this project, the developer identified the potential buildable areas. Considering the buildable areas, WTG will be developed further than 1,000 m from any noise-sensitive receptor (“NSR”), with most of the WTG to be developed further than 2,000 m from any NSR.

Considering the potential buildable areas, the noise impact will not change if the WTG are developed within this buildable zone. If WTG are only developed in this buildable area, the potential noise impact will be insignificant and the significance of the noise impact will remain low.

If the WTG are only developed within this buildable area, it will not be necessary to remodel the noise impact to reassess the noise impact. No additional noise impact assessments will be required, and the recommendations included in that report will remain valid.

10.4 Transport

A Transportation Impact Assessment was undertaken by SiVEST SA (Pty) Ltd (November 2022).

The Patatskloof WEF development is partially bisected by provincial roads and existing access points already exists in the form of farm access points, however, the access for the future facility expansions, will need to be upgraded or moved to new positions in order to accommodate the proposed adjusted land use.

The road bisecting the Patatskloof WEF is Road OP06121 - Local Access Road and is a proclaimed gravel road which falls under the jurisdiction of the Western Cape Provincial Administration.



Figure 38: Existing Road OP06121 – North Approaching

An approval and a wayleave application will be required from the Western Cape Department of Transport & Public Works prior to work commencing.

A large majority of the additional traffic generated from the Patatskloof WEF and associated grid infrastructure can be accommodated on the existing road network and include both normal and abnormal vehicles (minor modifications are however required). The section between Km 50.73 and Km 46.60 on Road DR01475 adjacent to the Perdekraal WEF development and the section on Road OP06121 between Km 16.70 to Km 13.44 will require upgrades to accommodate the intended vehicle use. In addition, upgrades to the intersection between Road DR01475 and OP06121 will also be required

The construction / BoP phase will typically generate the highest number of trips for the proposed facility. The construction phase or Balance of Plant (BoP) phase of this development will typically generate the highest number of additional vehicles. Of these additional vehicles, ± 57 trips / hour will occur in the morning and afternoon outside of the peak period, while ± 4 trips / hour will occur during the midday peak for construction material and abnormal loads. The impact will however be temporary and are considered to be nominal if adequately mitigated. During the operation phase, it is expected that the facility will accommodate ± 30 employees and generate an additional ± 10 trips / day in the morning and afternoon peak period. This impact is considered to be nominal. Construction will typically involve access roads, foundations, Wind Turbine Generators (WTG), electrical cables / transformers / switch gear / substations / BESS installations and the delivery of these materials / equipment / abnormal loads on the public road network.

It is assumed that no staff or labor will reside on the construction site, other than security, and therefore all will reside in nearby towns of Touws River / Matjiesfontein or alternatively be accommodated in nearby hostels.

A number of mitigation measures are proposed to accommodate the development and to reduce the impact to the surrounding road network.

10.5 Visual

A Visual Impact Assessment was undertaken by SiVEST SA (Pty) Ltd (November 2022).

The VIA has determined that the study area has a largely natural visual character with some pastoral elements. The area has however seen very limited transformation or disturbance and as such the proposed Patatskloof WEF development is expected to alter the visual character of the area and contrast significantly with the typical land use and / or pattern and form of human elements present. The level of contrast will however be reduced by the presence of the Kappa Substation, high voltage power lines and Perdekraal East WEF within the study area.

A broad-scale assessment of visual sensitivity, based on the physical characteristics of the study area, economic activities and land use that predominates, determined that the area would have a moderate visual sensitivity. However, an important factor contributing to the visual sensitivity of an area is the presence, or absence of visual receptors that may value the aesthetic quality of the landscape and depend on it to produce revenue and create jobs.

The study area is not typically known for its tourism significance, there is however limited human habitation resulting in relatively few sensitive or potentially sensitive receptors in the area. A total of twenty-one (21) potentially sensitive receptors were identified within the combined study area, although only eleven (11) of these were found to be within the viewshed for the proposed WEF. Two (2) of these receptors are considered to be sensitive receptors as they are linked to leisure/nature-based tourism activities in the area. One of the sensitive receptors is expected to experience high levels of visual impact from the WEF facility, namely Ibhadi Game Lodge. It should be noted that this rating is largely due to the location of the main residence / accommodation complex inside the Patatskloof WEF development area. It is therefore assumed that the property owners have a vested interest in the proposed development and would not perceive the WEF in a negative light. Accordingly, visual impacts would be significantly reduced. The remaining sensitive receptor would experience only moderate levels of impact.

Nine (9) of the receptors identified are all assumed to be farmsteads which are regarded as potentially sensitive visual receptors as they are located within a mostly rural setting and the proposed development will likely alter natural vistas experienced from these locations. Only two (2) of these receptors are expected to experience high levels of visual impact as a result of the WEF development. Neither of these receptors are tourism-related facilities and as such they are not considered to be Sensitive Receptors.

Five (5) potentially sensitive receptor locations would be subjected to moderate levels of visual impact as a result of the proposed Patatskloof WEF development while the remaining two (2) receptors would only experience low levels of visual impact.

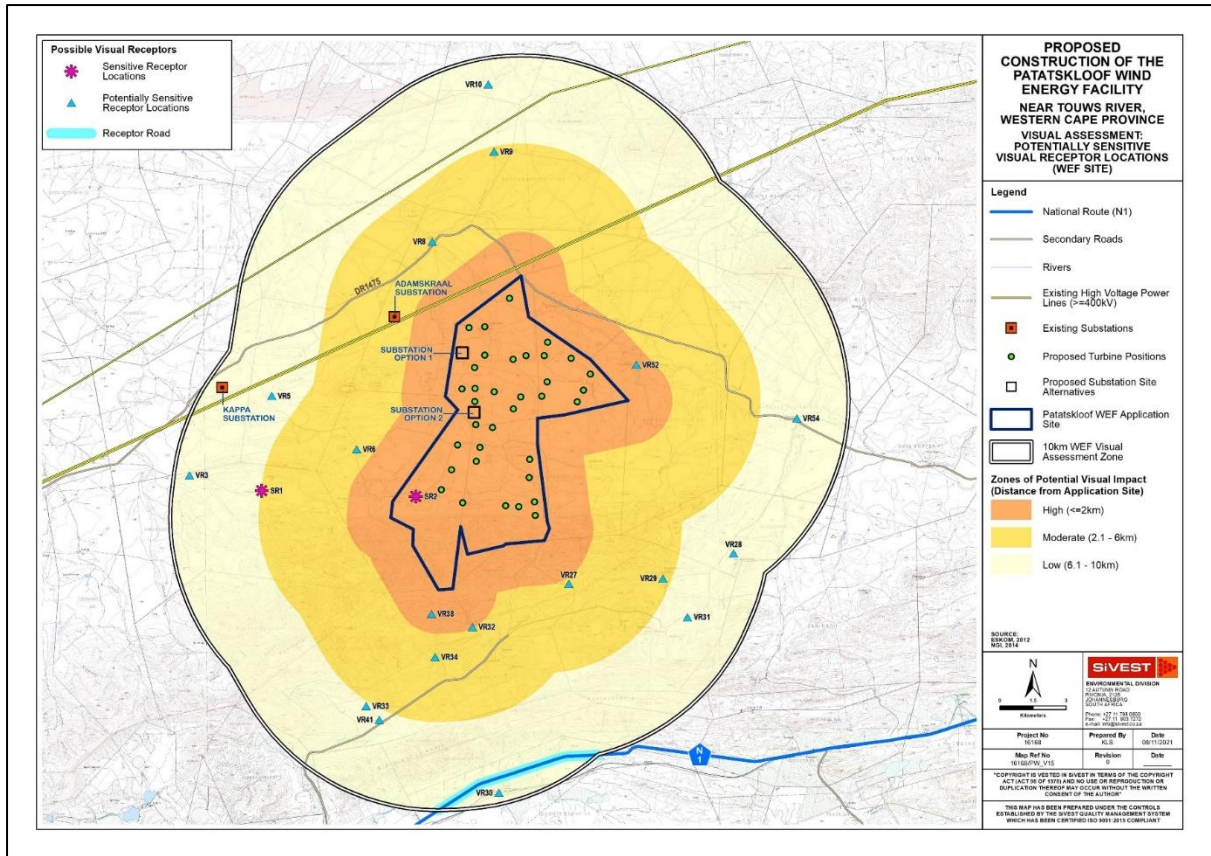


Figure 39: Potentially sensitive receptor locations within 10kms of the Patatskloof WEF application site

An overall impact rating was also conducted in order to allow the visual impact to be assessed alongside other environmental parameters. The assessment revealed that impacts associated with the proposed Patatskloof WEF will be of low significance during both construction and decommissioning phases. During operation, visual impacts from the WEF would be of medium significance with relatively few mitigation measures available to reduce the visual impact.

From a visual perspective, the proposed Patatskloof WEF and associated grid infrastructure project is deemed acceptable and the Environmental Authorisation (EA) should be granted. SiVEST is of the opinion that the visual impacts associated with the construction, operation and decommissioning phases can be mitigated to acceptable levels provided the recommended mitigation measures are implemented.

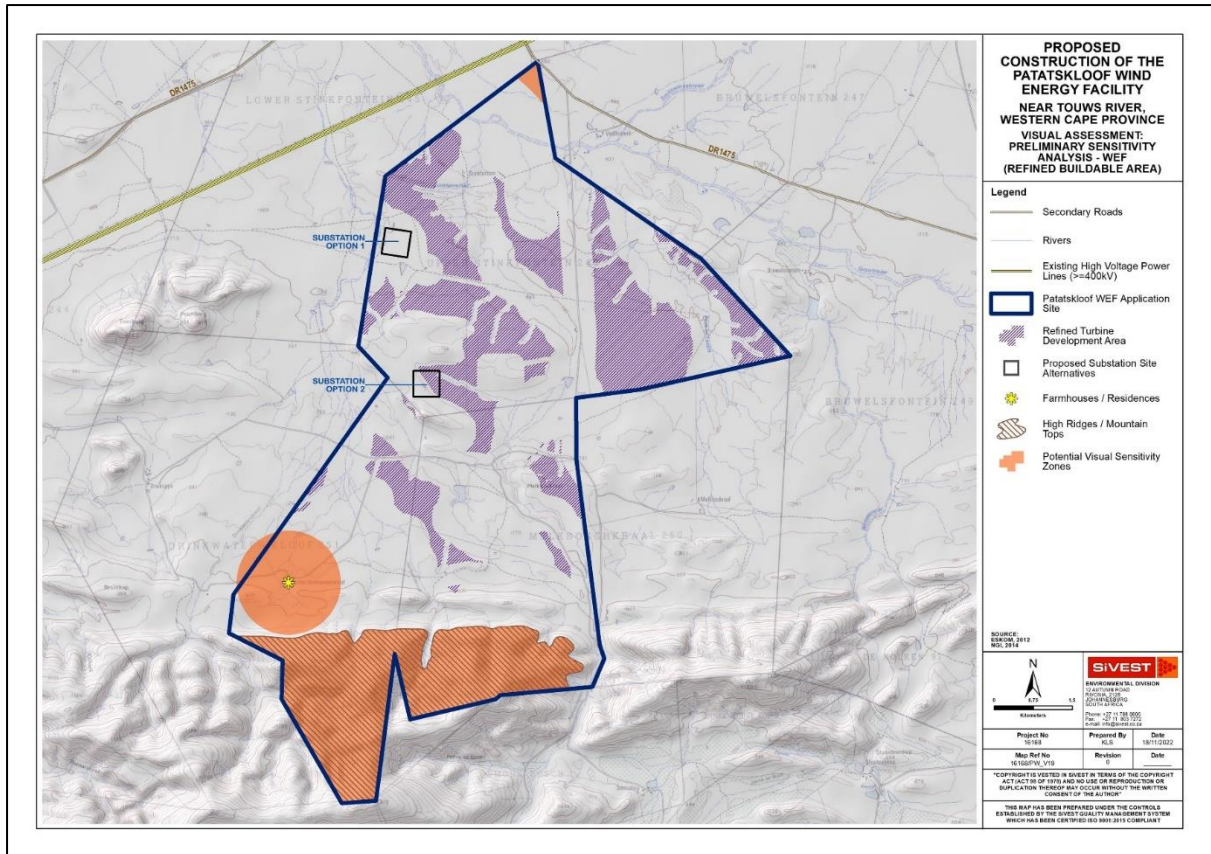


Figure 40: Sensitivity Analysis

11. POLICY AND LEGISLATIVE CONTEXT

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

11.1 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, NEMA 107 of 1998 and the Environment Conservation Act 73 of 1989 (ECA).

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.

11.2 National Environmental Management Act (107 of 1998)

The NEMA was promulgated in 1998 but has since been amended on several occasions from this date. This Act replaces parts of the ECA with exception of certain parts pertaining to Integrated Environmental Management.

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 BA 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.

Activities identified in terms of section 24(2)(a) and (d) of NEMA, which may not commence without environmental authorisation from the competent authority and in respect of which the investigation, assessment and communication of the potential impact of such activities must thus follow the procedure as described in the EIA Regulations. In terms of the EIA Regulations, activities listed in GNR 327 (Listing Notice 1), GNR 325 (Listing Notice 2) and GNR 324 (Listing Notice 3) require EA before they can proceed and be implemented.

The proposed project triggers listed activities under Listing Notice 1, 2 and 3 and thus requires an EA subject to a BA Process. The listed activities are further detailed in Section 7 above.

11.3 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.

11.4 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.

It is important to note that water resources are protected under the Act. Under the act, 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 however 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.

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

Within the scope of this project, Section 38 of the NHRA (25 of 1999), states that, as described above, an assessment of potential heritage resources in the development area needs to be done. A Heritage Impact Assessment (HIA), Archaeological Impact Assessment (AIA), 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.

A Notice of Intent to develop (NID) was submitted to HWC by PGS Heritage on **30 November 2022**.

11.6 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 term biodiversity, according to the Convention on Biodiversity (CBD), refers to the variability among living organisms from all sources including, inter alia terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity in genes, species and ecosystems.

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**) was undertaken to explore how the proposed development may impact on biodiversity as protected by the Act. Should the proposed development require offsets or permits, it will be determined and applied for separately prior to construction. In addition, all relevant conservation departments (such as the SANBI and Cape Nature) will be invited to provide comments with regards to the proposed development.

11.7 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, however it does fall within the National Protected Areas Expansion Strategy area.

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

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

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

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

Protected trees

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

Forests

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

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

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

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

11.9 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.

11.10 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 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.

11.11 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.

11.12 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 the WEF and associated 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 BA process and the required approvals will be obtained, where necessary. The closest airport is only located 64km away however the DFFE Screening tool has indicated an airfield within 8km of the site.

11.13 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 BA process.

11.14 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) [NEA]; 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).

11.15 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 ERA. 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.

11.16 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 gazetted¹ 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 2021³.

Table 17: 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

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)

REDZ Number	Name	Applicability of REDZ
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

In terms of Government Notice 114, the proposed development is located within the Komsberg Renewable Energy Development Zone (REDZ) and in terms of National Environmental Management Act (Act 107 of 1998) (NEMA) (as amended) and Appendix 1 of the EIA Regulations, 2014 promulgated in Government Gazette 40772 and GN R326, R327, R325 and R324 on 7 April 2017, is subject to a Basic Assessment (BA) process.

According to DFFE “On the 16 February 2018 Minister Edna Molewa published Government Notice No. 113 in Government Gazette No. 41445 which identified 5 strategic transmission corridors important for the planning of electricity transmission and distribution infrastructure as well as procedure to be followed when applying for environmental authorisation for electricity transmission and distribution expansion when occurring in these corridors”. The proposed project also falls within an EGI.

A map of the development in relation to the REDZ and EGI has been included in **Appendix 3**.

11.17 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.

11.18 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 [SALA]; and
- Mineral and Petroleum Resource Development Act (Act No. 28 of 2002, as amended) [MPRDA].

12. KEY DEVELOPMENT STRATEGIES AND GUIDELINES

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

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

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

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

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

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

A more efficient and competitive infrastructure is envisaged, particularly infrastructure that facilitates economic activity and is conducive to growth and job creation. The plan identifies key services that need strengthening; namely commercial transport, energy, telecommunications and water, while ensuring their long-term affordability and sustainability. The National Planning Commission maintains that South Africa has missed a generation of capital investment in many infrastructure opportunities including electricity. Therefore, one (1) infrastructure investment priority is in the procurement of at least 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 (IRP) for Electricity (2010-2030);
- Integrated Resource Plan (IRP 2019)
- National Infrastructure Plan 2012, as amended;
- Western Cape Strategic Plan 2019-2024 (refer section 12.1)
- The Western Cape Spatial Development Framework (SDF) 2014 (refer section 12.1.1)
- Cape Winelands District Municipality Integrated Development Plan, 2022/23 – 2026/27 (refer section 12.2)

The proposed project is also well aligned with the Witzenberg Local Municipality IDP (refer section 12.2.1).

12.1 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).

12.1.1 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).

12.2 Cape Winelands District Municipality Integrated Development Plan, 2022/23 – 2026/27

Aligned to the provision of a renewable source of energy and provision of economic infrastructure, the Cape Winelands District has identified the following key strategic objectives:

- Creating an environment and forging partnerships that ensure social and economic development of all communities, including the empowerment of the poor in the Cape Winelands District;
- Promoting sustainable infrastructure services and a transport system which fosters social and economic opportunities; and
- Providing effective and efficient financial and strategic support services to the Cape Winelands District Municipality.

In terms project implementations under **Resource Resilience: Energy Security**, the municipality have initiated the Municipal Energy Resilience (MER) programme which is currently in progress and will be reported on going forward.

All projects, planning initiatives and programmes are implemented within the jurisdiction areas of the applicable local municipality’s or district wide, and the following has been included under the Renewable Infrastructure for rural areas:

District Wide Support		
Type of support	Deliverable	Financial Impact
Renewable Infrastructure – Rural Areas	Solar systems supply to farmers	R1 000 000

12.2.1 Witzenberg Local Municipality Integrated Development Plan (2013 – 2016)

The Witzenberg Local Municipality identifies renewable energy as an opportunity for their municipality. The municipality also forms part of the Komsberg REDZ and they mention that any projects or renewable energy developments in the municipal area should preferably be located inside of this boundary, however, proposals for renewable energy developments outside of this boundary will be considered on a case by case basis based on its own merits.

Witzenberg has also developed “a *Small-scale Embedded Generator (SSEG) plan that will support the management of renewable energy production in the municipal jurisdiction*”.

13. NEED AND DESIRABILITY

13.1 National Renewable Energy Requirement

According to the South African Wind Energy Association (SAWEA), 2022, South Africa’s Utility Scale Wind & Renewable Energy Industry: Key Data as of October 2020 is as follows:

National Development Plan: Vision 2030

By 2030, South Africa’s transition to an environmentally sustainable, climate-change resilient, low-carbon economy and just society will be well under way:

Wind Industry

- *Integrated Resource Plan 2019 (IRP 2019) released in October 2019 with a wind allocation of 14.4 GW determined up to 2030.*
- *Technology price developments and steep downward price trends contributed to make wind even more competitive.*
- *Due to its value proposition, wind power has taken a larger share of the planned renewable energy (RE) investments to date.*
- *The IRP 2019 is the national electricity infrastructure development plan which is based on least-cost electricity supply and demand balance, considering security of supply and the environment, the aim is to minimize negative emissions and water usage in the generation of electricity.*
- *The promulgated IRP 2010–2030 identified the preferred generation technology required to meet expected demand growth up to 2030.*
- *Wind technology has attracted significant investment for the development of projects in the country. The total investment (total project costs), of all projects under construction and projects in the process of closure, is R209.7 billion of which R80.6 billion is for onshore wind Independent Power Producers (IPPs).*
- *IPP-Office (IPP-O) commits to commencing the 5th Bid Window by December 2020 or during the first quarter of 2021.*
- *Risk Mitigation Independent Power Producer Procurement Programme (RMIPPP) 2000MW technology agnostic Request for Proposal issued in 2020. The 2000MW should be live by December 2021.*
- *The active wind IPPs have committed to create 11358 job year opportunities for SA citizens during the construction phase.*
- *The 22 wind IPPs that have successfully reached commercial operations to date have reported 2723 job years for SA citizens.*
- *23 projects with a capacity of 2026MW were scheduled to have reached commercial operations, by the end of March 2020. Actual achievement has been 22 projects delivering 1980MW (98% of the scheduled plan and a shortfall of 47MW)*
- *Over a 12-month period which ended in March 2020 the operational wind projects have reduced CO2 emissions by 6.4Mtons which already 53% of the total 12.1Mtons annual P50 projection for wind IPPs.*

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 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. According to SAWEA (2022): *“It is envisaged that by 2030, the electricity generation mix is set to comprise of:*

- 33364MW (42.6%) coal,
- 17742MW (22.7%) wind,
- 8288MW (10.6%) solar photovoltaic (PV),
- 6830MW (8.7%) gas or diesel,
- 5000MW (6.4%) energy storage, 4600MW (5.9%) hydro,
- 1860MW (2.4%) nuclear and;
- 600MW (0.8%) concentrating solar power (CSP).

It must be remembered that wind energy is plentiful, renewable, widely distributed, 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 programme and further result in cost savings to South African consumers.

The proposed Patatskloof WEF is being prepared to participate in the Department of Mineral Resources and Energy Independent Power Producer Procurement Programme (REIPPPP) as well as potential bilateral offtake agreements. The overall objective of the proposed grid development is to feed the electricity generated from renewable energy technologies into the National grid.

13.2 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.

According to the latest IRP (2019): “*Since the promulgated IRP 2010–2030, the following capacity developments have taken place:*

- *A total 6 422 MW under the Renewable Energy Independent Power Producers Programme (REIPPP) has been procured, with 3 876 MW operational and made available to the grid.*
- *In addition IPPs have commissioned 1 005 MW from two Open Cycle Gas Turbine (OCGT) peaking plants.*
- *Under the Eskom build programme, the following capacity has been commissioned: 1 332 MW of Ingula pumped storage, 1 588 MW of Medupi, 800 MW of Kusile and 100 MW of Sere Wind Farm.*
- *In total, 18 000MW of new generation capacity has been committed to.*

Besides capacity additions, a number of assumptions have changed since the promulgation of IRP 2010–2030. Key assumptions that changed include the electricity demand projection, Eskom’s existing plant performance, as well as new technology costs. These changes necessitated the review and update of the IRP...”

13.3 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 (DEA Guideline for Renewable Energy, 2015). *South Africa has fair wind potential, especially along the coastal areas of Western and Eastern Cape.* (<http://www.energy.gov.za>). South Africa Wind energy is one (1) of the lowest-priced renewable energy sources and is economically competitive (www.wasaproject.info).

According to the Global Wind Energy Council, 2021 : “*South Africa installed 515 MW of new wind power capacity in 2020, making it the number one market for new annual installations last year as well as for cumulative installations... and Tapping into the region’s wind power potential will be crucial to create greater energy security, reduce costs, and generate local socioeconomic benefits.*”

13.4 Site Suitability

Several key aspects played a role in determining the location of the proposed Patatskloof WEF, Battery Energy Storage System (BESS) and shared 33/132kV on-site substation (this application) and associated 132kV Power Line development (assessed as part of separate respective BA process) such as resource, grid availability and capacity, environmental, competition, topography and access.

1. **Resource:** Wind resource is one of the main driver’s wind project viability across South Africa. The applicant has investigated the option of solar energy however, the applicant has preferred the wind energy option.
2. **Grid Availability and Grid Capacity:** The primary driver of site selection is capacity on the local transmission system to evacuate the power into the national grid. The presence of the Kappa Main Transmission and Adamskraal Substation to which the Eskom portion (132kV portion/yard of the shared 33kV/132kV) of the Patatskloof WEF will connect facilitates this evacuation process. The

Patatskloof WEF on-site substation will be a step-up substation and will include an Independent Power Producer (IPP) portion (33kV portion/yard of the shared 33/132kV onsite substation) and an Eskom portion (132kV portion/yard of the shared 33kV/132kV onsite substation – this portion will be ceded to Eskom once the onsite substation is constructed and the necessary transfer of rights undertaken), hence the IPP portion (33kV portion/yard of the shared 33/132kV onsite substation) has been included in the WEF BA process and the Eskom portion (132kV portion/yard of the shared 33kV/132kV onsite substation) and associated 132kV overhead line, included in grid connection infrastructure BA process (i.e. this application). This will facilitate an ease of transfer over to Eskom once the onsite substation is constructed.

3. **Environmental:** Environmental suitability plays a key role when identifying Project Sites / Proposed Developments. The Project Sites are micro-sited in terms of environmental sensitivities and a suitable development area identified. Thus, the development area proposed avoids sensitive environmental areas ensuring the development has the least possible impact on the land on which it will be built.
4. **Competition:** Existing / Proposed WEF within close proximity to the proposed development also needs to be considered as this may have wake loss impacts on the WEF as well grid capacity constraints.
5. **Topography:** Suitable topography needs to be considered especially for the transportation and installation of large wind turbine generators. The site proposed for the Patatskloof WEF development is located in the scenic Karoo region of the Western Cape which is generally associated with wide vistas and mountainous landscapes. The topography in the general area surrounding the site to the north is characterised by flat plains with areas of slightly more undulating relief, including some local ridges. The topography over the assessment area is undulating but generally gently with minor areas of moderately steep to steep slopes at the ridges (greater than 1:10 based on the local topo-cadastral map). The southern portion of the site and surrounding area is characterised by mountainous areas with steeped side valley.
6. **Access:** Access is an important contributor to site selection. This will have both an environmental and financial impact on the proposed development. 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 the DR1475 District Road and DR1475, MR316 and MR319 WCG provincial Roads.
7. **Other:** Other key criteria which refines the site selection on a micro level.

13.5 Reduced dependency on fossil fuels

According to the South African Energy Report 2019, “*The South African energy supply is dominated by coal which constituted 69% of the primary energy supply in 2016, followed by crude oil with 14% and renewables with 11%. Nuclear contributed 3% while natural gas contributed 3% to the total primary supply during the same period*”. Apart from the fact that fossil fuels are finite resources that will eventually run out, fossil fuels are also harmful to the environment when used to produce electricity. During combustion, fossil fuels such as coal emit many by-products into the atmosphere, two (2) of which are carbon dioxide (CO₂) and sulphur dioxide (SO₂). Both these gases have been shown to contribute to the worsening climate crisis. Wind is a free and infinite resource that occurs naturally in the environment. Converting wind energy into electricity releases no harmful by-products into the environment and will reduce the dependency on fossil fuels.

13.6 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 Touws River and other nearby towns) is expected to increase and provide for much-needed stimulus for the local economy.

According to the Social Impact Assessment (May 2022), *“The project will also stimulate the local economy, which is likely to be most significant at a cumulative level. There will be a significant economic contribution attached to the project. 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 Touws River and Matjiesfontein area. The capital expenditure (CAPEX) during construction is estimated at R1 billion, with the operational phase estimated at 3% of CAPEX.*

Apart from job creation and procurement spend, the project will also have broader positive socio-economic benefits, at a national level, regarding the potential to contribute towards the National Grid requirements as part of the Government’s vision to source 22.53% of the country’s energy through wind power by 2030 (Department of Energy Republic of South Africa, 2019, p. 42)”.

13.7 Job opportunities and household livelihoods

WEF 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 (2022), the project will lead to the creation of both direct and indirect jobs which will have a positive economic benefit within the region. *The workforce will be broken down as follows:*

- **Construction**
 - *Skilled = 100*
 - *Low skilled = 300*
 - Total = 400.**

- **Operational**
 - *Skilled = 6*

- Low skilled = 6
- Total = 12.**

Construction will stretch over a 18 to 24month period, with the operational phase lasting over 20 years.

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Apart from job creation and procurement spend, the project will also have broader positive socio-economic benefits, at a national level, regarding the potential to contribute towards the National Grid requirements as part of the Government's vision to source 22.53% of the country's energy through wind power by 2030 (Department of Energy Republic of South Africa, 2019, p. 42).

13.8 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.

13.9 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.

14. DETAILS OF PROCESS FOLLOWED TO REACH THE PREFERRED OPTION

14.1 Details of alternatives

14.1.1 Introduction

As per the 2014 EIA Regulations (as amended), feasible and reasonable alternatives are required to be considered during the BA process. Alternatives are defined in Chapter 1 of the 2014 EIA Regulations (as amended) 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 the alternatives in relation to the proposed development is discussed in the sections below.

14.1.2 Location/Site alternatives

Several key aspects played a role in determining the location of the proposed Patatskloof WEF, Battery Energy Storage System (BESS) and shared 33/132kV on-site substation (this application) and associated 132kV Power Line development. These include resource, grid availability and capacity, environmental, competition, topography and access. The proposed WEF and associated grid infrastructure is located within the Komsberg Renewable Energy Development Zone (REDZ 2), as published in terms of Section 24(5) of the National Environmental Management Act, 1998 (NEMA) in GN R114 of 16 February 2018. Furthermore it is also located within an EGI corridor.

No location alternatives are being considered for the Patatskloof Wind Farm as these sites were selected prior to the commencement of the BA Process. One (1) site has been identified for the proposed Patatskloof WEF and Battery Energy Storage System (BESS)

Two (2) options have been identified for the 33kV portion/yard of the shared 33/132kV onsite substation.

Six (6) corridors have been identified for the 132kV overhead line and 132kV portion/yard of the shared 33kV/132kV onsite substation – these applications have been prepared and assessed under separate BA application processes.

14.1.3 Activity/technology alternatives

Activity alternatives refer to the consideration of alternatives requiring a change in the nature of the proposed activity to be undertaken.

No other activity / technology alternatives are being considered. Renewable energy development in South Africa is highly desirable from a social, environmental and development point of view. Based on the terrain, the climatic conditions and current land use being agricultural, it was determined that the proposed site would be best-suited for a substation and powerline associated with WEF, instead of any

other type of renewable energy technology. It is generally preferred to install WEF on elevated ground. There is also not enough rainfall in the area to justify a hydro-electric plant. Therefore, the only feasible technology alternative on this site is WEF with associated infrastructure and as such this is the only technology alternative being considered.

14.1.4 Design or Layout alternatives

Layout alternatives have been considered and assessed as part of the BA process.

A preliminary layout of thirty-five (35) wind turbines was initially identified and provided for the specialists to assess. Based on the findings of the specialists, the buildable area was designed by the project developer in order to respond to and avoid the sensitive environmental features located within the project site. This approach ensured the application of the mitigation hierarchy (i.e., avoid, minimise, mitigate and offset) to the Patatskloof WEF project which ultimately ensures that the development is appropriate from an environmental perspective and is suitable for development. The application of the mitigation hierarchy was undertaken by the developer taking into consideration the technical feasibility prior to the commencement of the BA process for Environmental Authorisation, and further considered based on specialist study findings. The development area is considered to be suitable and appropriate from an environmental perspective for the proposed WEF, as it ensures the avoidance, reduction and/or mitigation of all identified detrimental or adverse impacts on sensitive features as far as possible.

14.1.5 No – go option

The no-go alternative assumes that the proposed project will not go ahead i.e., it is the option of not developing the proposed Patatskloof WEF. This alternative would result in no environmental, social or economic impacts (positive or negative) from the proposed project on the site or surrounding local area and has been assessed further by the specialists as outlined below.

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

- No benefits will be realised from the implementation of an additional land-use being energy generation and livestock farming;
- No additional power will be generated or supplied through means of renewable energy wind resources at this project at this location;
- There will be lost opportunity for skills transfer and education/training of local communities;
- The positive socio-economic impacts likely to result from the project such as increased local spending and the creation of local employment opportunities will not be realized;
- There will be a loss of job creation opportunities from the construction and operation phases, where job creation is identified as a key priority;
- Not contributing to future demand for additional power generation in a most economic and rapid manner.
- Loss of economic benefit to participating landowners due to the revenue that will be gained from leasing the land to the developer.
- No contribution to assist the government in addressing climate change, energy security and economic development.

Contrary to the above, the following could occur if the no-go alternative is implemented:

- **Bats:** The No-Go alternative assumes that the proposed development will not go ahead, and status quo would be maintained. No negative impact is expected on bats should the WEF development not take place.
- **Avifauna:** The No-Go option would result will result in the current *status quo* being maintained as far as the avifauna is concerned. The low human population in the area is definitely advantageous to sensitive avifauna, especially Red Data species. The no-go option would eliminate any additional impact on the ecological integrity of the proposed PAOI as far as avifauna is concerned
- **Socio-Economic:** The option of not having this project go ahead means that the social environment is not affected as the status quo remains. On a negative basis, it also means that all positive aspects associated with the project would not materialise. This would mean that there is no job creation, no revenue streams into the local economy and no opportunity to enhance the National Grid with renewable source of energy.
- **Agriculture:** due to continued low rainfall in the area, which is likely to be exacerbated by climate change, agriculture in the area will come under increased pressure in terms of economic viability.
- **Terrestrial Ecology:** No biodiversity (fauna and flora) will be removed or disturbed during the development of this proposed facility.
- **Aquatic Ecology:** No aquatic resources will be impacted upon during the construction of the proposed WEF and associated infrastructure.
- **Visual:** The area would retain its visual character and sense of place and no visual impacts would be experienced by any locally occurring receptors.
- **Transport:** If the proposed development does not materialise the increase in the traffic volume will not transpire and the status quo will persist.
- **Heritage:** This option would result in no development impact on the Patatskloof cultural landscape, and it should continue to operate in the similar way maintaining the current significance. If the Patatskloof site is not developed, the WEF and associated infrastructure will not be built and the aesthetic and visual impact of new RE developments will be contained to their existing scale and massing. The potential for socio-economic opportunities related to the construction and operation of the RE facility for local residents in the area would be lost. The potential for increased RE energy capacity nationally would be lost in this instance but certainly gained elsewhere.
- **Noise:** Existing residual noise levels will remain as is within the project focus area;

The no- go alternative is not currently the preferred alternative.

14.1.6 Comparative Assessment of Alternatives

The proposed substation site alternatives including BESS and construction laydown which were investigated and comparatively assessed as part of the BA process are shown in **Table 18** below.

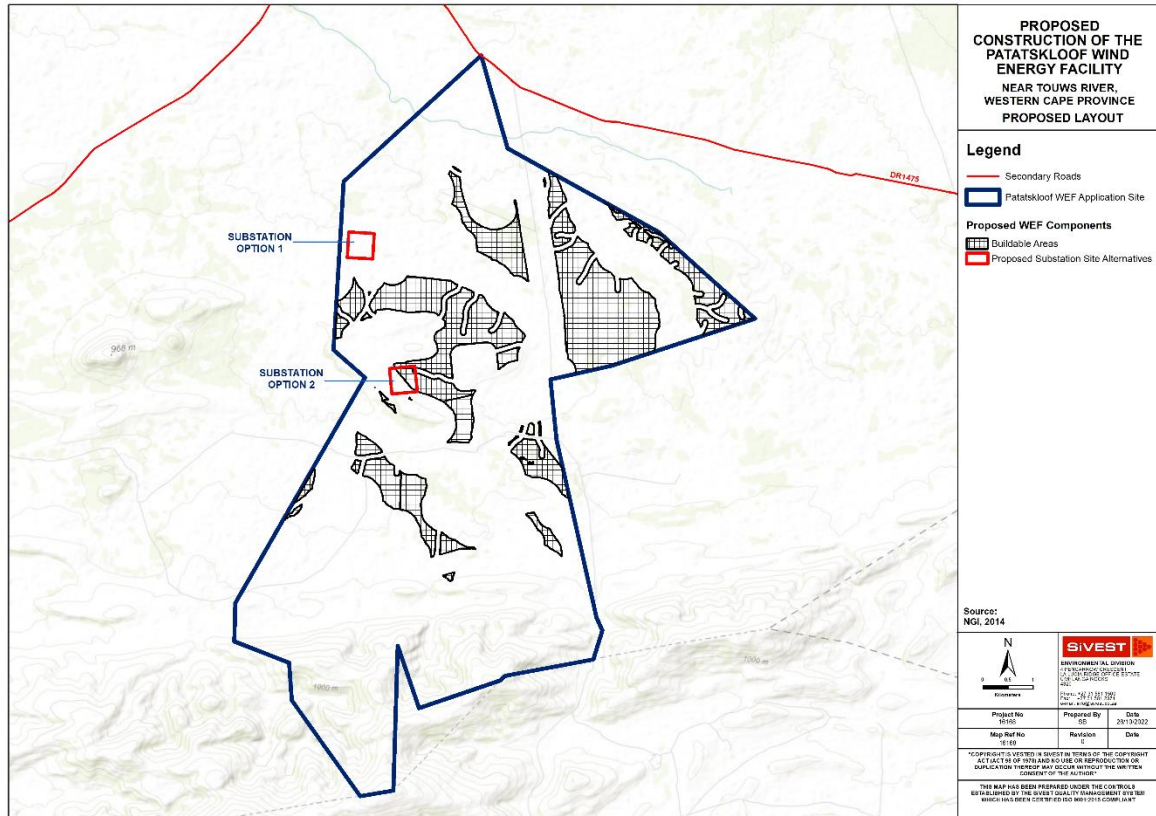


Figure 41: Proposed Layout showing the substation locations

Each of the alternatives have been comparatively assessed in terms of the findings from the specialist assessments conducted as part of the BA process and is summarised in the table below.

Key

PREFERRED	The alternative will result in a low impact / reduce the impact
FAVOURABLE	The impact will be relatively insignificant
NOT PREFERRED	The alternative will result in a high impact / increase the impact
NO PREFERENCE	The alternative will result in equal impacts

Table 18: Summary of comparative assessment of substation, BESS and construction laydown area site alternatives

ALTERNATIVE	ENVIRONMENTAL ASPECT													FATAL FLAW (YES / NO)	Applicants Preference
	Agric. and Soils	Avifauna	Bat	Terrestrial Ecology	Geotech	Archaeo	Palaeo	Cultural	Noise	Social	Surface Water	Transportation	Visual		
SUBSTATION, BESS AND CONSTRUCTION LAYDOWN SITE ALTERNATIVES															
Option 1	Not assessed	No Preference	Least preferred	Least preferred	No Preference	No Preference	No preference	Favourable located outside of CBA	No preference	No preference	Least preferred	No preference	Favourable	NO	No preference
Option 2	Not assessed	No Preference	Favourable	Least Preferred	No Preference	No Preference	No preference	Least preferred	No preference	No preference	Least preferred	No preference	Favourable	NO	No preference

14.2 Motivation and 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 Patatskloof WEF and grid was based on environmental constraints and technical and economic considerations.

In terms of the layout, a preliminary layout of thirty-five (35) wind turbines was initially identified and provided to the specialists for assessment. Based on the findings of the specialist site visits, a smaller buildable area was defined in order to respond to, and avoid as far as possible, the sensitive environmental features located within the project site.

This approach ensured the application of the mitigation hierarchy (i.e., avoid, minimise, mitigate and offset) which ultimately ensures that the development is appropriate from an environmental perspective and is suitable for development. The application of the mitigation hierarchy was undertaken by the developer taking into consideration the technical feasibility prior to the commencement of the BA process for Environmental Authorisation, and further considered based on specialist study findings. The buildable area is considered to be suitable and appropriate from an environmental perspective for the Pataskloof WEF, as it ensures the avoidance, reduction and/or mitigation of identified detrimental or adverse impacts on sensitive features as far as possible.

While the buildable area avoids specialist sensitives as far as possible, there are some areas that have been identified as culturally sensitive that cannot be avoided. The area is constrained by a number of sensitives as well as drainage lines and, as a result, a small area of culturally sensitive land in the northern part of the site has been included in the buildable area. However, these areas in relation to the amount of culturally sensitive areas are considered minimal. The layout and buildable area is evidence of the sensitivity avoidance measures taken.

In terms of the cultural sensitivity, the developer has given the cultural landscape due consideration and avoided the cultural sensitivities identified as far as possible (refer **Figure 42** below). However, some areas as discussed above are unavoidable. The developer has had to consider the benefits of the development versus the impacts that the development will have on some aspects of the cultural landscape, which has already undergone some degree of transformation as a result of other renewable energy developments in the vicinity. The benefits of the development include job creation, business opportunities, skills development, on-site training as well as the provision of much needed renewable energy. The project is also identified within the Komsberg Renewable Energy Development Zone as a favourable geographic areas for renewable energy projects.

The substation site locations have been based on proximity to the WEF and have been assessed by the specialists in their respective specialist studies. The location of the Substations are constrained by a number of sensitivities as well as riverine habitat and the most feasible option has been selected taking all site sensitives into account. Based on the results of the comparative assessment of substation site alternatives, Option 2 is the most preferred substation location from a specialist point of view, as identified by the bat and visual specialists. Further based on the site sensitivity mapping, it is located outside of all no-go areas. The cultural specialist identified Option 1 substation as preferable (but must be located outside of CBA without impacting on a riverine corridor flood line or a slope over 3%.) and Option 2 as least preferred (as it is located on sensitive raised elevation in landscape unit B) with the remaining specialists having no preference on the location of the substation. The developer has not indicated a preference. Both are deemed acceptable for authorisation since none are fatally flawed. It is therefore

requested that Substation Option 2 be authorised as part of the proposed development (with micrositing to be undertaken) (should the EA be granted). Refer to **Figure 42 and 43** for a map of the substation alternatives.

The buildable area, within which the infrastructure will be placed is recommended for authorisation. The buildable area will be further refined prior to construction based on the technology at the time and micrositing.

Where specialists identified areas of sensitivity which need to be considered for the placement of infrastructure, these features were analysed and detailed in the reports with the main objective being avoidance of sensitive features and areas within the affected environment. A summary is presented below:

- **Ecological & Aquatic Features and Associated Sensitivity:** The development areas will impact on Low sensitivity area, thus resulting in Low impact ratings. Going forward, the turbine, roads and ancillary structures should thus take this into account, however it is noted that the development areas are not contiguous and would have to cross some sensitive areas in particular access roads, cables and overhead lines. Therefore, any mitigations around route selections mentioned in this report must be considered (e.g., use existing tracks) and must be considered in the walkdown surveys post authorisation. It is recommended that the development within the development area be approved.
- **Agric & Soils Features and Associated Sensitivity:** The development area avoids all agricultural no-go areas. It is further confirmed that the development area does not change the assessed significance of the agricultural impact and that, from an agricultural impact point of view, it is recommended that the development within the development area be approved.
- **Avifauna Features and Associated Sensitivity:** The development area will have a moderate impact on avifauna which, in most instances, could be reduced to a low impact through appropriate mitigation. The alternative substation and laydown locations are all situated in essentially the same habitat, i.e. Karoo scrub. The habitat is not particularly sensitive, as far as avifauna is concerned, therefore any of the alternative locations will be acceptable. No fatal flaws were discovered in the course of the onsite investigations. The development is therefore supported, provided the mitigation measures listed in this report are strictly implemented.
- **Bat Features and Associated Sensitivity:** After specialist input was considered, the developer is proceeding with a development area instead of a detailed turbine layout with no further infringement of turbine positions.
- **Visual Features and Associated Sensitivity:** The development area avoids all visual no-go areas. It is further confirmed that the refined buildable area does not change the assessed significance of the visual impact. From a visual impact point of view, the project is deemed acceptable and the EA should be granted.
- **Transport Features and Associated Sensitivity:** The development area will have a nominal impact on the existing traffic network. The project is therefore deemed acceptable from a transport perspective, provided the recommendations and mitigations measures in this report are implemented, and hence the Environmental Authorisations (EAs) should be granted for the BA applications.
- **Noise Features and Associated Sensitivity:** The proposed buildable area will be developed further than 1,000 m from any noise-sensitive receptor ("NSR"), with most of the area to be developed further than 2,000 m from any NSR. Considering the low significance of the potential noise impacts (with mitigation, inclusive of cumulative impacts) for the proposed WEF and associated infrastructure, it is recommended that the proposed Patatskloof WEF be authorized..

- **Heritage Features and Associated Sensitivity:** The final proposed buildable area took the specialist recommendations identified during the 2021 and 2022 field assessments into consideration. From an archaeological and historical structure perspective, the proposed development area will not change the impact on the identified heritage resources, as such the recommended mitigation measures remains. There is no objection to the proposed development area associated with the project.
- **Cultural Landscape and Associated Sensitivity:** The proposed buildable area considers and adheres to most of the cultural landscapes buffers and sensitivities contained in the April 2022 CLA report other than slope, which has not been included. As indicated in the CLA report (April 2022), all slopes over 10% need to be avoided for development of turbines and new road infrastructure. Slopes over 3% need to be avoided for other infrastructure development. The map below overlays the CLA sensitivities map with the 14/11/2022 proposed buildable area and includes the slope sensitivities that need to be avoided for WEF development.
- **Palaeontology Features and Associated Sensitivity:** No palaeontological High Sensitivity or No-Go areas have been identified within the WEF project area. None of the recorded fossil sites lies within the development footprint as currently defined. The proposed Patatskloof WEF development is not fatally flawed and, on condition that the recommended mitigation measures are included within the EMPr and implemented in full, there are no objections on palaeontological heritage grounds to their authorization.
- **Geotech Features and Associated Sensitivity:** From a geotechnical and geological perspective, no fatal flaws or sensitivities have been identified within or close to the WEF assessment areas. It is therefore recommended that the proposed activity be authorised.

The proposed development area has therefore considered the sensitivities identified, which has informed the buildable area. The buildable areas is reflected with the sensitivities as well as without in **Figures 42 and 43**.

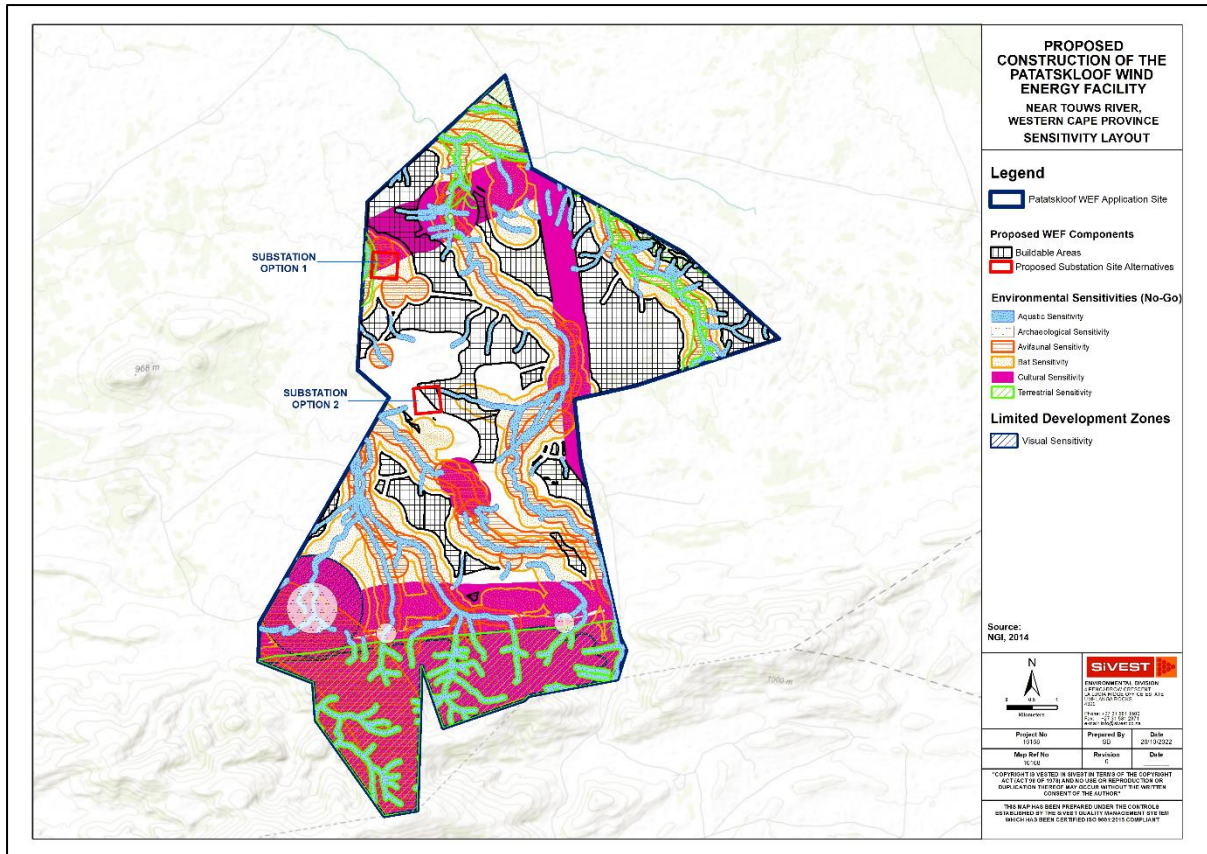


Figure 42: Final proposed development area overlain on the identified environmental sensitivities

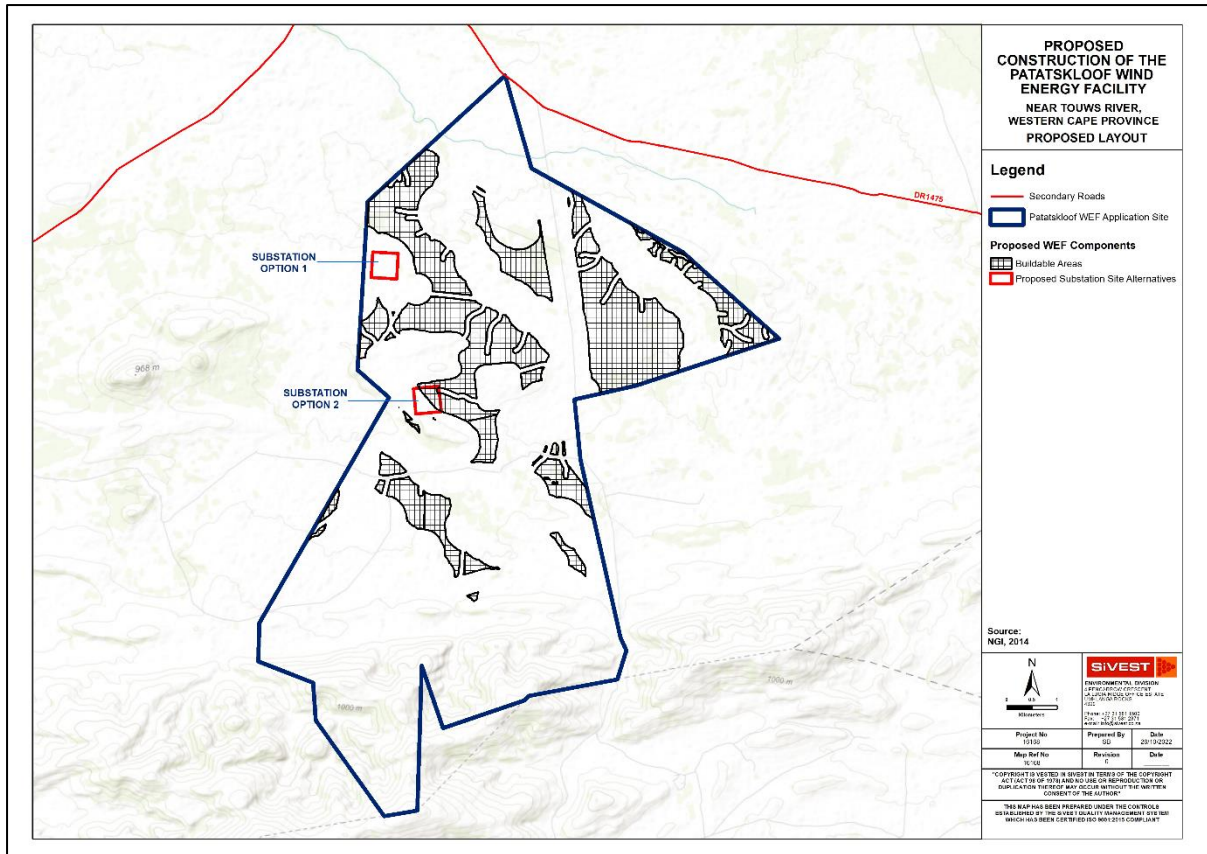


Figure 43: Final proposed development area

14.3 Public Participation Process undertaken

Public participation is the cornerstone of any EIA. The principles of the 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 BA Process is to collect the issues, concerns and queries of interested and affected parties (I&APs). The main objective 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 Assessment Process.

14.3.1 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.

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

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

- Comments are submitted within the timeframes set by the competent authority or extensions of timeframes agreed to by the applicant, 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.

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

Notification of BA process to be undertaken as follows:

- Issuing of the notifications and initial landowner consultation (to be circulated to all I&APs in **December 2022** respectively as part of the Draft Basic Assessment Report (proof to be included in Final Basic Assessment 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 **02 December 2022** (proof included in the Basic Assessment Report).
- Notification letters to be sent via E-mail or sms (if cell phone number / email is available, it is assumed the I&AP have an email or cell phone).
- Public notification of the BA process was advertised along with the WEF project, in a local newspaper (**namely Die Courier** on **02 December 2022**, as required according to Regulation 41(2) (c) of the EIA Regulations (2014), as amended. Proof to be included in the Draft Basic Assessment Report.

Availability of report for review:

- Report available on SiVEST's 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 Basic Assessment Report will be located and available for review at the following locations:

John Steyn Public library, 33 Owen Street (opposite post office and shopping centre), Ceres, Western Cape, South Africa.

14.3.4 Summary of issues raised

To be updated once the Public Comment Period has been completed from **05 December 2022** to **26 January 2023** (excluding the period **15 December 2022** to **5 January 2023**).

14.3.5 Details of notification of landowners

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

The applicant is not the owner or the person in control of the land on which the WEF is proposed, therefore landowner consent is required and has been included as part of the application form.

15. IMPACTS AND RISKS IDENTIFIED FOR THE PREFERRED ALTERNATIVE

The SiVEST Impact Assessment method, dated 28 July 2017 (attached as Appendix 7) has been utilised to assess the following potential impacts identified in the assessment phase and is presented in the following sections.

The method used in this impact assessment determines significance (can be both positive and negative) of an impact by multiplying the value of the environmental system or component affected by the magnitude of the impact on that system or component (System or Component Value x Impact Magnitude).

In this method, all significant impacts on the natural or biophysical environment are assessed in terms of the overall impacts on the health of ecosystems, habitats, communities, populations and species. Thus, for example, the impact of an increase in stormwater runoff generated by a development can only be assessed in terms of the impact on the health of the affected environmental systems.

Similarly, all significant impacts on the social and socio-economic environment are assessed in terms of the overall impacts to the quality of life, health and safety of the affected population, communities and/or individuals, with the exception of impacts on resources that are assessed on their own.

The following impacts have been identified for the proposed project:

Table 19: Impact Assessment Tables

15.1 Planning

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION																		
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S									
Aquatic / Freshwater- None Identified																													
Terrestrial Ecology- None Identified																													
Agricultural - None Identified																													
Avifaunal- None Identified																													
Bat- None Identified																													
Social																													
Political and social resources	Corruption	4	2	2	3	4	2	3	0	-	Medium									4	2	2	3	4	2	3	0	-	Medium
Heritage (Archaeological) - None Identified																													
Heritage																													
Homesteads, structures (kraals, dam walls, stone structures and buildings)	Construction activities close to these identified structures can damage and cause irreparable damage or destroy the resource	1	2	4	3	4	4	5	6	-	High	<ul style="list-style-type: none"> Implement a 50-meter buffer around all structures with a rating of IIIC and higher. Implement a 500-meter buffer around the farmstead site at (PK 06 and PK 15) Demarcate as no-go buffer areas 	1	2	3	3	4	2	2	6	-	Medium							

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT / NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION											
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		
											<ul style="list-style-type: none"> An archaeological walk down of the final approved layout will be required before construction commence. Chance finds protocol must be developed that includes the process of work stoppage, site protection, evaluation and informing HWC of such finds and a final process of mitigation implementation. Demarcate as no-go areas 											
Unidentified heritage resources (Chance finds)	Destruction or damage to previously unidentified archaeological or historical resources	1	2	4	3	4	4	5	6	-	High	<ul style="list-style-type: none"> A management plan for the heritage resources needs then to be compiled and approved for implementation during construction and operations. 	1	2	3	3	4	2	2	6	-	Medium
Fossil Heritage Resources	Disturbance, damage or destruction of fossils at or beneath the ground surface due to surface clearance and bedrock excavations	1	1	4	2	4	1	1	2	-	Low	<ul style="list-style-type: none"> Application of Chance Fossil Finds Procedure during construction phase 	1	1	4	2	4	1	1	2	-	Low
Cultural Landscape - Ecological	Inappropriate infrastructure layout planning degrades ecological elements of the cultural landscape.	2	4	3	3	3	4	6	0	-	High	<ul style="list-style-type: none"> 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 	2	2	2	1	3	2	2	0	-	Low

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT / NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S
										<p>any structures close to these drainage lines.</p> <ul style="list-style-type: none"> Renosterveld, and in this case, the Matjiesfontein Shale Renosterveld is found in the mid-elevations, and should be kept free from development. Renosterveld is classified as a threatened ecosystem, only found within the boundaries of South Africa. Care should be taken that we do not needlessly destroy our rare resources that determine the character of the Karoo landscape, and often on the mid-slopes. 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 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. 								

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION											
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		
Cultural Landscape - Aesthetic	Inappropriate infrastructure layout planning negates aesthetic and sense of place requirements of the cultural landscape.	2	4	4	4	3	4	6	8	-	Very High	<ul style="list-style-type: none"> 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 Tooverberg, Pramberg and the Pienaarspoort, as these are important place making and orientating elements for experiencing the cultural landscape. 	2	3	2	3	3	3	3	9	-	Medium

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT / NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S
										<ul style="list-style-type: none"> 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. Due to the scenic and historic significance of the regional road, a buffer of 500m to either side of the district road 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. Due to the impact of the noise and shadow flicker of wind turbines on residents, the turbines should be placed at 1km from any occupied homestead. Alternative Option 3 for the grid corridor is preferred in terms of cultural landscape assessment as it limits the construction to a smaller footprint on the landscape and locates the infrastructure close to existing industrial elements. It should be moved out of the CBA without impacting on a riverine corridor, flood line or a slope over 3%. 								

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT / NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION													
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S				
											<ul style="list-style-type: none"> Substation option 1 is preferred due to its location close to other industrial elements. It should be moved out of the CBA without impacting on a riverine corridor, flood line or a slope over 3%. 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. 													
Cultural Landscape - Historic	Inappropriate infrastructure layout planning degrades historic elements of the cultural landscape.	2	4	3	4	4	4	6	8	-	Very High	<ul style="list-style-type: none"> Due to the scenic and historic significance of the regional road, a buffer of 500m to either side of the district road 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. 	2	2	2	1	3	2	2	0	-	Low		

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT / NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S
										<ul style="list-style-type: none"> The integrity of the historic farmsteads and their associated cultivated areas and relationship to the riverine corridors and other natural elements, such as Tooverberg, should be maintained and protected. Location of proposed turbines should be limited to a 1000m buffer around the farmsteads as far possible to limit impact to the farmsteads. Any development that impacts the inherent character of the werf component should be discouraged and a development buffer of 50m around the outer boundary of farm werfs and 300m around any graded heritage structure, must be maintained, including the associated cultivated areas, cemeteries and unmarked graves, for all new infrastructure. 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. Public access to these sites should be encouraged. 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 								

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT / NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S
										<p>and should be discouraged. No development closer than 100m from the boundary of any burial grounds or unmarked graves. A preconstruction micro-survey of each turbine footprint and any new access roads should be conducted to ensure no further unmarked graves are threatened. Unmarked graves in the Stinkfontein site should be protected from development impact.</p> <ul style="list-style-type: none"> • 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. • Maintain traditional movement patterns across rural landscapes or to places of socio-historical value. (a) Avoid privatization or the creation of barriers to traditional access routes, such as the 								

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT / NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION																																	
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S																								
											road through Pienaarspoort. (b) Retain old roadways, which have been replaced by newer roads, for use as recreation trails, such as the historic Grand Trunk Road which runs past Stinkfontein.																																	
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.	2	4	4	3	4	4	6	8	-	Very High	<ul style="list-style-type: none"> 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. 	2	2	1	2	4	2	2	2	-	Low																						

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT / NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION									
		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		
										<p>appropriate mitigation for impacts to the cultural landscape.</p> <ul style="list-style-type: none"> 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 										

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		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		
											associated with WEF developments at all phases.											
Heritage (Palaeontology)- None Identified																						
Noise																						
Noise impacts relating to planning activities	Light delivery vehicles moving around onsite.	1	1	1	1	1	1	1	5	-	Low	No mitigation measures recommended for the planning stage	1	1	1	1	1	1	5	-	Low	
Heritage (Archaeology)																						
Stone Age and Rock Art sites	Construction activities close to these resources can damage and cause irreparable damage or destroy the resource. Rock art sites are extremely sensitive to human actions and are easily damaged.	1	2	4	3	4	4	5	6	-	High	<ul style="list-style-type: none"> An archaeological walk down of the final approved layout will be required before construction commence. Implement a 200-meter buffer around the rock art sites at (PK 29, PK 42 and PK 46) A management plan for the heritage resources needs then to be compiled and approved for implementation during construction and operations. Chance finds protocol must be developed that includes the process of work stoppage, site protection, evaluation and informing HWC of such finds and a final process of mitigation implementation. Demarcate as no-go areas 	1	1	3	3	4	2	2	4	-	Medium

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION											
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		
Chance finds	Destruction or damage to previously unidentified archaeological or historical resources	1	2	4	3	4	4	5	6	-	High	<ul style="list-style-type: none"> A management plan for the heritage resources needs then to be compiled and approved for implementation during construction and operations. 	1	1	3	3	4	1	2	-	Low	
Heritage: Cultural Landscape																						
Ecological	Inappropriate infrastructure layout planning degrades ecological elements of the cultural landscape.	2	4	3	3	3	4	6	0	-	High	<ul style="list-style-type: none"> 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. Renosterveld, and in this case, the Matjiesfontein Shale Renosterveld is found in the mid-elevations, and should be kept free from development. Renosterveld is classified as a threatened ecosystem, only found within the boundaries of South Africa. Care should be taken that we do not needlessly destroy our rare resources that determine the character of the 	2	2	2	1	3	2	2	0	-	Low

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT / NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S	
											<p>Karoo landscape, and often on the mid-slopes.</p> <ul style="list-style-type: none"> 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 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. 								
Aesthetic	Inappropriate infrastructure layout planning negates aesthetic and sense of place requirements of the cultural landscape.	2	4	4	4	3	4	6	8	Very High	<ul style="list-style-type: none"> 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 	2	3	2	3	3	3	9	Medium

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT / NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION										
		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S			
										<p>them in lower lying plains to reduce their impact on the surrounding sensitive cultural landscape.</p> <ul style="list-style-type: none"> • 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 Tooverberg, Pramberg and the Pienaarspoort, as these 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. • Due to the scenic and historic significance of the regional road, a buffer of 500m to either side of the 											

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT / NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION									
		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		
										<p>district road 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.</p> <ul style="list-style-type: none"> • Due to the impact of the noise and shadow flicker of wind turbines on residents, the turbines should be placed at 1km from any occupied homestead. • Alternative Option 3 for the grid corridor is preferred in terms of cultural landscape assessment as it limits the construction to a smaller footprint on the landscape and locates the infrastructure close to existing industrial elements. It should be moved out of the CBA without impacting on a riverine corridor, flood line or a slope over 3%. • Substation option 1 is preferred due to its location close to other industrial elements. It should be moved out of the CBA without impacting on a riverine corridor, flood line or a slope over 3%. • 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 										

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION															
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S						
											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.	2	4	3	4	4	4	6	8	Very High	<ul style="list-style-type: none"> Due to the scenic and historic significance of the regional road, a buffer of 500m to either side of the district road 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 integrity of the historic farmsteads and their associated cultivated areas and relationship to the riverine corridors and other natural elements, such as Tooverberg, should be maintained and protected. Location of proposed turbines should be limited to a 1000m buffer around the farmsteads as far possible to limit impact to the farmsteads. Any development that impacts the inherent character of the werf 	2	2	2	1	3	2	2	0	Low						

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT / NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S
										<p>component should be discouraged and a development buffer of 50m around the outer boundary of farm werfs and 300m around any graded heritage structure, must be maintained, including the associated cultivated areas, cemeteries and unmarked graves, for all new infrastructure.</p> <ul style="list-style-type: none"> 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. Public access to these sites should be encouraged. 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. A preconstruction micro-survey of each turbine footprint and any new access roads should be conducted to ensure no further unmarked graves are threatened. Unmarked graves in the Stinkfontein site should be protected from development impact. 								

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT / NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION										
		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S			
										<ul style="list-style-type: none"> 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. Maintain traditional movement patterns across rural landscapes or to places of socio-historical value. (a) Avoid privatization or the creation of barriers to traditional access routes, such as the road through Pienaarspoort. (b) Retain old roadways, which have been replaced by newer roads, for use as recreation trails, such as the historic Grand Trunk Road which runs past Stinkfontein. Respect existing patterns, typologies and traditions of settlement-making by promoting the continuity of heritage features. These include: (a) indigenous; (b) colonial; and (c) 											

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT / NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION																											
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S																		
											current living heritage in the form of tangible and intangible associations to place.																											
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.	2	4	4	3	4	4	6	8	-	Very High	<ul style="list-style-type: none"> The findings of this report must be shared with identified interested and affected parties, <u>including non-landowner residents on the development properties</u>, 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. A specialist qualified in recognising and discussing significance of intangible heritage resources should be present during the public meetings. The 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 	2	2	1	2	4	2	2	2	-	Low																

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		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S
										<p>element. The WEF development must allow and support this, including financially, and not degrade this continued relationship.</p> <ul style="list-style-type: none"> 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. 								
Visual - None Identified																		

15.2 Construction

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		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		
Aquatic / Freshwater																						
Impact 1: Loss of aquatic species of special concern	The construction activities will result in the disturbance of aquatic habitats that may contain listed and or protected plant or animal species. However, none of these were observed during this assessment within the tower positions proposed	1	1	1	1	1	1	5	-	Low	<ul style="list-style-type: none"> Develop and implement an Rehabilitation and Monitoring plan post Environmental Authorisation. This must be developed following the finalisation of the turbine / road layout and a walk down has been completed. This plan should include relocation of suitable plant species, but more important protect any topsoil stores and promote the collection of vegetative material and propagules / seed to assist with the revegetation of the site Where possible, temporary construction lay-down or assembly areas should be sited on transformed areas; and Rapid regeneration of plant cover must be encouraged by setting aside topsoil during earthmoving and replacing onto areas where the re- establishment of plant cover is desirable to prevent erosion. 	1	1	1	1	1	1	5	-	Low		
Impact 2: Damage or loss of riparian and alluvial systems in	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	2	3	2	2	3	2	2	4	-	Medium	<ul style="list-style-type: none"> A pre-construction walkthrough with an aquatic specialists is recommended and they can assist with the development of the stormwater management plan and Aquatic Rehabilitation and Monitoring plan, 	1	3	2	1	2	2	1	8	-	Low

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		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S			
the construction phase	widen any current bridges or drifts. Loss can also include a functional loss, through change in vegetation type via alien encroachment for example									coupled to micro-siting of the final layout.											
										<ul style="list-style-type: none"> 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. Where roads and crossings are upgraded, the following applies: Existing pipe culverts must be removed and replaced with suitable sized box culverts, especially where road levels are raised to accommodate any large vehicles. River levels, regardless of the current state of the river / water course must be reinstated thus preventing any impoundments from being formed. The related designs must be assessed by an aquatic specialist during a pre-construction walkdown. Where large cut and fill areas are required these must be stabilised and rehabilitated during the construction process, to minimise erosion and sedimentation. Suitable stormwater management systems must be installed along roads and other areas and monitored during the first few months of use. Any erosion / sedimentation must be resolved through whatever additional 											

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		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S			
											<p>interventions maybe necessary (i.e., extension, energy dissipaters, spreaders, etc).</p> <ul style="list-style-type: none"> 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. 										
Impact 3: 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	1	3	2	2	3	3	3	-	Medium	<ul style="list-style-type: none"> All liquid chemicals including fuels and oil, including the BESS must be stored in with secondary containment (bunds or containers or berms) that can contain a leak or spill. Such facilities must be inspected routinely and must have the suitable PPE and spill kits needed to contain likely worst-case scenario leak or spill in that facility, safely. Washing and cleaning of equipment must be done in designated wash bays, where rinse water is contained in evaporation/sedimentation ponds (to capture oils, grease cement and sediment). Mechanical plant and bowsers must not be refuelled or serviced within 100m of a river channel. All construction camps, lay down areas, wash bays, batching plants or areas and any stores should be more than 50 m from any demarcated water courses. Note comment regards Camp A that requires micro-siting. 	1	3	2	1	2	2	1	8	-	Low

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											<ul style="list-style-type: none"> Littering and contamination associated with construction activity must be avoided through effective construction camp management; No stockpiling should take place within or near a water course All stockpiles must be protected and located in flat areas where run-off will be minimised and sediment recoverable; 									
Terrestrial Ecology																				
Impact Loss of species special concern	The construction activities will result in the disturbance of both aquatic and terrestrial habitats that may contain listed and or protected plant or animal species. However, none of these were observed during this assessment within the tower positions proposed	1	1	1	1	1	1	5	-	Low	<ul style="list-style-type: none"> Develop and implement an Rehabilitation and Monitoring plan post Environmental Authorisation. This must be developed following the finalisation of the turbine / road layout and a walk down has been completed. This plan should include relocation of suitable plant species, but more important protect any topsoil stores and promote the collection of vegetative material and propagules / seed to assist with the revegetation of the site Where possible, temporary construction lay-down or assembly areas should be sited on transformed areas; and Rapid regeneration of plant cover must be encouraged by setting aside topsoil during earthmoving and replacing onto areas where the re- establishment of 	1	1	1	1	1	1	5	-	Low

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		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		
											plant cover is desirable to prevent erosion.											
Impact 2: Loss of terrestrial habitats – flora and vegetation	The construction of the proposed infrastructure will require the need to clear vegetation which could then have a secondary impact on ecological connectivity and especially Critical Biodiversity Areas, linked to the large riverine corridors.	2	3	2	2	3	2	2	4	-	Medium	<ul style="list-style-type: none"> A pre-construction walkthrough by the ecologist is recommended, who can assist with the development of the Rehabilitation and Monitoring plan, coupled to micro-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. Where possible, temporary construction lay-down or assembly areas should be sited on transformed areas; and Rapid regeneration of plant cover must be encouraged by setting aside topsoil during earthmoving and replacing onto areas where the re- establishment of plant cover is desirable to prevent erosion. 	1	3	2	1	2	2	1	8	-	Low
Impact 3: Loss of terrestrial species - fauna	Although most of the species observed are mobile, the increase in vehicle movement could result in an increase in road mortalities.	2	3	2	2	3	2	2	4	-	Medium	<ul style="list-style-type: none"> Clear demarcation during the construction phase of all undisturbed sensitive areas that are not within the direct footprint of the REF to ensure that there is no uncontrolled access by construction vehicles and labourers; Educate contractors as to the importance of the undisturbed conservations areas and importance of avoiding them; 	1	3	2	1	2	2	1	8	-	Low

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		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		
											<ul style="list-style-type: none"> All vehicles must stick to designated and prepared roads and adhere to the speed limit on site of 40km/hr; Mitigating the risk of poaching by fencing in the accommodation compounds of the construction crews, to prevent individuals from wandering in the veld after hours; banning the possession of dogs on site by construction and maintenance staff. 											
Agricultural – Compliance Statement																						
Avifaunal																						
Avifauna	Displacement due to disturbance associated with the construction of the wind turbines and associated infrastructure.	1	4	2	3	1	3	3	3	-	Medium	(1) 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. (2) Measures to control noise and dust should be applied according to current best practice in the industry.	1	4	2	3	1	2	2	-	Low	
Avifauna	Displacement due to habitat transformation associated with the construction of the wind turbines and associated infrastructure.	1	3	2	2	3	2	2	2	-	Low	(1) Removal of vegetation must be restricted to a minimum and must be rehabilitated to its former state where possible after construction. (2) Construction of new roads should only be considered if existing roads cannot be upgraded. (3) The recommendations of the ecological and botanical specialist studies must be strictly implemented, especially as far as	1	2	2	2	3	2	2	0	-	Low

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										limitation of the activity footprint is concerned.												
Geotechnical																						
Disturbance / displacement/ removal of soil and rock	Ground disturbance during access road construction, foundation earthworks, platform earthworks	1	4	3	2	3	1	1	3	-	Low	1) Design access roads and turbine locations (including crane pads) to minimise earthworks and levelling based on high resolution ground contour information 2) Correct topsoil and spoil management 3) Materials utilisation to minimise opening of borrow pits or creation of spoil	1	4	2	1	3	1	1	1	-	Low
Soil Erosion	Increased erosion due to vegetation clearing, alteration of natural drainage	1	4	3	2	2	1	1	2	-	Low	1) Avoid development in preferential drainage paths 2) Appropriate engineering design of road drainage and watercourse crossings 3) Temporary berms and drainage channels to divert surface runoff where needed 4) Landscape and rehabilitate disturbed areas timeously (e.g. regressing) 5) Use designated access and laydown areas only to minimise disturbance to surrounding areas	1	2	1	1	2	1	7	-	Low	
Social																						
Community resources	Availability of community services	2	1	1	2	1	1	7	-	Low		2	1	1	2	1	1	7	-	Low		
	Cultural and historic resources	1	3	4	2	4	2	2	8	-	Medium		1	2	4	2	4	2	2	6	-	Medium
	Social and community infrastructure	2	2	1	2	3	2	2	0	-	Low		2	1	1	2	3	2	1	8	-	Low

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		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S								
Individual and family changes	Annoyance, dust and noise	1	4	1	2	1	2	18	-	Low										1	3	1	2	1	2	16	-	Low
	Crime and security	2	3	2	2	2	2	22	-	Medium										2	2	2	2	1	2	18	-	Low
	Daily living patterns	1	3	1	2	1	2	16	-	Low										1	2	1	2	1	2	14	-	Low
	Employment and business opportunities	2	4	1	2	1	2	20	+	Low										2	4	1	2	1	2	20	+	Low
	Farming operations	1	2	1	2	1	2	14	-	Low										1	2	1	2	1	2	14	-	Low
	Fire hazard	2	2	2	2	1	2	18	-	Low										2	1	2	2	1	2	16	-	Low
	Hazard exposure	2	3	2	2	2	2	22	-	Low										2	2	2	2	2	2	20	-	Low
	STDs, HIV and AIDS	2	3	2	2	4	2	26	-	Medium										2	2	2	2	4	2	24	-	Medium
	Risk to livestock	1	2	1	2	1	2	14	-	Low										1	1	1	2	1	2	12	-	Low
Population characteristics	Temporary influx of construction workers	2	3	1	2	1	2	20	-	Low										2	2	1	2	1	2	18	-	Low
	Informal development and settlements	2	2	1	2	1	2	16	-	Low										2	1	1	2	1	2	16	-	Low
Heritage (Archaeology)																												
Homesteads, structures (kraals, dam walls, stone structures and buildings)	Construction activities close to these identified structures can damage and cause irreparable damage or destroy the resource	1	2	4	3	4	4	56	-	High	1. Implement a 50-meter buffer around all structures with a rating of IIIC and higher. 2. Implement a 500-meter buffer around the farmstead site at (PK 06 and PK 15) 3. Demarcate as no-go buffer areas	1	2	3	3	4	1	14	-	Low impact								

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		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		
											4. An archaeological walk down of the final approved layout will be required before construction commence.											
Stone Age and Rock Art sites	Construction activities close to these resources can damage and cause irreparable damage or destroy the resource. Rock art sites are extremely sensitive to human actions and are easily damaged.	1	2	4	3	4	4	5	6	-	High	1. An archaeological walk down of the final approved layout will be required before construction commence. 2. Implement a 200-meter buffer around the rock art sites at (PK 29, PK 42 and PK 46) 3. A management plan for the heritage resources needs then to be compiled and approved for implementation during construction and operations. 4. Chance finds protocol must be developed that includes the process of work stoppage, site protection, evaluation and informing HWC of such finds and a final process of mitigation implementation. 5. Demarcate as no-go areas	1	1	3	3	4	2	2	4	-	Medium impact
Burial Grounds	Construction activities close to these identified structures can damage and cause irreparable damage or destroy the resource	2	3	4	3	4	4	6	4	-	Very high impact	1. Implement a 50-meter buffer around all burial grounds and graves. 2. A management plan for the heritage resources needs then to be compiled and approved for implementation during operations. 3. Identify as no-go areas	1	1	4	3	4	1	1	2	-	Low impact
Chance finds	Destruction or damage to previously unidentified archaeological or historical resources	1	2	4	3	4	4	5	6	-	High	1. A management plan for the heritage resources needs then to be compiled and approved for implementation during construction and operations.	1	1	3	3	4	1	1	2	-	Low

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		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		
Heritage (Palaeontology)																						
Fossil heritage resources	Disturbance, damage or destruction of fossils at or beneath the ground surface due to clearance and bedrock excavations.	1	1	4	2	4	1	1	2	-	Low	Application of Chance Fossil Finds Procedure during construction phase.	1	1	4	2	4	1	1	2	-	Low
Heritage (Cultural Landscape)																						
Ecological	Fragmentation and destruction of the landscape degrading the environment and thus continuous relationship between man and environment	2	4	3	3	4	3	4	8	-	High	<ul style="list-style-type: none"> 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. Renosterveld, and in this case, the Matjiesfontein Shale Renosterveld is found in the mid-elevations, and should be kept free from development. Renosterveld is classified as a threatened ecosystem, only found within the boundaries of South Africa. 	2	2	2	1	4	2	2	2	-	Low

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		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S
										<p>Care should be taken that we do not needlessly destroy our rare resources that determine the character of the Karoo landscape, and often on the mid-slopes.</p> <ul style="list-style-type: none"> 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. 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 								

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		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S				
											that would alter the character of the site. By using rocks from site it helps to sensitively keep to the character.											
Aesthetic	WEF infrastructure construction and decommissioning activity degrades the character of the cultural landscape and the sense of place	2	4	3	3	3	4	6	0	-	High	<ul style="list-style-type: none"> 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 	2	4	2	2	2	2	2	4	-	Medium

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		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S																	
											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.	2	4	4	3	4	4	6	8	-	Very High	<ul style="list-style-type: none"> 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. 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 	2	2	3	2	2	2	2	2	-	Low															

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		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S
										<p>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.</p> <ul style="list-style-type: none"> 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 patterns 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 								



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		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S
										<p>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.</p> <ul style="list-style-type: none"> • 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 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 in tact 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 								

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		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S					
											<p>has heritage value and should be protected.</p> <ul style="list-style-type: none"> 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 Patatskloof should be maintained and integrity as a communal road for farm residents must be retained. Maintain traditional movement patterns across rural landscapes or to places of socio-historical value. (a) Avoid privatization or the creation of barriers to traditional access routes, such as the road through Pienaarspoort. (b) Retain old roadways, which have been replaced by newer roads, for use as recreation trails, such as the historic Grand Trunk Road which runs past Stinkfontein. 														
Socio-economic	Integrity of local residents to continue their patterns of land use is degraded by the construction and decommissioning activities.	2	3	4	4	4	4	6	8	-	Very High	<ul style="list-style-type: none"> 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 	1	3	3	1	3	2	2	2	+	Low			

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		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		
										<p>landscape and its outcomes and recommendations need to be considered in the decision for recommissioning and be implemented if recommissioning is approved.</p> <ul style="list-style-type: none"> 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 										

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		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S
											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.									
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	2	1	1	2	1	1	7	-	Low	No mitigation measures recommended for construction activities at the WTG locations or for substations	2	1	1	2	1	1	7	-	Low
Noise impacts at night	Construction activities relating to civil works as well as erection of wind turbines	2	1	1	2	1	1	8	-	Low	No mitigation measures recommended for construction activities at the WTG locations or for substations.	2	1	1	2	1	1	8	-	Low
Transport																				
Additional Traffic Generation	Increase in Traffic	2	4	1	2	1	3	30	-	Medium	• Ensure staff transport is done in the 'off peak' periods and by bus where possible. • Stagger material, component and abnormal loads delivery • Construction of an on-site batching plant and tower construction to reduce trips if possible	2	4	1	2	1	2	20	-	Low

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		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		
	Increase of Incidents with pedestrians and livestock	2	4	2	4	1	2	2	6	-	Medium	<ul style="list-style-type: none"> Upgrade of existing / new access points Reduction in speed of vehicles Adequate enforcement of the law Implementation of pedestrian safety initiatives Regular maintenance of farm fences & access cattle grids Construction of an on-site batching plant and tower construction to reduce trips if possible. 	2	3	2	4	1	1	2	-	Low	
	Increase in Dust from gravel roads	2	3	2	2	1	2	2	0	-	Low	<ul style="list-style-type: none"> Upgrade of existing / new access point Reduction in speed of the vehicles Construction of gravel roads in terms of TRH20 Implement a road maintenance program under the auspices of the respective transport department Possible use of an approved dust suppressant techniques Construction of an on-site batching plant and 	2	3	2	2	1	2	2	0	-	Low
	Increase in Road Maintenance	2	3	2	2	2	2	2	2	-	Low	<ul style="list-style-type: none"> Implement a road maintenance program under the auspices of the respective transport department. Construction of an on-site batching plant and tower construction to reduce trips if possible. 	2	3	2	2	1	2	2	0	-	Low
Abnormal Loads	Additional Abnormal Loads	3	2	1	2	1	1	9	-	Low	<ul style="list-style-type: none"> Ensure abnormal vehicles travel to and from the proposed development in the 'off peak' periods or stagger delivery. Adequate enforcement of the law 	3	2	1	2	1	1	9	-	Low		

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		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S
Internal Access Roads	Increase in Dust from gravel roads	1	4	1	1	1	2	16	-	Low	<ul style="list-style-type: none"> Enforce a maximum speed limit on the development Appropriate, timely and high quality maintenance required in terms of TRH20 Possible use of an approved dust suppressant techniques 	1	3	1	1	1	2	14	-	Low
Additional Traffic Generation	New / Larger Access points	1	4	1	2	1	1	9	-	Low	<ul style="list-style-type: none"> Adequate road signage according to the SARTSM Approval from the respective roads department 	1	4	1	2	1	1	9	-	Low
Visual																				
<ul style="list-style-type: none"> Potential alteration of the visual character and sense of place Potential visual impact on receptors in the study area 	<ul style="list-style-type: none"> Large construction vehicles, equipment and construction material stockpiles will alter the natural character of the study area and expose visual receptors to impacts associated with construction. Construction activities may be perceived as an unwelcome visual intrusion, particularly in more natural undisturbed settings. Dust emissions and dust plumes from increased traffic on the gravel roads serving the construction site may evoke negative sentiments from surrounding viewers. 	2	3	1	2	1	2	18	-	Low	<ul style="list-style-type: none"> Carefully plan to minimise 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. 	2	2	1	2	1	2	16	-	Low

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	<ul style="list-style-type: none"> 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. 									<ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> on all access roads; in all areas where vegetation clearing has taken place; on all soil stockpiles. 								

15.3 Operation

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Aquatic / Freshwater																					
Impact on aquatic systems through the possible increase in	4 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	2	3	2	2	3	3	3	6	-	Medium	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	1	1	1	1	1	1	5	-	Low

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surface water runoff on form and function during the operational phase	changes within aquatic systems, which are currently ephemeral. This then increases the rate of erosions and sedimentation of downstream areas.										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											
Terrestrial Ecology																						
Impact 4: Loss of terrestrial species - fauna	Although most of the species observed are mobile, the increase in vehicle movement could result in an increase in road mortalities.	2	3	2	2	3	2	2	4	-	Medium	Clear demarcation during the construction phase of all undisturbed sensitive areas that are not within the direct footprint of the REF to ensure that there is no uncontrolled access by construction vehicles and labourers; Educate contractors as to the importance of the undisturbed conservations areas and importance of avoiding them; All vehicles must stick to designated and prepared roads and adhere to the speed limit on site of 40km/hr; Mitigating the risk of poaching by fencing in the accommodation compounds of the construction crews, to prevent individuals from wandering in the veld after hours; banning the possession of dogs on site by construction and maintenance staff.	1	3	2	1	2	2	1	8	-	Low
Agricultural – Compliance Statement																						

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		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		
Avifaunal																						
Avifauna	Mortality of priority species due to collisions with the wind turbines.	2	3	2	3	3	3	3	9	-	Medium	(1) No turbines should be located in the buffer zones around major drainage lines, waterpoints and dams. (2) Any planned turbines within the 3.7 – 5.2km circular medium-risk buffer zone around the Verreaux’s Eagle nest must be subjected to an additional year of monitoring to determine the risk that these turbines pose to Verreaux’s Eagles, to establish whether they could be effectively mitigated, or will have to be removed ⁴ . (3) Live-bird monitoring and carcass searches should be implemented in the operational phase, as per the most recent edition of the Best Practice Guidelines at the time (Jenkins <i>et al.</i> 2015) to assess collision rates. (4) If at any time estimated collision rates indicate unacceptable mortality levels of priority species, i.e., if it exceeds the mortality threshold determined by the avifaunal specialist after consultation with other avifaunal specialists and BirdLife South Africa, additional measures will have to be implemented which could include shut down on demand or other proven measures.	2	2	2	2	3	2	2	2	-	Low

⁴ There are currently no turbines planned in this zone

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Avifauna	Mortality of priority species due to electrocutions on the overhead sections of the internal 33kV cables.	2	3	1	3	3	2	2	4	-	Medium	(1) Underground cabling should be used as much as is practically possible. (2) 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. (3) Regular inspections of the overhead sections of the internal reticulation network must be conducted during the operational phase to look for carcasses, as per the most recent edition of the Best Practice Guidelines at the time (Jenkins <i>et al.</i> 2015).	2	2	1	2	3	1	1	0	-	Low
Avifauna	Mortality due to collisions with the overhead sections of the internal 33kV cables.	2	3	2	3	3	2	2	6	-	Medium	Bird flight diverters should be installed on all the overhead line sections for the full span length according to the applicable Eskom standard at the time.	2	1	1	2	3	1	9	-	Low	
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	3	4	3	4	3	3	5	1	-	High	<ul style="list-style-type: none"> All turbines and turbine components, including the rotor swept zone, should be kept out of all no-go and high sensitivity zones. Mitigation, as proposed in Section 9, should be applied as soon as the test 	2	4	3	3	3	3	4	5	-	High

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		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S	
	predominantly been confirmed at the proposed Patatskloof WEF site.									<p>period of turbines are completed and turbines start turning.</p> <ul style="list-style-type: none"> Mitigation, as proposed for medium sensitivity zones proposed in Section 9, Table 8, should be applied after testing, as soon as turbines start to turn. A bat specialist should be appointed before the turbines start to turn, and operational bat monitoring should start when all the turbines start to turn. 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. Mitigation should be discussed between the bat specialist and developer during the operational phase. Mitigation should be adapted and implemented without delay. Where high bat mortality occurs, turbine-specific mitigation measures should be applied, using Section 9 as a starting point for discussions. Except for compulsory lighting required in terms of civil aviation, artificial 									

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		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S																				
											lighting 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.																											
Bat migrations	Bat fatality during migration. A limited number of calls like <i>Miniopterus natalensis</i> (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.	3	2	3	3	3	2	2	8	-	Medium	<ul style="list-style-type: none"> Care should be taken during post construction monitoring to verify the activity of <i>M. natalensis</i>, especially within the rotor swept area of the turbine blades. Carcasses should be identified timeously so as to establish the fatality of this species, or any other migrating bat species. All turbines and turbine components, including the rotor swept zone, should be kept out of all no-go and high sensitivity zones. 	2	2	2	2	3	2	2	2	-	Low																

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		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		
										<ul style="list-style-type: none"> Mitigation, as proposed in Section 9, should be applied as soon as the test period of turbines are completed and turbines start turning. Mitigation, as proposed for medium sensitivity zones proposed in Section 9, Table 8, should be applied after testing, as soon as turbines start to turn. A bat specialist should be appointed before the turbines start to turn, and operational bat monitoring should start when all the turbines start to turn. 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. Mitigation should be discussed between the bat specialist and developer during the operational phase. Mitigation should be adapted and implemented without delay. Where high bat mortality occurs, turbine specific mitigation measures should be applied, using Section 9 as a starting point for discussions. 										

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		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S			
											<ul style="list-style-type: none"> Except for compulsory lighting required in terms of civil aviation, artificial lighting 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. 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 Patatskloof WEF. Therefore, the installation of more than one monitoring system at height, is important. Static monitoring from the adjacent Perdekraal could assist with this. 												
Loss of bats of conservation value	Some calls like the red <i>data Miniopterus natalensis</i> have been recorded, as well as the endemic <i>Eptesicus hottentotus</i> .	2	3	2	3	3	2	3	0	-	Medium	<ul style="list-style-type: none"> Loss of bats of conservation value. A limited number of calls like the Near Threatened <i>M. natalensis</i> have been recorded, as well as the endemic <i>E. hottentotus</i>. Proven mitigation measures, such as curtailment, should be timeously applied if high activity of bats of conservation value is recorded, or if high numbers of carcasses are collected, during post-construction. 	2	2	1	2	2	2	1	8	-	Low	

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		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		
										<ul style="list-style-type: none"> • Carcasses should be identified, even if it is a preliminary identification, timeously, to establish if there are any red data species. • All turbines and turbine components, including the rotor swept zone, should be kept out of all no-go and high sensitivity zones. • Mitigation, as proposed in Section 9, should be applied as soon as the test period of turbines are completed and turbines start turning. • Mitigation, as proposed for medium sensitivity zones proposed in Section 9, Table 8, should be applied after testing, as soon as turbines start to turn. • A bat specialist should be appointed before the turbines start to turn and operational bat monitoring should start when all the turbines start to turn. • 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. 										

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		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S
										<ul style="list-style-type: none"> Mitigation should be discussed between the bat specialist and developer during the operational phase. Mitigation should be adapted and implemented without delay. Where high bat mortality occurs, turbine specific mitigation measures should be applied, using Section 9 as a starting point for discussions. Except for compulsory lighting required in terms of civil aviation, artificial lighting 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. 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 Patatskloof WEF. Therefore, the installation of more than one monitoring system at height, is important. The adjacent Perdekraal East data from the nearby met mast might assist with this. 								

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		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		
Fatal curiosity	Bat mortality due to the attraction of bats to wind turbines. Bats have been shown to sometimes be attracted to wind turbines out of curiosity or reasons still under investigation.	1	3	2	2	3	2	2	6	-	Medium	<ul style="list-style-type: none"> All turbines and turbine components, including the rotor swept zone, should be kept out of all no-go and high sensitivity zones. Mitigation, as proposed in Section 9, should be applied as soon as the test period of turbines are completed and turbines start turning. Mitigation, as proposed for medium sensitivity zones proposed in Section 9, Table 8, should be applied after testing, as soon as turbines start to turn. A bat specialist should be appointed before the turbines start to turn, and operational bat monitoring should start when all the turbines start to turn, for a minimum of two years, or described by the latest South African bat guidelines. 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. Mitigation should be discussed between the bat specialist and developer during the operational 	1	2	2	3	2	2	2	0	-	Low

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		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S			
											<p>phase. Mitigation should be adapted and implemented without delay. Where high bat mortality occurs, turbine specific mitigation measures should be applied, using Section 9 as a starting point for discussions.</p> <ul style="list-style-type: none"> Except for compulsory lighting required in terms of civil aviation, artificial lighting 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. 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 Patatskloof WEF. Therefore, the installation of more than one monitoring system at height, is important. The adjacent Perdekraal East data from the nearby met mast could aid with this. 												
Foraging space lost due to the turning of	Loss of habitat and foraging space during operation of the wind turbines	2	4	2	3	3	3	4	2	-	Medium	<ul style="list-style-type: none"> All turbines and turbine components, including the rotor swept zone, should be kept out of all no-go and high sensitivity zones. 	2	4	2	3	3	2	2	8	-	Medium	

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		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		
turbine blades										<ul style="list-style-type: none"> Mitigation, as proposed in Section 9, should be applied as soon as the test period of turbines are completed and turbines start turning. Mitigation, as proposed for medium sensitivity zones proposed in Section 9, Table 8, should be applied after testing, as soon as turbines start to turn. A bat specialist should be appointed before the turbines start to turn, and operational bat monitoring should start when all the turbines start to turn, for a minimum of two years, or described by the latest South African bat guidelines. 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. Mitigation should be discussed between the bat specialist and developer during the operational phase. Mitigation should be adapted and implemented without delay. Where high bat mortality occurs, turbine specific mitigation measures should be 										

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		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		
										applied, using Section 9 as a starting point for discussions.										
Smaller genetic pool	Reduction in the size, genetic diversity, resilience and persistence of bat populations. Bats have low reproductive rates and populations are susceptible to reduction by fatalities other than natural death. Furthermore, smaller bat populations are more susceptible to genetic inbreeding.	3	4	3	3	3	3	5 1	-	High	<ul style="list-style-type: none"> 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 no-go and high sensitivity zones. Mitigation, as proposed in Section 9, should be applied as soon as the test period of turbines are completed and turbines start turning. Mitigation, as proposed for medium sensitivity zones proposed in Section 9, Table 8, should be applied after testing, as soon as turbines start to turn. A bat specialist should be appointed before the turbines start to turn, and operational bat monitoring should start when all the turbines start to turn. 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 	3	3	2	3	3	3	4 2	-	Medium

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		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S
										<p>monitoring, as well as other relevant South African guidelines as applicable during the monitoring period.</p> <ul style="list-style-type: none"> Mitigation should be discussed between the bat specialist and developer during the operational phase. Mitigation should be adapted and implemented without delay. Where high bat mortality occurs, turbine specific mitigation measures should be applied, using Section 9 as a starting point for discussions. Except for compulsory lighting required in terms of civil aviation, artificial lighting 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. 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 Patatskloof WEF. Therefore, the installation of more than one monitoring system at height, is important. The data from the adjacent 								

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		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		
											met mast at Perdkraal could assist with this.											
Geotechnical																						
Soil Erosion	Increased erosion due to alteration of natural drainage	1	2	1	1	2	1	7	-	Low	1) Maintain drainage channels 2) Monitor for erosion and remediate and rehabilitate timeously	1	1	1	1	2	1	6	-	Low		
Social																						
Community resources	Vulnerability of small enterprises	2	2	2	2	2	2	2	0	-	Low		2	2	2	2	2	2	0	-	Low	
	Land use	1	4	1	2	3	2	2	2	-	Low		1	4	1	2	3	2	2	-	Low	
	Livelihoods and ecosystem services	2	2	1	2	3	2	2	0	-	Low		2	1	1	2	3	2	1	8	-	Low
	Blade glint (only applicable to WEF)	2	4	1	2	3	2	2	4	-	Low		2	2	1	2	3	2	2	0	-	Low
	Electromagnetic field (EMFs)	1	3	1	2	3	2	2	0	-	Low		1	2	1	2	3	2	1	8	-	Low
Individual and family changes	Employment after construction	2	4	1	2	1	2	2	0	-	Low		2	3	1	2	1	2	1	8	-	Low
	Shadow flicker (only applicable to WEF)	1	3	1	2	3	2	2	0	-	Low		1	2	1	2	3	2	1	8	-	Low
	Transformation of the sense of place	2	4	4	2	4	2	3	2	-	Medium		2	4	4	2	4	2	3	2	-	Medium
Political and social resources	Security of electricity supply	4	4	1	3	3	3	4	5	+	High		4	4	1	3	3	3	4	5	+	High

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		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S	
Heritage (Archaeology)																					
Homesteads, structures (kraals, dam walls, stone structures and buildings)	Uncontrolled access to such structures could result in damage that cannot be reversed.	1	2	4	3	4	4	5	6	-	High	1. A management plan for the heritage resources needs then to be compiled and approved for implementation during operations. 2. Identify as no-go areas	1	2	3	3	4	1	4	-	Low
Stone Age and Rock Art sites	Uncontrolled access to such archaeological resources could result in damage that cannot be reversed. Rock Art sites are significantly more susceptible for damage	1	2	4	3	4	4	5	6	-	High	1. A management plan for the heritage resources needs then to be compiled and approved for implementation during operations. 2. Identify as no-go areas	1	1	3	3	4	2	4	-	Medium
Burial Grounds	Uncontrolled access to such structures could result in damage that cannot be reversed.	1	2	4	3	4	4	5	6	-	High	1. A management plan for the heritage resources needs then to be compiled and approved for implementation during operations. 2. Identify as no-go areas	1	1	4	3	4	1	2	-	Low
Heritage (Cultural Landscapes)																					
Ecological	Inappropriate operational activities degrade the significant ecological elements of the cultural landscape	1	4	4	2	3	4	5	6	-	High	<ul style="list-style-type: none"> Areas of endemic and endangered natural vegetation should be conserved. Critical Biodiversity Areas, and Ecological Support Areas (along drainage lines), should be protected. 	1	1	4	2	3	2	2	-	Low

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		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S				
											<ul style="list-style-type: none"> • 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. • Renosterveld, and in this case, the Matjiesfontein Shale Renosterveld is found in the mid-elevations, and should be kept free from development. Renosterveld is classified as a threatened ecosystem, only found within the boundaries of South Africa. Care should be taken that we do not needlessly destroy our rare resources that determine the character of the Karoo landscape, and often on the mid-slopes. 											
Aesthetic	Inappropriate operational activities degrade the significant aesthetic elements of the cultural landscape altering the character and sense of place	2	4	3	3	4	3	4	8	High	<ul style="list-style-type: none"> • Infrastructure improvement or maintenance work, including new roads and upgrades to the road network, should be appropriate to the rural context (scale, material etc.) and avoid steep slopes over 10% as well as ridges. 	2	4	3	3	4	2	3	2	Medium		

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		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S
										<ul style="list-style-type: none"> Prevent the construction of new buildings/structures on visually sensitive, steep (over 10%), elevated or exposed slopes, ridgelines and hillcrests or within 1000m of the farmsteads and 500m of the district 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 								

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											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	2	4	4	4	4	4	7	2		<ul style="list-style-type: none"> 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. 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 	2	2	4	2	4	2	8														Medium

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										<p>these landscape features as historic remnants should occur.</p> <ul style="list-style-type: none"> 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 destroyed, as they add to the layering of the area. Roads running through the area may have historic stone way markers. 								

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		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S
										<p>Where these are found care should be taken that they are left in tact 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.</p> <ul style="list-style-type: none"> • 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 Patatskloof 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. 								

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		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		
											<ul style="list-style-type: none"> • 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. • Maintain traditional movement patterns across rural landscapes or to places of socio-historical value. (a) Avoid privatization or the creation of barriers to traditional access routes, such as the road through Pienaarspoort. (b) Retain old roadways, which have been replaced by newer roads, for use as recreation trails, such as the historic Grand Trunk Road which runs past Stinkfontein 									
Socio-economic	Inappropriate operational activities degrade the significant socio-economic opportunities of the cultural landscape	2	4	3	4	4	4	6	8	Very High	<ul style="list-style-type: none"> • 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. 	2	3	2	2	3	2	2	4	Medium

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		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S
										<ul style="list-style-type: none"> 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. 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. 								

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		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		
Noise																				
Increased noise levels	Cumulative noises due to operating wind turbines from other wind energy facilities in the area	2	1	1	3	3	1	10	-	Low	No mitigation measures recommended	2	1	1	3	3	1	10	-	Low
Transport																				
Additional Traffic Generation	Increase in Traffic	2	1	1	2	3	1	9	-	Low	<ul style="list-style-type: none"> The increase in traffic for this phase of the development is negligible and will not have a significant impact 	2	1	1	2	3	1	9	-	Low
	Increase of Incidents with pedestrians and livestock	2	1	1	2	3	1	9	-	Low	<ul style="list-style-type: none"> The increase in traffic for this phase of the development is negligible and will not have a significant impact 	2	1	1	2	3	1	9	-	Low
	Increase in Dust from gravel roads	2	1	1	2	3	1	9	-	Low	<ul style="list-style-type: none"> The increase in traffic for this phase of the development is negligible and will not have a significant impact 	2	1	1	2	3	1	9	-	Low
	Increase in Road Maintenance	2	1	1	2	3	1	9	-	Low	<ul style="list-style-type: none"> The increase in traffic for this phase of the development is negligible and will not have a significant impact 	2	1	1	2	3	1	9	-	Low

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Abnormal Loads	Additional Abnormal Loads	3	1	1	2	3	1	10	-	Low	<ul style="list-style-type: none"> The increase in traffic for this phase of the development is negligible and will not have a significant impact 	3	1	1	2	3	1	10	-	Low		
Internal Access Roads	New / Larger Access points	1	1	1	2	3	1	8	-	Low	<ul style="list-style-type: none"> Adequate road signage according to the SARTSM 	1	1	1	2	3	1	8	-	Low		
Visual																						
<ul style="list-style-type: none"> Potential alteration of the visual character and sense of place. Potential visual impact on receptors in the study area. Potential visual impact on the night time visual 	<ul style="list-style-type: none"> 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 	2	3	3	3	3	2	2	8	-	Medium	<p><u>Design Phase</u></p> <ul style="list-style-type: none"> Ensure that wind turbines are not located within 800m 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. <p><u>Operational Phase</u></p> <ul style="list-style-type: none"> 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 	2	3	3	2	2	2	2	4	-	Medium

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		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S		
environment.	result of operational and security lighting at the proposed WEF.									visually appealing when the blades are rotating (or at work) (Vissering, 2011). <ul style="list-style-type: none"> ▪ 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. ▪ 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. 										

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		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)
									<ul style="list-style-type: none"> The O&M buildings should be painted in natural tones that fit with the surrounding environment. 								

15.4 Decommissioning

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		E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL STATUS (+ OR -)	S			
Aquatic / Freshwater																					
Impact 3: Potential impact on localised surface water quality (construction materials and fuel storage facilities) during the construction and decommissioning	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	1	3	2	2	3	3	3	-	Medium	<ul style="list-style-type: none"> All liquid chemicals including fuels and oil, including the BESS must be stored in with secondary containment (bunds or containers or berms) that can contain a leak or spill. Such facilities must be inspected routinely and must have the suitable PPE and spill kits needed to contain likely worst-case scenario leak or spill in that facility, safely. Washing and cleaning of equipment must be done in designated wash bays, where rinse water is contained in evaporation/sedimentation ponds (to capture oils, grease cement and sediment). Mechanical plant and bowsers must not be refuelled or serviced within 100m of a river 	1	3	2	1	2	2	1	8	-	Low

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		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S	
oning phases	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										channel. • All construction camps, lay down areas, wash bays, batching plants or areas and any stores should be more than 50 m from any demarcated water courses. Note comment regards Camp A that requires micro-siting. • Littering and contamination associated with construction activity must be avoided through effective construction camp management; • No stockpiling should take place within or near a water course • All stockpiles must be protected and located in flat areas where run-off will be minimised and sediment recoverable;										
Terrestrial Ecology																					
Impact Loss of species special concern	The construction activities will result in the disturbance of both aquatic and terrestrial habitats that may contain listed and or protected plant or animal species. However, none of these were observed during this assessment within the tower positions proposed	1	1	1	1	1	1	5	-	Low	Develop and implement an Rehabilitation and Monitoring plan post Environmental Authorisation. This must be developed following the finalisation of the turbine / road layout and a walk down has been completed. This plan should include relocation of suitable plant species, but more important protect any topsoil stores and promote the collection of vegetative material and propagules / seed to assist with the revegetation of the site Where possible, temporary construction lay-down or assembly areas should be sited on transformed areas; and	1	1	1	1	1	1	5	-	Low	

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		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S						
											Rapid regeneration of plant cover must be encouraged by setting aside topsoil during earthmoving and replacing onto areas where the re- establishment of plant cover is desirable to prevent erosion.															
Impact 2: Loss of terrestrial habitats – flora and vegetation	The construction of the proposed infrastructure will require the need to clear vegetation which could then have a secondary impact on ecological connectivity and especially Critical Biodiversity Areas, linked to the large riverine corridors.	2	3	2	2	3	2	2	4	-	Medium	A pre-construction walkthrough by the ecologist is recommended, who can assist with the development of the 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. Where possible, temporary construction lay-down or assembly areas should be sited on transformed areas; and Rapid regeneration of plant cover must be encouraged by setting aside topsoil during earthmoving and replacing onto areas where the re- establishment of plant cover is desirable to prevent erosion.	1	3	2	1	2	2	1	8	-	Low				
Impact 3: Loss of terrestrial species - fauna	Although most of the species observed are mobile, the increase in vehicle movement could result in an increase in road mortalities.	2	3	2	2	3	2	2	4	-	Medium	Clear demarcation during the construction phase of all undisturbed sensitive areas that are not within the direct footprint of the REF to ensure that there is no uncontrolled access by construction vehicles and labourers; Educate contractors as to the importance of the undisturbed conservations areas and importance of avoiding them;	1	3	2	1	2	2	1	8	-	Low				

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											All vehicles must stick to designated and prepared roads and adhere to the speed limit on site of 40km/hr; Mitigating the risk of poaching by fencing in the accommodation compounds of the construction crews, to prevent individuals from wandering in the veld after hours; banning the possession of dogs on site by construction and maintenance staff.																															
Agricultural – Compliance statement																																										
Avifaunal																																										
Avifauna	Displacement due to disturbance associated with the dismantling of the wind turbines and associated infrastructure.	1	4	1	2	1	2	1	8	-	Low	(1) 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. (2) Measures to control noise and dust should be applied according to current best practice in the industry.	1	3	1	2	1	2	1	6	-	Low																				
Bat																																										
Removal of turbines	Bat disturbance due to decommissioning activities and associated noise, especially during night-time.	1	4	1	2	1	2	1	7	-	Low	<ul style="list-style-type: none"> Except for compulsory lighting required in terms of civil aviation, artificial lighting during construction should be minimised, especially bright lights or spotlights. Lights should avoid skyward illumination. 	1	3	1	1	1	1	7	-	Low																					

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											• Night-time decommissioning activities should be avoided as far as possible.											
Geotechnical																						
Disturbance / displacement/ removal of soil and rock	Ground disturbance during platform earthworks, road rehabilitation, removal of subsurface infrastructure	1	4	2	2	2	1	1	1	-	Low	1) Restore natural site topography 2) Landscape and rehabilitate disturbed areas timeously (e.g. regrassing)	1	4	2	1	2	1	1	0	-	Low
Soil Erosion	Increased erosion due to ground disturbance during rehabilitation activities	1	2	2	2	2	1	9	-	Low	1) Temporary berms and drainage channels to divert surface runoff where needed 2) Restore natural site topography 3) Use designated access and laydown areas only to minimise disturbance to surrounding areas	1	1	1	1	2	1	6	-	Low		
Heritage (Archaeology)- None Identified																						
Heritage (Cultural Landscapes)																						
Ecological	Fragmentation and destruction of the landscape degrading the environment and thus continuous relationship between man and environment	2	4	3	3	4	3	4	8	-	High	• 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	2	2	2	1	4	2	2	2	-	Low

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											<p>any structures close to these drainage lines</p> <ul style="list-style-type: none"> • Remaining areas of endemic and endangered natural vegetation should be conserved. • Renosterveld, and in this case, the Matjiesfontein Shale Renosterveld is found in the mid-elevations, and should be kept free from development. Renosterveld is classified as a threatened ecosystem, only found within the boundaries of South Africa. Care should be taken that we do not needlessly destroy our rare resources that determine the character of the Karoo landscape, and often on the mid-slopes. • 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. 												

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											<ul style="list-style-type: none"> Identified medicinal plants used for healing or ritual purposes should be conserved during all phases if threatened for use. 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. 												
Aesthetic	WEF infrastructure construction and decommissioning activity degrades the character of the cultural landscape and the sense of place	2	4	3	3	3	4	6	0	High	<ul style="list-style-type: none"> 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 landscape. 	2	4	2	2	2	2	2	4		Medium		

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											<ul style="list-style-type: none"> 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.	2	4	4	3	4	4	6	8	Very High	<ul style="list-style-type: none"> 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 	2	2	3	2	2	2	2	2	Low	

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											<p>existing farm roads must be found to avoid farm werfs as far as possible and reduce construction impact on these heritage features.</p> <ul style="list-style-type: none"> Duration and magnitude of construction/ decommissioning activity must be minimized as far as 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 as 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 											

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											<p>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 patterns should be maintained.</p> <ul style="list-style-type: none"> 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 												

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											<p>destroyed, as they add to the layering of the area.</p> <ul style="list-style-type: none"> Roads running through the area have historic stone way markers. Where these are found care should be taken that they are left in tact 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 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 Patatskloof should be maintained and integrity as a communal road for farm residents must be retained. Maintain traditional movement patterns across rural landscapes or to places of socio-historical value. (a) Avoid privatization or the creation of barriers to traditional access routes, such as the road through Pienaarspoort. (b) Retain 													

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											old roadways, which have been replaced by newer roads, for use as recreation trails, such as the historic Grand Trunk Road which runs past Stinkfontein.																															
Socio-economic	Integrity of local residents to continue their patterns of land use is degraded by the construction and decommissioning activities.	2	3	4	4	4	4	6	8	Very High	<ul style="list-style-type: none"> 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 	1	3	3	1	3	2	2	2	2	2																					Low

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											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.																													
											<ul style="list-style-type: none"> 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. 																													
Noise																																								
Noise impacts during the day	Decommissioning activities relating to removal of infrastructure and wind turbines, rehabilitation of disturbed areas	1	1	1	2	1	1	6	-	Low	No mitigation measures recommended for decommissioning activities for WTGs or substations	1	1	1	2	1	1	6	-	Low																				

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Transport																						
Additional Traffic Generation	Increase in Traffic	2	4	1	2	1	3	3	0	-	Medium	<ul style="list-style-type: none"> Ensure staff transport is done in the 'off peak' periods and by bus. Stagger material, component and abnormal loads delivery 	2	4	1	2	1	2	2	0	-	Low
	Increase of Incidents with pedestrians and livestock	2	4	2	4	1	2	2	6	-	Medium	<ul style="list-style-type: none"> Reduction in speed of vehicles Adequate enforcement of the law Implementation of pedestrian safety initiatives Regular maintenance of farm fences & access cattle grids 	2	3	2	4	1	1	1	2	-	Low
	Increase in Dust from gravel roads	2	3	2	2	1	2	2	0	-	Low	<ul style="list-style-type: none"> Reduction in speed of the vehicles Appropriate, timely and high quality maintenance required in terms of TRH20 Possible use of an approved dust suppressant techniques Implement a road maintenance program under the auspices of the respective transport department. 	2	3	2	2	1	2	2	0	-	Low
	Increase in Road Maintenance	2	3	2	2	2	2	2	2	-	Low	<ul style="list-style-type: none"> Implement a road maintenance program under the auspices of the respective transport department. 	2	3	2	2	1	2	2	0	-	Low
Abnormal Loads	Additional Abnormal Loads	3	2	1	2	1	1	9	-	Low	<ul style="list-style-type: none"> Ensure abnormal vehicles travel to and from the proposed development in the 'off peak' periods or stagger delivery. Adequate enforcement of the law 	3	2	1	2	1	1	9	-	Low		

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Internal Access Roads	Increase in Dust from gravel roads	1	4	1	1	1	1	8	-	Low	<ul style="list-style-type: none"> Enforce a maximum speed limit on the development Appropriate, timely and high quality maintenance required in terms of TRH20 Possible use of an approved dust suppressant techniques 	1	3	1	1	1	2	4	-	Low		
	New / Larger Access points	1	4	1	2	1	1	9	-	Low	<ul style="list-style-type: none"> Adequate road signage according to the SARTSM Approval from the respective roads department 	1	4	1	2	1	1	9	-	Low		
Visual																						
<ul style="list-style-type: none"> Potential visual intrusion resulting from vehicles and equipment involved in the decommissioning process; Potential visual impacts of increased dust 	<ul style="list-style-type: none"> Vehicles and equipment required for decommissioning will alter the natural character of the study area and expose visual receptors to visual impacts. Decommissioning activities may be perceived as an unwelcome visual intrusion. Dust emissions and dust plumes from increased traffic on the gravel roads serving the decommissioning site may evoke negative sentiments from surrounding viewers. Surface disturbance during decommissioning would expose bare soil (scarring) which could 	2	3	1	2	1	2	1	8	-	Low	<ul style="list-style-type: none"> All infrastructure that is not required for post-decommissioning use should be removed. Carefully plan to minimize the decommissioning period and avoid delays. Maintain a neat decommissioning site by removing rubble and waste materials regularly. Ensure that dust suppression procedures are maintained on all gravel access roads throughout the decommissioning phase. All cleared areas should be rehabilitated as soon as possible. Rehabilitated areas should be monitored post-decommissioning and remedial actions implemented as required. 	2	2	1	2	1	2	1	6	-	Low

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emissions from decommissioning activities and related traffic; and <ul style="list-style-type: none"> Potential visual intrusion of any remaining infrastructure on the site. 	visually contrast with the surrounding environment. <ul style="list-style-type: none"> Temporary stockpiling of soil during decommissioning may alter the flat landscape. Wind blowing over these disturbed areas could result in dust which would have a visual impact. 																		

15.5 Cumulative

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Aquatic / Freshwater																						
Cumulative Impact of various proposed wind farms and associated grid lines on the natural environment	The cumulative assessment considers the various proposed renewable projects that occur within a 35km radius of this site, where the author has either been involved in the assessment of these projects and or review of the past assessments as part of any required Water Use Licenses	1	1	1	1	1	1	1	5	-	Low	The premise of all the reviewed or assessed projects has been the avoidance of impacts on the Very High Sensitivity environments, which have been achieved by the various proposed layouts. The only remaining impacts will be the crossing of internal roads over minor watercourse / drainage lines or areas rated as LOW sensitivity.	1	3	2	1	2	2	1	8	-	Low
Terrestrial Ecology																						
Cumulative Impact of various proposed wind farms and associated grid lines on the natural environment	The cumulative assessment considers the various proposed renewable projects that occur within a 35km radius of this site, where the author has either been involved in the assessment of these projects and or review of the past assessments as part of any required Water Use Licenses	1	1	1	1	1	1	1	5	-	Low	The premise of all the reviewed or assessed projects has been the avoidance of impacts on the Very High Sensitivity environments, which have been achieved by the various proposed layouts. The only remaining impacts will be the crossing of internal roads over minor watercourse / drainage lines or areas rated as LOW sensitivity.	1	3	2	1	2	2	1	8	-	Low
Agricultural – Compliance Statement																						

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Avifaunal																						
Avifauna	<ol style="list-style-type: none"> 1. Mortality due to collisions with the wind turbines 2. Displacement due to disturbance during construction and operation of the wind farm 3. Displacement due to habitat change and loss at the wind farm 4. Mortality due to electrocution on the electrical infrastructure 	1	4	2	3	3	3	3	9	-	Medium	All the mitigation measures listed in the various bird specialist studies compiled for the eleven (11) renewable energy facilities within a 35km radius around the project.	1	2	2	3	3	2	2	-	Low	
Bat																						
Destruction of active roosts on several WEFs.	Cumulative effect of destruction of active roost of several WEFs as well as features that could serve as potential roosts.	3	4	3	3	3	3	4	8	-	High	<ul style="list-style-type: none"> Although the developer does not have any control over other wind energy development, project specific mitigation, as included in the BA or in the respective Bat Impact Assessments of the projects in the surrounding area, should be adhered to for each renewable energy project. This can however only be enforced by the regulating authority. Post construction monitoring as per the relevant South African guidelines. 	3	2	2	2	2	2	2	2	-	Low
Direct collision and barotrauma of several WEFs.	Cumulative bat mortality due to direct collision with the blades or barotrauma during foraging of resident bats at several WEF sites.	3	4	4	3	4	4	8	8	-	High	<ul style="list-style-type: none"> Although not enforceable by the Patatskloof applicant, all REFs must adhere to their project specific mitigation measures, especially buffer zones and sensitivity areas and 	3	4	4	3	3	3	5	1	-	High

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											recommended mitigation, for each renewable energy project.											
Mortality of several WEFs on migrating bats.	Cumulative bat mortality of migrating bats due to direct blade impact or barotrauma during foraging of migrating bats on several WEFs	3	3	3	3	3	3	4	5	-	High	<ul style="list-style-type: none"> Although not enforceable by the Patatskloof 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. 	3	3	2	3	3	3	4	2	-	Medium
Several WEFs stretching over thousands of hectares.	Habitat loss over several WEFs	3	4	3	3	3	4	6	4	-	High	<ul style="list-style-type: none"> Although not enforceable by the Patatskloof 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. 	3	4	3	3	3	3	4	8	-	High
Several WEFs with the associated bat mortality	Cumulative reduction in the size, genetic diversity, resilience, and persistence of bat populations	3	4	3	3	4	4	6	8	-	High	<ul style="list-style-type: none"> Although not enforceable by the Patatskloof applicant, all REFs must adhere to their project specific mitigation measures, especially buffer zones and sensitivity areas and 	3	4	3	3	3	3	5	4	-	High

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over the lifespan of WEFs.											recommended mitigation, for each renewable energy project.										
Geotechnical																					
General	Disturbance/ displacement/ removal of soil and Rock Soil Erosion								0		No cumulative effect									0	
Social																					
Community resources	Vulnerability of small enterprises	2	3	2	3	3	3	3	9	-	Medium	Regarding 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 Invalid source specified. acknowledges the need to prepare for large-scale, or regional, development proposals and to enlist national government, private sector and public participation. It may be pertinent to consider a similar initiative in the Witzenberg Region.									
	Availability of community services	2	3	2	3	3	3	3	9	-	Medium										
	Cultural and historic resources	2	4	4	3	4	3	5	1	-	Medium										
	Land use	2	4	2	3	3	3	4	2	-	Medium										
	Livelihoods and ecosystem services	2	2	2	2	3	2	2	2	-	Low										
	Social and community infrastructure	2	3	1	2	3	2	2	2	-	Low										
Individual and family changes	Annoyance, dust and noise	2	4	1	2	3	2	2	4	-	Medium										
	Blade glint	2	4	1	2	3	2	2	4	-	Medium										
	Crime and security	2	3	2	3	3	2	2	6	-	Medium										

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)
	Daily living patterns	2	3	1	2	3	2	2	-	Low									
	Electromagnetic field (EMFs)	2	3	1	2	3	2	2	-	Low									
	Employment after construction	3	4	1	3	3	3	4	-	Medium									
	Employment and business opportunities	3	4	1	3	3	3	4	+	Medium									
	Farming operations	2	4	1	3	3	3	3	-	Medium									
	Fire hazard	2	3	2	3	3	3	3	-	Medium									
	Hazard exposure	2	3	2	3	3	3	3	-	Medium									
	Shadow flicker	2	4	1	2	3	2	2	-	Medium									
	STDs, HIV and AIDS	3	3	2	3	4	3	4	-	High									
	Risk to livestock	2	4	2	3	3	3	4	-	Medium									
	Transformation of the sense of place	2	4	4	3	4	3	5	-	Medium									
Political and social resources	Corruption	4	3	3	3	4	3	5	-	Medium									
	Security of electricity supply	4	4	3	4	3	3	5	+	High									
Population characteristics	Temporary influx of construction workers	2	4	1	3	3	3	3	-	Medium									
	Informal development and settlements	2	4	1	3	3	3	3	-	Medium									

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION										
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S	
Heritage (Archaeology)																					
Homesteads, structures (kraals, dam walls, stone structures and buildings)	The Patats WEF facility will add to the cumulative impact on such structures as identified in the larger Roggeveld Region. The impact will not be as obvious as that on the cultural landscape. However, a significant number of such resources was identified in the region and can be impacted by these projects.	2	2	4	3	4	2	3	0	-	Medium	1. A management plan for the heritage resources needs then to be compiled and approved for implementation during construction and operations. 2. Identify as no-go areas	1	2	4	2	4	1	3	-	Low
Stone Age and Rock Art sites	The Patats WEF facility will add to the cumulative impact on such structures as identified in the larger Roggeveld Region. The impact will not be as obvious as that on the cultural landscape. However, a significant number of such resources was identified in the region and can be impacted by these projects	2	2	4	3	4	2	3	0	-	Medium	1. A management plan for the heritage resources needs then to be compiled and approved for implementation during construction and operations. 2. Identify as no-go areas	1	2	4	2	4	1	3	-	Low
Burial Grounds	The Patats WEF facility will add to the cumulative impact on such structures as identified in the larger Roggeveld Region. The impact will not be as obvious as that on the cultural landscape. However, a significant number of such resources was identified in the region and can be impacted by these projects	2	2	4	3	4	2	3	0	-	Medium	1. A management plan for the heritage resources needs then to be compiled and approved for implementation during construction and operations. 2. Identify as no-go areas	1	2	4	2	4	1	3	-	Low

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION									
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S
Heritage (Palaeontology)																				
Fossil heritage resources	Disturbance, damage or destruction of fossils at or beneath the ground surface due to clearance and bedrock excavations.	3	2	4	2	4	1	15	-	Low	Application of Chance Fossil Finds Procedure during construction phase.	3	2	4	2	4	1	15	-	Low
Heritage (Cultural Landscapes)																				
Ecological	Inappropriate cumulative development degrade the significant ecological elements of the cultural landscape	3	4	4	3	4	4	72	-	Very High	Fixed datum or dataset: The region has never been covered by a heritage resources study that can account for all heritage resources. Further to this none of the heritage studies conducted can with certainty state that all heritage resources within the study area have been identified and evaluated. Defined thresholds: The value judgment on the significance of a heritage site will vary from individual to individual and between interest groups. Thus implicating that heritage resources' significance can and does change over time. And so will the tipping threshold for impacts on a certain type of heritage resource; Threshold crossing: In the absence of a comprehensive dataset or heritage inventory of the entire region we will never be able to quantify or set a threshold to determine at what stage the impact from developments on heritage resources has reached or is reaching the danger level or	3	2	4	2	3	2	28	-	Medium
Aesthetic	Inappropriate cumulative development degrades the significant aesthetic elements of the cultural landscape altering the character and sense of place	3	4	3	3	3	4	64	-	Very High		3	4	2	2	3	2	28	-	Medium
Historic	Inappropriate cumulative development degrades the significant historic elements of the cultural landscape altering the character and sense of place	3	4	4	4	4	4	76	-	Very High		3	2	3	2	3	2	26	-	Medium
Socio-economic	Inappropriate cumulative development degrade the significant socio-economic opportunities of the cultural landscape	3	4	3	4	4	4	72	-	Very High		3	3	1	1	4	2	24	-	Medium

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT / NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION															
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S						
											excludes the new development on this basis. NOTE: If the recommendations in this CLA are applied to the majority of the surrounding RE developments, impacts can be reduced to ratings given in this table. With no specialist CLA reports done on the surrounding applications, cumulative impact on the cultural landscape of the region has not been considered and cannot be included in this rating.															
Transport																										
Additional Traffic Generation	Increase in Traffic	2	4	1	2	1	4	4	0	-	Medium	<ul style="list-style-type: none"> Ensure a large portion of vehicles traveling to and from the proposed development travels in the 'off peak' periods or by bus. Construction of an on-site batching plant and tower construction to reduce trips. Coordination between all developers in the area 	2	4	1	2	1	3	3	0	-	Medium				
	Increase of Incidents with pedestrians and livestock	2	4	2	4	1	3	3	9	-	Medium	<ul style="list-style-type: none"> Reduction in speed of vehicles Adequate enforcement of the law Implementation of pedestrian safety initiatives Regular maintenance of farm fences, access cattle grids Construction of an on-site batching plant and tower construction to reduce trips. 	2	3	2	4	1	2	2	4	-	Medium				

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT / NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION											
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		
											<ul style="list-style-type: none"> Coordination between all developers in the area 											
	Increase in Dust from gravel roads	2	3	2	2	1	4	4	0	-	Medium	<ul style="list-style-type: none"> Reduction in speed of the vehicles Construction of gravel roads in terms of TRH20 Implement a road maintenance program under the auspices of the respective transport department. Possible use of an approved dust suppressant techniques Construction of an on-site batching plant and tower construction to reduce trips. Coordination between all developers in the area 	2	3	2	2	1	2	2	0	-	Low
	Increase in Road Maintenance	2	3	2	2	2	2	2	2	-	Low	<ul style="list-style-type: none"> Implement a road maintenance program under the auspices of the respective transport department. Construction of an on-site batching plant and tower construction to reduce trips. Coordination between all developers in the area 	2	3	2	2	2	2	2	-	Low	
Abnormal Loads	Additional Abnormal Loads	3	2	1	2	1	4	3	6	-	Medium	<ul style="list-style-type: none"> Ensure abnormal vehicles travel to and from the proposed development in the 'off peak' periods. Adequate enforcement of the law Coordination between all developers in the area 	3	2	1	2	1	2	1	8	-	Low

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT / NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION											
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)		S	E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		
Internal Access Roads	Increase in Dust from gravel roads	1	4	1	1	1	3	2	4	-	Medium	<ul style="list-style-type: none"> Enforce a maximum speed limit on the development Appropriate, timely and high quality maintenance required in terms of TRH20 Possible use of an approved dust suppressant techniques 	1	3	1	1	1	2	1	4	-	Low
	New / Larger Access points	1	4	1	2	1	2	1	8	-	Low	<ul style="list-style-type: none"> Adequate road signage according to the SARTSM Approval from the respective roads department 	1	4	1	2	1	1	9	-	Low	
Visual																						
<ul style="list-style-type: none"> Potential alteration of the visual character and sense of place in the broader area. Potential visual impact on receptors in the study area. 	<ul style="list-style-type: none"> Additional renewable energy developments in the broader area will alter the natural character of the study area towards a more industrial landscape and expose a greater number of receptors to visual impacts. Visual intrusion of multiple renewable energy developments may be exacerbated, particularly in more natural undisturbed settings. Additional renewable energy facilities in the area would generate additional traffic on gravel roads thus resulting in increased impacts from dust emissions and dust plumes. 	3	3	2	3	3	2	2	8	-	Medium	<ul style="list-style-type: none"> Carefully plan to minimise the construction period and avoid construction delays. Position laydown areas and related storage/stockpile areas in unobtrusive positions in the landscape, where possible. Minimise vegetation clearing and rehabilitate cleared areas as soon as possible. Vegetation clearing should take place in a phased manner. 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. 	3	3	2	2	2	2	2	4	-	Medium

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT / NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
		E	P	R	L	D	I / M	TOTAL STATUS (+ OR)	S		E	P	R	L	D	I / M	TOTAL STATUS (+ OR)	S
<ul style="list-style-type: none"> Potential visual impact on the night time visual environment. 	<ul style="list-style-type: none"> The night time visual environment could be altered as a result of operational and security lighting at multiple renewable energy facilities in the broader area. 									<ul style="list-style-type: none"> 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. 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. 								

16. POSITIVE AND NEGATIVE IMPACTS OF THE PATATSKLOOF WEF PROJECT

A summary of the impacts pre-mitigation and post-mitigation are provided below:

Table 20: Summary of positive and negative impacts

Impact	Pre-mitigation	Post-mitigation
PLANNING		
Impacts to Biophysical Systems		
Aquatic / Freshwater – None Identified		
Terrestrial Ecology- None Identified		
Agricultural – Compliance Statement		
Bat - None Identified		
Impacts to Socio-Economic Component		
Social		
Corruption	Medium	Medium
Heritage		
Construction activities close to these identified structures can damage and cause irreparable damage or destroy the resource	High	Medium
Destruction or damage to previously unidentified archaeological or historical resources	High	Medium
Disturbance, damage or destruction of fossils at or beneath the ground surface due to surface clearance and bedrock excavations	Low	Low
Inappropriate infrastructure layout planning degrades ecological elements of the cultural landscape.	High	Low
Inappropriate infrastructure layout planning negates aesthetic and sense of place requirements of the cultural landscape.	Very High	Medium
Inappropriate infrastructure layout planning degrades historic elements of the cultural landscape.	Very High	Low
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.	Very High	Low
Heritage (Palaeontology) – None Identified		
Noise		
Light delivery vehicles moving around onsite.	Low	Low
Heritage-(Archaeology)		
Construction activities close to these resources can damage and cause irreparable damage or destroy the resource. Rock art sites are extremely sensitive to human actions and are easily damaged.	High	Medium
Destruction or damage to previously unidentified archaeological or historical resources	High	Low
Heritage: Cultural Landscape		
Inappropriate infrastructure layout planning degrades ecological elements of the cultural landscape.	High	Low
Inappropriate infrastructure layout planning negates aesthetic and sense of place requirements of the cultural landscape.	Very High	Medium
Inappropriate infrastructure layout planning degrades historic elements of the cultural landscape.	Very High	Low
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	Very High	Low
Visual – None Identified		
CONSTRUCTION		
Impacts to Biophysical Systems		
Aquatic / Freshwater		
Impact 1: Loss of aquatic species of special concern	Low	Low
Impact 2: Damage or loss of riparian and alluvial systems in the construction phase	Medium	Low
Impact 3: Potential impact on localised surface water quality (construction materials and fuel storage facilities) during the construction and decommissioning phases	Medium	Low
Terrestrial Ecology		

Impact	Pre-mitigation	Post-mitigation
Impact 1: Loss of species of special concern	Low	Low
Impact 2: Loss of terrestrial habitats – flora and vegetation	Medium	Low
Impact 3: Loss of terrestrial species - fauna	Medium	Low
Agricultural – Compliance Statement		
Avifauna		
Displacement due to disturbance associated with the construction of the wind turbines and associated infrastructure.	Medium	Low
Displacement due to habitat transformation associated with the construction of the wind turbines and associated infrastructure.	Low	Low
Bat		
The destruction of 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 relative dense bushes. The removal of limited trees and bushes would have an impact on all bats that could potentially roost in and or the foraging habitat of clutter and clutter-edge species.	Medium	Low
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.	Low	Low
Construction noise, especially during night-time, as well as lighting disturbance.	Low	Low
Geotech		
Ground disturbance during access road construction, foundation earthworks, platform earthworks	Low	Low
Increased erosion due to vegetation clearing, alteration of natural drainage	Low	Low
Impacts to Socio-Economic Component		
Social		
Availability of community services	Low	Low
Cultural and historic resources	Medium	Medium
Social and community infrastructure	Low	Low
Annoyance, dust and noise	Low	Low
Crime and security	Medium	Low
Daily living patterns	Low	Low
Employment and business opportunities	Low	Low
Farming operations	Low	Low
Fire hazard	Low	Low
Hazard exposure	Low	Low
STDs, HIV and AIDS	Medium	Medium
Risk to livestock	Low	Low
Temporary influx of construction workers	Low	Low
Informal development and settlements	Low	Low
Heritage (Archaeology)		
Construction activities close to these identified structures can damage and cause irreparable damage or destroy the resource	High	Low
Construction activities close to these resources can damage and cause irreparable damage or destroy the resource. Rock art sites are extremely sensitive to human actions and are easily damaged.	High	Medium
Construction activities close to these identified structures can damage and cause irreparable damage or destroy the resource	Very high impact	Low
Destruction or damage to previously unidentified archaeological or historical resources	High	Low
Heritage (Palaeontology)		
Disturbance, damage or destruction of fossils at or beneath the ground surface due to clearance and bedrock excavations.	Low	Low
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.	Low	Low

Impact	Pre-mitigation	Post-mitigation
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.		
Noise		
Construction activities relating to hardstand areas, digging of foundations for wind turbines, civil works as well as erection of wind turbines	Low	Low
Construction activities relating to civil works as well as erection of wind turbines	Low	Low
OPERATIONAL		
Impacts to Biophysical Systems		
Aquatic / Freshwater		
Impact 4 Impact on aquatic systems through the possible increase in surface water runoff on form and function during the operational phase	Medium	Low
Terrestrial Ecology		
Although most of the species observed are mobile, the increase in vehicle movement could result in an increase in road mortalities.	Medium	Low
Agricultural – Compliance Statement		
Avifauna		
Mortality of priority species due to collisions with the wind turbines.	Medium	Low
Mortality of priority species due to electrocutions on the overhead sections of the internal 33kV cables.	Medium	Low
Mortality due to collisions with the overhead sections of the internal 33kV cables.	Medium	Low
Bat		
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 Patatskloof WEF site.	High	High
Bat fatality during migration. A limited number of calls like <i>Miniopterus natalensis</i> (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.	Medium	Low
Some calls like the red data <i>Miniopterus natalensis</i> have been recorded, as well as the endemic <i>Eptesicus hottentotus</i> .	Medium	Low
Loss of habitat and foraging space during operation of the wind turbines.	Medium	Medium
Bat mortality due to the attraction of bats to wind turbines. Bats have been shown to sometimes be attracted to wind turbines out of curiosity or reasons still under investigation.	Medium	Low
Reduction in the size, genetic diversity, resilience and persistence of bat populations. Bats have low reproductive rates and populations are susceptible to reduction by fatalities other than natural death. Furthermore, smaller bat populations are more susceptible to genetic inbreeding.	High	Medium
Geotech		
Increased erosion due to alteration of natural drainage	Low	Low
Impacts to Socio-Economic Component		
Social		
Vulnerability of small enterprises	Low	Low
Land use	Low	Low
Livelihoods and ecosystem services	Low	Low
Blade glint (only applicable to WEF)	Low	Low
Electromagnetic field (EMFs)	Low	Low
Employment after construction	Low	Low
Shadow flicker (only applicable to WEF)	Low	Low
Transformation of the sense of place	Medium	Medium

Impact	Pre-mitigation	Post-mitigation
Security of electricity supply	High	High
Heritage (Archaeology)		
Uncontrolled access to such structures could result in damage that cannot be reversed.	High	Low
Uncontrolled access to such archaeological resources could result in damage that cannot be reversed. Rock Art site are significantly more susceptible for damage	High	Medium
Uncontrolled access to such structures could result in damage that cannot be reversed.	High	Low
Heritage (Cultural Landscapes)		
Inappropriate operational activities degrade the significant ecological elements of the cultural landscape	High	Low
Inappropriate operational activities degrade the significant aesthetic elements of the cultural landscape altering the character and sense of place	High	Medium
Inappropriate operational activities degrade the significant historic elements of the cultural landscape altering the character and sense of place	Very High	Medium
Inappropriate operational activities degrade the significant socio-economic opportunities of the cultural landscape	Very High	Medium
Noise		
Cumulative noises due to operating wind turbines from other wind energy facilities in the area	Low	Low
Transport		
Increase in Traffic	Low	Low
Increase of Incidents with pedestrians and livestock	Low	Low
Increase in Dust from gravel roads	Low	Low
Increase in Road Maintenance	Low	Low
Additional Abnormal Loads	Low	Low
New / Larger Access points	Low	Low
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.	Medium	Medium
DECOMMISSIONING		
Impacts to Biophysical Systems		
Aquatic / Freshwater		
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	Medium	Low
Terrestrial Ecology		
The construction activities will result in the disturbance of both aquatic and terrestrial habitats that may contain listed and or protected plant or animal species. However, none of these were observed during this assessment within the tower positions proposed	Low	Low
The construction of the proposed infrastructure will require the need to clear vegetation which could then have a secondary impact on ecological connectivity and especially Critical Biodiversity Areas, linked to the large riverine corridors.	Medium	Low
Although most of the species observed are mobile, the increase in vehicle movement could result in an increase in road mortalities.	Medium	Low

Impact	Pre-mitigation	Post-mitigation
Agricultural- Compliance Statement		
Avifauna		
Displacement due to disturbance associated with the dismantling of the wind turbines and associated infrastructure	Low	Low
Bat		
Bat disturbance due to decommissioning activities and associated noise, especially during night-time.	Low	Low
Geotech		
Ground disturbance during platform earthworks, road rehabilitation, removal of subsurface infrastructure	Low	Low
Increased erosion due to ground disturbance during rehabilitation activities	Low	Low
Impacts to Socio-Economic Component		
Social – None Identified		
Heritage (Cultural Landscapes)		
Fragmentation and destruction of the landscape degrading the environment and thus continuous relationship between man and environment	High	Low
WEF infrastructure construction and decommissioning activity degrades the character of the cultural landscape and the sense of place	High	Medium
Integrity of farmsteads and farm roads degraded by insensitive construction or decommissioning activities.	Very High	Low
Integrity of local residents to continue their patterns of land use is degraded by the construction and decommissioning activities.	Very High	Low
Noise		
Decommissioning activities relating to removal of infrastructure and wind turbines, rehabilitation of disturbed areas	Low	Low
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. 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.	Low	Low
Transport		
Increase in Traffic	Medium	Low
Increase of Incidents with pedestrians and livestock	Medium	Low
Increase in Dust from gravel roads	Low	Low
Increase in Road Maintenance	Low	Low
Additional Abnormal Loads	Low	Low
Increase in Dust from gravel roads	Low	Low
New / Larger Access points	Low	Low
CUMULATIVE		
Impacts to Biophysical Systems		
Aquatic / Freshwater		
The cumulative assessment considers the various proposed renewable projects that occur within a 35km radius of this site, where the author has either been involved in the assessment of these projects and or review of the past assessments as part of any required Water Use Licenses	Low	Low
Terrestrial Ecology		
The cumulative assessment considers the various proposed renewable projects that occur within a 35km radius of this site, where the author has either been involved in the assessment of these projects and or review of the past assessments as part of any required Water Use Licenses	Low	Low
Agricultural- Compliance Statement		

Impact	Pre-mitigation	Post-mitigation
Avifauna		
5. Mortality due to collisions with the wind turbines 6. Displacement due to disturbance during construction and operation of the wind farm 7. Displacement due to habitat change and loss at the wind farm 8. Mortality due to electrocution on the electrical infrastructure	Medium	Low
Bat		
Cumulative effect of destruction of active roost of several WEFs as well as features that could serve as potential roosts.	High	Low
Cumulative bat mortality due to direct collision with the blades or barotrauma during foraging of resident bats at several WEF sites.	High	High
Cumulative bat mortality of migrating bats due to direct blade impact or barotrauma during foraging of migrating bats on several WEFs	High	Medium
Habitat loss over several WEFs	High	High
Cumulative reduction in the size, genetic diversity, resilience, and persistence of bat populations	High	High
Impacts to Socio-Economic Component		
Social		
Vulnerability of small enterprises	Medium	
Availability of community services	Medium	
Cultural and historic resources	Medium	
Land use	Medium	
Livelihoods and ecosystem services	Low	
Social and community infrastructure	Low	
Annoyance, dust and noise	Medium	
Blade glint	Medium	
Crime and security	Medium	
Daily living patterns	Low	
Electromagnetic field (EMFs)	Low	
Employment after construction	Medium	
Employment and business opportunities	Medium	
Farming operations	Medium	
Fire hazard	Medium	
Hazard exposure	Medium	
Shadow flicker	Medium	
STDs, HIV and AIDS	High	
Risk to livestock	Medium	
Transformation of the sense of place	Medium	
Corruption	Medium	
Security of electricity supply	High	
Temporary influx of construction workers	Medium	
Informal development and settlements	Medium	
Heritage (Archaeology)		
The Patats WEF facility will add to the cumulative impact on such structures as identified in the larger Roggeveld Region. The impact will not be as obvious as that on the cultural landscape. However, a significant number of such resources was identified in the region and can be impacted by these projects.	Medium	Low
The Patats WEF facility will add to the cumulative impact on such structures as identified in the larger Roggeveld Region. The impact will not be as obvious as that on the cultural landscape. However, a significant number of such resources was identified in the region and can be impacted by these projects	Medium	Low
The Patats WEF facility will add to the cumulative impact on such structures as identified in the larger Roggeveld Region. The impact will not be as obvious as that on the cultural landscape. However, a significant number of such resources was identified in the region and can be impacted by these projects	Medium	Low
Heritage (Palaeontology)		
Disturbance, damage or destruction of fossils at or beneath the ground surface due to clearance and bedrock excavations.	Low	Low

Impact	Pre-mitigation	Post-mitigation
Heritage (Cultural Landscapes)		
Inappropriate cumulative development degrade the significant ecological elements of the cultural landscape	Very High	Medium
Inappropriate cumulative development degrades the significant aesthetic elements of the cultural landscape altering the character and sense of place	Very High	Medium
Inappropriate cumulative development degrades the significant historic elements of the cultural landscape altering the character and sense of place	Very High	Medium
Inappropriate cumulative development degrade the significant socio-economic opportunities of the cultural landscape	Very High	Medium
Transport		
Increase in Traffic	Medium	Medium
Increase of Incidents with pedestrians and livestock	Medium	Medium
Increase in Dust from gravel roads	Medium	Low
Increase in Road Maintenance	Low	Low
Additional Abnormal Loads	Medium	Low
Increase in Dust from gravel roads	Medium	Low
New / Larger Access points	Low	Low
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.	Medium	Medium
No-Go		
Impacts to Biophysical Systems		
Aquatic / Freshwater		
Should the project not proceed, then current status quo with regard the environment would remain unchanged. Overall, the area is largely in a natural state. But present day impacts do occur in localised areas and included the following: • Increase in unpalatable species due to past grazing activities Erosion as a result of road crossings; • Several farm dams; and • Undersized culverts within present day road crossings.	Low	Low
Terrestrial Ecology		
Should the project not proceed, then current status quo with regard the environment would remain unchanged. Overall, the area is largely in a natural state. But present day impacts do occur in localised areas and included the following: • Increase in unpalatable species due to past grazing activities Erosion as a result of road crossings; • Several farm dams; and • Undersized culverts within present day road crossings.	Low	Low
Agricultural		
Impacts to Socio-Economic Component		
Heritage		
If the Patats WEF will not be implemented and operational	Low	Low
Noise		
Residual noise levels to remain as is.	Low	Low

16.1 Mitigation Measures

The assessment of each issue/impact is included in Section 15 above and mitigation measures are provided for each impact identified in **Table 19**.

17. SUMMARY OF SPECIALIST FINDINGS AND RECOMMENDATIONS

Table 21: Summary of specialist findings and recommendations

Specialist Study	Findings	Recommendations
Agricultural	<p>The site has very low agricultural potential predominantly because of climate constraints. As a result of the constraints, the site is totally unsuitable for cultivation, and agricultural land use is limited to grazing. The land is predominantly of low agricultural sensitivity, but includes some areas of medium sensitivity.</p> <p>Three potential negative agricultural impacts were identified as follows: loss of agricultural land use, land degradation, and the impact of dust, but all are of low significance.</p> <p>The recommended mitigation measures are implementation of an effective system of stormwater run-off control; maintenance of vegetation cover; and stripping, stockpiling and re-spreading of topsoil.</p> <p>The conclusion of this assessment is that the proposed development will not have an unacceptable negative impact on the agricultural production capability of the site. The proposed development is therefore acceptable. This is substantiated by the facts that the land is of very limited land capability and is not suitable for the production of cultivated crops, the amount of agricultural land loss is within the allowable development limits prescribed by the agricultural protocol, the proposed development offers some positive impact on agriculture by way of improved financial security for farming operations, as well as wider, societal benefits, and that the proposed development poses a low risk in terms of causing soil degradation.</p>	<p>The recommended mitigation measures are implementation of an effective system of stormwater run-off control; maintenance of vegetation cover; and stripping, stockpiling and re-spreading of topsoil.</p> <p>From an agricultural impact point of view, it is recommended that the development be approved.</p> <p>The conclusion of this assessment on the acceptability of the proposed development and the recommendation for its approval is not subject to any conditions, other than recommended mitigations provided.</p>
Avifaunal	<p>The Cedarberg - Koue Bokkeveld Complex Important Bird Area (IBA) SA101 is the closest IBA and is located approximately 40km north-west of the development areas at its closest point. The development is not expected to have any impact on the</p>	<p><u>High sensitivity No-turbine buffer: Surface water.</u></p> <ul style="list-style-type: none"> ▪ Included in this category are areas within 200m of water troughs and earth dams, and 150m from all major drainage lines. Surface water in this arid habitat is

Specialist Study	Findings	Recommendations
	<p>avifauna in this IBA due to the distance from the development area.</p> <p>The proposed Patatskloof WEF will have several potential impacts on priority avifauna. These impacts are the following:</p> <ul style="list-style-type: none"> • Displacement of priority species due to disturbance linked to construction activities in the construction phase. • Displacement due to habitat transformation in the construction phase. • Collision mortality caused by the wind turbines in the operational phase. • Electrocution on the 33kV MV overhead lines (if any) in the operational phase. • Collisions with the 33kV MV overhead lines (if any) in the operational phase. • Displacement of priority species due to disturbance linked to dismantling activities in the decommissioning phase. <p>In term of these impacts, the proposed WEF will have a moderate impact on avifauna which, in most instances, could be reduced to a low impact through appropriate mitigation. The alternative substation and laydown locations are all situated in essentially the same habitat, i.e. Karoo scrub. The habitat is not particularly sensitive, as far as avifauna is concerned, therefore any of the alternative locations will be acceptable. No fatal flaws were discovered during the onsite investigations. The development is therefore supported, provided the mitigation measures listed in this report are strictly implemented</p>	<p>crucially important for priority avifauna, including several Red Data species such as Martial Eagle, Lanner Falcon and Secretarybird, and many non-priority species, including several waterbirds. Drainage lines when flowing attract waterbirds on occasion, as do the large pools that remain in the channel after the flow has stopped. Wind turbines that are placed near these sources of surface water pose a collision risk to birds using the water for drinking and bathing, and drainage lines, when flowing, are natural flight paths for birds.</p> <p><u>Medium sensitivity Restricted turbine buffer: Red Data species nests.</u></p> <ul style="list-style-type: none"> ▪ Any planned turbines within the 3.7 – 5.2km circular medium-risk buffer zone around any of the Verreux's Eagle nests must be subjected to an additional year of monitoring to determine the risk that these turbines pose to Verreux's Eagles, to establish whether they could be effectively mitigated, or will have to be removed. If they cannot be removed, pro-active mitigation must be implemented at these turbines in the form of proven measures such as Shutdown on Demand (SDoD)
Bat	<p>Although the combined impact during the operational phase, namely after mitigation, is predicted to be Medium Negative, it should be noted that the bat activity on the</p>	<p><u>It is recommended that the following mitigation measures be included in the Environmental Authorisation (EA):</u></p> <ul style="list-style-type: none"> • The final layout must be informed by the sensitivity map provided in Section 7 of the

Specialist Study	Findings	Recommendations
	<p>project site, according to the bat threshold for Succulent Karoo, is high and the negative impact on bats during the operational phase could thus be high. This must be confirmed during operational bat monitoring, but the developer should prepare for turbine specific curtailment and/or installing bat deterrents when more information is available.</p> <p>As expected in an area where several back-to-back wind farms are developed, cumulative impacts on bat populations before mitigation are predicted to be High Negative, specifically when the threshold for bats in the Succulent Karoo is considered. Even with mitigation measures, the cumulative impact is expected to be High Negative. This has been confirmed by the general estimated mortality (GenEst) through carcass searches on operating wind farms in the Succulent Karoo. Despite the negative cumulative impact, this is not considered to be a fatal flaw if all the wind farms apply appropriate mitigation measures.</p> <p>It should be noted that one year of pre-construction bat monitoring is required by legislation in South Africa. However, the semi-desert Succulent Karoo environment is subject to erratic weather conditions, which vary from year to year. These changes usually result in changes in the bat situation which might not have been observed in this survey. This is not a limitation which would greatly affect the results of this bat monitoring programme, especially seen in the light of relatively good rainfall during the monitoring period. The overall potential negative impact of the proposed Patatskloof WEF on bats, combined for all the development phases, is predicted to be Medium Negative without mitigation. The combined impact remains overall Medium Negative with mitigation, but the significance rating is lower.</p>	<p>main report, and turbine positions must avoid no-go and high sensitivity zones.</p> <ul style="list-style-type: none"> • A bat specialist must be appointed before the commercial operation date (COD). • A mitigation scheme, as per Section 9 in the main report, must apply to operational turbines from the start, after turbines have been tested and have started to turn. • Turbines must be feathered below cut-in speed, and although they need not be at a complete standstill, there should be minimum movement so that bats are not at risk when turbines are not generating power. • All newly built structures that have bat conducive features must be rehabilitated to discourage bat presence. This includes roofs of new buildings, open quarries and borrow pits. • A minimum of two year's operational bat monitoring must be conducted after commencement of operations at the WEF, as per the guidance of the latest operational South African Bat Assessment Association (SABAA) guidelines.

Specialist Study	Findings	Recommendations
	<p>Based on the findings of the one-year pre-construction monitoring undertaken at the proposed Patatskloof WEF project site, the bat specialist is of the opinion that no fatal flaws exist which would prevent the construction and operation of the WEF. EA may thus be granted, subject to the implementation of the recommendations made in this report.</p>	
Biodiversity	<p>The project overall has a small footprint spread out over a large area, allowing for retention of much of the natural environment so that the systems should remain largely unaffected. Therefore, the wind farm is such that it carries a low intensity impact, but requiring the clearing of areas with terrestrial vegetation, especially when considering the associated roads, cables and other infrastructure.</p> <p>A variety of environmental features were observed within the study area and these were mapped and buffered as necessary for their protection. The current layout has the potential, to a large degree, avoided these sensitive features and buffer areas, greatly reducing the potential overall impact and environmental risk. The overall and cumulative impacts, as assessed, are linked to instances where complete avoidance was not possible, or the nature of the activities involve a potential risk to biodiversity resources even at great distance.</p> <p>Overall, it is expected that the impact on the environment would be Low (-). Noteworthy areas, that should be avoided, include the Very High Sensitivity areas as shown in this report.</p>	<p>Based on the findings of this study, the specialist finds no reason to withhold to an authorisation of any of the proposed activities, assuming that key mitigations measures are implemented and provided, that all the Very High sensitivity systems could be avoided, while making use of existing tracks.</p> <p>The buildable area has taken cognizance of the various sensitivities i.e., the buildable areas will impact on Low sensitivity area, thus resulting in Low impact ratings as discussed in this assessment.</p> <p>It is noted that the buildable area are not contiguous and would have to cross some sensitive areas in particular access roads, cables and overhead lines. Therefore, any mitigations around route selections mentioned in this report must be considered (e.g., use existing tracks) and must be considered in the walkdown surveys post authorisation.</p>
Aquatic	<p>The project overall has a small footprint spread out over a large area, allowing for retention of much of the natural environment so that the systems should remain largely unaffected. Therefore, the</p>	<p>In summary the proposed development area must avoid all of the observed aquatic and terrestrial habitat, however, this must all still be assessed in detail once the roads layout, hard stand and other temporary</p>

Specialist Study	Findings	Recommendations
	<p>wind farm is such that it carries a low intensity impact on aquatic resources, but requiring the clearing of areas with terrestrial vegetation, especially when considering the associated roads, cables and other infrastructure.</p> <p>A variety of environmental features were observed within the study area and these were mapped and buffered as necessary for their protection. The current layout has , to a large degree, avoided these sensitive features and buffer areas, greatly reducing the potential overall impact and environmental risk. The overall and cumulative impacts, as assessed, are linked to instances where complete avoidance was not possible, or the nature of the activities involve a potential risk to aquatic resources even at great distance.</p> <p>Overall, it is expected that the impact on the environment would be Low (-). Noteworthy areas, that should be avoided, including the Very High Sensitivity areas as shown in this report. Existing crossings may be used and/or upgraded that intersect these systems however, but these crossings, detailed monitoring plan must be developed in the pre-construction phase.</p>	<p>works areas have been provided, coupled to a micro-siting walkdown once all information is available post authorization before the EMPr and Final Layout are approved.</p> <p>Going forward, the turbine, roads and ancillary structures should thus take this into account, however it is noted that the development area are not contiguous and would have to cross some sensitive areas in particular access roads, cables and overhead lines. Therefore, any mitigations around route selections mentioned in this report must be considered (e.g. use existing tracks) and must be considered in the walkdown surveys post authorisation.</p> <p>Based on the findings of this study, the specialist finds no reason to withhold to an authorisation of any of the proposed activities, assuming that key mitigations measures are implemented. Lastly no preference is provided with regard the grid connections, as it assumed based on the characteristics of the site, that all the aquatic systems could be spanned, while making use of existing tracks, however technical considerations have resulted in Substation Option 2 being selected, which is supported as Option 1 is located within a watercourse.</p>
Geotechnical	<p>The assessment area is underlain by rock units of Dwyka Group and Ecca Group of the Karoo Supergroup and locally by faulted rock units of the Cape Supergroup. Some geotechnical constraints have been identified, primarily shallow bedrock which may cause excavation difficulties, thick alluvium and steep slopes. These constraints may be mitigated via standard engineering design and construction measures. Spread footings are considered suitable to support the structures on majority of the site.</p>	<p>The proposed developments are assessed to have a "Negative Low impact - the anticipated impact will have negligible negative effects provided that the recommended mitigation measures are implemented. These include avoiding development on the steeper sections of the site. The remaining mitigation measures provided to minimise the impacts relate to the appropriate engineering design of earthworks and site drainage, erosion control and topsoil and spoil material management. These do not exceed civil engineering and construction best practice.</p>

Specialist Study	Findings	Recommendations
	<p>No fatal flaws or 'no-go' areas have been identified that would render any assessment areas unsuitable from a geological and geotechnical perspective.</p>	<p>Further intrusive geotechnical investigations should be undertaken to confirm the engineering recommendations provided in this report.</p>
<p>Heritage – Archaeological</p>	<p>A total of two (2) burial grounds were identified on the farm Upper Stinkfontein. The two burial grounds (PK43, PK44) were rated as having high heritage significance.</p> <p>A total of twenty-four (24) structures were identified, including ten (10) houses (including farmsteads, labourer houses, and old stone houses with associated kraals) seven (7) kraals, two (2) dam walls, one (1) reservoir, two (2) stone packed cairns, and two (2) circular stone hunting shelters.</p> <p>Four of these sites (PK-06, PK-15, PK 20, PK 24) were of medium heritage significance but located more than 100m away from the proposed development. As a result, no impact is expected from the proposed development on these sites.</p> <p>A total of twenty-three (23) archaeological resources/areas were identified, including seventeen (17) that can be classified as find spots with varying collections of LSA and some MSA material present. Three (3) areas that can be classified as archaeological sites due to the presence of stone tools and other cultural material such as OES beads, three (2) sites consisted of a rock shelter with rock art, and one (1) site containing a possible rock art as indicated by residents.</p> <p>Three archaeological sites (PK-29, PK-42, PK 46) was rated as having a high heritage significance and three sites (PK 09, PK 37, PK 41) medium heritage significance. All of these are located more than 100m away from the proposed development. As a result, no impact is expected from the proposed development on these sites.</p>	<p>The following mitigation measures will be required:</p> <ul style="list-style-type: none"> ▪ An archaeological walk down of the final approved layout will be required before construction commences; ▪ Implement a 50-meter buffer around all structures with a rating of IIIC and higher. ▪ Implement a 500-meter buffer around the farmstead site at PK 06 and PK 15. ▪ Implement a 200-meter buffer around the rock art sites at PK 29, PK 42 and PK 46. ▪ Demarcate the resources rated as IIIB-III A no-go areas. ▪ A management plan for the heritage resources needs then to be compiled and approved for implementation during construction and operations. ▪ A chance finds protocol must be developed that includes the process of work stoppage, site protection, evaluation and informing HWC of such finds and a final process of mitigation implementation.

Specialist Study	Findings	Recommendations
Heritage Cultural	<p>The Ceres Karoo region is a significant cultural landscape that reflects the relationship between man and nature over a period of time. This relationship has generally been sustainable, where biodiversity and ecological systems have been maintained in the utilisation of the landscape expressed in specific land use patterns. The surrounding land use indicates a social appreciation of the natural environment with low impact stock farming with limited farmstead crop cultivation. The vastness and relative homogenous nature of the cultural landscape is, however, often undervalued. If careful contextual planning is not followed, it will rapidly result in a cluttered wasteland. This does not mean that development is discouraged, but rather that the implementation of wind and solar energy farms should be planned holistically. It is the duty of the planning department to consider this application in terms of other renewable energy developments that are planned/proposed for the Komsberg area, notably the proposed RE developments included in the cumulative impact section of this report.</p> <p>Conservation: to protect the natural resources (water, air, land, sand, fishes, etc.), ecosystems (reefs, fynbos), biological abundance (flora and fauna), landscapes and the local culture.</p> <p>Development: to protect social and economic progress, without damaging or depleting the natural resources (sustainable development).</p> <p>The findings of this report, coupled with the proposed layout for development of wind turbines, which considers appropriate placement in terms of wind energy capacity, concludes that the development can be permitted within the site if the report's recommendations are followed.</p>	<p><u>Recommended heritage indicators and development buffers :</u></p> <ul style="list-style-type: none"> • Landscape units D and E are suitable for sensitive WEF infrastructure development; • A 500m buffer to either side of the district road for turbine and infrastructure placement (Patatskloof WEF does not propose turbines or infrastructure within this buffer); • 300m buffer to either side of identified significant historic farm roads (pink) for turbine placement, substation and laydown areas; • The historic route (yellow) that passes through Stinkfontein site is no longer in use as such, but should be reinstated as a walking trail and open to public access. • 1000m buffer around historic farmsteads (red circles) for turbine placements; and • 50m outer boundary buffer for roads and infrastructure around farmsteads including cultivated areas and graves – integrity of farmstead complex as a whole should be retained and no WEF roads running through farmstead complexes; • 200m freestanding graded heritage structure buffer for new roads and infrastructure; • 100m buffer from cemetery or unmarked burial for all development; • 400m buffer around water management bio-cultural landscape elements (blue circles); • 600m buffer around significant Stinkfontein site (orange circle); • existing roads to be used with minimal upgrade as far as possible; • riverine corridors 100yr flood line buffer (ecological) or 100m buffer (archeological) whichever is further (buffers not indicated). • CBA and ESA no-go areas for all development (green shading –

Specialist Study	Findings	Recommendations
	<p>The mitigating recommendations in this report consider the ecological, aesthetic, historic and socio-economic value lines that underpin the layers of significance that combine to create the character of the place and the cultural landscape of the Ceres Karoo. These recommendations include road and farmstead complex buffers which incorporate cultivated areas and graves, steep slope and ridgeline no-go areas as well as consideration of the unique land form of the site, CBA and ESA no-go areas, as well as mechanisms to support the non-landowner residents that live on the site in being bale to continue their indigenous land use patterns, knowledge and social systems. These mitigations will reduce the impact on the surrounding landscape and heritage resources but due to the high visual impact of the turbines, largely a result of their height, the negative impact to the cultural landscape cannot be removed, only reduced from very high to moderate.</p>	<p>turbines 5, 23, 18), unless otherwise recommended by the biodiversity and environmental specialist studies for this site;</p> <ul style="list-style-type: none"> • Pienaarspoort gateway buffer included in the 300m farm road buffer and unit A. • Further, the following changes to the layout is recommended: <ul style="list-style-type: none"> ▪ The substation option 1 and Gridline alternative 3 should be located out of the CBA, without impacting on the riverine corridor flood line and slopes over 3%. • The proposed buildable area considers and adheres to most of the cultural landscapes buffers and sensitivities contained in the April 2022 CLA report other than slope, which has not been included. As indicated in the CLA report (April 2022), all slopes over 10% need to be avoided for development of turbines and new road infrastructure. Slopes over 3% need to be avoided for other infrastructure development.
Heritage – Paleontological	<p>The Patatskloof WEF project area is underlain by several basinal to shallow marine sedimentary formations of the Witteberg Group (Cape Supergroup), Dwyka Group and Ecca Group (Karoo Supergroup) of Palaeozoic age. All these units are potentially fossiliferous but only two – the Early Carboniferous Waaipoort Formation and the Early Permian Whitehill Formation – are generally regarded as of high palaeosensitivity due to their record of well-preserved fish, mesosaurid reptiles, crustaceans and plant fossils in the Tanqua - Ceres Karoo region and elsewhere.</p> <p>A recent 2-day palaeontological field survey shows that the Waaipoort Formation is very poorly exposed within the WEF project area, although potentially</p>	<p><u>Recommended mitigation:</u></p> <ol style="list-style-type: none"> (5) The Environmental Site Officer (ESO) should be made aware of the possibility of important fossil remains (bones, teeth, fish, petrified wood, plant-rich horizons etc) being found or unearthed during the construction phase of the development. (6) Monitoring for fossil material of all major surface clearance and deeper (> 1m) excavations by the Environmental Site Officer on an on-going basis during the construction phase is therefore recommended. (7) Significant fossil finds should be safeguarded and reported at the earliest opportunity to Heritage Western Cape for recording and sampling by a professional palaeontologist. (8) A protocol for Chance Fossil Finds is appended to this report (Appendix 3). These recommendations must be included

Specialist Study	Findings	Recommendations
	<p>fossiliferous phosphatic carbonate concretions do occur here, while the uppermost several meters of the Whitehill Formation are intensely weathered. The only fossil remains recorded during the site visit comprise (a) occasional stromatolitic carbonate erratics within the Dwyka Group and (2) low-diversity, poorly-preserved trace fossil assemblages in the Floriskraal and Collingham Formations. These fossils occur widely within the outcrop areas of the formations concerned and are not of high scientific interest or conservation value.</p> <p>As a consequence of (1) the paucity of irreplaceable, unique or rare fossil remains within the WEF and project area, as well as (2) the extensive superficial sediment cover overlying most potentially-fossiliferous bedrocks here, the overall impact significance of the construction phase of the proposed Patatskloof WEF regarding legally-protected palaeontological heritage resources is assessed as LOW (negative status), with and without mitigation. There is therefore no preference on palaeontological heritage grounds for any specific layout (e.g. location of on-site substation, construction laydown area, grid connection corridor) among those under consideration. No significant further impacts on fossil heritage are anticipated during the operational and decommissioning phases of the renewable energy developments. The No-Go alternative would probably have a neutral impact on palaeontological heritage.</p> <p>No palaeontological High Sensitivity or No-Go areas have been identified within the WEF project area. None of the recorded fossil sites lies within the development footprint as currently defined. Pending the potential discovery of significant new fossil material here during the construction phase, no specialist palaeontological</p>	<p>within the Environmental Management Programmes (EMPRs) for the Patatskloof WEF, BESS and grid connection developments.</p>

Specialist Study	Findings	Recommendations
	monitoring or mitigation is recommended for these developments.	
Noise	<p>The potential noise impact of the proposed Patatskloof WEF was evaluated using a sound propagation model. Conceptual scenarios were developed for the construction and operation phases. It was determined that the potential noise impact would be of a:</p> <ul style="list-style-type: none"> • low significance for daytime activities related to the construction of the substation, hard standing areas, digging foundations, civil work as well as the erection of the wind turbines; • low significance for night-time activities relating to the construction of civil work as well as the erection of the wind turbines. Mitigation is proposed and available to reduce the significance to low; • low significance for both day- and night-time operational activities; • low significance for potential cumulative noises during the operational phase; and, • low significance for potential decommissioning noises. <p>The potential noise impact of the decommissioning phase is based on the potential noise impact during daytime construction activities (low significance). The development of the Patatskloof WEF will not increase cumulative noises in the area and the significance of the noise impact will be low.</p>	<p>It is recommended that the developer:</p> <ul style="list-style-type: none"> • investigate any reasonable and valid noise complaint if registered by a receptor staying within 2,000 m from the location where construction or operational activities are taking place; • evaluate the potential noise impact should the layout be revised where any proposed wind turbines are located closer than 1,000 m from a confirmed noise Sensitive Development (NSD); or • if the developer decides to use a different wind turbine that has a sound power emission level higher than that of the Wind Turbine Generator (WTG) used in this report (sound power emission level exceeding 115.0 dBA re 1 pW).
Social	<p>While the project will create employment for local communities during the construction and operational phases, the more significant positive impact of the project will be the contribution it will make towards renewable energy infrastructure. Research recently published by Meridian Economics, in collaboration with the CSIR, indicates that “[in all realistic mitigation scenarios, the majority of new build capacity is wind and solar PV]” Invalid</p>	<p>Considering all social impacts associated with the project, it is evident that, at the social level, the positive elements outweigh the negative and that the project carries with it a significant social benefit at a national level and is therefore supported. In addition, no compelling preference emerges in respect of the alternatives and it would be socially acceptable for the authorisation of either power line alternative.</p>

Specialist Study	Findings	Recommendations
	<p>source specified., and highlights an urgent need for the country to accelerate the RE build pathway. In addition, the South African Climate Change Coordinating Commission, is considering a more ambitious emissions target and is suggesting changes to the country's energy plan Invalid source specified.</p> <p>Considering the impacts discussed above, it is evident that the cumulative impacts associated with changes to the social environment of the region are more significant than those attached to any one project. The initiative to address these cumulative impacts lies at a far higher level than at an individual project level. In this regard, the Western Cape Government has undertaken an exercise to address intergovernmental readiness for the large development scenarios in the Central Karoo; which is a positive step towards addressing the cumulative impact of these developments Invalid source specified.</p>	
Surface Water	<p>The project overall has a small footprint spread out over a large area, allowing for retention of much of the natural environment so that the systems should remain largely unaffected. Therefore, the wind farm is such that it carries a low intensity impact on aquatic resources, but requiring the clearing of areas with terrestrial vegetation, especially when considering the associated roads, cables and other infrastructure.</p> <p>A variety of environmental features were observed within the study area and these were mapped and buffered as necessary for their protection. The current layout has the potential, to a large degree, to avoid these sensitive features and buffer areas, greatly reducing the potential overall impact and environmental risk. The overall and cumulative impacts, as assessed, are linked to instances where complete avoidance was not possible, or the nature</p>	<p>Based on the findings of this study, the specialist finds no reason to withhold to an authorisation of any of the proposed activities, assuming that key mitigations measures are implemented. Lastly no preference is provided with regard the grid connections, as it assumed based on the characteristics of the site, that all the aquatic systems could be spanned, while making use of existing tracks.</p> <p>Further it is recommended that WTG 23 and 24 are relocated to avoid the watercourses (Very High). While WTG 5, 18, 20, 23, 24, and 31 positions are adjusted to avoid the Critical Biodiversity Area (CBA 1) associated with aquatic systems. Similarly, Substation 1, while Substation 2 is also located within a delineated system.</p> <p>However, this must all still be assessed once the roads layout has been provided,</p>

Specialist Study	Findings	Recommendations
	<p>of the activities involve a potential risk to aquatic resources even at great distance.</p> <p>Overall, it is expected that the impact on the environment would be Low (-). Noteworthy areas, that should be avoided, include the Very High Sensitivity areas as shown in this report. Existing crossings may be used and/or upgraded that intersect these systems however, but these crossings, detailed monitoring plan must be developed in the pre-construction phase.</p>	<p>coupled to a micrositing walkdown once all information is available.</p>
Transportation	<p>The development is located in close proximity to an existing road network. A number of existing access points are located along Road OP06121 and in order to accommodate the adjusted land use, the access position will be relocated in order to obtain the recommend sight distances and remove it from its current position. An approval and a wayleave application will be required from the Western Cape Department of Transport & Public Works prior to work commencing. Additional upgrades to the external access road will also be required on Road DR01475 from the adjacent Perdekraal East WEF up to the development on Road OP06121, including the intersection between the two roads.</p> <p>The construction phase or Balance of Plant phase of this development will typically generate the highest number of additional vehicles. Of these additional vehicles, ± 57 trips / hour will occur in the morning and afternoon outside of the peak period, while ± 4 trips / hour will occur during the midday peak for construction material and abnormal loads. The impact will however be temporary and are considered to be nominal if adequately mitigated.</p> <p>During the operation phase, it is expected that the facility will accommodate ± 30 employees and generate an additional ± 10 trips / day in the morning and afternoon</p>	<p>All external road upgrades require approval and a wayleave application from the Western Cape Department of Transport & Public Works prior to work commencing.</p> <p>A more comprehensive route analysis be completed prior to construction in order to get a better understanding of the works required and the potential risks.</p>

Specialist Study	Findings	Recommendations
	<p>peak period. This impact is considered to be nominal.</p> <p>A number of mitigation measures are proposed to accommodate the development and to reduce the impact to the surrounding road network.</p>	
Visual	<p>The VIA has determined that the study area has a largely natural visual character with some pastoral elements. The area has however seen very limited transformation or disturbance and as such the proposed Patatskloof WEF development is expected to alter the visual character of the area and contrast significantly with the typical land use and / or pattern and form of human elements present. The level of contrast will however be reduced by the presence of the Kappa Substation, high voltage power lines and Perdekraal East WEF within the study area.</p> <p>A broad-scale assessment of visual sensitivity, based on the physical characteristics of the study area, economic activities and land use that predominates, determined that the area would have a moderate visual sensitivity</p> <p>From a visual perspective, the proposed Patatskloof WEF and associated grid infrastructure project is deemed acceptable and the Environmental Authorisation (EA) should be granted.</p> <p>The visual impacts associated with the construction, operation and decommissioning phases can be mitigated to acceptable levels provided the recommended mitigation measures are implemented.</p>	None identified

18. ENVIRONMENTAL IMPACT STATEMENT

Mainstream is proposing to construct the Patatskloof WEF and associated infrastructure. 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 Patatskloof WEF will comprise of thirty-five (35) wind turbines with a maximum total energy generation capacity of up to approximately 250MWac. 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 this BA process.

Taking into consideration the findings of the BA process for the proposed development and the fact that specialist recommendations have been used to inform the project design and buildable area of the facility, it is the opinion of the Environmental Assessment Practitioner (EAP) that the majority of the negative impacts associated with the implementation of the proposed project can be mitigated to acceptable levels. While there are potential negative environmental impacts associated with the proposed development, the extent of the positive benefits associated with the implementation of the project in terms of renewable energy supply and positive local and regional economic impact are considered to outweigh the negative impacts.

A layout of the development and the environmental site sensitivities is included below:

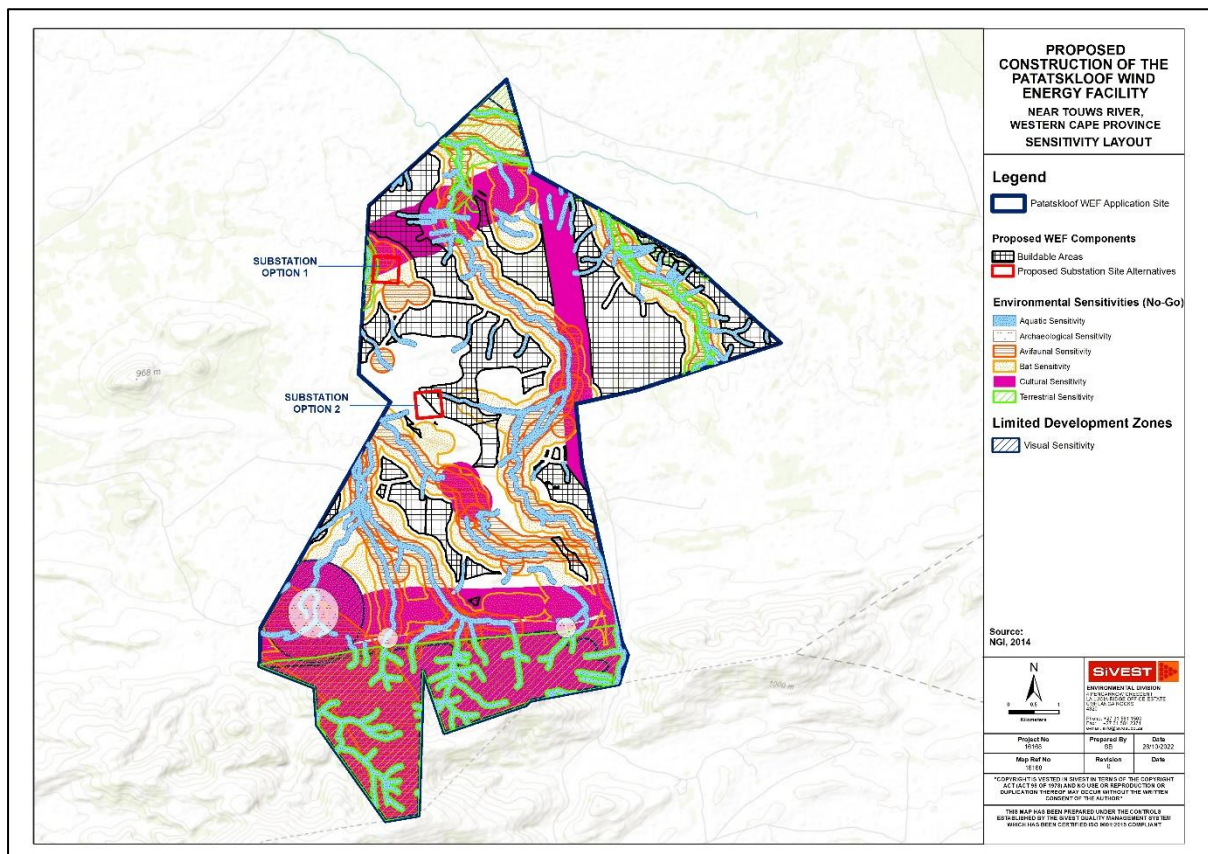


Figure 44: Final proposed development area with site sensitivities

The implementation of the Patatskloof WEF and associated infrastructure will assist expected growth in demand for installed power generation capacity. This in turn will assist with the increasing economic growth and social development within South Africa. Coupled with this, is the growing awareness of environmental impact, climate change and the need for sustainable development. 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. Wind is a free and infinite resource that occurs naturally in the environment. The Patatskloof WEF will assist by converting wind energy into electricity, thereby releasing no harmful by-products into the environment which will in turn reduce the dependency on fossil fuels.

The specialist assessments were conducted to address the potential impacts relating to the proposed development in order to ascertain the level of each identified impact, as well as mitigation measures which may be required. The results of the specialist assessments have indicated that all alternatives (including the preferred alternative) contain no fatal flaws that should prevent the proposed project from proceeding. In light of this, it is the EAP's reasoned opinion that authorisation be granted and that the layout being proposed as part of this BA process also be authorised (provided there are no concerns raised during the public participation process).

The following specialist studies have been undertaken for the project:

- Agriculture and Soils Impact Assessment (desktop)
- Avifaunal Impact Assessment
- Bat Impact Assessment
- Biodiversity Impact Assessment
- Heritage Impact Assessment
 - Paleontological Impact Assessment
 - Archaeological Assessment
 - Cultural Landscape Assessment
- Geotechnical Assessment (desktop)
- Noise Impact Assessment
- Social Impact Assessment (desktop)
- Surface Water Impact Assessment
- Transportation Impact Assessment
- Visual Impact Assessment

A summary of the main findings of the specialists are included in **Section 16** above.

The **agricultural assessment** (refer to **Appendix 6**) concluded that the proposed development will not have an unacceptable negative impact on the agricultural production capability of the site and is therefore acceptable. This is substantiated by the facts that the land is of very limited land capability and is not suitable for the production of cultivated crops, the amount of agricultural land loss is within the allowable development limits prescribed by the agricultural protocol, the proposed development offers some positive impact on agriculture by way of improved financial security for farming operations, as well as wider, societal benefits, and that the proposed development poses a low risk in terms of causing soil degradation. From an agricultural impact point of view, the specialist recommended that the development be approved and that the approval is not subject to any conditions.

The **avifaunal assessment** (refer to **Appendix 6**) concluded that the proposed Karee WEF will have a moderate impact on avifauna which, in most instances, could be reduced to a low impact through appropriate mitigation. The alternative substation and laydown locations are all situated in essentially

the same habitat, i.e. Karoo scrub. The habitat is not particularly sensitive, as far as avifauna is concerned, therefore any of the alternative locations will be acceptable. No fatal flaws were discovered in the course of the onsite investigations. The development is therefore supported, provided the mitigation measures listed in this report are strictly implemented.

According to the **bat assessment** undertaken for the project (refer to **Appendix 6**), the overall potential negative impact of the proposed Patatskloof WEF on bats, combined for all the development phases, is predicted to be Medium Negative without mitigation. The combined impact remains overall Medium Negative with mitigation, but the significance rating is lower. Based on the findings of the one-year pre-construction monitoring undertaken at the proposed Patatskloof WEF project site, the bat specialist is of the opinion that no fatal flaws exist which would prevent the construction and operation of the WEF. EA may thus be granted, subject to the implementation of the recommendations made in this report

The **aquatic assessment** (refer to **Appendix 6**) revealed that there is no reason to withhold an authorisation of any of the proposed activities, assuming that key mitigations measures are implemented. Lastly no preference is provided with regard the grid connections, as it assumed based on the characteristics of the site, that all the aquatic systems could be spanned, while making use of existing tracks, however technical considerations have resulted in Substation Option 2 being selected, which is supported as Option 1 is located within a watercourse.

The **biodiversity assessment** (refer to **Appendix 6**) revealed that there is no reason to withhold to an authorisation of any of the proposed activities, assuming that key mitigations measures are implemented and provided, that all the Very High sensitivity systems could be avoided, while making use of existing tracks.

According to the **geotechnical assessment** undertaken for the project (refer **Appendix 6**), no fatal flaws or 'no-go' areas have been identified that would render any assessment areas unsuitable from a geological and geotechnical perspective. However further intrusive geotechnical investigations should be undertaken to confirm the engineering recommendations provided in this report. The impact of the WEF was found to be negative low impact as the anticipated impact will have negligible negative effects and will require little to no mitigation provided that the recommended mitigation measures are implemented. The site from a desktop level geotechnical study perspective is considered suitable for the proposed WEF and the specialist therefore recommended that the proposed activity be authorised.

According to the **archaeological impact assessment** (refer to **Appendix 6**), The final proposed buildable area took the specialist recommendations identified during the 2021 and 2022 field assessments into consideration. From an archaeological and historical structure perspective, the proposed footprint areas will not change the impact on the identified heritage resources in the AIA. We have no objection to the proposed buildable area associated with the Patatskloof WEF project

The **cultural impact assessment** (refer to **Appendix 6**) has confirmed that with the buffers in place and all other recommendations followed, the overall impact to the cultural landscape for the proposed Patatskloof WEF and associated grid connection and infrastructure can be reduced from very high to moderate. There are no fatal flaws and the development can proceed with CLA recommendations and mitigation in place

The **palaeontological report** (refer to **Appendix 6**) concluded that the proposed Patatskloof WEF development is not fatally flawed and, on condition that the recommended mitigation measures are included within the EMPr and implemented in full, there are no objections on palaeontological heritage grounds to their authorization.

The **noise assessment** (refer to Appendix 6) confirmed that with the low significance of the potential noise impacts (with mitigation, inclusive of cumulative impacts) for the proposed WEF and associated infrastructure, it is recommended that the proposed Patatskloof WEF be authorized.

According to the **social impact assessment** (refer to **Appendix 6**), considering all social impacts associated with the project, it is evident that, at the social level, the positive elements outweigh the negative and that the project carries with it a significant social benefit at a national level and is therefore supported. In addition, no compelling preference emerges in respect of the alternatives and it would be socially acceptable for the authorisation of either power line alternative.

According to the **transportation assessment** (refer to **Appendix 6**), the Patatskloof Wind Energy Facility and associated grid infrastructure will have a nominal impact on the existing traffic network. The project is therefore deemed acceptable from a transport perspective, provided the recommendations and mitigations measures proposed are implemented, and hence the Environmental Authorisation (EA) should be granted for the BA application.

The **visual impact assessment** (refer to **Appendix 6**) concluded that the potential visual impacts associated with the proposed Patatskloof WEF and associated grid infrastructure development are negative and of moderate significance. Given the low level of human habitation and the relative absence of sensitive receptors, the project is deemed acceptable from a visual perspective and the EA should be granted. The specialist is of the opinion that the impacts associated with the construction, operation and decommissioning phases can be mitigated to acceptable levels provided the recommended mitigation measures are implemented.

No location alternatives are being considered for the Patatskloof Wind Farm as these sites were selected prior to the commencement of the BA Process. The preliminary layout that was prepared for the Patatskloof WEF has been assessed by specialists to identify potential impacts that may arise from the development. Based on the findings of the specialists, the potential impacts identified, the layout has been updated to avoid environmental sensitivities where possible to produce a draft layout. No further layout alternatives have been considered as part of the BA process. Impact assessments have been undertaken on the revised layout. 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 substation site locations have been based on proximity to the WEF and have been assessed by the specialists in their respective specialist studies. The location of the Substations are constrained by a number of sensitivities as well as riverine habitat and the most feasible option has been selected taking all site sensitivities into account. Based on the results of the comparative assessment of substation site alternatives, Option 2 is the most preferred substation location from a specialist point of view, as identified by the bat and visual specialists. Further based on the site sensitivity mapping, it is located outside of all no-go areas. The cultural specialist identified Option 1 substation as preferable (but must be located outside of CBA without impacting on a riverine corridor flood line or a slope over 3%.) and Option 2 as least preferred (as it is located on sensitive raised elevation in landscape unit B) with the remaining specialists having no preference on the location of the substation. The developer has not indicated a preference. Both are deemed acceptable for authorisation since none are fatally flawed. It is therefore requested that Substation Option 2 be authorised as part of the proposed development (with micro-siting to be undertaken) (should the EA be granted).

The buildable area, within which the infrastructure will be placed is recommended for authorisation. The buildable area will be further refined prior to construction based on the technology at the time and micro-siting.

Section 16 provides a summary of the positive and negative impacts associated with the proposed project.

19. ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR) AND CONDITIONS TO BE INCLUDED IN ENVIRONMENTAL AUTHORISATION

In accordance with Appendix 4 of the EIA Regulations, 2014 (as amended), an EMPr has been included within the EIA. The EMPr includes the impact management measures formulated by the various specialists and the recording of the proposed impact management outcomes for the development have also been included in the EMPr (**Appendix 8**).

The EMPr provides 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. The relevant management plans have also been incorporated into the EMPr (where required), which will assist in this regard. Taking into account the potential negative and significant positive impacts that the proposed development could have on the biophysical and social environment, it is the opinion of the EAP that the proposed development should be authorised subject to the following conditions of authorisation:

- All of the mitigation measures identified in this BA Report (**Section 15.1**) must be included in the EMPr.
- It is important that all of the listed mitigation measures are costed for in the construction phase financial planning and budget so that the contractor and/or developer cannot give financial budget constraints as reasons for non-compliance.
- All feasible and practical mitigation measures recommended by the various specialists must be incorporated into the Final Environmental Management Programme (EMPr) and implemented, where applicable;
- The specialist recommendations included in **Section 16** must be made conditions of the authorisation.
- Where applicable, monitoring should be undertaken to evaluate the success of the mitigation measures recommended by the various specialists.
- The activity-specific construction EMPr must be adhered to.
- An independent Environmental Control Officer (ECO) must be appointed by the applicant to monitor the implementation of the construction EMP. The ECO should undertake regular site inspections and compile an environmental audit report.

In March 2019, a generic EMPr relevant to an application for environmental authorisation for substations and overhead transmission and distribution electricity transmission infrastructure developed within or outside of the strategic transmission corridors was published in Government Notice No. 435 in Government Gazette No, 42323. The generic EMPr for the on-site substation has therefore also been prepared accordingly (**Appendix 8**).

20. ASPECTS WHICH WERE CONDITIONAL TO THE FINDINGS OF THE ASSESSMENT EITHER BY THE EAP OR SPECIALIST WHICH ARE TO BE INCLUDED AS CONDITIONS OF AUTHORISATION

None.

21. UNCERTAINTIES, ASSUMPTIONS AND GAPS IN KNOWLEDGE

The assessment has been based by SiVEST on information sourced and provided by the Applicant, site visits conducted, specialist findings and the application of the SiVEST assessment criteria. The EAP is of the opinion that the assessment method applied is acceptable. SiVEST assumes that:

- All the information provided by the Applicant is accurate and unbiased.
- The available data, including Topocadastral maps, Orthophotographs, geological maps and Google Earth images, are reasonably accurate.
- All information contained in the specialist studies provided is accurate and unbiased.
- Refer to specialist studies (**Appendix 6**) for their specific assumptions and limitations.
- It is not always possible to involve all Interested and/or Affected Parties (I&APs) individually, however, every effort has/will be made to involve as many interested parties as possible. It is also assumed that individuals representing various associations or parties convey the necessary information to these associations / parties.
- It is not possible to determine the actual degree of the impact that the development will have on the immediate environment without some level of uncertainties. Actual impacts can only be determined following construction and/or operation commences.
- 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.

22. AUTHORISATION OF THE PROPOSED PATATSKLOOF WEF PROJECT

The final layout for the Patatskloof WEF has been designed to avoid no-go features on site that have been identified through the various specialist studies that have been undertaken. No fatal flaws were identified by the specialists who have undertaken their respective assessment for the project. Whilst it is acknowledged that the project will result in negative impacts, these can be mitigated to acceptable levels.

Based on the findings of the specialist studies and this assessment, provided further comments and concerns are not raised during the pending public participation process, the EAP has no reason to recommend that the project not be authorised, provided that the mitigation measures are adhered to. The conditions to be included in the Environmental Authorisation for the construction phase are listed in **Section 19** above.

The environmental authorization should be valid for a period of 10 years.

23. 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**.

24. INFORMATION REQUIRED BY CA (IF APPLICABLE)

Currently n/a.

25. CONCLUSION

This Basic Assessment Report has covered activities and findings related to the BA process for the proposed Patatskloof 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 project have been identified within the BA phase, however the report provides an outline of the established measures that were taken to best identify all the potential impacts.

No fatal flaws were identified during the BA Process (subject to public participation). In conclusion, SiVEST, as the independent EAP, is therefore of the view that:

- The site location and project description can be authorised based on the findings of the suite of specialist assessments;
- A cumulative impact assessment of similar developments in the area was undertaken by the respective specialists. Based on their findings, majority of the cumulative impacts associated with the proposed development can be kept either low or medium after the implementation of mitigation measures, with the exception of Bat impacts. In addition, the Social specialist found that the project will result in several positive cumulative effects on the socio-economic environment and that these cumulative impacts will be positive medium, before and after the implementation of mitigation measures; and
- Through the implementation of mitigation measures, together with adequate compliance monitoring, auditing and enforcement thereof by the appointed Environmental Control Officer (ECO) as well as the competent authority, the potential detrimental negative impacts associated with the proposed development can be mitigated to acceptable levels.

26. WAY FORWARD

The Draft Basic Assessment Report is currently being circulated for public participation for a period of 30 days (excluding the period of **15 December 2022 to 5 January 2023**) from **05 December 2022** until **26 January 2023**.

All comments received will be responded to in a C&RR, which will be included prior to submission of the Final Basic Assessment Report (FBAR) 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 FBAR.

Once the FBAR has been submitted and the DFFE have acknowledged receipt thereof, a decision to either grant or refuse the EA for the proposed development will be made by the DFFE. In addition, once a decision regarding the EA has been received from the DFFE, it will be made available to the public and all registered I&APs, stakeholders and OoS / authorities will be notified accordingly and provided details regarding the appeal process. The BA process will thus come to an end once appeals (if any) have been dealt with adequately and the appeal process closes.

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

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

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



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