

Scoping and Environmental Impact
Assessment for the proposed development
of the Genesis Beau Valley Wind Energy
Facility and associated infrastructure near
Beaufort West in the Western Cape



FINAL
SCOPING
REPORT



October 2023

Prepared for:
Genesis Beau Valley Wind
Farm (Pty) Ltd

Prepared by:
CSIR Environmental
Management Services,
PO Box 320, Stellenbosch
7599, South Africa



Scoping and Environmental Impact
Assessment for the proposed development
of the Beau Valley Wind Energy Facility and
associated infrastructure near Beaufort West
in the Western Cape



SCOPING REPORT

PART A: MAIN REPORT



SCOPING AND ENVIRONMENTAL IMPACT ASSESSMENT

for the

Proposed Development of the Genesis Beau Valley Wind Energy Facility and Associated Infrastructure, near Beaufort West, Western Cape Province

FINAL SCOPING REPORT

DFFE Ref. No.: 14/12/16/3/3/2/2413

October 2023

Prepared for:

Genesis Beau Valley Wind Farm (Pty) Ltd

Prepared by:

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REPORT DETAILS

Title:	Scoping and Environmental Impact Assessment (EIA) Process for the proposed development of the Genesis Beau Valley Wind Energy Facility and associated infrastructure, near Beaufort West in the Western Cape Province: SCOPING REPORT
Purpose of this report:	The purpose of this Final Scoping Report is to: - Present the details of and the need for the proposed project; - Describe the affected environment at a sufficient level of detail based on scoping level specialist input to facilitate informed decision-making; - Provide an overview of the Scoping and EIA Process being followed, including public consultation; - Provide an overview of the potential positive and negative impacts of the proposed project on the environment; - Provide recommendations to avoid or mitigate negative impacts and to enhance the positive benefits of the project (based on a high-level); and - Provide the Plan of Study for the EIA Phase for the proposed project. The Draft Scoping Report was made available to all Interested and/or Affected Parties (I&APs), Organs of State and relevant stakeholders for a 30-day review period extending from 4 September 2023 to 6 October 2023, excluding public holidays. All comments submitted during the 30-day review are incorporated in a Comments and Responses Report (Appendix E of the Final Scoping Report), and addressed, as applicable and where relevant in the Final Scoping Report. The Final Scoping Report is being submitted to the National Department of Forestry, Fisheries and the Environment (DFFE) for decision-making.
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FINAL SCOPING REPORT

EXECUTIVE SUMMARY



October 2023

Prepared for:
Genesis Beau Valley Wind
Farm (Pty) Ltd

Prepared by:
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Management Services,
PO Box 320, Stellenbosch
7599, South Africa



INTRODUCTION AND PROJECT LOCALITY

The Project Developer, Genesis Eco-Energy Developments (Pty) Ltd (hereafter “GEED”) is proposing to develop a Renewable Energy Cluster located approximately 40 km north-west of Beaufort West within the Beaufort West Local Municipality and the Central Karoo District Municipality in the Western Cape Province. The proposed GEED Renewable Energy Cluster consists of 9 Renewable Energy Facilities (REFs) consisting of 2 Solar Photovoltaic Energy Facilities (SEFs) and 7 Wind Energy Facilities (WEFs). Each of the REFs will be subjected to separate Scoping and Environmental Impact Assessments (S&EIA) processes and separate Applications for Environmental Authorisation (EA) with the National Department of Forestry, Fisheries and the Environment (DFFE), as the Competent Authority, in terms of the National Environmental Management Act (Act 107 of 1998, as amended) EIA Regulations, 2014, as amended.

The proposed Genesis Beau Valley Wind Energy Facility, with a capacity of 250 MW, is the subject of this S&EIA process (hereafter referred to as the “Beau Valley WEF” or the “proposed project”) as shown in Figure A. The Project Applicant is Genesis Beau Valley Wind Farm (Pty) Ltd. The proposed project is located on the farm portions indicated in Table A, below.

Table A: Farm Properties forming the study area

FARM PORTION	SG CODE	FARM AREA (ha)	WEF	OHPL
Doornboomfontyn RE/89	C00900000000008900000	5 758	X	
Doornboomfontyn 1/89	C00900000000008900001	2 597	X	X
Matjesfontein Farm No. 412	C00900000000041200000	22 936		X

The proposed project will make use of onshore wind turbine generator technology to generate electricity. The associated infrastructure on site includes various structures, buildings and internal electrical grid infrastructure (EGI), including but not limited to an on-site substation and a battery energy storage system at each WEF. The Applicant is also proposing the development of a 132 kV overhead transmission power line and associated EGI to facilitate the connection of the proposed WEF projects directly to the national electrical grid network or via a collector substation. A separate Assessment process will be undertaken for the development of the collector substation and for a 400 kV power line from the collector substation to feed Eskom's national electrical grid.

The proposed project is not located within any of the Renewable Energy Development Zones (REDZs) that were gazetted in GG 41445, GN 114 on 16 February 2018; and GG 44191, GN 144 on 26 February 2021, hence it is subjected to a full Scoping and EIA Process with a 107-day decision-making timeframe, as opposed to a BA Process and 57-day decision-making timeframe allowed for in the REDZs. The proposed project is located within the Central Strategic Transmission Corridor that was gazetted in GN 113 on 16 February 2018; however, the benefits only apply specifically to the EGI projects which are subjected to separate Basic Assessment processes, which is not applicable to the current project.

SCOPING REPORT: Scoping and Environmental Impact Assessment (S&EIA) Process for the Proposed Development of Beau Valley Wind Energy Facility and associated infrastructure, near Beaufort West, Western Cape Province

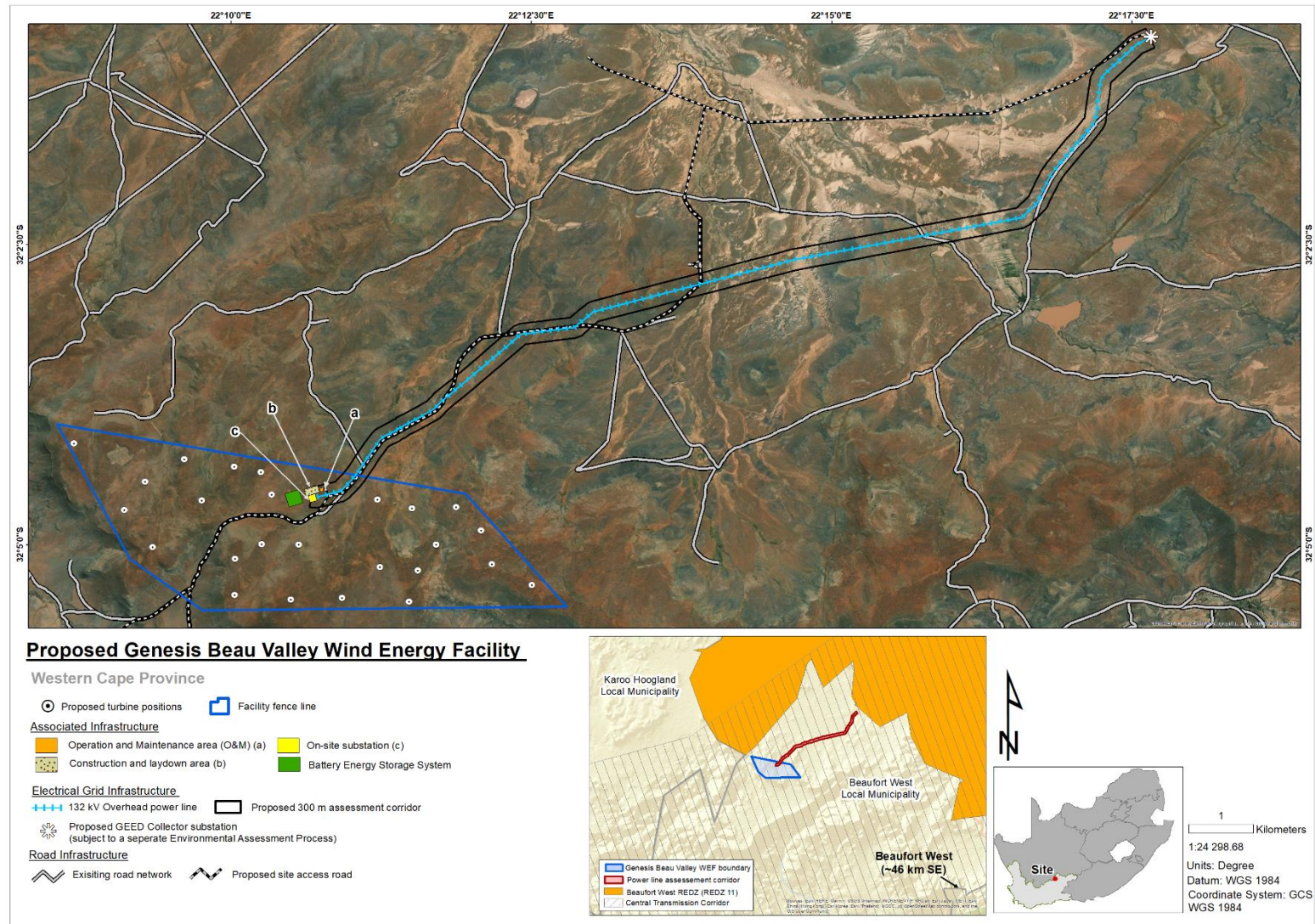


Figure A. Locality Map of the proposed Beau Valley WEF and associated infrastructure, including the 132 kV Overhead Transmission Power Line that is part of the current application and report.

The Draft Scoping Report was released to all Interested and/or Affected Parties (I&APs), Organs of State and relevant stakeholders for a 30-day review period extending from 4 September 2023 to 6 October 2023, excluding public holidays. All comments received during the 30-day review are incorporated into a detailed Comments and Responses Report, and addressed, as applicable and where relevant in the Final Scoping Report. The Final Scoping Report is being submitted to the DFFE, in accordance with Regulation 21 (1) of the 2014 NEMA EIA Regulations (as amended), for decision-making.

PROJECT ENVIRONMENTAL IMPACT ASSESSMENT TEAM

In accordance with Regulation 12 (1) of the 2014 NEMA EIA Regulations (as amended), GEED has appointed the Council for Scientific and Industrial Research (CSIR) to undertake the required Scoping and EIA Process in order to determine the potential biophysical, social and economic impacts associated with undertaking the proposed development. The project team and the relevant specialists are indicated in Table B below.

Table B. Project Team for the Scoping and EIA Process

NAME	ORGANISATION	ROLE/STUDY TO BE UNDERTAKEN
<i>CSIR Environmental Management Services</i>		
Paul Lochner (<i>Registered EAP (2019/745)</i>)	CSIR	EAP, Technical Advisor and Quality Assurance
Willan Adonis	CSIR	Project Manager
Helen Antonopoulos	CSIR	Project Officer
Dhiveshni Moodley (<i>Cand. Pr.Sci.Nat.</i>)	CSIR	GIS Specialist
Sonto Mkize	CSIR	Project Officer
<i>Specialists</i>		
Johann Lanz (<i>Pr.Sci.Nat.</i>)	Private	Agriculture and Soils Compliance Statement
Simon Todd (<i>Pr.Sci.Nat.</i>)	3Foxes Biodiversity Solutions	Terrestrial Biodiversity, Terrestrial Plant Species, and Terrestrial Animal Species
Kevin McCann	Biodiversity Outcomes	Biodiversity Stewardship Consultant
To Be Appointed (TBA)	TBA	Biodiversity Offset Study ¹
Toni Belcher (<i>Pr.Sci.Nat.</i>)	Private	Aquatic Biodiversity Impact Assessment
Chris van Rooyen ² Albert Froneman (<i>Pr.Sci.Nat.</i>)	Chris van Rooyen Consulting, AfriAvian Environmental (Pty) Ltd	Avifauna Impact Assessment

¹ A Biodiversity Offset specialist is in the process of being appointed to undertake a cumulative biodiversity offset study for Beau Valley WEF, SEF and DBF South SEF in accordance with the National Biodiversity Offset Guideline gazetted on 23 June 2023 in GN 3569 of GG 48841. The biodiversity offset study will be made available to I&APs with the Draft EIA Report and will be used to inform the stewardship programme and conservation agreement with SANParks as the management authority of the Karoo National Park.

² Please note that the Avifauna Scoping Report was authored by Chris van Rooyen before his passing in June 2023. Mr van Rooyen worked under the supervision and in association with Albert Froneman. Following Mr van Rooyen's passing, Albert Froneman has assumed lead authorship as the avifaunal specialist and will continue to provide specialist input on the proposed project under AfriAvian Environmental (Pty) Ltd.

SCOPING REPORT: Scoping and Environmental Impact Assessment (S&EIA) Process for
the Proposed Development of Beau Valley Wind Energy Facility and associated
infrastructure, near Beaufort West, Western Cape Province

NAME	ORGANISATION	ROLE/STUDY TO BE UNDERTAKEN
Mark Hodgson (<i>Pr.Sci.Nat.</i>) Ashlin Bodasing (<i>Pr.Sci.Nat.</i>) Craig Campbell (<i>Pr.Sci.Nat.</i>)	ARCUS	Bat Species Impact Assessment
Lourens Du Plessis Tosca de Villiers	LOGIS	Visual Impact Assessment
Dr Brett Williams Jason Hutten	Safetech	Noise Impact Assessment
John Gribble	ACO Associates	Heritage Impact Assessment (Archaeology and Cultural Landscape)
Elize Butler	BANZAI Environmental	Palaeontology Site Sensitivity Verification Report
Sue Reuter Christopher Dalglish	SRK Consulting	Socio-Economic Impact Assessment
Athol Schwartz (<i>Pr. Tech.</i>)	Private	Traffic Impact Assessment
Debbie Mitchell (<i>Pr Eng</i>)	Ishecon cc	Battery Storage High Level Safety, Health and Environment Risk Assessment
Louis Jonk (<i>Pr.Sci.Nat.</i>) Shane Teek (<i>Pr.Sci.Nat.</i>)	GEOSS South Africa (PTY) Ltd	Desktop Geotechnical Assessment
Helen Antonopoulos Lizande Kellerman (<i>Pr.Sci.Nat.</i>)	CSIR	Civil Aviation Site Sensitivity Verification
Helen Antonopoulos Lizande Kellerman (<i>Pr.Sci.Nat.</i>)	CSIR	Defence Site Sensitivity Verification

The specialist assessments will be detailed during the EIA Phase and will comply with Appendix 6 of the 2014 NEMA EIA Regulations (as amended), or the Assessment Protocols published in GN 320 on March 2020; or the Assessment Protocols published in GN 1150 on October 2020. However, the BESS High Level Safety, Health and Environment Risk Assessment serves as a technical report and the aforementioned legislation will thus not be applicable.

PROJECT DESCRIPTION

It is important to point out at the outset that the exact specifications of the proposed project components will be determined during the detailed design and engineering phase prior to construction (subsequent to the issuing of EA, should it be granted for the proposed project). A summary of the key components of the proposed project is provided in Table B below.

Table C. Summary of the proposed project components and associated infrastructure

COMPONENT	DESCRIPTION
Wind Turbines	
Type of Technology	Onshore Wind Turbine Generators (WTGs)
Facility Generation Capacity (and Turbine Count)	Beau Valley WEF: 250 MW (25 WTGs)
Capacity per WTG	Up to 10 MW
Hub height	Up to 200 m - to be revised during the EIA phase to reduce the potential visual impact on the Karoo National Park
Tower	- Up to 200 m - to be revised during the EIA phase to reduce the potential visual impact on the Karoo National Park - Conical shaped either constructed of full steel, full concrete, or hybrid
Length of blade	Approximately 100 m - to be revised during the EIA phase to reduce the potential visual impact on the Karoo National Park
Rotor diameter	200 m (up to 100 m blade / radius) - to be revised during the EIA phase to reduce the potential visual impact on the Karoo National Park
Rotor top tip height	Up to 300 m (maximum based on 200 m hub + 100 m blade length) - to be revised during the EIA phase to reduce the potential visual impact on the Karoo National Park
Number of blades	3
Area per turbine foundation	Each turbine will have a circular foundation with a diameter of up to 32 m ($A \approx 804.25 / 0,08\text{ha}$) and this will be placed alongside the 80 m x 45 m ($3600 \text{ m}^2 / 0,36 \text{ ha}$) wide hardstand resulting in an area of about 0,44 ha that will be disturbed per turbine.
Overhead Transmission Power Line (OHPL)	
Line capacity	132 kV
Pylon height	17.4m – 21m
Pylon type, span, working area and footprint	<u>Type</u>: Monopole or steel lattice type pylons, or combination of both where required. <u>Span</u>: The pylons will have a span of 200 m to 350 m for monopole pylons and up to approximately 500 m for lattice structures. <u>Working area</u>: The working area required around a pylon position during the construction phase is approximately 30 m x 30 m. <u>Footprint</u>: The size of the final constructed pylon footprint depends on the type of structure used, which will typically range from approximately 0.5 m^2 to 8 m^2 for monopole pylons, and 36 m^2 to 64 m^2 for steel lattice pylons.
Tower type	Self-supporting and Angle Strain towers
Registered servitude	Up to 50 m wide (where multiple adjacent power lines occur, in line with the Eskom Distribution Guideline for OHPL. Note that the entire servitude will not be cleared of vegetation.

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Assessment corridor	Specialists assessed an approximately 300 m wide corridor (i.e., 150 m on either side of centreline) for all power lines to identify sensitivities and features that need to be avoided.
Building Infrastructure and substations	
Auxiliary Buildings	<u>Type</u>: These include, but are not limited to, Operation and Maintenance (O&M) building / centre, site office, workshop, staff lockers, bathrooms/ablutions, warehouses, guard houses, etc. <u>Cumulative Footprint</u>: Approximately up to 5000 m² <u>Height</u>: Up to 10 m
Inverter/Transformer Stations	Several transformers will be installed with the following specifications: <u>Height</u>: Approximately 3 m <u>Footprint</u>: Approximately 220 m² each
On-site Substation and Switching Substation Complex	<u>Footprint</u>: Approximately 1 ha <u>Height of the on-site substation complex (including switching substation)</u>: Up to 10 m. However, the on-site substation will include switchgear portals up to 15 m and lightning masts up to 25 m in height. <u>Capacity of the on-site substation complex</u>: up to 132 kV <u>Fence</u>: Galvanized palisade fencing to be used at the substations <u>Fence height</u>: Up to 2.5 m
Associated Infrastructure	
Battery Energy Storage System (BESS)	<u>Preferred Technology</u>: Lithium-Ion or Sodium-Ion (Solid state) <u>Alternative Technology</u>: Redox Flow <u>Footprint</u>: Up to 2 ha <u>Height</u>: Up to 10 m <u>Capacity</u>: Up to 1 200 MWh
On-site medium voltage internal cables	<u>Placement</u>: Underground (maybe above ground pending technical constraints) <u>Capacity</u>: 33 kV <u>Depth</u>: Maximum depth of 3 m <u>Safety</u>: Danger tape will be placed at appropriate intervals above the cable to alert contractors or workers post-construction that buried electrical cable is located in the area they are excavating.
Access roads (including upgrading and widening of existing roads, where relevant)	- Existing roads will be used as far as practically achievable. The proposed project site can be accessed via the following roads: - Divisional Road 2312 (DR02312); - Trunk Road 5801 (TR05801); and - Trunk Road 7301 (TR07301). - Refer to the Traffic Impact Assessment (Appendix G.9 of the Scoping Report) and Chapter 2 of the Scoping Report for additional information on the route options per project. - Some of the existing intersections along the above roads may need to be widened to accommodate the turning movement of the trucks. Exact specifications of the widening will be confirmed as the EIA progresses.
Internal roads	<u>Internal access roads</u>: Permanent roads will be up to 6 m wide and may require side drains on one or both sides. All roads may have underground cables running next to them. A 12 m wide road corridor may be temporarily impacted during construction and rehabilitated to 6 m wide after construction. Temporary clearing of up to 50 m may be required in areas where cut and fill may be required as well for the construction of the bell mouth road junction, turning circles and temporary passing lanes.

	▪ <u>Details</u>: New internal service roads will need to be established. These would either comprise farm roads (compacted dirt/gravel) or paved roads. ▪ <u>Width</u>: Approximately 4 – 6 m
Storm water channels	▪ Details to be confirmed once the Engineering, Procurement and Construction (EPC) contractor has been selected and the design is finalised. Where necessary, a detailed storm water management plan would need to be developed.
Work area during the construction phase (i.e. laydown area)	▪ Temporary Laydown: Up to 2 ha. ▪ Temporary concrete batching plant: A temporary site camp establishment and concrete batching plants of ± 100 m x 100 m (1 ha).
Water Requirements	▪ Approximately 50 000 m³ of water is estimated to be required per year for the construction phase. ▪ Approximately 3 500 m³ of water is estimated to be required per year for the operational phase. ▪ Water requirements during the decommissioning phase are unknown at this stage. ▪ Potential sources: Local municipality, third-party water supplier, existing boreholes, newly drilled boreholes on site or a combination of existing and newly drilled boreholes on site. ▪ Reuse of rainwater and stormwater will be investigated in the EIA phase. ▪ Water supplied to site from an external source will be trucked to the site. ▪ Water supplied from either a nearby bulk supply pipeline (to be confirmed) or on-site borehole will most likely be piped via a temporary HDPE pipe. Should these same sources be utilised during the operations phase then these pipes will most likely be buried.
Construction Period	▪ 24 to 30 months
Operational Period	▪ Once the commercial operation date is achieved, the proposed facility will generate electricity for 20 to 25 years.

NEED FOR THE ENVIRONMENTAL IMPACT ASSESSMENT

As noted above, in terms of the 2014 NEMA EIA Regulations (as amended) published in GN R326, R327, R325 and R324 and further amended on 11 June 2021 in GN 517; and on 3 March 2022 in GN 1816, a full Scoping and EIA Process is required for the proposed project. The need for the Scoping and EIA is triggered by, amongst others, the inclusion of Activity 1 listed in GN R325 (Listing Notice 2):

“The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts 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”.

Chapter 4 of the Scoping Report contains the detailed list of activities contained in GN R327, R325 and R324 which are triggered by the various project components and thus form part of this Scoping and EIA Process.

The purpose of the Scoping and EIA Process is to identify, assess and report on any potential impacts the proposed project, if implemented, may have on the receiving environment. The Scoping and EIA therefore needs to show the Competent Authority, the National DFFE; and the Project Applicant what the consequences of their choices will be in terms of impacts on the biophysical and socio-economic environment and how such impacts can be, as far as possible, enhanced or mitigated and managed as the case may be.

POTENTIAL ISSUES AND HIGH-LEVEL IMPACT ASSESSMENT

Potential issues and impacts associated with the proposed project have been identified based on Scoping Level Specialist Assessments and inputs. These potential issues and impacts, summarised in Table D below, will be assessed in further detail during the EIA Phase and are included in Chapter 6 of this Scoping Report. Additional issues may be raised during the Scoping Phase, which could potentially be assessed during the EIA Phase. The Terms of Reference for the various Specialist Assessments are included in Chapter 7 of this Scoping Report.

Table D. Summary of Issues to be addressed during the EIA Phase as part of the Specialist Assessments / Input

SPECIALIST ASSESSMENT / INPUT	KEY ISSUES TO BE ADDRESSED
Agriculture and Soils Compliance Statement	Negative potential impacts: - Construction and Operational Phases: Loss of agricultural potential by occupation of land. - Construction, Operational and Decommissioning Phases: Loss of agricultural potential by soil erosion and degradation. Positive potential impacts (Construction, Operation and Decommissioning Phases): - Increased financial security for farming operations.
Terrestrial Biodiversity, Terrestrial Plant Species, and Terrestrial Animal Species	Construction Phase: - Impacts on vegetation and listed or protected plant species - Direct Faunal Impacts - Impacts on Riverine Rabbit - Impact on the Karoo Dwarf Tortoise - Erosion Risk - Impacts on ESA, CBAs and broad-scale ecological processes - Impact on Expansion of the Karoo National Park Operational Phase: - Erosion risk - Impact on adjacent NPAES focus areas
Aquatic Biodiversity Impact Assessment	Construction Phase: - Disturbance of aquatic habitat and the associated impact on sensitive aquatic biota - Removal of indigenous aquatic vegetation and associated loss of aquatic ecological integrity and functionality - Water supply for construction and associated stress on available water resources - Road crossing structures may impede flow in the aquatic features - Alien vegetation infestation may occur within the aquatic features due to disturbance - Increased sedimentation and risks of contamination of surface water runoff may result from construction works Operational Phase: - Decrease in aquatic ecosystem integrity (ongoing disturbance). - Decrease in aquatic ecosystem integrity (disturbance of cover vegetation and soil). - Modified runoff characteristics from hardened surfaces at the substation and along access roads has the potential to result in erosion of adjacent watercourses - Water supply and water quality impacts (e.g. contamination from sewage) as a result of the operation of the site

SPECIALIST ASSESSMENT / INPUT	KEY ISSUES TO BE ADDRESSED
	Decommissioning Phase: - Increased disturbance of aquatic habitat due to the increased activity on the site - Increased sedimentation and risks of contamination of surface water runoff Cumulative Impacts: - Construction and Decommissioning Phases: Increased disturbance of aquatic habitat due to the increased activity in the wider area - Operational Phase: Degradation of ecological condition of aquatic ecosystems
Bat Species Assessment	Construction Phase: - Displacement of bats due to habitat loss / habitat transformation. - Roost disturbance; and - Roost destruction Operational Phase: - Mortality of bats due to turbine collisions while commuting/foraging; - Mortality of bats due to turbine collisions during migrations; and - Light pollution associated risks including loss of insect prey and increased collision risks for bats foraging closer to turbines Decommissioning Phase: - Displacement of bats due to disturbance associated with the decommissioning activities
Avifauna Impact Assessment	Construction Phase: - Displacement due to disturbance and habitat transformation associated with the construction of the WEF and associated infrastructure. Operational Phase: - Displacement due to habitat transformation and disturbance associated with the presence of the WEF and associated infrastructure. - Mortality due to collisions with the wind turbines. - Mortality due to electrocutions on the overhead sections of the internal 33kV cables and in the on-site substation complex. - Mortality due to collisions with the overhead sections of the internal 33kV cables - Mortality due to collisions with the 132kV overhead powerline. Decommissioning Phase: - Displacement due to disturbance associated with the decommissioning of the WEF and associated infrastructure. Cumulative Impacts: - Displacement due to disturbance associated with the construction of the WEF and associated infrastructure. - Displacement due to habitat transformation associated with the construction of the WEF and associated infrastructure. - Mortality due to collisions with the wind turbines. - Mortality due to electrocutions on the overhead sections of the internal 33kV cable and on-site substation complex. - Mortality due to collisions with the overhead sections of the internal 33kV cables. - Mortality due to collisions with the 132kV overhead powerline.

SPECIALIST ASSESSMENT / INPUT	KEY ISSUES TO BE ADDRESSED
Noise Impact Assessment	Construction Phase: - Noise pollution i.e. increase in ambient sound levels due to construction activities (e.g. equipment and vehicle noise). Operational Phase: - Mechanical and aerodynamic noise from the operation of the wind turbine components. Decommissioning Phase: - Noise pollution i.e. increase in ambient sound levels due to decommissioning activities (e.g. equipment and vehicle noise).
Visual Impact Assessment	Construction Phase: - The potential visual impact of the construction of ancillary infrastructure (i.e. internal access roads, buildings, power line, etc.) on observers in close proximity to the facility. Operational Phase: - The visibility of the facility to, and potential visual impact on, observers travelling along the secondary road in closer proximity to the proposed infrastructure. - The visibility of the facility to, and potential visual impact on residents of dwellings within the study area, with specific reference to the farm residences in closer proximity to the proposed development. - The potential visual impact of the facility on the visual character or sense of place of the region. - The potential visual impact of the facility on tourist routes or tourist destinations/facilities (R381 and Karoo National Park). - The visual absorption capacity of the natural vegetation (if applicable). - The potential visual impact of operational, safety and security lighting of the facility at night on observers residing in close proximity of the facility. - The potential visual impacts of shadow flicker on sensitive and potentially sensitive visual receptors in close proximity. - Potential visual impacts associated with the construction phase. - The potential to mitigate visual impacts and inform the design process.
Heritage Impact Assessment (Archaeology and Cultural Landscape)	Construction Phase: - Potential impacts on archaeology - Potential impacts on graves and burials - Potential impacts on the cultural landscape Operational Phase: - Potential impacts on the cultural landscape Decommissioning Phase: - Potential impacts on the cultural landscape Cumulative Impacts: - Potential impacts on archaeology - Potential impacts on graves and burials - Potential impacts on the cultural landscape

SPECIALIST ASSESSMENT / INPUT	KEY ISSUES TO BE ADDRESSED
Palaeontology Site Sensitivity Verification Report	Construction Phase: ▪ Loss of fossil Heritage Cumulative Impacts (Construction Phase): ▪ Loss of fossil Heritage
Socio-Economic Impact Assessment	Construction Phase: ▪ Capital investment (CapEx) contributing to the national, regional and local economy; ▪ Generation of employment, income and skills; ▪ Social disruption and change in social dynamics; and ▪ Reduced quality of life and increased risks due to construction near residences. Operational Phase: ▪ Operational investment (OpEx) contributing to the national, regional and local economy; ▪ Generation of employment, income and skills; ▪ Increased community prosperity through contributions and income from the WEF; and ▪ Increased power generation reducing the probability of load shedding. Decommissioning Phase: ▪ Reduced employment and funding. Cumulative Impacts ▪ Stimulation of economic and employment growth; and ▪ Increased community prosperity through contributions and income from IPPs.
Traffic Impact Assessment	Construction Phase: ▪ The increased traffic volumes on the public roads will increase the potential of incidents on the road network within the study area ▪ The increased traffic volumes on the public roads will increase the potential for localised road network degradation within the study area. ▪ The increased traffic volumes on the unpaved public roads will generate more dust. ▪ The increased traffic volumes at intersections will increase the potential risk of accidents at the intersections, resulting in serious injuries or even fatalities, especially at the intersection on the main roads, when vehicles from the site need to cross over oncoming traffic. Operational Phase: ▪ The increased traffic volumes at intersections will increase the potential risk of accidents at the intersections, resulting in serious injuries or even fatalities, especially at the intersection on the main roads, when vehicles from the site need to cross over oncoming traffic. Decommissioning Phase: ▪ As part of the decommissioning process, a separate traffic impact assessment should be undertaken since many of the characteristics related to the traffic impact assessment, i.e. access routes, road geometry, traffic volumes, etc., would have changed over the operational life of the development. This will be confirmed before the decommissioning phase commences. Thus, the impact assessment for the decommissioning phase will not be provided. Cumulative Impacts ▪ The increased traffic volumes on the public roads will increase the potential of incidents on the road network within the study area

SPECIALIST ASSESSMENT / INPUT	KEY ISSUES TO BE ADDRESSED
	▪ The increased traffic volumes on the public roads will increase the potential for localised road network degradation within the study area. ▪ The increased traffic volumes on the unpaved public roads will generate more dust. ▪ The increased traffic volumes at intersections will increase the potential risk of accidents at the intersections, resulting in serious injuries or even fatalities, especially at the intersection on the main roads, when vehicles from the site need to cross over oncoming traffic.
Battery Storage High Level Safety, Health and Environment Risk Assessment	▪ Solid State (Lithium-ion or Sodium-ion) Battery Energy Storage System (BESS): ○ Noxious smoke from potential fires. ○ Risk of fires or explosions. ▪ Redox flow BESS: ○ Risk of spills due to the large volume of electrolyte handled.
Geotechnical Assessment	Construction Phase: ▪ Increased unnatural hard surfaces that will yield increased runoff, potentially increasing erosion. ▪ Removal of rocks and other geologic materials for site levelling and grading, resulting in loss of geologic materials, e.g. topsoil removal/loss, and potentially the destruction of habitats of endemic species. ▪ Contamination of geologic materials as a consequence of the construction activities by earthworks machinery and other apparatus. Operational Phase: ▪ Increased unnatural hard surfaces yielding increased runoff, potentially increasing erosion. ▪ Contamination of geologic materials as a consequence of typical maintenance activities. Decommissioning Phase: ▪ Increased unnatural hard surfaces yielding increased runoff, potentially increasing erosion. ▪ Removal of rocks and other geological materials for site levelling and grading, resulting in loss of geologic materials, e.g. topsoil removal/loss, and potentially the destruction of habitats of endemic species. Cumulative Impacts: ▪ The cumulative impacts identified include the impacts related to the construction, operational and decommissioning phases across the proposed development including the entire GEED Renewable Energy Cluster near Beaufort West, and neighbouring similar proposed developments occurring within a 30 km radius from the study area.
Civil Aviation Site Sensitivity Verification Report	▪ A Civil Aviation Site Sensitivity Verification was undertaken, which confirmed that the study area does not include any civil aviation installations, and therefore the low sensitivity is confirmed. No further requirements need to be fulfilled in terms of the Assessment Protocols of March 2020 (GN R320).
Defence Site Sensitivity Verification Report	▪ A Defence Site Sensitivity Verification was undertaken, which confirmed that the study area does not include any defence installations, and therefore the low sensitivity is confirmed. No further requirements need to be fulfilled in terms of the Assessment Protocols of March 2020 (GN R320).

Table E below provides a summary of the overall impact significance assessed by the relevant specialists at the Scoping Level. It includes the overall impact significance, based on the implementation of mitigation measures for each phase of the proposed project, including direct and cumulative impacts. Where information is not provided, it means that the impacts were insignificant or not predicted for that phase. These impacts will be unpacked in further detail during the EIA Phase.

Overall, based on Table E it can be deduced that the effect of potential impacts can be limited or reduced to acceptable levels through avoidance, minimisation and the implementation of appropriate mitigation measures and management actions during the construction, operational and decommissioning phases. Therefore, based on the scoping level specialist input, potential negative impacts associated with the proposed project are anticipated to mainly be of **low to very low significance after mitigation**, whilst some impacts of moderate significance are expected post mitigation.

Table E: Overall Impact Significance with the Implementation of Mitigation Measures for Direct and Cumulative Negative and Positive Impacts for the proposed project

Phase →				
Specialist Study ↓	Construction		Operational	Decommissioning
Direct Impacts				
Terrestrial Biodiversity, Terrestrial Plant Species and Terrestrial Animal Species	Low		Low	Low
Aquatic Biodiversity and Species	Very Low		Very Low	Very Low
Bat species Assessment	TBC in EIA Phase		TBC in EIA Phase	TBC in EIA Phase
Avifauna Assessment	Low		Medium	Low
Noise Impact Assessment	TBC in EIA Phase		TBC in EIA Phase	TBC in EIA Phase
Visual Impact Assessment	TBC in EIA Phase		TBC in EIA Phase	TBC in EIA Phase
Heritage Impact Assessment (Archaeology and Cultural Heritage)	Very Low	Low	Low	Low
Palaeontological Assessment	Low		No Impact	No Impact
Socio-Economic Assessment	TBC in EIA Phase		TBC in EIA Phase	TBC in EIA Phase
Traffic Impact Assessment	Moderate	Low	Moderate	TIA Not Provided
Geotechnical Assessment	Very Low		Very Low	Very Low
Cumulative Impacts				
Terrestrial Biodiversity, Terrestrial Plant Species and Terrestrial Animal Species	TBC in EIA Phase		TBC in EIA Phase	TBC in EIA Phase
Aquatic Biodiversity and Species	Low		Low	Low
Bat species Assessment	TBC in EIA Phase		TBC in EIA Phase	TBC in EIA Phase
Avifauna Assessment	Low		Moderate	Low
Noise Impact Assessment	TBC in EIA Phase		TBC in EIA Phase	TBC in EIA Phase
Visual Impact Assessment	TBC in EIA Phase		TBC in EIA Phase	TBC in EIA Phase
Heritage Impact Assessment (Archaeology and Cultural Heritage)	Low		Low	Low
Palaeontological Assessment	Low		No Impact	No Impact
Socio-Economic Assessment	TBC in EIA Phase		TBC in EIA Phase	TBC in EIA Phase
Traffic Impact Assessment	Moderate	Low	Moderate	TIA Not Provided
Geotechnical Assessment	Low		Low	Low

Scoping and Environmental Impact
Assessment for the proposed development
of the Beau Valley Wind Energy Facility and
associated infrastructure near Beaufort West
in the Western Cape



SCOPING REPORT

CHAPTER I: Introduction



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1. INTRODUCTION

Genesis Eco-Energy Developments (Pty) Ltd (hereafter referred to as “GEED” or the “Project Developer”) intends to develop a Renewable Energy Cluster located north-west of Beaufort West within the Beaufort West Local Municipality and the Central Karoo District Municipality in the Western Cape Province (Figure 1.1.)

Three separate clusters are proposed as follow, which are also shown in Table 1.1 with the corresponding Project and Applicant names:

- Northern Cluster
- Middle Cluster
- Southern Cluster

Table 1.1: GEED Renewable Energy Cluster Proposed Projects

Project	Applicant
NORTHERN CLUSTER	
Eland WEF, 132 kV EGI, BESS and associated infrastructure	Genesis Eland Wind Farm (Pty) Ltd
Windy Plains WEF, 132 kV EGI, BESS and associated infrastructure	Genesis Windy Plains Wind Farm (Pty) Ltd
MIDDLE CLUSTER	
Aloe WEF, 132 kV EGI, BESS and associated infrastructure	Genesis Aloe Wind Farm (Pty) Ltd
Elegia WEF, 132 kV EGI, BESS and associated infrastructure	Genesis Elegia Wind Farm (Pty) Ltd
Gazania WEF, 132 kV EGI, BESS and associated infrastructure	Genesis Gazania Wind Farm (Pty) Ltd
SOUTHERN CLUSTER	
Beau Valley WEF, 132 kV EGI, BESS and associated infrastructure	Genesis Beau Valley Wind Farm (Pty) Ltd
Beau Valley SEF, 132 kV EGI, BESS and associated infrastructure	Genesis Beau Valley Solar Farm (Pty) Ltd
DBF South WEF, 132 kV EGI, BESS and associated infrastructure	Genesis DBF South Wind Farm (Pty) Ltd
DBF South SEF, 132 kV EGI, BESS and associated infrastructure	Genesis DBF South Solar Farm (Pty) Ltd
SUPPORTING 400 kV EGI	
400 kV Overhead Transmission Power Line and a 132/400 kV Collector Substation and Associated Infrastructure	Genesis Eco-Energy Developments (Pty) Ltd

This Scoping Report only addresses the proposed Genesis Beau Valley Wind Energy Facility (hereafter referred to as the “Beau Valley WEF” or “proposed project”). Separate Applications and Scoping Reports for each of the above-mentioned projects will be submitted to DFFE for decision-making.

The proposed Beau Valley WEF will comprise a maximum of 250 MW and will be located approximately 48 km north-west of Beaufort West. The proposed project will make use of onshore wind turbine generator technology to generate electricity. The associated infrastructure on site includes various structures, buildings and internal electrical grid infrastructure (“EGI”), including but not limited to an on-site substation and a battery energy storage system. The Applicant is also

proposing the development of a 132 kV overhead transmission power line (OHPL) and associated EGI, located within a 300 m assessment corridor, to facilitate the connection of the proposed project to the national electrical grid network via a collector substation. A separate environment application and assessment will be undertaken for the development of a 400 kV power line from the proposed GEED Collector Substation to the national electrical grid.

The proposed project is not located within any of the Renewable Energy Development Zones (REDZs) gazetted in Government Notice (GN) 114 on 16 February 2018; and GN 144 on 26 February 2021. However, the proposed project is located adjacent to the Beaufort West REDZ earmarked for large scale wind and solar photovoltaic energy facilities in terms of GN 144 of 26 February 2021. In addition, the project is located within the Central Strategic Transmission Corridor gazetted in GN 113 of 16 February 2018.

The WEF component of the proposed project (Figure 1.2) will be constructed on the following farm portions:

- Portion 1 of Doornboomfontyn Farm No. 89.
- Remaining extent of Doornboomfontyn Farm No. 89.

The overhead power line component of the proposed project will be constructed on the following farm portions:

- Portion 1 of Doornboomfontyn Farm No. 89.
- Matjesfontein Farm No. 412

This chapter provides an introduction of the proposed project, and includes the following:

- An overview of the proposed project and associated infrastructure;
- Project Motivation;
- The legal requirements for an EIA;
- Information on the Project Developer and Project Applicant;
- The Competent Authority and EIA Project Team;
- Details and Expertise of the CSIR EIA Project Management Team;
- Need and Desirability;
- The objectives of the Scoping Report; and
- Requirements for a Scoping Report in terms of Appendix 2 of the 2014 NEMA EIA Regulations (as amended).

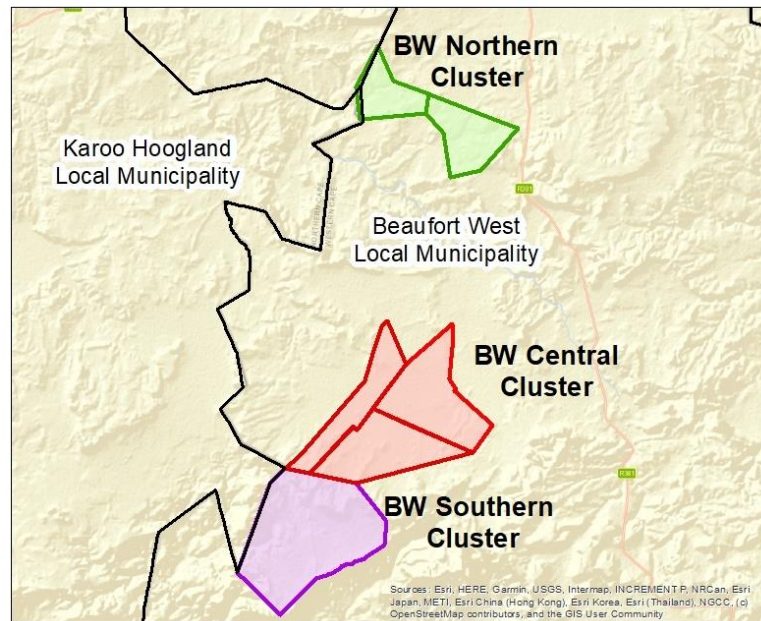


Figure 1.1: GEED Renewable Energy Cluster, approximately 40 km northwest of Beaufort West. Refer to Appendix C of this Scoping Report for detailed maps.

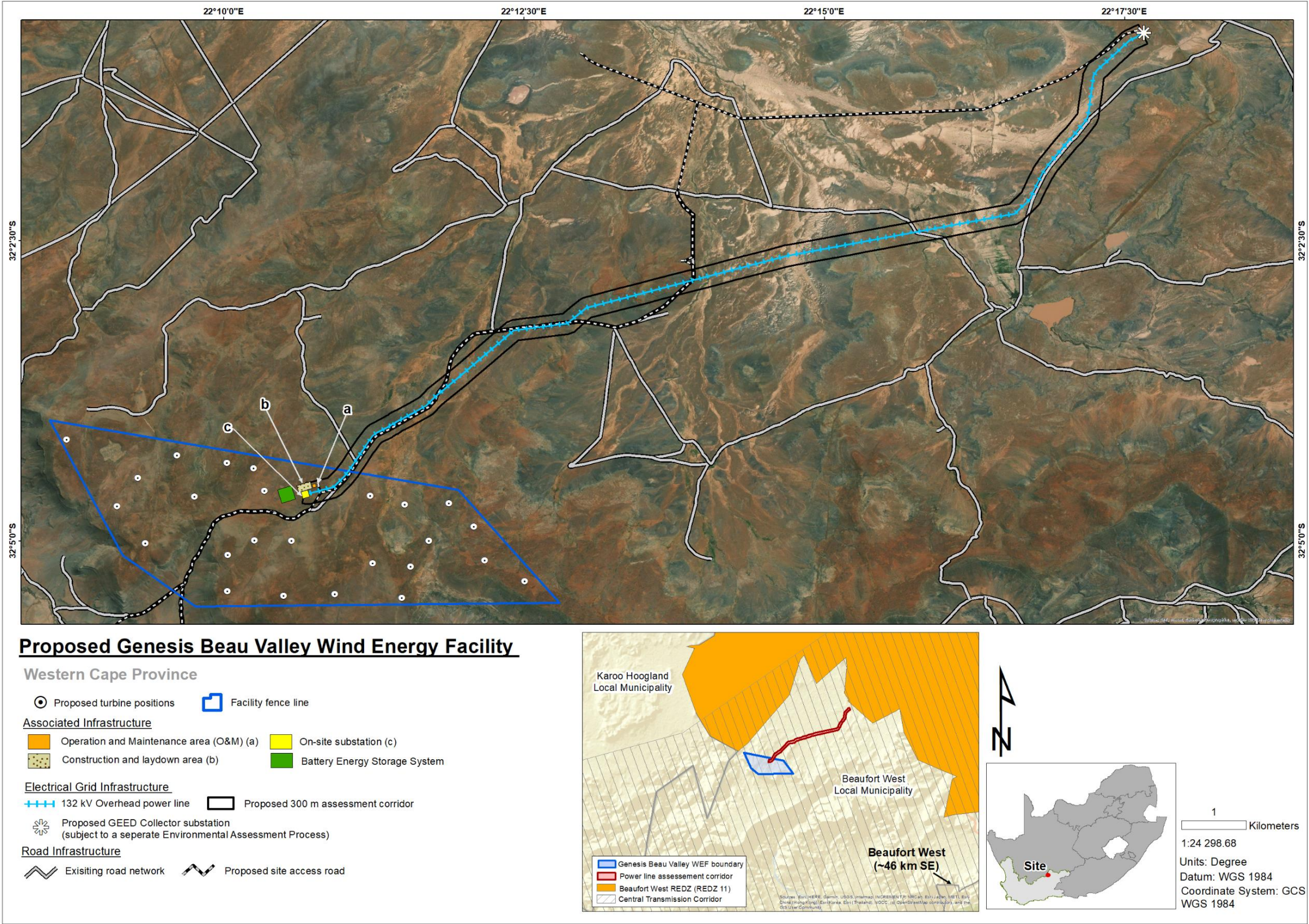


Figure 1.2: Locality map for the proposed Genesis Beau Valley WEF and EGI near Beaufort West in the Western Cape. Note that the on-site substation and 132 kV power line to connect the proposed project to the Genesis Collector Substation form part of the current application and report.

1.1. Overview of the Proposed Project

The proposed project will consist of the key components listed in Chapter 2 of this Scoping Report, as summarised below:

- Wind turbine generators each with a
 - Hub height up to 200 m;
 - Blade length approximately 100 m;
 - Rotor top tip height of up to approximately 300 m;
 - Circular foundation with a diameter of up to 32 m (~ 0,08 ha) which will be placed alongside a temporary 80 m x 45 m (~ 0,36 ha) wide hardstand resulting in a footprint area of about 0,44ha per turbine.
- Building Infrastructure (e.g., on-site substation complex; offices; operational and maintenance building and control centre; warehouse/workshop; ablution facilities; Inverter-Transformer stations; and guard house).
- An on-site substation complex including the following:
 - On-site Substation.
 - Lithium Ion or Redox Flow BESS.
- A 132 kV OHPL and associated EGI, located within a 300 m assessment corridor, to facilitate the connection of the proposed project to the national electrical grid network via a collector substation.
- Associated Infrastructure (e.g. temporary construction laydown area; internal roads up to 6 m wide; widening and/or upgrading of existing access roads (where required); fencing; storm water channels; panel maintenance and cleaning area; underground low voltage cables or cable trays; and 33 kV internal underground power lines¹).

The generation capacity for the Beau Valley WEF is estimated at 250 Megawatts (MW)². The construction period is estimated to extend 24 to 30 months. Once the commercial operation date is achieved, the proposed facility will generate electricity for a minimum period of 20 to 25 years.

1.2. Project Motivation

The need for renewable energy is clear, in both a local and international context, with South Africa becoming an integral part of the global transition towards renewable sources of electricity generation. South Africa is one of the highest per capita producers of carbon emissions in the world. These emissions are largely a result of an energy-intensive economy and high dependence on coal-based electricity generation to meet more than 90% of its energy needs. Consequently, the South African government is committed to supplementing the existing generation capacity of thermal and nuclear power plants with renewable energy power generation, thus creating the framework that will lead to an increase in the supply of clean energy for the nation. The

¹ The internal reticulation would be 33 kV, and most likely underground. In the isolated event of crossing a feature hindering underground cabling (e.g. a road, topographical or environmental constraint) the reticulation line may better be suited to be above ground in certain sections. Therefore, both below and above ground routings need to be covered in this Application for EA.

² Subject to engineering design and energy yield assessment to be undertaken by the applicant following the environmental authorization process.

development of renewable energy is important for South Africa to reduce its overall environmental footprint from power generation (including externality costs), and thereby to steer the country on a pathway towards sustainability.

Commitment toward decarbonisation of the economy is clearly illustrated in the South Africa's National Development Plan (NDP) Vision 2030 published in 2012. Chapters 4 and 5 of the NDP advocates for increased investment in an energy sector that is both economically inclusive and environmentally sustainable – with renewable energy at the core of enabling this transition. The plan identifies, as a priority, the production of sufficient energy to support industry at competitive prices, ensuring access for poor households, while reducing the carbon intensity of the economy.

In addition, due to the current constrained energy landscape and frequent loadshedding, the South African Government has articulated a plan to address the energy crisis. The President of South Africa delivered a speech on 25 July 2022 to inform the public of the plan towards achieving a reliable, affordable and sustainable energy supply (The Presidency, 2022³). In addition, the Minister of Forestry, Fisheries and the Environment also held a stakeholder engagement session on 21 July 2022 during which she highlighted proposed mechanisms for streamlining environmental approvals for solar energy development in low and medium sensitivity areas throughout the country; as well as power line and substation development within low and medium sensitivity areas within the gazetted EGI corridors (DFFE, 2022⁴). One of those mechanisms has already been gazetted for implementation, as noted above (i.e., the EGI Standard published in GG 47095; GN 2313, dated 27 July 2022).

Further, the Integrated Resource Plan (IRP) for South Africa for the period 2010 to 2030 (referred to as "IRP2010") was released by government in 2010, and an updated report was published in 2013, which proposed to secure 17 800 MW of renewable energy capacity by 2030 (including solar, wind and other energy sources). In August 2011, the Department of Energy (DoE) (currently operating as the Department of Mineral Resources and Energy (DMRE)) launched the Renewable Energy Independent Power Producer Programme (REIPPPP) and invited potential IPPs to submit proposals for the financing, construction, operation and maintenance of the first 3 725 MW of onshore wind, solar thermal, PV, biomass, biogas, landfill gas or small hydropower projects. On 18 August 2015, an additional procurement target of 6 300 MW to be generated from renewable energy sources was added to the REIPPPP for the years 2021 - 2025, as published in GN 733, GG 39111. Of this, the additional target allocated for solar PV was 2 200 MW.

The most recent update to the IRP i.e. the IRP 2019, was gazetted by the Minister of Mineral Resources and Energy, Gwede Mantashe, in October 2019. The update revised the energy forecast for South Africa to the year 2030. Provision has been made for new additional capacity by 2030 including in particular 14 400 MW of wind and 6 000 MW of solar PV. In terms of the REIPPPP, submitted proposals are then evaluated according to a Request for Proposal (RFP). Bidding Window 5 had the same two main evaluation criteria for compliant proposals as the previous Bidding Windows 1-4, namely price and economic development. However, for Bidding

³ The Presidency (2022). *Address by President Cyril Ramaphosa on actions to address the electricity crisis, Union Buildings, Tshwane*. Accessed online: <https://www.thepresidency.gov.za/speeches/address-president-cyril-ramaphosa-actions-address-electricity-crisis%2C-union-buildings%2C-tshwane> [August 2022]

⁴ DFFE (2022). *Minister Creecy announces improved environmental assessment processes for solar energy*. Accessed online: https://www.dffe.gov.za/creecy_environmentalassessmentprocesses_solarenergy [August 2022]

Window 5, the point allocation changed to 90/10 compared to 70/30 for the previous Bidding Windows.

The overview summary document (DMRE, 2022⁵) on the RFP issued for Bidding Window 6 notes that Bid responses will be assessed firstly in terms of Functional and Qualification Criteria to determine if they are compliant. These criteria include the structure of the project; legal aspects; land acquisition and land use; environmental; financial; technical; economic development; and value for money. Secondly, the compliant Bids are proposed to be evaluated on a comparative basis (out of 100 points) in terms of price (maximum of 90 points) and economic development (maximum of 10 points). Therefore, economic development has been retained as a qualification criterion based on the RFP for Bidding Window 5, but it is also considered in the comparative scoring (DMRE, 2022). The bidders whose responses rank the highest (according to the aforementioned criteria) generally have the greatest potential to be appointed as “Preferred Bidders” by the DMRE.

Bidding Window 5 was conducted during 2021 with an allocation of 2 600 MW for new wind and solar energy. The successful bidders were announced on 28 October 2021. Bidding Window 6 was announced in April 2022 with an allocation of 4 200 MW of renewable energy of which solar comprises 1 000 MW.

Should this proposed project be acceptable and authorised, it is considered viable that long-term benefits for the community and society in the Beaufort West area would be realised. The proposed project will provide an opportunity for additional employment in an area where job creation is identified as a key priority. Approximately 300-400 employment opportunities will be created during the construction phase, and approximately 40-50 during the operational phase of the proposed project. The proposed project will make use of local labour as much as possible.

The project is intended to address the current energy shortages in South Africa and assist in meeting the need for additional renewable energy generation capacity, as required by the IRP of 2019. The total generation capacity of the project is 200 MW.

The proposed project would also have international significance as it contributes to South Africa being able to meet some of its international obligations by aligning domestic policy with internationally agreed strategies and standards as set by the United Nations Framework Convention on Climate Change (UNFCCC), the Paris Agreement on Climate Change, Kyoto Protocol, and United Nations Convention on Biological Diversity (UNCBD), all of which South Africa is a signatory to. Renewable energy is critical to South Africa as this source of energy is recognised as a major contributor to climate protection, has a much lower environmental impact significance, as well as advancing economic and social development.

It is intended that this project will be bid into a future bidding program of the REIPPPP [or another future process linked to the IRP]. To submit a Bid in terms of the REIPPPP, the Project Applicant is required to have obtained an EA in terms of the 2014 NEMA EIA Regulations (as amended), as

⁵ DMRE (2022). Overview of the Request for Qualification and Proposals for New Generation Capacity under Sixth Bid Submission Phase of the Renewable Energy Independent Power Producer Procurement Programme. Accessed online: <https://www.ipp-renewables.co.za/> [June 2022]

well as several additional authorisations or consents. Alternatively, the project may be considered for private-offtake and/or any other viable commercial and industrial agreements.

1.3. Legal Requirements for an EIA

Section 24(1) of the NEMA, states that “In order to give effect to the general objectives of integrated environmental management laid down in this Chapter, the potential impact on the environment of listed activities must be considered, investigated, assessed and reported to the competent authority charged by this Act with granting the relevant EA”. The reference to “listed activities” relates to the regulations promulgated in GN R982, R983, R984 and R985 in GG 38282, dated 4 December 2014, which came into effect on 8 December 2014. These were amended on 7 April 2017, specifically promulgated in GN R326, R327, R325 and R324 in GG 40772; and further amended on 11 June 2021 in GN 517; and on 3 March 2022 in GN 1816. GN R327 and GN R324 includes listed activities that trigger the need for a BA Process, whereas GN R325 includes listed activities that trigger the need for a full Scoping and EIA Process. Additional detail is provided in Chapter 4 of this Scoping Report.

In terms of the NEMA and the 2014 NEMA EIA Regulations (as amended), a full Scoping and EIA Process is required for the proposed project.

The proposed project is not located within any of the Renewable Energy Development Zones (REDZs) that were gazetted in GG 41445, GN 114 on 16 February 2018; and GG 44191, GN 144 on 26 February 2021, hence it is subjected to a full Scoping and EIA Process with a 107-day decision-making timeframe, as opposed to a BA Process and 57-day decision-making timeframe allowed for in the REDZs. It should be noted however that the proposed project falls within 1.5 km at its closest point to the Beaufort West REDZ 11. The proposed project is located within the Central Strategic Transmission Corridor that was gazetted in GN 113 on 16 February 2018.

The need for the full Scoping and EIA is triggered by, amongst others, the inclusion of Activity 1 listed in GN R325 (Listing Notice 2):

- ***“The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more, excluding where such development of facility or infrastructure is for photovoltaic installations and occurs (a) within an urban area; or (b) on existing infrastructure”.***

Chapter 4 of this Scoping Report contains the detailed list of activities contained in GN R327, R325, and R324, which may be triggered by the various project components and thus form part of the Scoping and EIA Process.

The Project Applicant has appointed the Council for Scientific and Industrial Research (CSIR) to undertake the Scoping and EIA Process for this proposed project in order to determine the potential biophysical, social and economic impacts associated with undertaking the proposed activities. Given that energy related projects have been elevated to national strategic importance in terms of the Scoping and EIA Process, the proposed WEF requires EA from the National Department of Forestry, Fisheries, and the Environment, (DFFE) as the Competent Authority (CA), acting in consultation with other spheres of government.

The purpose of the Scoping and EIA Process is to identify, assess and report on any potential impacts the proposed project, if constructed and implemented, may have on the receiving environment. The environmental assessment, therefore, needs to show the CA what the potential biophysical and socio-economic impacts will be of the proposed project. It also needs to show the CA how such impacts can be avoided, remedied, mitigated, or managed, and how positive impacts can be enhanced.

1.4. Project Developer

Genesis Eco-Energy Developments (GEED) was established in 2001 and is one of South Africa's pioneering renewable energy companies providing project development, management and operations services across a range of renewable energy technologies. Their focus is on free fuel renewable energy (wind, solar PV and marine technologies) as well as bio-energy.

GEED employs a team of highly experienced people who have worked locally and internationally in areas ranging from energy strategy, policy formulation, energy trading, financial services, land, agriculture and rural development, through to project design, development, management and implementation. Their team has developed and implemented projects in a number of countries and bring this expertise and experience to bear when designing and implementing projects in South Africa and the SADC region.

Genesis has helped to develop a number of solar PV projects with two 50 MW projects having been selected as Preferred Bidders in Round 1 of the REIPPPP.

The Droogfontein and De Aar projects have both completed construction and Genesis exited these projects through sale to incoming investors.

Currently Genesis is developing a number of solar PV projects in the Northern Cape and Free State province which it will be submitting for future rounds of REIPPPP.

1.5. Project Applicant

The Project Applicant for the proposed project is **Genesis Beau Valley Wind Farm (Pty) Ltd.**

1.6. Competent Authority and EIA Project Team

In accordance with Regulation 12 (1) of the 2014 NEMA EIA Regulations (as amended), GEED has appointed the Council for Scientific and Industrial Research (CSIR) to undertake the Scoping and EIA Process to determine the potential biophysical, social and economic impacts associated with the proposed project, and to identify how such negative impacts can be avoided, remedied, mitigated or managed; and how positive impacts can be enhanced. Public participation forms an integral part of the Scoping and EIA Process and assists in identifying issues and possible alternatives to be considered. The CSIR is also undertaking the Public Participation Process (PPP) for this Scoping and EIA Process. Details on the PPP are included in Chapter 4 of this Scoping Report.

The 2014 NEMA EIA Regulations, as amended in GN 517 on 11 June 2021 states that the Competent Authority (CA) in respect of the listed activities “*is the CA in the province in which the activity is to be undertaken, unless: (a) it is an application for an activity contemplated in Section 24C(2) of the Act, in which case the CA is the Minister or an organ of state with delegated powers in terms of Section 42(1) of the Act; or (b) the application is a mining application in which case the CA is the Minister responsible for mineral resources*”.

With relevance to the proposed project, Section 24C (2) (a) (i) of NEMA states “*(2) the Minister must be identified as the competent authority in terms of subsection (1), unless otherwise agreed to in terms of section 24C (3), if the activity (a) has implications for international environmental commitments or relations, and where (i) it is identified by the Minister by notice in the Gazette*”.

Related to this, GN 779 states that, in terms of Sections 24C(1), 24C(2)(a)(i) and 24D of the NEMA, the Minister of Environmental Affairs (now Forestry, Fisheries and the Environment) is the CA for activities which are identified as activities in terms of Section 24(2)(a) of NEMA, which may not commence without an EA, and which relates to the Integrated Resources Plan (IRP) 2010 - 2030 and any updates thereto. The proposed project triggers various listed activities and thus requires EA. As noted above, the proposed project will be bid into a future bidding program of REIPPPP. Based on the above, the National DFFE serves as the CA for the proposed project.

The project team, which is involved in this Scoping and EIA Process, is listed in Table 1.2 below. This team includes several specialists who have extensive experience in conducting specialist studies for renewable energy projects in South Africa.

Table 1.2: The EIA Project Team

NAME	ORGANISATION	ROLE/STUDY TO BE UNDERTAKEN
CSIR Environmental Management Services		
Paul Lochner (<i>Registered EAP (2019/745)</i>)	CSIR	EAP, Technical Advisor and Quality Assurance
Willan Adonis	CSIR	Project Manager
Helen Antonopoulos	CSIR	Project Officer
Dhiveshni Moodley (<i>Cand. Pr.Sci.Nat.</i>)	CSIR	GIS Specialist
Sonto Mkize	CSIR	Project Officer
Specialists		
Johann Lanz (<i>Pr.Sci.Nat.</i>)	Private	Agriculture and Soils Compliance Statement
Simon Todd (<i>Pr.Sci.Nat.</i>)	3Foxes Biodiversity Solutions	Terrestrial Biodiversity, Terrestrial Plant Species, and Terrestrial Animal Species
Kevin McCann	Biodiversity Outcomes	Biodiversity Stewardship Consultant
To Be Appointed (TBA)	TBA	Biodiversity Offset Study ⁶

⁶ A Biodiversity Offset specialist is in the process of being appointed to undertake a cumulative biodiversity offset study for Beau Valley WEF, SEF and DBF South SEF in accordance with the National Biodiversity Offset Guideline

NAME	ORGANISATION	ROLE/STUDY TO BE UNDERTAKEN
Toni Belcher (<i>Pr.Sci.Nat.</i>)	Private	Aquatic Biodiversity Impact Assessment
Chris van Rooyen ⁷ Albert Froneman (<i>Pr.Sci.Nat.</i>)	Chris van Rooyen Consulting, AfriAvian Environmental (Pty) Ltd	Avifauna Impact Assessment
Mark Hodgson (<i>Pr.Sci.Nat.</i>) Ashlin Bodasing (<i>Pr.Sci.Nat.</i>) Craig Campbell (<i>Pr.Sci.Nat.</i>)	ARCUS	Bat Species Impact Assessment
Lourens Du Plessis Tosca de Villiers	LOGIS	Visual Impact Assessment
Dr Brett Williams Jason Hutten	Safetech	Noise Impact Assessment
John Gribble	ACO Associates	Heritage Impact Assessment (Archaeology and Cultural Landscape)
Elize Butler	BANZAI Environmental	Palaeontology Site Sensitivity Verification Report
Sue Reuter Christopher Dalgliesh	SRK Consulting	Socio-Economic Impact Assessment
Athol Schwartz (<i>Pr. Tech.</i>)	Private	Traffic Impact Assessment
Debbie Mitchell (<i>Pr Eng</i>)	Ishecon cc	Battery Storage High Level Safety, Health and Environment Risk Assessment
Louis Jonk (<i>Pr.Sci.Nat.</i>) Shane Teek (<i>Pr.Sci.Nat.</i>)	GEOSS South Africa (PTY) Ltd	Desktop Geotechnical Assessment
Helen Antonopoulos Lizande Kellerman (<i>Pr.Sci.Nat.</i>)	CSIR	Civil Aviation Site Sensitivity Verification
Helen Antonopoulos Lizande Kellerman (<i>Pr.Sci.Nat.</i>)	CSIR	Defence Site Sensitivity Verification

Feedback on the specialist studies commissioned as part of this Scoping and EIA Process is also included in Chapter 3, Chapter 4, Chapter 6 and Chapter 7 of this Scoping Report. Chapter 4 also includes motivation for not undertaking certain studies identified by the Screening Tool.

1.7. Details and Expertise of the CSIR EIA Project Team

This section provides information on the expertise of the CSIR EIA Project Management Team and Environmental Assessment Practitioner (EAP).

Paul Lochner (*Registered EAP; Technical Advisor and Quality Assurance*):

Paul Lochner is an EAP at the CSIR in Stellenbosch, with 30 years of experience in a wide range of environmental assessment and management studies. Paul commenced work at CSIR in 1992, after completing a B.Sc. degree in Civil Engineering and a Masters in Environmental Science, both at the University of Cape Town. His initial work at focused on wetlands and estuarine management; environmental engineering in the coastal zone; and coastal zone management plans. Since 2008, Paul has been the leader and manager of the Environmental Management Services (EMS) group

gazetted on 23 June 2023 in GN 3569 of GG 48841. The biodiversity offset study will be made available to I&APs with the Draft EIA Report and will be used to inform the stewardship programme and conservation agreement with SANParks as the management authority of the Karoo National Park.

⁷ Please note that the Avifauna Scoping Report was authored by Chris van Rooyen before his passing in June 2023. Mr van Rooyen worked under the supervision and in association with Albert Froneman. Following Mr van Rooyen's passing, Albert Froneman has assumed lead authorship as the avifaunal specialist and will continue to provide specialist input on the proposed project under AfriAvian Environmental (Pty) Ltd.

within CSIR that has been at the forefront of advancing environmental assessment in South Africa. This group currently consists of approximately 10 environmental scientists, planners and engineers, with offices in Stellenbosch, Cape Town and Durban. Paul's particular experience is in environmental planning and assessment for renewable energy, EGI, desalination, oil and gas, wetlands and coastal zone management, and industrial and port development. He has been closely involvement in the research and application of Strategic Environmental Assessment (SEA) in South Africa, and also has wide experience in Environmental and Social Impact Assessment, Environmental Management Programmes (EMPRs) and Environmental Screening Studies. He has been the project leader for over 40 SEAs and EIAs. He also served as project leader for a suite of SEAs commissioned by the DFFE from 2014 to 2020. Paul is a Registered EAP (2019/745) with the Environmental Assessment Practitioners Association of South Africa (EAPASA).

Willan Adonis (Project Manager):

Willan Adonis is an Environmental Consultant in the CSIR's EMS group. Willan holds a BA, a PGDip and an MPhil (all Cum Laude) in Development and Environmental Management from Stellenbosch University. Willan is experienced in on-site compliance monitoring, he has authored BA and Scoping and EIA Reports, compiled EMPRs, and undertook several public participation processes for renewable energy, municipal services, and industrial developments. His key interests are in how the multi-disciplinary interfaces between Environmental, Social and Governance systems can be used to build stakeholder partnerships and promote just and sustainable human-environment relationships.

Helen Antonopoulos (Project Officer):

Helen Antonopoulos is an intern Environmental Consultant in the EMS group of the CSIR and holds BSc, BSc Honours, and MSc degrees in Environmental and Geographical Science from the University of Cape Town. She has assisted with compiling EA applications for Wind Energy Facilities in the Western Cape, as well as BA and Scoping Reports for Solar Facilities in the Northern Cape. She is interested in using renewable energy projects to promote sustainable development in South Africa.

Dhiveshni Moodley (Cand. Sci. Nat., GIS Specialist):

Dhiveshni Moodley is environmental scientist at the CSIR in Durban. Dhiveshni holds a BSc, BSc Honours (cum laude) and MSc (cum laude) degrees in Environmental Science from the University of KwaZulu-Natal. She has more than two year's work experience in flood risk, hydrogeological and wetland functional assessment specialist studies, as well as conducting BAs and S&EIAs in the Renewable Energy sector. Her key interest lies in applying GIS analyses analysing the formation of accurate, feasible solutions to complex environmental challenges. Dhiveshni is registered as a Candidate Natural Scientist (#1472997/19) with the SACNASP.

Sonto Mkize (Project Officer):

Sonto Mkize is an intern Environmental Consultant in the EMS group at the CSIR. Sonto holds a BSc and BSc Honours in Urban and Regional Planning from the University of the Witwatersrand, and a MSc in Sustainable Urban Planning and Design from KTH Royal Institute of Technology in Sweden. She has assisted in compiling Basic Assessment and Scoping and Environmental Impact Assessment reports for wind and solar energy facilities in various provinces. Her key interests primarily lie in maximising the opportunities presented by advancements in technological innovations to build inclusive smart cities and to enable a just energy transition using renewable resources.

1.8. Need and Desirability

It is an important requirement in the EIA Process to review the need and desirability of the proposed project. Need and desirability requires an analysis of the effect that the proposed project may have on social, economic and ecological systems, and places emphasis on consideration of a project's justification in terms of the specific needs and interests of people. The consideration of need and desirability in EIA decision-making therefore requires the consideration of the strategic context of the project along with broader societal needs and the public interest.

Guidelines on Need and Desirability were published by the Department of Environmental Affairs (DEA) [now operating as the DFFE] in 2017⁸. These guidelines list specific questions to determine need and desirability of proposed developments. This checklist is a useful tool in addressing specific questions relating to the need and desirability of a project and assists in explaining that need and desirability at the provincial and local context. Need and desirability answer the question of whether the activity is being proposed at the right time and in the right place.

Table 1.3 includes a list of questions based on the DEA's Guideline to determine the need and desirability of the proposed project. It should be noted this table will be informed by the outcomes of the Scoping and EIA Process and will be updated once the Specialist Assessments are completed in the EIA Phase. Note that the Scoping Level Specialist Assessments are included in Appendix G of this Scoping Report, and where possible, the findings of these studies have been integrated into Table 1.3.

⁸ DEA (2017), Guideline on Need and Desirability, Department of Environmental Affairs (DEA), Pretoria, South Africa. ISBN: 978-0-9802694-4-4.

Table 1.3: The Guideline on the Need and Desirability's list of questions to determine the "Need and Desirability" of a proposed project

NEED	
Question	Response
1. How will this development (and its separate elements/aspects) impact on the ecological integrity of the area?	
1.1. How were the following ecological integrity considerations taken into account?:	The ecological sensitivities present within the study area will be assessed in detail in the Terrestrial Biodiversity and Plant and Animal Species, Aquatic Biodiversity, and Avifauna Impact Assessments during the EIA Phase. The specialists will identify aquatic, terrestrial and avifaunal sensitive areas within the study area that should be avoided by the proposed development, as well as any other ecologically sensitive areas and how to suitably develop within these areas so that the ecological integrity is maintained.
1.1.1. Threatened Ecosystems,	The Terrestrial Biodiversity and Plant and Animal Species, Aquatic Biodiversity, and Avifauna Scoping Level Assessments are included in Appendix G.2, Appendix G.3 and Appendix G.4 of this Scoping Report respectively. These Scoping Level Assessments have identified sensitivities within the study area that should be avoided, based on desktop assessments and field work. The Aquatic Biodiversity Scoping Level Assessment determined the following: - The area is in the upper reaches of several tributaries of the Leeu River, a tributary of the Gamka River in the Gouritz River System. The upper Leeu River lies within a sub-catchment mapped as an Upstream Catchment. The only natural Freshwater Ecosystem Priority Area wetland within the study area are some seeps adjacent to the larger channel of the Leeu River downstream of the development site that has been lost due to past agricultural activities. There is also a depression wetland in the north of the larger site. These wetlands are also mapped in the National Wetland Map version 5. - The watercourses are all mapped as aquatic Ecological Support Areas (ESAs). Within the terrestrial Critical Biodiversity Areas (CBAs), the watercourses have also been mapped as aquatic CBAs. These comprise the upper Leeu River upstream of Doringboomsfontein Dam, the Leeu River where the seep wetlands occur near Modderdrift, the Frieslandkloof River within the kloof, in its upper reaches in the
1.1.2. Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure,	
1.1.3. Critical Biodiversity Areas ("CBAs") and Ecological Support Areas ("ESAs"),	
1.1.4. Conservation targets,	
1.1.5. Ecological drivers of the ecosystem,	
1.1.6. Environmental Management Framework,	
1.1.7. Spatial Development Framework, and	
1.1.8. Global and international responsibilities relating to the environment (e.g. RAMSAR sites, Climate Change, etc.).	

NEED	
Question	Response
	southern extent of the larger site, as well as the depression wetland in the northern extent of the larger site. ▪ The Leeu River is more impacted by surrounding land use activities and is in a moderately modified ecological condition. ▪ The Leeu River in the study area is deemed to be of high ecological importance and sensitivity. This is due to the importance of the larger river in providing a diversity of habitats and being an important refuge for biota as well as corridors for the movement of water within the landscape. ▪ The smaller tributaries are of moderate ecological importance and sensitivity and tend to be more sensitive to flow and water quality changes. ▪ The wetland features within the study area are considered of moderate ecological importance and sensitivity, providing habitat and ecological corridors for the movement of biota. ▪ Based on the present ecological condition and the ecological sensitivity and importance, aquatic sensitivity and recommended buffers have been mapped to protect these ecosystems. The recommended buffer area between the aquatic features and the project components to ensure these aquatic ecosystems are not impacted by the proposed activities is at least 35 m for the smaller drainage features and 50m from the larger rivers. The Terrestrial Biodiversity and Plant and Animal Species Scoping Level Assessment determined the following: ▪ Beau Valley WEF project site is mapped as falling largely within the Upper Karoo Hardeveld vegetation type with some Western Upper Karoo along the site access and Southern Karoo Riviere along the major drainage lines of the site. ▪ In terms of fauna, there are several listed fauna which occur in the area and which would potentially be impacted by the development. This includes the Riverine Rabbit, Black-footed Cat, Mountain Reedbuck and Karoo Dwarf Tortoise. Of these species, it is only the Karoo Dwarf Tortoise that are considered to be potentially impacted by the development and as such would require a full species assessment in the EIA phase of the project application.

NEED	
Question	Response
	- In terms of the sensitivity and constraints mapping conducted as part of this study, there are numerous constraints operating across the site, associated largely with the steep slopes and dolerite outcrops of the site and to a lesser degree the larger drainage features of the area. The Avifauna Scoping Level Assessment noted the following: - The PAOI is located right on the northern boundary of the Karoo National Park Important Bird Area (IBA) (Marnewick et al. 2015). The IBA itself follows the boundary of the Karoo National Park. The dominant topographical feature is the Nuweveld escarpment which, with peaks of over 1900m a.s.l., towers over plains averaging 900m a.s.l. Riverbeds, which are dry for most of the year, descend sharply from the escarpment to meander across the flat plains in the far west and east of the park (Marnewick et al. 2015). The variation in altitude yields a wide diversity of micro-habitats, resulting in a distinct contrast between the harsher vegetation of the upper plateau, where grassland intruded by shrubland elements is dominant, and the lower plain, where dwarf scrub dominates and thornveld occurs in the moister valleys and watercourses. - The study area is not located within any Protected Areas and it is not located within a National Protected Areas Expansion Strategy (NPAES) focus area. - A total of 107 species could potentially occur within the Broader Area where the proposed Project is located (Appendix E). Of these, 14 are classified as priority species for wind energy developments. All 14 priority species were recorded during the on-site monitoring so far and all have a medium to high probability of occurring regularly in the PAOI. Seven (7) Red Data species were recorded during the on-site surveys, namely Blue Crane, Karoo Korhaan, Kori Bustard, Ludwig's Bustard, Martial Eagle, Secretarybird, and Verreaux's Eagle. Based on the desktop analysis and the Site Sensitivity Verification undertaken, the following buffers are recommended: - Very High Sensitivity - All infrastructure exclusion zones: Verreaux's Eagle nest: A 1 km all infrastructure exclusion zone is recommended to prevent the displacement of the breeding pair during the construction phase due to disturbance.

NEED	
Question	Response
	○ High Sensitivity - Drainage lines, dams, and waterpoints: It is preferable to leave some open space where possible with no solar panels, for birds to access and leave the surface water area unhindered. The buffer zones as recommended by the Aquatic Biodiversity Specialist should be followed. ○ High Sensitivity - Verreaux's Eagle nest: A 3.7km rotor-swept area turbine exclusion zone is recommended around Verreaux's Eagle nesting sites to reduce the risk of mortality due to collisions with the wind turbines. ○ Medium Sensitivity - Verreaux's Eagle nest: A 5.2km rotor-swept area turbine exclusion zone is recommended around Verreaux's Eagle nesting sites as pro-active mitigation against displacement due to disturbance. The preliminary sensitivity map is included in Chapter 3 and Chapter 7 of this Scoping Report and will be further refined, where warranted, during the EIA Phase following detailed specialist assessments. The sensitivities identified by the various specialists during the Scoping Phase, as highlighted above, have been taken into consideration and avoided where possible to identify the Scoping phase development footprint/ development footprint. The development footprint will be further refined during the scoping and EIA phase. Following the submission of the Final Scoping report, and should the project be approved to continue to EIA phase, the specialist will undertake full impact assessments and the development footprint will be further refined.
1.2. How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity? What measures were explored to firstly avoid these negative impacts, and where these negative impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	The ecological sensitivities present within the study area will be assessed in detail in the Terrestrial Biodiversity and Plant and Animal Species, Aquatic Biodiversity, and Avifauna Impact Assessments during the EIA Phase. The specialists will identify aquatic, terrestrial and avifaunal sensitive areas within the study area that should be avoided by the proposed development, as well as any other ecologically sensitive areas and how to suitably develop within these areas so that the ecological integrity is maintained. The Terrestrial Biodiversity and Plant and Animal Species, Aquatic Biodiversity, and Avifauna Scoping Level Assessments are included in Appendix G.2, Appendix G.3 and Appendix G.4 of this Scoping Report respectively. These Scoping Level Assessments

NEED	
Question	Response
	have identified sensitivities within the study area that should be avoided, based on desktop assessments and field work. Refer to the response to Question 1.1 regarding the sensitivities identified in the Terrestrial Biodiversity and Plant and Animal Species, Aquatic Biodiversity, and Avifauna Scoping Level Assessments. The preliminary sensitivity map is included in Chapter 3 and Chapter 7 of this Scoping Report and will be further refined during the EIA Phase following detailed specialist assessments. The sensitivities identified by the various specialists during the Scoping Phase, as highlighted above, have been taken into consideration and avoided where possible to identify the Scoping phase development footprint/ development footprint. The development footprint will be further refined during the scoping phase. Following the submission of the Final Scoping report, and should the project be approved to continue to EIA phase, the specialist will undertake full impact assessments and the development footprint will be further refined. The Terrestrial Biodiversity and Plant and Animal Species Scoping Level Assessment (Appendix G.2) has identified various potential impacts during the Scoping Phase, which are discussed below: Measures to avoid, remedy, mitigate and manage impacts will be included in the Environmental Management Programme (EMPr) that will be compiled during the EIA Phase and included in the EIA Report.
1.3. How will this development pollute and/or degrade the biophysical environment? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	Various Scoping Level Assessments have been compiled and are included in Appendix G of this Scoping Report. These Scoping Level Assessments have identified sensitivities within the study area that should be avoided at the scoping phase, based on desktop assessments and field work. This has informed the identification of the Scoping phase development footprint. In addition, the Scoping Level Assessments have identified various potential negative impacts that the proposed project may result in, such as degradation to the biophysical environment and potential pollution. The associated high-level mitigation measures have also been identified. Such potential impacts are also summarised in

NEED	
Question	Response
	Chapter 6 of this Scoping Report. All the potential impacts will be assessed in further detail and refined during the EIA Phase. Measures to avoid, remedy, mitigate or manage biophysical impacts will also be included in the EMPr that will be compiled during the EIA Phase and included in the EIA Report.
1.4. What waste will be generated by this development? What measures were explored to firstly avoid waste, and where waste could not be avoided altogether; what measures were explored to minimise, reuse and/or recycle the waste? What measures have been explored to safely treat and/or dispose of unavoidable waste?	Waste will mostly be generated during the construction and decommissioning phases of the proposed project. The following waste materials are expected during the construction phase: ▪ Packaging material, such as the cardboard, plastic and wooden packaging and off-cuts; ▪ Hazardous waste from empty tins, oils, 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. During the operational phase, the facility will produce minor amounts of general waste (as a result of the offices or maintenance). Waste generated on site will be disposed of at a licenced landfill site. Refer to Chapter 2 (Project Description) of this Scoping Report for a detailed description of the waste to be generated by the proposed project. Measures to avoid, remedy, reduce, mitigate or manage waste will be included in the EMPr that will be compiled during the EIA Phase and included in the EIA Report.
1.5. How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	A Heritage Impact Assessment (HIA) was undertaken during the Scoping Phase to assess potential archaeological and cultural impacts resulting from the proposed project. A Heritage Impact Assessment (Archaeology and Cultural Heritage) has been commissioned and is included in Appendix G.6 of this Scoping Report. It is a Scoping Level Assessment intended for the Scoping Phase in terms of the 2014 National Environmental Management Act (NEMA) EIA Regulations (as amended), to capture high level assessments and to identify if there are any fatal flaws, as well as to capture the findings of the Site Sensitivity Verifications in line with the Assessment Protocols of GN

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Question	Response
	320. Thus, the requirements of the National Heritage Resources Act (Act 25 of 1999) (NHRA) (and Appendix 6 of the 2014 NEMA EIA Regulations, as amended) will be fulfilled in the EIA Phase, during which the formal HIA will be compiled. This HIA has identified the following high-level impacts at this stage: ▪ Construction Phase: ○ Potential impacts on archaeology. ○ Potential impacts on graves. ○ Potential impacts on the cultural landscape. ▪ Operational Phase: ○ Potential impacts on the cultural landscape. ▪ Decommissioning Phase: ○ Potential impacts on the cultural landscape. ▪ Cumulative Impacts: ○ Construction and Decommissioning Phases: ▪ Potential impacts on archaeology. ▪ Potential impacts on graves. ○ Operational Phase: ▪ Potential impacts on the cultural landscape. Overall, with the recommended mitigation measures being implemented, the potential impacts have been rated with a low significance during the Scoping Phase. This will be further refined during the EIA Phase and the HIA will be included in the EIA Report. The HIA will also be sent to Heritage Western Cape for comment during the EIA Phase. A Palaeontology Impact Assessment has been completed and included in Appendix G.7 of this Scoping Report. The assessment notes that the Screening Tool depicts a Medium to High palaeo-sensitivity for the majority of the study area. However, the specialist has recommended, based on a 2-day palaeontological site visit and several previous field-based and desktop Palaeontology Impact Assessment (PIA) studies in the broader De Aar – Kimberley region, that the study area is of Low to Very Low palaeo-sensitivity in

NEED	
Question	Response
	general. If any fossiliferous deposits are exposed by surface clearance or excavations during the construction phase, the Chance Fossils Finds Protocol should be fully implemented. Provided that the Chance Fossil Finds Protocol is incorporated into the EMPr and fully implemented during the construction phase, there are no objections on palaeontological heritage grounds to authorisation of the proposed project. Pending the discovery of significant new fossil finds before or during construction, <u>no further specialist palaeontological studies, monitoring or mitigation are recommended for this proposed project.</u>
1.6. How will this development use and/or impact on non-renewable natural resources? What measures were explored to ensure responsible and equitable use of the resources? How have the consequences of the depletion of the non-renewable natural resources been considered? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	Measures to avoid, remedy, mitigate or manage impacts on non-renewable natural resources will be included in the EMPr that will be compiled during the EIA Phase and included in the EIA Report. However, the proposed project is focused on the use of renewable natural resources (i.e., a Wind Energy Facility).
1.7. How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part? Will the use of the resources and/or impact on the ecosystem jeopardise the integrity of the resource and/or system taking into account carrying capacity restrictions, limits of acceptable change, and thresholds? What measures were explored to firstly avoid the use of resources, or if avoidance is not possible, to minimise the use of resources? What measures were taken to ensure responsible and equitable use of the resources? What measures were explored to enhance positive impacts?	South Africa has heavily relied on coal as a source of electricity for decades. Due to the nature of coal as a non-renewable resource that causes major environmental degradation, there is a need to identify alternative resources that could promote sustainable energy as well as cleaner energy production mechanisms. The proposed project aims to harness the wind resources available in the area for the generation of electricity. This project is seen as a source of 'clean energy' and reduces the dependence on non-renewable sources. The proposed project is intended to form part of the REIPPPP, and therefore aims to contribute to the energy mix of South Africa, in line with the IRP. The need for renewable energy is clear, with South Africa becoming an integral part of the global transition towards renewable sources of electricity generation and it is integral to alleviating South Africa's energy insecurity.
1.7.1. Does the proposed development exacerbate the increased dependency on increased use of resources to maintain economic growth or does it reduce resource dependency (i.e. de-materialised growth)? (note: sustainability requires that settlements reduce their ecological footprint by using less material and energy demands and reduce the amount of waste they generate, without compromising their quest to improve their quality of life)	The proposed project is a sustainable option for the area and the footprint will, as far as possible, avoid areas of very high environmental sensitivity. Where impacts cannot be avoided, the footprint will be placed to minimise, mitigate or manage potential impacts to the receiving environment.
1.7.2. Does the proposed use of natural resources constitute the best use thereof? Is the use justifiable when considering intra- and	

NEED	
Question	Response
intergenerational equity, and are there more important priorities for which the resources should be used (i.e. what are the opportunity costs of using these resources of the proposed development alternative?) 1.7.3. Do the proposed location, type and scale of development promote a reduced dependency on resources?	In addition, various Scoping Level Assessments have been compiled and are included in Appendix G of this Scoping Report. These Scoping Level Assessments have identified various potential negative impacts that the proposed project may result in. The associated high-level mitigation measures have also been identified. Such potential impacts are also summarised in Chapter 6 of this Scoping Report. All the potential impacts will be assessed in further detail and refined during the EIA Phase.
1.8. How were a risk-averse and cautious approach applied in terms of ecological impacts? 1.8.1. What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)? 1.8.2. What is the level of risk associated with the limits of current knowledge? 1.8.3. Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?	The precautionary approach has been adopted for this study, i.e., assuming the maximum development scenario will occur and then identifying ways to mitigate or manage these impacts. In addition, the specialist assessments that will be compiled during the EIA Phase will provide detailed feedback on any uncertainties, assumptions, and risks associated with limits of current knowledge.
1.9. How will the ecological impacts resulting from this development impact on people's environmental right in terms following: 1.9.1. Negative impacts: e.g. access to resources, opportunity costs, loss of amenity (e.g. open space), air and water quality impacts, nuisance (noise, odour, etc.), health impacts, visual impacts, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts? 1.9.2. Positive impacts: e.g. improved access to resources, improved amenity, improved air or water quality, etc. What measures were taken to enhance positive impacts?	A detailed Socio-Economic Impact Assessment will be included in the EIA Report that will consider the impact of the proposed project from a socio-economic perspective. A preliminary socio-economic profile is included in Chapter 3 of this Scoping Report and will be further refined during the EIA Phase. Scoping Level inputs have been provided by the Socio-Economic specialist and have been included in Appendix G.8 of the Scoping Report. The Scoping Level assessment has identified the following impacts at this stage: ▪ Construction Phase: ○ Potential positive impacts: ▪ Capital investment (CapEx) contributing to the national, regional and local economy; ▪ Generation of employment, income and skills; ▪ Social disruption and change in social dynamics; and ▪ Reduced quality of life and increased risks due to construction near residences. ▪ Operational Phase:

NEED	
Question	Response
	- Operational investment (OpEx) contributing to the national, regional and local economy; - Generation of employment, income and skills; - Increased community prosperity through contributions and income from the WEF; and - Increased power generation reducing the probability of load shedding. - Decommissioning Phase: - Social Reduced employment and funding.
1.10. Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts (e.g. on livelihoods, loss of heritage site, opportunity costs, etc.)?	Linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area will be considered as part of the relevant specialist assessments during the EIA Phase.
1.11. Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives / targets / considerations of the area?	The impacts on ecological integrity objectives of the area will be considered as part of the Terrestrial Biodiversity and Plant and Animal Species, Aquatic Biodiversity, and Avifauna Impact Assessments that will be undertaken during the EIA Phase. Refer to the responses provided to Questions 1.1 to 1.10 regarding the sensitivities identified in these Scoping Level Assessments, as well as the potential high-level impacts identified on terrestrial biodiversity.
1.12. Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the "best practicable environmental option" in terms of ecological considerations?	Chapter 5 of this Scoping Report includes a full description of alternatives that will be assessed during the EIA Phase. The no-go alternative and technology alternatives (relating to the BESS) will be assessed during the EIA Phase. Note that the specialists will assess Lithium-Ion and Redox Flow BESS technologies and if both are acceptable, it will be motivated to the DFFE in the EIA Phase that both options be approved in the EA (should it be granted). The Lithium-Ion BESS is currently the preferred option of the Project Applicant. Should the findings of the EIA phase (including findings from the specialists) recommend that the Redox Flow BESS is more acceptable from a risk perspective, the relevant activity relating to the storage of dangerous goods (i.e. Activity 14 of Listing Notice 1) will be included the amended Application for EA and submitted to DFFE.

NEED	
Question	Response
	With regards to technology options, these include options relating to the wind turbine generator technology options and generation capacity, however these will not be weighed against each other in order to identify the preferred alternative at the end of the EIA Phase. The approach followed to identify the buildable areas was to use environmental and social constraints to avoid sensitive features, thus applying mitigation hierarchy thinking. This approach replaces the need to rank alternative sites and locations, as it leads to the selection of the least sensitive development footprint.
1.13. Describe the positive and negative cumulative ecological/biophysical impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and existing and other planned developments in the area?	Refer to Chapter 6 of this Scoping Report where the potential cumulative impacts are discussed, as well as each Scoping Level Specialist Assessment included in Appendix G. Chapter 7 of this Scoping Report contains a list of all other renewable energy projects within a 30 km radius that are being considered in the cumulative impact assessment. The cumulative impacts will be assessed during the EIA Phase.
2.1. What is the socio-economic context of the area, based on, amongst other considerations, the following considerations?	
2.1.1. The IDP (and its sector plans' vision, objectives, strategies, indicators and targets) and any other strategic plans, frameworks of policies applicable to the area.	The proposed project is entirely located within the Beaufort West Local Municipality (BWLM) and Central Karoo District Municipality (CKDM). The vision of the BWLM Integrated Development Plan (IDP) (2017-2022) is to be the economic gateway in the Central Karoo, where people are developed and live in harmony together. Further unpacking of the vision indicates the provision of directives regarding the growth of the economy and ensuring financial sustainability among other areas in which development is required. The five priority areas of the IDP are: 1. Service to the people – seeking to improve and maintain basic service delivery through infrastructure development;

NEED	
Question	Response
	2. Sustainable economic growth by leveraging competitive advantages of the region (The IDP identifies low economic growth as one of the main reasons for the lack of new labour entrants into the economy); 3. A well-run administration that is efficient, effective and has the right skills mix; 4. Ensure financial sustainability; and 5. Be a transparent organisation. The Central Karoo region is attractive for renewable energy projects due to the significant solar and wind energy resources. Various renewable energy projects have been approved in the CKDM area, but most have yet to be implemented. The CKDM Strategic Development Framework (SDF) has identified considerable opportunities for expanding renewable energy projects specifically related to solar and wind power generation in the CKDM, which encourages IPPs to locate in the region and to create downstream business- and employment opportunities (CKDM, 2019⁹). According to the Western Cape Provincial SDF (WCG, 2014¹⁰), renewable energy generation is also deemed one of the most promising economic sectors in the Central Karoo region that will add significant value to the regional Gross Domestic Product (GDP), while having the potential to change the composition and character of towns throughout the municipal district (CKDM, 2017¹¹). Furthermore, the proposed project is also located within the Central Strategic Transmission Corridor that was gazetted in February 2018. This facilitates large scale

⁹ Central Karoo District Municipality. (2019). Central Karoo District Municipality Spatial Development Framework.

Central Karoo District Municipality. (2017). Central Karoo District Municipality Integrated Development Plan 2017-2022.

¹⁰ Western Cape Government. (2014) The Western Cape Provincial Spatial Development Framework. Retrieved from <https://cer.org.za/wp-content/uploads/2015/07/Western-Cape-Provincial-SDF-2014.pdf>

¹¹ Central Karoo District Municipality. (2017). Central Karoo District Municipality Integrated Development Plan 2017-2022.

NEED	
Question	Response
	transmission and distribution EGI, which would be needed to support the proposed project. Therefore, the proposed project is in line with the planning for the area. The proposed project will create job opportunities and economic spin offs during the construction and operational phases (if an EA is granted by the DFFE). Approximately 300 to 400 employment opportunities will be created during the construction phase, and approximately 40 to 50 during the operational phase of the proposed project. It should, however, be noted that employment during the construction phase will be temporary, whilst the employment opportunities during the operational phase will be long-term. Therefore, the proposed project would help to address the need for increased electricity supply to the national grid while also providing advanced skills transfer and training to the local communities and creating contractual and permanent employment in the area. These factors are linked to the REIPPPP.
2.1.2. Spatial priorities and desired spatial patterns (e.g. need for integrated of segregated communities, need to upgrade informal settlements, need for densification, etc.)	This is not applicable as the proposed project is located within a rural area and the site is zoned for agricultural use.
2.1.3. Spatial characteristics (e.g. existing land uses, planned land uses, cultural landscapes, etc.)	The land within the study area is currently being used for Low Density grazing. The farm is located in a sheep farming agricultural region. Grazing is the dominant agricultural land use on the site and surrounds. An Agricultural Compliance Statement has been included in Appendix G.1 of this Scoping Report based on a Scoping Level and will be refined and expanded on, where necessary, during the EIA Phase. It notes that grazing capacity of the site is low at 28 to 30 hectares per large stock unit. Infrastructure such as homesteads, livestock pens, windpumps, waterpoints, gravel farm roads and fences are located on the affected properties. Furthermore, existing overhead powerlines run through the study area. An HIA will be undertaken during the EIA Phase to assess potential archaeological and cultural impacts resulting from the proposed project. A Scoping Level Heritage Assessment (Archaeology and Cultural Heritage) has been commissioned and is included in Appendix G.6 of this Scoping Report. Refer to the response to Question 1.5 for detailed

NEED	
Question	Response
	feedback on the high-level impacts identified on Archaeology and Cultural Heritage at this stage, as well as feedback on the palaeontology. Should the proposed project proceed, it is not expected that the agricultural activities present on site will be significantly threatened. The Compliance Statement considers the impact of the proposed project in terms of the land capability and agricultural potential. The Statement notes that the site has low agricultural potential predominantly because of climate constraints, but also because of soil constraints. As a result of the constraints, the site is unsuitable for crop production, and agricultural production is limited to low-capacity grazing. The land impacted by the development footprint is verified in this assessment as being of low to medium agricultural sensitivity. As noted, an EMPr will be compiled for the proposed project to ensure that all potential negative impacts identified are suitably managed and mitigated, and potential positive impacts are enhanced. The impact on the sense of place is difficult to predict and would potentially be ambiguous. This is due to the subjective nature of perceptions regarding the relative attraction or disturbance of the wind facilities in a rural landscape. The visual impact and considerations will be further assessed as part of the Visual Impact Assessment to be undertaken during the EIA Phase. A Scoping Level Visual Impact Assessment (VIA) has been commissioned and is included in Appendix G.5 of this Scoping Report. This study area is known as a tourist destination owing to the presence of the Karoo National Park, a midway stop between Gauteng and Cape Town, as well as the small historic town of Beaufort West. The Scoping Level VIA recommends that the following be undertaken: Detailed viewsheds and analysis of visual impacts is required in the EIA Phase of the project.

NEED	
Question	Response
	- Determination of the cumulative visual exposure for the seven (7) WEFs and 2 Solar PV energy facilities that form part of the project cluster, as well as any other renewable projects within the area. - Detailed mitigation measures for visual impacts as a result of associated infrastructure must be developed in the next phase of the EIA process. The preliminary sensitivity map is included in Chapter 3 and Chapter 7 of this Scoping Report and will be further refined during the EIA Phase following detailed specialist assessments. The sensitivities identified by the various specialists during the Scoping Phase have been taken into consideration and avoided where possible in order to identify the Scoping phase development footprint. This area will be further assessed by the specialists in the EIA phase.
2.1.4. Municipal Economic Development Strategy ("LED Strategy").	The LED Strategy will be considered, and potential alignment will be discussed in the EIA Report. However, it should be noted that one of the thrusts in the National LED Strategy is focused on renewable energy development and enhancing efficiency in the energy sector.
2.2. Considering the socio-economic context, what will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area?	This will be addressed in the Socio-Economic Impact Assessment that will be included in the EIA Report. The assessment will consider the impact of the proposed project from a socio-economic perspective.
2.2.1. Will the development complement the local socio-economic initiatives (such as local economic development (LED) initiatives), or skills development programs?	As noted in the Socio-Economic Scoping Level Assessment (Appendix G.8 of the Final Scoping Report), the REIPPPP has contributed significantly towards meeting South Africa's Greenhouse Gas emission targets and, at the same time, supporting energy security, economic stability, and environmental sustainability. The establishment of renewable energy facilities, such as the proposed project, therefore, not only address the environmental issues associated with climate change and consumption of scarce water resources, but also creates significant socio-economic opportunities and benefits, specifically for historically disadvantaged, rural communities. A preliminary socio-economic profile is included in Chapter 3 of this Scoping Report and will be further refined during the EIA Phase. Scoping Level inputs have been provided by the Socio-Economic specialist and have been included in Appendix G.8 of the Scoping

NEED	
Question	Response
	Report. Refer to the response provided to Question 1.9 for a description of the impacts identified at the Scoping Level.
2.3. How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?	These needs and interests of the relevant communities will be addressed in the Socio-Economic Impact Assessment that will be included in the EIA Report. Issues raised by Interested and Affected Parties (I&APs) to this effect will also be addressed in the relevant Comments and Responses Report of the EIA Report. A Comments and Responses Report for all issues raised by I&APs during the 30-day review of the Draft Scoping Report, which extends from 4 September 2023 to 6 October 2023, is included as Appendix E Part 2 of this Final Scoping Report.
2.4. Will the development result in equitable (intra- and inter-generational) impact distribution, in the short- and long term? Will the impact be socially and economically sustainable in the short- and long-term?	This will be addressed in the Socio-Economic Impact Assessment that will be included in the EIA Report. The assessment will consider the impact of the proposed project from a socio-economic perspective. Scoping Level inputs have been provided by the Socio-Economic specialist and have been included in Appendix G.8 of the Scoping Report. Refer to the response provided to Question 1.9 for a description of the impacts identified at the Scoping Level.
2.5. In terms of location, describe how the placement of the proposed development will:	
2.5.1. result in the creation of residential and employment opportunities in close proximity to or integrated with each other	Local employment opportunities will be provided as far as possible. Approximately 300 to 400 employment opportunities will be created during the construction phase, and approximately 40 to 50 during the operational phase of the proposed project. It should, however, be noted that employment during the construction phase will be temporary, whilst the employment opportunities during the operational phase will be long-term.
2.5.2. reduce the need for transport of people and goods	This is not applicable as the proposed project is located within a remote rural area and the site is zoned for agricultural use. This project is a renewable energy project proposal. Nevertheless, traffic related impacts of the proposed project have been addressed in the TIA which is included in the Scoping Report. These issues will be further addressed in the TIA during the EIA Phase, as applicable. A Scoping Level Assessment has been provided in Appendix G.9 of this Scoping Report.
2.5.3. result in access to public transport or enable non-motorised and pedestrian transport (e.g. will the development result in densification and the achievement of thresholds in terms public transport)	This is not applicable as the proposed project is located within a remote rural area and the site is zoned for agricultural use. This project is a renewable energy project proposal. Refer to the response provided to Question 2.5.2.

NEED	
Question	Response
2.5.4. compliment other uses in the area	As noted above, the land within the study area is currently being used for Low Density grazing. The Agricultural Compliance Statement (Appendix G.1) notes the following: ▪ The site has low agricultural potential predominantly because of climate constraints, but also because of soil constraints. As a result of the constraints, the site is unsuitable for crop production, and agricultural production is limited to low-capacity grazing. The land impacted by the development footprint is verified in this assessment as being of low to medium agricultural sensitivity. ▪ The amount of agricultural land used by the proposed project is well within the allowable development limits prescribed by the Agricultural Protocol of GN 320. ▪ The proposed project offers positive impact on agriculture by way of improved financial security for farming operations, as well as security benefits against stock theft and other crime. ▪ The proposed development will also have the wider societal benefits of generating additional income and employment in the local economy. Based on the above the specialist concluded that from an agricultural impact point of view, it is recommended that the development be approved.
2.5.5. be in line with the planning for the area	The Central Karoo District Municipality Strategic Development Framework (SDF) has identified considerable opportunities for expanding renewable energy projects specifically related to solar and wind power generation in the Central Karoo District Municipality, which encourages IPPs to locate in the region and to create downstream business- and employment opportunities (CKDM, 2019). According to the Western Cape Provincial SDF (WCG, 2014), renewable energy generation is also deemed one of the most promising economic sectors in the Central Karoo region that will add significant value to the regional Gross Domestic Product (GDPR), while having the potential to change the composition and character of towns throughout the municipal district (CKDM, 2017). Furthermore, the proposed project is also located within the Central Strategic Transmission Corridor that was gazetted in February 2018. This facilitates large scale

NEED	
Question	Response
	transmission and distribution EGI, which would be needed to support the proposed project. Therefore, the proposed project is in line with the planning for the area
2.5.6. for urban related development, make use of the underutilised land available with the urban edge	This is not applicable as the proposed project is located within a remote rural area and the site is zoned for agricultural use.
2.5.7. optimise the use of existing resources and infrastructure	GEED consulted with Eskom to formulate connection options for the GEED Renewable Energy Cluster projects. Following the inputs and recommendations from Eskom, two power evacuation options were proposed. These options take into consideration the status of the RedCap Nuweveld EGI power lines, as well as the lack of clarity surrounding Eskom's future plans for the area. Through consultation with Eskom, the Project Developer has determined that one of two 400 kV grid connection opportunities exist which includes: - Option 1: Power evacuated via 400 kV OHPL from GEED collector sub-station (SS) to the proposed Nuweveld Main Transmission Substation (MTS) - Option 2: Power evacuated from GEED collector SS via 400 kV Loop-in Loop-out (LIL) extension of Eskom proposed 400 kV OHPL between proposed Nuweveld MTS and the existing Eskom Droërvier MTS. - Option 3: Power evacuated via 400 kV OHPL from GEED collector sub-station (SS) to the future proposed Eskom Klipkraal Main Transmission Substation (MTS) A separate environmental assessment process will be undertaken for the proposed development of the 400 kV power lines, 400 kV GEED Collector Substation and associated EGI.
2.5.8. opportunity costs in terms of bulk infrastructure expansions in non-priority areas (e.g. not aligned with the bulk infrastructure planning for the settlement that reflects the spatial reconstruction priorities of the settlement)	The proposed project is a renewable energy project and not related to bulk infrastructure expansion.
2.5.9. discourage "urban sprawl" and contribute to compaction/densification	This will be addressed in the Socio-Economic Impact Assessment that will be included in the EIA Report.
2.5.10. contribute to the correction of the historically distorted spatial patterns of settlements and to the optimum use of existing infrastructure in excess of current needs	This is not applicable as the proposed project is located within a remote rural area and the site is zoned for agricultural use.

NEED	
Question	Response
2.5.11. encourage environmentally sustainable land development practices and processes	The development of a renewable energy facility is a sustainable land development practice provided it is constructed and operated in an environmentally conscious manner.
2.5.12. take into account special locational factors that might favour the specific location (e.g. the location of a strategic mineral resource, access to the port, access to rail, etc.)	Refer to Chapter 5 of this Scoping Report for a description of the process undertaken to identify the study area as the preferred site for the proposed WEF development.
2.5.13. the investment in the settlement or area in question will generate the highest socio-economic returns (i.e. an area with high economic potential)	This will be addressed within the Socio-Economic Impact Assessment that will be included in the EIA Report.
2.5.14. impact on the sense of history, sense of place and heritage of the area and the socio-cultural and cultural-historic characteristics and sensitivities of the area	An HIA will be undertaken during the EIA Phase to assess potential archaeological and cultural impacts resulting from the proposed project. A Scoping Level Heritage Assessment (Archaeology and Cultural Heritage) has been commissioned and is included in Appendix G.6 of this Scoping Report. Refer to the response to Question 1.5 for detailed feedback on the high-level impacts identified on Archaeology and Cultural Heritage at this stage, as well as feedback on the palaeontology. The visual impact and considerations, including sense of place, will be further assessed as part of the Visual Impact Assessment to be undertaken as part of the EIA Phase. A Scoping Level Visual Impact Assessment has been commissioned and is included in Appendix G.5 of this Scoping Report. Refer to the response provided to Question 2.1.3 for additional feedback on the potential visual impacts.
2.5.15. in terms of the nature, scale and location of the development promote or act as a catalyst to create a more integrated settlement?	Chapter 7 of this Scoping Report includes a list of other renewable energy projects within a 30 km radius that have received EA or are currently going through an Environmental Assessment process.
2.6. How were a risk-averse and cautious approach applied in terms of socio-economic impacts?	
2.6.1. What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?	The precautionary approach has been adopted for this study, i.e, assuming the maximum development scenario will occur and then identifying ways to mitigate or manage these impacts. In addition, the specialist assessments that will be compiled during the EIA Phase will provide detailed feedback on any uncertainties, assumptions, and risks associated with
2.6.2. What is the level of risk (note: related to inequality, social fabric, livelihoods, vulnerable communities, critical resources, economic vulnerability and sustainability) associated with the limits of current knowledge?	

NEED	
Question	Response
2.6.3. Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?	limits of current knowledge. The Socio-Economic Scoping Level Specialist Assessment included in Appendix G.8 of this Scoping Report provides high-level input on the assumptions and limitations at the scoping phase.
2.7. How will the socio-economic impacts resulting from this development impact on people's environmental right in terms following:	
2.7.1. Negative impacts: e.g. health (e.g. HIV-Aids), safety, social ills, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?	A detailed Socio-Economic Impact Assessment will be included in the EIA Report that will consider the impact of the proposed project from a socio-economic perspective. A preliminary socio-economic profile is included in Chapter 3 of this Scoping Report and will be further refined during the EIA Phase. Scoping Level inputs have been provided by the Socio-Economic specialist and have been included in Appendix G.8 of the Scoping Report. Refer to the response provided to Question 1.9 for a description of the impacts identified in the Socio-Economic Scoping Level assessment In addition, measures to avoid, remedy, mitigate or manage negative socio-economic impacts and enhance positive socio-economic impacts will be included in the EMPr that will be compiled during the EIA Phase and included in the EIA Report. Linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area, as well as how the potential socio-economic impacts will result in ecological impacts will be considered as part of the relevant specialist assessments during the EIA Phase. With regard to the best practicable environmental option, Chapter 5 of this Scoping Report includes a full description of alternatives that will be assessed during the EIA Phase. The no-go alternative, and technology alternatives (relating to the BESS) will be assessed during the EIA Phase. Refer to the response provided to Question 1.12 above for additional information on the alternatives to be considered.
2.7.2. Positive impacts. What measures were taken to enhance positive impacts?	
2.8. Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socioeconomic impacts will result in ecological impacts (e.g. over utilisation of natural resources, etc.)?	
2.9. What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?	
2.10. What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons (who are the beneficiaries and is the development located appropriately)? Considering the need for social equity and justice, do the alternatives identified, allow the "best practicable environmental option" to be selected, or is there a need for other alternatives to be considered?	
2.11. What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination?	
2.12. What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?	

NEED	
Question	Response
2.13. What measures were taken to:	
2.13.1. ensure the participation of all interested and affected parties	The Public Participation Process (PPP) that was undertaken during the Scoping Phase is described in Chapter 4 of this Scoping Report, and the PPP that will be undertaken during the EIA Phase is described in Chapter 7 of this Scoping Report. The PPP will comply with the 2014 NEMA EIA Regulations (as amended). The Draft Scoping Report was released for a 30-day comment period, extending from 4 September 2023 to 6 October 2023, to all the relevant authorities, I&APs and stakeholders. Various methods were employed to notify potential I&APs of the proposed project, namely, through newspaper advertisements, site notices boards, notification letters and communication via email, as well as text messages, and telephonic discussions where possible. Copies of the comments received, and a Comments and Responses Report are included in Appendix E of this Final Scoping Report.
2.13.2. provide all people with an opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation	
2.13.3. ensure participation by vulnerable and disadvantaged persons	
2.13.4. promote community wellbeing and empowerment through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means	The Scoping and EIA Process will aim to take cognisance of all interests, needs, and values espoused by all I&APs. Opportunity for public participation will be provided to all I&APs throughout the Scoping and EIA Process in terms of the 2014 NEMA EIA Regulations (as amended).
2.13.5. ensure openness and transparency, and access to information in terms of the process	The PPP that is being undertaken during the Scoping Phase is described in Chapter 4 of this Scoping Report, and the PPP that will be undertaken during the EIA Phase is described in Chapter 7 of this Scoping Report. Refer to the responses provided to Questions 2.13.1 – 2.13.3 above.
2.13.6. ensure that the interests, needs and values of all interested and affected parties were taken into account and that adequate recognition were given to all forms of knowledge, including traditional and ordinary knowledge	The EIA process will take cognisance of relevant interests, needs and values adopted by I&APs.
2.13.7. ensure that the vital role of women and youth in environmental management and development were recognised and their full participation therein was promoted	Public participation of all I&APs will be promoted and opportunities for engagement will be provided during the EIA process.
2.14. Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community (e.g. a mixture of low-, middle-, and high-income	This will be addressed in the Socio-Economic Impact Assessment that will be included in the EIA Report. Refer to the responses provided to Questions 1.9, 2.2 and 2.3.

NEED	
Question	Response
housing opportunities) that is consistent with the priority needs of the local area (or that is proportional to the needs of an area)?	
2.15. What measures have been taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected?	An EMPr will be developed during the EIA Phase to address environmental, health and safety concerns. An Environmental Control Officer (ECO) will be appointed to monitor compliance with the EMPr and EA (should such authorisation be granted) during the construction and operational phases.
2.16. Describe how the development will impact on job creation in terms of, amongst other aspects:	
2.16.1. the number of temporary versus permanent jobs that will be created	This will be addressed in the Socio-Economic Impact Assessment that will be included in the EIA Report. Refer to the response provided to Question 1.9 for a description of the impacts identified at the Scoping Level from a socio-economic perspective, and also the responses to Questions 2.1.1 and 2.5.1 for feedback on potential employment opportunities.
2.16.2. whether the labour available in the area will be able to take up the job opportunities (i.e. do the required skills match the skills available in the area)	
2.16.3. the distance from where labourers will have to travel	
2.16.4. the location of jobs opportunities versus the location of impacts (i.e. equitable distribution of costs and benefits)	
2.16.5. the opportunity costs in terms of job creation (e.g. a mine might create 100 jobs, but impact on 1000 agricultural jobs, etc.).	
2.17. What measures were taken to ensure:	
2.17.1. that there were intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment	Various government departments have been listed as I&APs and were given the opportunity to comment on the Draft Scoping Report, extending 4 September 2023 to 6 October 2023, and will be given the opportunity to comment on the Draft EIA Report during the respective 30-day public participation period.
2.17.2. that actual or potential conflicts of interest between organs of state were resolved through conflict resolution procedures?	This will be determined during the EIA Phase (following the PPP undertaken as part of the Scoping Phase).
2.18. What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage?	The proposed project will adhere to the principles of environmental management in NEMA. Measures taken to ensure adherence to the principles of NEMA will be determined during the EIA Phase. In addition, the outcomes of this Scoping and EIA Process and the associated conditions of the EA (should it be received) will serve to address this question.

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Question	Response
2.19. Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?	It would be premature to decide whether proposed mitigation measures are realistic prior to the completion of the Impact Assessment Phase of this Scoping and EIA Process. Therefore, the practicality of mitigation measures shall be determined during the EIA Phase. The proposed mitigation measures to be included in the EMPr will be informed by the specialist studies undertaken. This will include a detailed assessment of the environment as well as the impacts associated with the proposed development.
2.20. What measures were taken to ensure that the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects will be paid for by those responsible for harming the environment?	The EMPr for the proposed project (to be included in the EIA Report) will form part of the contractual agreement and must be adhered to by the contractors, construction workers and the Project Applicant. The EMPr will include measures to ensure that the costs to potentially remedy pollution, environmental degradation and consequent adverse health effects will be paid for by those responsible for the relevant environmental impacts. The EMPr will accordingly include measures to ensure that the costs to potentially prevent, control or minimise further pollution, environmental damage or adverse health effects will be paid for by those responsible for the relevant environmental impacts. Roles and responsibilities for the implementation of management actions, and monitoring thereof, will be included in the EMPr.
2.21. Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the best practicable environmental option in terms of socio-economic considerations?	Agriculture on site is influenced by climatic variables and limitations. Renewable energy development is a suitable land use option for the site. The proposed project would be more robust in terms of economic viability and profitability while also being largely uninfluenced by climate change variables. The proposed project would also provide the farm owners with additional income by way of lease agreements and will also contribute to local socio-economic upliftment through job creation. Chapter 5 of this Scoping Report includes a full description of alternatives that will be assessed during the EIA Phase. The no-go alternative, and technology alternatives (relating to the BESS) will be assessed during the EIA Phase. Refer to the response provided to Question 1.12 above for additional information on the alternatives to be considered.
2.22. Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope, and nature of the project in relation to its location and other planned developments in the area?	The potential cumulative impacts resulting from the proposed project can only be objectively determined at the end of the EIA process. These will be assessed as part of the EIA Phase.

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Question	Response
	Refer to Chapter 6 of this Scoping Report where the potential cumulative impacts are discussed for this project, where relevant, as well as the Socio-Economic Scoping Level Specialist Assessment included in Appendix G.8. The Socio-Economic Scoping Level Specialist Assessment identified the following cumulative impacts at this stage: ▪ Stimulation of economic and employment growth; and ▪ Increased community prosperity through contributions and income from IPPs. Chapter 6 of this Scoping Report contains a list of all other renewable energy projects within a 30 km radius that are being considered in the cumulative impact assessment. The cumulative impacts will be assessed during the EIA Phase.

1.9. Objectives for this Scoping Report

The Scoping Phase of the EIA refers to the process of determining the spatial and temporal boundaries for the EIA. In broad terms, the objectives of the Scoping Process in terms of the 2014 NEMA EIA Regulations (as amended) are to:

- Confirm the process to be followed and opportunities for stakeholder engagement;
- Clarify the project scope to be covered;
- Identify and confirm the preferred activity and technology alternative;
- Identify and confirm the preferred site for the preferred activity;
- Identify the key issues to be addressed in the impact assessment phase and the approach to be followed in addressing these issues; and
- Confirm the level of assessment to be undertaken during the impact assessment.

This is achieved through parallel initiatives of consulting with:

- The lead authorities involved in the decision-making for this Application for EA;
- The public to ensure that local issues are well understood; and
- The EIA specialist team to ensure that technical issues are identified.

The Scoping Process is supported by a review of relevant background literature on the local area. Through this comprehensive process, the environmental assessment can identify and focus on key issues requiring further assessment during the EIA Phase.

The primary objective of the Scoping Report is to present key stakeholders (including affected organs of state) with an overview of the proposed project and key issues that require assessment in the EIA Phase and allows the opportunity for the identification of additional issues that may require assessment.

The Draft Scoping Report (DSR) was made available to all potential and registered Interested and Affected Parties (I&APs), Organs of State and relevant stakeholders for a 30-day review period extending from 4 September 2023 to 6 October 2023, excluding public holidays. Issues raised in response to the Draft Scoping Report that was released for a 30-day comment period, extending from 4 September 2023 to 6 October 2023 are captured in the Comments and Responses Report, which is included as Appendix E Part 2 of this Final Scoping Report. The Final Scoping Report is being submitted to the DFFE for decision-making (i.e., approval or rejection) in line with Regulation 21 (1) of GN R326. This approval is planned to mark the end of the Scoping Phase after which the EIA Process moves into the impact assessment and reporting phase.

In terms of legal requirements, a crucial objective of the Scoping Report is to satisfy the requirements of Appendix 2 of the 2014 NEMA EIA Regulations (as amended), as noted in Regulation 21 (3) of the GN R326. This section regulates and prescribes the content of the Scoping Report and specifies the type of supporting information that must accompany the submission of the Scoping Report to the authorities. An overview of where the requirements of Appendix 2 of the 2014 NEMA EIA Regulations (as amended) are addressed in this Scoping Report is presented in Table 1.3.

Furthermore, this process has been designed to satisfy the requirements of Regulations 41, 42, 43 and 44 of the 2014 NEMA EIA Regulations (as amended) relating to the PPP and, specifically, the registration of and submissions from I&APs.

**Table 1.3: Compliance with Appendix 2 of the 2014 NEMA EIA Regulations
(as amended)**

Section of the EIA Regulations	Requirements for a Scoping Report in terms of Appendix 2 of the 2014 NEMA EIA Regulations (as amended, GN R326)	Chapter / Appendix
Appendix 2 - (2)(1)(a)	Details of - i. the EAP who prepared the report; and ii. the expertise of the EAP, including a curriculum vitae;	Chapter 1, Appendix A and Appendix B
Appendix 2 - (2)(1)(b)	The location of the activity, including - i. the 21-digit Surveyor General code of each cadastral land parcel; ii. where available, the physical address and farm name; iii. where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	Chapter 1 and Chapter 2
Appendix 2 - (2)(1)(c)	A plan which locates the proposed activity or activities applied for at an appropriate scale, or if it is - i. a linear activity, a description, and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or ii. on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	Chapter 1, Chapter 2, Chapter 3, Chapter 7, Appendix C and Appendix G
Appendix 2 - (2)(1)(d)	A description of the scope of the proposed activity, including – i. all listed and specified activities triggered; ii. a description of the activities to be undertaken, including associated structures and infrastructure;	Chapter 2 and Chapter 4
Appendix 2 - (2)(1)(e)	A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process;	Chapter 4
Appendix 2 - (2)(1)(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;	Chapter 1
Appendix 2 - (2)(1)(g)	A full description of the process followed to reach the proposed preferred activity, site and location of the development footprint within the site, including - i. details of all the alternatives considered;	Chapter 5
	ii. details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	Chapter 4, Appendix D, Appendix E, Appendix F
	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;	This is included in Appendix E of the Final Scoping Report following issues raised by I&APs on the Draft Scoping Report
	iv. the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Chapter 3, Chapter 5, Chapter 6 and Appendix G

**SCOPING REPORT: Scoping and Environmental Impact Assessment (S&EIA) Process for
the Proposed Development of Beau Valley Wind Energy Facility and associated
infrastructure, near Beaufort West, Western Cape Province**

Section of the EIA Regulations	Requirements for a Scoping Report in terms of Appendix 2 of the 2014 NEMA EIA Regulations (as amended, GN R326)	Chapter / Appendix
	v. the impacts and risks which have informed the identification of each alternative, including nature, significance, consequence, extent, duration, and probability of such identified impacts, including the degree to which these impacts – (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated;	Chapter 5, Chapter 6 and Appendix G
	vi. the methodology used in identifying and ranking the nature, significance, consequences, extent, duration, and probability of potential environmental impacts and risks associated with the alternatives;	Chapter 7 and Appendix G
	vii. positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Chapter 5, Chapter 6 and Appendix G
	viii. the possible mitigation measures that could be applied and level of residual risk;	Chapter 5, Chapter 6 and Appendix G
	ix. the outcome of the site selection matrix;	Chapter 5
	x. if no alternatives, including alternative locations for the activity, were investigated, the motivation for not considering such; and	Chapter 5
	xi. a concluding statement indicating the preferred alternatives, including the preferred location of the activity;	Chapter 5
Appendix 2 - (2)(1)(h)	A plan of study for undertaking the environmental impact assessment process to be undertaken, including - i. a description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity; ii. a description of the aspects to be assessed as part of the environmental impact assessment process; iii. aspects to be assessed by specialists; iv. a description of the proposed method of assessing the environmental aspects, including aspects to be assessed by specialists; v. a description of the proposed method of assessing duration and significance; vi. an indication of the stages at which the competent authority will be consulted; vii. particulars of the public participation process that will be conducted during the environmental impact assessment process; and viii. a description of the tasks that will be undertaken as part of the environmental impact assessment process; ix. identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.	Chapter 7
Appendix 2 - (2)(1)(i)	An undertaking under oath or affirmation by the EAP in relation to - i. the correctness of the information provided in the report; ii. the inclusion of comments and inputs from stakeholders and interested and affected parties; and iii. any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties;	Appendix B

SCOPING REPORT: Scoping and Environmental Impact Assessment (S&EIA) Process for
the Proposed Development of Beau Valley Wind Energy Facility and associated
infrastructure, near Beaufort West, Western Cape Province

Section of the EIA Regulations	Requirements for a Scoping Report in terms of Appendix 2 of the 2014 NEMA EIA Regulations (as amended, GN R326)	Chapter / Appendix
Appendix 2 - (2)(1)(j)	An undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and interested and affected parties on the plan of study for undertaking the environmental impact assessment;	Appendix B
Appendix 2 - (2)(1)(k)	Where applicable, any specific information required by the competent authority.	Not Applicable
Appendix 2 - (2)(1)(l)	Any other matter required in terms of section 24(4)(a) and (b) of the Act.	N/A
Appendix 2 - (2)(2)	Where a government notice gazetted by the Minister provides for any protocol or minimum information requirement to be applied to a scoping report, the requirements as indicated in such notice will apply.	Not applicable in terms of the Scoping Report, however various gazetted assessment and reporting protocols will be complied with for the specialist studies in the EIA Phase. Refer to Chapter 4 of this Scoping Report for additional information.

Scoping and Environmental Impact
Assessment for the proposed development
of the Beau Valley Wind Energy Facility and
associated infrastructure near Beaufort West
in the Western Cape



SCOPING REPORT

CHAPTER 2: Project Description



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2. PROJECT DESCRIPTION

This chapter provides an overview of the conceptual project design and technology for the proposed Beau Valley WEF and associated infrastructure, as provided by the Project Developer, Genesis Eco-Energy Developments (Pty) Ltd (hereafter “GEED”).

The purpose of this chapter is to present sufficient project information on the proposed project to inform the Scoping and Environmental Impact Assessment (EIA) Process in terms of design parameters applicable to the project.

As noted in Chapter 1 of this Scoping Report, GEED is proposing to develop three clusters of WEF and SEFs, namely the Northern, Middle and Southern Cluster near Beaufort West. This Scoping and EIA process focus on the **Genesis Beau Valley Wind Energy Facility (WEF)** and associated infrastructure) (hereafter referred to as the “Beau Valley WEF” or “proposed project”) near Beaufort West in the Western Cape Province.

The proposed WEF will consist of a maximum of 25 individual turbines, which will be positioned at strategic locations on site that will be informed by the assessment inputs provided by the specialists on the EIA project team during the EIA Phase. While the exact type of turbine technology is yet to be finalised, the WEF is expected to have a total generating output capacity of 250 MW. In order to facilitate the connection of the proposed WEF to the national electrical grid network, the Project Developer is proposing the construction of a 132 kV overhead transmission powerline, to be located within a 300 m assessment corridor, and its associated electrical grid infrastructure from the onsite substation complex at the WEF to a newly proposed 132 kV / 400 kV GEED Collector Substation to be located in the Genesis Middle Cluster. A separate Application for Environmental Authorisation (EA) will be undertaken for the collector substation and 400 kV grid connection to the national electrical grid.

2.1 Definition of Project Study Area

The **study area or preferred site** for the proposed Beau Valley WEF is the **full extent** of the **affected farm properties** on which the proposed project is planned to be constructed. These farm properties are listed in Table 2.1. The full extent of this properties have been assessed by the specialists to identify environmental sensitivities and no-go areas. The preferred site serves as the study area for this Scoping and EIA Process. Therefore, the terms “site” and “study area” are used synonymously in this report.

Table 2.1: Farm Properties forming the study area

FARM PORTION	SG CODE	FARM AREA (ha)	WEF	OHPL
Doornboomfontyn RE/89	C00900000000008900000	5 758	X	
Doornboomfontyn 1/89	C00900000000008900001	2 597	X	X
Matjesfontein Farm No. 412	C00900000000041200000	22 936		X

At the commencement of this Scoping and EIA Process, the **Original Scoping Buildable Area** which falls within the study area / preferred site, was identified by the Project Applicant following

the completion of high-level environmental screening based on the Screening Tool. The Scoping Buildable Areas serve as the “development footprint” for the proposed project and falls within the preferred site / study area.

As part of this Scoping Phase, the specialists assessed and considered the entire study area / preferred site, which include the **Original Scoping Buildable Area**. Findings of the Scoping Level Specialist Assessments are included in Appendix G and integrated in relevant sections of the Scoping Report.

Following the identification of sensitivities by the specialists and relevant specialist fieldwork during the Scoping Phase, the Project Developer took such sensitivities, and other considerations, into account and formulated the **Revised Scoping Buildable Area or development footprint for the proposed project**. The Revised Scoping Buildable Area informs the design of the layout and will be further assessed during the EIA Phase.

2.2 Project Locality and Co-ordinates

Appendix 2 of the 2014 National Environmental Management Act, 1998 (Act 107 of 1998, as amended) (NEMA) EIA Regulations (as amended) states that a Scoping Report must provide the location of the activity, including the 21-digit Surveyor General code of each cadastral land parcel; where available, the physical address and farm name; or the coordinates of the boundary of the property or properties if the aforementioned is not available. Appendix 2 of the 2014 NEMA EIA Regulations (as amended) also states that a Scoping Report must include a plan which locates the proposed activity or activities applied for at an appropriate scale.

In line with the above, refer to Chapter 1 for a locality map of the proposed Beau Valley WEF and associated infrastructure. Refer to Appendix C of this Scoping Report for additional maps.

The proposed project and associated infrastructure will occur on the farm portions listed in Table 2.1 above, which also specifies the corresponding 21-digit Surveyor General code for each affected farm portion. The properties to be affected by the development of the proposed project will be leased from the property owners by the Project Applicant for the life span of the proposed project.

In addition, some intersections may need to be widened to accommodate truck access to the site. Details of the affected farm properties and intersection widening will be confirmed during the EIA Phase.

The approximate co-ordinates of the boundary points of the project site are provided in Appendix C. A map corresponding to the co-ordinate points is provided in Figure 2.1. The co-ordinates of the power line (start, mid and end points) to connect to the GEED Collector substation are also provided in Appendix C with a corresponding map in Figure 2.2.

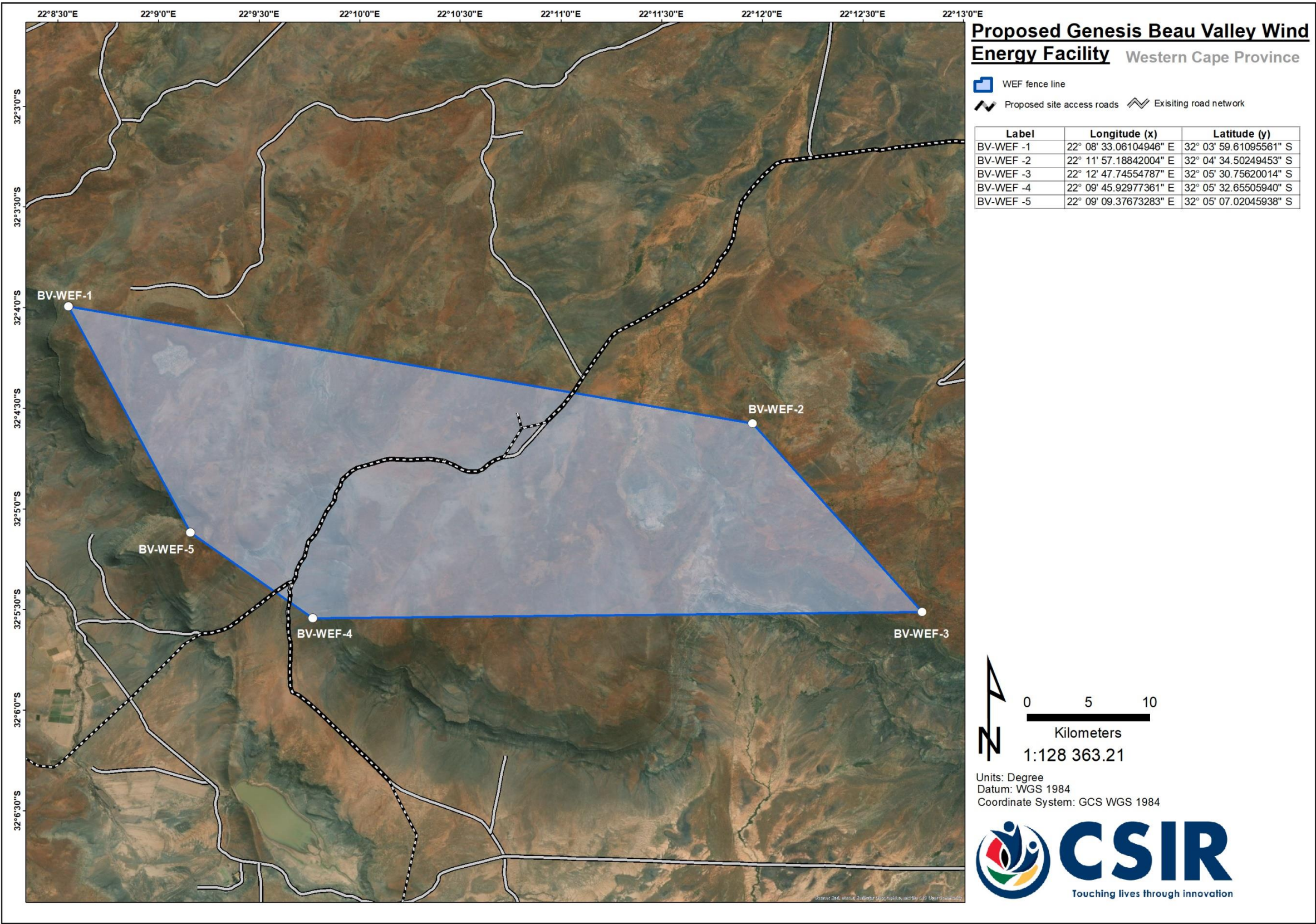


Figure 2.1: Coordinates of the boundary points of the proposed WEF.



Figure 2.2: Coordinates along the proposed power line routing to connect to the GEED Collector Substation

The co-ordinates of the estimated mid-points of the proposed WEF area and on-site substation are detailed in Table 2.2 and Table 2.3 respectively. The co-ordinates of the start, middle and end point of the 132 kV power line are indicated in Table 2.4.

Table 2.2: Co-ordinates of the Mid-Point of the proposed project

Project	Decimal Degrees		Degrees, Minutes, Seconds	
	Latitude (Y)	Longitude (X)	Latitude (S)	Longitude (E)
Beau Valley WEF	-32.076866692026	22.17797320456	32° 4' 36.720" S	22° 10' 40.704" E

Table 2.3: Co-ordinates of the the Mid-Point of the on-site substation of the proposed project

Project	Decimal Degrees		Degrees, Minutes, Seconds	
	Latitude (Y)	Longitude (X)	Latitude (S)	Longitude (E)
Beau Valley WEF: On-site substation complex	-32.081645447116	22.175923671871	32° 4' 53.924" S	22° 10' 33.325" E

Table 2.4: Co-ordinates of the start, middle, and end point of the Beau Valley WEF EGI: 132 kV power line

Project	Decimal Degrees		Degrees, Minutes, Seconds	
	Latitude (Y)	Longitude (X)	Latitude (S)	Longitude (E)
132 kV Power line: Start	-32.013020027	22.294198714000	32° 00' 46.87209720" S	22° 17' 39.11537040" E
132 kV Power line: Middle	-32.045489283	22.238172837314	32° 2' 43.761" S	22° 14' 17.422" E
132 kV Power line: End	-32.076635827	22.177826272000	32° 04' 35.88897720" S	22° 10' 40.17457920" E

2.3 Key components of the proposed project

A summary of the key components of the proposed project and technical information is described in this section. The exact specifications of the proposed project components will be determined either during the EIA Phase or detailed engineering phase (subsequent to the issuing of the Environmental Authorisation (EA), should such an authorisation be granted for the proposed project). In line with the precautionary approach and in order to ensure that any environmental impacts which may arise as a result of the project are adequately assessed during the EIA Phase, maximum development scenarios and estimates have been provided in this section. It should be noted however at the Scoping Phase there are some project aspects that are still to be confirmed during the EIA Phase, and it is necessary to follow the maximum development scenario or precautionary approach. In such instances, if any updates need to be made to the listed activities, an Amended Application for EA will be submitted accordingly.

The Scoping Specialist Assessments have also been based on the maximum development scenario in terms of the project specifications (such as the development footprint, dimensions, height etc.).

The total physical development footprint of the proposed project (i.e., maximum 25 turbines and supporting infrastructure) is estimated to comprise approximately 50 ha. As discussed in Chapter 1 of this Scoping Report, once the commercial operation date is achieved, the proposed facility will generate electricity for a minimum period of 20 years. The properties to be affected by the development of the proposed WEF will be leased from the property owners by the Project Applicant for the life span of the WEF project. As the proposed WEF requires a permanent development footprint of approximately 50 ha, which is about 0.2% of the total assessed study area that is approximately 28 694 ha in extent, there is ample spatial scope to avoid major environmental constraints through optimisation of the final design, if required.

All high resource areas within the relevant affected properties, as well as potential locations for all relevant supporting infrastructure have been assessed during the Scoping Phase. Based on the initial findings of the specialist assessments, a preliminary combined environmental sensitivity map was prepared and is included in Chapters 3 and 5 of this Scoping Report. This map shows the environmental sensitivities (*inter alia* avifauna, bats, terrestrial biodiversity, watercourses, heritage features, etc.) within the larger study area that was assessed during Scoping. Based on this map, the preferred development footprint for the WEF was revised to avoid (where possible) the most sensitive features that were identified by the specialists within the original assessed study area. This revised development footprint and associated project infrastructure layout will be taken forward into the EIA Phase for further assessment by the specialist team.

The WEF will typically consist of some of the illustrated components shown in Figure 2.1 below.

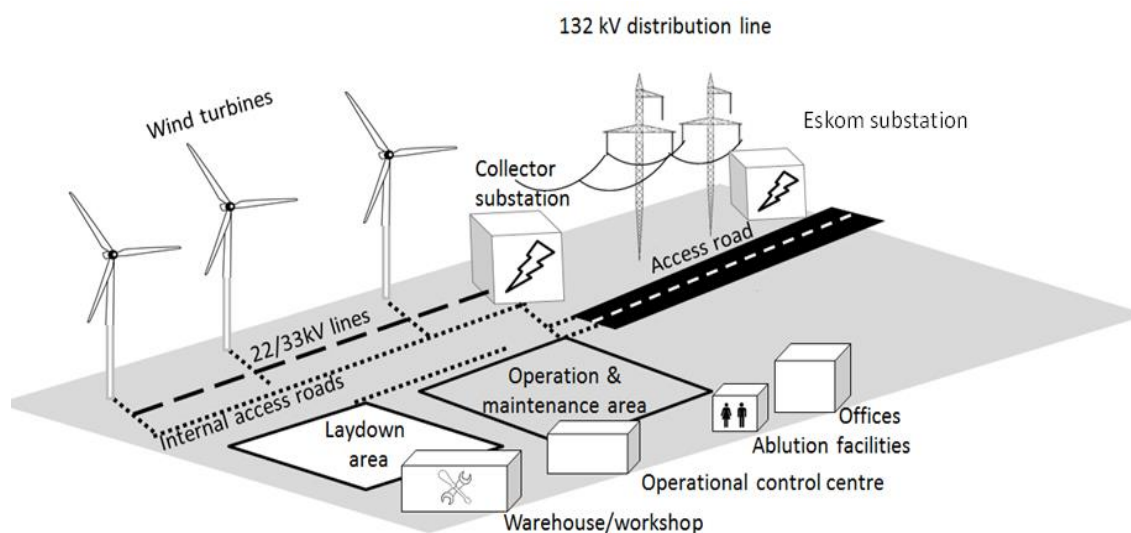


Figure 2.1: Typical components of a Wind Energy Facility (Source: Tennessee Valley Authority, Wikimedia)

The proposed project will consist of the key components listed below in Table 2.5.

Table 2.5: Description of the components of the proposed project

COMPONENT	DESCRIPTION
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SCOPING REPORT: Scoping and Environmental Impact Assessment (S&EIA) Process for
the Proposed Development of Beau Valley Wind Energy Facility and associated
infrastructure, near Beaufort West, Western Cape Province

Wind Turbines	
Type of Technology	▪ Onshore Wind Turbine Generators (WTGs)
Facility Generation Capacity (and Turbine Count)	▪ Beau Valley WEF: 250 MW (25 WTGs)
Capacity per WTG	▪ Up to 10 MW
Hub height	▪ Up to 200 m
Tower	▪ Up to 200 m ▪ Conical shaped either constructed of full steel, full concrete, or hybrid
Length of blade	▪ Approximately 100 m
Rotor diameter	▪ 200 m (up to 100 m blade / radius)
Rotor top tip height	▪ Up to 300 m (maximum based on 200 m hub + 100 m blade length)
Number of blades	▪ 3
Area per turbine foundation	▪ Each turbine will have a circular foundation with a diameter of up to 32 m ($A \approx 804.25 / 0,08 \text{ ha}$) and this will be placed alongside the 80 m x 45 m (3600 m ² / 0,36 ha) wide hardstand resulting in an area of about 0,44 ha that will be disturbed per turbine.
Overhead Transmission Power Line (OHPL)	
Line capacity	▪ 132 kV
Pylon height	▪ 17.4m – 21m
Pylon type, span, working area and footprint	▪ <u>Type</u>: Monopole or steel lattice type pylons, or combination of both where required. ▪ <u>Span</u>: The pylons will have a span of 200 m to 350 m for monopole pylons and up to approximately 500 m for lattice structures. ▪ <u>Working area</u>: The working area required around a pylon position during the construction phase is approximately 30 m x 30 m. ▪ <u>Footprint</u>: The size of the final constructed pylon footprint depends on the type of structure used, which will typically range from approximately 0.5 m² to 8 m² for monopole pylons, and 36 m² to 64 m² for steel lattice pylons.
Tower type	▪ Self-supporting and Angle Strain towers
Registered servitude	▪ Up to 50 m wide (where multiple adjacent power lines occur, in line with the Eskom Distribution Guideline for OHPL. Note that the entire servitude will not be cleared of vegetation.
Assessment corridor	▪ Specialists assessed an approximately 300 m wide corridor (i.e., 150 m on either side of centreline) for all power lines to identify sensitivities and features that need to be avoided.
Building Infrastructure and substations	
Auxiliary Buildings	▪ <u>Type</u>: These include, but are not limited to, Operation and Maintenance (O&M) building / centre, site office, workshop, staff lockers, bathrooms/ablutions, warehouses, guard houses, etc. ▪ <u>Cumulative Footprint</u>: Approximately up to 5000 m² ▪ <u>Height</u>: Up to 10 m
Inverter/Transformer Stations	Several transformers will be installed with the following specifications: ▪ <u>Height</u>: Approximately 3 m ▪ <u>Footprint</u>: Approximately 220 m² each
On-site Substation and Switching Substation Complex	▪ <u>Footprint</u>: Approximately 1 ha ▪ <u>Height of the on-site substation complex (including switching substation)</u>: Up to 10 m. However, the on-site substation will

SCOPING REPORT: Scoping and Environmental Impact Assessment (S&EIA) Process for
the Proposed Development of Beau Valley Wind Energy Facility and associated
infrastructure, near Beaufort West, Western Cape Province

	include switchgear portals up to 15 m and lightning masts up to 25 m in height. ▪ <u>Capacity of the on-site substation complex</u>: up to 132 kV ▪ <u>Fence</u>: Galvanized palisade fencing to be used at the substations ▪ <u>Fence height</u>: Up to 2.5 m
Associated Infrastructure	
Battery Energy Storage System (BESS)	▪ <u>Preferred Technology</u>: Lithium-Ion or Sodium-Ion (Solid state) ▪ <u>Alternative Technology</u>: Redox Flow ▪ <u>Footprint</u>: Up to 2 ha ▪ <u>Height</u>: Up to 10 m ▪ <u>Capacity</u>: Up to 1 200 MWh
On-site medium voltage internal cables	▪ <u>Placement</u>: Underground (maybe above ground pending technical constraints) ▪ <u>Capacity</u>: 33 kV ▪ <u>Depth</u>: Maximum depth of 3 m ▪ <u>Safety</u>: Danger tape will be placed at appropriate intervals above the cable to alert contractors or workers post-construction that buried electrical cable is located in the area they are excavating.
Access roads (including upgrading and widening of existing roads, where relevant)	▪ Existing roads will be used as far as practically achievable. The proposed project site can be accessed via the following roads: ○ Divisional Road 2312 (DR02312); ○ Trunk Road 5801 (TR05801); and ○ Trunk Road 7301 (TR07301). ▪ Refer to the Traffic Impact Assessment (Appendix G.9 of the Scoping Report) and Chapter 2 of the Scoping Report for additional information on the route options per project. ▪ Some of the existing intersections along the above roads may need to be widened to accommodate the turning movement of the trucks. Exact specifications of the widening will be confirmed as the EIA progresses.
Internal roads	▪ <u>Internal access roads</u>: Permanent roads will be up to 6 m wide and may require side drains on one or both sides. All roads may have underground cables running next to them. A 12 m wide road corridor may be temporary impacted during construction and rehabilitated to 6 m wide after construction. Temporary clearing of up to 50 m may be required in areas where cut and fill may be required as well for the construction of the bell mouth road junction, turning circles and temporary passing lanes. ▪ <u>Details</u>: New internal service roads will need to be established. These would either comprise farm roads (compacted dirt/gravel) or paved roads. ▪ <u>Width</u>: Approximately 4 – 6 m
Storm water channels	▪ Details to be confirmed once the Engineering, Procurement and Construction (EPC) contractor has been selected and the design is finalised. Where necessary, a detailed storm water management plan would need to be developed.
Work area during the construction phase (i.e. laydown area)	▪ Temporary Laydown: Up to 2 ha. ▪ Temporary concrete batching plant: A temporary site camp establishment and concrete batching plants of ± 100 m x 100 m (1 ha).
Water Requirements	▪ Approximately 50 000 m³ of water is estimated to be required per year for the construction phase. ▪ Approximately 3 500 m³ of water is estimated to be required per year for the operational phase.

	- Water requirements during the decommissioning phase are unknown at this stage. - Potential sources: Local municipality, third-party water supplier, existing boreholes, newly drilled boreholes on site or a combination of existing and newly drilled boreholes on site. - Reuse of rainwater and stormwater will be investigated in the EIA phase. - Water supplied to site from an external source will be trucked to the site. - Water supplied from either a nearby bulk supply pipeline (to be confirmed) or on-site borehole will most likely be piped via a temporary HDPE pipe. Should these same sources be utilised during the operations phase then these pipes will most likely be buried.
Construction Period	24 to 30 months
Operational Period	Once the commercial operation date is achieved, the proposed facility will generate electricity for 20 to 25 years.

2.3.1 General Description of a Wind Turbine and Wind Turbine Technology

Wind turbines generate electricity by converting movement or kinetic energy produced by the wind into electricity. Different turbine technologies achieve this through slightly different means. A typical horizontal-axis wind turbine consists of a number of components, which work together to generate electricity as depicted in Figure 2.4 below. When the rotor spins the shaft, the shaft spins the assembly of magnets, which generate voltage in the coil of wire. This voltage provides alternating electrical current, which could then be distributed through powerlines. The wind turbine tower supports the rotor and nacelle and provides the height for the rotor blades to clear the ground safely, and to capitalise on atmospheric wind resources, which occur approximately 80 - 200 m above the earth's surface.

It is anticipated that the individual wind turbines planned for the proposed WEF will have the following **approximate** specifications:

- Number of turbines: 25
- Hub height: Up to 200 m
- Rotor diameter: Up to 200 m
- Blade length: Up to 100 m
- Turbine capacity: Up to 10 MW
- Reinforced foundation diameter: 32 m per turbine
- Crane hardstand: 70 m x 45 m per turbine
- Blade hardstand: 80 m x 45 m per turbine

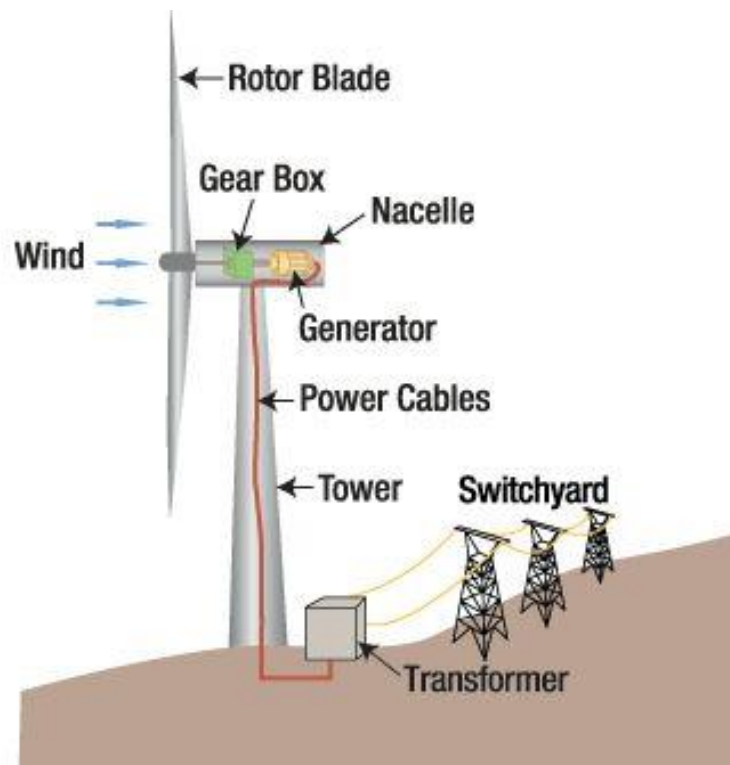


Figure 2.3: Generic design for a wind turbine (Source: Tennessee Valley Authority, Wikimedia)

The energy output of a wind turbine ultimately depends on the size of the generator, velocity of the wind, the height of the hub, and the length of the rotor blades. Wind turbines operate at a range of wind speeds and have a start-up speed, which is the speed at which the blades and rotor start to rotate, and a cut-in speed, which reflects the minimum wind speed at which usable power is generated. This is typically about 3 - 4 m/s with full power output occurring at higher wind speeds of approximately 10 to 12 m/s. Wind turbines are also equipped with a cut-out speed or pitch control system as a safety feature to prevent mechanical damage at high or turbulent wind speeds. The cut-out speed is the highest wind speed after which a wind turbine will stop producing power, and a braking system will be activated. This is typically between 25 and 28 m/s depending on the manufacturer and type of turbine selected for implementation. The pitch control system will turn the rotor out of the mean wind direction and change the orientation of the blades so the rotor will capture lower wind speeds and the output power of generator stays within the allowed range. Once the wind drops below the cut-out speed back to a safe level, the turbine can resume normal operation.

Even though wind turbines are relatively tall they do not require extensive land space. Each turbine will have a circular foundation with a diameter of up to 32 m and this will be placed alongside the 45 m wide hardstand resulting in an area of about 32 m x 45 m that will be permanently disturbed for the turbine foundation. The combined permanent footprint for the turbines will be approximately 11 ha for the WEF.

Each turbine will have a crane hardstand of 70 m x 45 m. The permanent footprint for turbine crane hardstands will be approximately 8 ha for the WEF. Each turbine will also have a blade hardstand of 80 m x 45 m. The permanent footprint for turbine blade hardstands will be approximately 9 ha for the WEF.

The comparatively small base of the turbine allows other activities to continue uninterrupted in the space underneath and around the turbine. Conventional large-scale development footprints often lead to habitat fragmentation and interference with fauna. As such, the micro-siting of the wind turbines will be in an optimum position that minimises the possibility of habitat fragmentation and interference with movement of fauna on the ground.

In terms of wind turbine technology to be used as part of the proposed development, the Project Developer is currently considering a range of wind turbine designs and generation capacity. The exact turbine specifications have not yet been confirmed. Some turbine specifications will only be finalised during the detailed design phase closer to construction. However, the “worst-case scenario” is presented and will be assessed by the specialists during the EIA Phase. The turbine technology selection process shall be subjected to further wind analysis and is also dependent on technical, commercial and site suitability assessment that will, in part, be informed by the EIA Process.

2.3.2 Associated Infrastructure

2.3.2.1 Hardstand Areas

The hardstand area at each turbine will be established adjacent to each wind turbine base. This area will comprise a crane platform (approximately 70 m x 45 m) and a blade storage area (approximately 80 m x 45 m), totalling approximately 17 ha for the WEF. This hardstand area will be utilised by the auxiliary cranes for assembly of turbine components, off-loading and storage during the construction phase, and possibly for maintenance during the operational phase. A schematic illustration of a typical hardstand area and crane platform is provided in Figure 2.4 below.

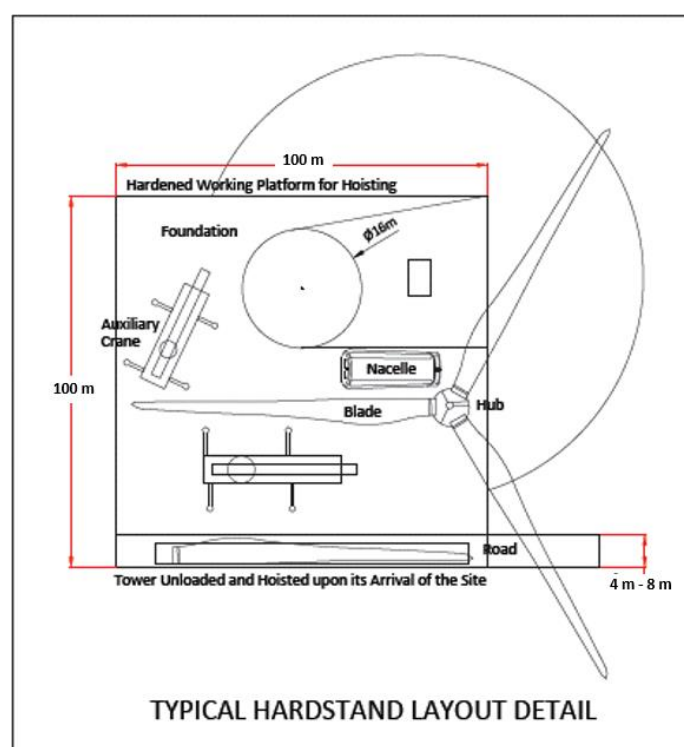


Figure 2.4: Example of a typical hardstand area at each turbine location

2.3.2.2 Construction Compound and Laydown Areas

During the construction phase, the proposed development will require the establishment of at least one construction compound and one laydown area, each with an approximate temporary footprint of up to two (2) ha.

2.3.2.3 Operations and Maintenance (O&M) Area

The on-site Operations and Maintenance (O&M) area is required to support the functioning of the proposed WEF and provide services to personnel who will be responsible for the construction as well as operation and routine maintenance of the facility during its lifespan. The proposed O&M area will have a footprint of up to five (5) ha, will be fenced with access control and will typically comprise of the following:

- Operational and Maintenance (O&M) building (including a control centre, site offices, warehouses, workshop, visitors centre, etc.);
- Worker amenities (e.g., canteen, ablution facilities, changing room, etc.);
- Storage structures for equipment, materials, fuel, oil, machinery etc. (e.g., containers, skips etc.);
- Security office and boom gate (up to approx. 0.5 ha);
- Parking area;
- A concrete batching plant of 1 ha in size (100 m x 100 m);
- Water storage (likely in 10 000 L above ground conventional (plastic) storage tanks); and
- Central waste collection and storage area.

It is anticipated that the O&M building complex, which will form part of the development footprint earmarked for the construction of the substation hub, will include the installation of a communications tower on site with a maximum height of 32 m. The maximum height of onsite buildings and other related infrastructure is not likely to exceed 10 m.

2.3.2.4 Auxiliary Building Infrastructure

The solar field will require the following auxiliary building infrastructure:

- O&M Building (includes Control Centre, Offices, Guard houses, Warehouses, Workshop, Canteen, Visitors Centre, Staff Lockers, etc.): 0.5 ha with a height of up to 10 m;
- Ablution facilities: approximately 0.4 ha;
- Inverter stations: 0.02 ha each; and
- On-site substation and switching station building: up to 1 ha.

A temporary laydown area with a maximum footprint of 2 ha will also be constructed.

2.3.2.5 Stormwater Channels and Water Pipelines

Stormwater drainage systems will be constructed on site to ensure that stormwater run-off from site is appropriately managed. Water from these systems is not likely to contain any chemicals or hazardous substances and will be released into the surrounding environment based on the natural drainage contours. Temporary water pipelines will be installed on site during construction for water supply to inter alia the concrete batching plant and the O&M building complex for domestic use

and sanitation. Possible groundwater abstraction on site for purposes of the batching plant could be considered, if required, taking into account any necessary and relevant legal requirements.

Details of storm water management are to be confirmed once the Engineering, Procurement and Construction (EPC) contractor has been selected and the design is finalised. Where necessary, a detailed Storm Water Management Plan would need to be developed during the detailed design phase (post EA, should such an authorisation be granted) and to be implemented during all phases of the project. The plan must ensure compliance with applicable regulations and prevent off-site migration of contaminated storm water or increased soil erosion. The plan should also include the installation of appropriate design measures that allow surface and subsurface movement of water along drainage lines so as not to impede natural surface and subsurface flows. Drainage measures promotes the dissipation of storm water run-off. Recommendations for the management of storm water will be discussed in the Environmental Management Programme (EMPr) during the EIA Phase.

2.3.2.6 Fencing

For various reasons such as security, public protection and lawful requirements, the proposed built infrastructure on site will be secured via the installation of appropriate fencing. The fencing type could be palisade or mesh or fully electrified, with an estimated height of up to 3 m. Existing livestock fencing on the affected farms portions may be upgraded in places deemed insufficiently secure, whereas permanent fencing will be required around the O&M building complex and on-site substation hubs. Access points will be managed and monitored by an appointed security service provider. The type and height of fencing to be installed will be confirmed during detailed design as the development progresses.

2.3.2.7 Internal Roads

Internal roads will also be constructed within the footprint of the WEF. The internal roads will comprise farm roads (compacted gravel/dirt) or paved roads and will extend approximately 6 m wide. The total internal road length will be estimated during the EIA Phase, and may vary slightly, depending on the final design. A 12 m wide road corridor may be temporary impacted during construction and rehabilitated to 6 m wide after construction. Temporary clearing of up to 50 m may be required in areas where cut and fill may be required as well for the construction of the bell mouth road junction, turning circles and temporary passing lanes.

2.3.3 Electrical Components and Connection to Grid

2.3.3.1 Inverters, Low Voltage Cables, and Medium Voltage Cables

A inverter/transformer station will accompany each WTG at the proposed WEF. Each transformer station will be located on the hardstand adjacent to the respective WTG. The transformer stations will be connected to the proposed on-site substation complexes, via medium voltage (33 kV) internal underground cables. It is more likely that the 33 kV internal cables will be underground to a maximum depth of 1.5 m. However, in the isolated event of crossing a feature hindering underground cabling (e.g., a road, topographical or environmental constraint), the reticulation lines may better be suited to be above ground in certain sections. Therefore, both below and above ground routings are considered in this S&EIA process.

2.3.3.2 On-site Substation Complex

The proposed project will also include an on-site substation complex. The on-site substation complex will cover an approximate area of 3 ha, with a height of up to 10 m, and generally stepping up from 22 kV or 33 kV to 132 kV. The on-site substation complex is planned to include the following:

- On-site Independent Power Producer (IPP) or facility substation (1 ha); and
- Battery Energy Storage System (BESS) (2 ha).

The on-site IPP or facility substation will cover an area of approximately 1 ha within the on-site substation complex, and with a maximum height of 10 m. This will be maintained by the IPP, focusing on the high voltage infrastructure leading up to the Point of Connection. As noted above, this has been included in the current Application for EA (i.e., for the WEF and associated infrastructure), as confirmed with the DFFE.

The BESS is described in the section below.

2.3.3.3 Battery Energy Storage System

The BESS will extend up to 2 ha within the on-site substation complex, with a height of up to 10 m, and a capacity of up to 400 MW / 1 200 MWh.

Battery storage offers a wide range of advantages to South Africa including electricity supply reliability and quality improvement. The main purpose of the BESS is to mitigate intermittency of wind energy by storing and dispatching of electricity when needed i.e., to contribute to the grid 24 hours/day, during peak demand at night or during power outages. In essence, this technology allows renewable energy to enter the completely independent power generation market.

The BESS technology type will either be Lithium-Ion, Lithium-Na or Redox Flow, with Lithium-Ion and Lithium-Na being the preferred types. All three of these technologies were assessed during the Scoping and EIA Phase, and a motivation is included in Chapter 7 of the EIA Report to authorise both Lithium-Ion and Lithium-Na technology types since both were found to be acceptable and preferred during the EIA Phase. Additional information on the BESS technologies that are being considered is provided below.

- **Solid State Lithium-Ion Batteries or Sodium-Ion Batteries (preferred technology)**

Lithium-Ion and Sodium-Ion batteries are solid state, sealed systems i.e., pre-assembled off site and then delivered to site for placement as per specifications of the supplier. This BESS system consists of multiple battery cells that are assembled together to form modules. A module may consist of several cells working in conjunction. Each cell contains a positive electrode, a negative electrode and an electrolyte.

It is proposed that the Lithium-Ion or Sodium-Ion BESS would be housed in containers, with associated operational, safety and control infrastructure. The BESS will be a sealed unit and will remain sealed during operations. Based on various discussions with the DFFE on previous occasions, it has been confirmed that Lithium-Ion and Sodium-Ion BESS are not classified as containers or structures for the development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good. Hence, listed activities

pertaining to this aspect in the 2014 NEMA EIA Regulations (as amended) do not apply. Figure 2.5 is an illustration of a 25 MW / 50 MWh Lithium-Ion battery located at the 60 MW Gannawarra Solar Farm in Australia.



Figure 2.5: Example of Lithium-Ion BESS in the foreground (ARENAWIRE, 2018¹)

- **Redox Flow Batteries (RFB) (alternative technology)**

Flow batteries generally comprise of three major components; a cell stack, auxiliary parts and electrolyte storage. The active chemical species in a flow battery are stored mostly externally in above-ground storage tanks, which contain the positive and negative electrolytes separately. The energy is stored in two chemical components, which are dissolved in a liquid to form electrolytes during operation. The energy density of a RFB is thus dependent on the size of the storage tanks (Parsons, 2017²).

A schematic representation of a typical RFB is provided in Figure 2.6.

There are two types of RFB's i.e., a 'true' RFB and a hybrid RFB. In a 'true' RFB the electro-active materials used to store energy remain dissolved in solution. Therefore, the energy is determined by the volumes of electrolyte available. Examples of a 'true' RFB is a Vanadium RFB and iron-chromium systems. Hybrid RFBs deposit at least one chemical species as a solid during the charge cycle, therefore preventing the complete separation of power and energy characteristics (Parsons, 2017⁴).

Examples of electrolytes for RFBs include Hydrochloric Acid and Sulphuric Acid, which are considered as dangerous goods in terms of the 2014 NEMA EIA Regulations (as amended).

¹ Arenawire (2018). Solar battery storage in Victoria charging up for summer. <https://arena.gov.au/blog/solar-battery-storage-in-victoria-charging-up-for-summer/> [online]. Accessed November 2021.

² Parsons, 2017. US Trade and Development Agency. South Africa Energy Storage Technology and Market Assessment. Order Number: TDA-IE201511210. USTDA Activity Number: 2015-11032A. Parsons Job Number: 640368

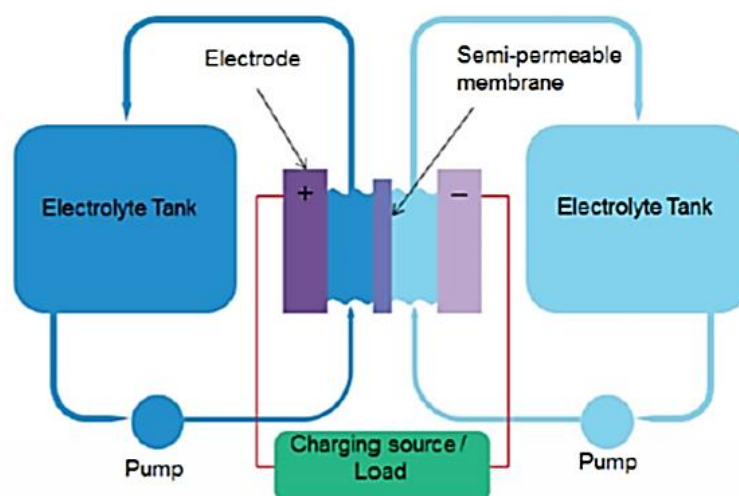


Figure 2.6: Schematic diagram of a typical Redox Flow Battery (Source: Parsons, 2017⁴)

Activity 14 of Listing Notice 1 is for “the development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres”. This listed activity is applicable to the Redox Flow BESS technology type as some of the electrolytes could be stored separately in above ground storage tanks for use in the Redox Flow BESS during operations. Activity 14 of Listing Notice 1 has not been included in the current Application for EA as the preferred BESS technology selected by the applicant is the Solid State BESS (Lithium-Ion or Sodium-Ion).

However, it should be noted that the High-Level Safety, Health and Environment Risk Assessment for the Development of the BESS (Appendix G.10) found that both Solid State technology options and Redox Flow technology options are acceptable for the proposed WEF development. The report provides high level information on the safety, health and environmental risks of the BESS technologies being considered. According to ISHECON (2023³), the safety and health risks associated with RFBs⁴ will likely be lower than the lithium-ion battery type for both employees and members of the public outside the facility. Lithium-ion and Sodium-Ion batteries pose a higher fire and explosion risk and the possibility of generating noxious smoke under these circumstances. However, lithium battery systems are easier to install, i.e., pre-assembled containers as opposed to formal brick and mortar structures and will not require as many permanent staff as RFB utility scale operations. The environmental risks of surface aquatic features and groundwater contamination with the RFBs will likely be higher than for solid state batteries, due to the presence of liquids and potential spillages.

³ ISHECON (2023). Battery Energy Storage System High-Level Safety, Health and Environment Risk Assessment. Scoping Level Assessment for the proposed Beau Valley WEF and associated infrastructure. Prepared for the Scoping and Environmental Impact Assessment (EIA) for the Beau Valley WEF and associated infrastructure. Appendix G.10 of the Scoping Report.

⁴ Vanadium is assumed for now; however alternative chemistry may be considered.

2.3.4 External Access Roads

A Scoping Level Traffic Impact Assessment has been commissioned for the proposed project and is included in Appendix G.9 of this Scoping Report. The following information has been obtained from the Scoping Level Traffic Impact Assessment (Athol Schwarz, 2023⁵).

The proposed project study area / preferred site can be accessed via various existing main roads and unnamed farm gravel roads. The road network adjacent to the proposed project and potential access routes are discussed below and illustrated in Figure 2.7.



Figure 2.7: Road network adjacent to the proposed project (Schwartz, 2023)

2.3.4.1 Main Road

- **MR00588 (R356)**

The MR00588 is an Access Collector providing mobility between towns. The management and maintenance of this road fall under the jurisdiction of the Northern Cape Provincial Roads Department. The MR00588 starts at the R354 in Sutherland, passing through Fraserburg, before ending at the TR016 (R63) at Loxton.

The road consists of a gravel carriageway within a 30 m wide servitude, as shown in Figure 2.8. The condition of the road is good and allows for dual-directional traffic at speed.

⁵ Athol Schwarz (2023). Traffic Impact Assessment. Scoping Level Assessment for the proposed Genesis Beau Valley WEF and associated infrastructure. Prepared for the Scoping and Environmental Impact Assessment (EIA) for the Genesis Beau Valley WEF and associated infrastructure. Appendix G.9 of the Scoping Report.



Figure 2.8: MR00588

2.3.4.2 District Roads

The district roads in the area are level 4 roads and are classified as Resident Access Collector roads, providing accessibility to nearby towns and main roads. The management and maintenance of this road fall under the jurisdiction of the Provincial Roads Department, in which the roads are located. The minimum required level of service on these roads is a LOS C.

Most of these roads consist of a gravel carriageway, approximately 7 m wide, within a 20 m wide servitude. As a result of the width, road users have to reduce speed when passing oncoming vehicles. Although most of these roads are suitable for light vehicles, the use of these roads by heavy vehicles is not recommended.

The condition of these roads is not consistent and varies from very poor to satisfactory. However, several sections of these roads are very stony, which could result in mechanical damage to vehicles.

- **DR02312**

The DR02312 starts at the TR05801 (R381) and ends at the TR07301 (R353). The condition of this road is adequate, as shown in Figure 2.9. Road users need to slow down when passing oncoming vehicles.



Figure 2.9: DR02312

- **DR02313**

The DR02313 is a link road that starts and ends on the DR02312 and provides access to the DR02315 and the DR02319. The condition of this road is adequate, as shown in Figure 2.10. This road passes through numerous homesteads.



Figure 2.10: DR02313

- **DR02314**

The DR02314 starts at the MR00588 and intersects with the DR02315 before ending at the DR02312. The road's width is significantly less than the required 7 m, making passing other vehicles very difficult, as shown in Figure 2.11. Travelling at high speed on this road is not advisable.



Figure 2.11: DR02314

- **DR02315**

The DR02315 starts at the DR02313 and intersects with the DR02314 before ending at the TR05801 (R381). The section of the road between the DR02315 and TR05801 passes through a ravine, which requires a significant speed reduction. The road's width is significantly less than the required 7 m, making passing other vehicles very difficult, as shown in Figure 2.12. Travelling at high speed on this road is not advisable.



Figure 2.12: DR02315

- **DR02317**

The DR02317 is 68 km long, starts at the TR05801, and intersects with the DR02311 (at 30.7 km) and DR02318 (at 40.5 km) before ending at the NR00108 (N1). Over the majority of the length, the road is undulating, as shown in Figure 2.13.



Figure 2.13: DR02317

At approximately 8 km from the TR05801, the DR02317 passes through an existing homestead, as shown in Figure 2.14.



Figure 2.14: DR02317 - 8 km from TR05801

Another farming community straddles the DR02317 at approximately 22 km from the TR05801, as shown in Figure 2.15.



Figure 2.15: DR02317 - 22 km from TR05801

- **DR02319**

The DR02319 starts at the MR00588 before ending at the DR02313. The condition of this road is adequate, as shown in Figure 2.16.



Figure 2.16: DR02319

2.3.4.3 Minor Roads

Minor roads in the area, have a functional classification of level 5, and are categorised as a Local Access road, providing direct access to properties. The management and maintenance of this road fall under the jurisdiction of the Provincial Roads Department, in which the roads are located. The minimum required level of service on these roads is a LOS C.

Most of these roads consist of a gravel carriageway, within a 20 m wide servitude.

- **OP08870**

The OP08870 (Modderpoort) is 3.41 km long, starting at the DR02312 before ending at the Northern Cape Boundary. The road is well utilised, as shown in Figure 2.17.



Figure 2.17: OP08870

- **OP08871**

The OP08871 (Klipbanksfontein) is 16.84 km long, starting at the DR02312 before ending at the OP08872. The road is well utilised, as shown in Figure 2.18.



Figure 2.18: OP08871

2.3.4.4 Site Access

The envisaged access to the proposed development would be from the DR02312 and across the adjacent properties. The final selection of the access points to this development will be subject to the outcome of the EIA process. However, given the topography of the area, there are not many limitations provide on this section of the road. The geometric design limitations need to be implemented when selecting and design the final access point.

It should be noted that the access point, from the DR02312, is the same access point that will be used for all the developments in the southern cluster and majority of the developments in the middle cluster.

2.3.4.5 Transportation routes

2.3.4.5.1 Commuter Routes

The towns in this part of the country are few and far apart. There are several towns within a 200 km radius of the proposed development from which the workforce is to be drawn, for the proposed development, which include Beaufort West, Carnarvon, Fraserburg, Loxton, Leeu Gamka, Merweville, Nelspoort, Victoria West and Williston. The anticipated routes to the proposed development from the surrounding towns are indicated in magenta, in Figure 2.19.

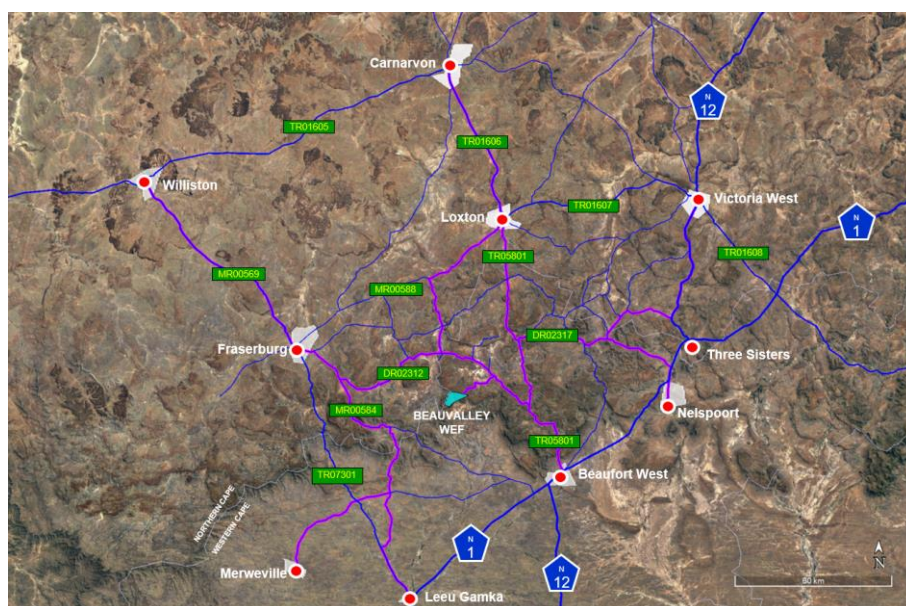


Figure 2.19: Commuting Routes to the Proposed Development

The proportionality of the workforce from the surrounding towns is based on a ‘working-age’ population, modified by a ‘weighting factor’, calculated based on the distance travelled to the proposed development from the relevant town. The expected proportion of the workforce from the surrounding communities is depicted in Table 2.6.

Table 2.6: Distance to Surrounding Towns

Town	Population	Travel Distance	Proportion (%)
Beaufort West	21376	58 km	76%
Carnarvon	4107	156 km	5%
Fraserburg	1854	93 km	4%
Loxton	604	97 km	1%
Leeu Gamka	1679	180 km	2%
Merweville	960	185 km	1%
Nelspoort	1212	128 km	2%
Victoria West	4978	169 km	6%
Williston	1981	183 km	2%

Based on the information provided above, the proportion of the workforce from Leeu Gamka, Merweville, Nelspoort and Williston are low, and in reality, might not materialise. However, for the purpose of this report they have been included.

2.3.4.6 Freight Routes

2.3.4.6.1 Container Terminals

Transnet Port Terminals is a division of Transnet SOC Limited, South Africa’s state-owned freight transport company, which owns and operates the terminal at several Ports in South Africa. Operations are divided into the major market sectors: containers, bulk, breakbulk, and automotive, organised into three geographical regions – Eastern Cape, Western Cape, and Kwa-Zulu Natal.

The port of entry into South Africa for all import WTG components is limited to Ngqura (located close to Gqeberha) located in the Eastern Cape, or Saldanha Terminals located in the Western Cape. The possible routes from these terminals to the proposed development is via Victoria West and Loxton, shown in Figure 2.20



Figure 2.20: Freight Routes - Port Terminals

The potential transportation routes from the various Port Terminals in South Africa, with the capability to import wind turbine components, to the proposed development, are detailed in Table 2.8.

Table 2.7: Distance - Port Terminals

Container Terminals	Distance
Saldanha	835 km
Ngqura	614 km

Based on the information provided above, the closest terminal to the proposed development is the Ngqura Port Terminal (close to Gqeberha) which is located in the Eastern Cape.

However, the length and weight of the various WTG components will only be available once the turbine supplier has been appointed. There is a strong possibility that the length of the blades for the WTG units could exceed 95 m.

Each of the proposed transportation routes has their own unique challenges that the appointed logistics company will need to address. In some cases, the challenges can be easily overcome, and for others, alternative routes will have to be considered.

The preferred transportation route would ultimately be identified by the logistic company appointed to transport the various WTG components from the port of entry to the proposed development.

2.3.4.6.2 Transportation of Wind Turbines

Most shipping vessels importing the turbine components will be equipped with on-board cranes to do all the safe off-loading of Wind Turbine Generator (WTG) components onto the abnormal transport vehicles, parked adjacent to the shipping vessels (Figure 2.21). The imported turbine components may be temporarily stored at the nearest laydown area within the port's bounds or transported directly from the Port of Entry to the laydown area at the proposed project site. Mobile cranes will be required at these laydown areas to position the respective turbine components at their temporary storage location.



Figure 2.21: Example of cranes at Port of Entry (Source: iWink Consulting (Pty) Ltd, 2022)

Wind turbine components can be transported in a number of ways with different truck / trailer combinations and configurations, which will need to be investigated at a later stage when the transporting contractor and the plant hire companies apply for the necessary permits from the Permit Issuing Authorities.

For the transportation of the turbines from the Port of Entry to the proposed WEF site, the blades are the longest and possibly most vulnerable components of a wind turbine and hence needs to be transported with utmost care. The blades need to be transported on an extendible blade transport trailer or in a rigid container with rear steerable dollies. The blades can be transported individually, in pairs or in threes, although different manufacturers have different methods of packaging and transporting the blades.

In terms of the National Road Traffic Act, 1996 (Act No. 93 of 1996), the trucks delivering turbine components will be considered as abnormal loads. Approval i.e., relevant permits may have to be obtained from National, Provincial and/or Local Competent Authorities for the transportation of abnormal heavy components. This is normally the responsibility of the logistics company in charge of these components.

Figure 2.22 to Figure 2.25 below provide examples of transportation of some of the turbine components.



Figure 2.22: Example of a tower section being transported (Source: Google Images, 2022)



Figure 2.23: Example of a wind turbine blade being transported on an extendible trailer (Source: Google Images, 2022)



Figure 2.24: Example of a nacelle being transported (Source: Google Images, 2022)



Figure 2.25: Example of a hub and rotary units being transported (Source: Google Images, 2022)

2.3.4.7 Commercial Centres

The most likely transportation routes for domestically supplied and manufactured components from the major commercial centres to the proposed development are either Cape Town or Johannesburg (or any supplier along these routes), as shown in Figure 2.26.



Figure 2.26: Freight Routes - Commercial Centres

The distances from the proposed developments to the major commercial centres in South Africa are shown in Table 2.8.

Table 2.8: Distance - Major Commercial Centres

Commercial Centres	Distance
Cape Town	775 km
Johannesburg (via N1)	1079 km
Johannesburg (via N12)	1044 km

Although the closest major commercial centre to the proposed development is located in the greater Cape Town area, many components will be fabricated in Johannesburg and transported to the proposed development.

2.3.5 Service Provision

The Project Developer will consult with the Beaufort West Local Municipality during the S&EIA Process in order to confirm the supply of services (in terms of water usage, sewage removal, solid waste removal, and electricity requirements) for the proposed project. The municipality was also consulted with as part of the 30-day public review period of the Draft Scoping Report to seek comment on the general proposed project. The municipality will also be communicated with in the EIA Phase.

Should the local municipality not have adequate capacity available for the handling of waste, provision of water and sewage handling provisions; then the Project Applicant will make use of private contractors to ensure that these services are provided. An outline of the services that will be required are discussed below.

2.3.5.1 Water Usage

Water will be required during the construction phase, primarily for the purposes of concrete production and curing for the construction of turbine foundations, road construction as well as road compaction and dust suppression, earthworks and human consumption. High water usage is only anticipated during the first 18 months whereafter the monthly water usage will decrease drastically. The monthly water use requirement during the construction phase for a 30-month period is an estimated average of 4 000 m³/m (or 50 000 m³/a)

The water use requirement during the operational phase will be primarily for human consumption and sanitation purposes. The total water consumption estimated for the operational phase of the WEF is approximately 3 500 m³ of water per year for an approximate 20 to 25-year operational lifespan.

It is proposed that water preferably be sourced from the Beaufort West Local Municipality, and specific arrangements will be agreed upon with the relevant local municipality in a Service Level Agreement (SLA), following the appointment of the proposed WEF as a preferred bidder during the financial close period, prior to construction. In case municipal water supply cannot be confirmed, the Project Applicant will then investigate other sources of water supply for construction and operations of the proposed WEF considering any necessary licencing applications required in terms of relevant environmental legislation including but not limited to the National Water Act (Act No. 39 of 1998). Other possible sources include (i) water supply from a Private Contractor, which may include extraction from any available bulk water supply lines in the vicinity of the project site, (ii) water abstraction from existing boreholes on site, and/or (iii) water abstraction from one or more new boreholes located on site.

The EMPr will provide recommendations for water conservation techniques during the construction, operational and decommissioning phases. The staff would also be encouraged to use water sparingly during all phases.

Water required for the construction, operational and decommissioning phases will either be sourced from the following sources (in order of priority and likelihood), either individually or as components of a water mix:

- The Beaufort West Local Municipality - specific arrangements will be agreed to with the local municipality in a Service Level Agreement (SLA). The water will be trucked in or made available for collection at the Local Municipal Water Treatment Plant via a metered standpipe. Should the water be trucked in, such impacts will be considered in the Traffic Impact Assessment during the EIA Phase.
- Investigation into a third-party water supplier which may include private services companies. This would be trucked in, and such impacts will be considered in the Traffic Impact Assessment during the EIA Phase.
- During the EIA Phase methods for rainwater and stormwater recycling will be considered for implementation on site
- **Existing boreholes on site** to source groundwater (if available and if suitable).

- **New boreholes that will be drilled on site** to source groundwater (if available and if suitable), which will be subject to complete geohydrological testing and an assessment, as well as a Water Use Licence Application process. This will be undertaken as a separate process, once more detailed information becomes available, outside of the current Application for EA for the proposed project and associated infrastructure. Refer to Chapter 4 of this Scoping Report for feedback on the authorisations required for this aspect in terms of the National Water Act (Act 36 of 1998, as amended).
- **Finally, a third option to consider is to make use of a combination of existing boreholes and drilling new boreholes** for further groundwater development. This scenario will depend on the following:
 - Whether permission is granted by land/farm owner to make use of the existing boreholes on their properties.
 - The volumes that could sustainably be abstracted from the relevant boreholes, this would need to be proven by scientific yield testing according to relevant standards.
 - The volumes that are currently being used by the farmer while bearing in mind permissible abstraction in terms of the GA.
 - Successful borehole drilling, i.e. intersection of groundwater with a reasonable quality and sufficient sustainable yield, which could supplement any shortfall required on the proposed project.

Groundwater quality will be a further factor in determining which boreholes are considered most appropriate for supply.

2.3.5.2 *Sewage or Liquid Effluent*

The proposed 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) and/or temporary conservancy tanks will be used during the construction phase, which will be regularly serviced and emptied by a registered contractor for disposal of at a registered municipal sewerage treatment facility. Due to the remote location of the project site, a waterproof conservancy tank system will be employed on site during the operational phase of the WEF for which a registered company will be contracted to store and transport sewage from site to an appropriate municipal wastewater treatment facility.

2.3.5.3 *Solid Waste Generation*

The quantity of waste generated will depend on the construction phase, which is estimated to extend 24 to 30 months. 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, 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 EMPr during all project phases. The EMPr will be provided in the EIA Report, which will incorporate waste management principles. During the construction phase, general solid 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 or monthly basis by an approved waste disposal Contractor (i.e. a suitable Contractor) or the municipality. In addition, a skip will be placed on site and any damaged or broken equipment will be stored in this skip. A specialist waste management company will be commissioned to manage and dispose of this waste.

Any hazardous waste (such as contaminated soil as a result of spillages) will be temporarily stockpiled 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/licenced 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.

During the operational phase after construction, the facility will produce minor amounts of general waste (as a result of the offices or maintenance).

2.3.5.4 Electricity Requirements

In terms of electricity supply, the developer may make use of generators on site during construction, and the operational electrical requirements would be nominal and would likely be supplied by the proposed facility.

2.4 Socio-Economic

It should be noted that the employment opportunity specifications provided in this report are estimates and is dependent on the final engineering design and the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) Request for Proposal provisions, or similar programme requirements, at that point in time.

2.4.1 Employment during Construction

During the construction phase, skilled, low skilled and semi-skilled temporary employment opportunities will be created. It is difficult to specify the actual number of employment opportunities that will be created at this stage; however, approximately 300-400 employment opportunities are expected to be created during the construction phase. The skill breakdown of employment opportunities is estimated as 55 % low skilled, 30% semi-skilled and 15 % skilled.

Employees will most likely be housed in local nearby towns and villages. The Socio-Economic Assessment will also consider this during the EIA Phase. Typically, the EPC contractor will be responsible for the provision of transport of construction personnel to and from site.

2.4.2 Employment during Operations

Approximately 40 to 50 full time employment opportunities will be created during the operational phase. The employment breakdown is estimated as 50 % low skilled, 40 % semi-skilled and 10 % skilled. The low and semi-skilled jobs will be linked to services such as panel cleaning, maintenance and security. The percentage of temporary workers that may be offered permanent employment once the construction phase is completed will be dependent on the investor requirements, however will meet the requirements of the REIPPPP (or similar process) at the time as well.

2.4.3 Socio-Economic Investment and Development

The Applicant will ultimately own the project, if successful, and will compile an Economic Development Plan which will be compliant with REIPPPP requirements (or similar process) and will inter alia set out to achieve the following:

- Create a local community trust or similar (as required by REIPPPP) which has an equity share in the project life to benefit historically disadvantaged communities;
- Initiate a skills development and training strategy to facilitate future employment from the local community;
- Give preference to local suppliers for the construction of the facility; and
- Support local community upliftment projects and entrepreneurship through socio-economic and enterprise development initiatives.

2.5 Overview of the Project Development Cycle

This section provides an outline of the main activities that are proposed during each phase of the proposed project, i.e., extending from the Planning and Design phase through to the Decommissioning phase. The operational life of the proposed Beau Valley WEF is expected to be approximately 20 to 25 years, which could be extended through regular maintenance and/or upgrades in technology.

The project can be divided into the following main phases:

- Detailed Planning and Design Phase;
- Construction Phase;
- Operational Phase; and
- Decommissioning Phase.

Each activity undertaken as part of the above phases may have environmental impacts and, where applicable, has therefore been assessed at a high-level in the specialist studies for the Scoping Phase (Appendix G of this Scoping Report), and will be detailed further during the EIA Phase.

2.5.1 Planning and Design Phase

The project layout, including the exact placement of each individual turbine, building infrastructure and the proposed internal service road network will be finalised in the EIA Phase. The project layout will be informed by the findings of the specialist impact assessments, which includes the identification of sensitive biophysical areas that need to be avoided i.e., 'no-go' areas. The

specialists will be requested to comment on the final project layout. The turbine manufacturer and turbine generation capacity to be used will be dependent on availability of turbines in the international market, suitability to the South African wind climate, and service levels and experience available in South Africa, and will only be confirmed during the detailed design phase prior to construction (after EA, should such EA be granted).

2.5.2 Construction Phase

The construction phase will take place subsequent to the issuing of the EA (should such authorisation be granted) and if a successful bid in terms of the REIPPPP or a similar tender process is issued, and once a power purchase agreement (PPA) is signed with a suitable energy off-taker (either national government or private). As indicated above, the construction phase is expected to extend 24 to 30 months; however, the construction period is subject to the actual number of turbines to be erected, the final requirements of Eskom and the REIPPPP RfP provisions at that time.

The main activities that are proposed to take place during the construction phase will entail the clearance of vegetation within the approved development footprint to facilitate the construction and/or establishment of infrastructure including but not limited to the turbine locations, construction compound, temporary laydown area (for the storage of construction equipment, materials, machinery, and turbine components), internal service roads and all relevant built structures. Next, the wind turbine foundations will be constructed at each approved turbine location with the aid of a mechanical excavator. Then follows the construction of the on-site substations. The construction of the substation buildings will entail construction of the foundations and building structure as well as the installation of electrical infrastructure such as transformers, conductors, etc. Subsequently, the trenches for the installation of the electrical cabling to facilitate the connection of the wind turbines to the on-site substations will be excavated at a maximum depth of approximately 1.5 m between each wind turbine.

The construction phase will also involve the transportation of personnel, construction materials and equipment to and from the site. All efforts will be made to ensure that construction work will be undertaken in compliance with local, provincial and national legislation, local and international best practice, as well as the EMPr that will be compiled and included in the EIA Report. An independent Environmental Control Officer (ECO) will be appointed during the construction phase and will monitor compliance with the recommendations and conditions of the EMPr and EA, respectively.

Skilled as well as unskilled temporary employment opportunities will be created during the construction phase. It is difficult to specify the actual number of employment opportunities that will be created at this stage; however, it is estimated that up to 400 employment opportunities are expected to be created during the construction phase. Of these 15% will comprise skilled, 30% semi-skilled, and 55% low-skilled employment opportunities. The proposed construction and operational phases will make use of local labour (including female labour) as far as possible. A majority of the low-skilled and semi-skilled employment opportunities will be made available to local residents. All non-local workers will be housed in rental accommodation in the nearby town i.e., Beaufort West and/or Loxton, and will be transported to site by bus daily. The Engineering, Procurement and Construction (EPC) contractor will arrange daily transport of these workers to and from the site by buses. No workers will be accommodated in worker amenities on site during construction.

2.5.3 Operational Phase

The following activities will occur during the operational phase:

- Operation of the WEF and generation of electricity to add to the national grid;
- Storage of energy generated by the WEF in electrochemical batteries;
- Routine maintenance of the WEF; and
- Unscheduled maintenance of the WEF.

The operational lifespan of the proposed project is expected to be approximately 20 to 25 years. During the life span of the proposed project, on-going maintenance will be required on a scheduled basis to ensure the continued optimal functioning of the infrastructure. In general, maintenance on the structures will involve visual inspection, and only equipment that fails will be replaced in manner similar to that of construction activities. The EMPr that will be compiled and included in the EIA Report will include the requirement for method statements to be compiled prior to the operational phase to describe the manner in which maintenance will be undertaken to ensure environmental impacts are minimised.

2.5.4 Decommissioning Phase

At the end of the operational phase, the PV facility may be decommissioned, or may be repowered i.e., redesigned and refitted to operate for a longer period. The main aim of decommissioning is to return the land to its original, pre-construction condition. Should the unlikely need for decommissioning arise i.e., if the facility becomes outdated or the land needs to be used for other purposes, the decommissioning procedures will be undertaken in line with an approved EMPr and relevant legislation at the time, and the site will be rehabilitated and returned to its pre-construction state.

Various components of the proposed WEF, which are to be decommissioned will be reused, recycled, or disposed of in accordance with the relevant regulatory requirements. All of the components of the wind turbines are considered to be reusable or recyclable. The turbines may also be traded or sold as there is an active second-hand market for wind turbines and/or it may be used as scrap metal. The decommissioning phase of the project is also expected to create temporary skilled and unskilled employment opportunities.

Scoping and Environmental Impact
Assessment for the proposed development
of the Beau Valley Wind Energy Facility and
associated infrastructure near Beaufort West
in the Western Cape



SCOPING REPORT

CHAPTER 3: Description of the Affected Environment



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3. DESCRIPTION OF THE AFFECTED ENVIRONMENT

This chapter of the Scoping Report provides a broad overview of the affected environment for the proposed Beau Valley Wind Energy Facility (hereafter referred to as the “Beau Valley WEF” or the “proposed project”) and the surrounding area.

The receiving environment is understood to include biophysical, socio-economic, and heritage aspects, which could be affected by the proposed project or which in turn might impact on the proposed project.

This information is provided to identify the potential issues and impacts of the proposed project on the environment and vice versa. The information presented within this chapter has been sourced from *inter alia*:

- Scoping inputs from the specialists that form part of the project team;
- Feedback from the National Department of Forestry, Fisheries and the Environment (DFFE) National Web-based Environmental Screening Tool (hereafter referred to as the Screening Tool), where applicable;
- Review of *inter alia* information sources available on the South African National Biodiversity Institute (SANBI) Biodiversity Geographical Information System (BGIS), Agricultural Geo-Referenced Information System (AGIS), Endangered Wildlife Trust (EWT) Threatened Species No-Go Map;
- Western Cape Provincial Strategic Plan 2019-2024;
- Western Cape Provincial Spatial Development Framework (SDF), 2014;
- Central Karoo District Municipality (CKDM) Integrated Development Plan (IDP), 2020;
- CKDM SDF, 2019;
- Beaufort West Local Municipality (BWLM) IDP 2022-2027; and
- BWLM SDF, 2022;
- Karoo National Park Management Plan, 2017-2027.

It is important to note that this chapter intends to provide a broad overview of the affected environment. Detailed descriptions of the preferred project footprint within the preferred site (i.e. the study area) that are focused on significant environmental aspects of the proposed project will be provided in the relevant specialist assessments during the Environmental Impact Assessment (EIA) Phase.

3.1 Background, Study Area, and Buildable Areas

The study areas and affected farm portions for the proposed WEF and the 132 kV overhead power line (OHPL) are indicated in Table 3.1 and are located north-west of Beaufort West in the Western Cape Province.

Table 3.1: Farm portions and SG codes for the Study Area

FARM PORTION	SG CODE	FARM AREA (ha)	WEF	OHPL
Doornboomfontyn RE/89	C00900000000008900000	5 758	X	
Doornboomfontyn 1/89	C00900000000008900001	2 597	X	X
Matjesfontein Farm No. 412	C00900000000041200000	22 936		X

In the Scoping Report, the Project Developer identifies the **Original Scoping Assessment Areas** within the study area. As part of the Scoping and Environmental Impact Assessment (EIA) Process, the specialists were commissioned to assess the full extent of the study area in order to identify environmental sensitivities and no-go areas, and also comment on and consider the Original Scoping Assessment Areas.

Following the identification of sensitivities during the Scoping Phase, as well as various considerations such as the grid capacities and the requirements of landowners, the Project Developer will take such sensitivities and considerations into account during the EIA Phase and will formulate the **Revised Scoping Development Area** which will be further assessed during the EIA phase. The proposed project is located within the BWLM and CKDM. Figure 3.1 below provides a locality map of the study area.

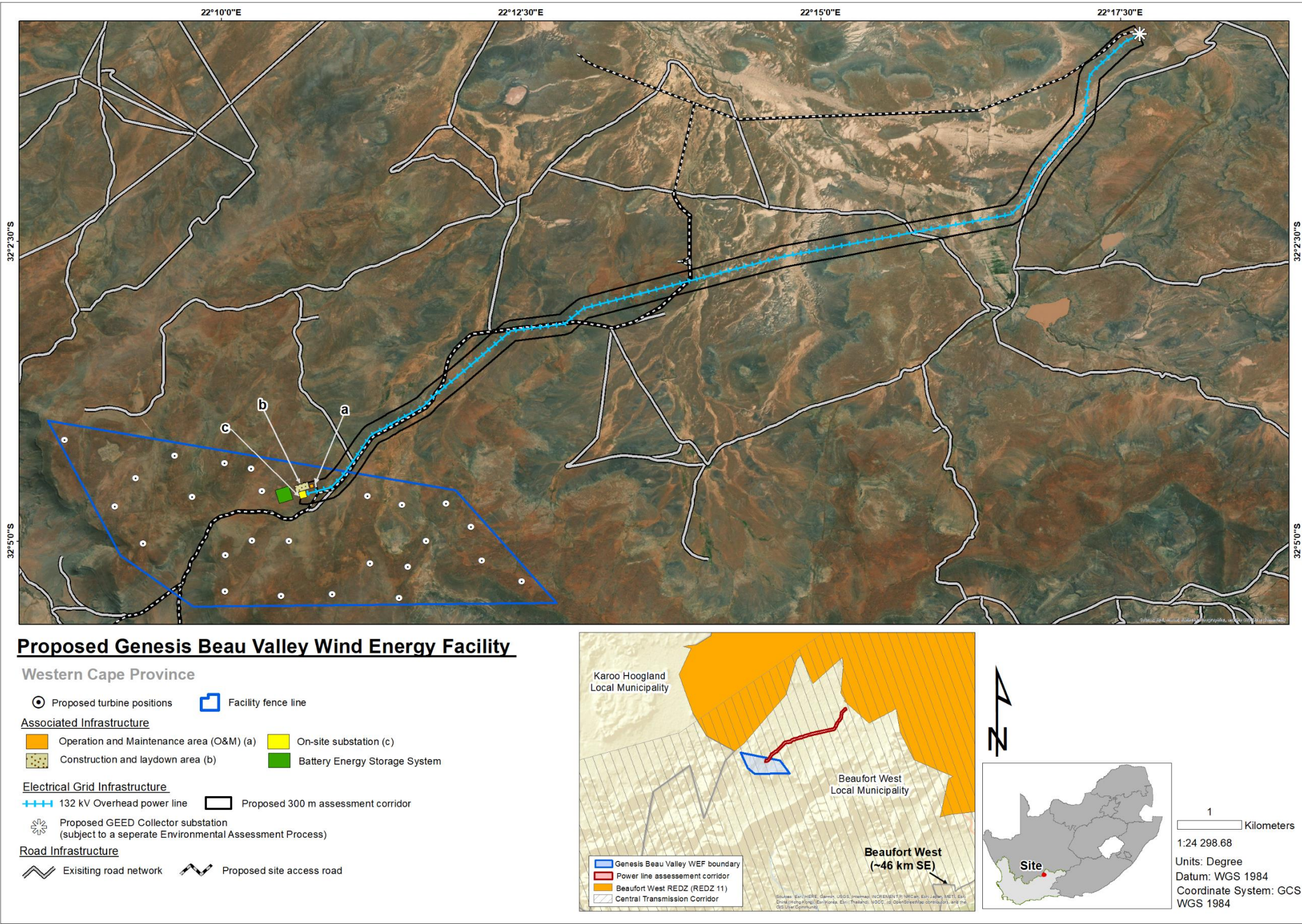


Figure 3.1: Locality map for the proposed WEF project situated north-west of Beaufort West in the Western Cape province.

3.1 Biophysical Environment

The description of the receiving biophysical environment discussed hereafter is informed by inputs provided by the specialists as indicated in Table 3.2.

Table 3.2: Specialist inputs and respective appendices.

NAME	ORGANISATION	ROLE/STUDY TO BE UNDERTAKEN
Specialists		
Johann Lanz (<i>Pr.Sci.Nat.</i>)	Private	Agriculture and Soils Compliance Statement
Simon Todd (<i>Pr.Sci.Nat.</i>)	3Foxes Biodiversity Solutions	Terrestrial Biodiversity, Terrestrial Plant Species, and Terrestrial Animal Species
Kevin McCann	Biodiversity Outcomes	Biodiversity Stewardship Consultant
To Be Appointed (TBA)	TBA	Biodiversity Offset Study ¹
Toni Belcher (<i>Pr.Sci.Nat.</i>)	Private	Aquatic Biodiversity Impact Assessment
Chris van Rooyen ² Albert Froneman (<i>Pr.Sci.Nat.</i>)	Chris van Rooyen Consulting, AfriAvian Environmental (Pty) Ltd	Avifauna Impact Assessment
Mark Hodgson (<i>Pr.Sci.Nat.</i>) Ashlin Bodasing (<i>Pr.Sci.Nat.</i>) Craig Campbell (<i>Pr.Sci.Nat.</i>)	ARCUS	Bat Species Impact Assessment
Lourens Du Plessis Tosca de Villiers	LOGIS	Visual Impact Assessment
Dr Brett Williams Jason Hutten	Safetech	Noise Impact Assessment
John Gribble	ACO Associates	Heritage Impact Assessment (Archaeology and Cultural Landscape)
Elize Butler	BANZAI Environmental	Palaeontology Site Sensitivity Verification Report
Sue Reuter Christopher Dalglish	SRK Consulting	Socio-Economic Impact Assessment
Athol Schwartz (<i>Pr. Tech.</i>)	Private	Traffic Impact Assessment
Debbie Mitchell (<i>Pr Eng</i>)	Ishecon cc	Battery Storage High Level Safety, Health and Environment Risk Assessment
Louis Jonk (<i>Pr.Sci.Nat.</i>) Shane Teek (<i>Pr.Sci.Nat.</i>)	GEOSS South Africa (PTY) Ltd	Desktop Geotechnical Assessment
Helen Antonopoulos Lizande Kellerman (<i>Pr.Sci.Nat.</i>)	CSIR	Civil Aviation Site Sensitivity Verification

¹ A Biodiversity Offset specialist is in the process of being appointed to undertake a cumulative biodiversity offset study for Beau Valley WEF, SEF and DBF South SEF in accordance with the National Biodiversity Offset Guideline gazetted on 23 June 2023 in GN 3569 of GG 48841. The biodiversity offset study will be made available to I&APs with the Draft EIA Report and will be used to inform the stewardship programme and conservation agreement with SANParks as the management authority of the Karoo National Park.

² Please note that the Avifauna Scoping Report was authored by Chris van Rooyen before his passing in June 2023. Mr van Rooyen worked under the supervision and in association with Albert Froneman. Following Mr van Rooyen's passing, Albert Froneman has assumed lead authorship as the avifaunal specialist and will continue to provide specialist input on the proposed project under AfriAvian Environmental (Pty) Ltd.

NAME	ORGANISATION	ROLE/STUDY TO BE UNDERTAKEN
Helen Antonopoulos Lizande Kellerman (<i>Pr.Sci.Nat.</i>)	CSIR	Defence Site Sensitivity Verification

3.1.1 Climate

3.1.1.1 General Context

According to the Köppen-Geiger climate classification method the majority of the study area is classified “BWk”, which is indicative of a cold arid climate (Figure 3.2). The region is characterised with a long term (1950 – 2000) mean annual rainfall of 195 mm with the bulk of rainfall generally received in the summer and early autumn months (i.e. between December to April) (Figure 3.3). Figure 3.4 shows the average annual rainfall within the region for the period 2010 to 2022. Average maximum temperatures range from 13°C in June to 29°C in January. Figure 3.5 shows the average monthly maximum and minimum temperature within the region. The highest average temperatures occur from December to February (Figure 3.5). As shown in Figure 3.6, the area is characterised by relatively consistent sunny days throughout the year, with the lowest quantity of sun hours generally experienced in June. The area is characteristic of gusty winds prevailing for most of the year, with the average gust falling within the 20 kmph to 30 kmph range, for the period 2010 to 2022 (Figure 3.7).

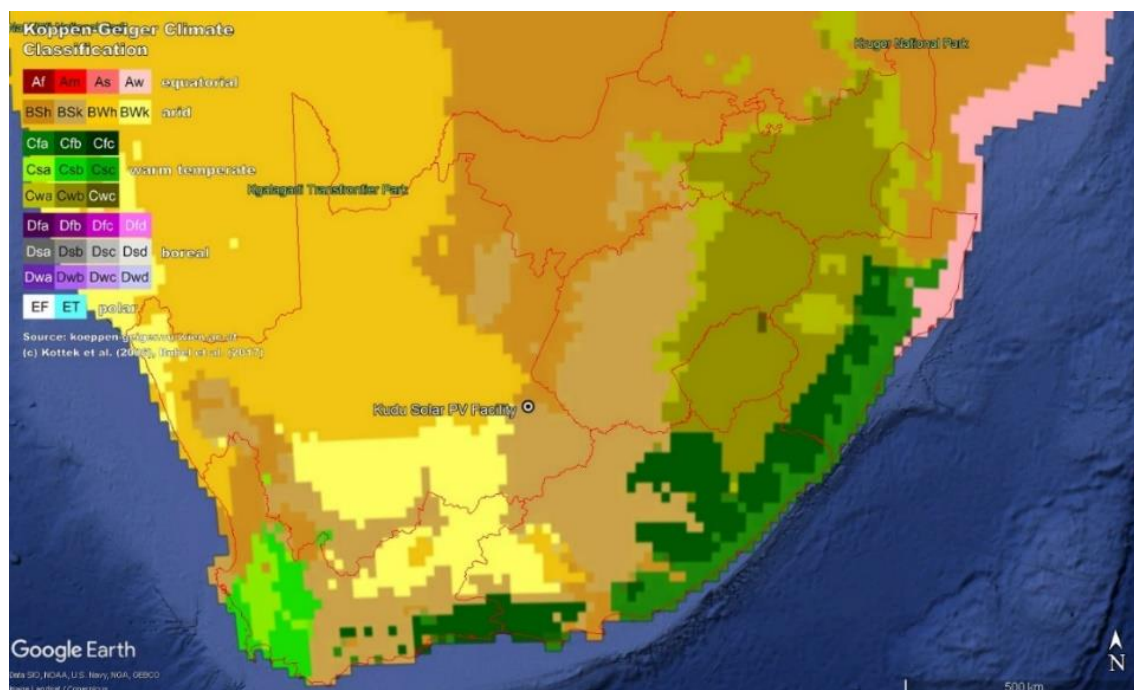


Figure 3.2: Köppen-Geiger Climate Classification of South Africa, including the study area (Source: Köppen-Geiger Climate Classification³)

³ Kottek, M., J. Grieser, C. Beck, B. Rudolf, and F. Rubel, 2006: World Map of the Köppen-Geiger climate classification updated. Meteorol. Z., 15, 259-263. DOI: 10.1127/0941-2948/2006/0130. Available at: <http://koeppen-geiger.vu-wien.ac.at/present.htm> [online]. Accessed: November 2022.

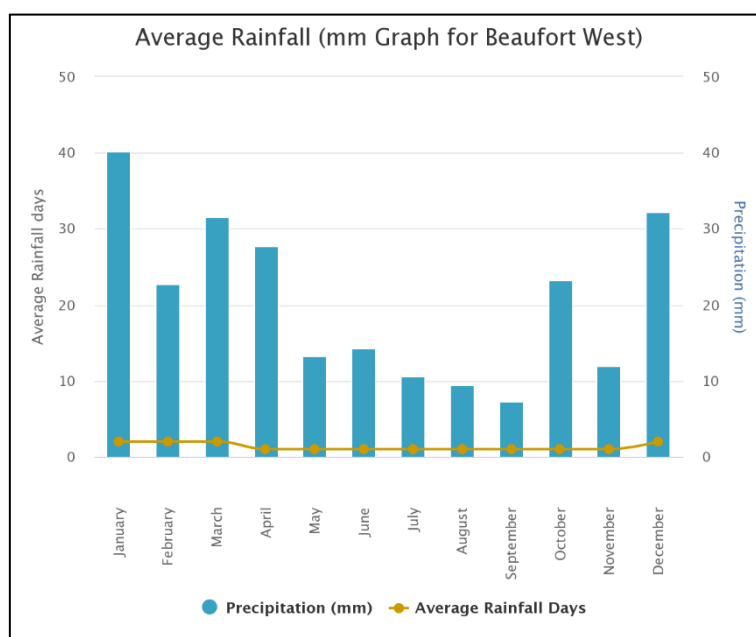


Figure 3.3: The average monthly distribution of rainfall within the Beaufort West area, including the study area (Source: World Weather Online, 2023⁴)

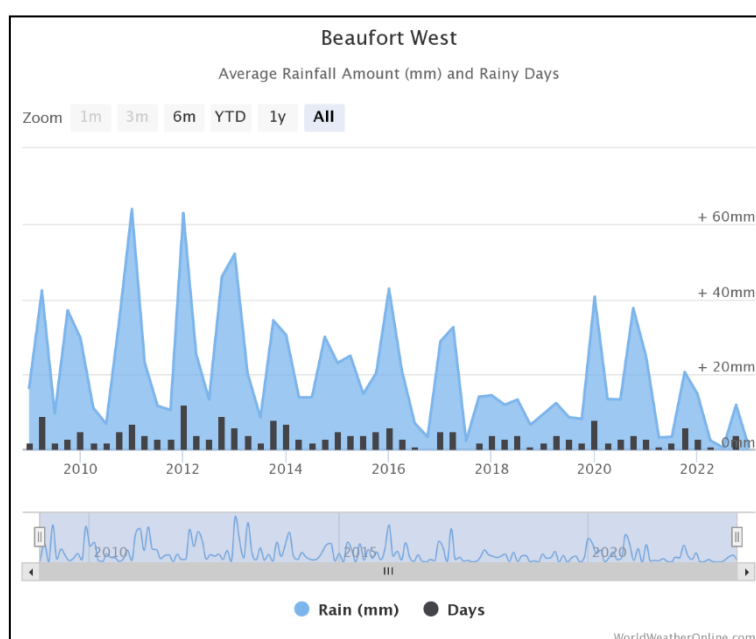


Figure 3.4: The average annual rainfall within the Beaufort West area, including the study area for the period 2010 – 2022 (Source: World Weather Online, 2023⁵)

⁴ World Weather Online. 2023. Beaufort West Annual Weather Averages. Available at: <https://www.worldweatheronline.com/beaufort-west-weather-averages/western-cape/za.aspx> [online]. Accessed: 19 February 2023.

⁵ World Weather Online. 2023. Beaufort West Annual Weather Averages. Available at: <https://www.worldweatheronline.com/beaufort-west-weather-averages/western-cape/za.aspx> [online]. Accessed: 19 February 2023.

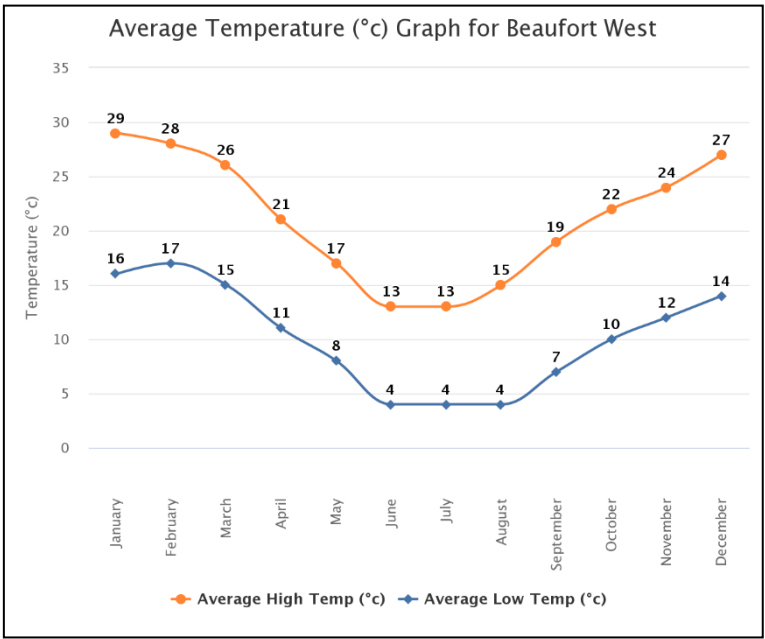


Figure 3.5: The average monthly maximum and minimum temperature for the Beaufort West area, including the study area (Source: World Weather Online, 2023⁶)

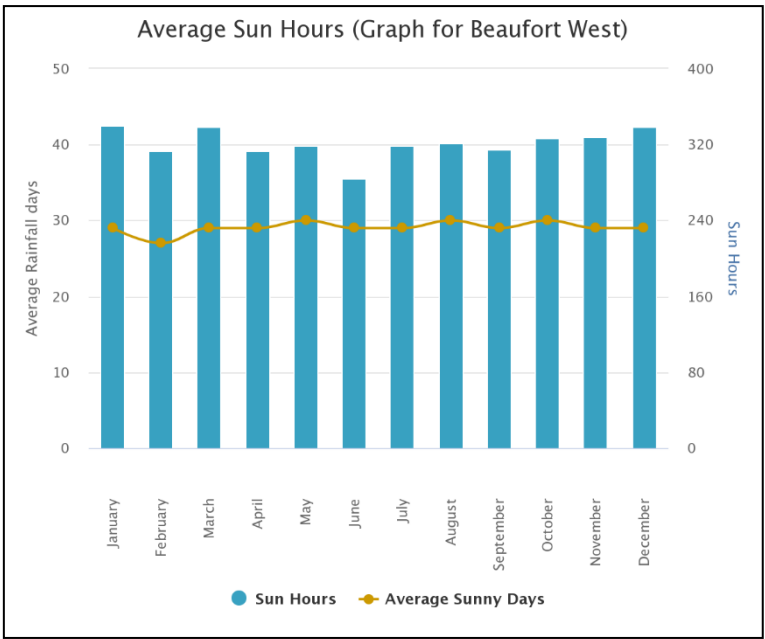


Figure 3.6: The average sun hours and sunny days per month for the Beaufort West area, including the study area for the period 2010 – 2022 (Source: World Weather Online, 2023⁷)

⁶ World Weather Online. 2023. Beaufort West Annual Weather Averages. Available at: <https://www.worldweatheronline.com/beaufort-west-weather-averages/western-cape/za.aspx> [online]. Accessed: 19 February 2023.

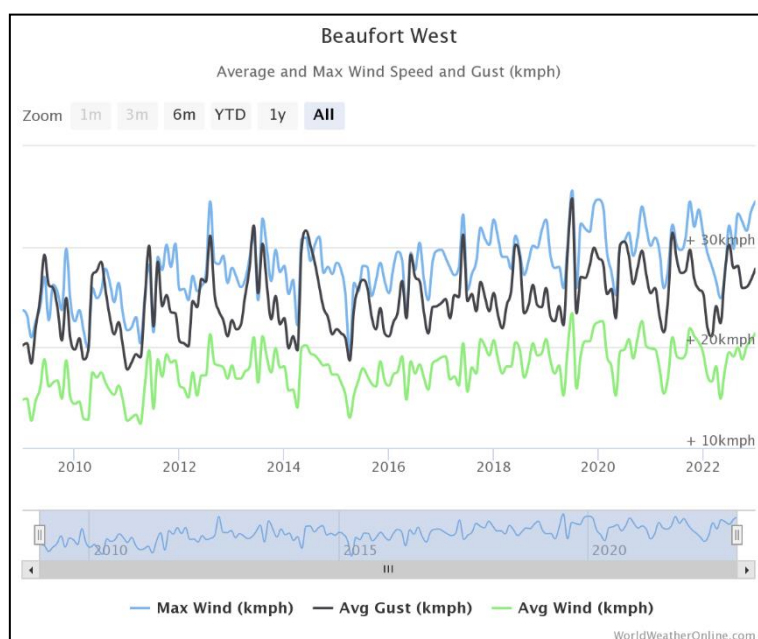


Figure 3.7: The average and maximum annual wind speeds and gusts for the Beaufort West area, including the study area for the period 2010 – 2022 (Source: World Weather Online, 2023⁸)

3.1.2 Topography and Landscape

Regionally, the site for the proposed Beau Valley WEF is located approximately 70 km south of Loxton and 46 km northwest of Beaufort West within the Beaufort West Local Municipality and the Central Karoo District Municipality in the Western Cape Province. The border to the Northern Cape Province lies approximately 2 km to the west.

The proposed site lies on the plateau, north of the Great Escarpment (Figure 3.8). The Great Escarpment, a major topographical feature in Africa extends from Limpopo, past Lesotho (known as the Drakensberg), down into the Western Cape before it extends northwards into Namibia and Angola. The Nuweveldberge, on which the proposed study area, forms the central and most arid component to the southern Great Escarpment which straddles the Northern and Western Cape.

Elevation ranges from approximately 750 m above sea level (a.s.l.) to the south of the proposed site, below the escarpment, to approximately 1 950 m a.s.l. on the tops of the mountains to the east. The proposed development site itself is located at an average elevation of 1 750 m a.s.l., comprising a wide flat area surrounded by hills and drained by small watercourses (Figure 3.8 and Figure 3.9). The overall terrain morphological description of the southern portion of the study area

⁷ World Weather Online. 2023. Beaufort West Annual Weather Averages. Available at: <https://www.worldweatheronline.com/beaufort-west-weather-averages/western-cape/za.aspx> [online]. Accessed: 19 February 2023.

⁸ World Weather Online. 2023. Beaufort West Annual Weather Averages. Available at: <https://www.worldweatheronline.com/beaufort-west-weather-averages/western-cape/za.aspx> [online]. Accessed: 19 February 2023.

is steep slopes of koppies, butts, mesas, while the northern portion is a more dissected landscape associated with the tributaries of the upper catchment of the Leeu River.

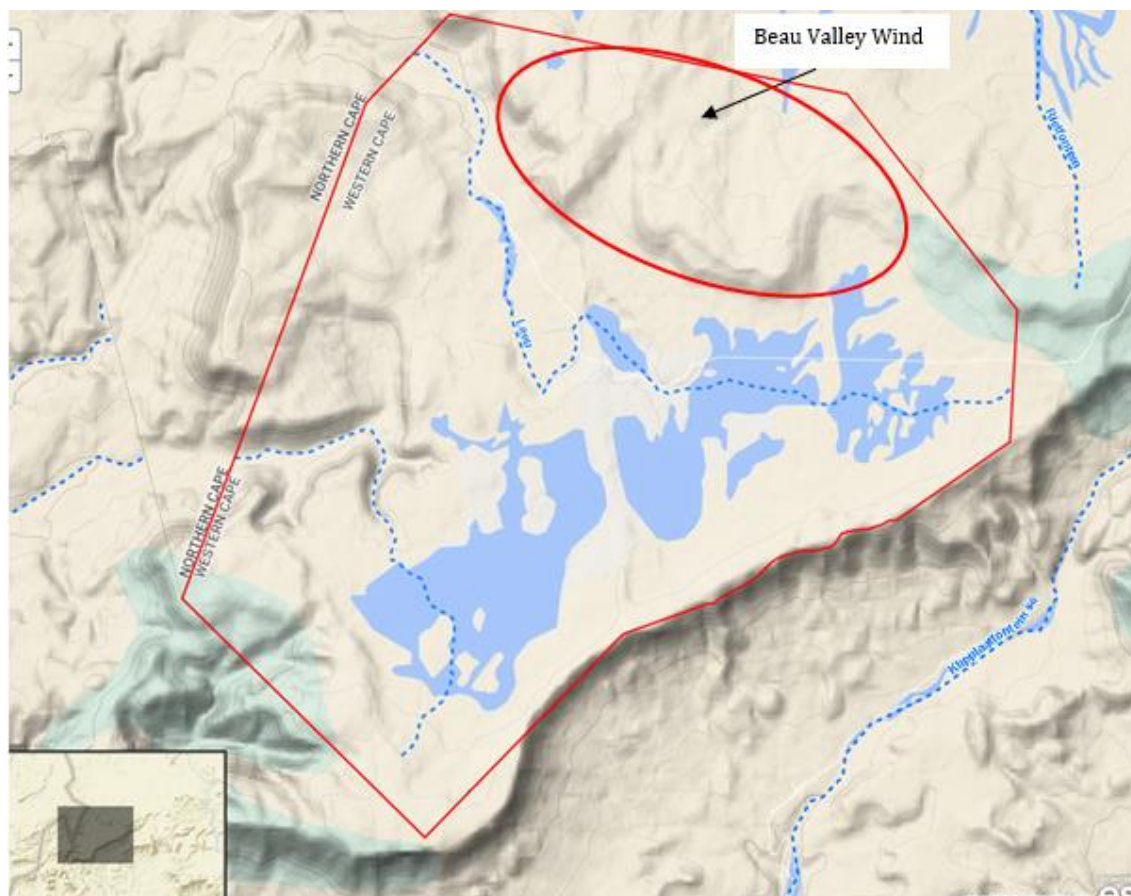


Figure 3.8: Relief map for the area, showing the topography and main watercourses and the location of the proposed project (CapeFarmMapper, 2023). The red oval shows the focus area for the proposed project.



Figure 3.9: *Portion of the Swartrug plateau (capped by Jurassic dolerite) where the wind turbines will be located with low-relief sedimentary lying vlaktes in the foreground* (Source: E Butler, 2023; Appendix G.7).



Figure 3.10: View to north towards the high ground in the distance on which the Beau Valley WEF will be constructed. Image taken from the ridge above the Doringboomsfontein farm complex (Source: J Gribble, 2023, Appendix G.6)

3.1.3 Geology and Soils

The information described below is based on Scoping-level inputs provided by the Terrestrial Biodiversity, Palaeontology, and Geotechnical Specialists, which are included in Appendix G.2, G.7, and G.11 of this Scoping Report, respectively.

The main geology of the study area is listed in Table 3.3, and an extract from the 1:250 000 geology map 3222 Beaufort West (Council for Geoscience, Pretoria) overlain by the study area is shown in Figure 3.11.

Table 3.3: Geological formations within the study area listed in order of relative age

Symbol	Formation	Group	Lithology
	Quaternary Deposit		Alluvium
Jd	Jurassic Intrusion		Dolerite
Pte	Teekloof	Beaufort	Brownish-red and greenish-grey mudstone, subordinate siltstone and sandstone

As mapped in Figure 3.11, the proposed Genesis Beau Valley WEF is located on the Swartrug plateau and almost all of the turbines are strategically underlain by unfossiliferous Early Jurassic Karoo dolerite dykes and sills. A portion of the grid infrastructure and roads on the plains of the central portion of the development are underlain by the Middle to Late Permian Teekloof Formation (Adelaide Subgroup, Beaufort Group). These potential fossiliferous sedimentary bedrocks have often been thermally metamorphized by overlying dolerite sills compromising their palaeontological sensitivity. These rocks are in-turn overlain by quaternary-aged partially calcretised alluvium deposits. Shallow, gravelly colluvial and eluvial deposits are dominated by hornfels, sandstone, and dolerite rubble that overlies most hillslopes and plateaus. The site shows very little evidence of regional scale folding or faulting, with structures mostly limited to vertical jointing within the dolerites. Downwasted weathered gravels and soils are shown in the photographs in Figure 3.9.

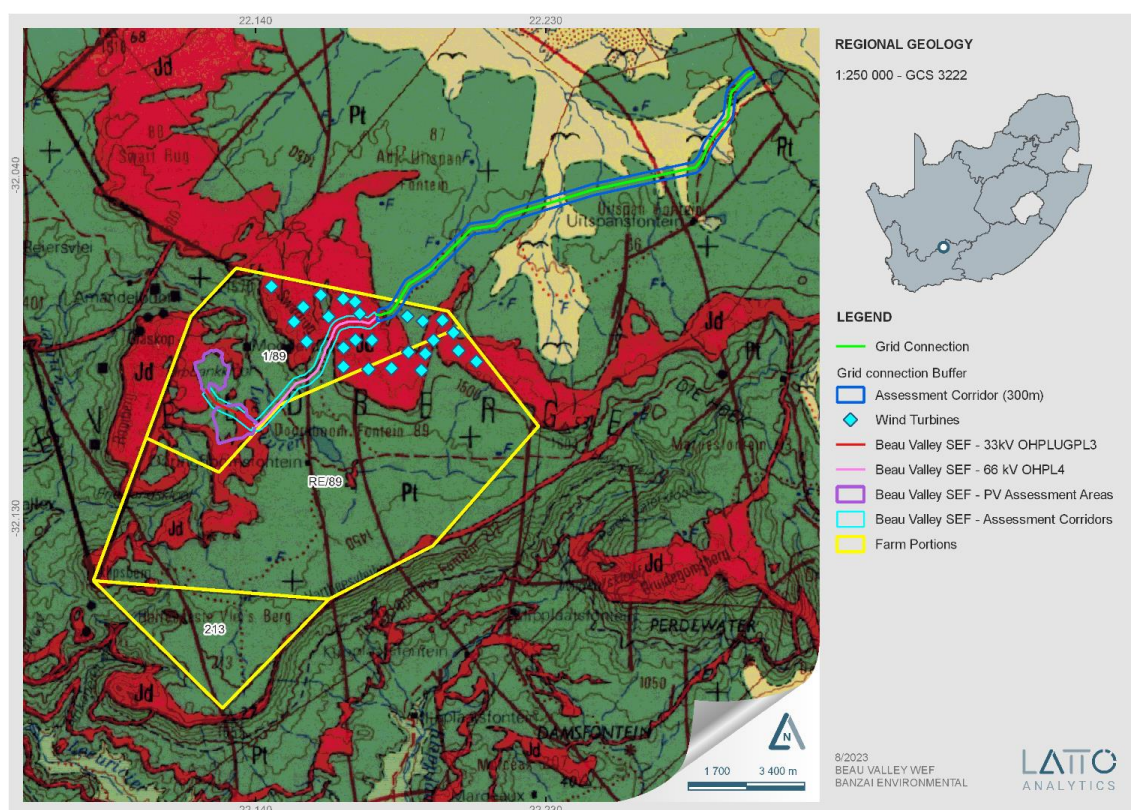


Figure 3.11: Geological setting for the proposed project and associated infrastructure (Source: Council for Geoscience, 1997, Map: 1:250 000 scale; Beaufort West 3222 in E Butler, 2023, Appendix G.7).

3.1.4 Agriculture and Land Capability

The information described below is based on the Agriculture Compliance Statement included in Appendix G.1 of this Scoping Report.

3.1.4.1 General Context

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

The Screening Tool classifies agricultural sensitivity according to only two independent criteria – the land capability rating and whether the land is used for cropland or not. All cropland is classified as at least high sensitivity, based on the logic that if it is under crop production, it is indeed suitable for it, irrespective of its land capability rating. The Screening Tool sensitivity categories in terms of land capability are based upon the Department of Agriculture's updated and refined, country-wide land capability mapping, released in 2016. The data is generated by GIS modelling.

Land capability is defined as the combination of soil, climate and terrain suitability factors for supporting rain fed agricultural production. It is an indication of what level and type of agricultural production can sustainably be achieved on any land, based on its soil, climate and terrain. The higher land capability values (≥ 8 to 15) are likely to be suitable as arable land for crop production, while lower values are only likely to be suitable as non-arable grazing land.

In 2017, the then Department of Agriculture, Forestry and Fisheries (DAFF) released updated and refined land capability mapping across the whole of South Africa. This has greatly improved the accuracy of the land capability rating for any particular piece of land anywhere in the country. The new land capability mapping divides land capability into 15 different categories with 1 being the lowest and 15 being the highest. Values of 1 to 5 translate to a low agricultural sensitivity and values of 6 to 8 translate to a medium agricultural sensitivity. Values of below 8 are generally not suitable for production of cultivated crops. This land capability data is used by the Screening Tool.

3.1.4.2 Screening Tool Descriptions and Site Sensitivity Verification

A map of the study area and proposed development footprint in relation to the Agricultural Sensitivity provided by the Screening Tool is shown in Figure 3.12. The Screening Tool classifies most of the land as low sensitivity, with small portions in the north and south rated as medium agricultural sensitivity. As per the Agricultural Compliance Statement (Appendix G.1), since none of the land within the study area is classified as cropland, the agricultural sensitivity is therefore purely a function of land capability. The classified land capability of the site is predominantly 4 to 5 (i.e. low land capability). The small-scale differences in the modelled land capability across the project area are not very accurate or significant at this scale and are largely a function of terrain and of how the data is generated by modelling, than actual meaningful differences in agricultural potential on the ground.

The low agricultural capability and sensitivity of the site, as identified by the screening tool, is confirmed by the Agricultural Compliance Statement (Appendix G.1 of the Scoping Report). The motivation for confirming the sensitivity is predominantly that the climate data (low rainfall of approximately 195 mm per annum and high evaporation of approximately 1275 mm per annum) (Schulze, 2009) proves the area to be arid, and therefore of limited land capability. Moisture availability is totally insufficient for crop production without irrigation. In addition, the land type data shows the dominant soils to be shallow soils on underlying rock. A low to medium agricultural sensitivity is entirely appropriate for this land, which is totally unsuitable for crop production.

The Site Sensitivity Verification (SSV) verified that the entire study area is of low agricultural sensitivity with a land capability value of 4 to 6. The required level of agricultural assessment is therefore confirmed as an Agricultural Compliance Statement. Based on the above and various factors, the impact of the proposed project on the agricultural production capability of the site is assessed as being acceptable. Therefore, from an agricultural impact point of view, it has been recommended that the proposed project be approved.

Therefore, there are no areas that specifically need to be avoided by the proposed project from an agricultural perspective. Furthermore, the Agriculture specialist has confirmed that the exact nature and layout of the different infrastructure within the proposed site has no bearing on the significance of agricultural impacts because it is the total footprint size (and its agricultural production potential) that determines the impact significance. Any alternative layout within the footprint is considered acceptable. Furthermore, in this agricultural environment with uniformly low production potential, the location of the proposed project within the studied landscape will also make absolutely no material difference to the significance of the agricultural impacts. The Agricultural assessment further verified that the agricultural impact of the proposed associated power lines for the Beau Valley WEF are entirely insignificant in this environment because agriculture is not excluded from the land underneath a power line. The power line corridor is not therefore considered to be part of the agricultural footprint, in keeping with NEMA's agricultural protocol.

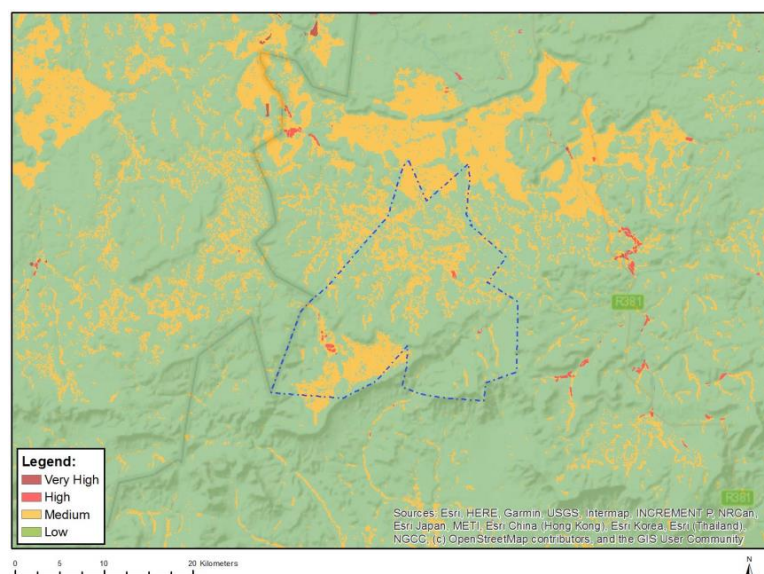


Figure 3.12: The Agricultural Sensitivity of the Beau Valley WEF study area based on the Screening Tool (Source: Screening Tool, 2023)

3.1.5 Aquatic Biodiversity

The information described below is based on Scoping-level inputs provided by the Aquatic Biodiversity Specialist, which are included in Appendix G.3 of this Scoping Report. The Scoping-level inputs were informed by a combination of desktop assessments of existing freshwater ecosystem information for the study area and surrounding catchments, as well as by a more detailed assessment of the freshwater features within the study area. The study area was visited in December 2022 and in January 2023, both following recent rainfall events, to verify the aquatic features occurring on the site. During the field visits, the characterisation and integrity assessments of the freshwater features were undertaken. Mapping of the freshwater features was undertaken using a GPS Tracker and mapped in PlanetGIS and Google Earth Professional.

3.1.5.1 Regional and Site-Specific Aquatic Context

The majority of the study area is located in the Gouritz Water Management Area (WMA) which is managed by the Breede Olifants Catchment Management Agency. The proposed Beau Valley WEF study area is located in the upper reaches of several tributaries of the Leeu River Quaternary Catchment (J22G), in the upper Gouritz River System. The tributaries drain westwards to join the Leeu River, which then drains southwards to its confluence with the Gamka River at Leeu Gamka. The Gamka River joins the Olifants River to form the Gouritz River.

Table 3.4: Key water resources information for the proposed project development area

Descriptor	Name / details	Notes
Water Management Area (WMA)	Breede Gouritz WMA	
Catchment Area	Tributaries of the Leeu River	Upper portion of the Gouritz Catchment
Quaternary Catchment	Leeu River (J22G)	
Present Ecological state	B (largely natural)	DWS (2012) for the Leeu River
Ecological Importance (EI) and Ecological Sensitivity (ES)	High EI and Very high ES	
Type of water resources	Ephemeral streams and depression wetlands	
Recommended Ecological Condition (REC)	Remain in current condition	

The Leeu River is a larger watercourse that tends to contain water for longer periods. The rivers are in a slightly modified ecological condition, with the main impacts being the Doornboomfontein Dam, livestock grazing and trampling and farm roads that cross the watercourses. The largest of the Leeu River tributaries within the site is the Frieslandkloof Stream which drains into the river from the south, confluencing with the larger river to the west of the study area. Associated with both the Leeu and Frieslandkloof Rivers are wider valley floor wash areas that contain a mosaic of depression wetlands.

The larger Leeu River corridor and the Frieslandkloof Stream are mapped in places as aquatic Critical Biodiversity Areas (CBAs), with the smaller tributaries mapped as aquatic Ecological Support Areas (ESAs). The only mapped natural Freshwater Ecosystem Priority Area Wetlands and National Wetland Map (version 5) areas are seep wetlands adjacent to the Leeu River near

Modderdrift that have been lost to past agricultural activities and a depression wetland (pan) near Swartrug in the north of the site. None of these features lies within the proposed Beau Valley WEF. The access roads to the facility largely avoid crossing within the aquatic CBAs, crossing the Leeu River immediately downstream of the channel, where it enters the Doornboomfontein Dam and at an existing road crossing.

The aquatic features that have been mapped as being of conservation concern are shown in Figure 3.13.

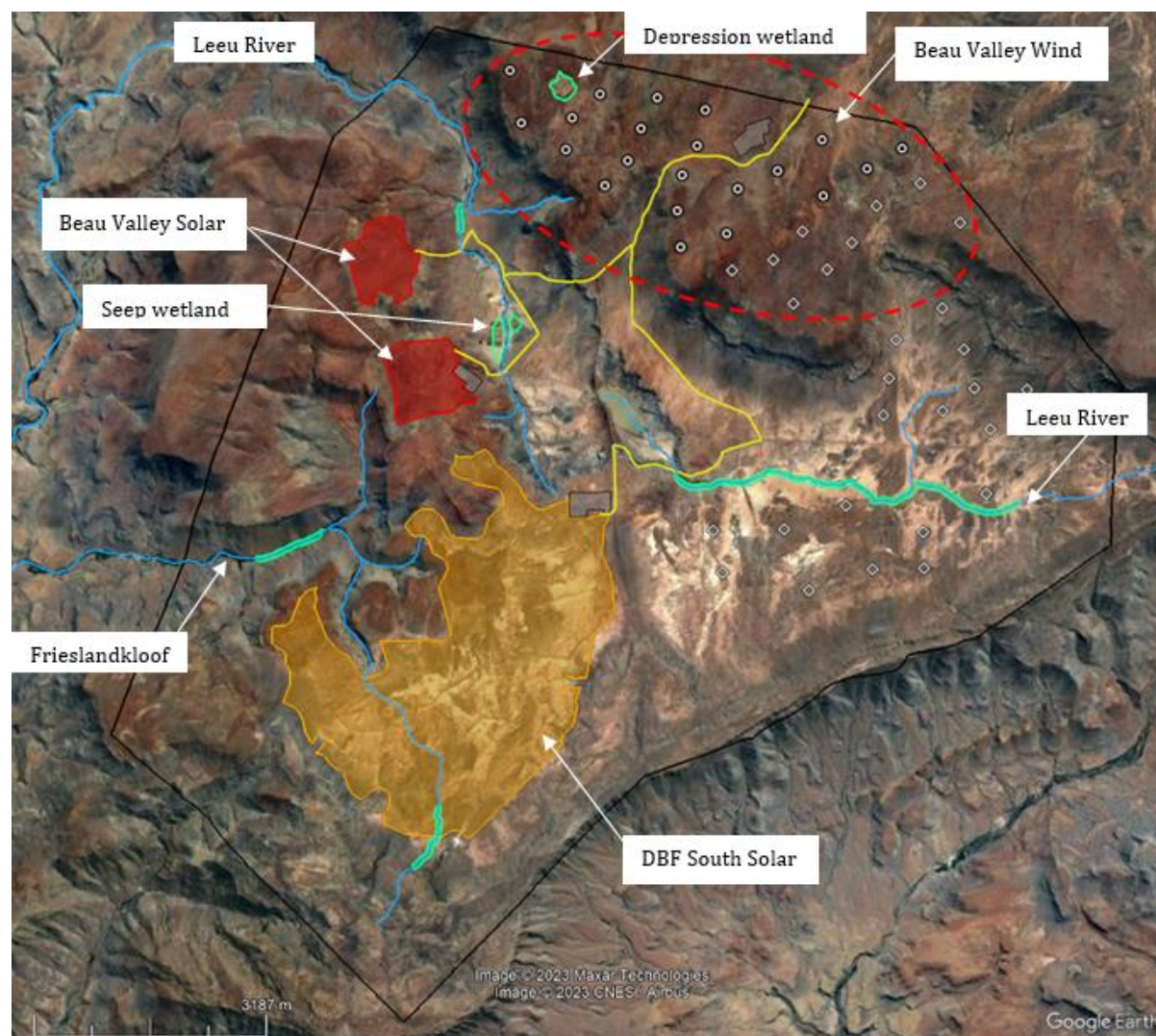


Figure 3.13: Google Earth image with the mapped aquatic features of conservation concern (light green polygons) shown within the larger Beaufort West Southern Cluster (Source: T Belcher, 2023, Appendix G.3)

Table 3.5 summarises the aquatic ecological condition, ecological importance and sensitivity and recommended ecological category, as well as the sensitivity and associated buffers for the aquatic features, based on the field assessment by the Aquatic Specialist.

Table 3.5: Summary of the ecological condition, importance and sensitivity of aquatic features, together with recommended buffers (Source: T Belcher, 2023, Appendix G.3)

Aquatic feature	Present Ecological Status (PES)	Ecological Importance and Sensitivity (EIS)	Recommended Ecological Category (REC)	Sensitivity	Recommended buffer
Leeu River	C	High	B/C	High	50 m
Small tributaries	A/B	Moderate	A/B	Medium	35 m
Depression wetlands and wider wash areas	A/B	High	A/B	High	-

The Leeu River in the study area is deemed to be of high ecological importance and sensitivity. This is due to the importance of the larger river in providing a diversity of habitats and being an important refuge for biota as well as corridors for the movement of water within the landscape. The smaller tributaries are of moderate ecological importance and sensitivity and tend to be more sensitive to flow and water quality changes.

Considering the moderately modified to largely natural ecological condition of the aquatic ecosystems within the study area and their moderate to high ecological importance and ecological sensitivities, the recommended ecological condition (REC) of these features would be that they remain in their current condition or be improved where possible. These rivers should not be allowed to degrade further. The proposed WEF is mostly located outside of the aquatic features and are unlikely to result in any significant degradation of aquatic ecosystem integrity if the recommended mitigation measures are implemented.

Aquatic Habitat and Species of Concern

Vegetation along the larger watercourses comprises *Vachellia karroo* thickets fringed by tall *Salsola aphylla*-dominated shrubland and comprising of *Stipagrostis namaquensis* grass within the sandy drainage lines. Most of the vegetation associated with the aquatic features within the valley floors in the study area is still largely natural and comprises a mix of low trees and shrubs such as *Vachellia karroo*, *Lycium* spp., *Asclepias fruticosa* and *Asparagus capensis* within the riparian zones. Patches of common *Phragmites australis* reeds, grasses such as *Stipagrostis ciliata* and *Aristida congesta* with *Juncus* rushes within the instream habitat. There is a low density of invasive alien plants such as *Opuntia* spp. occurring in the more disturbed aquatic habitats.

The watercourses in the study area are non-perennial. As a result, there are no records of indigenous fishes occurring in the Leeu River System. The amphibian diversity within the study area is also likely to be relatively low. No species of conservation concern are thus known to occur in the study area from an aquatic perspective. The amphibian species likely to be present are quite widespread and of low conservation concern. These include the Karoo Dainty Frog *Cacosternum karooicum* (Data Deficient), Poynton's River Frog *Amietia poyntoni*, the Cape Sand Frog, *Tomopterna delalandii*, Pygmy Toad *Poyntonophrynus vertebralis* and the Karoo Toad, *Vandijkophrynus gariepensis*. The latter two amphibian species are listed as "Least Concern".

A faunal species potentially in the area associated with watercourses the Riverine Rabbit, which is listed as Critically Endangered. The habitat preference of Riverine Rabbit is alluvial seasonal watercourses, browsing on *Pteronia erythrochaetha*, *Kochia pubescens*, *Salsola glabrescens* and Mesembryanthemaceae. They are unable to survive in heavily overgrazed or agriculturally transformed habitats as is the case with the proposed development footprint. This finding by the Aquatic specialist is supported by the Terrestrial Biodiversity specialist (see Appendix G.2 and Section 3.2.7.3 of the Scoping Report).

Strategic Water Source Areas

Strategic Water Source Areas (SWSAs) are defined as “areas of land that either: (a) supply a disproportionate (i.e., relatively large) quantity of mean annual surface water runoff in relation to their size and so are considered nationally important; or (b) have high groundwater recharge and where the groundwater forms a nationally important resource; or (c) areas that meet both criteria (a) and (b)” (Le Maitre *et al.*, 2018:1 in Department of Environment, Forestry and Fisheries (DEFF) [now operating as the DFFE], 2019: Page 60⁹). The proposed project study area is located approximately 36 km to the north-west of the Nuweveld surface water SWSA. The proposed project study area is located approximately 25 km to the north-west of the Beaufort West groundwater SWSA. The proposed project will not impact on the Nuweveld surface water SWSA and the Beaufort West groundwater SWSA.

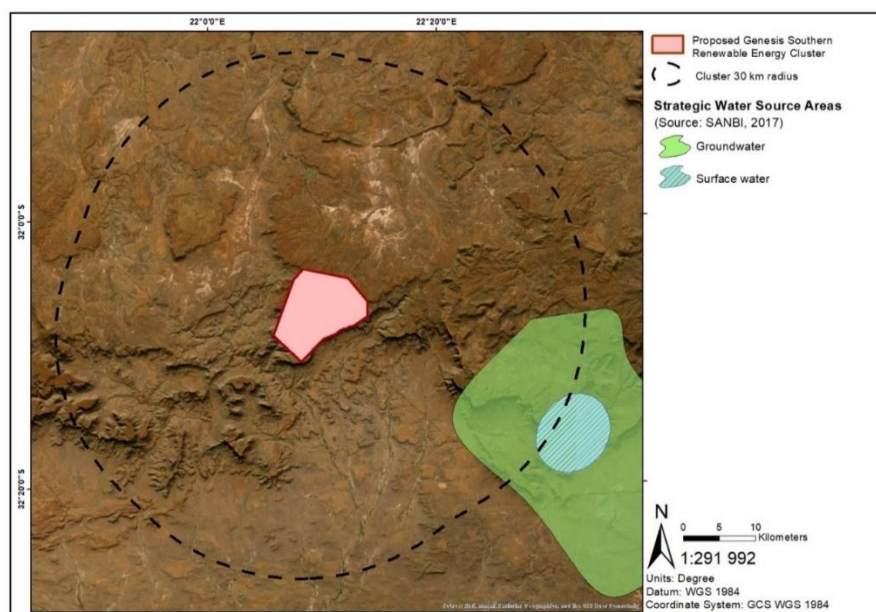
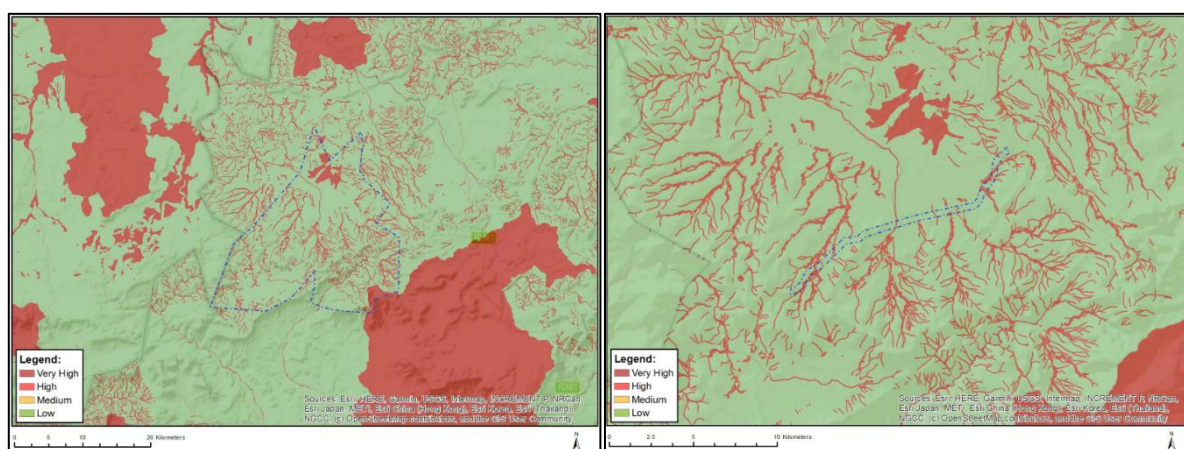


Figure 3.14: Strategic Water Source Areas within 30 km of the GEED Southern Renewable Energy Cluster.

⁹ Department of Environment, Forestry and Fisheries (DEFF), 2019. Strategic Environmental Assessment for the Development of a Phased Gas Pipeline Network in South Africa. CSIR Report Number: CSIR/SPLA/EMS/ER/2019/0077/B. ISBN Number: ISBN 978-0-7988-5649-2. Stellenbosch and Durban.

3.1.5.2 Screening Tool Descriptions and Site Sensitivity Verification

Figure 3.15 below presents the information from the Screening Tool for the Aquatic Biodiversity Combined Sensitivity as it relates to the study area and the proposed development footprint. Evident from this data is that most of the wider study area is indicated to be of low sensitivity, with only the main channels of the larger rivers and some wetland areas within the wider site being mapped as being of very high sensitivity. The very high sensitivity is linked to aquatic CBAs that are associated with larger rivers that contain instream wetland habitat. These larger river channels will need to be crossed by the proposed access roads to the Beau Valley WEF. The findings of the Aquatic Biodiversity and Species Scoping Report (Appendix G.3) largely agree with the screening tool mapping.



**Figure 3.15: Aquatic Biodiversity Combined Sensitivity of the Beau Valley WEF (left) and associated power line corridor (right)
(Source: DFFE Screening Tool, 2023)**

Prior to commencing with the Aquatic Biodiversity Specialist Assessment in accordance with the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Aquatic Biodiversity (Government Notice 320, dated 20 March 2020), a site sensitivity verification was undertaken in order to confirm the current land use and environmental sensitivity of the proposed project area as identified by the National Web-Based Environmental Screening Tool (Screening Tool).

The details of the site sensitivity verification are noted below:

Date of Site survey	17 December 2022 and 23 January 2023
Specialist Name	Toni Belcher
Professional Registration Number	400040/10
Specialist Affiliation / Company	Private

The proposed Beau Valley WEF Project was assessed in terms of its aquatic biodiversity sensitivity by means of a desktop analysis using available aquatic ecosystem mapping, aerial imagery and a site survey was undertaken on 17 December 2022 and 23 January 2023. A literature survey was also undertaken to determine any aquatic biodiversity sensitivities that may occur in the surrounding area.

Based on the PES, EI&ES and REC findings detailed in Table 3.5, aquatic sensitivity and recommended buffers have been mapped to protect these ecosystems. The recommended buffer area between the aquatic features and the project components is 35m from the centre of the smaller streams or along the delineated edge of the wetlands and 50m from the larger Leeu River. The mapped aquatic features and recommended buffers are shown in Figure 3.16.

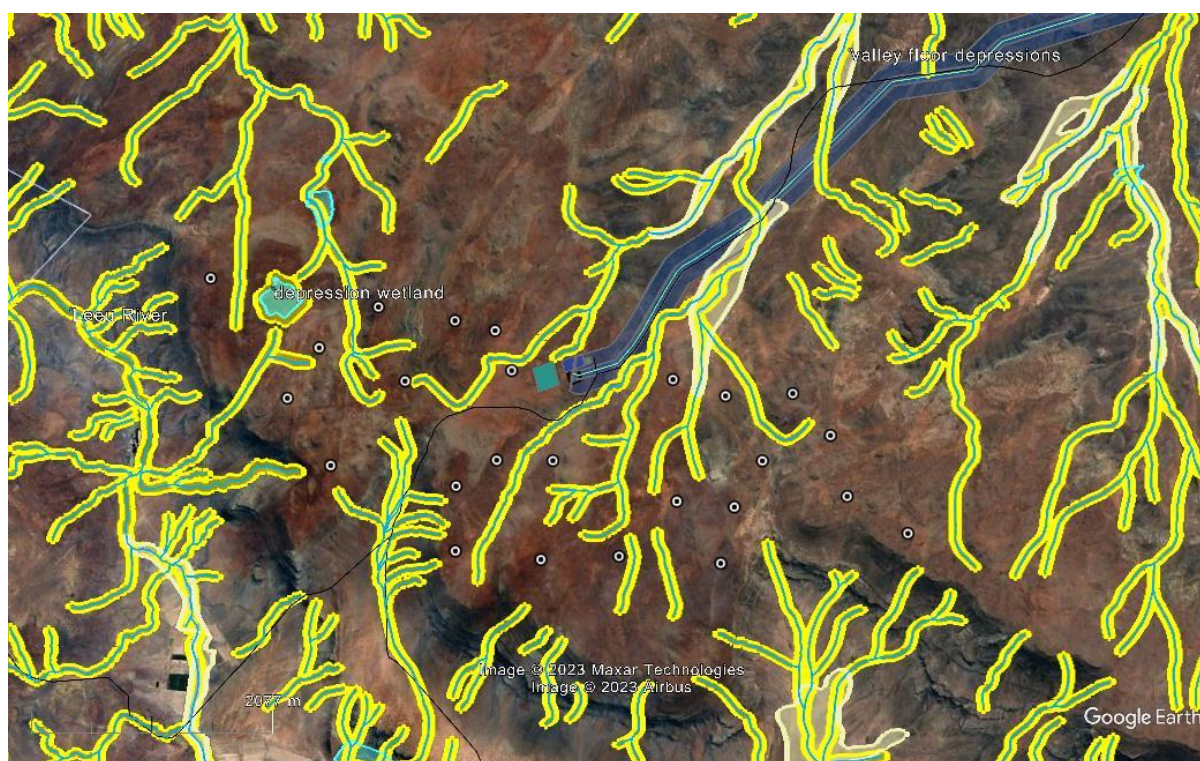


Figure 3.16: Google Earth image of the proposed renewable energy development and the associated aquatic ecosystem constraints (recommended buffers as the yellow areas; grid connection the pale green line and turbines the round waypoints). The aquatic features mapped as FEPA wetlands or aquatic CBAs are indicated by the green polygons) (Source: T Belcher, 2023, Appendix G.3).

In terms of the proposed layout, there are some minor watercourses that occur within the southern proposed facilities. These watercourses are deemed of moderate sensitivity and the potential impact of the proposed activities is likely to be of low significance that they would not pose a constraint to the proposed development if mitigated. No infrastructure or turbines should be placed within these watercourses, but limited service tracks and grid lines may be constructed through these features.

The proposed access roads will require careful consideration where they are new roads to be established down steep slopes that are drained by watercourses, as these will pose an erosion risk and a higher risk of impacting the adjacent watercourses. Where widening along existing roads and the watercourse crossings can be adequately mitigated, the aquatic ecosystems would not be a constraint to the required upgrade to the existing roads.

In terms of aquatic ecosystem sensitivity, the larger Leeu and Frieslandkloof Rivers should be treated as high-sensitivity, no-go areas, while the smaller tributaries are of medium sensitivity as

well as the recommended buffers for all the watercourses. The wider valley floor depressions and wider wash areas are areas that should largely be avoided in the proposed development as medium sensitivity areas. The buffer areas are areas of protection recommended as a development setback for the WEF that are intended to reduce the edge effect and direct impacts on the integrity and functionality of the aquatic ecosystems.

Figure 3.17 indicates the aquatic sensitivity layers and their associated recommended buffers for the proposed project. The no-go area is associated with the depression wetland (red polygon) as an area of high aquatic sensitivity that should be avoided. The medium sensitivity (orange areas) should be avoided where possible, or in the case of the new service tracks, adequately mitigated as stipulated in Chapter 6 and Appendix G.3 of this Scoping Report. The existing access roads that intersect with the medium and high sensitivity areas will be upgraded and is acceptable.

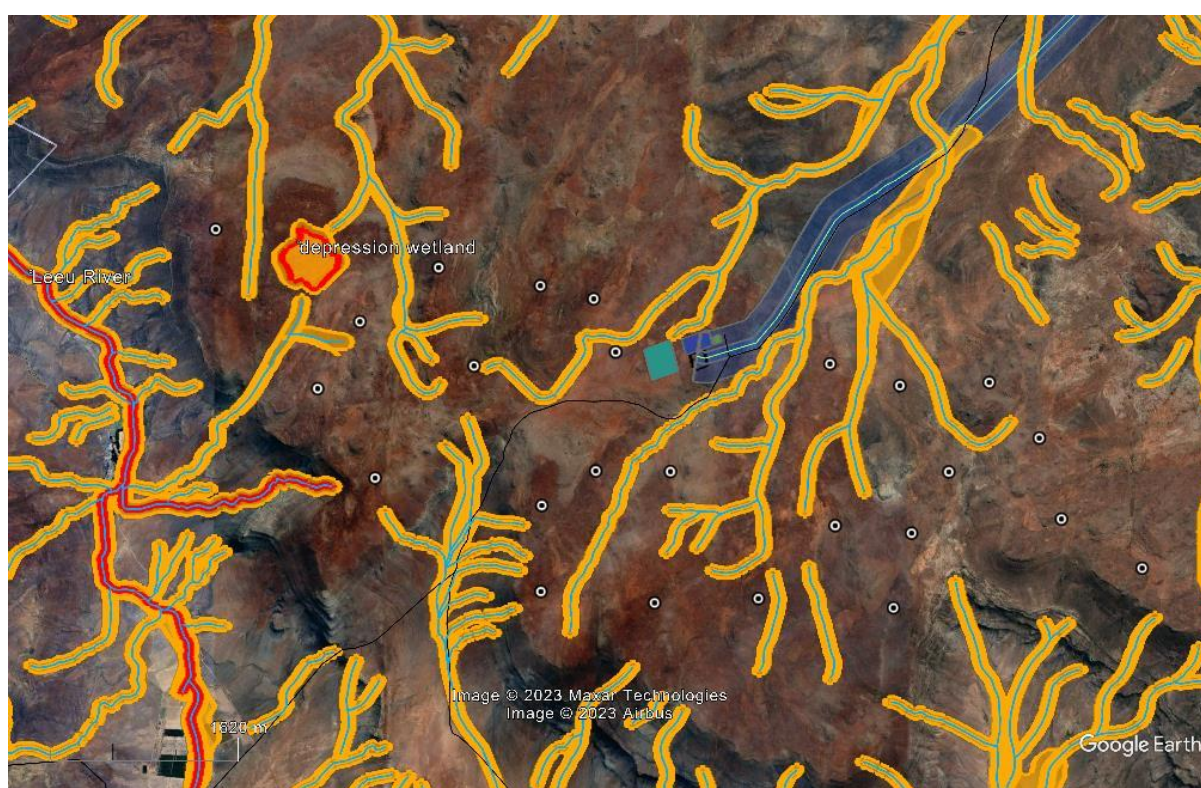


Figure 3.17: Google Earth image showing the aquatic ecosystem sensitivity mapping for the proposed project (Source: T Belcher, 2023, Appendix G.3).

3.1.6 Terrestrial Biodiversity

The information described below is based on Scoping-level inputs provided by the Terrestrial Specialist, and which are included in Appendix G.2 of this Scoping Report.

A literature review of existing reports, scientific studies, databases, reference works, guidelines, and legislation relevant to the study area was conducted to establish the baseline ecological and vegetative condition of the study area. The literature review aimed to identify the potential habitats and flora Species of Conservation Concern (SCC) present within the study area. The South African Biodiversity Information Facility (SABIF)/ SANBI Integrated Biodiversity Information System (SIBIS) database was used to access distribution records on southern African plants. The Red List of South African Plants website (SANBI, 2022)¹⁰ was also utilized to provide the most current account of the national status of flora. Relevant field guides and texts were also consulted for identification purposes in the field during the surveys.

An initial site visit took place on the 9th of September 2022, with a follow-up field assessment on the 9th of May 2023 and a final walk-through of the development footprint taking place on the 9th of June 2023. During the site visits, the different biodiversity features, habitat, and landscape units present at the site were identified and mapped in the field. Specific features visible on the satellite imagery of the site were also marked for field inspection and were verified and assessed during the site visit. During the final field assessment, a full walk-through-surveys of the development footprint was conducted and all plant and animal species observed were recorded. Active searches for reptiles and amphibians were also conducted within habitats likely to harbour or be important for such. The presence of sensitive habitats such as stands of large trees, pans or rocky outcrops were noted in the field where present and recorded on a GPS. Particular attention was paid to the integrity of habitats present as well as the broader ecological context in terms of connectivity and broad-scale ecological processes likely to be operating at the site.

In terms of the actual sampling approaches that were used, the vegetation of the site was characterised through walk-through surveys distributed across the site, in which plant species lists for the different habitats observed were compiled. Specific attention was paid to the presence of SCC as well as other species which are considered to be of ecological significance. In terms of fauna, active searches were conducted for mammals, reptiles and amphibians across the site, within habitats where such species are likely to be encountered. In addition, all reptiles and amphibians encountered while doing other field work were recorded. As the Riverine Rabbit is a species of particular concern in the area, camera trapping was conducted within the site within areas observed to be potentially favourable for this species.

3.1.6.1 Regional Vegetation

The national vegetation map (Mucina & Rutherford 2006 & SANBI 2018 update) for the study area is depicted below in Figure 3.18. The Beau Valley WEF site is classified as falling largely within the Upper Karoo Hardeveld vegetation type with some Western Upper Karoo vegetation type also present but outside of the area where the turbines would be located. Although it has not been mapped by the VegMap, the major drainage features of the area, can be considered to represent the Southern Karoo Riviere vegetation type.

¹⁰ SANBI (2022): <http://redlist.sanbi.org/>.

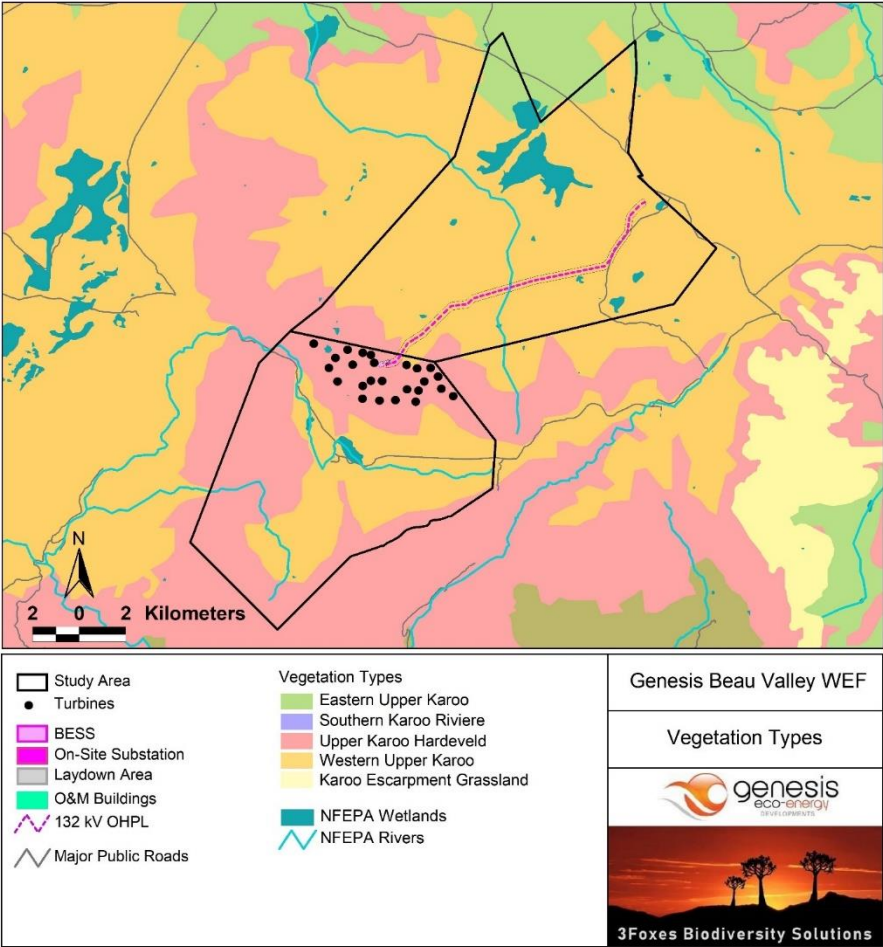


Figure 3.18. The national vegetation map (SANBI 2018 Update) for the proposed site and surrounding area (Source: S Todd, 2023, Appendix G.2).

Most of the hills, outcrops and undulating slopes within the Beau Valley WEF site consist of Upper Karoo Hardeveld and this unit has been significantly under-mapped within the national vegetation map. This vegetation type usually consists of very rocky ground and is often associated with steep slopes, with the result that it is considered vulnerable to disturbance but is also an important habitat for fauna. It also contains a higher abundance of protected plant species than the adjacent areas of Western Upper Karoo. Consequently, it is generally considered higher ecological sensitivity than the surrounding areas. This habitat creates a wide variety of microhabitats for fauna and flora and the areas with large amounts of exposed rock have therefore been mapped as high sensitivity. Although the abundance of plant species of concern appears to be relatively low, there are numerous provincially protected species present.



Figure 3.19: Typical dolerite plateau area from the Beau Valley WEF site, representing the Upper Karoo Hardeveld vegetation type (Source: S Todd, 2023, Appendix G.2).

Within the study area, the Western Upper Karoo vegetation type is associated with the lower-lying parts of the site, on open plains. Common and dominant shrub species include *Lycium cinereum*, *Tripteris sinuata*, *Chrysocoma ciliata*, *Eriocephalus ericoides* subsp. *ericoides*, *Helichrysum lucilioides*, *Pentzia globosa*, *Tetragonia arbuscula*, *Asparagus capensis* var. *capensis*, *Berkheya annectens*, *Eriocephalus decussatus*, *Euryops multifidus*, *Felicia muricata*, *Hermannia cuneifolia*, *H. spinosa*, *Melolobium candicans*, *Pegolettia retrofracta*, *Pentzia incana*, *Pteronia adenocarpa*, *P. glauca*, *P. mucronata*, *P. sordida*, *Rosenia glandulosa*, *Selago albida* and *Zygophyllum microphyllum*. Succulent shrubs include *Ruschia intricata*, *Aridaria noctiflora* subsp. *straminea*, *Brownanthus ciliata* subsp. *ciliatus*, *Drosanthemum lique*, *Euphorbia rectirama*, *Galenia sarcophylla*, *Salsola calluna*, *S. glabrescens*, *S. rabieana*, *S. tuberculata*, *Sarcocaulon patersonii* and *Psilocaulon coriarium*. Grasses include *Aristida congesta*, *Enneapogon desvauxii*, *Stipagrostis ciliata*, *S. obtusa*, *Aristida adscensionis*, *A. diffusa*, *Eragrostis obtusa*, *Fingerhuthia Africana* and *Tragus berteronianus*.



Figure 3.20: Typical open plains present in the study area, corresponding with the Western Upper Karoo vegetation type (Source: S Todd, 2023, Appendix G.2).

About 12% of the Southern Karoo Riviere vegetation type has been transformed as a result of intensive agriculture and the construction of dams. Although it is classified as Least Threatened, it is associated with rivers and drainage lines and, as such, represents areas that are considered ecologically significant. Within the study site, the Leeu Rivier lies along the grid connection route and while these areas are often of high significance due to their association with the Riverine Rabbit, the habitat within the affected area is not considered suitable for the Riverine Rabbit. Typical and dominant species observed at the site include *Searsia lancea*, *Cenchrus ciliaris*, *Melanthus comosus*, *Sporobolus ioclados*, *Pentzia globosa*, *Salsola aphylla*, *Tribulis terrestris*, *Felicia muricata*, *Atriplex vestita*, *Roepera retrofractum*, *Cynodon dactylon*, *Chrysocoma ciliata*, *Stipagostis namaquensis*, *Lycium pumilum*, *Lycium cinereum*, *Artemisia africana*, *Tripteris spinescens*, *Exomis microphylla* and *Derris denudata*. These areas are considered important for ecological processes and the provision of ecosystem services and as such are considered to represent sensitive habitats.

3.1.6.2 Biodiversity Conservation Planning

Critically Endangered and Threatened Ecosystems

Based on specialist input, there appears to be no Critically Endangered or Threatened Ecosystems present within the proposed project site. The Upper Karoo Hardeveld vegetation type is considered to be vulnerable to disturbance. The Upper Karoo Hardeveld vegetation type is associated with 11 734 km² of the steep slopes of koppies, buttes, mesas and parts of the Great Escarpment covered with large boulders and stones. The vegetation type occurs as discrete areas associated with slopes and ridges from Middelpos in the west and Strydenburg, Richmond and Nieu-Bethesda in the east, as well as most south-facing slopes and crests of the Great Escarpment between Teekloofpas and eastwards to Graaff-Reinet. However, while the rocky hills are considered sensitive from an overall ecological perspective, they are considered low sensitivity for plant species as no plant SCC were observed within the site.

Critical Biodiversity Areas and Ecological Support Areas

Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs), together with Protected Areas, are important for the persistence of a viable representative sample of all ecosystem types and species as well as the long-term ecological functioning of the landscape. Biodiversity priority areas are described as follows:

- CBAs are areas of the landscape that need to be maintained in a natural or near-natural state in order to ensure the continued existence and functioning of species and ecosystems and the delivery of ecosystem services. In other words, if these areas are not maintained in a natural or near-natural state then biodiversity conservation targets cannot be met. Maintaining an area in a natural state can include a variety of biodiversity-compatible land uses and resource uses. For CBAs the impact on biodiversity of a change in land-use that results in a change from the desired ecological state is most significant locally at the point of impact through the direct loss of a biodiversity feature (e.g., loss of populations or habitat). All FEPA prioritized wetlands and rivers have a minimum category of CBA1, while all FEPA prioritised wetland clusters have a minimum category of CBA2.
- ESAs are areas that are not essential for meeting biodiversity representation targets/thresholds but which nevertheless play an important role in supporting the ecological functioning of CBAs and/or in delivering ecosystem services that support socio-economic development, such as

water provision, flood mitigation or carbon sequestration. The degree of restriction on land use and resource use in these areas may be lower than that recommended for CBAs. For ESAs a change from the desired ecological state is most significant elsewhere in the landscape through the indirect loss of biodiversity due to a breakdown, interruption or loss of an ecological process pathway (e.g. removing a corridor results in a population going extinct elsewhere or a new plantation locally results in a reduction in stream flow at the exit to the catchment which affects downstream biodiversity). All natural non-FEPA wetlands and larger rivers have a minimum category of ESA.

Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) for the study are indicated in terms of the Western Cape Biodiversity Spatial Plan (2017) and the Northern Cape CBA Map (2016) (Figure 3.21). There is a single small extent of CBA within the Beau Valley Wind project area (Figure 3.21). Based on the lookup layer associated with the CBA map, the reason underlying the CBA is largely due to water resource protection due to the pan present at the centre of the CBA. These drainage features have been mapped by the Aquatic Specialist and a buffer of 35 m from the delineated edge of the drainage features was specified by the specialist (see Section 3.2.6). The development of the Beau Valley WEF would have low impact on this pan and the underlying functions of the affected CBA. Under the preliminary layout provided, there are no turbines within the affected CBA and it is likely that access roads can avoid the CBA as well. As such, impacts of the Beau Valley WEF on CBAs would be minimal and this does not appear to be a significant constraint associated with the development.

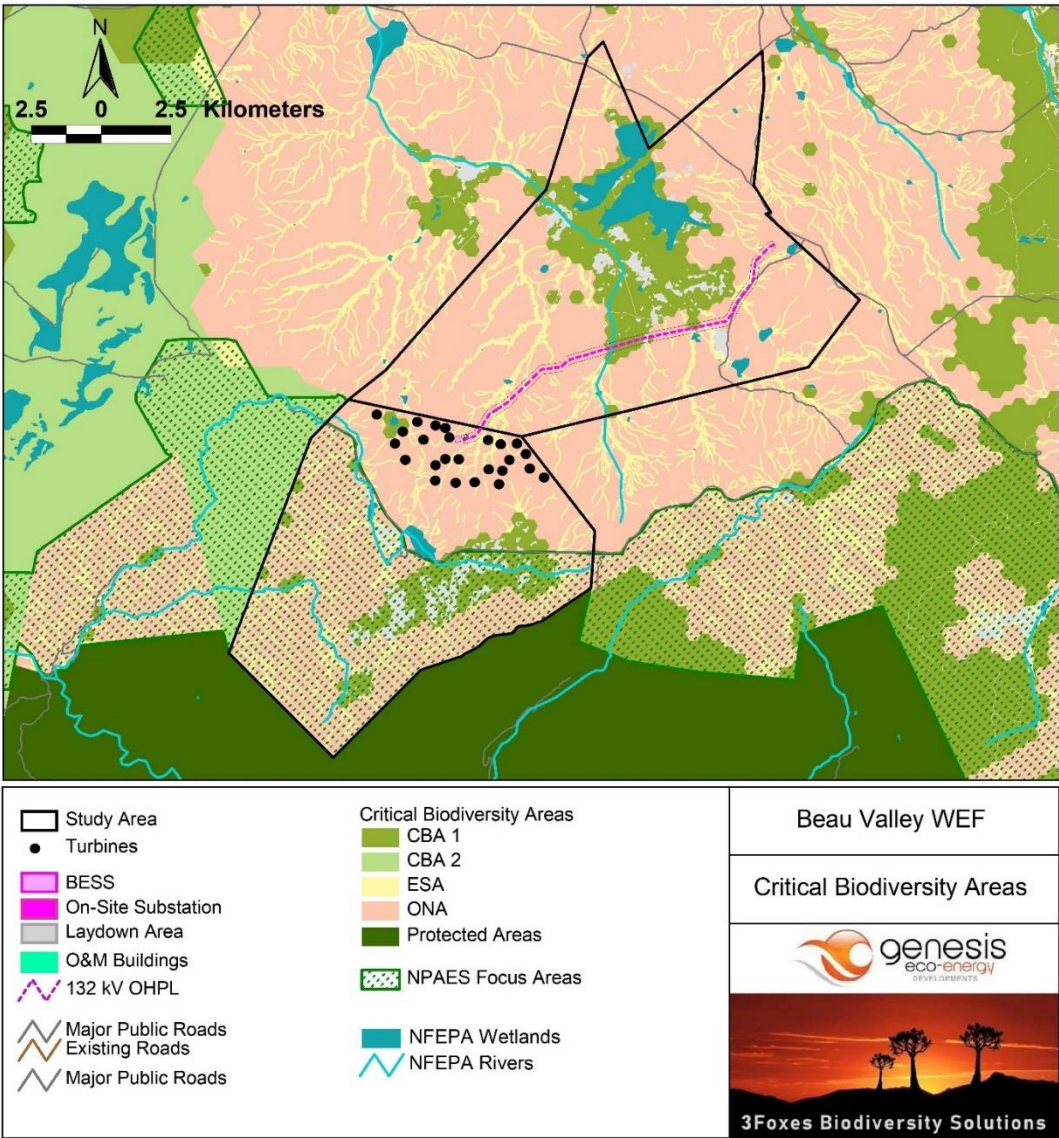


Figure 3.21: Extract of the Western Cape Biodiversity Spatial Plan and Northern Cape CBA map for the study area (Source: S Todd, 2023, Appendix G.2).

National Protected Area Expansion Strategy (NPAES) Focus Areas

According to the South African Protected Areas Database (SAPAD), the project area is not located within any formally Protected Areas, as defined by the National Environmental Management: Protected Areas Act (Act 57 of 2003) (NEM: PAA). The National Protected Area Expansion Strategy (NPAES) focus areas for land-based expansion are comprised of large, intact and unfragmented areas of importance for biodiversity representation and ecological persistence. As such, these areas are suitable for the creation or expansion of extensive Protected Areas. The NPAES (DEA, 2018) has identified Nama-Karoo habitat as under protected, with only 1% of the 24.8 million hectares of this habitat protected (as at 2014) and sets the target of protecting 11% of this habitat within 20 years.

The Beau Valley WEF project area lies outside of the NPAES Focus Area that occurs south and west of the site, associated the Karoo National Park (see Figure 3.22). However, the site is still marginally within what would be considered to represent a buffer area for the Karoo National Park. Although located outside the NPAES (2018) focus area, the site is located on the proposed properties intersecting with the NPAES focus area and therefore identified for the Karoo National Park expansion in the Park Management Plan (2017).

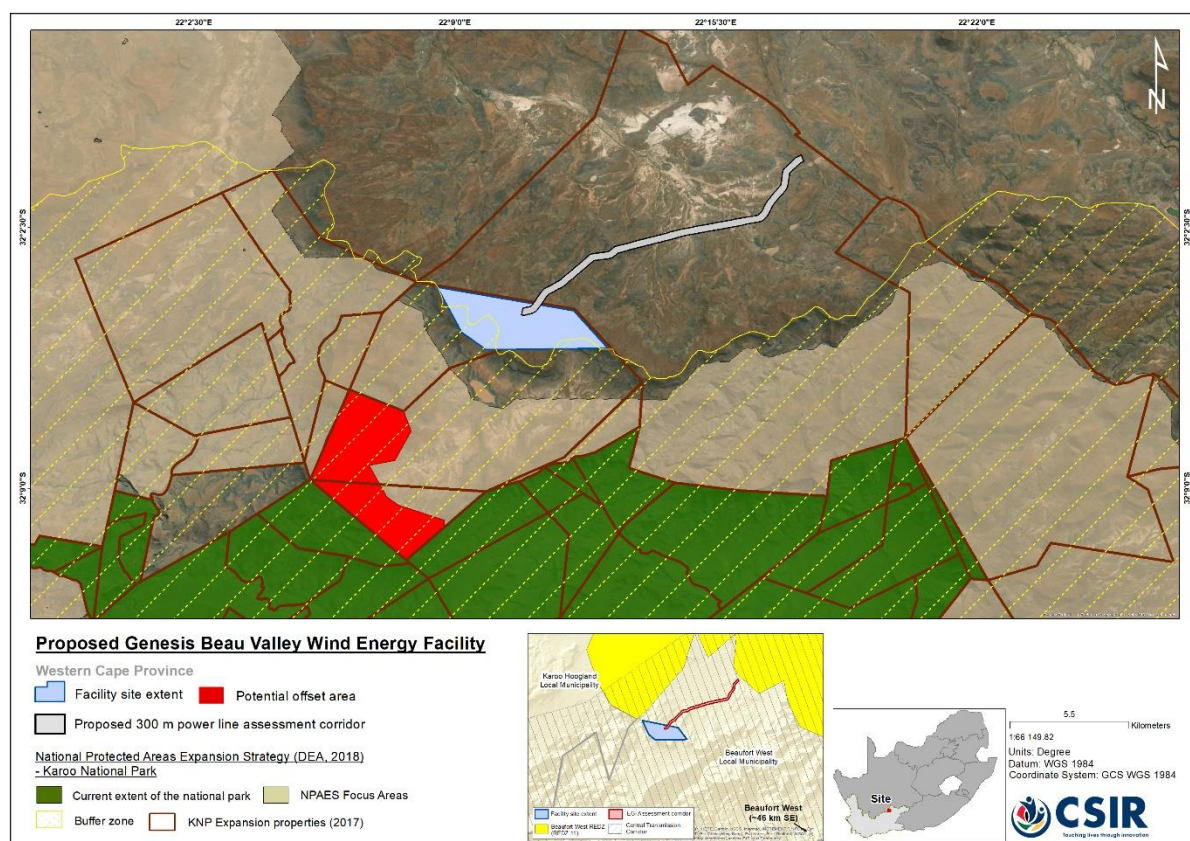


Figure 3.22: The Proposed Development Site in relation the Karoo National Park and the NPAES Focus Area.

In terms of the National Environmental Management: Protected Areas Act (NEM: PA, Act 57 of 2003, as amended), the legal procedure for the declaration of protected areas requires that in the case of privately owned land, the landowners' consent to the declaration in the form of a written agreement entered into with the Minister or with the MEC. In accordance with Section 33 of NEM: PA, the declaration of private land as a protected area requires that an extensive public participation and consultation process be undertaken. This process requires that the Minister or MEC "must" "send a copy of the proposed notice by registered post to the last known address of each owner of the land within the area to be declared, and inform in an appropriate manner any other person whose rights in such land may materially or adversely be affected by such declaration." Preceding the landowner consent process and the formal declaration of the affected properties as a protected area, the National Protected Area Expansion Strategy has limited legal basis to restrict a landowner from exercising their legal discretionary rights to pursue development on the land as provided in Section 25 of the Constitution of the Republic of South Africa.

The NPAES (DEA, 2018) identifies three mechanisms for protected area expansion:

- (1) acquisition of land (which is recognised as involving large upfront costs);
- (2) contract agreements with landowners who maintain ownership of their land; and
- (3) declaration of public or state land that requires reassigning of the land to a protected area agency (this option has limited potential as very little of the priority areas are public or state land).

The NPAES (DEA, 2018) states that the negotiation and conclusion of contractual agreements with landowners was the predominant mechanism for achieving protected area expansion in phase 1 (2008 to 2014). This option is often much more cost effective than acquisition of land and is used increasingly as part of biodiversity stewardship programmes (DEA, 2018: xi & 12), as it is clearly recognised in the NPAES that financing is a very significant constraint to the ability of protected area agencies to meet their targets for management effectiveness and protected area expansion.

In Section 6.2 of the Terrestrial Biodiversity Scoping Phase Study, it is noted that to mitigate the impact on the future expansion of the KNP, potential measures that can be implemented to reduce negative effects on the existing KNP and reduce impacts on the future use value of the project area should be investigated in collaboration with SANParks. Accordingly, a site meeting was held between SANParks, the Project Developer and the CSIR on 14 March 2023. Further engagements between SANParks, the Project Developer and the affected landowners will be held during the EIA phase. Consultation with the Karoo National Park/ SANParks was therefore initiated at an early stage during the Scoping and EIA process, and these engagements will be ongoing during the EIA phase. The purpose of these engagements will be to find a mechanism to achieve the balanced objectives of both the NPAES and the various government policies and initiatives for renewable energy development and conservation outcomes and meeting South Africa's international climate change commitments. Mitigation measures such as committing some of the land adjacent to the Park to stewardship or similar conservation commitment are being investigated in collaboration with SANParks and the Karoo National Park management. The implementation of a stewardship programme will represent a collaborative and co-generated approach between the parties to find a balance and achieve the imperatives of biodiversity conservation and renewable energy development.

3.1.6.3 Faunal Communities

In terms of the fauna that potentially occur at the site, the potential diversity is considered to be moderate and numbers approximately 38 mammals, 28 reptiles and about 6 frog and toads. Mammals observed at the site or immediate vicinity directly or indirectly include Steenbok, Kudu, Cape Hare, Cape Porcupine, Suricate, Bat-eared Fox, Cape Fox, Cape Mongoose, Yellow Mongoose, Common Genet, Aardwolf and Black-backed Jackal. Reptiles and amphibians observed on the site or in the immediate environment include Leopard Tortoise, Southern Tent Tortoise, Karoo Girdled Lizard, Spotted Sand Lizard, Southern Rock Agama, Cape Thick-toed Gecko, Variegated Skink, Ground Agama and Karoo Toad.

The DFFE Screening Tool identified the Karoo Dwarf Tortoise and Riverine Rabbit as being of potential concern at the site. In terms of these two species, there is some habitat present at the site and particularly along the grid connection that considered suitable for the Karoo Dwarf Tortoise. There is however no habitat present that is considered suitable for the Riverine Rabbit.

In the Upper Karoo, the Riverine Rabbit is associated with specific riparian vegetation communities which can readily be recognised. In terms of the Riverine Rabbit, there is no habitat within the development footprint the Beau Valley Wind project. There are several other fauna species of concern that occur in the wider area (Table 3.6) that also warrant consideration. However, interrogation of these species and their associated habitats and distribution suggests that none of these other species are likely to occur within the affected area site as they all occur in habitats that are not well-represented within the site.

The Karoo Dwarf Tortoise, *Chersobius boulengeri*, occurs in association with dolerite ridges and rocky outcrops of the southern Succulent and Nama Karoo biomes, and peripherally in the Albany Thicket biome in the southeast, at altitudes of approximately 800 to 1,500 m. The vegetation usually consists of dwarf shrubland that often contains succulent and grassy elements. The tortoises usually take shelter under rocks in vegetated areas or in rock crevices. However, these are quite specific in terms of their requirements with the result that suitable retreats for the species are not common. Due to their strong habitat association, populations are isolated on rocky outcrops with specialized vegetation. It is not possible to provide a reliable estimate of the population size within the Beau Valley WEF. Firstly, there are no reliable estimates of population density for this species that can be extrapolated across the range and secondly, the reported population declines appear to be widespread with the result that it is not possible to ascertain what proportion of the suitable habitat within the site would actually be occupied. The affected habitat tract within the Beau Valley WEF site occupies less than 0.01% of the Area of Occurrence of this species and assuming a similar level of occupancy across the range, this would amount to approximately 0.01% of the population. Direct habitat loss would be very low and is not considered a significant threat resulting from the development. Furthermore, the areas of optimal habitat would be avoided by the development of the Beau Valley WEF project as they have been mapped as no-go areas, with the result that while there may be some habitat loss for this species, the areas of perceived higher quality habitat would be little impacted. The Beau Valley WEF would generate some habitat loss for the Karoo Dwarf Tortoise and as such as full species assessment for this species for the Beau Valley Wind project would be required in the EIA phase.

Overall, general impacts on fauna and flora associated with the current project is considered acceptable.

Table 3.6: Red-listed mammals known from the broad area and their likely presence in the Beau Valley WEF site and the likely consequence thereof.

Species	Status	Likely Presence & Consequence	
		Wider Study Area	Beau Valley WEF
Riverine Rabbit <i>Bunolagus monticularis</i>	CR	Confirmed present on the adjacent Hoogland South WEF by the consultant and more generally in the immediate area by EWT.	There is no habitat present within the Beau Valley Wind site and it is only the access route to the site would traverse any habitat.

Species	Status	Likely Presence & Consequence	
		Wider Study Area	Beau Valley WEF
Black-footed Cat <i>Felis nigripes</i> (VU)	VU	There are historical records from the wider area and it is considered to be possibly present within the Karoo National Park but not confirmed.	This is a secretive species and while it may be present in the area, this species was not detected during any of the camera trapping conducted to date and it is not likely present within the site.
Grey Rhebok <i>Pelea capreolus</i>	NT	This species is confirmed present in the area and can commonly be seen in most areas of high-lying ground in the Karoo and along the Great escarpment.	Does not appear to be common in the area and it is considered unlikely to be present within the Beau Valley WEF site.
Mountain Reedbuck <i>Redunca fulvorufula</i>	EN	This species is confirmed present in the area, both within the Karoo National Park and more generally in the area, in high-lying areas with good grass cover.	This species is known from the Karoo National Park, but was not observed on the adjacent Hoogland South WEFs, suggesting that while it may be present in the area, it is not common on farmland in the area. As such, this species is considered unlikely to be present within the Beau Valley WEF site.
Brown Hyena <i>Hyaena brunnea</i>	NT	This species occurs at a naturally low density within the Karoo and is known from a few records from the Karoo National Park but may also roam freely on farmland.	Although this species may pass through the area on occasion, it is considered unlikely to be present on the site on a regular basis.

In terms of the sensitivity mapping relating more generally to mammals, the larger riparian areas have been classified as Very High sensitivity based on their value as Riverine Rabbit habitat but also as a result of their general ecological importance. The more rugged parts of the rocky hills and steep slopes have been classified as Very High sensitivity on account of the value of these areas as habitat for mammals associated with rocky areas and the more general ecological value of these areas.

3.1.6.4 Screening Tool Descriptions and Site Sensitivity Verification

Figure 3.23, Figure 3.24 and Figure 3.25 below indicate the results of the Screening Tool in terms of terrestrial plant species, terrestrial animal species, and the terrestrial biodiversity combined sensitivity, respectively, for the proposed project.

Plant Species

The Screening Tool shows Medium sensitivity for the Plant species theme for the whole site, due to the potential presence of five different Sensitive Species as listed in Table 3.7. The habitats, distribution and likely presence of these species within the Beau Valley WEF footprint area is discussed below in Table 3.7. None of these species were observed within the site and it is

considered that these species are either highly unlikely to be present within the site or can be confirmed absent from the site. Since no other plant SCC were observed on the site, the site can be considered Low sensitivity for the Plant Species Theme. As conditions at the time of the field assessment were favourable in terms of vegetation (Figure 6), it is unlikely that any such species were missed. The site verification therefore confirms the low sensitivity of the whole of the site and the lack of any plant SCC on-site.

Table 3.7. Sensitive Species as listed by the DFFE Screening Tool for the Beau Valley WEF site and the likely presence of these species within the site.

DFFE Site Status	Name	IUCN Status	Possible presence within the Beau Valley WEF
Medium	Sensitive species 945 (Rare)	Rare	This seasonal geophyte species is associated with dolerite outcrops in high-lying areas of the Sneeuberg, Agter-Sneeuberg and Nuweveld Mountains. It was not observed within the Beau Valley WEF site and there no habitat deemed suitable for this species within the site. As a result, this species is considered absent from the site and hence the site is considered low sensitivity for this species.
Medium	Sensitive species 484	Rare	This small cryptic succulent occurs from the Roggeveld Escarpment to the Nuweveld Mountains. This species was observed north of the site on flat silty plains and the habitat within the Beau Valley site is considered unsuitable for this species. As it was not observed and the habitat is considered unsuitable for this species, this species is confirmed absent from the Beau Valley WEF footprint area.
Medium	Sensitive species 886	Rare	This asteraceous shrub grows on the Roggeveld and Hantamsberg Mountains. The habitat is considered to represent steep or gentle slopes of a mainly southern aspect in low karroid scrub. This species was not observed within the site and it is assumed to be absent from the site.
Medium	<i>Peersia frithii</i>	VU	This low succulent species has previously been collected widely throughout the southern Karoo with an historic extent of occurrence (EOO) of 28913 km ² . It has only been recorded seven times since 1990, and is suspected to be extant at 6 locations from a current EOO of 690 km ² . Decline is suspected to be the result of livestock overgrazing and trampling. This species was not observed within the site and it is considered not present within the Beau Valley WEF site.
Medium	<i>Cliffortia arborea</i>	VU	This is a conspicuous species that grows on cliffs from the Hantamsberg Mountain to the Nuweveld Mountains. There is no suitable habitat for this species at the site and it can be confirmed that this species is not present within the Beau Valley WEF footprint.

Animal Species

The animal species theme sensitivity map is illustrated below in Figure 3.24 and shows that the site is classified as High sensitivity for avifauna, and High to Medium sensitivity for terrestrial fauna. Refer to Section 3.1.7 of this chapter for the Scoping-level assessment and Site Sensitivity Verification for avifaunal species. Table 3.8 indicates indicates that the High sensitivity is due to the presence of the Mountain Reedbuck *Redunca fulvorufula fulvorufula* in the area, while the Medium sensitivity is related to the potential presence of the Riverine Rabbit and Karoo Dwarf Tortoise. The Mountain Reedbuck was not observed on the site but is known from the adjacent

Karoo National Park. However, it was not observed on the adjacent Hoogland South WEFs despite extensive camera trapping, suggesting that while it may be present in the area, it is not common on farmland in the area. As a result, this species is considered unlikely to be present within the Beau Valley WEF site. Although there are confirmed observations from the broader area of Riverine Rabbit, these are outside of the site and there is no suitable riparian habitat within the development footprint. The site verification therefore finds that the site can be classified as low sensitivity for the Riverine Rabbit. The Karoo Dwarf Tortoise *Chersobius boulengeri* occurs in association with dolerite ridges and rocky outcrops of the southern Succulent and Nama Karoo biomes, and peripherally in the Albany Thicket biome in the southeast, at altitudes of approximately 800 to 1,500 m. The vegetation usually consists of dwarf shrubland that often contains succulent and grassy elements. These tortoises usually take shelter under rocks in vegetated areas or in rock crevices. However, these are quite specific in terms of their requirements with the result that suitable retreats for the species are not common. Due to their strong habitat association, populations are isolated on rocky outcrops with specialized vegetation (Hofmeyr et al. 2018). The typical dolerite outcrops associated with this species are present within the site and this species should be assumed present. As such, it is concluded that the Beau Valley WEF can be confirmed to be High sensitivity for this species and that a full assessment for the Karoo Dwarf Tortoise would be required as a result. Based on the site verification, the sensitivity of the site for other terrestrial fauna is considered to be low.

Table 3.8: Faunal species conservation concern known from the broad area around the Beau Valley WEF, and their likely presence within the site.

Species	Wider area	Beau Valley WEF
Vaal Rhebok (NT)	Present on higher ground, especially the Nuweveld mountains.	Not observed within the site and while the habitat is considered broadly suitable this species has not been observed in the immediate area and is not considered present.
Black-footed Cat (VU)	Previously recorded from within the Karoo National Park, but no recent records.	No recent records from the area and the regular presence of this species within the site is considered unlikely. The site is considered low sensitivity for this species.
Riverine Rabbit (CR)	There are records from the wider area and confirmed sightings by the consultant on the nearby Hoogland South WEF projects.	Unlikely to be present as there is no suitable habitat present.
Karoo Dwarf Tortoise (NT)	Occasional records from the broad area. Associated with dolerite outcrops.	Potentially present as there is some suitable habitat within the site and there are some records from similar habitat in the wider area.

Terrestrial Biodiversity

The terrestrial biodiversity theme is illustrated below in Figure 3.25 and illustrates that whole of the Beau Valley WEF project area is mapped as Very High sensitivity due to the presence of areas of CBA 1, CBA 2, ESA 2 and PAES Focus Areas and buffer for the Karoo National Park. The site verification confirms the presence of some noteworthy biodiversity features within the wider site. As a result of the Very High sensitivity ranking for the Terrestrial Biodiversity Theme, a full terrestrial biodiversity assessment for the development would be required which will be included in the EIA Report.

Table 3.9: Terrestrial Biodiversity Theme features for the Beau Valley WEF project area.

Sensitivity	Feature(s)
Very High	ESA 2: Restore from other land use
Very High	CBA 2: Terrestrial
Very High	CBA 1: Terrestrial
Very High	National Protected Area Expansion Strategy (NPAES)
Very High	SANParks (Buffer) - Karoo National Park

Based on the results of the site verification, the following studies (included in Appendix G.2 of this Scoping Report) are considered appropriate for the EIA phase for the proposed project:

- Plant Species Compliance Statement
- Terrestrial Biodiversity and Animal Species Assessment
- Karoo Dwarf Tortoise Species Assessment.

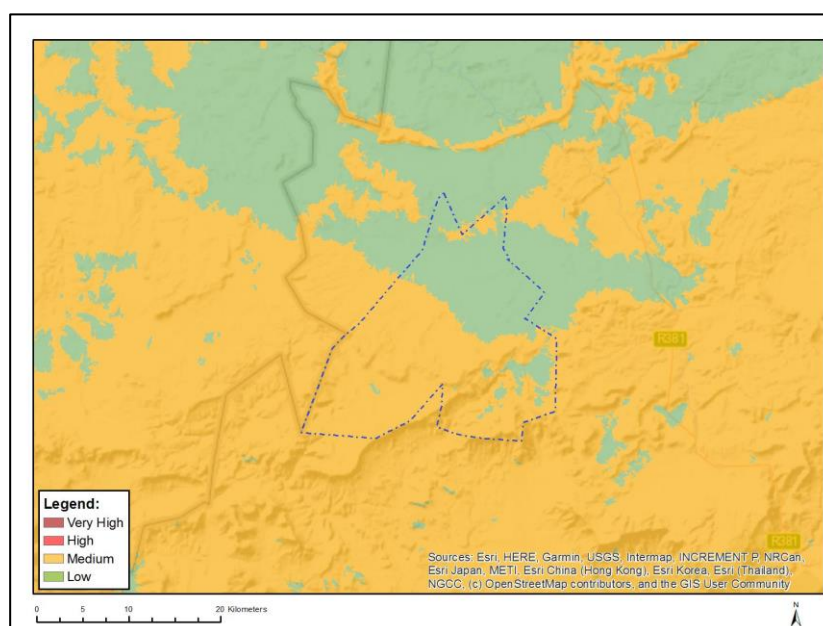


Figure 3.23: Terrestrial Plant Species sensitivity of the Beau Valley WEF study area (Source: Screening Tool, 2023)

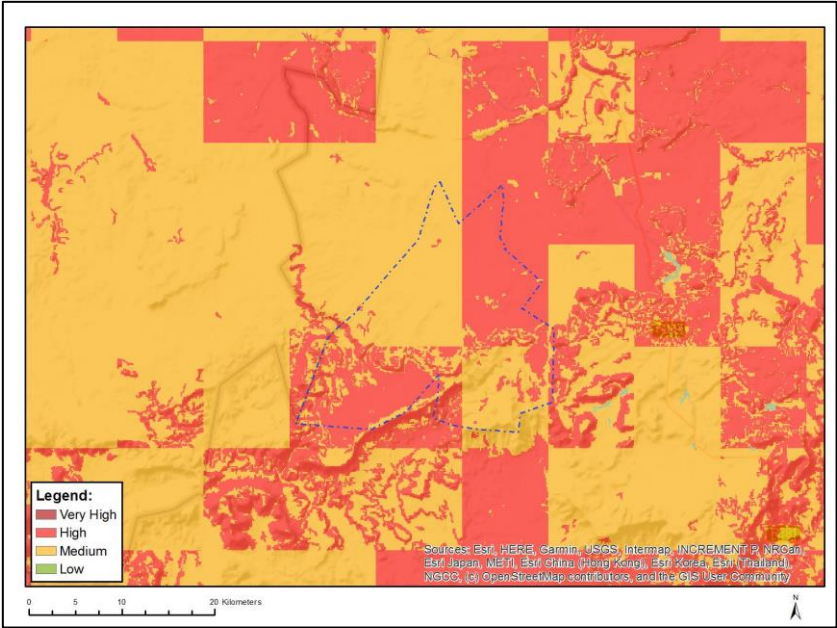


Figure 3.24: Terrestrial Animal Species sensitivity of the Beau Valley WEF study area (Source: Screening Tool, 2023)

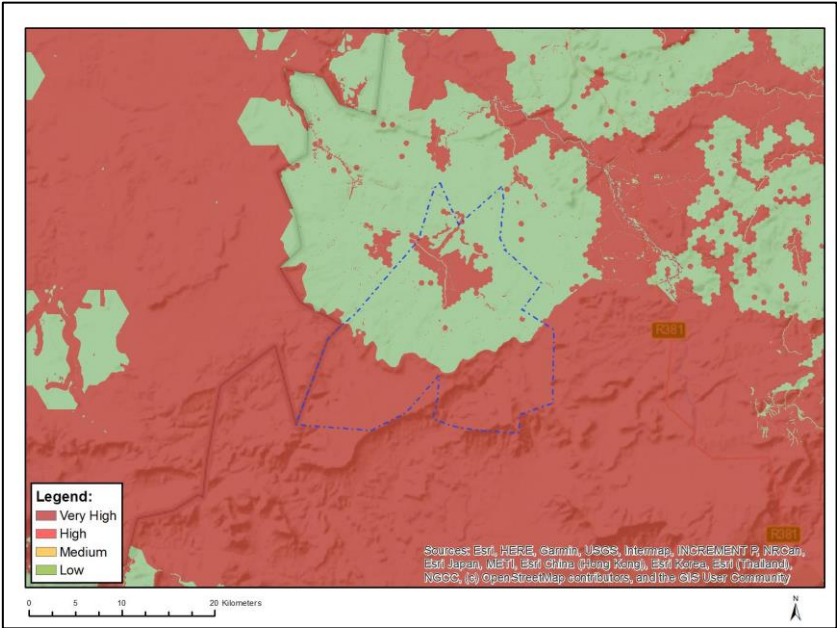


Figure 3.25: Terrestrial Biodiversity Combined Sensitivity of the Beau Valley WEF study area (Source: Screening Tool, 2023)

3.1.7 Bats

A detailed description of the bat species encountered within the study area and the potential impact of the proposed WEF development on these bats will be provided in the Bat Impact Assessment that will be included in the EIA Report. The information described below is based on scoping inputs provided by the Bat Specialist, and which are included in Appendix G.12 of this Scoping Report.

The pre-construction monitoring was designed to monitor bat activity across the study area earmarked for the proposed development of the proposed WEF project. The baseline environment was investigated by using acoustic monitoring to document bat activity between 30 May 2021 and 26 May 2022 (362 sample nights) and the monitoring was undertaken in accordance with the “*South African Good Practice Guidelines for Operational Monitoring for Bats at Wind Energy Facilities*” (Aronson *et al.*, 2020). The monitoring was undertaken in accordance with South African best practice (Sowler, 2020). Sampling of bat activity was undertaken at seven locations using Song Meter SM4 bat detectors (Wildlife Acoustics, Inc.). An ultrasonic microphone was mounted on a mast at 12 m (“ground level”) at all of these locations. Three of these locations are meteorological masts on which microphones were placed at 12 m, 55 m and 110 m (where 55 m and 110 m are “at height”). All detectors were configured to record every night from 30 minutes before sunset until 30 minutes after sunrise. The distribution of monitoring locations across the site was determined based on vegetation types, land-use, and topography with the aim to sample bat activity in areas where bat activity was expected to be higher (e.g. near water, buildings and along riparian vegetation), but also in areas where bat activity was expected to be lower (e.g. away from water and buildings, on top of ridges and in open areas with low habitat complexity). In addition to acoustic monitoring, potential structures that bats could use as roosts were investigated during the day for the presence or evidence of roosting bats (e.g. guano and culled insect remains, etc.) whenever the Arcus team was on site. Such structures included buildings, rocky outcrops and trees. The structural complexity of the habitat on site is lacking, which corresponds to a lower diversity of bat species and could be the case on the site. There are some suitable habitats for bats that can be used for roosting, foraging and commuting, but no known major bat roosts have been located close to any of these sites.

Approximately ten bat species can potentially occur at the proposed site (African Chiroptera Report 2020; Monadjem *et al.* 2020). It is possible that more (or fewer) species may be present because the distributions of some bat species in South Africa, particularly rarer species, are poorly known. Analysis of the acoustic monitoring data suggests that at least seven bat species are present (Table 3.10). The sensitivity of each of these species to the project is a function of their conservation status and the likelihood of risk to these species from wind farm development. The likelihood of risk to impacts of wind energy was determined from the guidelines and is based on the foraging and flight ecology of bats and migratory behaviour. The sensitivity of each bat species to the proposed project is a function of their conservation status and the likelihood of risk to these species from the proposed WEF development. Table 3.10 lists the bat species recorded within the study area including their sensitivity to the WEF projects.

Table 3.10: Bat Species recorded within the proposed WEF study area and their sensitivity to WEFs (Source: Appendix G.12 of this Scoping Report)

Species	Species Code	# of Bat Passes	Conservation Status ³		Likelihood of Risk
			National (2016)	Global	
Egyptian free-tailed bat <i>Tadarida aegyptiaca</i>	TADAEG	150,888	Least Concern	Least Concern	High
Roberts's flat-headed Bat* <i>Sauromys petrophilus</i>	SAUPET	728	Least Concern	Least Concern	High
Natal long-fingered bat <i>Miniopterus natalensis</i>	MINNAT	615	Least Concern	Least Concern	High
Cape serotine <i>Neoromicia capensis</i>	NEOCAP	8,700	Least Concern	Least Concern	High
Long-tailed serotine* <i>Eptesicus hottentotus</i>	EPHOT	720	Least Concern	Least Concern	Medium
Lesueur's hairy bat <i>Cistugo lesueuri</i>	CISLES	4	Near Threatened	Least Concern	Low
Cape horseshoe bat* <i>Rhinolophus capensis</i>	RHICAP	1	Near Threatened	Least Concern	Low
Egyptian Fruit Bat <i>Rousettus aegyptiacus</i>		-	Least Concern	Least Concern	High
Temmink's hairy bat <i>Myotis tricolor</i>		-	Near Threatened	Least Concern	Medium-High
Egyptian slit-faced bat <i>Nycteris thebaica</i>		-	Least Concern	Least Concern	Low

*Species endemic to southern Africa

During the pre-construction bat monitoring period undertaken within the study area, Bat activity at the proposed Beau Valley WEF area (and the wider GEED Beaufort West Wind Farm area) was high in summer and parts of spring and autumn, moderate for the rest of spring and autumn, and low for winter with regards to the Nama Karoo ecoregion. However, there is lack of structural complexity in the habitat, low evidence of roosts and typically low species diversity for the area, which is characteristic of this ecoregion. The data collected during the monitoring period suggests that the risk to bats posed by the wind energy development at the site is low for clutter-edge bat species and the correct placement of turbines will limit the impact to these species. Free-tailed bats and Cape serotine bats are likely to face the highest risk of impacts due to their prevalence. Sensitive design and mitigation will be needed to reduce risk to these bats. Sensitive areas including those used by bats for foraging, roosting and commuting must be avoided for turbine placement (Figure 3.27). No turbines, including the blade tips, are allowed within any high sensitivity areas. No turbines currently encroach into high sensitivity zones. The proposed on-site substation location in the current layout is acceptable.

The choice of turbine design, specifically, the hub height and rotor diameter, should be carefully chosen to reduce potential interactions between bats and turbine blades. The hub height should be maximized and the blade length should, ideally, not sweep lower than 50 m, as turbines with a lower ground clearance run the risk of reaching the fatality thresholds sooner.

Blade feathering, curtailment and deterrents are the remaining mitigation measures to reduce residual impacts during operation and must be continuously refined and adapted based on incoming bat fatality data. Blade feathering must be implemented as soon as operation begins. An operational monitoring campaign for bats must be implemented and informed by the best practice guidelines, to monitor mortality and bat activity levels. Activity and fatality data should be relayed to an appropriate bat specialist to include in operational monitoring reports and used to refine and update mitigation measures (should mortalities exceed acceptable levels; i.e. 52 insectivorous bats) and the curtailment plan.

The data suggests that there could be a risk to bats posed by the Beau Valley wind energy development at the site, particularly in summer and parts of spring and autumn. Despite this, and provided the above considerations are met, the development of proposed Beau Valley Wind Farm are compatible with bat conservation and the application process may proceed to the EIA phase.

3.1.7.1 Screening Tool Descriptions and Site Verification

Figure 3.26 below indicates the results of the Screening Tool in terms of the bats combined sensitivity as it relates to wind energy development within the proposed Beau Valley WEF project site and surrounding areas. The red areas indicate high bat sensitivity hydrology features due to presence of a wetland, or within 500 m of a wetland, or within 500 m of a river. The remaining areas are not assigned any sensitivity ranking by the Screening Tool. The sensitivities of the National Screening Tool have been considered; however, the sensitivity map produced with this scoping study includes additional sensitivities. The pre-construction monitoring confirmed high sensitivity areas for bat species that are linked to several watercourses and open water sources.

The sensitivity map (Figure 3.27) indicates areas of the site based on features identified to be important for foraging and roosting of the species that are most probable to occur on site. The features identified include species ecology, habitat preferences and bat activity recorded by the passive bat detection systems. The sensitivities have been classified as High, with the parameters based on landscape features including amount of surface rock, topography, vegetation, climate, and presence of surface water. High sensitivities and their buffers are 'no-go' zones for turbines and turbine blade overhang i.e., turbine blades cannot intrude into High sensitivity buffers. The High bat sensitivities area have been avoided by 24 of the 25 proposed turbines during the scoping phase (see Figure 3.27); the turbine positioning of the remaining 1 turbine in the high sensitivity zone will be refined during the EIA phase.

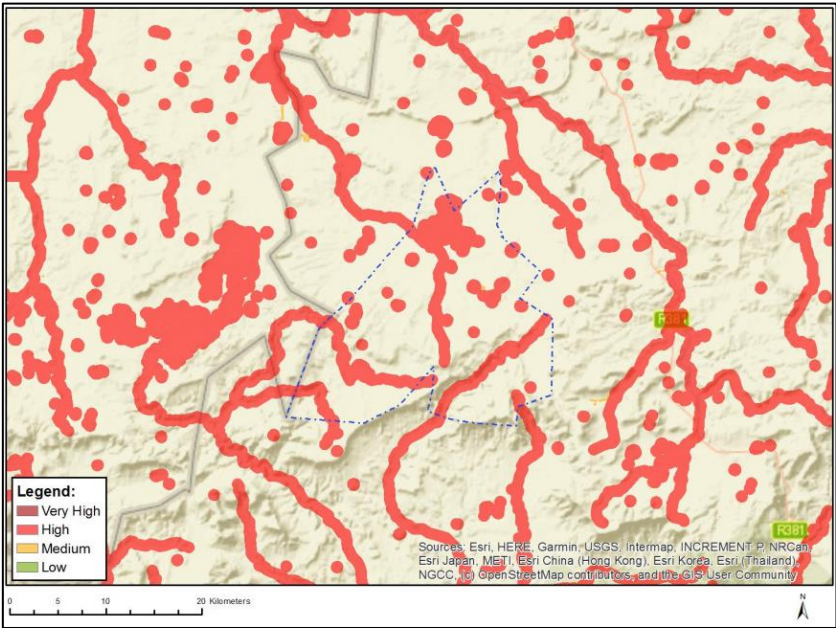


Figure 3.26: Map indicating Bats (Wind) Combined Sensitivity for the proposed WEF project study area (Source: DFFE Screening Tool, 2023)

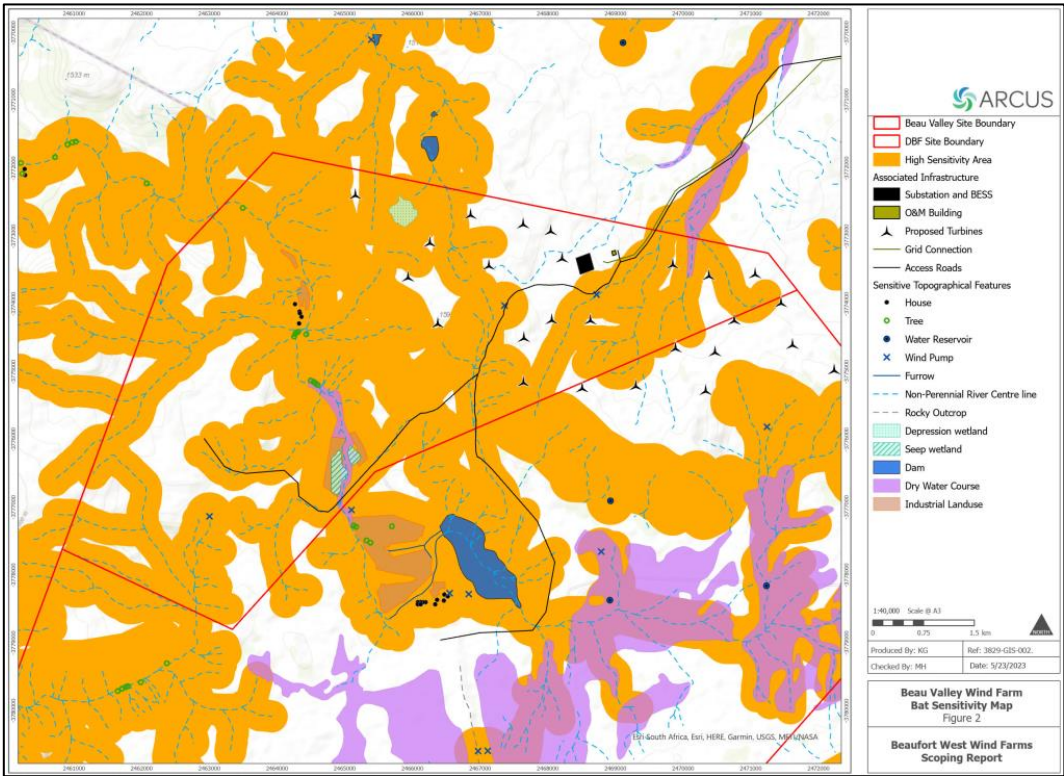


Figure 3.27: Map indicating Bats (Wind) Combined Sensitivity for the proposed WEF project site following the site sensitivity verification

3.1.8 Avifauna

The information described below is based on Scoping-level inputs provided by the Avifauna Specialist, which are included in Appendix G.4 of this Scoping Report.

The main source of information on the avifaunal diversity and abundance at the avifaunal Project Area of Impact (PAOI) is an integrated pre-construction monitoring programme that was implemented at the southern cluster of the proposed Genesis renewable energy projects, including the proposed Beau Valley WEF and PAOI, which was completed between December 2020 and December 2021.

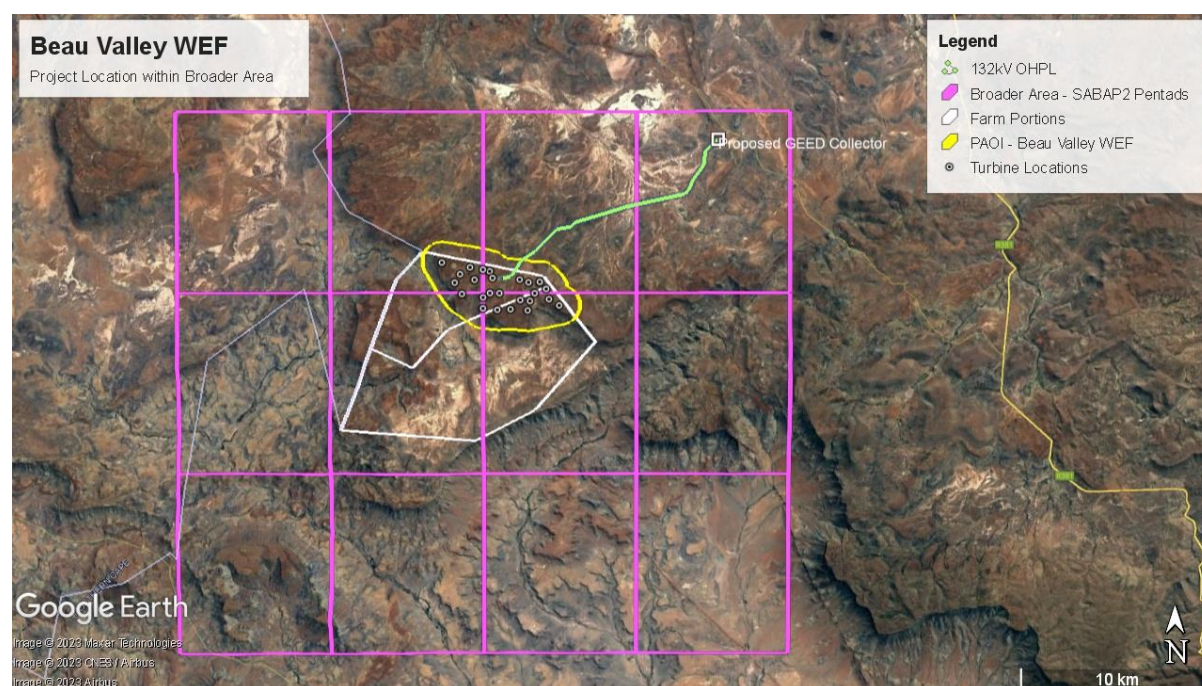


Figure 3.28: The 12 pentads of the Second Southern African Bird Atlas Project (SABAP2) comprise the Broader Area where the PAOI (outlined in white) is located

A total of 107 species could potentially occur within the Broader Area where the proposed Project is located. Of these, 14 are classified as priority species for wind energy developments. All 14 priority species were recorded during the on-site monitoring so far and all have a medium to high probability of occurring regularly in the PAOI. Seven (7) Red Data species were recorded during the on-site surveys, namely Blue Crane, Karoo Korhaan, Kori Bustard, Ludwig's Bustard, Martial Eagle, Secretarybird, and Verreaux's Eagle.

Refer to Table 3.11 for a list of priority species potentially occurring in the study area and potential impacts on them by the proposed project.

Table 3.11: List of Priority species potentially occurring in the PAOI on a regular basis and the potential impacts of the Beau Valley WEF on avifauna. CR = Critically Endangered EN = Endangered VU = Vulnerable NT = Near-threatened (Source: Chris van Rooyen Consulting, 2023, Appendix G.4)

Species name	Scientific name	SABAP2 Reporting Rate %		Global Conservation Status	Regional Conservation Status	Recorded during monitoring in the broader area	Likelihood of regular occurrence in the PAOI	Nama Karoo	Surface water: Drainage lines, dams and water troughs	Cliffs and ridges	Agriculture	Collision with turbines	Displacement: habitat transformation	Displacement: disturbance - breeding	Electrocution: Powerline MV & substation	Collision: Powerline MV	Collision: Powerline HV
		Full protocol	Ad hoc protocol														
Blue Crane	<i>Grus paradisea</i>	10,61	1,85	VU	NT	x	M	x	x		x	x	x			x	x
Booted Eagle	<i>Hieraaetus pennatus</i>	3,03	1,85	-	-	x	M		x	x		x	x		x		
Double-banded Courser	<i>Rhinoptilus africanus</i>	10,61	3,70	-	-	x	M	x			x	x	x	x			
Grey-winged Francolin	<i>Scleroptila afra</i>	15,15	1,85	-	-	x	M	x			x	x	x	x			
Jackal Buzzard	<i>Buteo rufofuscus</i>	31,82	7,41	-	-	x	H		x	x		x	x		x		
Karoo Korhaan	<i>Eupodotis vigorsii</i>	62,12	18,52	-	NT	x	H	x				x	x	x		x	x
Kori Bustard	<i>Ardeotis kori</i>	3,03	3,70	NT	NT	x	M	x				x	x	x		x	x
Lesser Kestrel	<i>Falco naumanni</i>	0,00	0,00	-	-	x	M		x	x		x	x				
Ludwig's Bustard	<i>Neotis ludwigii</i>	21,21	3,70	EN	EN	x	H	x				x	x	x		x	x
Martial Eagle	<i>Polemaetus bellicosus</i>	3,03	1,85	EN	EN	x	M		x	x		x	x		x		
Pale Chanting Goshawk	<i>Melierax canorus</i>	34,85	14,81	-	-	x	H	x	x	x		x	x		x		
Secretarybird	<i>Sagittarius serpentarius</i>	4,55	0,00	EN	VU	x	M	x	x		x	x				x	x
Spotted Eagle-Owl	<i>Bubo africanus</i>	3,03	0,00	-	-	x	M			x		x	x	x	x	x	x
Verreaux's Eagle	<i>Aquila verreauxii</i>	31,82	7,41	-	VU	x	H		x	x		x	x		x	x	x

3.1.8.1 Screening Tool Descriptions and Site Sensitivity Verification

In terms of the Screening Tool, the PAOI and immediate environment is classified as Medium and High sensitivity for bird species according to the Terrestrial Animal Species Theme . The Medium and High sensitivity classifications are linked to the potential occurrence of Ludwig’s Bustard (Globally and Regionally Endangered) and Verreaux’s Eagle (Regionally Vulnerable). The PAOI and immediate environment contain 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 on-site surveys at the PAOI and immediate environment. The following SSC have been recorded: Martial Eagle (Globally and Regionally Endangered), Verreaux’s Eagle, Blue Crane (Globally Vulnerable and Regionally Near threatened), Secretarybird (Globally Endangered and Regionally Vulnerable) and Ludwig’s Bustard (Globally and Regionally Endangered).

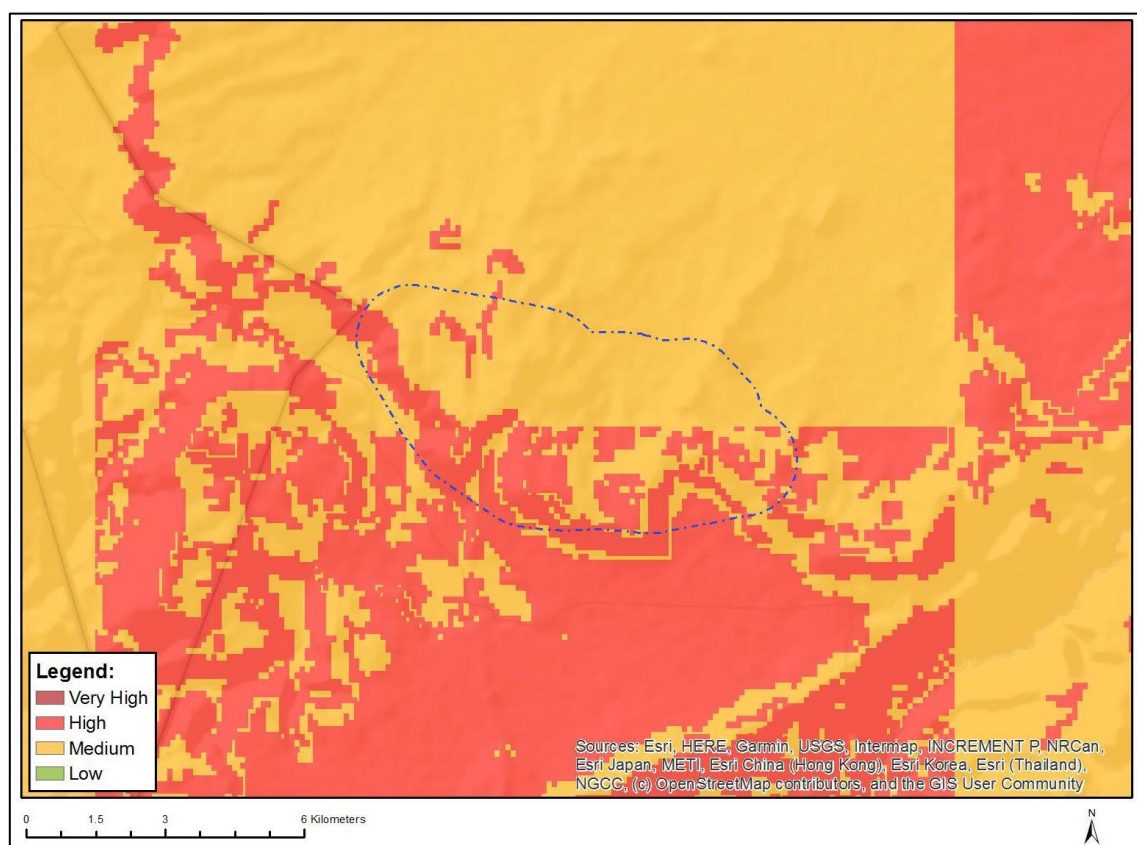


Figure 3.29: The National Web-Based Environmental Screening Tool map of the PAOI, indicating sensitivities for the Terrestrial Animal Species theme. The Medium and High sensitivity classifications are linked to Ludwig’s Bustard *Neotis ludwigii* and Verreaux’s Eagle *Aquila verreauxii* (Source: Appendix G.4 of the Scoping Report)

Based on the SSV surveys conducted in the course of the integrated pre-construction monitoring, the specialists concluded that the PAOI is of high sensitivity for avifauna.

The following sensitive zones and buffers were recommended by the specialists:

- **Very High Sensitivity - All infrastructure exclusion zones:** A 1km all infrastructure exclusion zone is recommended to prevent the displacement of breeding Verreaux's Eagles during the construction phase due to disturbance (Figure 3.30). In addition, the buffer area will reduce the risk of injury to the juvenile bird due to collision with the solar panels, when it starts flying and practicing its hunting technique around the nest. There is currently no infrastructure planned within these exclusion zones.
- **High Sensitivity - Wind turbine exclusion zone (other infrastructure allowed):**
 - **Drainage lines, dams, and waterpoints:** Surface water in this semi-arid habitat is crucially important for priority avifauna and many non-priority species. The PAOI and the immediate surrounding area contain several non-perennial rivers, drainage lines, and dams, which are sources of surface water. It is preferable to leave some open space where possible with no wind turbines, for birds to access and leave the surface water areas unhindered. Surface water is also important area for raptors to hunt birds which congregate around water troughs, and they should have enough space for fast aerial pursuit. This will also benefit Blue Cranes which prefer to breed close to water bodies. A 100m rotor-swept area turbine exclusion zone is recommended around all drainage lines and a 200m rotor-swept area turbine exclusion zone around boreholes and dams. There are no turbines planned for these areas.
 - **Verreaux's Eagle nest:** A 3.7km rotor-swept area turbine exclusion zone is recommended around Verreaux's Eagle nesting sites to reduce the risk of mortality due to collisions with the wind turbines. There are no turbines planned in this zone.
- **Medium Sensitivity - Verreaux's Eagle nest:** A 5.2km rotor-swept area turbine exclusion zone is recommended around Verreaux's Eagle nesting sites as pro-active mitigation against displacement due to disturbance. All turbines in the area >3.7km up to 5.2km should be regarded as medium-risk and relocated if possible. Should relocation not be feasible, these turbines must be subject to a minimum of two years of pre-construction monitoring and pro-active mitigation in the form of a proven mitigation method such as Shutdown on Demand (SDoD), using either bio-monitors or an automated system must be implemented for the turbines remaining in this zone. There are no turbines planned in this zone.

Refer to Figure 3.30 for the avifaunal sensitivity zones identified for the study area based on avifaunal monitoring.

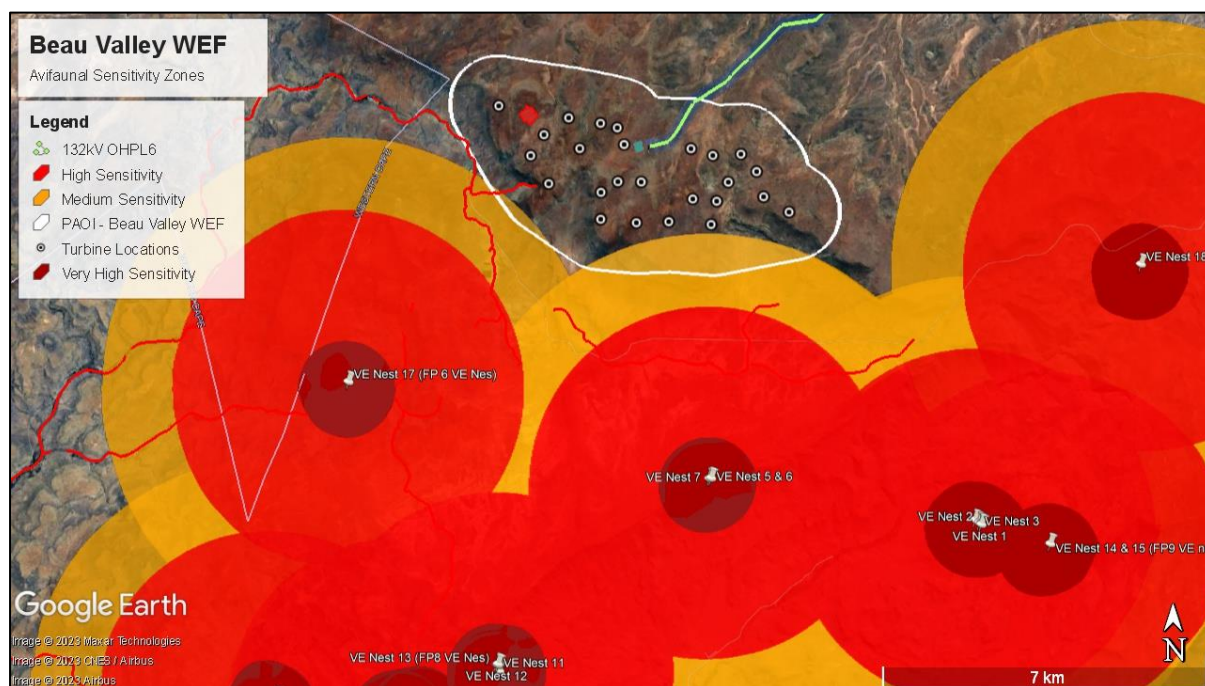


Figure 3.30: Avifaunal sensitivity zones identified for the study area based on pre-construction avifaunal monitoring data obtained (Source: Appendix G.4 of the Scoping Report).

3.1.9 Visual Aspects and Sensitive Receptors

The information described below is based on Scoping-level inputs provided by the Visual Specialist, which are included in Appendix G.5 of this Scoping Report.

The visual assessment provides information on landscape, terrain, and vegetation, as well as other aspects such as land use and sensitive receptors. As described in Section 3.1.2 of this chapter, the proposed site lies on the plateau, north of the Great Escarpment. The proposed development site itself is located at an average elevation of 1 750 m a.s.l, comprising a wide flat area surrounded by hills and drained by small watercourses.

The approach and methodology for the visual specialist study is based on the “Guideline for Involving Visual and Aesthetic Specialists in EIA Processes” (Oberholzer, 2005), and the use of a 3D digital terrain model of the study area to determine the viewshed of the proposed project, the sourcing or relevant spatial data (e.g. cadastral features, vegetation types, land use activities, topographical features, site placement), the identification of sensitive visual receptors as well as the creation of viewshed analysis (Figure 3.31) from the proposed project site in order to determine the visual exposure and the topography’s potential to absorb the potential visual impact. Photo simulations were undertaken (in addition to the above spatial analyses) in order to illustrate the potential visual impact of the proposed Beau Valley Wind Facility within the receiving environment of the Karoo National Park specifically. The purpose of the photo simulation exercise is to support/verify the findings of the VIA, and is not an exercise to illustrate what the facilities will look like from all directions (i.e. it is not an artist’s impression). The simulated wind turbines, as shown on the photographs (see Figure 3.32 to Figure 3.35), were adapted to the atmospheric conditions

present when the original photographs were taken. This implies that factors such as haze and solar glare were also simulated in order to realistically represent the observer's potential view of the Cluster.

As can be witnessed from the photo simulations undertaken, the Beau Valley Wind Facility will have a lasting visual impact on the tourists visiting the Karoo National Park from as far as 31km away. It is expected that this will alter the sense of place of the KNP during the operational lifespan of the proposed WEF. Of the 25 turbines, three 3 turbines were determined to fall within the Protected Area: National Parks 5 km buffer. While five 5 turbines are located within and four 4 turbines encroaching on the Karoo National Parks Viewshed Protection Zone.

In light of the findings of this report it is recommended that the project proponent **investigate the viability of setting the turbines of this facility even further back** from the escarpment during the EIA phase. In addition, during the EIA Phase the proponent may investigate **reducing the turbine top tip height of the 14 visible turbines (see Figure 3.32) to mitigate visibility of the turbines from the KNP below the escarpment**. Failing this, **14 of the 25 turbines that form the Beau Valley Wind Facility may not offer an ideal operating scenario from a visual impact perspective and could potentially be fatally flawed in terms of SANParks planning criteria** as this facility may have a high visual impact on the aesthetic quality of visitor experience in the KNP. Informed by the Visual Scoping-level assessment, during the EIA phase the developer will investigate refining the turbine layout and height specification in order to avoid and/or minimise the visual impact on the KNP.

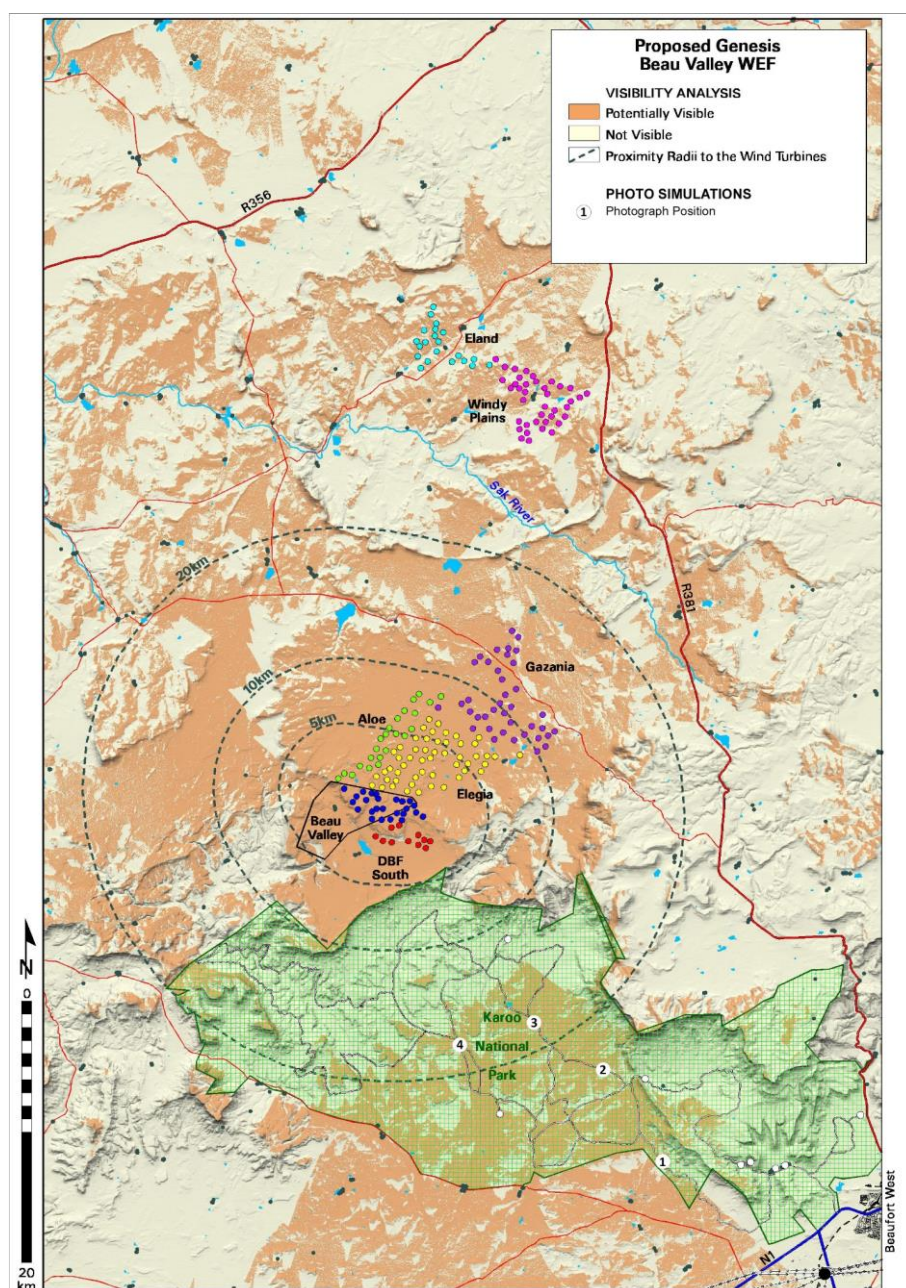


Figure 3.31: Potential visual exposure (visibility analysis) for Beau Valley WEF turbines (dark blue) shown in relation to the northern edge of the Karoo National Park (green-shaded area). Numbered location indicate the photograph positions undertaken from the Karoo National Park for the photo simulations in relation to the Beau Valley WEF (Source: Appendix G.5).

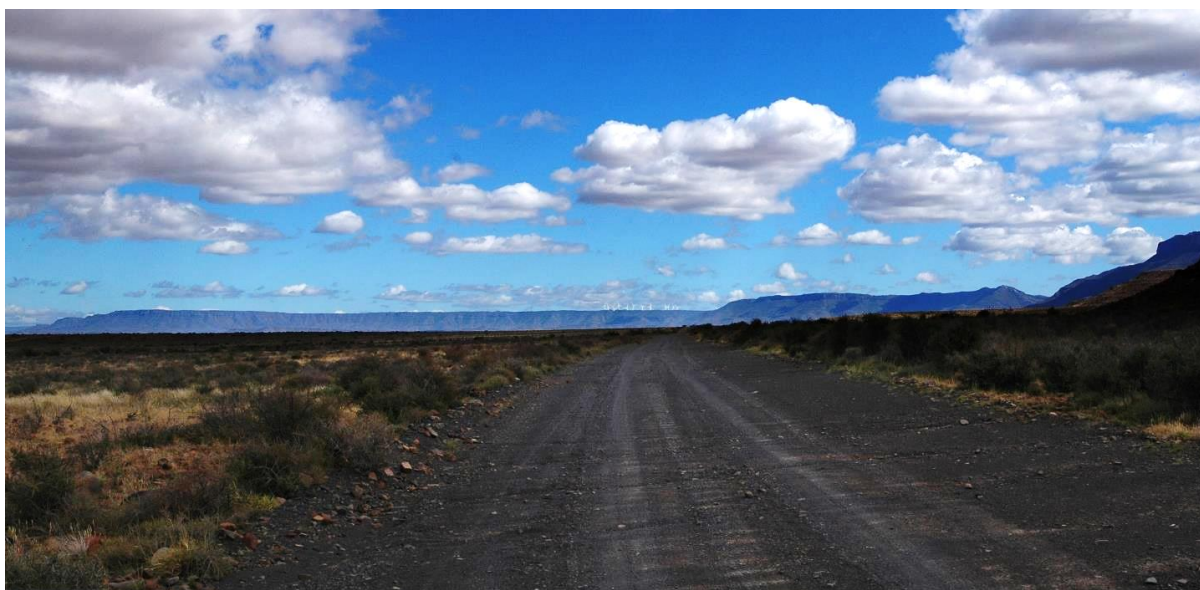


Figure 3.32: Photo simulation 1 – after. The closest wind turbine in the Beau Valley Wind Facility is 31km from this point and it is anticipated that at least 14 turbines (blades and hubs) will be visible from this point (Source: Appendix G.5).



Figure 3.33: Photo simulation 2 – after. The closest wind turbine in the Beau Valley Wind Facility is 23km from this point and it is anticipated that at least 13 turbines (blades and hubs) will be visible from this point (Source: Appendix G.5).



Figure 3.34: Photo simulation 3 – after. The closest wind turbine in the Beau Valley Wind Facility is 17km from this point and it is anticipated that at least 12 turbines blades will be visible from this point (Source: Appendix G.5).



Figure 3.35: Photo simulation 4 – after. The closest wind turbine in the Beau Valley Wind Facility is 17km from this point and it is anticipated that at least 3 turbine blades will be visible from this point (Source: Appendix G.5).

3.1.9.1 Screening Tool Descriptions and Site Sensitivity Verification

The Screening Tool “Landscape” Combined Sensitivity Map as it relates to wind energy developments in the region is reported to be Very High across the majority of the study area, where the very high sensitivities are mainly linked to slopes of more than 1:4., i.e. mountain tops and high ridges; as well as South African Large Telescope (namely the Square Kilometre Array (SKA)).

Screening Tool further indicates a high sensitivity for the southern portion of the study area due to it being between 5 km and 10 km from a national park; namely, the Karoo National Park.

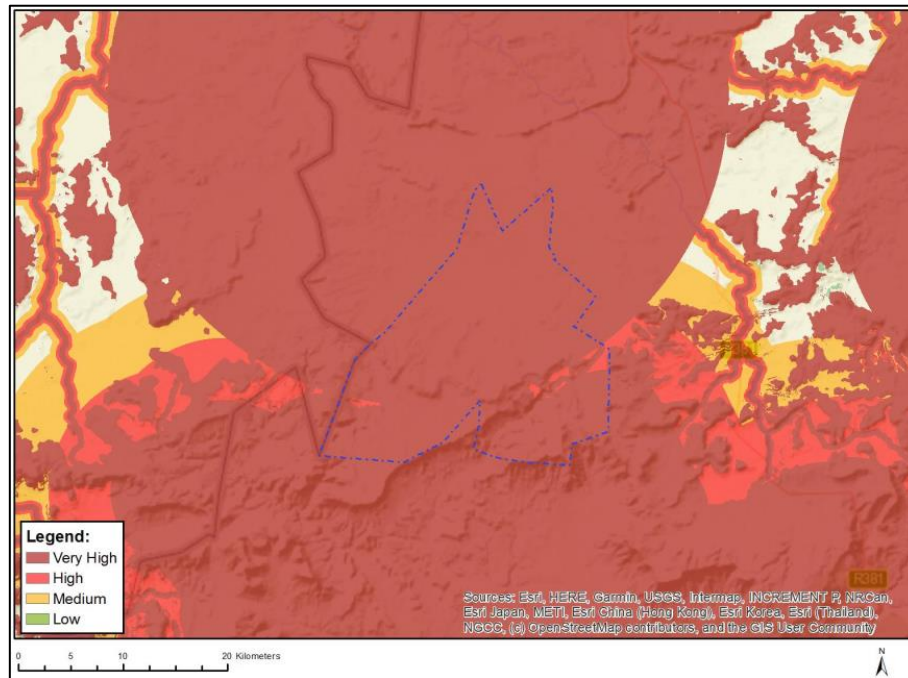


Figure 3.36: Potential Landscape (Wind) Combined Sensitivity of the study area based on the Screening Tool. The Beau Valley WEF site area is shown in grey (Source: Screening Tool, 2023)

These findings were partly disputed based on more detailed project-scale mapping of landscape features. More accurate maps of landscape features, along with recommended visual sensitivity buffers, has been prepared at the local project scale by the Visual Specialists, taking into account detailed viewshed analysis and local site conditions (see Appendix G.5 of the Scoping Report). Beau Valley WEF is located on strongly undulating plains and hills which are deemed to have a moderate visual sensitivity, rather than a very high sensitivity as indicated by the Screening Tool.

In terms of the SKA sensitivity distance guidelines (Table 3.12), the proposed GEED Southern Renewable Energy Cluster (inclusive the Beau Valley WEF) is located in a low sensitivity zone as it is more than 48 km, specifically ~171 km, away from the SKA core area (Figure 3.37). In addition, the proposed project is located outside of the Karoo Central Astronomy Advantage Area (KCAAA) (Figure 3.37). The South African Radio Astronomy Observatory (SARAO) is registered on the project I&AP database as a key stakeholder and was invited to comment on the project during the pre-application phase. During the Scoping Phase, SARAO responded with their findings of an assessment of the potential impact of the proposed project on the SKA radio telescopes (see Appendix E of this Scoping Report). SARAO found that the project represents a low risk of interference to the nearest SKA radio telescope with a compliance surplus of 28.42 dBm/Hz. Accordingly, they had no objection to the proposed project. Therefore, RFI and EMI specialist studies will not be commissioned by the S&EIA project team as SARAO's assessment and findings are considered conclusive in respect of the RFI and EMI sensitivity themes.

Table 3.12: SKA Sensitivity distane guidelines (Source: DFFE, 2019: Part 3)

Colour	Sensitivity	Distance from SKA Facility	
		Wind	Other Solar PV
Dark Red	Very High	Less than 18 km	Less than 8 km
Red	High	Between 18 and 26 km	Between 8 and 14 km
Orange	Medium	Between 26 and 48 km	Between 14 and 32 km
Green	Low	Greater than 48 km	Greater than 32 km

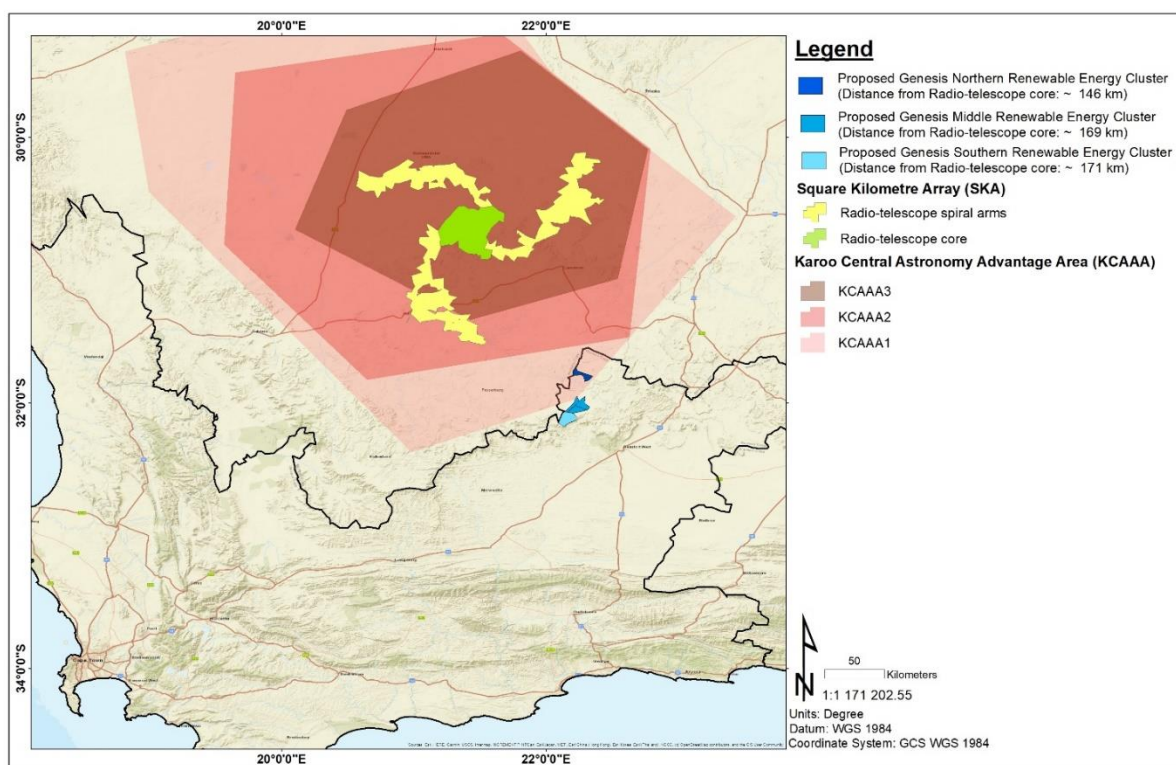


Figure 3.37: The proposed GEED Renewable Energy Clusters in relation to the Square Kilometre Array and the Karoo Central Astronomy Advantage Area.

3.1.10 Noise Aspects and Sensitive Receptors

A detailed description of the ambient noise levels and sensitive receptors within the proposed Beau Valley WEF project site and immediate surrounds will be provided in the Noise Impact Assessment that will be included in the EIA Report. The information described below is based on scoping inputs provided by the Noise Specialist, and which are included in Appendix G.13 of this Scoping Report.

Figure 3.38 below shows the Noise Sensitive Areas (NSAs) identified with Google Earth Imagery and by means of a field study. Fourteen (14) NSAs, within a 10km buffer zone of the Southern Cluster, have been included in this report. Not all receptors identified in the screening tool report (see Figure 3.40) have been included as NSAs in Figure 3.38. This is because some of the identified receptors in the screening tool are water troughs, abandoned houses and crop fields.

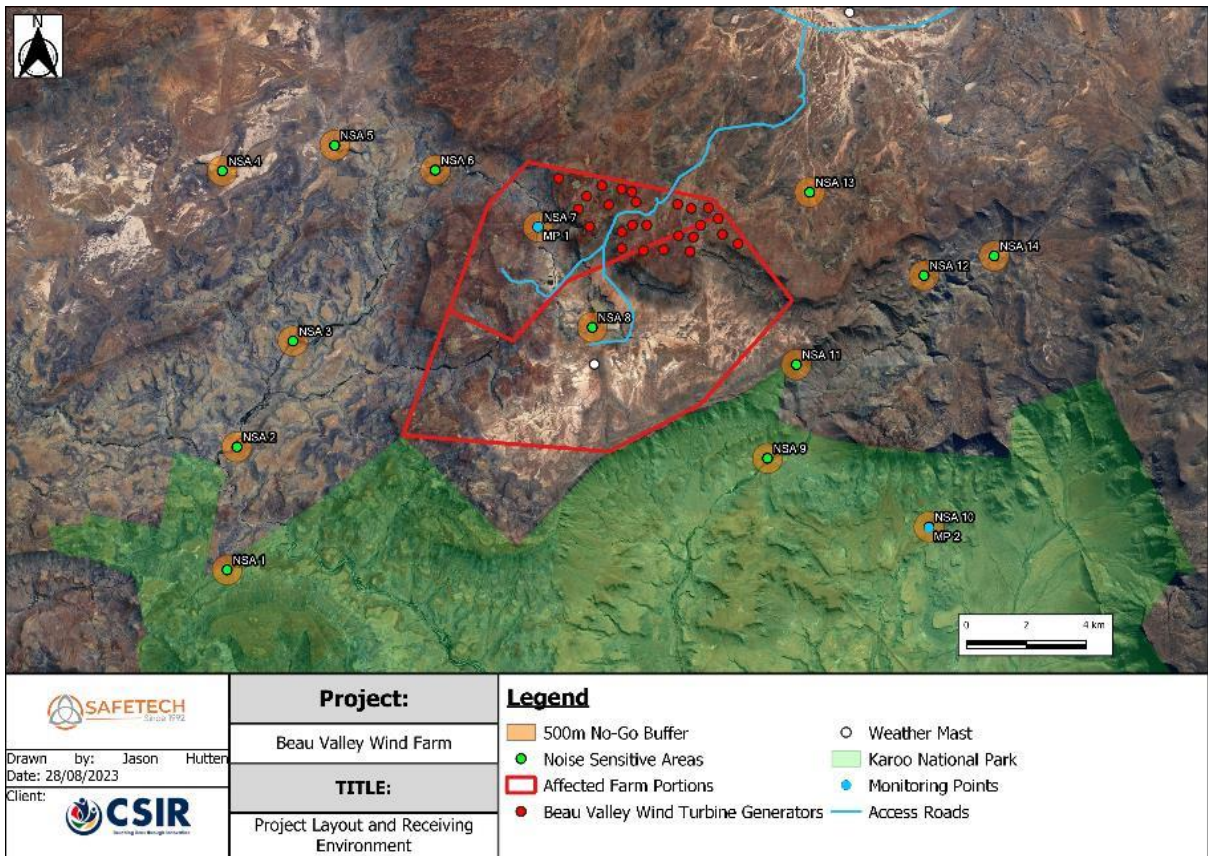


Figure 3.38: Aerial image indicating the closest identified noise-sensitive developments within the proposed Beau Valley WEF project site and immediate surrounds (Source: de Jager, 2022).

The Terrestrial Biodiversity Scoping Report (Appendix G.2 of this Scoping Report) notes that there are “some species such as rhino that may be sensitive to low-frequency noise and which are focus species of the [Karoo] National Park, with the result that the construction of wind turbines near to the park may result in habitat degradation for such sensitive species within an unknown radius of wind turbines. However, such infra-sound effects have not been well-documented and are especially unknown for African wildlife. However, given that the majority of turbines are more than 2 km from the boundary of the NPAES Focus Area, a significant noise-related impact on the fauna of a future possibly expanded Karoo National Park seems unlikely.” While the terrestrial biodiversity specialist notes the potential of infrasound, they conclude that infrasound effects are highly unlikely. This is supported by the Noise specialist in Appendix G.13, whose findings takes precedent over the Terrestrial Biodiversity specialist in respect of noise related effects of the proposed development.

It is worth noting that the precautionary principle enshrined in the National Environmental Management Act (Act 107 of 1998), requires that *in the absence of full scientific certainty, caution must be exercised to prevent environmental degradation*. Therefore, scientific certainty must be obtained from a noise specialist assessment to determine whether or not infrasound effects may emanate from the proposed WEF development.

The Noise Scoping-level specialist input (Appendix G.13) notes that infrasound was a significant characteristic of some wind turbine models that has been attributed to early designs in which turbine blades were downwind of the main tower. The effect was generated as the blades cut through the turbulence generated around the downwind side of the tower. Modern designs generally have the blades upwind of the tower. Wind conditions around the blades and improved blade design minimize the generation of the effect.

As depicted in Figure 3.39 below, low frequency pressure vibrations are typically categorized as low frequency sound when they can be heard near the bottom of human perception (10-200 Hz), and infrasound when they are below the common limit of human perception. Sound below 20 Hz is generally considered to be infrasound. Because the ranges of low frequency sound and infrasound overlap it is important to understand how the terms are applied in a given context.

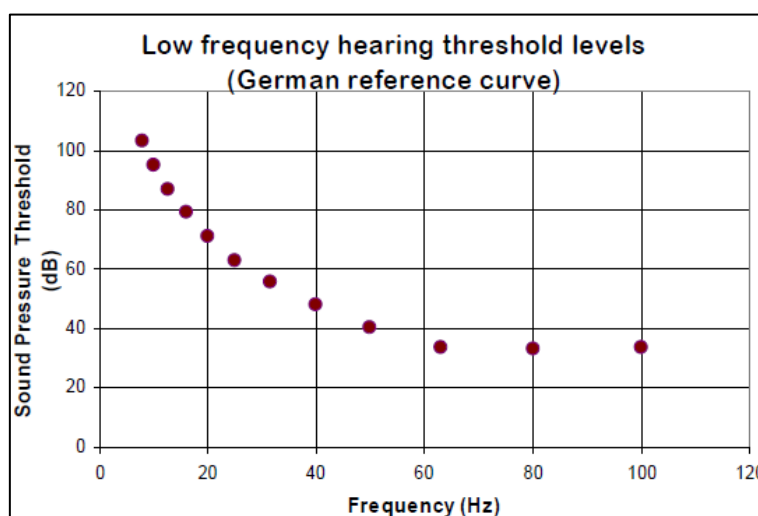


Figure 3.39: Low frequency hearing threshold levels

Infrasound is always present in the environment and stems from many sources including residual air turbulence from wind, ventilation units, waves on the seashore, distant explosions, traffic, aircraft, and other machinery. Infrasound propagates farther (i.e., with lower levels of dissipation) than higher frequencies. To place infrasound in perspective, when a child is swinging high on a swing, the pressure changes on their ears, from top to bottom of the swing, is nearly 120 dB(A) at a frequency of around 1 Hz.

The typical range of sound power level for wind turbine generators is in the range of 100 to 105 dB(A) – a much lower sound power level (10 dB or more) than the majority of construction machinery such as bulldozers. Rhino communicate using infrasound waves of the frequency of 5 Hz. There is no information available to indicate that wind turbine generators emit infrasound anywhere near this intensity.

The following is concluded and verified:

- The project site is situated in a rural district.
- The project could impact on several noise sensitive areas.

- It is recommended that a 500m buffer be placed around all noise sensitive receptors for planning purposes.

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

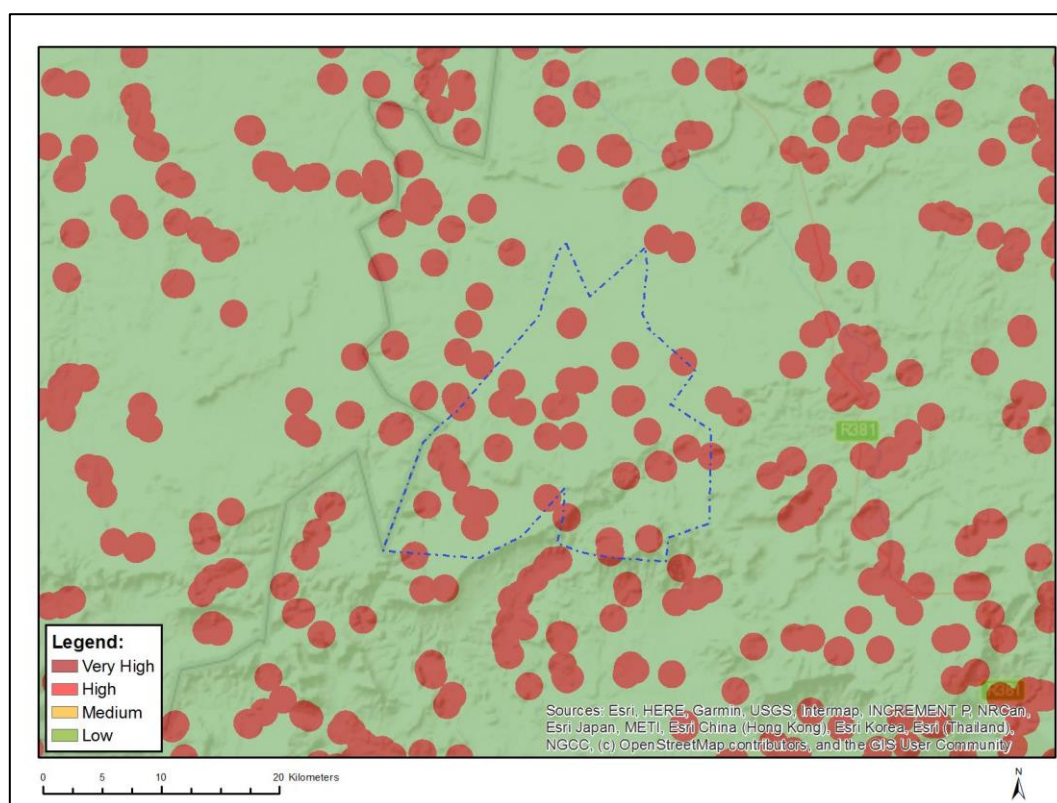


Figure 3.40: Screening tool map indicating potential Noise Sensitivity for the proposed Beau Valley WEF study area (Source: DFFE Screening Tool, 2022).

3.1.11 Heritage: Archaeology and Cultural Landscape

The information described below is based on Scoping-level inputs provided by the Heritage Specialist, and which are included in Appendix G.6 of this Scoping Report. A detailed description of the archaeological features and cultural landscape within the study area is provided in the Heritage Impact Assessment (Archaeology and Cultural Landscape) included Appendix G.6 of this Scoping Report.

The heritage impact assessment was informed by a high-level desk-based research was conducted to gather information about the heritage context of the project site and wider area. Thereafter, the Beau Valley WEF site was visited by John Gribble and Gail Euston-Brown of ACO Associates as part of a heritage field survey for the Beaufort West Cluster conducted on 16 and 25-27 January 2023. The site survey took place at the height of summer and although there had

been recent good rains and vegetation was thick in places, ground visibility and thus the visibility of archaeological material was generally good.

A handful of archaeological material was identified in the central river valley in the Study Area during the site visit. This material was very ephemeral and consisted of isolated occurrences of mixed period lithics (mainly Middle and Later Stone Age) found largely in erosional contexts. No evidence of lithic concentrations representative of living sites was recorded. Evidence from other parts of the Upper Karoo (see for example, Webley & Hart, 2010; Van der Walt, 2016; Orton, 2017, 2021a-d; Gribble, 2022) indicates that it is in the river valleys that the bulk of archaeological material and sites are located. The higher ground like that to be occupied by the Beau Valley WEF is exposed and remote from resources such as water, and the presence of archaeological sites and material in areas like this is the exception rather than the rule.

The only farmstead present in the Study Area is Modderdrift (JG011). Although none of the structures were examined closely, the complex contains some modern steel-framed utility buildings, an apparently modern farmhouse, some labourers' cottages that appear to be 20th century in date and two older barns or storerooms which appear to be more than 60 years of age. The farm complex is situated in the narrow ravine of the Leeu Rivier, at the confluence of several streams that drain northwards into the river. It is surrounded by poplars and other established trees and there is a narrow strip of cultivation on the river floodplain just to the north of the complex. No evidence of historical built structures was found in a desktop review of historical satellite imagery for the area to be occupied by the Beau Valley WEF.

No identifiable graves were recorded in the Study Area during the scoping study site visit although it is likely that graves will be present at the Modderdrift farmstead. Graves could occur almost anywhere in the Study Area, but the remote and rocky nature of much of the wind energy facility footprint suggests that they are unlikely in that area.

This assessment found that the area identified for the proposed Beau Valley WEF has a relatively low cultural significance.

3.1.11.1 Screening Tool Descriptions and Site Sensitivity Verification

Figure 3.41 indicates the archaeological and heritage sensitivity as assigned by the Screening Tool for the study area. The overall heritage sensitivity of the study area, as per the Screening Tool, is low with no sites of any significance marked on the map shown. The site survey by the specialist showed the study area is largely of low heritage significance, with a very patchy and ephemeral presence of archaeological and cultural heritage resources.

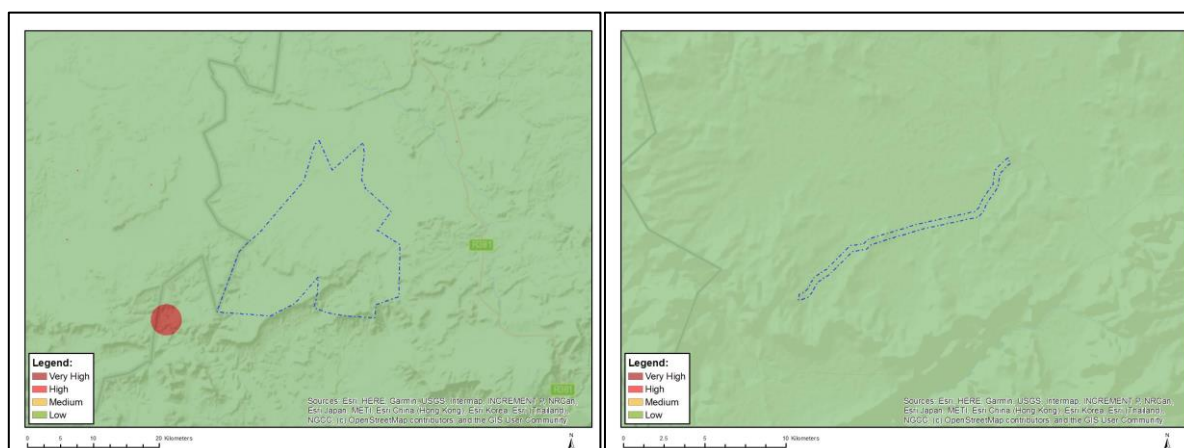


Figure 3.41: Archaeology and Cultural Heritage Combined Sensitivity of the Beau Valley WEF study area (left) and associated power line corridor (right) (Source: Screening Tool, 2023).

3.1.12 Palaeontology

The information described below is based on the Palaeontology Scoping-level Assessment, which is included in Appendix G.7 of this Scoping Report.

As mapped in Figure 3.11, the proposed Genesis Beau Valley WEF is located on the Swartrug plateau and almost all of the turbines are strategically underlain by unfossiliferous Early Jurassic Karoo dolerite dykes and sills. A portion of the grid infrastructure and roads on the plains of the development are underlain by Quaternary alluvium as well as the Middle to Late Permian Teekloof Formation (Adelaide Subgroup, Beaufort Group). These potential fossiliferous sedimentary bedrocks have often been thermally metamorphized by overlying dolerite sills compromising their palaeontological sensitivity. These rocks are in-turn overlain by quaternary-aged partially calcretised alluvium deposits. Shallow, gravelly colluvial and eluvial deposits are dominated by hornfels, sandstone, and dolerite rubble that overlies most hillslopes and plateaus. The site shows very little evidence of regional scale folding or faulting, with structures mostly limited to vertical jointing within the dolerites. Downwasted weathered gravels and soils are shown in the photographs in Figure 3.9.

According to the PalaeoMap (Figure 3.42) of the South African Heritage Resources Information System (SAHRIS) and the DFFE Screening Tool the Palaeontological Sensitivity (Figure 3.43) of the Teekloof Formation of the Adelaide Subgroup is Very High attributed to the rich Permian fossil assemblages from the lower Beaufort Group in the Karoo Basin. However, most of the WEF site is located on Jurassic dolerite that is rated as Zero as it is igneous in origin and unfossiliferous.

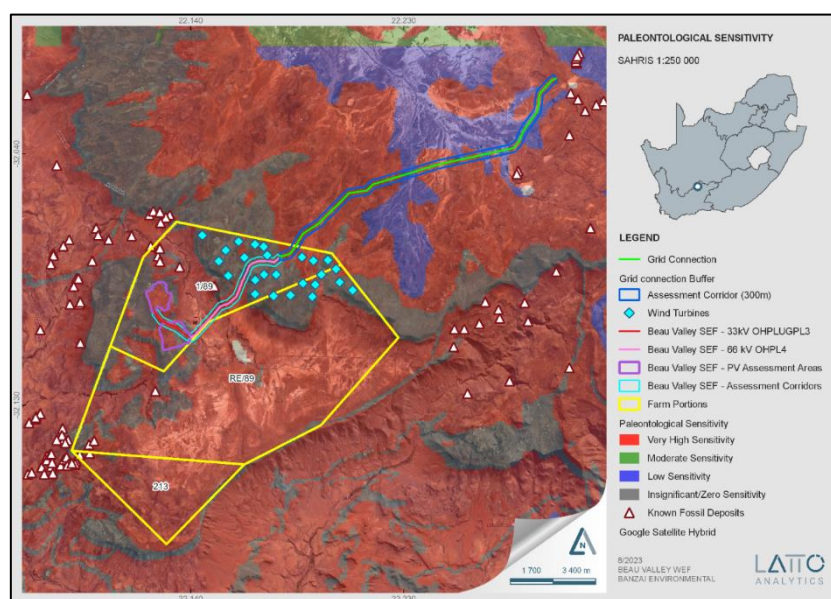


Figure 3.42: Extract of the 1: 250 000 SAHRIS PalaeoMap map (Council of Geosciences) indicating the study area (E Butler, 2023, Appendix G.7).

A ten day-comprehensive site-specific field survey of the development footprint for the combined GEED Renewable Energy Cluster was conducted on foot and motor vehicle in January 2023. Although a few fossiliferous sites were identified in the proposed footprint of the GEED Renewable Energy Cluster, no fossils were recovered from the Beau Valley WEF footprint. This could be attributed to the following:

- extensive dolerite intrusions that metamorphized potentially fossiliferous Beaufort sediments,
- low relief of the central development area,
- poor bedrock exposure, and
- relative unfossiliferous superficial sediments.

However, it must be emphasised that the presence of well-preserved fossils is not ruled out.

Based on the site investigation as well as desktop research it is concluded that fossil heritage of scientific and conservational interest in the Beau Valley WEF footprint is relatively rare. This is in contrast with the High Sensitivity allocated to the development area by the SAHRIS DFFE Screening Tool. A low Palaeontological Significance has been allocated for the construction phase of the WEF development pre-mitigation and a very low significance post mitigation. The construction phase will be the only development phase impacting Palaeontological Heritage and no significant impacts are expected to impact the Operational and Decommissioning phases.

3.1.12.1 Screening Tool Descriptions and Site Sensitivity Verification

According to the Screening Tool, the study area has a Very High palaeontological sensitivity (Figure 3.43). The PalaeoMap of the South African Heritage Resources Information System (Figure 3.42) indicates that the Palaeontological Sensitivity of the Jurassic Dolerite is Zero as it is igneous in origin and thus unfossiliferous while that of the Adelaide Subgroup is Very High (Almond and Pether, 2009; Almond et al., 2013). Large areas in the development are underlain by white that indicates that these areas have not been allocated so a specific Palaeontological Sensitivity.

A site investigation in January of 2023, by the specialist palaeontologist, did not report any fossiliferous outcrops. The Screening Tool and SAHRIS classification is thus contested as far as the impact of the Beau Valley WEF is concerned, based on actual conditions recorded on the ground during the site survey.

However, it must be emphasised that the presence of well-preserved fossils is not ruled out. Therefore, if any fossiliferous deposits are exposed by surface clearance or excavations during the construction phase of the development, the Chance Fossils Finds Protocol (included in Appendix G.7 of the Scoping Report) should be fully implemented. These mitigation measures will be translated into the EMPr for the proposed project which will be included in EIA Report.

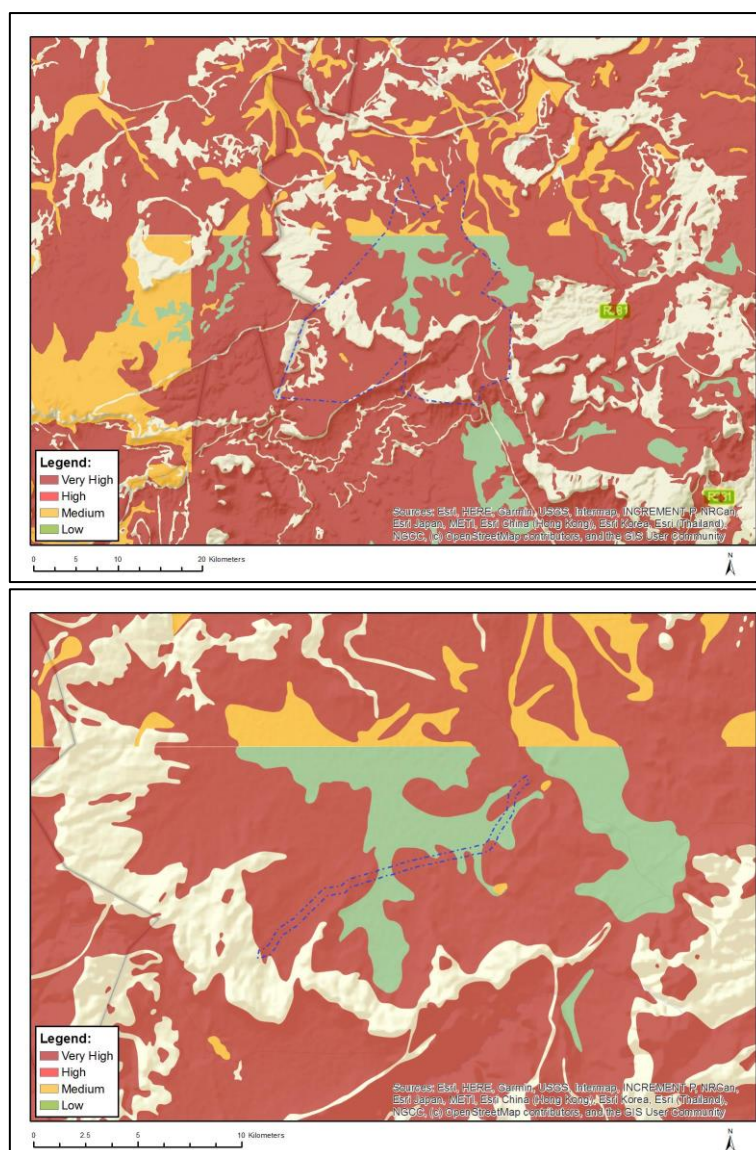


Figure 3.43: Palaeontology sensitivity of the Beau Valley WEF study area (top) and associated power line corridor (bottom) (Source: Screening Tool, 2023)

3.2 Socio-Economic Environment

The available data used to compile the socio-economic baseline for the Beaufort West Local Municipality (BWLM) and the Central Karoo District Municipality (CKDM), although not exhaustive, is interpreted in terms of professional opinion and is indicative of generally accepted trends within the Western Cape Province and the broader South Africa.

The information described below is based on Scoping-level inputs provided by the Socio-Economic Specialist, which are included in Appendix G.8 of this Scoping Report, as well as a review of various planning documents such as IDPs and SDFs.

3.2.1 Regional Context – Central Karoo District Municipality

The Central Karoo DM is situated in the north-eastern part of the Western Cape and comprises the Laingsburg, Prince Albert and BWLMs. It is the largest District in the Western Cape Province, covering 38 854 km², or 27.7% of the provincial area, and had a population of 75 673 in 2021 (Appendix G.8). The Central Karoo DM is predominantly rural, with discrete development areas (“service centres”) which include Beaufort West, Prince Albert, Laingsburg and Murraysburg.

3.2.1.1 Demographics

The CKDM population increased by 4.4% between 2011 and 2016, less than the 6.6% increase in the overall Western Cape population. The CKDM is the most sparsely populated District in the Western Cape, with only ~2 people / km², and accounts for less than 10% of the Western Cape population. The DM population is expected to increase annually by 0.8% from 2022 to 2026, well below the anticipated provincial population annual growth of 1.7% (Appendix G.8).

Beaufort West is the largest and most populous LM in the District; it covers 21 916 km², equivalent to 56 % of the total CKDM geographical area and had 51 556 residents in 2021, equivalent to 67% of the District population (Table 3.13).

Table 3.13: Populations in the Central Karoo DM (Source: Appendix G.8 of this Scoping Report)

Municipality	2011	2016	2021	2022*	2023*	2024*
Laingsburg	8 289	8 895	9 338	9 421	9 528	9 635
Prince Albert	13 136	14 272	14 770	14 894	15 071	12 229
Beaufort West	49 586	51 080	51 556	51 582	51 814	52 000
Central Karoo DM	71 011	74 274	75 673	75 897	76 413	76 863

Note: * Population forecast

Of the Central Karoo DM population, 32% are youth (15-34), slightly lower than the national figure (36%). Children under 14 constitute 29% of the District's population. The average household size was 3.9 people in 2021. Each 100 working-age persons on average support 63 dependents, higher than the provincial ratio (45 dependents per 100 working-age persons) (Appendix G.8).

3.2.1.2 Economy

The CKDM economy is dominated by the tertiary sector (services), which accounted for 74.7% of the Regional Gross Domestic Product (GDP) in 2020, followed by the primary sector (agriculture and mining) with 15% (see Figure 3.44). The CKDM tertiary sector includes general government (21% of overall GDP), community services (18%), finance (13%), trade (12%) and transport (10%). The regional economy thus strongly depends on the public rather than the private sector, and on agriculture (14% of DM GDP, compared to only 4.2% of provincial GDP). Recent droughts have hindered agricultural productivity and thus economic growth in the region, while the less important mining sector also contracted by 14% in 2021. The DM economy shrank by 0.6% in 2021 (compared to a provincial contraction of 0.4%) due to the compounding effects of drought, load-shedding, national recession, inflation and the Covid-19 pandemic (which also caused a decline in tourism). With a GDP of R3.5 billion in 2021 the CKDM contributed only 0.5% to the Western Cape economy (Appendix G.8).

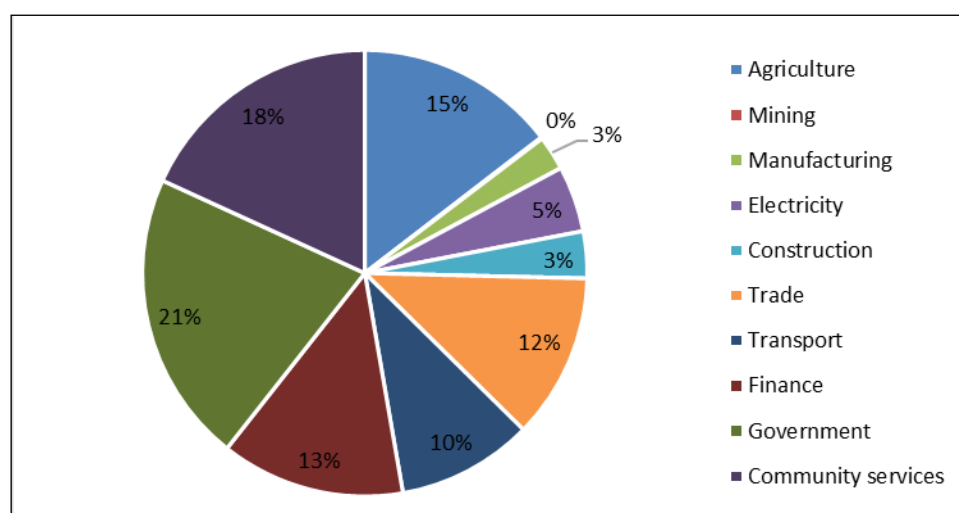


Figure 3.44: Sectoral contribution to Central Karoo DM GDP, 2020 (Source: Appendix G.8 of this Scoping Report)

The agricultural sector generates approximately 25% of all employment opportunities in the District (compared to only 10% in the Western Cape), far above its relative contribution to DM GDP. Agricultural jobs are typically low-skilled and low-income opportunities, which limits earning potential but provides opportunities for unskilled labour. Other sectors that generate significant employment opportunities are within the tertiary sector, namely community services (24%), trade (21%) general government (11%) and finance (9%), also typically low to semiskilled. Overall, the tertiary sector generates ~70% of employment opportunities, while the secondary sector only accounts for 6.6% of employment opportunities, with contributions from construction (5%) and manufacturing (1.5%) (see Figure 3.45) (Appendix G.8).

The CKDM had 17 748 formal employment opportunities in 2020, of which 20% were skilled, 43% were semi-skilled and 37% were low skilled, which mirrors the sectors that generate most employment. Informal employment was estimated at 4 180 opportunities in 2020. BWLM accounts for 64.7% of employment in the Central Karoo District in 2021, followed by Prince Albert (20.1%) and Laingsburg LMs (15.2%) (Appendix G.8).

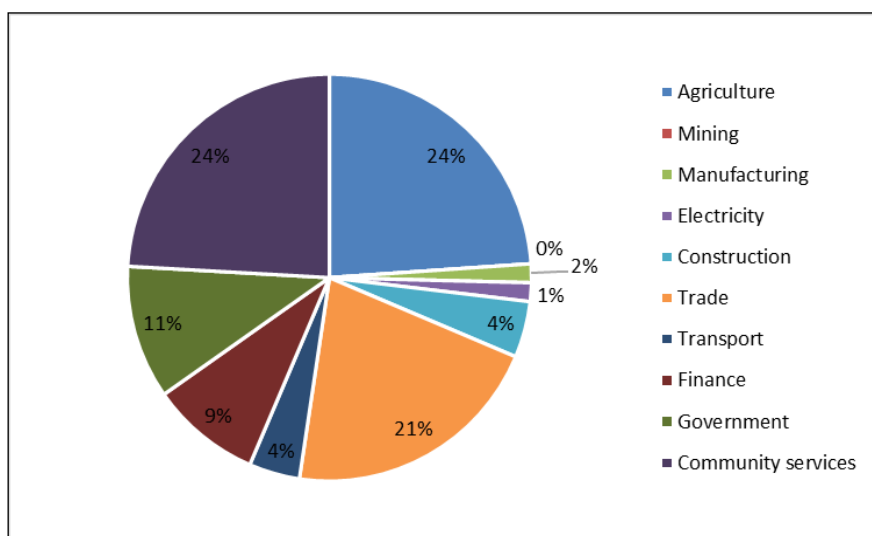


Figure 3.45: Sectoral employment in the Central Karoo DM – (2020) (Source: Appendix G.8 of this Scoping Report)

3.2.1.3 Social Characteristics

The official unemployment rate in the Central Karoo was 22.7% in 2020, slightly above that of the Western Cape at 21%. Only half of the Central Karoo DM's working age population (aged 15 to 64) is economically active (part of the labour force), which is much lower than the provincial rate (62%). Unemployment is highest in the BWLM at 25%, with lower rates in Prince Albert (18%) and Laingsburg LMs (17%) (CKDM DDM, 2021 cited in Appendix G.8).

Not surprisingly, given the economic characteristics of the District, 63% of households fell within the low income bracket in 2016, with 4.7% of households in the high income bracket (CKDM SDF, 2019 cited in Appendix G.8). Approximately 8.5% of households did not have an income in 2016 (CKDM SDF, 2019 cited in Appendix G.8). Social grants remain a significant source of income for households, particularly in rural areas. More than 64% of the Central Karoo DM population depended on grants in 2020 (CKDM IDP, 2020; CKDM DDM, 2021 cited in Appendix G.8).

Approximately half the population lives below the Upper-Bound Poverty Line¹¹ (see Figure 3.46), and more than 80% of Central Karoo DM households earn less than the South African monthly household average income of R11 514 (CKDM DDM, 2021 cited in Appendix G.8). The percentage of people living in poverty slightly decreased between 2009 and 2019 (CKDM DDM, 2021 cited in Appendix G.8).

In 2016, the Central Karoo DM had 29 schools and 14 333 learners (CKDM DDM, 2021 cited in Appendix G.8). For every 32 learners there is one teacher in the region. Approximately 38% of children drop out of school before completing grade 12.

¹¹ The national poverty lines based on April 2020 prices were (StatsSA, 2020):

- Food Poverty Line: R585 monthly income (amount required to purchase minimum energy intake)
- Lower-Bound Poverty Line: R840 (must choose between food and important non-food items)
- Upper-Bound Poverty Line: R1 268 (cannot afford minimum lifestyle desired by most South Africans)

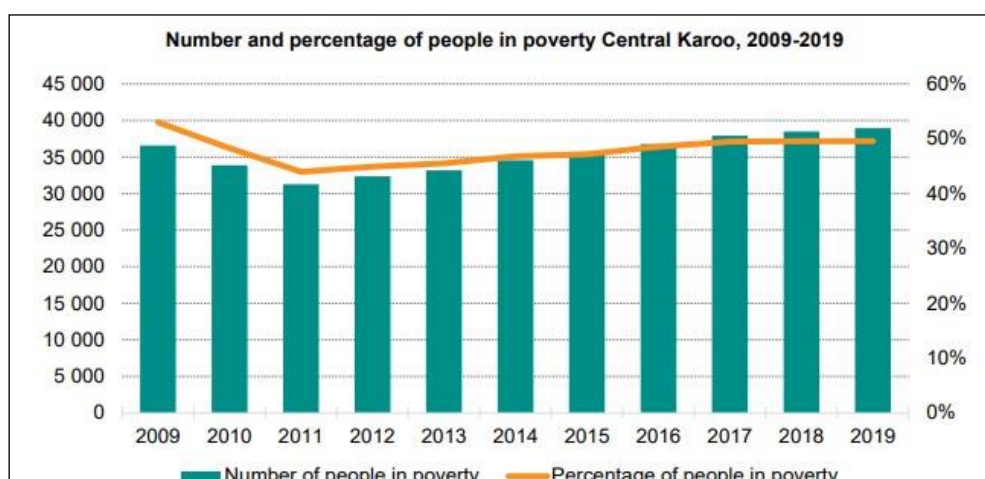


Figure 3.46 Poverty rate for Central Karoo DM between 2009 and 2019 (Source: Appendix G.8 of this Scoping Report)

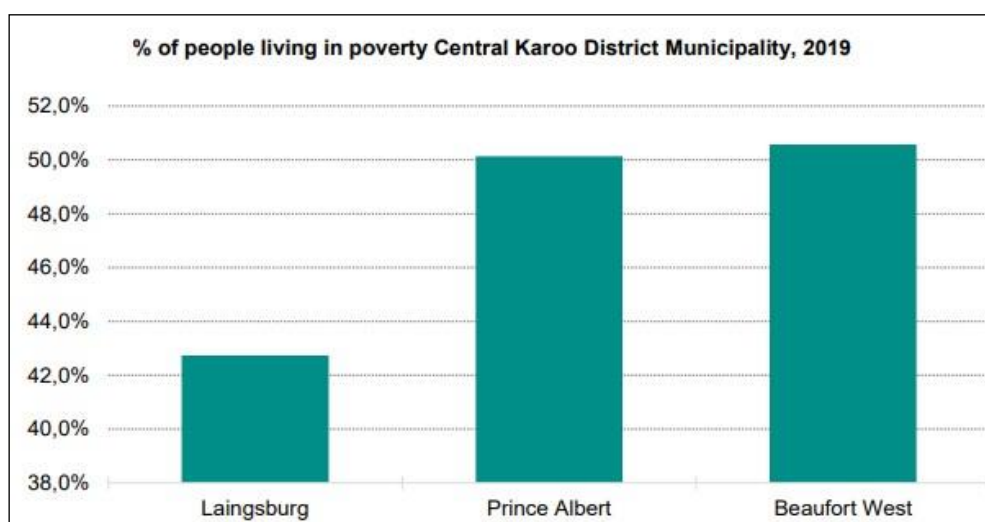


Figure 3.47: Poverty rate for LMs in Central Karoo DM in 2019 (Source: Appendix G.8 of this Scoping Report)

The Central Karoo DM is serviced by six hospitals, nine primary health care facilities and 26 clinics (SEP, 2021 cited in Appendix G.8). Just over 2 000 people receive antiretroviral treatment (ART) for the Human Immunodeficiency Virus (HIV) in the Central Karoo DM, with a slight downward trend. HIV incidence is 2.7% (CKDM DDM, 2021 cited in Appendix G.8).

In 2016, approximately 97% of households had formal housing, 2% resided in traditional housing while 0.5% resided in informal dwellings. Some 76% of households had piped water inside their dwelling (CKDM DDM, 2021 cited in Appendix G.8).

Crime rates and sexual offences recorded in the Central Karoo DM declined in recent years, but drug related crime, driving under the influence of drugs or alcohol and residential burglaries remains higher than provincial averages.

3.2.2 Local Context – Beaufort West Local Municipality

BWLM is the largest municipality in the Central Karoo DM, accounting for 56.4% of the District area (21 916 km²) and is the economic and administrative centre of the CKDM (CKDM DDM, 2021 cited in Appendix G.8). The BWLM is divided into four wards – the project lies on the northern boundary of the large and rural Ward 7.

3.2.2.1 Demographics

The BWLM accommodates 68% of the Central Karoo DM population and recorded a very low annual growth rate of 0.4% (SEP, 2021 cited in Appendix G.8).

The population density in the BWLM is 2 people/km², similar to the District average of ~2 people/km² (Wazimap, 2023 cited in Appendix G.8) whereas Ward 7 has a lower population density of ~1.3 people/km² and 10 377 residents, reflecting the predominantly rural nature of the project area (Wazimap, 2023 cited in Appendix G.8). The average household size in the BWLM is 3.9 in 2021.

The age distribution and ethnic composition of the municipality's population are similar to that in the District population.

3.2.2.2 Education

Education levels are low in the BWLM. Approximately 32% of the population completed secondary education (matric) in 2016, while another 39% obtained at least some secondary education (see Figure 3.48). A sizable share of the population (5%) had received no schooling, and 12% only had primary education. Less than 3% of the population had any form of tertiary education (Wazimap, 2023 cited in Appendix G.8).

The percentage of the population who completed matric increased from 24% in 2011 to 35.5% in 2016, while learner enrolment increased marginally between 2018 and 2020 (SEP, 2021 cited in Appendix G.8) (Wazimap, 2023 cited in Appendix G.8), indicating that education levels are improving. BWLM had 18 public schools, 14 of which are no-fee schools. Some 11 300 learners were enrolled in school in 2020 (equivalent to 61% of all residents 18 years and younger) (SEP, 2021 cited in Appendix G.8).

Only 28% of households in the BWLM have access to the internet, suggesting limited opportunities to participate in today's increasingly online world and associated educational and employment opportunities (Wazimap, 2023 cited in Appendix G.8).

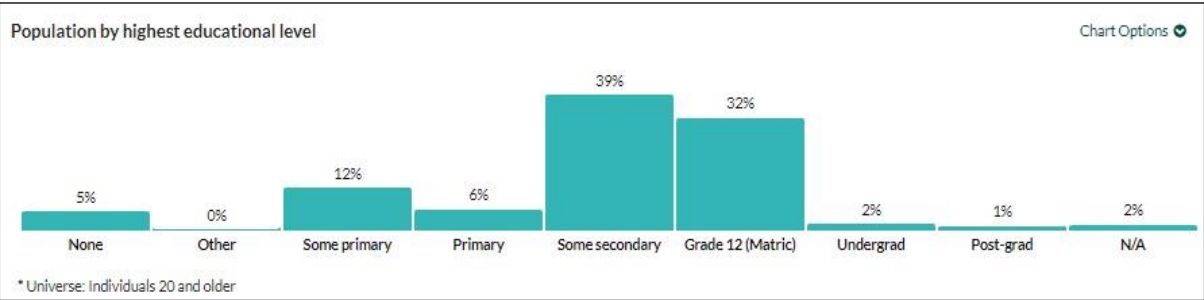


Figure 3.48: Education levels in the BWLM, 2016 (Source: Appendix G.8 of this Scoping Report)

3.2.2.3 Economy

The BWLM economy is the economic hub of the Central Karoo and contributed 69.7% (or ~R2.4 billion) to the District GDPR (MERO, 2022 cited in Appendix G.8).

Municipal GDPR growth rates were positive but low and below the District rates between 2011 and 2018 and turned negative in 2019, reflecting a range of challenges such as drought, loadshedding and the COVID-19 pandemic (see Figure 3.49). Economic conditions are expected to remain difficult.

GDPR per capita growth was positive in all years except 2020 (see Figure 3.50). Growth declined over most of the period but was nevertheless significantly higher than GDPR growth, implying that the population grew slower than the economy, as evidenced by the very low annual growth rate of 0.4 %, likely through emigration from the region.

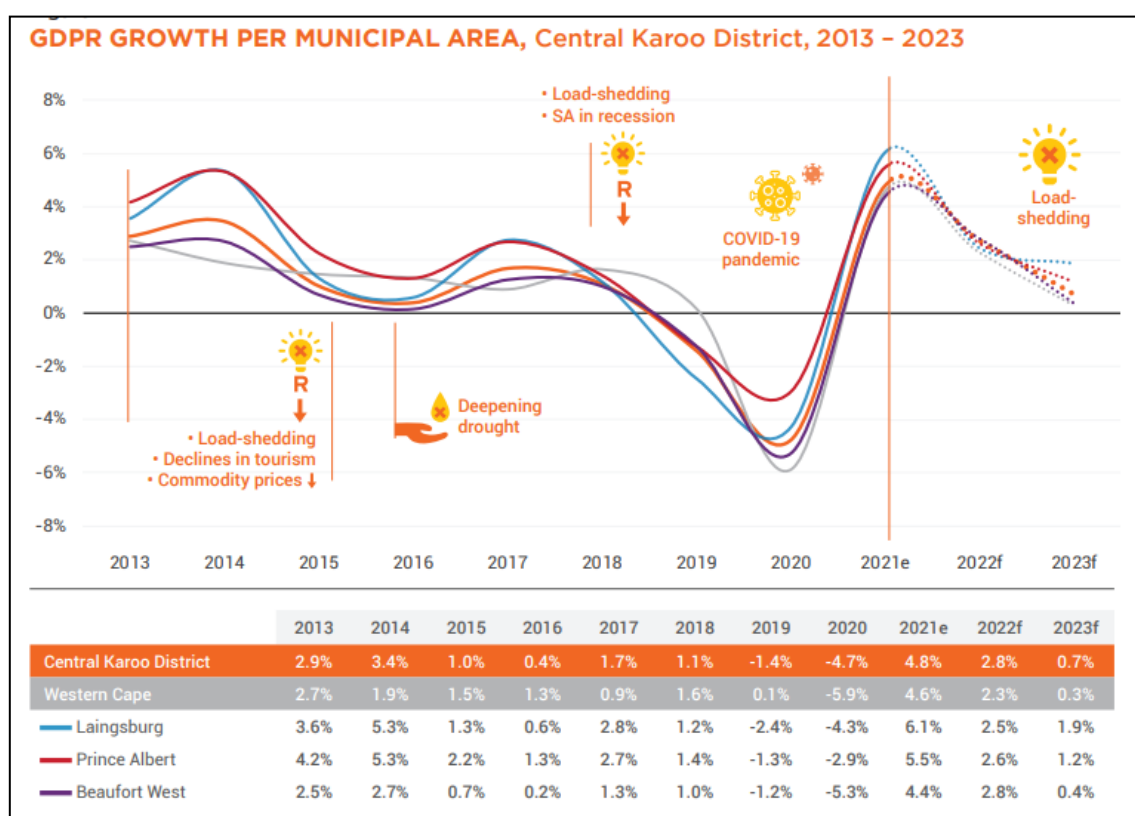


Figure 3.49: GDPR growth in the BWLM, Central Karoo DM and Western Cape (Source: Appendix G.8 of this Scoping Report)

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021e
Central Karoo District	9.6%	8.1%	7.8%	8.1%	8.6%	8.2%	4.3%	2.8%	1.0%	0.8%	8.3%
Western Cape	5.6%	4.7%	6.3%	5.2%	5.6%	5.8%	4.5%	2.6%	2.1%	-3.9%	8.1%
Laingsburg	10.9%	9.0%	7.7%	9.9%	9.4%	10.1%	3.6%	2.1%	-0.5%	3.6%	8.6%
Prince Albert	9.7%	8.1%	7.8%	9.3%	9.1%	9.9%	4.4%	2.8%	0.6%	2.7%	8.7%
Beaufort West	9.3%	7.9%	7.8%	7.6%	8.3%	7.4%	4.4%	3.0%	1.4%	-0.1%	8.2%

Source: Quantec Research, 2022 (e denotes estimate)

Figure 3.50: GDPR per capita growth (Source: Appendix G.8 of this Scoping Report)

Similar to the Central Karoo DM, the tertiary sector contributed the most to municipal GDPR (~78%) in 2020 (MERO, 2022), particularly general government (21.3% of municipal GDPR), community services (17.2%), finance (11.0%), transport (11.3%) and trade (11.1%). The primary and secondary sectors, with respective contributions of 12.9% and 9.2%, are small (see Figure 3.51) (CKDM DDM, 2021 cited in Appendix G.8)

The agricultural sector is the second largest economic sector in the BWLM and despite relatively low historic growth, the sector recently benefitted from higher prices for mutton and wool (MERO, 2022 cited in Appendix G.8).

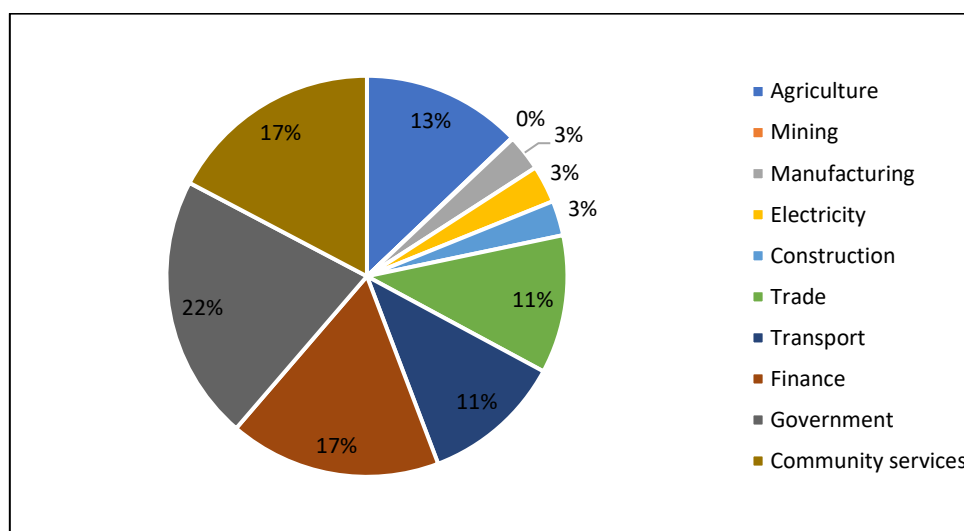


Figure 3.51: Sectoral contribution to BWLM GDP, 2020 (Source: Appendix G.8 of this Scoping Report)

3.2.2.4 Employment and Income

Similar to the Central Karoo DM, the community services, trade and agricultural sectors generated most employment opportunities in the BWLM (24%, 23% and 19% respectively) (MERO, 2022 cited in Appendix G.8)).

The official unemployment rate of 23.4% in 2016 was higher than in the Central Karoo DM and the Western Cape, and decreased by one percentage point between 2016 and 2020 (see Table 3.14). The poverty rate shows a similar slowly decreasing trend as unemployment (SEP, 2021 cited in Appendix G.8).

Table 3.14: Unemployment rates for the project area and region (Source: Appendix G.8 of this Scoping Report)

Area	2010	2016	2020
Beaufort West LM	24.4%	23.4%	22.4%
Central Karoo DM	23.0%	21.3%	20.3%
Western Cape	15.9%	17.7%	18.9%

More than half of people in the BWLM lived below the Upper-Boundary Poverty Line in 2019, the highest percentage within the Central Karoo DM (see Figure 3.47). A significant portion of the population is reliant on social grants. The employment characteristics in Ward 7 broadly mirror those in the LM.

Some 10% of municipal households had no income in 2011, while a further 31% of households earned less than R20 000 per annum in 2011. Household income distribution is similar in the BWLM and Central Karoo DM. The Western Cape Province has a higher percentage of higher-income households, while incomes are noticeably lower in Ward 7 (see Table 3.15).

The 2021 Gini coefficient in the BWLM (0.60) broadly aligns with the Gini coefficient of the Central Karoo DM (0.607) and the Western Cape Province (0.627) (MERO, 2022 cited in Appendix G.8).

Table 3.15: Monthly household income distribution (2011) (Source: Appendix G.8 of this Scoping Report)

Monthly household income	Ward 7	BWLM	CKDM	Western Cape
R0	8%	10%	9%	14%
Under R5 000	4%	3%	3%	3%
R5 000 – R10 000	10%	6%	5%	4%
R10 000 – R20 000	23%	22%	21%	12%
R20 000 – R40 000	29%	24%	25%	18%
R40 000 – R75 000	14%	15%	16%	16%
R75 000 – R150 000	6%	9%	10%	13%
More than R150 000	4%	11%	11%	22%

3.2.2.5 Health and Community Services

The BWLM was serviced by two District hospitals and 10 primary clinics in 2019. In 2020 BWLM recorded 1 558 patients receiving antiretroviral treatment for HIV/AIDS, with a small increase in 2021 (SEP, 2021 cited in Appendix G.8).

3.2.2.6 Municipal Services

Some 85% of households in the BWLM resided in formal dwellings in 2011 while 97% resided in formal dwellings in Ward 7 (see Figure 3.52).

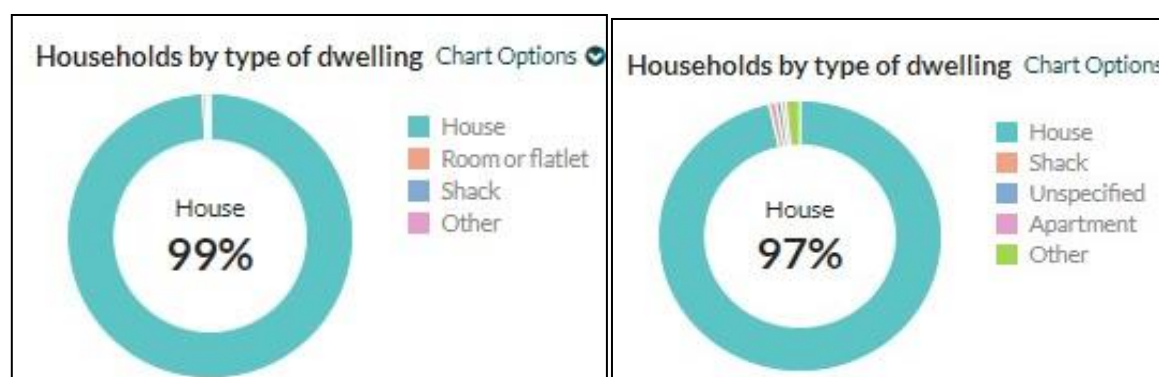


Figure 3.52: Households by type of dwelling in 2011 (left) in the BWLM and Ward 7 (Source: Appendix G.8 of this Scoping Report)

Access to services is generally high in the BWLM. Not surprisingly in rural areas such as Ward 7, fewer people have access to municipal services and rely more on borehole water and own waste disposal (Table 3.16). Some 5 275 people were on the BWLM housing waiting list in 2017.

Table 3.16: Basic service delivery in Ward 7, Beaufort West and Central Karoo Municipality in 2011 (Source: Appendix G.8 of this Scoping Report)

Area	Water		Toilets	Refuse Removal	
	Service Provider	Borehole	Access to flush toilet	Service Provider	Own dump
Ward 7	76%	17%	91%	80%	14%
Beaufort West LM	95%	1%	98%	95%	3%
Central Karoo DM	94%	1%	97%	94%	4%

Overall, it is evident that the BWLM and Ward 7 have many socio-economic challenges and needs. Conditions, on average, are slightly worse than in the wider region, as evidenced by slightly lower education levels, slightly more households in the very low-income bands and higher unemployment.

Ward 7 is a huge rural ward extending over more than 8 000 km² and is sparsely populated at 1.1 persons / km² in 2011. Opportunities therefore cannot be evenly distributed across the area, and averages even within Ward 7 will not appropriately reflect the situation in any one area. Unemployment figures suggest there is a ready, albeit small, pool of unskilled workers.

3.2.3 Study Area Context

The project area is remote and primarily used for small stock farming (grazing), notably sheep. Small areas are also under irrigation and produce e.g., lucerne, garlic and onions. A prolonged regional drought has significantly affected farming activities and reduced farming income. The Agricultural Compliance Statement (Appendix G.1) indicates that the proposed development offers some positive impact on agriculture by way of improved financial security for farming operations, as well as wider, societal benefits.

Very few people are employed on farms in the project area. Similarly, very few people reside permanently on the farms; those who do are primarily the landowners and their family members who have contractual agreements with the developers. Infrastructure, such as roads and communications networks, is reported to be in poor condition.

A small number of farmsteads (less than 10) and cultivated areas are located in and around the project area, primarily near ephemeral streams and farm dams. Carrying capacity, water availability and activity levels are evidently very low.

A relatively small number of other homesteads are located within ~5 km of the cluster boundaries. The nearest towns are Beaufort West (~40 km, with an estimated population of ~38 700 in 2023), Loxton (~35 km, with an estimated population of ~1 000 in 2011), Leeu Gamka (~70 km, with an estimated population of ~2 700 in 2011) and Fraserburg (~65 km, with an estimated population of ~3 000 in 2011).

3.3 Eco-Tourism Activities

The information described below is based on Scoping-level inputs provided by the Visual and Socio-economic Specialists, which are included in Appendix G.5 and G.8, respectively, of this Scoping Report.

This study area is known as a tourist destination owing to the presence of the Karoo National Park, a midway stop between Gauteng and Cape Town, as well as the small historic town of Beaufort West. The proposed development site is located approximately 5 km north of the Karoo National Park.

In order to avoid visual impacts on the wilderness character, experience, recreation amenity and tourism economy associated with many protected areas and tourist facilities, visual buffers are recommended to be placed around these potential sensitive receptor sites. It is recommended that large scale REF infrastructure should not be placed within the boundary of these identified or within the established buffer zones. The potential land use conflict between nature orientated tourism and the potential visual impacts associated with REFs may be mitigated to some degree by adhering to the following exclusion zone buffers:

- National Parks – 5 km buffer (applicable to proposed development)
- Nature Reserves – 3 km buffer (not applicable)
- Private reserves and game farms – 1.5 km buffer (not applicable)

Three turbines of the Beau Valley WEF are located within the 5km exclusion buffer zone for the Karoo National Park. Informed by the scoping-level specialist studies, the locations of these turbines will be refined during the EIA phase.

Roads (especially scenic routes) are considered potential sensitive receptors whereby the travellers may be negatively impacted on by the exposure to the GEED Renewable Energy Cluster. In order to avoid encroachment of the infrastructure on public roads (especially in natural, rural and scenic areas), and thereby reducing the potential visual impact on road users and tourists, the following buffers are recommended:

- National roads – 1 km buffer
- Arterial and main roads – 500m buffer
- Secondary roads – 500m buffer

Beau Valley WEF is not located within the roads buffer.

3.4 Civil Aviation

The Screening Tool has indicated that the study area is of low sensitivity as it relates to Civil Aviation (Figure 3.53). The low sensitivity was verified during a site visit undertaken in August 2022, whereby no civil aviation features or installations were found within the study area. Therefore, as required by GN 320, a Civil Aviation SSV was compiled and is included in Appendix G.14 of this Scoping Report. Additionally, in line with GN 320, no further requirements are applicable i.e., a Civil Aviation Compliance Statement is not required.

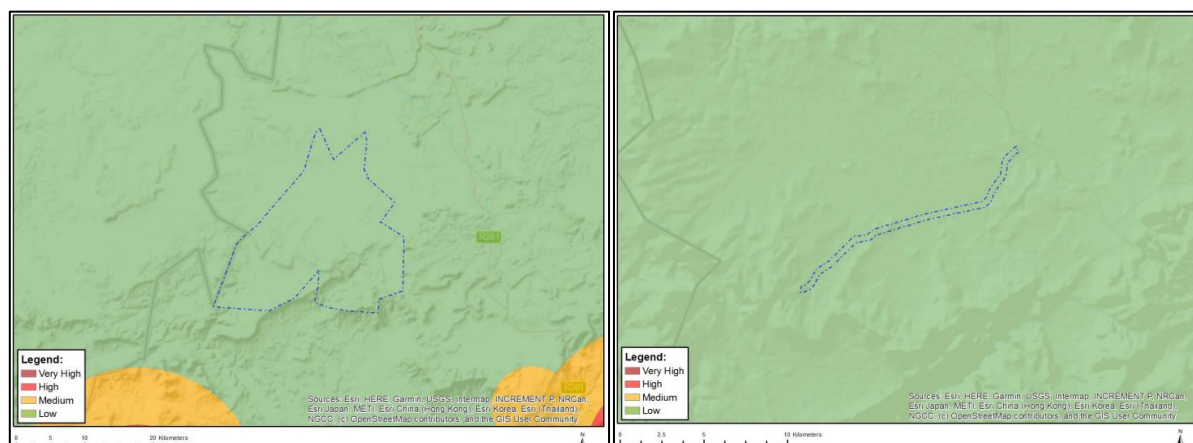


Figure 3.53: Civil Aviation sensitivity of the Beau Valley WEF study area (left) and associated power line corridor (right) (Source: Screening Tool, 2023)

The Air Traffic and Navigation Services SOC Limited (ATNS) data has confirmed that there are two SACAA registered aerodromes within the 30 km radius of the study area. The De Panne Aerodrome (R 091) (31° 58' 45.22" S; 22° 14' 25.26" E) is located approximately 17 km northeast of the study area. The De Panne Aerodrome was not identified by the Screening Tool, thus no sensitivities have been identified. The Bergplaas Aerodrome (R 007) (32° 20' 58.47" S; 21° 59' 26.85" E) is located approximately 30 km southwest of the study area. The Bergplaas Aerodrome is indicated on the Screening Tool as medium sensitivity for WEF developments; and high sensitivity within 8 km of the aerodrome for substation and EGI developments (based on the general methodology); however, the actual aerodrome will not be impacted on by the proposed solar facility and associated infrastructure due to its distance from the proposed project.

ATNS data further confirmed verified that a licensed aerodrome falls outside of the 30 km radius of the study area. The Karoo Gateway Aerodrome (International Civil Aviation Organisation Code: FABW) near Beaufort West is located approximately 55 km southeast of the study site.

The location of the Karoo Gateway Aerodrome, which is approximately 1.4 km long and is oriented SE to NW, is indicated on the Screening Tool as medium sensitivity for WEF developments; and high sensitivity within 8 km of the aerodrome for substation and EGI developments (based on the general methodology); however, the actual aerodrome will not be impacted on by the development due to its distance from the proposed project.

In relation to Conventional Air Traffic Service (ATS) Routes, Lower ATS Routes (i.e., A405 (Upper) and A405 (Lower)), along with an Upper ATS Route (i.e., UA405 (Upper)), are located approximately 25 km north of the study area. Two Area Navigation Routes (RNAV) flank the study area 5 km to the northwest and 15 km to the southeast (at its closest points). The one directional RNAV (Z/UZ39) positioned north of the study area is associated with the TETAN waypoint and the Bloemfontein (BLV) Very High Frequency Omni-Directional Range (VOR) beacon/ Distance Measuring Equipment (DME), whereas the one directional RNAV (Z/UZ40) south of the study site is associated with the BLV VOR/DME and the ESRUK waypoint.

The proposed project study area was determined and verified to be of low sensitivity (as it relates to civil aviation). Figure 3.54 indicates the location of the civil aviation features noted above, which informed this Site Sensitivity Verification.

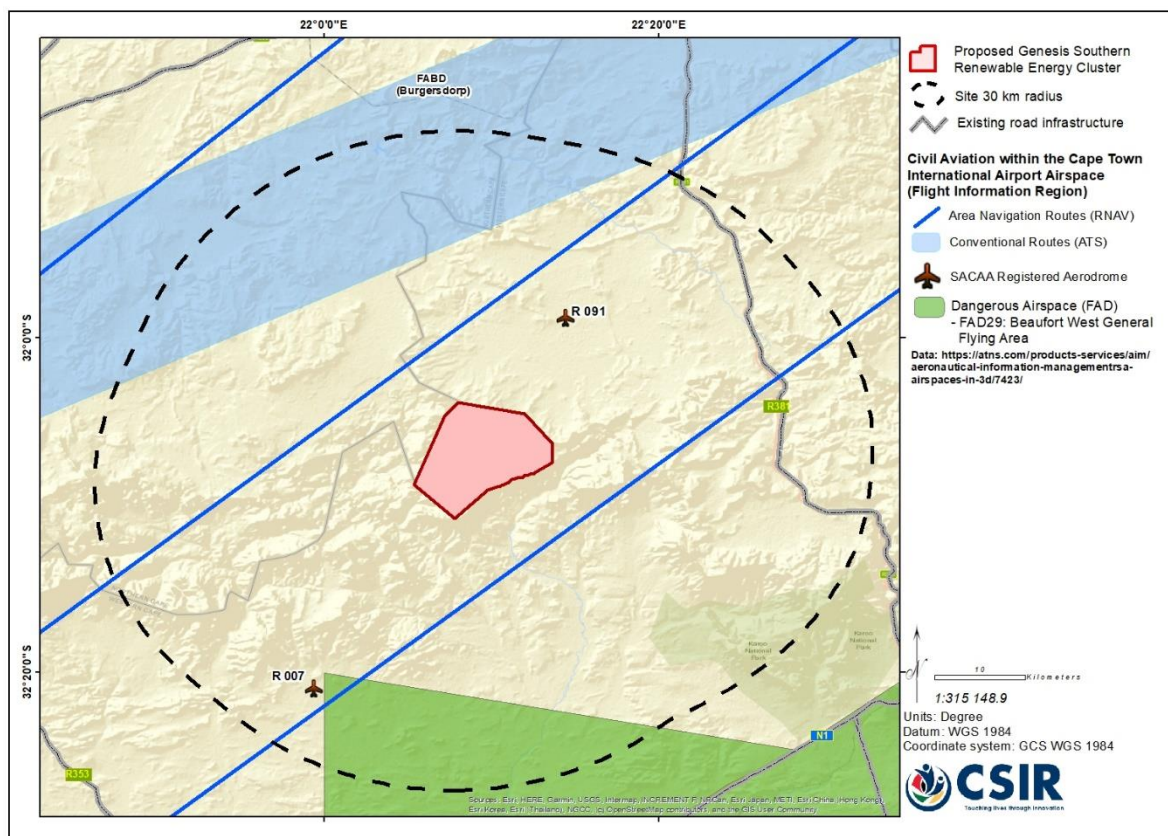


Figure 3.54: Civil Aviation features relative to the proposed project study area based on the site visit and existing databases.

3.5 Defence

The Screening Tool has indicated that the study area is of low sensitivity as it relates to Defence (Figure 3.55). The low sensitivity was verified during a site visit undertaken in August 2022, whereby no defence features or installations were found within the study area. Therefore, as required by GN 320, a Defence SSV was compiled and is included in Appendix G.15 of this Scoping Report. Additionally, in line with GN R320, no further requirements are applicable i.e., a Defence Compliance Statement is not required.

The Screening Tool shows this area as low sensitivity in relation to the solar methodology and in relation to the general methodology for substations and power lines. Desktop research and the Screening Tool for wind turbine methodology confirm that there are no military or defence sites within a 30 km radius of the proposed project study site. Although the Screening Tool based on the general methodology for substations and EGI indicate two military and defence sites as very

high sensitivity located approximately 35 km southeast (most likely a Sentech High Power Terrestrial Broadcasting Facility or telecommunication facility) and 55 km southwest of the study area, they will not be impacted on by the proposed project due to their vast distance from the study site. Accordingly, the proposed project study area was determined and verified to be of low sensitivity (as it relates to defence installations).

Figure 3.56 indicates the location of the defence features noted above, which informed the SSV.

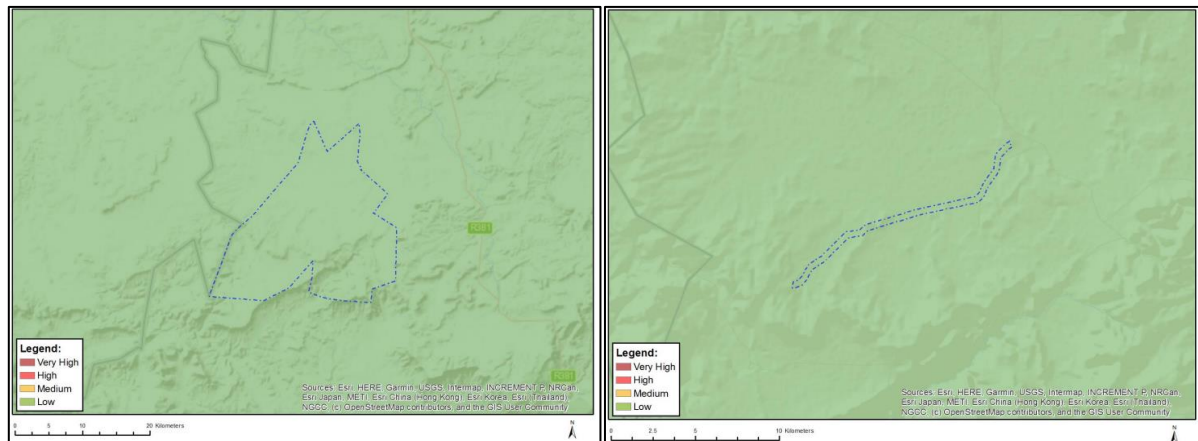


Figure 3.55: Defence sensitivity of the Beau Valley WEF study area (left) and associated power line corridor (right) (Source: Screening Tool, 2023)

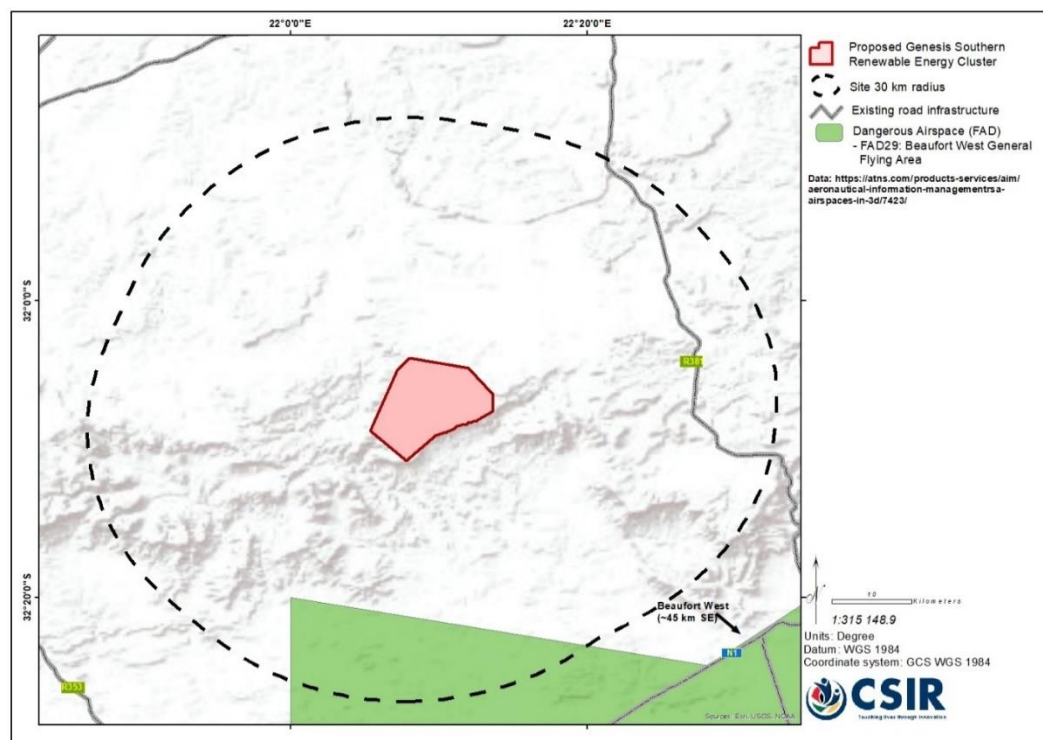


Figure 3.56: Defence features relative to the proposed project study area based on the site visit and existing databases.

3.6 Environmental Sensitivity Mapping

Based on the environmental sensitivities identified and verified by the Specialists on site during the Scoping Phase (included as Appendix G to this Scoping Report), an overall combined environmental feature map and environmental sensitivity map has been compiled for the study area. The scoping phase proposed development footprint are overlain onto these maps to show how they relate to the environmental features and sensitivities, and how they have been avoided (these maps are included in Chapter 7 of this Scoping Report).

Figure 3.57 shows the identified and assessed environmental features present within the study area; whereas Figure 3.58 shows the recommended environmental sensitivity and buffers that have been allocated to these features. Refer to Appendix C of the Scoping Report for individual thematic sensitivities maps. These maps indicate that the inherent environmental sensitivity of the proposed project study area is generally medium to low, with some very high and high sensitivity areas. The study area is suited for the development of the proposed project based on the understanding that measures have been taken to firstly avoid the sensitive features as best as possible, and all aspects to manage or mitigate potential impacts will be taken into consideration and detailed during the EIA Phase.

These identified sensitivities will be further refined through detailed specialist impact assessments during the EIA Phase. The specialist impact assessments will be included in the EIA Report. Table 3.17 provides a summary of the environmental sensitivities identified by the relevant specialists.

Table 3.17: Key Environmental Features and Sensitivities identified by relevant Specialists at Scoping

Specialist Study or Theme	Sensitivity Description
Agriculture	The Site Sensitivity Verification (SSV) verified that the site is of low agricultural sensitivity with a land capability value of 4 to 5. There are no areas that need to be avoided from an agricultural perspective. The layout has no relevance to agricultural impact in this case. Refer to the Agricultural Compliance Statement (Appendix G.1) for additional information.
Terrestrial Biodiversity, Terrestrial Plant Species and Terrestrial Animal Species	Very High Sensitivity: - The larger riparian area is considered very highly sensitive which must be avoided, based on their value as Riverine Rabbit habitat but also as a result of their general ecological significance. Buffers as per the Aquatic specialist's recommendation should be implemented. High Sensitivity: - The rocky hills and steep slopes is considered very highly sensitive habitat which must be avoided. - The pans and drainage lines are considered highly sensitive habitat which must be avoided. Buffers as per the Aquatic specialist's recommendation should be implemented. - Linear infrastructure such as roads and overhead powerlines are considered to have a low impact on the high sensitivity areas, and therefore may cross these areas.

Specialist Study or Theme	Sensitivity Description
	Medium Sensitivity: - Wash areas are considered medium sensitivity. Very Low Sensitivity: - Existing transformed areas.
Aquatic Biodiversity	The recommended buffer area between the aquatic features and the project components to ensure these aquatic ecosystems are not impacted by the proposed activities are as follows: High Sensitivity: - The larger rivers that are indicated to be of high sensitivity – 50m buffer Medium Sensitivity: - Smaller streams and drainage features that are indicated to be of medium sensitivity – 35m buffer - Depression wetlands and wider wash areas indicated to be of medium sensitivity should be avoided.
Bats	High Sensitivity (No-go): - Buildings, wetlands, NFEPA rivers, farm dams, and rocky outcrops must be buffered by 200 m as per best practise guidelines. - Smaller drainage lines must be buffered by 50 m. - In the current layout for the proposed Beau Valley WEF, there are no turbines in high sensitivity areas.
Avifauna	Very High Sensitivity - All infrastructure exclusion zones: Verreaux's Eagle nest: A 1 km all infrastructure exclusion zone is recommended to prevent the displacement of the breeding pair during the construction phase due to disturbance. High Sensitivity - Drainage lines, dams, and waterpoints: It is preferable to leave some open space where possible with no turbine infrastructure, for birds to access and leave the surface water area unhindered. The buffer zones as recommended by the Aquatic Biodiversity Specialist should be followed. High Sensitivity - Verreaux's Eagle nest: A 3.7km rotor-swept area turbine exclusion zone is recommended around Verreaux's Eagle nesting sites to reduce the risk of mortality due to collisions with the wind turbines. Medium Sensitivity - Verreaux's Eagle nest: A 5.2km rotor-swept area turbine exclusion zone is recommended around Verreaux's Eagle nesting sites as pro-active mitigation against displacement due to disturbance.
Visual	Very High Sensitivity: - National roads – 1km buffer - Arterial and main roads – 500m buffer - Secondary roads – 500m buffer - Homesteads – 500m buffer - Dams, wetland and Pans – 250m buffer - National Parks – 5km buffer

Specialist Study or Theme	Sensitivity Description
	High Sensitivity - High mountains - Mountains and tall hills - Slopes > 20% - Karoo National Park viewshed protection zone Moderate Sensitivity - Strongly undulating plains and hills
Noise	Very High Sensitivity: 500m buffer around all noise receptors
Heritage (Archaeology and Cultural Heritage)	Most resources located within the study area are of low cultural significance and hence low sensitivity.
Palaeontology	There are no areas that need to be avoided from a palaeontology perspective. The site survey undertaken by the specialist found minimal bedrock exposure and concluded that the site is of low palaeo-sensitivity.
Socio-Economic Assessment	Not applicable. There are no sensitivities of this nature that can be mapped and that would influence the layout of the proposed project.
Traffic	Not applicable. There are no sensitivities of this nature that can be mapped and that would influence the layout of the proposed project.
BESS High Level Risk Assessment	- Ideally the BESS should be placed at least 50 m away from known boreholes and water points, and 100 m away from major surface water features, such as major rivers and wetlands. - Ideally, due to the possibility of noxious smoke from potential fires, any lithium-ion BESS should be located over 500 m from residential areas, in this case isolated farm houses that are occupied. If this is not possible, it is noted that the risks are low and advice of mitigative measures should be provided to the farm occupants, e.g. shelter in place indoors. This will be considered during the EIA Phase.
Geotechnical	It must be noted that there are no areas within the study area that should be avoided from a geotechnical sensitivity perspective. However, areas of moderate to steep topography would likely render development financially unfeasible.
Civil Aviation	No sensitive civil aviation features have been identified within the study area.
Defence	No sensitive defence features have been identified within the study area.

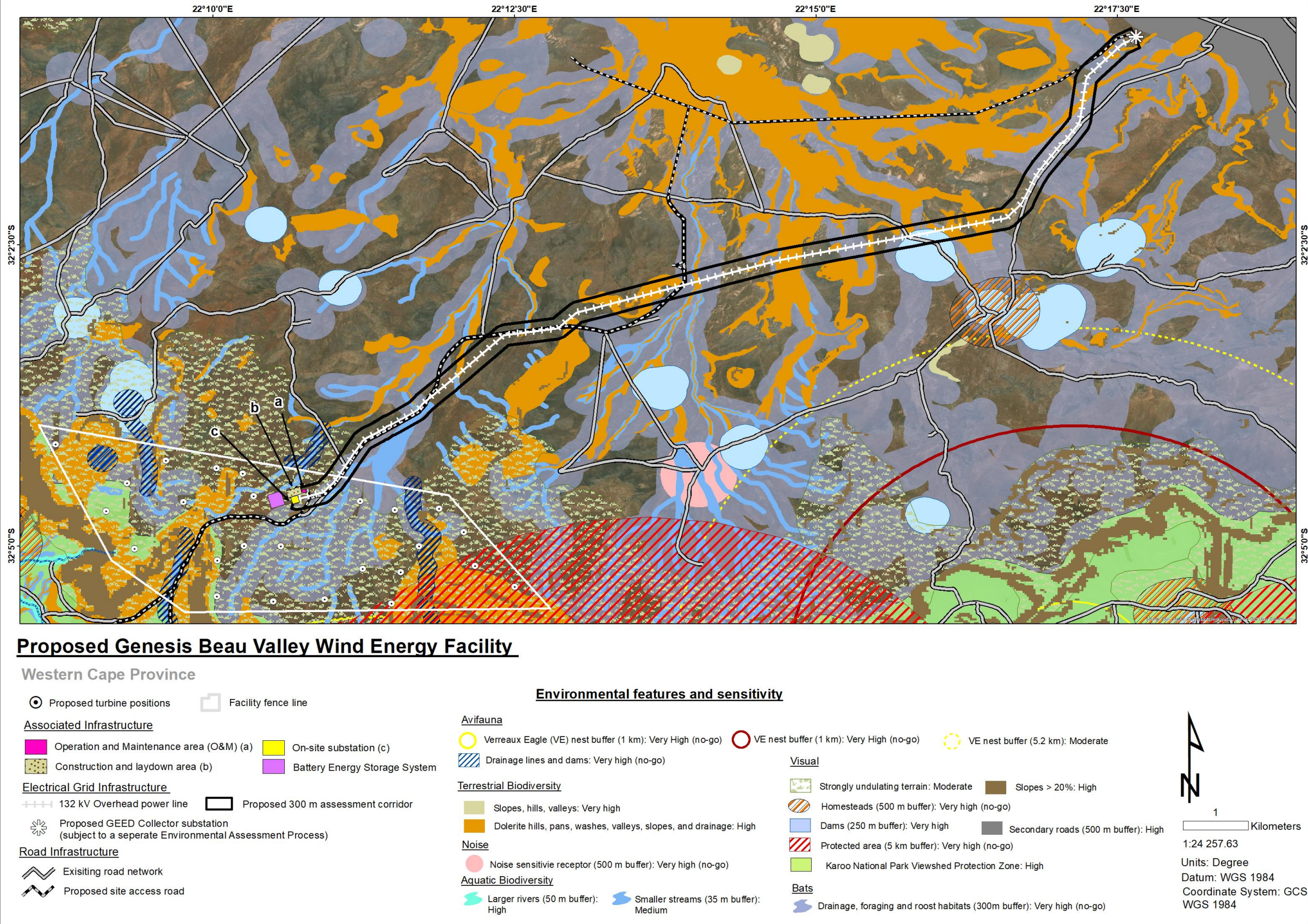


Figure 3.57: Scoping phase combined environmental feature map for the proposed project study area based on scoping level specialist inputs.

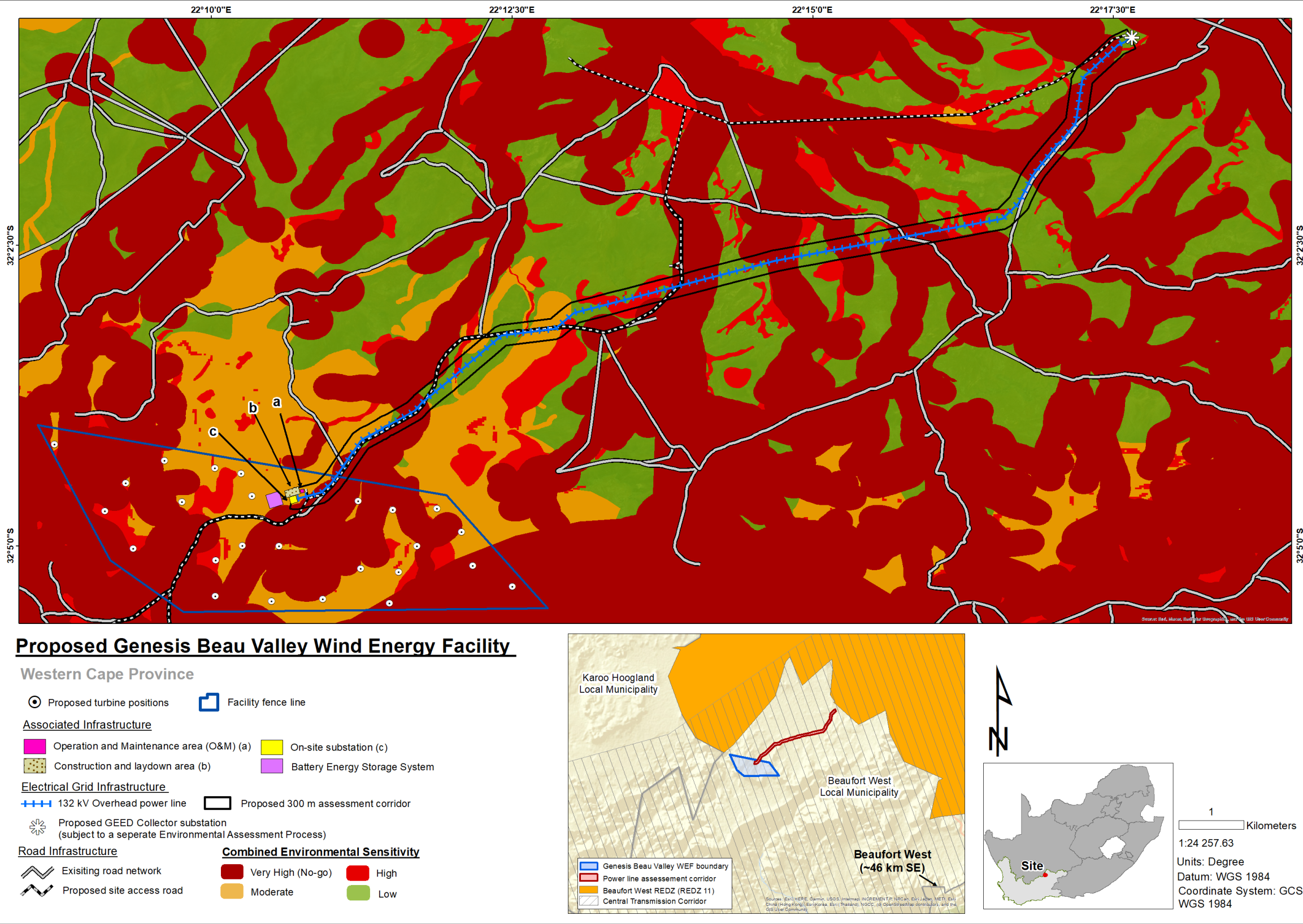


Figure 3.58: Scoping phase combined environmental sensitivity map for the proposed project study area based on scoping level specialist inputs.

Scoping and Environmental Impact
Assessment for the proposed development
of the Beau Valley Wind Energy Facility and
associated infrastructure near Beaufort West
in the Western Cape



SCOPING REPORT

CHAPTER 4:

Approach to EIA Process and Public Participation



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4. APPROACH TO THE EIA PROCESS AND PUBLIC PARTICIPATION

This chapter gives particular attention to the legal context and guidelines that apply to this Environmental Impact Assessment (EIA) for the proposed Genesis Beau Valley Wind Energy Facility (hereafter referred to as the “Beau Valley WEF” or “proposed project”), and the steps in the Public Participation Process (PPP) of the Scoping Phase of the EIA, in accordance with Regulations 41, 42, 43 and 44 of Government Notice (GN) R326 of the 2014 National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) EIA Regulations (as amended), and the schedule for the Scoping and EIA Process.

4.1 Legislation, Policies and Guidelines Pertinent to this EIA

The scope and content of this Scoping Report has been informed by the main legislation, policies, guidelines and information series documents described in this section. Additional information on applicable legislation is provided in the Scoping Level Specialist Assessments included in Appendix G of this Scoping Report.

4.1.1 National Legislation

4.1.1.1 *The Constitution of the Republic of South Africa (Act 108 of 1996)*

The Constitution, which is the supreme law of the Republic of South Africa, provides the legal framework for legislation regulating environmental management in general, against the backdrop of the fundamental human rights. 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.”

Section 24 of the Bill of Rights therefore guarantees the people of South Africa the right to an environment that is not detrimental to human health or well-being, and specifically imposes a duty on the State to promulgate legislation and take other steps that ensure that the right is upheld and that, among other things, ecological degradation and pollution are prevented.

In support of the above rights, the environmental management objectives of the proposed project are to protect ecologically sensitive areas and support sustainable development and the use of natural resources, whilst promoting justifiable socio-economic development in the towns nearest to the study area.

4.1.1.2 NEMA and EIA Regulations

Chapter 1, Section 2 of the NEMA sets out several principles to give guidance to developers, private landowners, members of the public and authorities. The proclamation of the NEMA gives expression to an overarching environmental law. Various mechanisms, such as cooperative environmental governance, compliance and non-compliance, enforcement, and regulating government and business impacts on the environment, underpin NEMA. NEMA, as the primary environmental legislation, is complemented by many sectoral laws governing marine living resources, mining, forestry, biodiversity, protected areas, pollution, air quality, waste and integrated coastal management. Principle number 3 determines that a development must be socially, environmentally and economically sustainable. Principle Number 4(a) states that all relevant factors must be considered, *inter alia* i) that the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied; ii) that pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied; vi) that the development, use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the level beyond which their integrity is jeopardised; and viii) that negative impacts on the environment and on peoples' environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied.

Section 24 (1) of the NEMA, as amended states that *"In order to give effect to the general objectives of integrated environmental management laid down in this Chapter, the potential impact on the environment of listed activities must be considered, investigated, assessed and reported to the Competent Authority charged by this Act with granting the relevant EA"*. The reference to "listed activities" in Section 24 (1) of NEMA relates to the regulations promulgated in GN R982, R983, R984 and R985 in Government Gazette (GG) 38282, dated 4 December 2014, which came into effect on 8 December 2014. These were amended in GN R326, R327, R325 and R324 in GG 40772, dated 7 April 2017. GN R326 contains the regulations for the Environmental Assessment Process. GN R327 and GN R324 includes listed activities that trigger the need for a Basic Assessment (BA) Process, whereas GN R325 includes listed activities that trigger the need for a full Scoping and EIA Process.

The 2014 NEMA EIA Regulations (as amended) were further amended as follows:

- GG 41766, GN 706 on 13 July 2018;
- GG 43358, GN 599 on 29 May 2020;
- GG 44701, GN 517 on 11 June 2021; and
- GG 45999, GN 1816 on 3 March 2022.

Based on the transitional arrangements, these amendments (where they have been commenced with) apply to the proposed project as the Application for Environmental Authorisation (EA) was not submitted before the above amendments took effect (where relevant). The relevant amendments have been taken into consideration in this Scoping and EIA Process.

In terms of the NEMA and the 2014 NEMA EIA Regulations (as amended), a Scoping and EIA Process is required for the proposed development of the Kudu Solar Facility and associated infrastructure. Refer to Section 4.2 of this chapter for additional information on the 2014 NEMA EIA Regulations (as amended).

4.1.1.3 GN 960 (published 5 July 2019)

GN 960 was published on 5 July 2019 and came into effect for compulsory use of the National Web Based Environmental Screening Tool (hereafter referred to as the Screening Tool) from 4 October 2019. The notice outlines the requirement to submit a report generated by the Screening Tool, in terms of Section 24(5)(h) of the NEMA and Regulation 16(1)(b)(v) of the 2014 NEMA EIA Regulations (as amended), when submitting an Application for EA in terms of Regulations 19 and 21 of the 2014 NEMA EIA Regulations (as amended). As such, the Application for EA for the proposed project has been run through the Screening Tool, and the associated reports generated and attached to the Application for EA, which is being submitted to the Department of Forestry, Fisheries and the Environment (DFFE) with the Scoping Report. In addition, the findings of the Screening Tool Report are discussed in the Scoping Level Specialist Assessments included in Appendix G of this Scoping Report, as well as Chapters 3 and 4 of this Scoping Report. The Screening Tool Reports are also included in Appendix H of this report.

4.1.1.4 GN 320 (published 20 March 2020)

GN 320 prescribes the general requirements for undertaking site sensitivity verifications and protocols for the assessment and minimum report content requirements for identified environmental impacts for environmental themes in terms of Sections 24(5)(a) and (h) and 44 of NEMA, when applying for EA. The protocols were enforced within a period of 50 days of publication of the notice i.e., on 9 May 2020.

The Specialist Assessments undertaken as part of this Scoping and EIA Process will comply with GN 320, where applicable, specifically Agriculture, Terrestrial Biodiversity, and Aquatic Biodiversity. Some of the remaining specialist assessments will comply with Appendix 6 of the 2014 NEMA EIA Regulations (as amended), and where relevant, Part A of GN 320 which contains site sensitivity verification requirements where a Specialist Assessment is required but no specific assessment protocol has been prescribed. This specifically applies to the Visual; Heritage (Archaeology and Cultural Heritage); Palaeontology; Socio-Economic; Traffic; Geohydrology; and Geotechnical Assessments. However, in some instances there are no themes on the Screening Tool that relate to some of these studies and as such sensitivities cannot be verified against the Screening Tool. More information in this regard is included in Appendix G of this Scoping Report. Some of the specialist assessments will comply with the Assessment Protocols published in GN R1150 on 30 October 2020, specifically Terrestrial Biodiversity and Species and Avifauna (as described below). The Battery Energy Storage System (BESS) High Level Safety, Health and Environment Risk Assessment will serve as a technical report, and the aforementioned legislation will thus not be applicable.

The site sensitivity verifications for Civil Aviation and Defence will also comply with GN 320. Additional detail on Civil Aviation and Defence is included in Appendix G.13 and Appendix G.14 respectively of this Scoping Report.

4.1.1.5 GN 1150 (published on 30 October 2020)

GN 1150 prescribes procedures and protocols in respect of specific environmental themes for the assessment of, as well as the 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. GN 1150 includes a protocol for the specialist assessment and minimum report content requirements for environmental impacts on a) terrestrial animal species and b) terrestrial plant species. The

requirements of these protocols apply from the date of publication (i.e., from 30 October 2020), except where the Project Applicant provides proof to the Competent Authority that the specialist assessment affected by these protocols had been commissioned prior to the date of publication of these protocols in the GG, in which case Appendix 6 of the 2014 NEMA EIA Regulations (as amended) will apply to such applications.

The Terrestrial Biodiversity and Species Assessment that is being undertaken as part of this Scoping and EIA Process was commissioned following the publication date of the Species Protocols. Therefore, the Terrestrial Animal and Plant Species components will be undertaken in compliance with GN 1150. One combined report will be compiled for Terrestrial Biodiversity, Terrestrial Animal Species and Terrestrial Plant Species. The Scoping Level Terrestrial Biodiversity, Terrestrial Plant Species and Terrestrial Animal Species Assessment is included in Appendix G.2 of this Scoping Report. The Avifauna Assessment will also comply with GN 1150.

4.1.1.6 National Environmental Management: Biodiversity Act (Act 10 of 2004)

The National Environmental Management: Biodiversity Act (Act 10 of 2004, as amended) (NEMBA) provides for “the management and conservation of South Africa’s biodiversity within the framework of the NEMA, the protection of species and ecosystems that warrant national protection, and the use of indigenous biological resources in a sustainable manner, amongst other provisions”. The Act states that the state is the custodian of South Africa’s biological diversity and is committed to respect, protect, promote and fulfil the constitutional rights of its citizens.

Overall, the NEMBA focuses on the protection of national biodiversity through the regulation of activities that may affect biodiversity including habitat disturbance, culture of and trade in organisms, both exotic and indigenous. Lists of threatened ecosystems (Sections 52 (1) (a)), threatened and protected species (Sections 56 (1)), and alien invasive organisms (Section 97 (1)) have been published and maintained in terms of NEMBA.

Chapter 1 sets out the objectives of the Act, and they are aligned with the objectives of the Convention on Biological Diversity, which are the conservation of biodiversity, the sustainable use of its components, and the fair and equitable sharing of the benefits of the use of genetic resources. The Act also gives effect to CITES, the Ramsar Convention, and the Bonn Convention on Migratory Species of Wild Animals. The State is endowed with the trusteeship of biodiversity and has the responsibility to manage, conserve and sustain the biodiversity of South Africa.

This Act therefore serves to control the disturbance and land utilisation within certain habitats, as well as the planting and control of certain exotic species. Effective disturbance and removal of threatened or protected species encountered on or around the sites, will require specific permission from the applicable authorities.

Furthermore, NEMBA states that the loss of biodiversity through habitat loss, degradation or fragmentation must be avoided, minimised or remedied. The loss of biodiversity includes *inter alia* the loss of endangered, threatened or protected plant and animal species.

4.1.1.6.1 Threatened Ecosystems

GG 34809, GN 1002, published on 9 December 2011 in terms of Section 52 (1) (a) of the NEMBA, provides a list of threatened terrestrial ecosystems categorised as Critically Endangered (CR), Endangered (EN), Vulnerable (VU) and Protected.

However, a revised national list of ecosystems that are threatened and in need of protection was published in GG 47526, GN 2747 on 18 November 2022 in terms of Section 52 (1) (a) of NEMBA. The revised list includes threatened terrestrial ecosystem types that are classed as CR, EN and VU.

The list of threatened ecosystems includes threatened ecosystems based on vegetation types present within these ecosystems. Should a project fall within a listed vegetation type or ecosystem that is listed, actions in terms of NEMBA are triggered. In addition, Listing Notice 3 (GN R324) of the 2014 NEMA EIA Regulations (as amended) includes Listed Activity 12, for the clearance of an area of 300 m² or more of indigenous vegetation in the Western Cape, specifically within any CR or EN ecosystem listed in terms of Section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as CR in the National Spatial Biodiversity Assessment 2004.

4.1.1.6.2 Threatened and Protected Species

The 2007 Threatened or Protected Species Regulations of the NEMBA declares species of high conservation value, national importance or that are considered threatened and in need of protection. Furthermore, the regulations provide for the prohibition of specific restricted activities involving specific listed threatened or protected species.

The list of CR, EN, VU or Protected species was published in GG 29657, GN R151 on 23 February 2007 in terms of Section 56 (1) of the NEMBA. The list was further amended in GG 30568, GN R1187 on 14 December 2007, as well as in GG 43386, GN R627 of 3 June 2020. Should a project include threatened and protected species that are listed, actions in terms of NEMBA are triggered.

The faunal species identified in the broader area based on the site sensitivity verification undertaken by the Terrestrial Biodiversity Specialist are noted in Appendix G.2 of this Scoping Report.

This will be detailed as part of the Terrestrial Biodiversity and Species Assessment to be undertaken during the EIA Phase.

4.1.1.6.3 Alien and Invasive Species

Chapter 5 of NEMBA (Sections 73 to 75) regulates activities involving invasive species, and lists duty of care as follows:

- the landowner/land user must take steps to control and eradicate the invasive species and prevent their spread, which includes targeting offspring, propagating material and regrowth, in order to prevent the production of offspring, formation of seed, regeneration or re-establishment;
- take all required steps to prevent or minimise harm to biodiversity; and

- ensure that actions taken to control/eradicate invasive species must be executed with caution and in a manner that may cause the least possible harm to biodiversity and damage to the environment.

The Alien and Invasive Species Regulations, published in 2014 and amended in 2020, in terms of the NEMBA provides for the protection of biodiversity through the control and eradication of listed alien and invasive species categorised as follows:

- Category 1a Listed Invasive Species – must be combatted or eradicated;
- Category 1b Listed Invasive Species – must be controlled or ‘contained’ in accordance with the requirements of an Invasive Species Management Programme;
- Category 2 Listed Invasive Species – require a permit to carry out a restricted activity e.g. cultivation within an area;
- Category 3 Listed Invasive Species – species that are less-transforming invasive species, but introduction, trade or transportation should be limited. Category 3 plant species are automatically Category 1b species where located within riparian and wetland areas;
- Exempted Alien Species – species that are not regulated; and
- Prohibited Alien Species – species for which a permit for restricted activities (e.g., *inter alia* hunting, gathering, breeding, cultivating, trading, transporting) may not be issued.

The Alien and Invasive Species List was published in terms of sections 66(1), 67(1), 70(1)(a), 71(3) and 71A of the NEMBA in GG 40166, GN 864 on 29 July 2016.

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

The National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA) introduces an integrated and interactive system for the management of national heritage, archaeological and palaeontological resources (which include landscapes and natural features of cultural significance).

Parts of sections 35(4), 36(3) (a) and 38(1) of the NHRA apply to the proposed project:

Archaeology, palaeontology and meteorites:

Section 35 (4) – No person may, without a permit issued by the responsible heritage resources authority:

- a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;
- b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite; and
- c) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.

Burial grounds and graves:

Section 36 (3) (a) - No person may, without a permit issued by South African Heritage Resources Agency (SAHRA) or a provincial heritage resources authority (e.g. HWC):

- a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;

- b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
- c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.

Heritage resources management:

38 (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorized as:

- a) the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length;
- b) the construction of a bridge or similar structure exceeding 50 m in length;
- c) any development or other activity which will change the character of the site –
 - (i) exceeding 5 000 m² in extent, or
 - (ii) involving three or more erven or subdivisions thereof; or
 - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
 - (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA, or a provincial 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, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

While landscapes with cultural significance do not have a dedicated Section in the NHRA, they are protected under the definition of the National Estate (Section 3). Section 3(2)(c) and (d) list “historical settlements and townscapes” and “landscapes and natural features of cultural significance” as part of the National Estate. Furthermore, Section 3(3) describes the reasons a place or object may have cultural heritage value. Section 38 (2a) of the NHRA states that if there is reason to believe that heritage resources will be affected then an impact assessment report must be submitted.

A Scoping Level Heritage Impact Assessment (Archaeology and Cultural Heritage) has been commissioned and included in Appendix G.6 of this Scoping Report. The Scoping Level Assessment includes a high-level assessment of potential impacts on archaeology and cultural heritage, as well as a site sensitivity verification. The Screening Tool indicates that the study area is of low sensitivity in terms of the archaeological and cultural heritage theme. The initial site visit indicates that the Screening Tool assessment is largely accurate, with relatively few archaeological sites and materials or other cultural heritage resources present in much of the Study Area and project footprint. However, based on the initial heritage site visit the specialist concluded that the current Screening Tool sensitivity assessment is largely correct, and that although several archaeological and heritage sites were recorded in the study area these are of low heritage significance according to the grading system developed by Heritage Western Cape (HWC) (2016).

Additional detail is provided in Chapters 3 and 6 of this Scoping Report. A Heritage Impact Assessment (including Archaeology and Cultural Landscape) will be undertaken during the EIA Phase of the proposed project in accordance with GN 320 (Part A) and Appendix 6 of the 2014

NEMA EIA Regulations (as amended). This specialist study will be included in the Draft EIA Report that will be released to Interested and Affected Parties (I&APs) for review during the EIA Phase.

In terms of Palaeontology, a Scoping Level Palaeontology Impact Assessment was compiled during the Scoping Phase, as included in Appendix G.7 of this Scoping Report. The Screening Tool indicates that the proposed development has a Very High Palaeontological Sensitivity. Based on a site visit undertaken by the specialist this provisional assessment is contested here due to the fact that no fossils were recovered in the ten-day palaeontological site investigation. It is concluded that the study area generally has a low palaeontological sensitivity. If Palaeontological Heritage is uncovered during surface clearing and excavations, the Chance find Protocol (attached to the Palaeontological Impact Assessment) should be implemented immediately. These recommendations should be incorporated into the EMPr and fully implemented during the construction phase of the development. Refer to Appendix G.7 for additional information. Heritage Western Cape (HWC) is required to provide comment on the proposed project. A Notice of Intent to Develop (NID) will be submitted to HWC during the Scoping Phase.

Following the submission of the EIA phase HIA, and once a final comment has been issued by HWC, the recommendations will be included in the conditions of the EA (should such authorisation be granted). This will essentially give 'permission' from the heritage authority to proceed.

The proposed project may require a permit in terms of the NHRA prior to any fossils or artefacts being removed by professional palaeontologists and archaeologists. If archaeological mitigation is needed, then the appointed archaeologist will need to contact Heritage Western Cape in order to confirm requirements to conduct the work. The permit application must be carried out well in advance of construction to ensure that there is enough time for the authorities to approve the mitigation work before construction commences. Should professional palaeontological mitigation be necessary during the construction phase, the palaeontologist concerned will need to apply for a Fossil Collection Permit. Palaeontological collection should comply with international best practice. All fossil material collected must be deposited, together with key collection data, in an approved depository (museum / university). Palaeontological mitigation work including the ensuing Fossil Collection reports should comply with the minimum standards specified by SAHRA (2013).

4.1.1.8 National Forests Act (Act 84 of 1998)

The National Forests Act (Act 84 of 1998, as amended) (NFA) allows for the protection of certain tree species. The Minister has the power to declare a particular tree to be a protected tree. The most recent list of protected tree species was published in 2018 in GN 536. In terms of Section 15(1) of the NFA, no person may cut, disturb, damage or destroy any protected tree; or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree or any product derived from a protected tree, except under a licence or exemption granted by the Minister to an applicant and subject to such period and conditions as may be stipulated. The DFFE is authorised to issue licences for any removal, cutting, disturbance, damage to or destruction of any protected trees. Therefore, the removal of any protected tree species listed within the NFA will require a tree removal permit, which can be obtained from the DFFE.

The Terrestrial Biodiversity and Species Scoping Level Assessment (Appendix G.2 of this Scoping Report) did not list any protected trees on site in terms of the NFA.

In addition, protection of natural forests through gazetted lists of Natural Forests in terms of Sections 7 (2) of the NFA must also be highlighted. In terms of section 7(1) of the NFA, no person may cut, disturb, damage or destroy any indigenous tree in, or remove or receive any such tree from a natural forest except in terms of (a) a license issued under subsection (4) or section 23 of the NFA; or (b) an exemption from the provisions of subsection (4) of the NFA published by the Minister in the Gazette.

4.1.1.9 Conservation of Agricultural Resources Act (Act 43 of 1983)

The objectives of the Conservation of Agricultural Resources Act (Act 43 of 1983) (CARA) are to provide for the conservation of the natural agricultural resources of South Africa by the:

- maintenance of the production potential of land;
- combating and prevention of erosion and weakening or destruction of the water sources; and
- protection of the vegetation and the combating of weeds and invader plants.

The CARA states that no land user shall utilise the vegetation of wetlands (a watercourse or pans) in a manner that will cause its deterioration or damage. This includes cultivation, overgrazing, diverting water run-off and other developments that damage the water resource. The CARA includes regulations on alien invasive plants. According to the amended regulations (GN R280 of March 2001), declared weeds and invader plants are divided into three categories:

- Category 1 may not be grown and must be eradicated and controlled,
- Category 2 may only be grown in an area demarcated for commercial cultivation purposes and for which a permit has been issued, and must be controlled, and
- Category 3 plants may no longer be planted and existing plants may remain as long as their spread is prevented, except within the flood line of watercourses and wetlands. It is the legal duty of the land user or land owner to control invasive alien plants occurring on the land under their control.

Invasive alien species likely to occur on site are listed above and in the Terrestrial Biodiversity and Species Scoping Level Assessment (Appendix G.2 of this Scoping Report). These alien plant species will be managed in line with the EMP.

As noted in the Agriculture Compliance Statement (Appendix G.1 of this Scoping Report), rehabilitation after disturbance to agricultural land is managed by the CARA. A consent in terms of CARA is required for the cultivation of virgin land. Cultivation is defined in CARA as “any act by means of which the topsoil is disturbed mechanically”. The purpose of this consent for the cultivation of virgin land is to ensure that only land that is suitable as arable land is cultivated. Therefore, despite the above definition of cultivation, disturbance to the topsoil that results from the construction of a renewable energy facility and its associated infrastructure does not constitute cultivation as it is understood in CARA. This has been corroborated by the National Department of Agriculture, Land Reform and Rural Development (DALRRD). The construction and operation of the proposed project will therefore not require consent from the DALRRD in terms of this provision of CARA.

4.1.1.10 Subdivision of Agricultural Land Act (Act 70 of 1970)

As noted in the Agriculture Compliance Statement (Appendix G.1 of this Scoping Report), two approvals from the DALRRD are required if a proposed renewable energy facility is located on agriculturally zoned land.

The first approval is a No Objection Letter for the change in land use issued by the Deputy Director General (Agricultural Production, Health and Food Safety, Natural Resources and Disaster Management). This letter is one of the requirements for receiving municipal rezoning. It is advisable to apply for this as early in the process as possible. A positive EA does not assure DALRRD's approval of this. This application requires a motivation backed by good evidence that the development will not significantly compromise the future agricultural production potential of the development site, and the Agriculture Compliance Statement will suffice in this regard. Such an application will be submitted for the proposed project.

The second required approval is a consent for long-term lease in terms of the Subdivision of Agricultural Land Act (Act 70 of 1970) (SALA). If the DALRRD approval for the proposed project has already been obtained in the form of the No Objection Letter, then SALA approval should not present any difficulties. Note that SALA approval is not required if the lease is over the entire farm portion. In the case of the proposed project, only portions of the farm portion would be leased. SALA approval can only be applied for once the Municipal Rezoning Certificate and EA are in hand.

4.1.1.11 National Water Act (Act 36 of 1998)

One of the important objectives of the National Water Act (Act 36 of 1998) (NWA) is to ensure the protection of the aquatic ecosystems of South Africa's water resources. Section 21 of this Act identifies certain land uses, infrastructural developments, water supply/demand and waste disposal as 'water uses' that require authorisation (licensing) by the Department of Water and Sanitation (DWS). Chapter 4 (Part 1) of the NWA sets out general principles for the regulation of water use. Water use is defined broadly in the NWA, and includes taking and storing water, activities which reduce stream flow, waste discharges and disposals, controlled activities (activities which impact detrimentally on a water resource), altering the bed, banks, course or characteristics of a watercourse, removing water found underground for certain purposes, and recreation. In general, a water use must be licensed unless it is listed in Schedule I, is an existing lawful use, is permissible under a General Authorisation (GA), or if a responsible authority waives the need for a licence. The Minister may limit the amount of water which a responsible authority may allocate. In making regulations the Minister may differentiate between different water resources, classes of water resources and geographical areas.

All water users who are using water for agriculture: aquaculture, agriculture: irrigation, agriculture: watering livestock, industrial, mining, power generation, recreation, urban and water supply service must register their water use. This covers the use of surface- and groundwater.

Section 21 of the NWA lists the following water uses that need to be licensed:

- a) taking water from a water resource;
- b) storing water;
- c) impeding or diverting the flow of water in a watercourse;
- d) engaging in a stream flow reduction activity contemplated in section 36;

- e) engaging in a controlled activity identified as such in section 37(1) or declared under section 38(1);
- f) discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit;
- g) disposing of waste in a manner which may detrimentally impact on a water resource;
- h) disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process;
- i) altering the bed, banks, course or characteristics of a watercourse;
- j) removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and
- k) using water for recreational purposes.

Any activities that take place within the outer edge of the 1 in 100 year flood line and /or delineated riparian habitat, whichever is the greatest distance, measured from the middle of the watercourse of a river, spring, natural channel, lake or dam; within a watercourse; within 100 m of the edge of a watercourse; or within 500 m of a delineated wetland boundary, will require a water use authorisation in terms of Section 21 (c) and Section 21 (i) of the NWA. An application for water use authorisation for the proposed project may be required should any of the planned structures or infrastructure associated with the proposed project trigger water uses in terms of Section 21 (c) and Section 21 (i) of the NWA.

The GA for Section 21 (c) and (i) water uses as defined under the NWA were revised in 2016 (GN R509). Determining if a Water Use Licence is required for these water uses is now associated with the risk of degrading the ecological status of a watercourse. A low risk of impact could be authorised in terms of a GA. According to the Aquatic Biodiversity Scoping Level Assessment (Appendix G.3 of this Scoping Report), the Risk Assessment that was undertaken determined that the proposed project poses a LOW risk of impacting aquatic habitat, water flow and water quality if the facility is placed within the area mapped as being the wash area containing the mosaic of depression wetlands. With the findings of the risk assessment, the water use activities associated with the proposed project would need to be authorised with a Water Use Licence for Section 21(c) and (i) water uses. Should the location of the facility be located outside of the mapped aquatic features and buffers, the risk would be reduced to low such that the water use activities associated with the proposed project could potentially be authorised through the general authorisations for Section 21(c) and (i) water uses.

The NWA also provides for measures to prevent, control and remedy the pollution of surface and groundwater sources. The property on which the proposed project is located falls within the J22G quaternary catchment. This proposed project falls under the Breede Gouritz Water Management Area (DWS, 2016). The groundwater General Authorisation (GA) for this catchment is 45 m³ /ha/a. This means that in this catchment, 45 m³ of water can be abstracted per year for every hectare, under the GA. For example, a 100 ha property could be abstracting a maximum of 4 500 (45 x 100) m³ /a under the GA. However, the GA volume is capped at 40 000 m³/a (1.27 L/s) per property. Therefore, a property with an extent of 20 000 ha would only be allowed to abstract 40 000 m³/a under the GA. If larger volumes are needed, a Water Use Licence will have to be applied for

This will be undertaken post EA. Refer to the Geohydrology Assessment in Appendix G.11 of this Scoping Report for additional information.

4.1.1.12 Water Services Act (Act 108 of 1997)

Water will be required during the construction, operational and decommissioning phases of the proposed project. Potable water is only to be utilised for human consumption purposes, whereas greywater is to be used for earthworks, dust suppression, etc. Water will be sourced from the following potential sources: Beaufort West Local Municipality; third-party water supplier; existing boreholes, newly drilled boreholes on site or a combination of the latter two. Should the latter two be selected for water use, the boreholes will be subjected to complete geohydrological testing and an assessment, as well as a Water Use Licence Application process. This will be undertaken as a separate process, once more detailed information becomes available, outside of the current EA Application for the proposed project. Compliance with the Water Services Act (Act 108 of 1997) will be undertaken during the relevant phase of the proposed project, in consultation with the local and district municipalities.

4.1.1.13 Hazardous Substances Act (Act 15 of 1973)

During the proposed project, fuel and diesel will be utilised to power vehicles, generators and equipment. In addition, potential spills of hazardous materials could occur during the relevant phases. Such management actions will be recommended in the EMP, which will be included as an Appendix to the Draft and Final EIA Reports.

4.1.1.14 National Environmental Management: Waste Act (Act 59 of 2008, as amended) (NEMWA)

The National Environmental Management: Waste Act (Act 59 of 2008, as amended) (NEM:WA) was published with one of the main objectives to reform the law regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development. Section 19 of the NEM:WA allows the Minister to publish a List of Waste Management Activities that have, or are likely to have, a detrimental effect on the environment published. Such a list specifies the waste management activities that will require a Waste Management Licence.

The List of Waste Management Activities was originally published in GN 921 on 29 November 2013, and thereafter amended in GN 332 on 2 May 2014; GN 633 on 24 July 2015; GN 1094 on 11 October 2017; and GN 1757 on 11 February 2022. The List of Waste Management Activities include Categories A, B and C. If any waste management activities listed in Category A are triggered by a development, a BA process must be undertaken in terms of the 2014 NEMA EIA Regulations (as amended), as part of the Waste Management Licence application. Waste management activities in Category B will, however, require a full Scoping and EIA Process in terms of the 2014 NEMA EIA Regulations (as amended), as part of the Waste Management Licence application. If any of the waste management activities in Category C are triggered, then the relevant Norms and Standards must be followed.

Based on a review of the project description, the proposed project will **not** trigger the need for a Waste Management Licence. However, general and hazardous waste will be generated during the construction, operational and decommissioning phases, which will require proper management. Such management actions will be recommended in the EMP, which will be included as an Appendix to the Draft and Final EIA Reports.

4.1.1.15 National Environmental Management: Air Quality Act (Act 39 of 2004)

The National Environmental Management: Air Quality Act (Act 39 of 2004, as amended) (NEM: AQA) was published in 2004 and came into full effect on 31 March 2010, when the Atmospheric Pollution Prevention Act (Act 45 of 1965) (APPA) was repealed. The NEM: AQA was published with the overall objective to:

- *“reform the law regulating air quality in order to protect the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development while promoting justifiable economic and social development;*
- *provide for national norms and standards regulating air quality monitoring, management and control by all spheres of government; for specific air quality measures; and for matters incidental thereto”.*

The list of activities which result in atmospheric emissions which have or may have a significant detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions or cultural heritage was published under GN 248, GG 33064 dated 31 March 2010 and thereafter amended in GN 893, GG 37054 dated 22 November 2013. The list of activities was further amended in GN 551, GG 38863 dated 12 June 2015; GN 1207, GG 42013 dated 31 October 2018; GN 687, GG 42472 dated 22 May 2019; and GN 421, GG 43174 dated 27 March 2020.

Section 22 of the NEM: AQA deals with the consequences of listing, and it states that “no person may without a provisional atmospheric emission licence or an atmospheric emission licence conduct an activity (a) listed on the national list anywhere in the Republic; or (b) listed on the list applicable in a province anywhere in that province”. Therefore, a Provisional Atmospheric Emissions Licence (AEL) and/or AEL is required for any plant or proposed development that triggers a listed activity.

Based on a review of the project description, the proposed project will **not** trigger the need for an AEL. However, the proposed stockpiling activities, including earthworks, may result in the unsettling of, and temporary exposure to, dust. Appropriate dust control methods will need to be applied. Such management actions will be recommended in the EMP, which will be included as an Appendix to the Draft and Final EIA Reports.

4.1.1.16 National Environmental Management: Protected Areas Act (NEM: PAA) (Act 57 of 2003)

According to the South African Protected Areas Database (SAPAD), the project area is not located within any formally Protected Areas, as defined by the National Environmental Management: Protected Areas Act (Act 57 of 2003) (NEM: PAA). The National Protected Area Expansion Strategy (NPAES) focus areas for land-based expansion are comprised of large, intact and unfragmented areas of importance for biodiversity representation and ecological persistence. As such, these areas are suitable for the creation or expansion of extensive Protected Areas. The NPAES (DEA, 2018) has identified Nama-Karoo habitat as under protected, with only 1% of the 24.8 million hectares of this habitat protected (as at 2014) and sets the target of protecting 11% of this habitat within 20 years.

The Beau Valley WEF project area lies outside of the NPAES Focus Area that occurs south and west of the site, associated the Karoo National Park (see Figure 4.1). However, the site is still marginally within what would be considered to represent a buffer area for the Karoo National Park. Although located outside the NPAES (2018) focus area, the site is located on the proposed properties intersecting with the NPAES focus area and therefore identified for the Karoo National Park expansion in the Park Management Plan (2017).

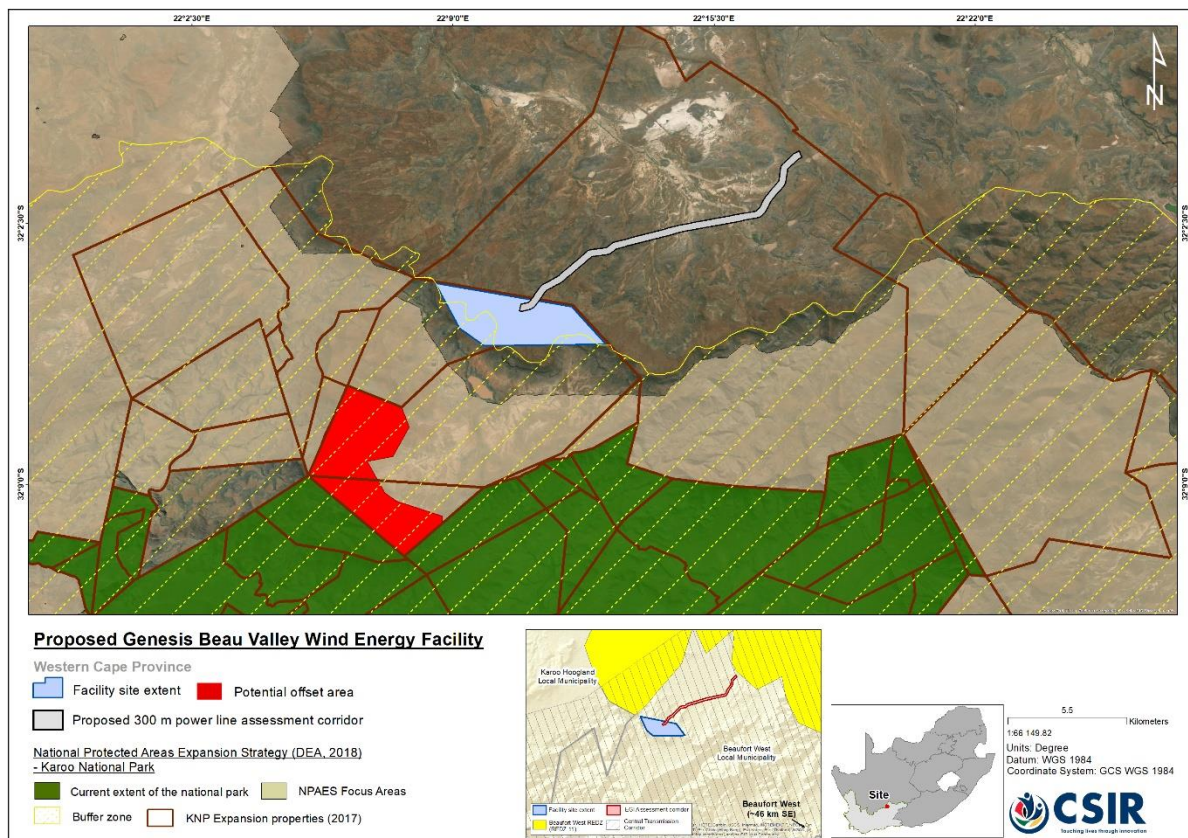


Figure 4.1: The Proposed Development Site in relation the Karoo National Park and the NPAES Focus Area.

In terms of the National Environmental Management: Protected Areas Act (NEM: PAA, Act 57 of 2003, as amended), the legal procedure for the declaration of protected areas requires that in the case of privately owned land, the landowners' consent to the declaration in the form of a written agreement entered into with the Minister or with the MEC. In accordance with Section 33 of NEM: PAA, the declaration of private land as a protected area requires that an extensive public participation and consultation process be undertaken. This process requires that the Minister or MEC "must" "send a copy of the proposed notice by registered post to the last known address of each owner of the land within the area to be declared, and inform in an appropriate manner any other person whose rights in such land may materially or adversely be affected by such declaration." Preceding the landowner consent process and the formal declaration of the affected properties as a protected area, the National Protected Area Expansion Strategy has limited legal basis to restrict a landowner from exercising their legal discretionary rights to pursue development on the land as provided in Section 25 of the Constitution of the Republic of South Africa.

The NPAES (DEA, 2018) identifies three mechanisms for protected area expansion:

- (1) acquisition of land (which is recognised as involving large upfront costs);
- (2) contract agreements with landowners who maintain ownership of their land; and
- (3) declaration of public or state land that requires reassigning of the land to a protected area agency (this option has limited potential as very little of the priority areas are public or state land).

The NPAES (DEA, 2018) states that the negotiation and conclusion of contractual agreements with landowners was the predominant mechanism for achieving protected area expansion in phase 1 (2008 to 2014). This option is often much more cost effective than acquisition of land and is used increasingly as part of biodiversity stewardship programmes (DEA, 2018: xi & 12), as it is clearly recognised in the NPAES that financing is a very significant constraint to the ability of protected area agencies to meet their targets for management effectiveness and protected area expansion.

In Section 6.2 of the Terrestrial Biodiversity Scoping Phase Study, it is noted that to mitigate the impact on the future expansion of the KNP, potential measures that can be implemented to reduce negative effects on the existing KNP and reduce impacts on the future use value of the project area should be investigated in collaboration with SANParks. Accordingly, a site meeting was held between SANParks, the Project Developer and the CSIR on 14 March 2023. Further engagements between SANParks, the Project Developer and the affected landowners will be held during the EIA phase. Consultation with the Karoo National Park/ SANParks was therefore initiated at an early stage during the Scoping and EIA process, and these engagements will be ongoing during the EIA phase. The purpose of these engagements will be to find a mechanism to achieve the balanced objectives of both the NPAES and the various government policies and initiatives for renewable energy development and conservation outcomes and meeting South Africa's international climate change commitments. Mitigation measures such as committing some of the land adjacent to the Park to stewardship or similar conservation commitment are being investigated in collaboration with SANParks and the Karoo National Park management. The implementation of a stewardship programme will represent a collaborative and co-generated approach between the parties to find a balance and achieve the imperatives of biodiversity conservation and renewable energy development.

4.1.1.17 Astronomy Geographic Advantage (Act 21 of 2007)

The Astronomy Geographic Advantage (AGA) Act (Act 21 of 2007) aims to provide for the preservation and protection of areas within the Republic that are uniquely suited for optical and radio astronomy; to provide for intergovernmental co-operation and public consultation on matters concerning nationally significant astronomy advantage areas; and to provide for matters connected therewith. The purpose of the AGA Act is to preserve the geographic advantage areas that attract investment in astronomy. The AGA Act also notes that declared astronomy advantage areas are to be protected and properly maintained in terms of Radio Frequency Interference (RFI). The AGA Act is administered by the Department of Higher Education, Science and Technology (previously the Department of Science and Technology).

According to the CSIR Wind and Solar Phase 2 SEA (Department of Environment, Forestry and Fisheries (DEFF), 2019: Part 3, Page 2¹), the majority of the mid-frequency dish array of the Square Kilometre Array (SKA) will be constructed in the core which is located in the Northern Cape; with dish antennas being located in the spiral arms. The South African component of the SKA will consist of approximately 3 000 receptors comprising dish antennas, each with a diameter of 15 m, and radio receptors known as dense aperture-arrays. The outer stations in the spiral arms will extend beyond the borders of South Africa and at least 3 000 km from the core area. About 80% of the receptors, including a dense core and up to 5 spiral arms, will be located in the Karoo Central Astronomy Advantage Area (KCAAA) (DEFF, 2019²: Part 3, Page 2).

The KCAAA, which is located between Brandvlei, Van Wyksvlei, Carnarvon and Williston in the Northern Cape Province, was officially declared in 2014 by the Minister of Science and Technology in terms of the AGA Act for the purposes of protection RFI and Electromagnetic Interference (EMI). The declaration of the KCAAA ensures the long-term viability of the area to be used for astronomical installations (DEFF, 2019²: Part 3, Page 2).

The location of the proposed project does not pose an EMI or RFI risk to the SKA, as the proposed project is located outside of the Northern Cape as well as the KCAAA. Refer to Figure 4.2 for the location of the proposed project in relation to the SKA and KCAAA. The proposed project site is located more than 171 km away from the SKA, an area of low sensitivity in terms of SKA sensitivity for the development of wind energy (Table 4.1).

Table 4.1: SKA sensitivity distance guidelines (Source: DFFE, 2019: Part 3, Page 2)

Colour	Sensitivity	Distance from SKA Facility	
		Wind	Other Solar PV
Dark Red	Very High	Less than 18 km	Less than 8 km
Red	High	Between 18 and 26 km	Between 8 and 14 km
Orange	Medium	Between 26 and 48 km	Between 14 and 32 km
Green	Low	Greater than 48 km	Greater than 32 km

¹ Department of Environment, Forestry and Fisheries (DEFF), 2019. Phase 2 Strategic Environmental Assessment for wind and solar PV energy in South Africa. CSIR Report Number: CSIR/SPLA/SECO/ER/2019/0085 Stellenbosch, Western Cape.

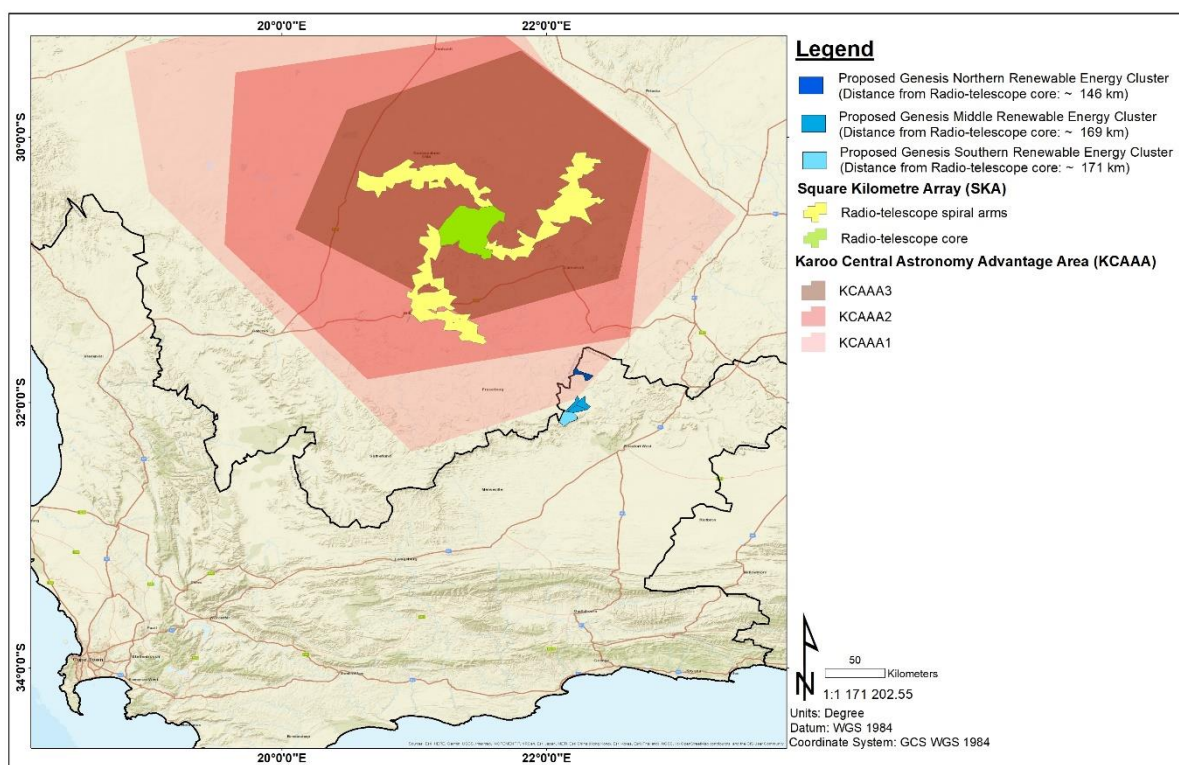


Figure 4.2: Location of the proposed Beau Valley WEF project in relation to the SKA and KCAAA

The South African Radio Astronomy Observatory (SARAO) is registered on the project I&AP database as a key stakeholder and was invited to comment on the project during the pre-application phase. During the Scoping Phase, SARAO responded with their findings of an assessment of the potential impact of the proposed project on the SKA radio telescopes. SARAO found that the project represents a low risk of interference to the nearest SKA radio telescope with a compliance surplus of 28.42 dBm/Hz. Accordingly, they had no objection to the proposed project. Therefore, RFI and EMI specialist studies will not be commissioned by the S&EIA project team as SARAO's assessment and findings are considered conclusive in respect of the RFI and EMI sensitivity themes. Copies of the comments received from SARAO are included in Appendix E of this Scoping Report.

4.1.1.18 Development Facilitation Act (Act 67 of 1995)

The Development Facilitation Act (Act 67 of 1995) (DFA) sets out a number of key planning principles which have a bearing on assessing proposed developments in light of the national planning requirements. The planning principles most applicable to the study area include:

- Promoting the integration of the social, economic, institutional and physical aspects of land development;
- Promoting integrated land development in rural and urban areas in support of each other;
- Promoting the availability of residential and employment opportunities in close proximity to or integrated with each other;

- Optimising the use of existing resources including such resources relating to agriculture, land, minerals, bulk infrastructure, roads, transportation and social facilities;
- Contributing to the correction of the historically distorted spatial patterns of settlement in the Republic and to the optimum use of existing infrastructure in excess of current needs;
- Promoting the establishment of viable communities; and
- Promoting sustained protection of the environment.

4.1.1.19 National Biodiversity Offset Guideline (GN 3569 of 23 June 2023)

The National Biodiversity Offset Guideline (GN 3569 of 23 June 2023) was published in terms of section 24J of the National Environmental Management Act (Act 107 of 1998) (NEMA) and must therefore be read together with the provisions of NEMA, including the national environmental management principles in section 2 of NEMA, as well as the Environmental Impact Assessment Regulations, 2014 (EIA Regulations) and other guidelines published under section 24J of NEMA. Of importance, the guideline must be read in the context of the mitigation hierarchy provided for in section 2(4)(a)(i) of NEMA as well as any national policy on environmental offsetting. Biodiversity offsetting is a mitigation measure that is potentially applicable in all EA application processes.

The purpose of this guideline is to indicate when biodiversity offsets are likely to be required as mitigation by any competent authority (CA), to lay down basic principles for biodiversity offsetting and to guide offset practice in the environmental authorisation (EA) application context. This guideline is therefore applicable to applications for EA in terms of section 24 of NEMA. The Guideline provides:

- an overview of the steps involved in the biodiversity offsetting process that should be followed in the EIA process;
- the roles and responsibilities of the different role-players in the biodiversity offsetting process;
- guidance on when biodiversity offsets are required by identifying residual impacts and a lookup table for impact significance in various biodiversity context;
- guidance on the determining biodiversity offset requirements;
- guidance on selecting biodiversity offset sites;
- guidance on planning for biodiversity offset implementation
- guidance on engaging with conservation authorities and commenting authorities in the EIA process;
- the minimum requirements to be included in Biodiversity Offset Reports that are included in the EIA phase;
- guidance on biodiversity offset implementation agreements; and
- implementation, monitoring and auditing.

The guideline is applicable to the present project as the project site is located within the expansion footprint properties as identified by the Karoo National Park's Park Management Plan (2017) – refer to Chapter 4.1.1.16 above, Chapter 3.1.6, the Terrestrial Biodiversity Report (Appendix G.2) and the Comments and Responses Report (Appendix E Part 2) for further detail on the applicability of the National Biodiversity Offset Guideline. Furthermore, Chapter 7 (Plan of Study for the EIA phase provides the Terms of Reference for the Biodiversity Offset Study to be undertaken during the EIA Phase. This study will inform the stewardship, contracted national park and biodiversity offset implementation agreement that may be undertaken between SANParks (as management authority of the Karoo National Park), the Developer and affected landowners. The Biodiversity

Offset Report will be made available for public comment with the Draft EIA Report during the respective 30-day public participation process.

4.1.1.20 Other Applicable Legislation

Other applicable national legislation that may apply to the proposed project include:

- Advertising on Roads and Ribbons Act (Act 21 of 1940);
- Electricity Act (Act 41 of 1987);
- Electricity Regulations Amendments (August 2009);
- Promotion of Administrative Justice Act (Act 2 of 2000);
- Civil Aviation Act (Act 13 of 2009) and Civil Aviation Regulations (CAR) of 1997;
- Civil Aviation Authority Act (Act 40 of 1998);
- White Paper on Renewable Energy (2003);
- Integrated Resource Plan for South Africa (2019);
- Occupational Health and Safety Act (Act 85 of 1993), as amended by Occupational Health and Safety Amendment (Act 181 of 1993)²;
- Road Safety Act (Act 93 of 1996);
- Fencing Act (Act 31 of 1963);
- National Road Traffic Act (Act 93 of 1996); and
- Strategy on buffer zone for national parks in South Africa in Gazette Notice No:106 of 2012.

4.1.2 Provincial Legislation

4.1.2.1 Western Cape Nature and Environmental Conservation Ordinance (No. 19 of 1974) and the Western Cape Nature Conservation Laws Amendment Act (Act No. 3 of 2000)

This Act should be given consideration following EA with particular respect to its Chapters IV (The protection of wild animals other than fish) and Chapter VI (The protection of flora). The requirement for permits when removing and relocating specific flora that may be encountered or alternatively addressing fauna that may be encountered around the sites would require due consideration.

The Western Cape Nature Conservation Laws Amendment Act (2000) provides for the amendment of various laws on nature conservation in order to transfer the administration of the provisions of those laws to the Western Cape Nature Conservation Board, which includes various regulations pertaining to wild plants and animals including avifauna.

Based on the Terrestrial Biodiversity and Species Scoping Level Assessment (Appendix G.2 of this Scoping Report), in terms of fauna, there are several listed mammals which occur in the area and which would potentially be impacted by the development. This includes the Mountain Reedbuck *Redunca fulvorufula fulvorufula*, Black-footed Cat, Riverine Rabbit and Karoo Dwarf Tortoise. The Mountain Reedbuck was not observed on the site but is known from the adjacent Karoo National Park. However, it was not observed on the adjacent Hoogland South WEFs despite extensive camera trapping, suggesting that while it may be present in the area, it is not common

² The proposed Battery Energy Storage Systems (BESS) must be designed, operated, maintained and decommissioned according to the requirements of Occupational Health and Safety Act (Act 85 of 1993).

on farmland in the area. As a result, this species is considered unlikely to be present within the Beau Valley WEF site. In terms of the Black-footed Cat, no recent records from the area and the regular presence of this species within the site is considered unlikely. The site is considered low sensitivity for this species. Although there are confirmed observations from the broader area of Riverine Rabbit, these are outside of the site and there is no suitable riparian habitat within the development footprint. The site verification therefore finds that the site can be classified as low sensitivity for the Riverine Rabbit. The Karoo Dwarf Tortoise *Chersobius boulengeri* occurs in association with dolerite ridges and rocky outcrops of the southern Succulent and Nama Karoo biomes, and peripherally in the Albany Thicket biome in the southeast, at altitudes of approximately 800 to 1,500 m. The typical dolerite outcrops associated with this species are present within the site and this species should be assumed present. As such, it is concluded that the Beau Valley WEF can be confirmed to be High sensitivity for this species and that a full assessment for the Karoo Dwarf Tortoise would be required in the EIA phase. Based on the site verification, the sensitivity of the site for other terrestrial fauna is considered to be low. Refer to the Terrestrial Biodiversity and Species Scoping Level Assessment (Appendix G.2 of this Scoping Report) for additional information.

4.1.2.2 Draft Western Cape Biodiversity Bill (May 2019)

The purpose of the Draft Western Cape Biodiversity Bill, 2019, is to provide for the framework and institutions for nature conservation and the protection, management and sustainable use of biodiversity and ecosystems in the Province; and for matters incidental thereto. This law has not been promulgated however some aspects of its Chapter 7 (Protection of Ecosystems, Ecological Infrastructure and Species), in particular, may apply to the affected sites, once promulgated.

4.1.3 District and Local Planning Legislation

4.1.3.1 Environmental Management Framework

Research indicates that there is no Environmental Management Framework (EMF) for the Central Karoo District Municipality (CKSDM). The Screening Tool also notes that no intersections with EMF areas have been found.

4.1.3.2 Beaufort West Local Municipality Integrated Development Plan (IDP) (2017-2022)

The vision of the Beaufort West Local Municipality Integrated Development Plan (BWLM IDP) (2017-2022) is to be the economic gateway in the Central Karoo, where people are developed and live in harmony together.

Further unpacking of the vision indicates the provision of directives regarding the growth of the economy and ensuring financial sustainability among other areas in which development is required.

The five priority areas of the IDP are:

1. Service to the people – seeking to improve and maintain basic service delivery through infrastructure development;
2. Sustainable economic growth by leveraging competitive advantages of the region (The IDP identifies low economic growth as one of the main reasons for the lack of new labour entrants into the economy);
3. A well-run administration that is efficient, effective and has the right skills mix;
4. Ensure financial sustainability; and
5. Be a transparent organisation.

The Central Karoo region is attractive for renewable energy projects due to the significant solar and wind energy resources. Various renewable energy projects have been approved in the Central Karoo District Municipality (CKDM) area, but most have yet to be implemented. The Central Karoo District Municipality Strategic Development Framework (SDF) has identified considerable opportunities for expanding renewable energy projects specifically related to solar and wind power generation in the Central Karoo District Municipality, which encourages IPPs to locate in the region and to create downstream business- and employment opportunities (CKDM, 2019³).

According to the Western Cape Provincial SDF (WCG, 2014⁴), renewable energy generation is also deemed one of the most promising economic sectors in the Central Karoo region that will add significant value to the regional Gross Domestic Product (GDPR), while having the potential to change the composition and character of towns throughout the municipal district (CKDM, 2017⁵).

Furthermore, the proposed project is also located within the Central Strategic Transmission Corridor that was gazetted in February 2018. This facilitates large scale transmission and distribution EGI, which would be needed to support the proposed project. Therefore, the proposed project is in line with the planning for the area.

The proposed project will create job opportunities and economic spin offs during the construction and operational phases (if EA is granted by the DFFE). Furthermore, the proposed project is aligned with one of the objectives of the Beaufort West IDP and the CKDM and Western Cape SDFs in that the proposed project will encourage sustainable economic growth through increased investment and employment opportunities.

4.1.3.3 Guidelines, Frameworks and Protocols

The following guidelines, frameworks and protocols are applicable to the proposed project:

- Guidelines published in terms of the NEMA EIA Regulations, in particular:
 - Guideline on Alternatives (DEA, 2014);
 - Guideline on Transitional Arrangements (Department of Environmental Affairs and Development Planning (DEA&DP), 2013);

³ Central Karoo District Municipality. (2019). Central Karoo District Municipality Spatial Development Framework.

⁴ Western Cape Government. (2014) The Western Cape Provincial Spatial Development Framework. Retrieved from <https://cer.org.za/wp-content/uploads/2015/07/Western-Cape-Provincial-SDF-2014.pdf>

⁵ Central Karoo District Municipality. (2017). Central Karoo District Municipality Integrated Development Plan 2017-2022.

- Guideline on Alternatives (DEA&DP, 2013);
- Guideline on Public Participation (DEA, 2012; DEA&DP, 2013; DEA, 2017);
- National Noise Control Regulations (GN R154 of 1992) and SANS 10103:2008;
- Guideline on Need and Desirability (DEA&DP, 2013; DEA, 2017);
- Information Document on Generic Terms of Reference for Environmental Assessment Practitioners (EAPs) and Project Schedules (March 2013);
- Integrated Environmental Management Information Series (Booklets 0 to 23) (Department of Environmental Affairs and Tourism (DEAT), 2002 – 2005);
- Guidelines for Involving Specialists in the EIA Processes Series (DEA&DP; CSIR and Tony Barbour, 2005 – 2007);
- BirdLife South Africa (BLSA) 2017 Guidelines for assessing and monitoring the impact of solar power generating facilities on birds in southern Africa;
- Species Environmental Assessment 2020 Guideline: Guidelines for the implementation of the Terrestrial Fauna and Terrestrial Flora Species Protocols for EIAs in South Africa. South African National Biodiversity Institute (SANBI);
- United Nations Framework Convention on Climate Change (1997); and
- Kyoto Protocol (which South Africa acceded to in 2002).

4.1.4 International Finance Corporation Performance Standards

In order to promote responsible environmental stewardship and socially responsible development, the proposed project will as far as practicable incorporate the environmental and social policies of the International Finance Corporation (IFC). These policies provide a frame of reference for lending institutions to review environmental and social risks of projects, particularly those undertaken in developing countries.

Through the Equator Principles, the IFC's standards are now recognised as international best practice in project finance. The IFC screening process categorises projects into A, B or C in order to indicate relative degrees of environmental and social risk. The categories are:

- *Category A* - Projects expected to have significant adverse social and/or environmental impacts that are diverse, irreversible, or unprecedented;
- *Category B* - Projects expected to have limited adverse social and/or environmental impacts that can be readily addressed through mitigation measures; and
- *Category C* - Projects expected to have minimal or no adverse impacts, including certain financial intermediary projects.

Accordingly, projects such as the proposed Beau Valley WEF are categorised as Category B projects. The EIA Process for Category B projects examines the project's potential negative and positive environmental impacts. As required for Category B projects, a Scoping and EIA Process is being undertaken. Other Acts, standards and/or guidelines which may also be applicable will be reviewed in more detail as part of the specialist studies to be conducted for the EIA Process.

4.2 Legal Context for this EIA

In terms of the NEMA and the 2014 NEMA EIA Regulations (as amended), a full Scoping and EIA Process is required for the proposed project. The need for the full Scoping and EIA Process is triggered by, amongst others, the inclusion of Activity 1 listed in GN R325 (Listing Notice 2):

- ***“The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more, excluding where such development of facility or infrastructure is for photovoltaic installations and occurs (a) within an urban area; or (b) on existing infrastructure”.***

Note that the proposed project is not located within any of the 11 Renewable Energy Development Zones (REDZs) gazetted in GN 114 on 16 February 2018 and GN 144 on 26 February 2021. However, the proposed EGI project is located within the Central Strategic Transmission Corridor that was gazetted in GN 113 on 16 February 2018.

Therefore, a full Scoping and EIA Process is being undertaken for the proposed project, subjected to a 107 days decision-making timeframe. The listed activities triggered by the proposed project are indicated in Table 4.2.

Table 4.2: Listed Activities in GN R327, GN R325, and GN R324 that will be potentially triggered by the proposed project

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
Activity 11 (i)	The development of facilities or infrastructure for the transmission and distribution of electricity: (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts; excluding the development of bypass infrastructure for the transmission and distribution of electricity where such bypass infrastructure is — (a) temporarily required to allow for maintenance of existing infrastructure; (b) 2 kilometres or shorter in length; (c) within an existing transmission line servitude; and (d) will be removed within 18 months of the commencement of development.	The project will entail the construction of an on-site substation hub and a 132 kV overhead transmission powerline to facilitate the connection between the proposed project and internal grid connections to the newly proposed 400 kV/132 kV GEED Collector Substation. Each on-site substation complex will include the following: • On-site Independent Power Producer (IPP) or Facility Substation. This will include the relevant section that will be maintained by the IPP (i.e, the high voltage infrastructure leading up to the Point of Connection (the Project Applicant's section of the proposed on-site substation complexes)), and/or • Switching Station and Collector Station, and/or • Battery Energy Storage System (BESS). The proposed WEF will be on two farm portion (Doornboomfontein 1/89 and Doornboomfontein RE/89) with the Overhead power line extending onto Matjesfontein Farm Nr. 412. The proposed project site is therefore located approximately 40 km northwest of Beaufort West, in the Beaufort West Local Municipality and the Central Karoo District Municipality in the Western Cape province. Therefore, the proposed project is situated

		outside of an urban area and this activity would be triggered. <i>This activity would therefore be triggered.</i>
Activity 12 (ii) [(a) and (c)]	The development of: (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs: (a) within a watercourse; (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding: (aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies; (dd) where such development occurs within an urban area; (ee) where such development occurs within existing roads, road reserves or railway line reserves; or (ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6	The proposed project will entail the construction of various infrastructure and structures (such as wind turbines, on-site substation complex, BESS), laydown area, internal roads, and various ancillary infrastructure such as Operation and Maintenance (O&M) building / centre, site office, workshop, staff lockers, bathrooms/ablutions, warehouse, guard house, etc.). Details of the infilling of, and excavations from, the affected watercourses/drainage features will be confirmed during the detailed engineering design phase. The Aquatic Biodiversity Scoping Level Assessment (Appendix G.3 of this Scoping Report) notes that the only natural instream wetland areas within the study area are some seeps adjacent to the larger channel of the Leeu River and a depression wetland. These wetlands are also mapped in the National Wetland Map version 5. The other FEPA wetland mapping within the study area comprises an artificial wetland associated with Doornboomsfontein Dam. Within the WCBSP, the watercourses are all mapped as aquatic ESAs (ESA1). Some aquatic ESAs (ESA2) occur where there is localised disturbance within the watercourses, such as at Doringboomsfontein Dam. Within the terrestrial CBAs, the watercourses and wetlands have also been mapped as aquatic CBAs. These comprise the upper Leeu River upstream of Doringboomsfontein Dam, the Leeu River where the seep

	weeks of commencement of the development and where indigenous vegetation will not be cleared.	wetlands occur near Modderdrift, the Frieslandkloof River within the kloof as well as in its upper reaches in the southern extent of the larger site, as well as the depression wetland near the proposed WEF. The infrastructure and structures will exceed a footprint of 100 m² and some may occur within small drainage features and 32 m of the watercourses. Additional detail will be provided during the EIA Phase. The proposed WEF will be on two farm portion (Doornboomfontein 1/89 and Doornboomfontein RE/89) with the Overhead power line extending onto Matjesfontein Farm Nr. 412. The proposed project site is therefore located approximately 40 km northwest of Beaufort West, in the Beaufort West Local Municipality and the Central Karoo District Municipality in the Western Cape province. Therefore, the proposed project is situated outside of an urban area and this activity would be triggered. <i>This activity would therefore be triggered.</i>
Activity 14	The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres.	The proposed renewable energy facility development will require storage and handling of dangerous goods, including fuel, cement and chemical storage onsite, that will be greater than 80m³ but not exceeding 500m³. <i>This activity would therefore be triggered.</i>
Activity 19	The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;	The proposed project may entail the excavation, removal and moving of more than 10 m³ of soil, sand, pebbles or rock from nearby watercourses on site. The proposed

	but excluding where such infilling, depositing, dredging, excavation, removal or moving- a) will occur behind a development setback; b) is for maintenance purposes undertaken in accordance with a maintenance management plan; c) falls within the ambit of activity 21 in this Notice, in which case that activity applies; d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.	project may also entail the infilling of more than 10 m³ of material into the nearby watercourses. The Aquatic Biodiversity Scoping Level Assessment (Appendix G.3 of this Scoping Report) notes that the only natural instream wetland areas within the study area are some seeps adjacent to the larger channel of the Leeu River and a depression wetland. These wetlands are also mapped in the National Wetland Map version 5. The other FEPA wetland mapping within the study area comprises an artificial wetland associated with Doornboomsfontein Dam. Within the WCBSP, the watercourses are all mapped as aquatic ESAs (ESA1). Some aquatic ESAs (ESA2) occur where there is localised disturbance within the watercourses, such as at Doringboomsfontein Dam. Within the terrestrial CBAs, the watercourses and wetlands have also been mapped as aquatic CBAs. These comprise the upper Leeu River upstream of Doringboomsfontein Dam, the Leeu River where the seep wetlands occur near Modderdrift, the Frieslandkloof River within the kloof as well as in its upper reaches in the southern extent of the larger site, as well as the depression wetland near the proposed WEF. Details of the infilling of, and excavations from, the affected watercourses/drainage features will be confirmed during the detailed engineering design phase. <i>This activity would therefore be triggered.</i>
Activity 24 (ii)	The development of road with (ii) a road reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 m.	A temporary road corridor of up to 15 m will be impacted during the construction phase. This will be rehabilitated after the completion of construction activities to allow for a

		permanent 6 m wide road surface, with side drains on one or both sides where necessary. This will be confirmed and verified during detailed specialist assessments. <i>This activity would therefore be triggered.</i>
Activity 27	The clearance of an area of 1 hectare (ha) or more, but less than 20 ha of indigenous vegetation, except where such clearance of indigenous vegetation is required for i. the undertaking of a linear activity; or maintenance purposes undertaken in accordance with a maintenance management plan.	The proposed project will entail the construction of infrastructure with a combined physical footprint of approximately 50 ha that will require clearance of indigenous vegetation. The 50 ha area exceeds the 20 ha maximum threshold of this listed activity; <i>therefore, this activity is NOT applicable.</i> Activity 15 of Listing Notice 2 is applicable.
Activity 28 (ii)	Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development: iii. will occur outside an urban area, where the total land to be developed is bigger than 1 hectare; excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.	The proposed WEF will be on two farm portion (Doornboomfontein 1/89 and Doornboomfontein RE/89) with the Overhead power line extending onto Matjesfontein Farm Nr. 412. The proposed project site is therefore located approximately 40 km northwest of Beaufort West, in the Beaufort West Local Municipality and the Central Karoo District Municipality in the Western Cape province. The farm portions have previously been utilised for agricultural activities. The proposed project, which is considered a commercial/industrial development, will have an estimated footprint in excess of 1 ha (minimum footprint of about 180 ha). The proposed project will also entail the construction of various infrastructure and structures (such as the wind turbines, on-site substation complex, BESS, laydown

		area, internal roads, and various ancillary infrastructure such as O&M building / centre, site office, workshop, staff lockers, bathrooms/ ablutions, warehouse, guard house, etc.). This will constitute infrastructure with a physical footprint of more than 1 ha. <i>This activity would therefore be triggered.</i>
Activity 48 (i) (a) and (c)	The expansion of (i) infrastructure or structures where the physical footprint is expanded by 100 square metre or more, (a) within a watercourse and (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.	The proposed project will require the upgrading of existing roads within the project area, as well as watercourse crossing upgrades, where such upgrades may take place within watercourses and within 32 m from the edge of these watercourses. The total footprint of the upgrades to be undertaken on the existing roads would be in excess of 100 m² within a watercourse, or within 32 m of a watercourse. This will be confirmed and verified during detailed specialist assessments. The Aquatic Biodiversity Scoping Level Assessment (Appendix G.3 of this Scoping Report) notes that the only natural instream wetland areas within the study area are some seeps adjacent to the larger channel of the Leeu River and a depression wetland. These wetlands are also mapped in the National Wetland Map version 5. The other FEPA wetland mapping within the study area comprises an artificial wetland associated with Doornboomsfontein Dam. Within the WCBSP, the watercourses are all mapped as aquatic ESAs (ESA1). Some aquatic ESAs (ESA2) occur where there is localised disturbance within the watercourses, such as at Doringboomsfontein Dam. Within the terrestrial CBAs, the watercourses and wetlands have also been mapped as aquatic CBAs. These comprise the upper Leeu River upstream of Doringboomsfontein Dam, the Leeu River where the seep

		wetlands occur near Modderdrift, the Frieslandkloof River within the kloof as well as in its upper reaches in the southern extent of the larger site, as well as the depression wetland near the proposed WEF. <i>This activity would therefore be triggered.</i>
Activity 56 (ii)	The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre- (i) where the existing reserve is wider than 13,5 meters; or (ii) where no reserve exists, where the existing road is wider than 8 metres; excluding where widening or lengthening occur inside urban areas.	Existing roads will be used as far as practically achievable. The proposed projects will require the upgrading of existing roads within the project area, as well as watercourse crossing upgrades, where such upgrades may take place within watercourses and within 32 m from the edge of these watercourses. The total footprint of the upgrades to be undertaken on the existing roads would be in excess of 100 m² within a watercourse, or within 32 m of a watercourse. This will be confirmed and verified during detailed specialist assessments. The Traffic Specialist noted that the existing road network adjacent to the proposed developments is well established, consists of a combination of national roads, first, second and third-order roads, which provides accessibility to the proposed development from the local towns and major commercial centres within South Africa. <i>This activity would therefore be triggered.</i>
Activity No(s):	Provide the relevant Scoping and EIA Activity(ies) as set out in Listing Notice 2 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
Activity 1	The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more, excluding where such development of	The proposed project is a Wind Energy Facility (i.e., facility for the generation of electricity from a renewable resource) with an estimated capacity of up to 250 MW.

	facilities or infrastructure is for photovoltaic installations and occurs — (a) within an urban area; or (b) on existing infrastructure.	The proposed WEF will be on two farm portion (Doornboomfontein 1/89 and Doornboomfontein RE/89) with the Overhead power line extending onto Matjesfontein Farm Nr. 412. The proposed project site is therefore located approximately 40 km northwest of Beaufort West, in the Beaufort West Local Municipality and the Central Karoo District Municipality in the Western Cape province. <i>This activity would therefore be triggered.</i>
Activity 15	The clearance of an area of 20 hectares 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.	The proposed Wind Energy Facility will have an estimated footprint of 50 ha to accommodate the footprints of wind turbine generator hard stands, access roads, on-site substations and power line/ pylon foundation footprints. Accordingly, more than 20 ha of indigenous vegetation could be cleared for the construction of the proposed Wind Energy Facility. <i>This activity would therefore be triggered.</i>
Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 3 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
Activity 4 (i) (ii) and (aa)	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	A 15 m road corridor will be temporarily impacted upon during construction and rehabilitated to 6 m wide after construction. The proposed project will be on one farm portion (Doornboomfontein 1/89) located approximately 40 km northwest of Beaufort West, in the Beaufort West Local Municipality and the Central Karoo District Municipality in the Western Cape province. Therefore, the proposed projects are situated outside of an urban area. The proposed project will take place outside of an urban area in the Western Cape, on sites that contain indigenous

		vegetation. The Scoping Level Terrestrial Biodiversity Impact Assessment indicates that the project site contains Ecosystem Support Areas (ESAs) and Critical Biodiversity Areas <i>This activity would therefore be triggered.</i>
Activity 12 (i) (v)	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 v. On land designated for protection or conservation purposes in an Environmental Management Framework adopted in the prescribed manner, or a Spatial Development Framework adopted by the MEC or Minister.	The proposed project will have an estimated total development footprint of more than 5 ha. As a result, more than 300 m² of indigenous vegetation could be removed for the construction of the proposed WEF and associated infrastructure. As per the Karoo National Park's Management Plan (2017 -2027) the proposed project is located within the land portions identified for the park's expansion and it is located within the park's buffer area. <i>This activity would therefore be triggered.</i>
Activity 14 (ii) (a) and (c); (i)(i)(bb), and (ff)	The development of – (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs – (a) within a watercourse; (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;	The proposed project will be on one farm portion (Doornboomfontein 1/89) located approximately 40 km northwest of Beaufort West, in the Beaufort West Local Municipality and the Central Karoo District Municipality in the Western Cape province. The proposed project will entail the construction of various infrastructure and structures (such as the wind turbines, on-site substation complex, BESS), laydown area, internal roads, and various ancillary infrastructure such as O&M building / centre, site office, workshop, staff lockers, bathrooms/ ablutions, warehouse, guard house, etc.).

	i. Western Cape i. Outside urban areas: (bb) National Protected Area Expansion Strategy Focus areas; (ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans	The Aquatic Biodiversity Scoping Level Assessment (Appendix G.3 of this Scoping Report) notes that the only natural instream wetland areas within the study area are some seeps adjacent to the larger channel of the Leeu River and a depression wetland. These wetlands are also mapped in the National Wetland Map version 5. The other FEPA wetland mapping within the study area comprises an artificial wetland associated with Doornboomsfontein Dam. Within the WCBSP (2017), the watercourses are all mapped as aquatic ESAs (ESA1). Some aquatic ESAs (ESA2) occur where there is localised disturbance within the watercourses, such as at Doringboomsfontein Dam. Within the terrestrial CBAs, the watercourses and wetlands have also been mapped as aquatic CBAs. These comprise the upper Leeu River upstream of Doringboomsfontein Dam, the Leeu River where the seep wetlands occur near Modderdrift, the Frieslandkloof River within the kloof as well as in its upper reaches in the southern extent of the larger site, as well as the depression wetland near the proposed WEF. The infrastructure and structures will exceed a footprint of 10 m² and some may occur within small drainage features and 32 m of the watercourses. Additional detail will be provided during the EIA Phase. As per the Karoo National Park's Management Plan (2017-2027) the proposed project is located within the park's expansion area and buffer area.
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		The proposed project will take place outside of an urban area in the Western Cape, on a site that contains ESAs and CBAs in terms of the 2017 Western Cape Biodiversity Spatial Plan. <i>This activity would therefore be triggered.</i>
Activity 18 (i) (ii) and (aa)	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	Existing roads will be used as far as possible and will be upgraded where needed. There is a possibility that the existing roads will be widened by more than 4 m or lengthened by more than 1 km. The proposed projects will take place outside of an urban area in the Western Cape, on sites that may contain indigenous vegetation and contains ESAs and CBAs in terms of the 2017 Western Cape Biodiversity Spatial Plan. <i>This activity would therefore be triggered.</i>
Activity 23 (ii) (i) (i) (bb) and (ff)	The expansion of: (ii) infrastructure or structures where the physical footprint is expanded by 10 square metres or more; where such expansion occurs i. Western Cape i. Outside urban areas: (bb) National Protected Area Expansion Strategy Focus areas;	The proposed WEF will be on two farm portion (Doornboomfontein 1/89 and Doornboomfontein RE/89) with the Overhead power line extending onto Matjesfontein Farm Nr. 412. The proposed project site is therefore located approximately 40 km northwest of Beaufort West, in the Beaufort West Local Municipality and the Central Karoo District Municipality in the Western Cape province. Existing roads will be used as far as practically achievable. The proposed project study area can be accessed via various existing main roads and unnamed farm gravel roads. The potential access routes are discussed below: The proposed project site can be accessed via the following roads: - Divisional Road 2312 (DR02312);

	(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans	- Trunk Road 5801 (TR05801); and - Trunk Road 7301 (TR07301). Refer to the Traffic Impact Assessment (Appendix G.9 of the Scoping Report) and Chapter 2 of the Scoping Report for additional information on the route options per project. Some of the existing intersections along the above roads may need to be widened to accommodate the turning movement of the trucks. Exact specifications of the widening will be confirmed as the EIA progresses. Internal service roads will also be constructed within the footprint of the PV facility. The internal roads are expected to be composed of gravel or will be paved and will extend approximately 6 m wide. An up to 15 m wide road corridor may be temporarily impacted during construction and rehabilitated to allow for a permanent ~6 m road surface after construction. Details of this will be provided during the EIA Phase. The widening of the roads constitutes the expansion of infrastructure where the physical footprint is expanded by 10 m² or more. Additional detail will be provided during the EIA Phase. The proposed expansion of existing infrastructure will occur within a National Protected Areas Expansion Strategy (NPAES) Focus Area associated with the Karoo National Park. Within the 2017 Western Cape Biodiversity Sector Plan (a systematic biodiversity plan), the watercourses are all mapped as aquatic ESAs. These comprise tributaries of the upper Leeu River upstream of Doringboomsfontein Dam, the Leeu River where the seep
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		wetlands occur near Modderdrift, the Frieslandkloof River within the kloof, in its upper reaches in the southern extent of the larger site, as well as the depression wetland in the northern extent of the larger site. <i>This activity would therefore be triggered</i>
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4.3 Screening Tool

As noted above, GN 960 (dated 5 July 2019) stipulates the compulsory requirement (as from 4 October 2019) to submit a report generated by the Screening Tool, when submitting an Application for EA. The proposed project has accordingly been run through the Screening Tool, and the associated report generated and attached to the Application for EA.

Based on the selected classification, the Screening Tool provides a list of specialist assessments that should be undertaken as part of the Scoping and EIA Process, as well as identifies the sensitivities on site that need to be verified by either the EAP or the specialists, where relevant, as noted in the Assessment Protocols of 20 March 2020 (GN 320) and 30 October 2020 (GN 1150). The classifications that apply to the proposed project are:

1. **Utilities Infrastructure; Electricity; Generation; Renewable; Wind**
2. **Utilities Infrastructure; Electricity; Distribution and Transmission; Powerline**
3. **Utilities Infrastructure; Electricity; Distribution and Transmission; Substation**

The following list of Specialist Assessments have been identified by the Screening Tool for inclusion in the Scoping and EIA Processes (Table 4.3). **The Screening Tool Report notes that it is the responsibility of the EAP to confirm this list and to motivate in the Scoping Report, the reason for not including any of the identified specialist assessments, where relevant.**

As discussed at the Pre-Application Meeting held on 26 January 2023, the DFFE noted that the Screening Tool must be used as a guidance in terms of what studies are required and not required, and that the EAP must confirm this. Hence, the EAP is recommending that certain studies are not required. Refer to the discussion below.

Table 4.3: List of Specialist Assessments identified by the Screening Tool for the proposed project

Specialist Assessment Required by the Screening Tool		Assessment undertaken in Scoping and EIA Process	Type of Assessment undertaken in Scoping and EIA Process	Appendix of Scoping Report
1	Agricultural Impact Assessment	Yes	Protocol GN 320: Part B: Agriculture (Protocol for the Specialist Assessment and Minimum Report Content Requirements of Environmental Impacts on Agricultural Resources by Onshore Wind and/or Solar PV Energy Generation Facilities where the Electricity Output is 20 MW or more): Compliance Statement	Appendix G.1
2	Landscape/Visual Impact Assessment	Yes	Protocol GN 320: Part A: Site Sensitivity Verification; and Appendix 6 of the 2014 NEMA EIA Regulations (as amended): Impact Assessment	Appendix G.5
	Flicker Impact Assessment	Yes		
3	Archaeological and Cultural Heritage Impact Assessment	Yes	Protocol GN 320: Part A: Site Sensitivity Verification; and Appendix 6 of the 2014 NEMA EIA Regulations (as amended): Impact Assessment	Appendix G.6
4	Palaeontology Impact Assessment	Yes	Protocol GN 320: Part A: Site Sensitivity Verification; and Appendix 6 of the 2014 NEMA EIA Regulations (as amended): Impact Assessment	Appendix G.7

SCOPING REPORT: Scoping and Environmental Impact Assessment (S&EIA) Process for
the Proposed Development of Beau Valley Wind Energy Facility and associated
infrastructure, near Beaufort West, Western Cape Province

Specialist Assessment Required by the Screening Tool		Assessment undertaken in Scoping and EIA Process	Type of Assessment undertaken in Scoping and EIA Process	Appendix of Scoping Report
5	Terrestrial Biodiversity Impact Assessment	Yes	Protocol GN 320: Part B: Biodiversity (Protocol for the Specialist Assessment and Minimum Report Content Requirements of Environmental Impacts on Terrestrial Biodiversity): Impact Assessment Note that the reporting for Terrestrial Biodiversity, Terrestrial Plant Species and Terrestrial Animal Species are combined in one report.	Appendix G.2
6	Aquatic Biodiversity Impact Assessment	Yes	Protocol GN 320: Part B: Biodiversity (Protocol for the Specialist Assessment and Minimum Report Content Requirements of Environmental Impacts on Aquatic Biodiversity): Impact Assessment GN R3717 was promulgated on 28 July 2023 which amends the terrestrial plant and animal species protocol that was published in GN R1150 in October 2020. The amendment entails the removal of the term “terrestrial” from the protocol to ensure that it applies to all plant and animal species, including freshwater species. However, the Aquatic Biodiversity specialist was appointed in 2021, prior to the promulgation of the amendment in GN R3717. Therefore, the amendment is not applicable to the proposed project. The Aquatic Biodiversity specialist assessment has been undertaken in compliance with GN R320.	Appendix G.3
7	Avifauna Impact Assessment	Yes	Protocol GN R320 – Part A: Site Sensitivity Verification; and Part B – Avifauna (Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Avifaunal Species by Onshore Wind Energy Generation Facilities where the Electricity Output is 20 Megawatts or more): Impact Assessment Minimum report content requirements for environmental impacts on avifaunal species by onshore wind energy generation facilities (i.e. the proposed WEF) as prescribed in GN R320 indicates that an “Avifaunal Specialist Assessment must be undertaken based on the results of a site specific Pre-Application Avifaunal Monitoring Plan that is informed by a Reconnaissance Study, as well as data collected over four seasons (i.e. summer, autumn, winter and spring) on the preferred site and the control site”. As such, this study was commissioned by the Project Developer in 2019 already in accordance with GN R320, prior to the appointment of the EAP (i.e., CSIR) in 2020 to conduct this Scoping and EIA Process.	Appendix G.4
8	Civil Aviation Assessment	Yes (Site Sensitivity Verification)	Protocol GN 320: Part B: Civil Aviation (Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on	Appendix G.14

SCOPING REPORT: Scoping and Environmental Impact Assessment (S&EIA) Process for
the Proposed Development of Beau Valley Wind Energy Facility and associated
infrastructure, near Beaufort West, Western Cape Province

Specialist Assessment Required by the Screening Tool		Assessment undertaken in Scoping and EIA Process	Type of Assessment undertaken in Scoping and EIA Process	Appendix of Scoping Report
			Civil Aviation Installations): Site Sensitivity Verification or Compliance Statement The Screening Tool indicates that the proposed project area is of “low” sensitivity. This has been verified and confirmed on site. As per the protocols, a Site Sensitivity Verification is only required. This has been provided in Appendix G.13 of this Scoping Report. The South African Civil Aviation Authority and Air Traffic Navigation Services (ATNS) are included on the Interested and Affected Party (I&AP) database and will be provided with access to the Scoping Report in order to seek comment during the Scoping and EIA Process.	
9	Defence Assessment	Yes (Site Sensitivity Verification)	Protocol GN 320: Part B: Defence (Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Defence Installations): Site Sensitivity Verification or Compliance Statement The Screening Tool indicates that the proposed project area is of “low” sensitivity. This has been verified and confirmed on site. As per the protocols, a Site Sensitivity Verification is only required. This has been provided in Appendix G.14 of this Scoping Report. The Department of Defence will be provided with access to the Scoping Report in order to seek comment during the Scoping and EIA Process.	Appendix G.15
10	Radio Frequency Interference (RFI) Assessment	No	Motivation not to undertake this specialist assessment is provided in Section 4.3.2 below.	Motivation not to undertake this specialist assessment is provided in Section 4.3.2 below.
11	Noise Impact Assessment	Yes	Protocol GN R320 – Part A: Site Sensitivity Verification; and Part B – Noise (Protocol for the specialist assessment and minimum report content requirements for noise impacts): Impact Assessment	Appendix G.13
12	Bat Impact Assessment	Yes	Protocol GN R320 – Part A: Site Sensitivity Verification; and Appendix 6: Impact Assessment A pre-construction monitoring plan was designed to monitor bat activity across the entire area of interest proposed by the WEF development. The baseline environment is being investigated by using acoustic monitoring to document bat activity over a period of 12 months. The monitoring is being	Appendix G.12

Specialist Assessment Required by the Screening Tool		Assessment undertaken in Scoping and EIA Process	Type of Assessment undertaken in Scoping and EIA Process	Appendix of Scoping Report
			undertaken in accordance with the South African Best Practice Guidelines for Pre-Construction Monitoring of Bats at Wind Energy Facilities (2020).	
13	Traffic Impact Assessment	Yes	Appendix 6: Impact Assessment There are no themes on the Screening Tool that currently relate to traffic or transport features that could be verified on site. Hence, Part A of GN R320 (Site Sensitivity Verification) is not applicable in this regard.	Appendix G.9
14	Geotechnical Assessment	Yes	Appendix 6 of the 2014 NEMA EIA Regulations (as amended): Impact Assessment There are no themes on the Screening Tool that currently relate to Geotechnical features that could be verified on site. Hence Part A of GN 320 (Site Sensitivity Verification) is not applicable in this regard.	Appendix G.11
15	Socio-Economic Assessment	Yes	Appendix 6 of the 2014 NEMA EIA Regulations (as amended): Impact Assessment There are no themes on the Screening Tool that currently relate to Socio-Economic features that could be verified on site. Hence Part A of GN 320 (Site Sensitivity Verification) is not applicable in this regard.	Appendix G.8
16	Plant Species Assessment	Yes	Protocol GN 1150: Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Plant Species: Impact Assessment Note that the reporting for Terrestrial Biodiversity, Terrestrial Plant Species and Terrestrial Animal Species are combined in one report.	Appendix G.2
17	Animal Species Assessment	Yes	Protocol GN 1150: Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Animal Species: Compliance Statement Note that the reporting for Terrestrial Biodiversity, Terrestrial Plant Species and Terrestrial Animal Species are combined in one report.	Appendix G.2

4.3.1 Additional Specialist Assessments

It must be noted that the Screening Tool did not identify the need for the following specialist assessments, however these studies have been commissioned as part of the Scoping and EIA Process to ensure that all potential impacts resulting from the proposed project are considered as best as possible:

- **BESS High Level Safety, Health and Environment Risk Assessment:** The Scoping Level inputs are included in Appendix G.10 of this Scoping Report, and will be supplemented, as required, during the EIA Phase. This is a technical report and does not need to fulfil the requirements of the 2014 NEMA EIA Regulations (as amended); and

4.3.2 RFI Assessment

The Screening Tool identified the need for an RFI Assessment. However, an RFI Assessment is not being undertaken as part of the Scoping and EIA Process because the proposed project does not pose an EMI or RFI risk to the SKA, as the proposed project is located outside of the Northern Cape as well as the KCAAA. Refer to Figure 4.2 for the location of the proposed project in relation to the SKA and KCAAA. The proposed project site falls within an area of low sensitivity in terms of SKA sensitivity for the development of solar energy (Table 4.1).

Based on this, the EAP is of the reasoned opinion that an RFI Assessment is not warranted.

Furthermore, the SARAO was consulted to ascertain whether the proposed project will pose a risk of interference to the nearest SKA radio telescope. On 16 March 2023, the SARAO confirmed that the project represents a low risk of interference to the nearest SKA radio telescope with a compliance surplus of 28.42 dBm/Hz. Accordingly, they had no objection to the proposed project. Therefore, RFI and EMI specialist studies will not be commissioned by the S&EIA project team as SARAO's assessment and findings are considered conclusive in respect of the RFI and EMI sensitive themes. Copies of the comments received from SARAO are included in Appendix E of this Scoping Report.

4.4 Principles for Scoping and Public Participation

4.4.1 Objectives of the Scoping Phase

This Scoping Process is being planned and conducted in a manner that is intended to identify and provide sufficient information to enable the authorities to reach a decision regarding the scope of issues to be addressed in this EIA Process, and in particular to convey the range of specialist assessments that will be included as part of the EIA Phase, as well as the approach to these specialist assessments.

As highlighted in Chapter 1 of this Scoping Report, within this context, the objectives of this Scoping Process, as per the 2014 NEMA EIA Regulations (as amended), are to:

- Identify the relevant policies and legislation relevant to the proposed activity;
- Motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
- Clarify the project scope to be covered;
- Identify and confirm the preferred activity and technology alternative through an identification of impacts and risks and ranking process of such impacts and risks;
- Identify and confirm the preferred site, through a detailed site selection process, which includes an identification of impacts and risks inclusive of identification of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment;
- Clarify the alternatives being considered and ensure due consideration of alternative options regarding the proposed development, including the “No-go” option;
- Conduct an open, participatory and transparent approach and facilitate the inclusion of stakeholder issues in the decision-making process;
- Identify and inform a broad range of stakeholders about the proposed development;
- Confirm the process to be followed and opportunities for stakeholder engagement;
- Identify and document the key issues to be addressed in the impact assessment phase (through a process of broad-based consultation with stakeholders) and the approach to be followed in addressing these issues;
- Confirm the level of assessment to be undertaken during the impact assessment, including the methodology to be applied, the expertise required as well as the extent of further consultation to be undertaken to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site; and
- Identify suitable measures to avoid, manage or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored.

4.4.2 Introduction to the PPP

This section provides an overview of the tasks that were undertaken in the Scoping Phase, with a particular emphasis on providing a clear record of the PPP to has been followed.

Guideline 4 on “*Public Participation in support of the EIA Regulations*” published by the former Department of Environmental Affairs and Tourism (DEAT) in May 2006, states that public participation is one of the most important aspects of the Environmental Assessment Process. This stems from the requirement that people have a right to be informed about potential decisions that may affect them and that they must be afforded an opportunity to influence those decisions. Effective public participation also improves the ability of the Competent Authority to make informed decisions and results in improved decision-making as the view of all parties are considered.

An effective PPP could therefore result in stakeholders working together to produce better decisions than if they had worked independently. The DEAT guideline states the following in terms of PPP:

- *“Provides an opportunity for I&APs, EAPs and the Competent Authority to obtain clear, accurate and understandable information about the environmental impacts of the proposed activity or implications of a decision;*
 - *Provides I&APs with an opportunity to voice their support, concern and question regarding the project, application or decision;*
 - *Enables an applicant to incorporate the needs, preferences and values of affected parties into its application;*
 - *Provides opportunities for clearing up misunderstanding about technical issues, resolving disputes and reconciling conflicting interests;*
 - *Is an important aspect of securing transparency and accountability in decision-making; and*
 - *Contributes toward maintaining a health, vibrant democracy.”*

To the above, one can add the following universally recognised principles for public participation:

- Inclusive consultation that enables all sectors of society to participate in the consultation and assessment processes;
- Provision of accurate and easily accessible information in a language that is clear and sufficiently non-technical for I&APs to understand, and that is sufficient to enable meaningful participation;
- Active empowerment of grassroots people to understand concepts and information with a view to active and meaningful participation;
- Use of a variety of methods for information dissemination in order to improve accessibility, for example, by way of discussion, documents, meetings, workshops, focus group discussions, and the printed and broadcast media;
- Affording I&APs sufficient time to study material, to exchange information, and to make contributions at various stages during the assessment process;
- Provision of opportunities for I&APs to provide their inputs via a range of methods, for example, via briefing sessions, public meetings, written submissions or direct contact with members of the EIA team; and

- Public participation is a process and vehicle to provide sufficient and accessible information to I&APs in an objective manner to assist I&APs to identify issues of concern, to identify alternatives, to suggest opportunities to reduce potentially negative or enhance potentially positive impacts, and to verify that issues and/or inputs have been captured and addressed during the assessment process.

At the outset it is important to highlight two key aspects of public participation:

- There are practical and financial limitations to the involvement of all individuals within a PPP. Hence, the PPP aims to generate issues that are representative of societal sectors, not each individual and will be designed to be inclusive of a broad range of sectors relevant to the proposed project; and
- The PPP will aim to raise a diversity of perspectives and will not be designed to force consensus amongst I&APs. Indeed, diversity of opinion rather than consensus building is likely to enrich ultimate decision-making. Therefore, where possible, the PPP will aim to obtain an indication of trade-offs that all stakeholders (i.e. I&APs, technical specialists, the authorities and the development proponent) are willing to accept with regard to the ecological sustainability, social equity and economic growth associated with the project.

The Department of Environmental Affairs (2017), Public Participation guideline in terms of the NEMA EIA Regulations is also being considered during this Scoping and EIA Process. The Western Cape Department of Environmental Affairs & Development Planning (DEA&DP), (2013) Guideline on Public Participation, EIA Guideline and Information Document Series⁶, is also being consulted.

The key steps in the PPP for this Scoping and EIA Process are described below and are also illustrated in Figure 4.3. This approach is structured in line with the requirements of Chapter 6 (PPP) of the 2014 NEMA EIA Regulations (as amended, i.e. GN R326), as described below. Various mechanisms will be undertaken to provide notice to all potential and registered I&APs of the proposed project, as described below.

⁶ DEA&DP (2013) Guideline on Public Participation, EIA Guideline and Information Document Series. Western Cape Department of Environmental Affairs & Development Planning (DEA&DP), March 2013.

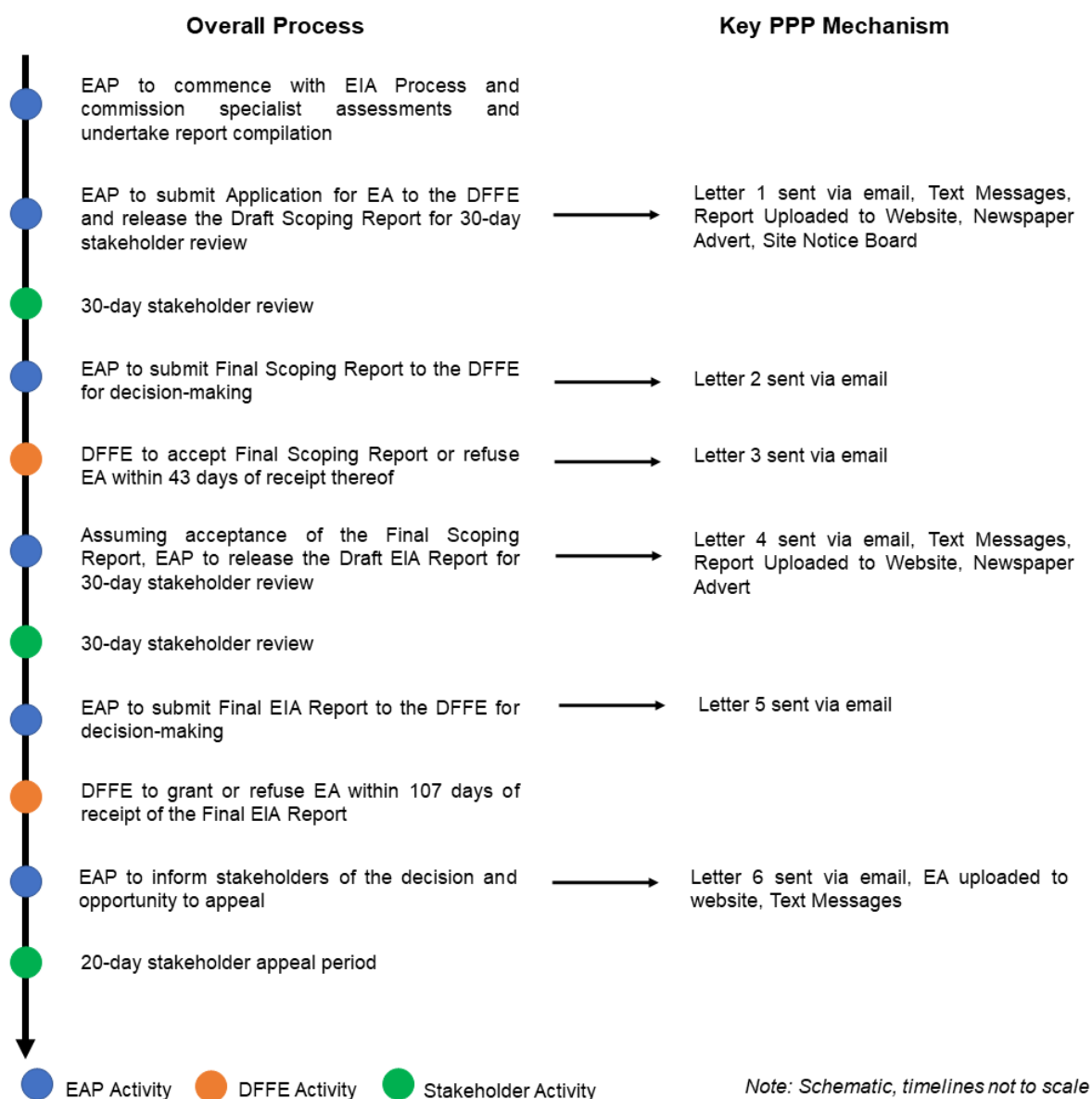


Figure 4.3: Overview of the Scoping and EIA Process and PPP

4.4.3 Pre-Application Consultation with the DFFE

A request for a Pre-Application Meeting was submitted to the DFFE on 26 January 2023 after which the EAP received a response from the DFFE on 27 January 2023 (Reference Number: 2023-01-0030). The DFFE later confirmed via email that a Pre-Application Meeting was scheduled for 7 February 2023. The Pre-Application Meeting was undertaken in order to discuss and agree on various aspects prior to release the Draft Scoping Report. The following points were discussed with the DFFE:

- Description of the proposed project;
- Discussion and confirmation of the specialist assessments and compliance statements to be undertaken;
- Discussion on the approach towards the specialist reporting;
- Discussion on the approach towards the BA and S&EIA reporting;
- Discussion on the proposed Public Participation Process to be undertaken;
- Discussion on the preliminary proposed project schedule and overall process for the EIAs and BA, including the applicable Listed Activities; and
- Discussion on the Cumulative Impact Assessment approach (i.e., assess cumulative impacts based on a 30 km buffer and based on Renewable Energy projects with a positive EA issued or which have submitted an EA Application at the start of these BA and EIA processes (i.e., January 2023))

Refer to Appendix F.1 of this Scoping Report for a copy of the Pre-Application Meeting Request Form that was submitted to the DFFE; Appendix F.2 for a copy of the presentation delivered at the Pre-Application Meeting; Appendix F.3 for a copy of the Pre-Application Meeting Notes; Appendix F.4 for the submission of the Pre-Application Meeting Notes to the DFFE; and Appendix F.5 for a copy of correspondence from the DFFE with approval of the Pre-Application Meeting Notes. The Pre-Application Meeting Notes were submitted to the DFFE via email on 22 February 2023 and approved by the DFFE on 28 February 2023.

4.4.4 Landowner Written Consent

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

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

The proposed project constitutes non-linear activities, and landowner consent is therefore required for the affected properties listed in Chapter 2 of this report. Written consent has been obtained from the respective landowners of the affected farm portions on which the non-linear infrastructure is proposed to be located. The written consent has been included as an appendix to the Application for EA, which is being submitted to the DFFE, together with the DSR for comment.

The proposed project also constitutes linear activities, i.e., the 33/132 kV power line to connect the on-site substation to the GEED Collector Substation, and landowner consent is therefore not required for the affected properties.

4.4.5 Determination of Appropriate Consultation Measures, and I&AP Identification, Registration and the Creation of an Electronic Database

In order to accommodate the varying needs of I&APs and develop their capacity to participate in the process, information sharing forms an integral and ongoing component of the EIA Process to ensure effective public participation.

In line with Regulation 41 (2) (b) of the 2014 NEMA EIA Regulations (as amended) and prior to the commencement of the Scoping and EIA Processes (and advertising the EA Process in the local print media), an initial database of I&APs (including key stakeholders and Organs of State) was developed for the Scoping and EIA Processes. This was undertaken based on research. Appendix D of this Scoping Report includes a copy of the I&AP Database, which indicates key stakeholders and all I&APs that have been added to the project database.

In line with Regulation 41 (2) (b) of 2014 NEMA EIA Regulations (as amended), the database includes the details of the following:

- Landowners of the affected farm portions;
- Occupiers of the affected farm portions;
- Landowners of the neighbouring adjacent farm portions;
- The municipal councillor of the ward in which the proposed project will be undertaken;
- The municipality which has jurisdiction in the area (i.e. Beaufort West Local Municipality and the Central Karoo District Municipality);
- Relevant Organs of State that have jurisdiction in respect of any aspect of the activity (e.g. the Western Cape Department of Environmental Affairs and Development Planning (DEA&DP), Department of Human Settlement, Water and Sanitation (DHSWS), DALRRD, DMRE, Eskom etc.); and
- Any other party as required by the Competent Authority.

In addition, the I&AP database includes the Competent Authority (i.e., DFFE); and potential and registered I&APs.

The above stakeholders, Organs of State and I&APs have accordingly received written notification of the commencement of the Scoping and EIA processes and were informed of the release of the DSR for comment, and were notified of the availability of the Draft EIA Report for comment.

While I&APs have been encouraged to register their interest in the project from the start of the process, following the public announcements, the identification and registration of I&APs is ongoing for the duration of the study. Stakeholders from a variety of sectors, geographical locations and/or interest groups are expected to show an interest in the proposed project, for example:

- Provincial and Local Government Departments;
- Local interest groups, for example, Councillors and Rate Payers Associations;
- Surrounding landowners;
- Farmer Organisations;
- Environmental Groups and NGOs; and
- Grassroots communities and structures.

As per Regulation 42 of the 2014 NEMA EIA Regulations (as amended), in terms of the electronic database, I&AP details will be captured and automatically updated as and when information is distributed to or received from I&APs. This ongoing record of communication is an important component of the PPP. It must be noted that while not required by the regulations, those I&APs proactively identified at the outset of the Scoping and EIA Process will remain on the project database throughout the process and will be kept informed of all opportunities to comment and will only be removed from the database by request.

In accordance with the Protection of Personal Information Act (Act 4 of 2013), the CSIR will conduct itself responsibly when collecting, processing, storing and sharing any personal information collected for the purposes of PPP in terms of the 2014 NEMA EIA Regulations (as amended). By registering as an I&AP and/or submitting information and comments, the stakeholder essentially consents to the collection, collation, processing, and storing of such information and the use and disclosure of such information for the aforementioned purpose⁷.

The above was explained to I&APs in the correspondence issued for the release of the DSR and will be maintained on all remaining correspondence sent throughout the EIA process. The stakeholders have also been given an opportunity to send an email to the EAP if they wish to opt out of communications on the proposed project.

Appendix D of this DSR includes a copy of the latest I&AP Database, which includes all I&APs registered to receive correspondence on this proposed project.

4.4.6 Site Notices

One specific mechanism of informing I&APs of the proposed projects includes the placement of site notice boards. Regulation 41 (2) (a) of the 2014 NEMA EIA Regulations (as amended) requires that a notice board providing information on the project and Scoping and EIA Process is fixed at a place that is conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of the site where the application will be undertaken or any alternative site.

Notice boards in the Afrikaans and English languages were placed at the key affected farm portions on which the proposed projects will be constructed, as well as at other strategic locations, such as well-known retail, public and/or government facilities in the wider region, as indicated in Table 4.4.

Table 4.4: Site Notice Board Placement for the Proposed Project

#	Locality/ Description	Coordinates
1	Entrance at the Central Karoo District Municipality offices, Beaufort West	S32° 20' 55.0" E22° 34' 57.6"
2	Entrance at the Beaufort West Local Municipality offices, Beaufort West	S32° 21' 00.7" E22° 35' 00.4"
3	Entrance at the Beaufort West Public Library, Beaufort West	S32° 21' 01.3" E22° 35' 00.4"

⁷ CSIR Privacy Notice. Website: <https://www.csir.co.za/csir-privacy-notice>

#	Locality/ Description	Coordinates
4	At the Fraserburg turn off from the R381 to the clusters	S32° 6' 40.9" E22° 26' 55.9"
5	Entrance gate to the southern cluster (Beau Valley WEF)	S32°6'44.71" E22°13'40.1"
6	Entrance gate to Matjiesfontein and Moddersdrift to the southern cluster (Beau Valley WEF)	S32°3'19.81" E22°21'15.33"

Refer to Appendix E.1 of this Scoping Report for a copy of the content and proof of placement of the site notice boards. The site notice boards include the following, in compliance with Regulation 41 (3) of the 2014 NEMA EIA Regulations (as amended):

- The details of the proposed project that is subjected to public participation;
- Explanation that a Scoping and EIA procedure is applicable to the proposed project;
- The nature and location of the proposed project;
- Details on where further information on the proposed project can be obtained; and
- The manner in which and the person to whom representations in respect of the proposed projects can be made.

4.4.7 Newspaper Advertisements

Regulation 41 (2) (c) of the 2014 NEMA EIA Regulations (as amended) requires the placement of a newspaper advertisement in one local newspaper or any official Gazette that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of the NEMA EIA Regulations.

In line with this, in order to notify and inform the public of the proposed project, to invite I&APs to register on the project database, as well as to inform I&APs of the release of the Scoping Report for comment, the Scoping and EIA Processes was advertised in “*Die Courier*” local newspaper on 1 September 2023, which informed I&APs of the commencement of the 30-day comment period extending from 4 September 2023 to 6 October 2023 (excluding public holidays). The content of the newspaper advertisement complies with Regulation 41 (3) of the 2014 NEMA EIA Regulations (as amended) and also included the details of the project website, from where information available on the proposed project can be downloaded. Refer to Appendix E Part 1 of this Scoping Report for a copy of the content of the newspaper advertisement. Proof of placement of the newspaper advertisement on 1 September 2023 is also included in Appendix E Part 1 of this Final Scoping Report.

At this stage, there are no official Gazettes published specifically for the purpose of providing public notice of applications or other submissions made in terms of the 2014 NEMA EIA Regulations (as amended).

4.4.8 Technical Scoping with the Project Proponent and EIA Team

The Scoping Process was designed to incorporate two complementary components: a stakeholder engagement process that includes the relevant authorities and wider I&APs; and a technical process involving the EIA team and the project proponent.

The purpose of the technical scoping process is to draw on the past experience of the EIA team and the project proponent to identify environmental issues and concerns related to the proposed project and confirm that the necessary specialist assessments have been identified. Most of the specialists have worked with the CSIR on several other projects, as well as having experience from EIAs for other renewable energy projects in the Western Cape. The specialists were therefore able to identify issues (as shown in Chapter 6 of this Scoping Report) to be addressed in the EIA Phase based on their experience and knowledge of the area and type of activity. Their inputs have informed the scope and Terms of Reference for the specialist assessments (as included in Chapter 7 of this Scoping Report). The findings of the scoping process with input from the stakeholders and the authorities will inform the specialist assessments, which will only be completed after the 30-day public comment period on the Scoping Report has been finalised.

4.4.9 Scoping Report Phase

In terms of Regulation 41 (6) of GN R326 the section below outlines the PPP for the Scoping Phase of this assessment in order to provide potential I&APs, Stakeholders and Organs of State access to information on the project and the opportunity to comment at the various stages of the assessment process.

4.4.9.1 Review of the Scoping Report

In terms of Regulation 41 (6) of GN R326 the section below outlines the PPP for this assessment in order to provide potential I&APs, Stakeholders and Organs of State access to information on the project and the opportunity to comment at the various stages of the assessment process.

As noted above, the Scoping Reports for the proposed projects were released to I&APs, Stakeholders and Organs of State for a 30-day comment period. The section below summarises the PPP for the review of the Scoping Report.

- **Database Development and Maintenance:** In line with Regulation 41 (2) (b) of GN R326, an initial database of potential I&APs was developed for the Scoping and EIA Process and will be updated throughout the process. Refer to Appendix D of this Scoping Report for a copy of the latest I&AP database that includes all I&APs that have registered.
- **Site Notice Boards:** As noted in Section 4.4.7 above, notice boards have been placed for the proposed project. A copy of the content and proof of placement of the notice boards is included in Appendix E.6 of this Scoping Report.
- **Advertisements to Register Interest:** As noted in Section 4.4.8 above, an advertisement was placed in Afrikaans, English and Xhosa in the local newspaper, “*Die Courier*” on 1 September 2023, notifying I&APs of the commencement of the 30-day comment period for the DSR extending from **4 September 2023 to 6 October 2023**. A copy of the content and proof of placement of the 1 September 2023 newspaper advertisement is included in Appendix E Part 1 of this Scoping Report. Proof of placement of the 1 September 2023 newspaper advertisement for the release of the Scoping Report is also included in Appendix E Part 1 of this FSR.
- **Submission of the Application for EA and Scoping Report to the DFFE:** On 31 August 2023, an Application Form for EA and Scoping Report was submitted to the DFFE via the DFFE Novell S-File System and proof of upload was emailed to the DFFE. Proof of submission of the Scoping Report for comment and Application for EA to the DFFE and proof of upload to

the DFFE Novell S-Filer System, as well as the DFFE EA Application reference number will be included in the FSR.

- **Letter 1 to I&APs (Release of the Scoping Report):** Written notification of the availability of the Draft Scoping Report (i.e., Letter 1) will be sent to all I&APs, stakeholders and Organs of State included on the project database via email, where email addresses are available. This letter will be sent at the commencement of the 30-day review period of the DSR and will include information on the proposed project and notification of the release and availability of the report. Proof of email, as well as copies of the Letter 1 and emails sent will be included in the FSR.
- **Text Messaging:** SMS texts were sent to all I&APs on the database, where cell phone numbers were available, to inform them of the proposed projects and how to access the Scoping Report. The text messages were sent at the start of the public participation period. Proof of text message communication is included Appendix E Part 1 of this FSR.
- **Executive Summaries of the Scoping Report:** Executive Summaries of the Scoping Report will be emailed to I&APs on the database and uploaded to the project website.
- **30-day Comment Period:** As noted above, potential I&APs, including authorities and Organs of State, will be notified via Letter 1, of the 30-day comment and registration period within which to submit comments on the DSR and/or to register on the I&AP database.
- **Broader Networks:** Attempts will be made to contact ward councillor(s) to request the contact information of additional councillors, as well as that of the Rate Payers Association, with the aim of requesting that they send notifications of the projects as well as report availability and executive summaries via their local networks (such as WhatsApp groups, Neighbourhood Watch groups, other social media mechanisms, etc.).
- **Availability of Information:** The Draft Scoping Report was made available for a 30-day comment period, extending from 4 September 2023 to 6 October 2023 (excluding public holidays), and was distributed to ensure access to information on the project and to communicate the Plan of Study for the EIA Phase. The Scoping Report was uploaded to the project website (i.e., <https://www.csir.co.za/environmental-impact-assessment>) for I&APs to access. As a supplementary mechanism, the Scoping Report was also uploaded to other alternative web-platforms (i.e., Google Drive: https://drive.google.com/drive/folders/1KnLLeDW5xZsqrD-Xhl2Y-S3j87JtEtJR?usp=drive_link). If an I&AP cannot/ could not access the report via the project website, via the alternative web-platforms such as Google Drive, and if additional information is required (other than what was provided in the Executive Summaries), then the I&AP could contact the EAP to make an electronic copy available (*where feasibly possible*). Electronic copies of the Draft Scoping Report was delivered on USB flash drives to the Western Cape Department of Agriculture and the National Department of Agriculture, Land Reform and Rural Development: Directorate Land and Soil Management for the Overberg and Central Karoo Districts (see Appendix E Part 1 for proof of deliveries).
- **Comments Received:** A key component of the Scoping and EIA Process is documenting and responding to the comments received from I&APs and the authorities. Copies of all comments received during the 30-day commenting periods for the DSR were incorporated in a Comments and Responses Report (Appendix E Part 2 of this Final Scoping Report), and addressed, as applicable and where relevant, and are included in the FSR. The FSR is being submitted to the DFFE for decision-making in terms of Regulation 21(1) and Regulation 22 of the 2014 EIA Regulations (as amended).

4.4.10 Compilation of the FSR for Submission to the DFFE

Following the 30-day commenting period of the Scoping Report and incorporation of the comments received into the report, the FSR will be submitted to the DFFE in line with Regulation 21 (1) of the 2014 NEMA EIA Regulations (as amended). The report will be submitted electronically to the DFFE via the Novell S-Filer system, as recommended by the DFFE since June 2020.

In line with best practice, I&APs on the project database will be notified via Letter 2 via email (where email addresses are available) of the submission of the FSR to the DFFE for decision-making. To ensure ongoing access to information, a copy of the FSR that will be submitted for decision-making, will be placed on the project website (i.e., <https://www.csir.co.za/environmental-impact-assessment>).

The FSR that will be submitted for decision-making to the DFFE will include proof of the PPP that was undertaken to inform Organs of State, Stakeholders and I&APs of the availability of the Scoping Report for the 30-day review (as explained above).

The DFFE will have 43 days (from receipt of the FSR) to either a) accept the scoping report, with or without conditions, and advise the applicant to proceed with the tasks contemplated in the plan of study for EIA; or b) refuse EA (respectively in line with Regulation 22 (a) and (b) of the 2014 NEMA EIA Regulations, as amended). In line with best practice, I&APs on the project database will be notified via Letter 3 via email (where email addresses are available) of the outcome of the decision-making on the FSR and commencement of the EIA Phase.

This step marks the end of the PPP for the Scoping Phase. The PPP for the subsequent EIA Phase is presented in the Plan of Study for the EIA i.e., Chapter 7 of this Scoping Report.

4.5 Schedule for the Scoping and EIA Processes

The proposed schedule for the Scoping and EIA Processes based on the legislated EIA timeframes, is presented in Table 4.5. It should be noted that this schedule could be revised during the EIA Processes, depending on factors such as the time required for decisions from authorities.

Table 4.5: Provisional Schedule for the proposed project

Key Milestones	Proposed Timeframe
Appointment of Specialists	December 2022 to January 2023
Project Initiation and Pre-Application Meeting with the Department of Forestry, Fisheries and the Environment (DFFE)	7 February 2023
Approval of Notes of the Pre-Application Meeting	28 February 2023
Specialist Inputs to the Draft Scoping Report (DSR)	March to August 2023
Prepare DSR and Plan of Study for EIA including specialist inputs (dated February 2023)	June to August 2023

Key Milestones	Proposed Timeframe
Release DSR for 30-day comment period	4 September to 6 October 2023
Submit Final Scoping Report to the DFFE for Decision-Making	October 2023
DFFE to issue a Decision on the Final Scoping Report	November 2023
Prepare Draft EIA Report	November 2023 to February 2024
Release Draft EIA Report for the for 30-day comment period	February to March 2024
Submit Final EIA Report to DFFE for Decision-Making	April 2024
DFFE Decision-Making on the Final EIA Report and issue of Decision (i.e. grant or refuse EA): 107 days	April 2024 to July 2024
EAP to Notify I&APs of Decisions (14 days)	Within 14 days of EA being issued

Scoping and Environmental Impact
Assessment for the proposed development
of the Beau Valley Wind Energy Facility and
associated infrastructure near Beaufort West
in the Western Cape



SCOPING REPORT

CHAPTER 5: Project Alternatives



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5. APPROACH TO THE ASSESSMENT OF ALTERNATIVES

This chapter discusses the alternatives that have been considered as part of the Scoping Phase, as well as the selection process of the preferred alternatives that will be considered and assessed as part of the Environmental Impact Assessment (EIA) Phase. Sections 24(4) (b) (i) and 24(4A) of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) require an Environmental Assessment to include investigation and assessment of impacts associated with alternatives to the proposed project. In addition, Section 24O (1)(b)(iv) also requires that the Competent Authority, when considering an application for EA, takes into account “*where appropriate, any feasible and reasonable alternatives to the activity which is the subject of the application and any feasible and reasonable modifications or changes to the activity that may minimise harm to the environment*”.

Therefore, the assessment of alternatives should, as a minimum, include the following:

- The consideration of the no-go alternative as a baseline scenario;
- A comparison of the reasonable and feasible alternatives; and
- Providing a methodology for the elimination of an alternative.

The 2014 NEMA EIA Regulations (as amended) define “alternatives”, in relation to a proposed activity, “as different means of meeting the general purpose and requirements of the activity, which may include alternatives to the:

- property on which or location where the activity is proposed to be undertaken;
- type of activity to be undertaken;
- design or layout of the activity;
- technology to be used in the activity;
- operational aspects of the activity; and
- includes the option of not implementing the activity”.

Appendix 2 of the 2014 NEMA EIA Regulations (as amended) provides the following objectives, *inter alia*, of the Scoping Process in relation to alternatives:

- To identify and confirm the preferred activity and technology alternative through an identification of impacts and risks and ranking process of such impacts and risks; and
- To identify and confirm the preferred site, through a detailed site selection process, which includes an identification of impacts and risks inclusive of identification of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment.

The Scoping Report is therefore required to provide a full description of the process followed to reach the proposed preferred activity, technology, site and location of the development footprint within the site, including details of all the alternatives considered and the outcome of the site selection matrix. The details presented in this chapter applies to the proposed Beau Valley Wind Energy Facility (WEF) (hereafter referred to as the “proposed project”).

5.1 Assessment of Alternatives

5.1.1 No-go Alternative

The no-go alternative assumes that the proposed project will not go ahead i.e. it is the option of not developing the proposed Beau Valley WEF and associated infrastructure. This alternative would result in no environmental impacts on the site or surrounding local area as a result of the proposed project. It provides the baseline against which other alternatives are compared. The following implications will occur if the “no-go” alternative is implemented (i.e. the proposed project does not proceed):

- No benefits will be derived from the implementation of an additional land-use;
- No additional power will be generated or supplied through means of renewable energy resources by the proposed project at this location;
- The “no go” alternative will not contribute to and assist the government in achieving its renewable energy target of 26 630 MW total installed capacity by 2030 (for Wind, Solar PV and Concentrated Solar Power (CSP)) (Integrated Resource Plan (IRP), 2019);
- Electricity generation will remain constant (i.e. no renewable energy generation will occur on the site for the proposed project) and as a result, the local economy in terms of surrounding communities and towns within the local municipality will not be diversified, while existing electricity generation sources nationally will age and degrade over time, with maintenance requirements potentially leading to outages;
- 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 realised;
- There will be no opportunity for additional employment in an area, where job creation is identified as a key priority;
- The local economic benefits associated with the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) will not be realised, and socio-economic contribution payments into the local community fiscus will not be realised;
- The development of solar PV facilities instead of coal fired power stations can directly contribute to South Africa’s response to climate mitigation; and
- Wind and solar energy are the cheapest source of electricity in South Africa, as seen in the REIPPPP Bidding Window 5 Preferred Bidder announcement on 28 October 2021. The development of the proposed Solar PV Facilities can contribute to the competitive nature of the REIPPPP to drive prices down even further to ensure that South Africans have access to affordable yet clean electricity.

Converse to the above, the following benefits could occur if the “no-go” alternative is implemented:

- Only the agricultural land use (livestock farming) will remain;
- No vegetation or protected species (flora) will be removed or disturbed during the development of the proposed project;
- No aquatic resources will be impacted upon during the construction and operation of the proposed project;
- No destruction of habitat will occur;

- No change to the current landscape will occur (i.e. the visual character of the area will remain unchanged);
- No heritage features will be impacted on;
- No noise impacts associated with construction activities will occur;
- No avifaunal impacts will occur due to the establishment of the project;
- No additional traffic will be generated; and
- No additional water use will be required.

The no-go alternative will be considered further by the specialists during the EIA Phase. Some of the specialists have discussed the no-go alternative in the current Scoping Level Specialist Assessments captured in Appendix G of this Scoping Report.

The no-go alternative means no addition of renewable energy, which means further reliance on fossil fuels that will continue to have a negative environmental impact. While the no-go alternative i.e. not developing the Beau Valley WEF will not result in any negative environmental impacts in the area, it will also not have any positive community development or socio-economic benefits. In addition, it will not assist government in addressing climate change, reaching its set targets for renewable energy, nor will it assist in supplying the increasing electricity demand within the country. **Hence, the no-go alternative is not the preferred alternative, nor is it a reasonable and feasible alternative to be considered in this Scoping Process.**

5.1.2 Land-Use Alternatives

According to the Agricultural Compliance Statements for the WEF, included in Appendix G.1 of the Scoping Report, respectively, the arid climate is the limiting factor for land capability, regardless of the soil capability and terrain. Moisture availability is insufficient for crop production without irrigation and the potential agricultural land use of the study area is therefore limited to low carrying capacity grazing. The farm portions forming part of the study area are located in a sheep and cattle farming region. Grazing capacity of the study area is fairly low at 28 to 30 hectares (ha) per large stock unit.

The Agricultural Site Sensitivity Verification for the Beau Valley WEF (Appendix G.1) verifies that the proposed site is classified as low to medium agricultural sensitivity with a predominant land capability value of 4 to 5, which is in line with the climate limitations that make the site unsuitable for dryland crop production.

The Agricultural Site Sensitivity Verification for the 132 kV EGI corridor confirms that the agricultural sensitivity of the power line corridor is largely irrelevant as the 132 kV EGI development has insignificant agricultural impact because all agricultural activities that are viable in this environment, can continue completely unhindered underneath the powerline and there will therefore be negligible loss of agricultural production potential.

Additionally, there is no scarcity of such agricultural land in South Africa and its conservation for agricultural production is not therefore a priority. The proposed project offers positive impact on agriculture by way of improved financial security for farming operations, as well as security benefits against stock theft and other crime.

Hence, the existing agricultural land use is not a preferred alternative.

5.1.3 Renewable Energy Alternatives

In terms of the type of activity, this relates to the generation of electricity from a renewable energy source, and in this particular case, from **wind** resources. As indicated in Chapter 1 of this Scoping Report, the Project Developer, Genesis Eco-Energy Developments (Pty) Ltd, focuses on solar, wind and hybrid renewable energy developments and works with landowners, technology providers, regulators and investors to source and develop renewable energy projects. Therefore, the **generation of electricity from a renewable energy source** was the only activity considered by the Project Developer and Project Applicant, and thus considered in this Scoping Report. **No other activity types were considered or deemed appropriate based on the expertise of the Project Applicant.**

Where the “activity” is the generation of electricity from a renewable energy source, possible alternatives that could potentially be considered include Biomass, Hydro Energy, Wind Energy and Solar Energy. The study area is attractive for renewable energy facilities (REFs) due to the significant solar and wind energy resources. As a result, the Project Developer is investigating and is proposing both solar and wind energy facilities as part of its package of projects in the area, consisting of two SEFs and seven WEFs. Biomass and Hydro energy facilities are deemed to be unsuitable technologies in the study area, and potential impacts of each, are discussed below.

5.1.3.1 Biomass Energy

The proposed project study area does not contain an abundant or sustainable supply of biomass. As indicated in Figure 5.1, the proposed project area has less than 5 000 t/a annual forestry residue, which is the lowest for this category. Therefore, the study area does not have any biomass energy potential.

Therefore, the implementation of a Biomass Energy Facility within the study area is not considered to be a reasonable and feasible alternative to be assessed as part of this Scoping and EIA Process.

5.1.3.2 Hydro Energy

The proposed project study area does not contain any large inland water bodies, which excludes the possibility of renewable energy from small- or large-scale hydro energy generation. In terms of macroscale hydropower potential (Figure 5.1), the study area falls within an area classified as “Not Suitable” (i.e. less than 1 000 kWh/year).

Therefore, the implementation of a Hydro Energy Facility within the study area is not considered to be a reasonable and feasible alternative to be assessed as part of this Scoping and EIA Process.

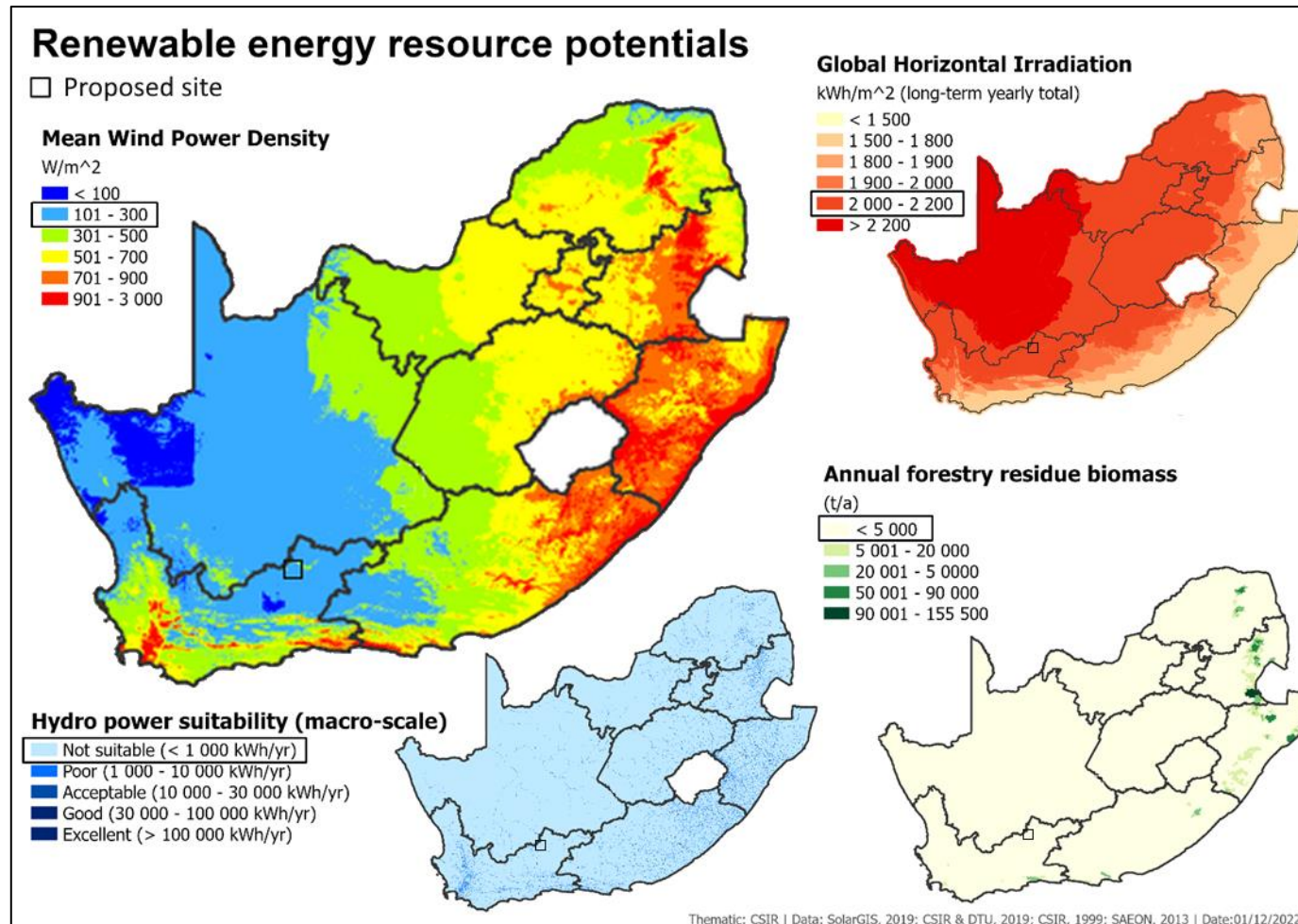


Figure 5.1: Solar Resource Availability / Global Horizontal Irradiation (kWh/m²); Annual Mean Wind Power Density (W/m²); Hydropower Potential (kWh/year); and Biomass Potential in terms of Annual Forestry Residue (t/a) for South Africa. The proposed project location is indicated by the black square.

5.1.3.3 Wind and Solar Energy

5.1.3.3.1 National Planning: IRP 2019

The 2019 IRP was published in Government Gazette (GG) 42784, Government Notice (GN) 1360 on 18 October 2019 for the period 2019 to 2030. As indicated in Figure 5.2 for the projection to 2030, coal makes up approximately 43 % of the total installed capacity, whereas Wind and Solar PV respectively make up 23 % and 10 % (Table 5, Page 42 of the IRP 2019 published in GG 42784).

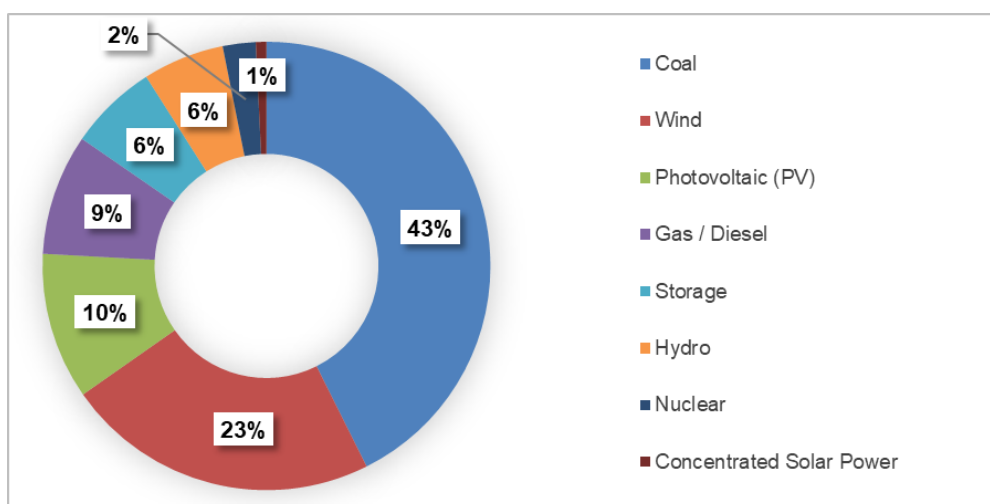


Figure 5.2: Total Installed Capacity for 2030 (% of MW) in the IRP of 2019.

The 2019 IRP proposes to secure 26 630 MW of renewable energy capacity by 2030 (for Wind, Solar PV and CSP). This amount excludes Hydropower and Storage. Of this total, 1 474 MW of Solar PV, 1 980 MW of Wind and 300 MW of CSP is already installed capacity. In addition, of the 26 630 MW, approximately 814 MW of Solar PV, 1 362 of Wind and 300 MW of CSP is committed or already contracted capacity. Furthermore, of the 26 630 MW total, 6 000 MW is allocated to Solar PV, and 14 400 MW is allocated to Wind as new additional capacity. Refer to Figure 5.3 for additional information.

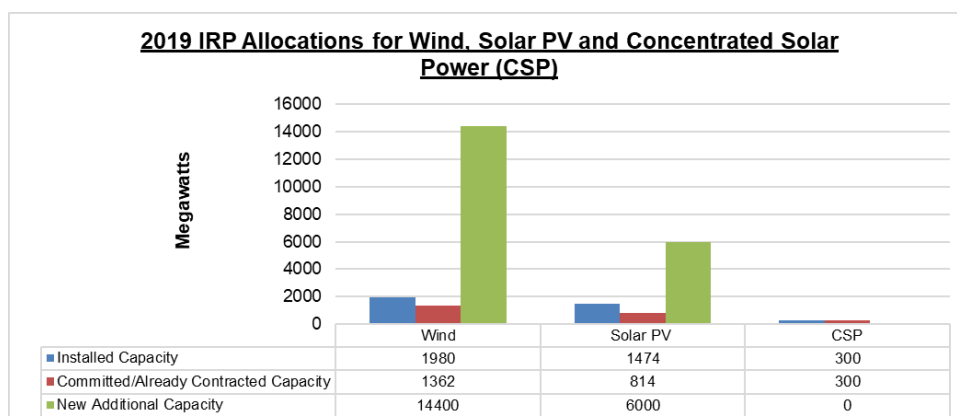


Figure 5.3: 2019 IRP Allocations for Wind, Solar and CSP in MW.

As part of the rollout of renewable energy in the country, the Department of Mineral Resources and Energy (DMRE) developed a bidding process for the procurement of a set amount (MW) of renewable energy in accordance with the IRP from Independent Power Producers (IPPs). The REIPPPP was launched in 2011 to implement the vision of the IRP and it included several bidding rounds (called “Bidding Windows”). To date, Bidding Windows 1, 2, 3, 3.5, 4, 5 and 6 have been announced.

On 18 August 2015, an additional procurement target of 6 300 MW to be generated from renewable energy sources was added to the REIPPPP for the years 2021 - 2025, as published in GN 733, GG 39111. Of this, the additional target allocated for solar PV was 2 200 MW and the additional target allocated for onshore wind was 3040 MW.

The preferred Bid Window 5 bidders amounted to approximately 1 608 MW and 975 MW which will be respectively procured from 12 wind projects and 13 Solar PV projects (DMRE, 2022a¹). In Bid Window 5, the preferred bidders provided an average tariff of 50 c/kWh for wind and of 43 c/kWh for solar PV. In Bid Window 6, the 5 Preferred Bidders, totalling 860 MW of solar PV, provided an average tariff of 49 c/kWh for solar PV (DMRE, 2022a²). This is a considerable reduction in tariff from Bid Window 4 in November 2015 where the tariff provided for wind and solar PV were both 78 c/kWh. This confirms the crucial role that renewable energy is playing in being the lowest cost energy alternative in South Africa, while supporting the decarbonisation of the power system and ensuring that electricity is cost-effective and sustainable.

According to the IPP Office, in a presentation made at the Bid Window 6 Bidders’ Conference on 7 July 2022 (IPP Office, 2022b³), as of March 2022 (excluding Bid Window 5 statistics), the DMRE had selected 92 Preferred Bidders, with a total combined electricity capacity of 6 323 MW procured, of which 5 826 MW is already operational from 87 IPPs.

On 7 July 2020, in GG 43509, GN R753, the Minister of Mineral Resources and Energy, in consultation with the National Energy Regulator of South Africa (NERSA), determined that new generation capacity needs to be procured to contribute towards energy security. Specifically, the gazette noted that 2000 MW needs to be procured from a range of energy source technologies in accordance with the short-term risk mitigation capacity allocated for the years 2019 to 2022 (under “other” in the allocation table contained in 2019 IRP). In line with this, the Risk Mitigation IPP Procurement Programme (RMIPPPP) was designed and launched in August 2020 by the DMRE in order to fulfil the GN R753 Ministerial Determination. Bids were submitted by various IPPs on 22 December 2020, and on 18 March 2021, the Minister of Mineral Resources and Energy, announced eight Preferred Bidders selected under the RMIPPPP, totalling 1 845 MW (DMRE,

¹ DMRE (2022a). Media Statement by the DMRE: Signing of an additional three project agreements under the 5th Bid Window of the Renewable Energy Independent Power Producer Programme (REIPPPP BID WINDOW 5), dated 10 November 2022. <https://ipp-projects.co.za/PressCentre> [online]. Accessed November 2022.

² DMRE (2022b). Media Statement by the DMRE: Signing of Preferred Bidder projects under the 5th Bid Window, and announcement of Preferred Bidders under the 6th Bid Window of the REIPPPP, dated 8 December 2022. <https://www.energy.gov.za/files/media/pr/2022/MediaStatement-REIPPPP-BW5-signing-08122022.pdf> [online]. Accessed February 2023.

³ IPP Office (2022b). Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) Bid Window 6 Bidders’ Conference dated 7 July 2022. <https://ipp-projects.co.za/PressCentre> [online]. Accessed August 2022.

2021b⁴). Three additional Preferred Bidder projects were also announced on 1 June 2021 under the RMIPPPP with a combined capacity of 150 MW, resulting in a total of approximately 1 995 MW to be procured under the RMIPPPP (DMRE, 2021c⁵).

As indicated in Chapter 2 of this Scoping Report, the proposed project forms part of a package of 2 SEFs and 7 WEFs, which will each have a generation capacity that ranges from 120 MW to 400 MW, for a total of 2195 MW. It is intended for these projects to be bid under future rounds of the REIPPPP or similar public or private electricity procurement processes, following the issuing of Environmental Authorisations (EAs), should such be granted.

5.1.3.3.2 Solar Energy

In terms of the suitability of solar energy development at this location, the proposed project study area falls within the **second highest** Global Horizontal Irradiation⁶ (GHI) category, relevant to PV installations (Figure 5.1). As indicated in Figure 5.1, the study area has a GHI of 2 000 kWh/m² to 2 200 kWh/m² in terms of the long-term yearly total.

Therefore, this area is deemed as one of the most suitable for the construction and operation of solar energy facilities as opposed to other areas and provinces within South Africa. For example, coastal regions within the Eastern Cape and Western Cape mainly have a lower GHI (shown in the lighter orange shades in Figure 5.1), which is not completely feasible as site alternatives for the proposed project. As indicated in the earlier discussion on the outcomes of Bid Window 5 and Bid Window 6 in October 2021 and December 2022, respectively, solar PV is currently the least cost energy generation option for South Africa. These factors substantiate that use of solar resources in the area is extremely viable and support the development of Solar PV within the proposed project study area.

Solar energy development is therefore a feasible alternative for the proposed site. However, as described in Chapter 2, the proposed Beau Valley WEF forms part of a **hybrid energy system** that is currently being proposed by the Project Developer. This hybrid energy cluster comprises wind and solar energy facilities which will complement one another, and it will harness both the favourable wind and solar energy resources characterising the study area.

5.1.3.3.3 Wind Energy

In order to ensure that a WEF is successful, a reliable wind resource is required. Wind resource is defined in terms of average wind speed and includes Weibull distribution (used to describe wind speed distributions); turbulence, wind direction, and pattern of wind direction (as depicted by a wind rose). These factors are all key considerations used in determining whether a site is suitable for the development of a Wind Energy Facility. A mean wind power density map has been created

⁴ DMRE (2021b). Media Statement: To Announce Preferred Bidders for the Risk Mitigation IPP Procurement Programme (RMIPPPP). <https://www.dmr.gov.za/news-room/post/1894/media-statement-to-announce-preferred-bidders-for-the-risk-mitigation-ipp-procurement-programme-rmipppp> [online]. Accessed November 2021.

⁵ DMRE (2021c). Media Statement: Department of Mineral Resources and Energy Announces Three Additional Preferred Bidders Appointed under the Risk Mitigation Independent Power Producer Procurement Programme (RMIPPPP). <https://www.ipp-rm.co.za/> [online]. Accessed November 2021.

⁶ Global Horizontal Irradiance is the total amount of shortwave radiation received from above by a surface horizontal to the ground.

(CSIR, 2018), which is not related to any specific turbine type and demonstrates the wind resource of the country. The mean wind power density map shows that the project study area falls within an area of approximately 101 – 300 W/m² (Figure 5.1).

On-site wind measuring meteorological (met) masts have been installed on site to provide wind- and meteorological measurements in order to verify the presence of the wind resource. The process of collecting on-site wind data is necessary to confirm both the presence of the wind resource on-site and the bankable viability of the proposed project. The provision of at least 12 months' on-site wind monitoring data is also a requirement of the REIPPPP. Data received from consistent measurements for a year indicated that the wind resource at the proposed project site is more than adequate for the development of a WEF.

Wind energy development is therefore a feasible alternative for the proposed site. However, as described in Chapter 2, the proposed Beau Valley WEF forms part of a **hybrid energy system** that is currently being proposed by the Project Developer. This hybrid energy cluster comprises wind and solar energy facilities which will complement one another, and it will harness both the favourable wind and solar energy resources characterising the study area.

5.1.3.4 Summary of the Renewable Energy Alternatives

Table 5.1 presents a summary and an evaluation matrix for the possible renewable energy alternatives with regards to resource suitability and availability, and potential risks and impacts.

Table 5.1: Summary of Evaluation of Potential Risks and Impacts for Renewable Energy Alternatives

Type of Renewable Energy Alternative	Are suitable resources available at the proposed project site?	Main Potential Impacts and Risks	Is this the preferred Alternative?
Biomass Energy	No – not suitable i.e. less than 5 000 t/a annual forestry residue.	- Significant Waste Generation with the potential need for a Waste Management Licence; and - Air Emissions with the potential need for an Atmospheric Emissions Licence.	No
Hydro Energy	No – “Not Suitable” (i.e. less than 1 000 kWh/year)	- Significant impacts on aquatic biodiversity and hydrology of the affected river system; - Water Use Licence would be required for the establishment of an in-stream hydropower development; and - Long lead times would be required for the various permits needed for such a development.	No
Solar Energy	Yes – 2 000 - 2 200 kWh/m². Forms part of the hybrid (PV and Wind) energy cluster proposed by the Project Developer.	- Visual impacts as a result of construction activities and the PV panels during operation; - Noise generation as a result of construction activities; - Loss of agricultural land (i.e. grazing); - Impacts on heritage resources (i.e. archaeology and palaeontology); - Impacts on the water balance as a result of water required for panel cleaning; and - Impacts on avifauna, aquatic ecology and terrestrial ecology.	No (But forms part of the hybrid (PV and Wind) energy cluster proposed by the Project Developer)

Type of Renewable Energy Alternative	Are suitable resources available at the proposed project site?	Main Potential Impacts and Risks	Is this the preferred Alternative?
Wind Energy	Yes, 101 – 300 W/m².	- Visual impacts as a result of construction activities and turbines during operation; - Noise generation as a result of construction activities and turbines during operation; - Bird and bat collisions during the operational phase; - More restrictive buffers due to presence of Verreaux's Eagle in the wider study area (which were recorded during the site monitoring); and - Impacts on avifauna, aquatic ecology and terrestrial ecology.	Yes

5.1.4 Site Alternatives

As per the requirements listed within Appendix 2 – [(1) (d)] and [(2) (1) (g) (ix)] of the 2014 NEMA EIA Regulations (as amended), a site selection matrix should be provided to show how the preferred site was determined through a site selection process. Within this context, it is understood that the “site” referred to in the Regulations are the farms or land portions earmarked for the development of the proposed project. This is essentially the proposed project study area, which consists of farm portions indicated in Table 5.2.

Table 5.2: Farm portions forming the study area

FARM PORTION	SG CODE	FARM AREA (ha)	WEF	OHPL
Doornboomfontyn RE/89	C00900000000008900000	5 758	X	
Doornboomfontyn 1/89	C009000000000089000001	2 597	X	X
Matjesfontein Farm No. 412	C009000000000041200000	22 936		X

The preferred site (i.e. study area) was strategically selected by the Project Developer based on various factors and detailed research, as noted below:

- As an initial step, the Project Developer undertook internal research, exploration work, and a desktop feasibility analysis (based on the grid connection options, solar resource and land availability) in order to identify the preferred site.
- The Project Developer then consulted the National Department of Forestry, Fisheries and the Environment (DFFE) Screening Tool and other available datasets, such as the Western Cape Critical Biodiversity Area (CBA) map, and the South African National Biodiversity Institute (SANBI) Biodiversity GIS (BGIS) system, as well as the Endangered Wildlife Trust (EWT) No-Go Screening Tool, in order to identify desktop environmental sensitivities and to determine if there are any fatal flaws and concerns. The findings indicated that the study area is generally developable.
- The Project Developer then consulted with the owners of the farm portions forming the study area to obtain consent to develop the proposed project, and to also identify any areas where development must be excluded based on the requirements of the landowners. These

landowner exclusion zones were then acknowledged and implemented, which influenced the site selection process.

- The study area falls inside the Central Strategic Transmission Corridor that was gazetted in GN 113 of 16 February 2018, which allows for streamlining of the Environmental Assessment for Electrical Grid Infrastructure (EGI) development within the corridor, whereby a Basic Assessment and 57 days decision-making can be followed, instead of a full Scoping and EIA with 107 days decision-making. In addition, the EGI Standard was published on 27 July 2022, in GG 47095; GN 2313, which allows for the exclusion from an Environmental Assessment for EGI development within the gazetted corridors in low and medium sensitivity areas. Should the EGI Standard apply, then the development for the EGI components of the project would only be subjected to a registration process with a decision-making of 30 days. This expedited timeframe was considered by the Project Developer, and therefore obtaining a site within any of the gazetted Strategic Transmission Corridors was focused on.
- A key priority for the Project Developer was to find a site which has favourable wind and solar resources for the development of a hybrid renewable energy system comprising of WEFs and SEFs. The mean wind power density map shows that the project study area falls within an area of approximately 101 – 300 W/m² (Figure 5.1). In terms of the suitability of solar energy development at this location, the proposed project study area falls within the second highest GHI category of 2 000 kWh/m² to 2 200 kWh/m² in terms of the long-term yearly total. The site proposed for the Beau Valley WEF and adjacent farm portions therefore meets the requirements for the hybrid REF.
- The Project Developer also considered the availability of main transmission grid capacity to facilitate the evacuation of the energy generated by the proposed REFs into the national electrical transmission grid. Through consultation with Eskom, the Project Developer has determined that one of two 400 kV grid connection opportunities exist which includes either a connection to the proposed Nuweveld Main Transmission Substation (MTS), the existing Eskom Droërivier MTS, or the future proposed Eskom Klipkraal MTS. A separate environmental assessment process will be undertaken for the development of the 400 kV power line and associated EGI. This is considered a significant site selection consideration for the Project Developer, as grid connection is an essential factor.
- It was also important for the site to be located outside of the Karoo Central Astronomy Advantage Area (KCAAA) distance sensitivity zones so that there are no unacceptable impacts on the Square Kilometre Array (SKA), which could potentially be a fatal flaw or require significant investment in Radio Frequency Interference and Electromagnetic Control studies to be undertaken.

At a local level, the affected farm portions for the development of the proposed project were selected based on a combination of the factors listed above. Furthermore, from an impact and risk assessment perspective, the implementation of the proposed project as the **preferred site** will most likely result in fewer risks in comparison to its implementation at alternative sites within the Western Cape (i.e. regions with similar solar radiation and wind resource levels), based on the following points:

- There is no guarantee that the current land use of alternative sites will be flexible in terms of development potential, for example, the agricultural potential at the alternative sites might be higher and of greater significance.
- There is no guarantee of the willingness of other landowners to allow the implementation of a REF on their land and if the landowners strongly object, then the project will not be feasible.
- There is no guarantee that other sites will be located close to existing or proposed EGI to enable connection to the national grid. The further away a project is from the grid, the higher

the potential for significant environmental and economic impacts associated with the length of the transmission power line.

5.1.4.1 Site Specific Considerations

As indicated above, the preferred site for the proposed project extends over the farm portions indicated in Table 5.2.

On a site specific level, the preferred site was deemed suitable due to all the site selection factors (such as land availability, environmental sensitivities, irradiation levels, distance to the national grid, site accessibility, topography, current land use and landowner willingness) being favourable. The site selection criteria considered by the Project Developer are discussed in detail below in Table 5.3.

Table 5.3: Site selection factors and suitability of the preferred site for the development of the proposed project

FACTOR	SUITABILITY OF THE PREFERRED SITE
Land Availability	The farm portions comprising the preferred site are of a suitable size for the proposed project. The land available for the development of all the proposed projects is approximately 8 355 ha in extent. Although this total area was assessed by the specialists during the site verifications and Scoping Phase and will be further assessed during the EIA Phase, only approximately 50 ha will be required for the permanent development footprint of the proposed Beau Valley WEF and its associated infrastructure. The permanent development footprint will be revised during the EIA phase following the scoping level specialist sensitivity input.
Environmental Sensitivity	Although the preferred site for the proposed project does contain environmental features that need to be avoided due to very high or high environmental sensitivity, as described in Chapter 3 and Appendix G of this Scoping Report, following these exclusions sufficient suitable land is still available to ensure the development feasibility of the project (see Section 5.1.5 below).
Irradiation Levels	The availability of the solar resource is the main driver of project viability. The project site was identified by the Project Developer through a desktop analysis based on the estimation of the solar energy resource, and other factors. This viable solar resource ensures the best value for money is gained from the project, allowing for competitive pricing and maximum generation potential, with the resulting direct and indirect benefits for the South African economy. The study area has a GHI of 2 000 to 2 200 kWh/m ² in terms of the long-term yearly total.
Distance to and availability of the Grid	GEED consulted with Eskom to formulate connection options for the GEED Renewable Energy Cluster projects. Following the inputs and recommendations from Eskom, two power evacuation options were proposed. These options take into consideration the status of the RedCap power lines, as well as the lack of clarity surrounding Eskom's future plans for the area. Through consultation with Eskom, the Project Developer has determined that one of two 400 kV grid connection opportunities exist which includes: - Option 1: Power evacuated via 400 kV OHPL from GEED collector sub-station (SS) to the proposed Nuweveld Main Transmission Substation (MTS) - Option 2: Power evacuated from GEED collector SS via 400 kV Loop-in Loop-out (LIL) extension of Eskom proposed 400 kV OHPL between proposed Nuweveld MTS and the existing Eskom Droërivier MTS. - Option 3: Power evacuated via 400 kV OHPL from GEED collector sub-station (SS) to the future proposed Eskom Klipkraal Main Transmission Substation (MTS)

FACTOR	SUITABILITY OF THE PREFERRED SITE
	A separate environmental assessment process will be undertaken for the development of the 400 kV power line, GEED collector substation and associated EGI.
Site Accessibility	The proposed project site can be accessed via the following roads: ▪ Divisional Road 2312 (DR02312); ▪ Trunk Road 5801 (TR05801); and ▪ Trunk Road 7301 (TR07301). Refer to the Traffic Impact Assessment (Appendix G.9 of the Scoping Report) and Chapter 2 of the Scoping Report for additional information on the route options per project. Some of the existing intersections along the above roads may need to be widened to accommodate the turning movement of the trucks. Exact specifications of the widening will be confirmed as the EIA progresses. Internal service roads will also be constructed within the footprint of the PV facility. The internal roads are expected to be composed of gravel or will be paved and will extend approximately 6 m wide. An up to 15 m wide road corridor may be temporarily impacted during construction and rehabilitated to allow for a permanent ~6 m road surface after construction.
Topography	The proposed site lies on the plateau, north of the Great Escarpment. The proposed development site itself is located at an average elevation of 1 750 m a.s.l, comprising a wide flat area surrounded by hills and drained by small watercourses. The overall terrain morphological description of the southern portion of the study area is steep slopes of koppies, butts, mesas, while the northern portion is a more dissected landscape associated with the tributaries of the upper catchment of the Leeu River. The site is mostly underlain by flat lying mudstones and sandstones of the Permian-aged Teekloof Formation of the Beaufort Group, which have been intruded by Jurassic-aged horizontal dolerite lopoliths and subvertical dolerite dykes. These rocks are in-turn overlain by quaternary-aged partially calcretised alluvium deposits.
Current Land Use	Agriculture (mainly low-density livestock grazing)
Landowner Willingness	All affected landowners have signed letters of consent for the use of the land for the proposed project (should an EA be granted). This is considered an important aspect of the proposed project in terms of its viability (i.e. this will limit potential appeals during the decision-making process, as the landowner is willing and supportive of the proposed project being undertaken on the affected farm portions).

Furthermore, the proposed project forms part of a large cluster of 9 REF projects (2 SEFs and 7 WEFs). The main determining points for the Project Developer was to find suitable, developable land in one contiguous block to (i) optimize design, (ii) minimize construction and operational costs, and (iii) minimize sprawling development and limit the impact footprints. In addition, the proximity to the proposed Nuweveld MTS, the existing Eskom Droërvier MTS and the future proposed Eskom Klipkraal MTS, as well as existing Eskom 400 kV power lines, was also a major determinant for identifying suitable sites for the proposed development.

In order to submit a bid in terms of the REIPPPP, the proponent is required to have obtained an EA in terms of the EIA Regulations as well as several additional authorisations or consents. It is important to note that the National Department of Environmental Affairs (DEA) in discussion with the Department of Energy (DoE) (now respectively operating as the DFFE and DMRE), was mandated by MinMec to commission a Strategic Environmental Assessment (SEA) to identify the areas in South Africa that are of strategic importance for Wind and Solar PV development. The

Phase 1 Wind and Solar PV SEA⁷ was completed in 2015, and was in support of the Strategic Infrastructure Plan (SIP) 8, which focuses on the promotion of green energy in South Africa. Similarly, the Phase 2 Wind and Solar SEA was commissioned in 2017 and completed in 2019. The SEA aimed to identify strategic geographical areas best suited for the roll-out of large-scale wind and solar PV energy projects, referred to as Renewable Energy Development Zones (REDZs). Through the identification of the REDZs, the key objective of the SEA was to enable strategic planning for the development of large-scale wind and solar PV energy facilities in a manner that avoids or minimises significant negative impact on the environment while being commercially attractive and yielding the highest possible social and economic benefit to the country – for example through strategic investment to lower the cost and reduce timeframes of grid access. Following the completion of the Phase 1 Wind and Solar SEA, eight REDZs were gazetted in February 2018 in GN 114 by the Minister of Environmental Affairs. In addition, following the completion of the Phase 2 Wind and Solar SEA, three REDZs were gazetted in February 2021 in GN 144 by the Minister of Forestry, Fisheries and the Environment.

The proposed projects are located approximately between 0 and 6 km away from the Beaufort West REDZ, i.e. either directly adjacent or in close vicinity to the REDZ. While the proposed project is not located within the REDZ, it still indeed supports the development of a large-scale renewable energy project at the proposed location. The proposed project is linked to the national planning vision for Renewable Energy development in South Africa.

Given the site selection requirements associated with holistic hybrid energy clusters and the suitability of the land available on the **preferred site**, **no other site alternatives were considered as part of this Scoping and EIA Process. Therefore, the site is deemed feasible and selected as the preferred site.**

5.1.5 Location Alternatives – Development Footprint within the Preferred Site

The strategic process followed to reach the preferred site and to consider various development footprints (or location alternatives) within the preferred site are discussed in this section and illustrated in Figure 5.4. The approach followed is to use environmental and social constraints to avoid sensitive features, thus applying mitigation hierarchy thinking. This approach replaces the need to rank alternative sites and locations, as it leads to the selection of the least sensitive development footprint.

Once the preferred site was identified, the Project Developer then determined the **Original Scoping Buildable Areas** based on the high-level environmental screening. Following this, the Environmental Assessment Practitioner (CSIR) and Specialists were appointed by the Project Developer to undertake the Scoping and EIA Processes for the Beau Valley WEF and the complement of REFs forming part of the GEED renewable energy cluster.

The specialists then undertook the Scoping Level Specialist Assessments (included in Appendix G of this Scoping Report), and site sensitivity verifications, where necessary. The specialists assessed the full extent of the preferred site for the Beau Valley WEF (i.e. approximately 2 597

⁷ More information on the SEA can be accessed at <https://redzs.csir.co.za>

ha), which serves as the Study Area for this Scoping and EIA Process. The specialists also provided feedback on the Original Scoping Buildable Areas. The Scoping Level Specialist Assessments resulted in the determination and verification of environmental sensitivities present on the preferred site.

Based on the findings of the Scoping Level Specialist Assessments, the **Original Scoping Buildable Areas** were revised in order to avoid the sensitivities identified. This resulted in the identification of the **Revised Scoping Buildable Areas**.

Based on these Scoping Level Specialist Assessments, combined environmental feature and sensitivity maps have been produced (included as Chapter 3 and Chapter 7 of this Scoping Report). These maps show the identified environmental features and sensitivities such as terrestrial biodiversity, aquatic features, avifauna, heritage, visual, and geohydrological features present within the study area.

The no-go or very highly sensitive environmental features found within the preferred site, as described in the Scoping Level Specialist Assessments (Appendix G), and discussed in Chapter 3 of this Scoping Report, are able to be avoided by the location, layout and design of the proposed project. Following the exclusion of the required areas, sufficient developable area is still available on site which does not compromise the current ecological integrity of the site. The current layout and **Revised Scoping Buildable Areas** are thus a culmination of extensive technical, economic and environmental planning.

The layout or location of the development footprint of the proposed project will be refined during the EIA Phase.

It must be re-iterated that a strategic site, location and development footprint identification process has been followed, where the selection is informed by the environmental constraints identified through screening. This is based on the mitigation hierarchy approach of firstly trying to avoid impacts through careful siting. Therefore, it must be noted that different site, location or development footprint alternatives are not ranked, but rather a strategic process is followed where sensitive features are screened out in order to reach the preferred location or development footprint within the preferred site.

5.1.6 Technology Alternatives

As indicated in Chapter 2 of this Scoping Report, Lithium-Ion Battery Energy Storage Systems (BESS) and Redox Flow BESS are being considered for the proposed project. For Redox Flow BESS, various chemical compositions may be considered during the Scoping Phase, such as Vanadium. Refer to Appendix G.10 of this Scoping Report for a High-Level Safety, Health and Environment Risk Assessment Report, which provides high level information on the safety, health and environmental risks of the BESS technologies being considered. Table 5.4 provides high level advantages and disadvantages of the two technologies.

Table 5.4: Advantages and disadvantages associated with the BESS technologies being considered for the proposed project (Sources: Parsons, 2017⁸; Zhang *et al.*, 2016⁹)

BESS technologies being considered	Advantages	Disadvantages
<u>Solid State BESS:</u> <u>(1) Lithium-ion and</u> <u>(2) Sodium-ion</u>	- Sealed/containised systems i.e. pre-assembled off site and delivered to site for placement (i.e. carries less potential risk to the environment in terms of spillages). Hence, they are easier to install and will not likely need many permanent staff. - Reduced risk of spillage as storage of large quantities of electrolyte is not required.	- Explosions and fires can occur as well as the possibility of generating noxious smoke under these circumstances. This can occur as result of electrolytes mixing when a breach occurs due to: - improper maintenance near operating temperature, - thermal expansion, or - freeze thaw cycles. - Over the long term, these BESS may be more difficult to repurpose / dispose of and may present cumulative long term environmental impacts.
<u>(3) Redox Flow Batteries (RFB)</u>	- RFBs are self-discharging systems therefore generally require little maintenance. However, RFBs are more difficult to install, i.e. formal brick and mortar structures, and will potentially require many permanent staff. - High economic efficiency, for example, Vanadium has a high economic value and can be recycled.	Risk of spillage tends to be higher for RFB as opposed to sealed solid-state BESS as the storage tanks of RFB, may be subjected to leaks or spills during the replacement or blending of the electrolyte, or during transport of the battery to and from site.

Note that all three of these technologies were assessed during the EIA Process, and a motivation is included in Chapter 7 of the Scoping Report to authorise both Lithium-Ion and Sodium-Ion technology types since both were found to be acceptable and preferred during the Scoping Phase.

5.2 Concluding Statement of Preferred Alternatives

As per Appendix 2, Section 2 (1) (g) (xi) of the 2014 NEMA EIA Regulations (as amended), and based on Section 5.1 above, the following alternatives will be taken forward into the EIA Phase for further assessment:

- No-Go Alternative:**

- The no-go alternative assumes that the proposed project will not go ahead i.e. it is the option of not constructing the proposed Beau Valley WEF. This alternative would result in no environmental impacts (positive and negative) on the preferred site or surrounding local area, as a result of the proposed project. It will provide a baseline against which other alternatives will be compared and considered during the EIA

⁸ Parsons, 2017. US Trade and Development Agency. South Africa Energy Storage Technology and Market Assessment. Order Number: TDA-IE201511210. USTDA Activity Number: 2015-11032A. Parsons Job Number: 640368.

⁹ Zhang, X., Tang, Y., Zhang, F., and Lee, C. S., (2016). A novel aluminum-graphite dual-ion battery. Advanced energy materials, 6(11), p.1502588.

Phase. The no-go alternative will be assessed in detail by all the specialists on the project team. **At this Scoping Phase, the no-go alternative is not preferred.**

- **Land-Use Alternative:**

- The current land-use is agriculture, specifically low density small stock grazing. There is no cultivation in the area. The study area has low agricultural sensitivity and is **not deemed feasible to assess further during the EIA Phase**. The proposed project offers some positive impact on agriculture by way of improved financial security for farming operations, as well as wider, societal benefits. The development of the proposed project at the preferred site is more favourable than the agricultural land-use alternative.

- **Type of Activity Alternative:**

- This relates to the generation of electricity from a renewable energy source, and in this particular case, from wind. The generation of electricity from a renewable energy source was the only activity considered by the Project Applicant, and thus considered in this Scoping Report. No other activity types were considered or deemed appropriate based on the expertise of the Project Applicant.

- **Renewable Energy Alternatives:**

- The Project Developer is undertaking Scoping and EIA processes for a holistic renewable energy cluster consisting of both wind and solar energy REFs. In terms of the suitability of WEF development at this location, the proposed project study area falls within the second highest GHI category of 2 000 kWh/m² to 2 200 kWh/m² in terms of the long-term yearly total. The mean wind power density map shows that the project study area falls within an area of approximately 101 – 300 W/m² (Figure 5.1). Local conditions are, therefore, favourable to the complement of renewable energy developments proposed by the Project Developer. Based on the findings of the Avifauna Scoping Level Assessment, the specific site proposed for the Beau Valley WEF outside the 3.7 km turbine exclusion buffer from Verreux's Eagle nests, therefore the proposed site is best suited to WEF development.
- In addition, **Hydro Power and Biomass Energy** are deemed **unsuitable**. These will not be further assessed in the EIA phase.

- **Preferred Site and Development Footprint within the site:**

- The preferred site for the proposed Beau Valley WEF comprises the following farm portions which covers an area of 8 355 ha, which serves as the study area for this Scoping and EIA Process:
 - Portion 1 of Doornboomfontyn Farm Nr. 89;
 - Remaining Extent of Doornboomfontyn Farm Nr. 89.
- The proposed 132 kV overhead power line within the 300 metre wide assessment corridor will extend from
 - Portion 1 of Doornboomfontyn Farm Nr. 89; to
 - Matjesfontein Farm No. 412.
- This led to the identification of the Original Scoping Buildable Areas within the preferred site. Furthermore, a screening and site verification exercise of the study area was undertaken by the specialist team during this Scoping Phase. The Scoping Level

Specialist Assessments are included in Appendix G of this Scoping Report. The findings of the Scoping Level Specialist Assessments were used to determine the Revised Scoping Buildable Areas. The Revised Scoping Buildable Areas avoid the no-go sensitivities identified by the specialists.

- The preferred project layout will be confirmed following the input from the various specialists during the EIA Phase.
- **Technology Alternatives**
 - The following types of BESS technologies will be assessed in the EIA Phase and the preferred alternative will thereafter be selected or both alternatives will be put forward for approval in the EA (should it be granted):
 - Lithium-ion or Sodium-ion BESS; and
 - RFB.

5.3 Summary of Legislative Requirements for the Assessment of Alternatives

As noted in Chapter 1 of this Scoping Report, the 2014 NEMA EIA Regulations (as amended) have certain requirements in terms of the selection of the **proposed preferred activity, site and location of the development footprint within the site**. Table 5.5 below indicates the requirements of the 2014 NEMA EIA Regulations (as amended) in terms of the process leading to the preferred activity, site and development footprint location alternatives. Table 5.5 also includes a response from the EAP showing how the requirements of the 2014 NEMA EIA Regulations (as amended) have been addressed in this report.

Table 5.5: Requirements for the consideration of Alternatives based on the 2014 NEMA EIA Regulations (as amended)

	Section of the EIA Regulations	Requirements for a Scoping Report in terms of Appendix 2 of the 2014 NEMA EIA Regulations (as amended)	Response from EAP
1	Appendix 2 – 2 – 1 – g – (i)	2. (1) A scoping report must contain the information that is necessary for a proper understanding of the process, informing all preferred alternatives, including location alternatives, the scope of the assessment, and the consultation process to be undertaken through the environmental impact assessment process, and must include: (g) a full description of the process followed to reach the proposed preferred activity, site and location of the development footprint within the site, including: (i) details of all the alternatives considered;	Refer to Sections 5.1, 5.2, and 5.3 (i.e. this section) of this chapter which provides a description of the process that led to the identification of the preferred alternatives and which alternatives will be taken further into the EIA Phase for assessment.
2	Appendix 2 – 2 – 1 – g – (ii)	(ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	Refer to Chapter 4 of this Scoping Report and Appendix E, which details the process followed in terms of Public Participation and includes the supporting documentation.
3	Appendix 2 – 2 – 1 – g – (iii)	(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;	A Comments and Responses Report which includes the issues raised by Interested and Affected Parties (I&APs) was documented following the release of the Draft Scoping Report for a 30-day comment period, and is included as Appendix E Part 2 of the Final Scoping Report, and will similarly be included in the Draft EIA Report, and the Final EIA Report.
4	Appendix 2 – 2 – 1 – g – (iv)	(iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Refer to Chapter 3 and Appendix G of this Scoping Report for a description of the environmental sensitivities associated with the preferred site. Section 5.1.4 of this chapter also provides information on environmental attributes that were considered in the selection of the preferred site for the proposed project.
5	Appendix 2 – 2 – 1 – g – (v)	(v) the impacts and risks which have informed the identification of each alternative, including the nature, significance, consequence, extent, duration and probability of such identified impacts, including the degree to which these impacts: (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated;	In terms of the no-go alternative, this is not considered as the preferred alternative, as discussed in Section 5.1.1 of this chapter. The impacts and risks of both adopting and not adopting the no-go alternative have been discussed in this section. Furthermore, this will be unpacked during the EIA Phase. Feedback on the impacts and risks that informed the identification of the preferred activity (i.e. generation of energy from solar resources) is provided in Section 5.1.3 and Section 5.1.4 above. Such feedback relating to

	Section of the EIA Regulations	Requirements for a Scoping Report in terms of Appendix 2 of the 2014 NEMA EIA Regulations (as amended)	Response from EAP
			the preferred site and location of the development footprint within the site is captured in Chapter 6 of this Scoping Report. This chapter includes a high-level assessment of impacts and risks of the proposed project at the preferred site, and it includes a description and assessment of the nature, significance, consequence, extent, duration and probability of the identified impacts for the preferred alternatives, as well as an assessment of the reversibility and irreplaceability of the potential identified impacts, as well as the degree to which the identified impacts can be avoided, managed or mitigated. Furthermore, various technologies for the BESS will be assessed in terms of impacts and risks in the EIA Phase. The preferred alternative will be selected or both alternatives will be put forward for approval in the EA (should it be granted).
6	Appendix 2 – 2 – 1 – g – (vi)	(vi) the methodology used in identifying and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;	Refer to Chapter 7 of this Scoping Report for the impact assessment methodology that was used in the assessment of impacts captured in Chapter 6. The same impact assessment methodology will be used in the EIA Phase and as such has only been mentioned once in the Scoping Report.
7	Appendix 2 – 2 – 1 – g – (vii)	(vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Feedback on the impacts and risks that informed the identification of the preferred activity (i.e. generation of energy from solar resources) is provided in Section 5.1.3 and Section 5.1.4 above. Such feedback relating to the preferred site is captured in Chapter 6 of this Scoping Report. This chapter includes a high-level assessment of impacts and risks of the proposed project at the preferred site.
8	Appendix 2 – 2 – 1 – g – (viii)	(viii) the possible mitigation measures that could be applied and level of residual risk;	
9	Appendix 2 – 2 – 1 – g – (ix)	(ix) the outcome of the site selection matrix;	Refer to Section 5.1.4 and Section 5.1.5 of this chapter for information on the process that led to the identification of the preferred site.
10	Appendix 2 – 2 – 1 – g – (x)	(x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and	Where no further alternatives were considered, a motivation has been provided in this chapter.
11	Appendix 2 – 2 – 1 – g – (xi)	(xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity;	Refer to Section 5.2 of this chapter for a concluding statement.

Scoping and Environmental Impact
Assessment for the proposed development
of the Beau Valley Wind Energy Facility and
associated infrastructure near Beaufort West
in the Western Cape



SCOPING REPORT

CHAPTER 6: Issues and Potential Impacts



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6. ISSUES AND POTENTIAL IMPACTS

The purpose of this chapter is to present a synthesis of the key issues, potential impacts (direct, indirect and cumulative, where applicable), and mitigation measures that have been identified by specialists thus far as part of the Scoping Process for the proposed Genesis Beau Valley WEF (hereafter referred to as the “WEF” or “proposed project”). These issues and impacts have been identified based on an evaluation of the status quo of the receiving environment, either through desktop assessments or site investigations. The Scoping Level specialist assessments comply with Appendix 6 of the 2014 NEMA EIA Regulations (as amended), or the Assessment Protocols published in Government Notice (GN) R320 on March 2020; or the Assessment Protocols published in GN R1150 on October 2020 (Table 6.1). However, the Battery Energy Storage System (BESS) High Level Safety, Health and Environment Risk Assessment serves as a technical report and the aforementioned legislation will thus not be applicable. Refer to Chapter 7 of this Scoping Report for the Plan of Study for EIA, which includes the methodology for the assessment of impacts; and the Terms of Reference for the specialist assessments that will be detailed during the EIA Phase.

Table 6.1: Specialist assessments undertaken and the applicable legislation.

Applicable Legislation →	Appendix 6 of the 2014 NEMA EIA Regulations (as amended)	Assessment Protocols in GN R320 (March 2020)	Assessment Protocols in GN R1150 (October 2020)	Technical Input	Desktop Assessment
Specialist Assessment ↓					
Agriculture and Soils Compliance Statement		✓			
Terrestrial Biodiversity, Terrestrial Plant Species, and Terrestrial Animal Species Assessment		✓	✓		
Aquatic Biodiversity		✓			
Bat Species Assessment	✓	✓			
Avifauna Assessment			✓		
Noise Impact Assessment		✓			
Visual Impact Assessment	✓	✓			
Heritage Impact Assessment (Archaeology and Cultural Landscape)	✓	✓			
Palaeontology Site Sensitivity Verification Report	✓	✓			
Socio-Economic Assessment	✓				
Traffic Impact Assessment	✓				
Battery Energy Storage System High Level Safety, Health and Environment Risk Assessment				✓	
Geotechnical Assessment					✓

The high-level preliminary impact assessment provided in each section is based on a scoping level assessment and, where necessary, the impact ratings will be confirmed and detailed during the EIA Phase. The mitigation measures provided in this chapter are also high-level for the purposes of Scoping and will be detailed during the EIA Phase. Cumulative impacts are based on considering other renewable energy projects within a 30 km radius (see Chapter 7).

6.1 Soils and Agricultural Potential

The specialist has confirmed that the agricultural sensitivity within the study area is largely low and medium sensitivity and therefore an Agricultural Compliance Statement is needed. As noted in the Agricultural Compliance Statement (Appendix G.1 of this Scoping Report), formally rating potential agricultural impacts is not required by the Assessment Protocol of GN 320, however it is required to indicate whether the proposed development will have an unacceptable impact on the agricultural production capability of the site. The following potential direct and negative impacts were identified during the Scoping Phase:

- **Construction Phase:** Loss of agricultural production potential by the occupation of land – Agricultural land that is directly occupied by the proposed infrastructure will become unavailable for agricultural use, with consequent potential loss of agricultural productivity for the duration of the project lifetime.
- **Construction and Decommissioning Phases:**
 - Loss of agricultural potential by soil erosion and degradation – Erosion can occur as a result of the alteration of the land surface run-off characteristics, predominantly through the establishment of hard surface areas including roads. Loss of topsoil can result from poor topsoil management during construction related excavations. Soil erosion and loss of topsoil are completely preventable. The stormwater management that will be an inherent part of the engineering on site and standard, best-practice erosion control and topsoil management measures recommended and included in the Environmental Management Programme (EMPr), are likely to be effective in preventing soil erosion and loss of topsoil.

In addition, the following two indirect positive agricultural impacts were also identified:

- Increased financial security for farming operations via reliable and predictable income will be generated by the farming enterprises through the lease of the land to the energy facility. This is likely to increase their cash flow and financial security and could improve farming operations and productivity through increased investment into farming.

The agricultural impact of the proposed project is regarded as being of low significance. The extent to which any of these impacts is likely to affect levels of agricultural production is small.

The potential cumulative agricultural impact of importance is a regional loss (including by degradation) of future agricultural production potential. The quantification of the cumulative impact will be done in detail in the EIA phase. This is highly likely to confirm that the cumulative impact of loss of future agricultural production potential is low. The development is highly likely to have an acceptable impact on the agricultural production capability of the area and therefore recommended that it be approved from a cumulative agricultural impact point of view. Due to the generally low agricultural potential of the site, and the consequent low agricultural impact, there are no restrictions relating to agriculture (other than recommended mitigation), which could preclude authorisation of the proposed development and therefore, from an agricultural impact point of view, the development should proceed to the EIA Phase and should receive approval.

6.2 Terrestrial Biodiversity and Species

The potential impacts on Terrestrial Biodiversity and Species identified during the Scoping Phase are listed below. Please note that during operation, the impacts would be reduced and restricted largely to potential noise impacts and occasional disturbance from operational activities:

Construction and (to an extent) Operational Phase:

- **Impacts on vegetation and listed or protected plant species:** The development of the Beau Valley Wind project would require vegetation clearing for turbines, roads, underground cabling and substations with associated battery facility, as well as for temporary site camp and general laydown areas. In addition, it is likely that the turbine foundations and some roads would require blasting which would generate dust and debris fallout near these locations. Apart from the direct loss of vegetation within the development footprint, listed and protected species are likely to be impacted. These impacts would occur during the construction phase of the development, with additional vegetation impacts during operation likely to be low. Although the abundance of plant species of concern appears to be relatively low, there are numerous provincially protected species present.
- **Direct Faunal Impacts:** Increased levels of noise, pollution, disturbance and human presence during construction will be detrimental to fauna. Sensitive and shy fauna are likely to move away from the area during the construction phase as a result of the noise and human activities present, while some slow-moving species would not be able to avoid the construction activities and might be killed if proper management and monitoring is not in place. Traffic at the site during all phases of the project would pose a risk of collisions with fauna. Slower types such as tortoises, snakes and certain mammals would be most susceptible, and the impact would be largely concentrated to the construction phase when vehicle activity is high. Some mammals and reptiles would be vulnerable to illegal collection or poaching during the construction phase as a result of the large number of construction personnel that are likely to be present.
- **Impact on the Riverine Rabbit:** Although no Riverine Rabbit have been observed or recorded within the Beau Valley site, it has been recorded from the wider area and it can be assumed that it occurs along some of the larger drainage systems that occur along the main access route to the site. As such, impacts on this species are likely to occur off-site and not within the boundaries of the Beau Valley site itself. During construction, the increased levels of traffic to and from the site would increase collision risk with rabbits, which is a known major cause of mortality for this species. Furthermore, the noise and disturbance associated with construction may deter rabbits from the affected areas where these are in close proximity to areas where Rabbits are present. During operation, impacts would be reduced, but noise from the turbines would potentially impact this species, resulting in local habitat degradation within and adjacent to the site. The habitat degradation would result largely from turbine noise which is likely to reduce the ability of fauna such as Riverine Rabbits to hear their predators, with the result that the habitat becomes less favourable overall for species vulnerable to predation.
- **Impact on the Karoo Dwarf Tortoise:** The Karoo Dwarf Tortoise would potentially experience habitat loss due to construction of turbines, roads and other infrastructure associated with the Beau Valley Wind project as well as an increased risk of poaching or illegal collecting. During

operation, impacts would likely be reduced to some residual habitat loss as evidence from other parts of the world indicates that the operation of wind turbines does not appear have a significant impact on the health and abundance of tortoises within operational wind farms in similar arid regions.

- **Increased Erosion Risk:** The disturbance created during construction of access roads, turbine foundations and hard stands etc. would render the impacted areas vulnerable to erosion and measures to limit erosion will need to be implemented. This impact is likely to manifest during construction and would persist into the operation phase.
- **Impacts on ESAs, CBAs and broad-scale ecological processes:** Although there are no turbines in CBAs, there are some turbines in close proximity to CBAs and a proportion of the layout is within ESAs. In addition, the noise generated by the turbines would generate disturbance for some fauna, which would decrease the value of the area for the affected fauna. In addition, the development would cause general habitat fragmentation and pose some impact on broad-scale ecological processes in the area.
- **Impact on Expansion of the Karoo National Park:** Although the Beau Valley Wind site is outside of the NPAES Focus Area, the presence of the turbines in close proximity to the existing and future potential Park boundary is likely to raise a variety of concerns. This would include the impact of low-frequency noise on sensitive species within the park such as rhino as well as other impacts on the ecological value of the affected area.

Cumulative Impacts:

In terms of cumulative impacts in and around the Beau Valley site, there are no existing wind farms in the area, although there are several approved facilities in the wider area, most notably the Nuweveld and Hoogland North suite of projects north of the site, with an approximate footprint of 600ha. The Hoogland South 3 and Hoogland South 4 Wind Farm projects immediately west of the site are still under application and would have an approximate permanent footprint of 150ha each. As such, the total potential footprint from wind energy development in the broad area from the Beau Valley site northwards to Loxton would be approximately 1000 ha. Apart from the contribution of the Beau Valley projects themselves, the proposed Genesis Central Cluster of wind farms immediately north of the Beau Valley site would comprise an additional three wind farms with an estimated footprint of 450 ha. In terms of specific cumulative impacts, impacts on the Riverine Rabbit would be a concern, however, the extent of Riverine Rabbit habitat within the Beau Valley site is very low and would not be directly impacted by the development with the result that any contribution of the Beau Valley WEF project to cumulative impact on the Riverine Rabbit would be minimal. Similarly, the Beau Valley project and the proposed Genesis Southern Cluster of wind farms would contribute towards cumulative habitat loss for the Karoo Dwarf Tortoise. However, the areas of optimal habitat would be avoided by the development of the Beau Valley project as they have been mapped as no-go areas, with the result that while there may be some habitat loss for this species, the areas of perceived higher quality habitat would be little impacted. Overall, general cumulative impacts on fauna and flora associated with the current project is considered acceptable. The Beau Valley WEF would not directly impact the NPAES Focus Area associated with the expansion of the Karoo National Park, but is likely to contribute to some degree towards degradation in the NPAES due to turbine noise, turbine flicker and general disturbance. These impacts and potential mitigation measures will be further investigated and confirmed during the EIA Phase.

Refer to the Terrestrial Biodiversity, Terrestrial Plant Species and Terrestrial Animal Species Scoping Level Assessment in Appendix G.2 of this Scoping Report for additional information on the potential impacts identified and mitigation measures recommended. Table 6.2 provides a summary of the Scoping Level impact assessment for this study. Please note that additional detail will be confirmed by the specialist during the EIA phase.

Table 6.2: Scoping level assessment of the potential Terrestrial Biodiversity and Species risks and impacts of the proposed project.

Impact	Impact Criteria		Significance Ranking (Pre-mitigation)	Potential mitigation measures	Significance Raking (Post-mitigation)	Confidence Level
IMPACTS						
CONSTRUCTION PHASE						
Impacts on vegetation and listed or protected plant species	Status	Negative	Moderate	- Undertake a pre-construction walk through of the development footprint to refine the layout through micro siting of turbines, buildings, substation (and associated battery facility), access roads and internal roads where it impacts on SCC. - Adhere to the sensitivity maps and limits of acceptable change provided within this assessment when determining the final layout of the Wind Farm and associated infrastructure. - Existing roads or disturbance footprints should be used as far as possible and should especially be used through very high sensitive areas. Should access roads, internal cables and overhead lines traverse drainage lines and riparian areas which are classified as Very High sensitivity these should be micro-sited by a suitably qualified ecological and aquatic specialist before construction in that area starts to ensure any potential impacts are minimised. - Develop an alien vegetation management plan, soil erosion management plan, revegetation and rehabilitation plan based on the site attributes and environmental constraints.	Low	TBC
	Spatial Extent	TBC				
	Duration	TBC				
	Consequence	TBC				
	Probability	TBC				
	Reversibility	TBC				
	Irreplaceability	TBC				
Direct Faunal Impacts	Status	Negative	Moderate	- Adhere to the development restrictions placed on areas of High and Very High sensitivity. - All vehicles should adhere to a low-speed limit on site. Heavy vehicles should be restricted to 30km/h and light vehicles to 40km/h. - All laydown areas, construction sites etc. with waste disposal bins, should be provided with lockable bins that are tamper proof by baboons, monkeys and other fauna. - Search and rescue for reptiles and other vulnerable species during construction, before areas of intact vegetation are cleared. Such search and rescue should be conducted by	Low	TBC
	Spatial Extent	TBC				
	Duration	TBC				
	Consequence	TBC				
	Probability	TBC				
	Reversibility	TBC				
	Irreplaceability	TBC				

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Impact	Impact Criteria		Significance Ranking (Pre-mitigation)	Potential mitigation measures	Significance Raking (Post-mitigation)	Confidence Level
				relevant experts with experience in search and rescue of the faunal groups concerned. - Limiting access to the site and ensuring that construction staff and machinery remain within the demarcated construction areas during the construction phase. - Environmental induction for all staff and contractors on-site. - Develop an open space management plan as part of the project EMP. - No excavated holes or trenches should be left open for extended periods as fauna may fall in become trapped. - The design should ensure that there are no electrical fencing around substations (and associated battery facility) or other features within 20cm of the ground as tortoises become stuck against such fences and are electrocuted to death.		
Impact on the Riverine Rabbit	Status	Negative	Low	- All construction vehicles should adhere to a low speed limit (30km/h on site and 40km/h) in areas where Riverine Rabbits are likely to be active, both within the wind farm as well as on the public roads to the site. - During construction, driving between sunset and sunrise should be reduced as far possible as this is when Riverine Rabbits are most active and the risk of collisions is highest. - No dogs should be allowed on site and precautions to ensure that there is poaching or other direct faunal disturbance on site should be implemented. - Where any new roads, cabling and/or overhead lines traverse areas mapped as High Riverine Rabbit habitat sensitivity, the route should be micro-sited by a suitably qualified ecological specialist before construction commences to ensure any potential impacts are minimised. Existing tracks through these areas should be used where present.	Low	TBC
	Spatial Extent	TBC				
	Duration	TBC				
	Consequence	TBC				
	Probability	TBC				
	Reversibility	TBC				
	Irreplaceability	TBC				
	Status	Negative	Medium	Avoidance of areas identified as potential Padloper habitat at the planning and design phase. This has been implemented via the	Low	TBC
	Spatial Extent	TBC				

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Impact	Impact Criteria		Significance Ranking (Pre-mitigation)	Potential mitigation measures	Significance Raking (Post-mitigation)	Confidence Level
Impact on the Karoo Dwarf Tortoise (Padloper)	Duration	TBC		sensitivity mapping which has included areas of likely potential habitat as high or very high sensitivity. - Limiting access to areas outside the construction footprint during construction to ensure that poaching and similar impact is minimised. - Search and rescue for the Padloper and other reptiles within the development footprint prior to clearing within areas that have been identified as potential habitat.		
	Consequence	TBC				
	Probability	TBC				
	Reversibility	TBC				
	Irreplaceability	TBC				
Erosion and Degradation Risk	Status	Negative	Moderate	Annual rehabilitation activities in line with the EMPr requirements. Any erosion problems observed on-site should be rectified as soon as possible using the appropriate revegetation and erosion control works.	Low	TBC
	Spatial Extent	TBC				
	Duration	TBC				
	Consequence	TBC				
	Probability	TBC				
	Reversibility	TBC				
	Irreplaceability	TBC				
Impacts on CBAs	Status	Negative	Medium	- There development footprint within the CBAs should be minimized as far as possible. - Should access roads, internal cables and overhead lines traverse drainage lines and riparian areas mapped as CBAs these should be micrositied by a suitably qualified ecological and aquatic specialist before construction in that area starts to ensure any potential impacts are minimised - Minimise the development footprint as far as possible, which includes locating temporary-use areas such as construction camps and lay-down areas in low sensitivity or previously disturbed areas. The current layout depicts that the substations, camps and lay-down areas are in low sensitivity areas, and this is therefore acceptable. - Avoid impact to restricted and specialised habitats such as pans, wetlands and rock pavements. The final development footprint to be authorised should be checked for such sensitive features in the field, such that there is a high degree of confidence that the final layout avoids such features so that	Low	TBC
	Spatial Extent	TBC				
	Duration	TBC				
	Consequence	TBC				
	Probability	TBC				
	Reversibility	TBC				
	Irreplaceability	TBC				

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Impact	Impact Criteria		Significance Ranking (Pre-mitigation)	Potential mitigation measures	Significance Raking (Post-mitigation)	Confidence Level
				significant changes to turbines or roads are not required at the preconstruction phase.		
OPERATIONAL PHASE						
Erosion and Degradation Risk	Status	Negative	Moderate	Annual rehabilitation activities in line with the EMP requirements. Any erosion problems observed on-site should be rectified as soon as possible using the appropriate revegetation and erosion control works.	Low	TBC
	Spatial Extent	TBC				
	Duration	TBC				
	Consequence	TBC				
	Probability	TBC				
	Reversibility	TBC				
	Irreplaceability	TBC				
Impact on NPAES Focus Areas	Status	Negative	Moderate	Negotiate with SANParks as to potential mitigation and avoidance measures that can be implemented to reduce negative effects on the existing Park and reduce impacts on the future use value of the Beau Valley project area.	Moderate	TBC
	Spatial Extent	TBC				
	Duration	TBC				
	Consequence	TBC				
	Probability	TBC				
	Reversibility	TBC				
	Irreplaceability	TBC				

6.3 Aquatic Biodiversity

The potential impacts on Aquatic Biodiversity identified during the Scoping Phase are listed below. Most of the potential aquatic ecosystem impacts of the proposed project are likely to take place during the construction phase.

Construction Phase:

- **Decrease in habitat integrity.** Disturbance and loss of aquatic habitats within the watercourses and wetlands with the associated impacts on sensitive aquatic biota. During construction, activities within watercourses and wetlands could result in the disturbance or destruction of sensitive habitats and any listed and or protected plant or animal species.
- **Decrease in aquatic ecosystem integrity (removal of aquatic vegetation).** The removal of indigenous riparian and instream vegetation will reduce the ecological integrity and functionality of the watercourses. Construction works, in particular, could result in the loss of riparian vegetation that provides ecosystem services within the site.
- **Stress on a water resource.** Demand for water for construction could place stress on the existing available water resources. During construction, more water is required than during the operational phase to suppress dust and used in concrete batching.
- **Decrease in aquatic ecosystem integrity (alien vegetation infestation).** Alien vegetation infestation within the aquatic features due to disturbance. The current presence of alien vegetation on the site is limited.
- **Decrease in water quality.** Increased sedimentation and risks of contamination of surface water runoff during construction. During construction, the earthworks near watercourses will expose and mobilise soil as well as construction materials and chemicals that may end up in the water resources. Any spills during transport or while works are conducted in proximity to a watercourse also have the potential to affect the surrounding biota.

Operational Phase:

- **Decrease in aquatic ecosystem integrity (ongoing disturbance).** Ongoing disturbance of aquatic features and associated vegetation along access roads or adjacent to infrastructure that needs to be maintained. As for the disturbance of aquatic features described under construction impacts, the disturbance of aquatic habitat is likely to be very localised to the road crossings and would not impact the larger aquatic ecosystem.
- **Decrease in aquatic ecosystem integrity (disturbance of cover vegetation and soil).** Modified runoff characteristics from hardened surfaces have the potential to result in the erosion of hillslopes and watercourses. Limited hardening of surfaces will take place as a result of the proposed projects. Much of this is related to the increased road network and also serves to concentrate and convey runoff with its associated erosion.

- **Modified hydraulics in the watercourses** as a result of any structures associated with the proposed road crossings through the watercourses. Any new structures within the watercourses associated with the proposed projects mustn't impede flow, or fragment the aquatic habitats, in the watercourses. Given the episodic flow in the watercourses, the structures at the road crossings should consist of nothing more than low water crossings that will not impede water or sediment movement. Areas identified as being of high sensitivity should be avoided by the projects, with the exception being that existing roads may be widened at these features. Stormwater management of access roads on steeper slopes, in particular, needs to be addressed to prevent erosion of the slopes and adjacent watercourses.
- Water supply (and possibly sanitation services) is required for the operation of the facility. The water requirements during operation are much lower and could potentially be provided from groundwater without any aquatic ecosystem impacts (the water requirements for the operational phase is about 3 500 m³ per annum). Boreholes should not be sited within or immediately adjacent to watercourses where they would potentially be impacting the subsurface flow in the watercourses. The baseflow in the watercourse is important in maintaining aquatic vegetation and some aquatic biota. The larger flows in the watercourses are unlikely to be impacted by the proposed projects.

Decommissioning Phase:

- **Increased disturbance of aquatic habitat** due to the increased activity on the site.
- **Increased sedimentation and risks of contamination of surface water runoff.**

Cumulative Impacts:

The **cumulative impact** of the project activities, together with the existing activities in the area, could have the potential to reduce the integrity of the watercourses if not properly mitigated and managed. By implementing suitable buffers (35m is recommended for the wetlands and smaller watercourses) and minimising the works within the river/stream corridors, the impact of the proposed project activities would be low and unlikely to impact the integrity of the aquatic ecosystems.

Refer to the Aquatic Biodiversity Scoping Level Assessment in Appendix G.3 of this Scoping Report for additional information on the potential impacts identified and high-level mitigation measures recommended. Table 6.3 provides a summary of the Scoping Level impact assessment for this study.

Table 6.3: Scoping level assessment of the potential Aquatic Biodiversity risks and impacts of the proposed project.

Impact	Impact Criteria		Significance Ranking (Pre-mitigation)	Potential mitigation measures	Significance Raking (Post-mitigation)	Confidence Level
DIRECT IMPACTS						
CONSTRUCTION PHASE						
Disturbance of aquatic habitat and the associated impact on sensitive aquatic biota	Status	Negative	Very Low (5)	Implement recommended development setbacks to minimise works within aquatic ecosystems (i.e. recommended buffer of at least 35 m for the smaller drainage features; and a 50m setback from the larger rivers)	Very Low (5)	High
	Spatial Extent	Site-specific				
	Duration	Short term				
	Consequence	Slight				
	Probability	Unlikely				
	Reversibility	High				
	Irreplaceability	Low				
Removal of indigenous aquatic vegetation and associated loss of aquatic ecological integrity and functionality	Status	Negative	Very Low (5)	- Implement development setbacks to minimise works within aquatic ecosystems (i.e. recommended buffer of at least 35 m for the smaller drainage features; and a 50m setback from the larger rivers). - Clearing of indigenous vegetation should not take place within the aquatic features and the recommended buffers. - Rehabilitate disturbed aquatic habitats by revegetating with suitable local indigenous vegetation.	Very Low (5)	High
	Spatial Extent	Site-specific				
	Duration	Medium-term				
	Consequence	Slight				
	Probability	Very Unlikely				
	Reversibility	High				
	Irreplaceability	Low				
Water supply for construction and associated stress on available water resources	Status	Negative	Very Low (5)	Water use for construction should be minimised as much as possible. The water should be obtained from an existing water allocation or other viable water sources for construction purposes.	Very Low (5)	High
	Spatial Extent	Local				
	Duration	Long term				
	Consequence	Moderate				
	Probability	Extremely Unlikely				
	Reversibility	Moderate				
	Irreplaceability	Moderate				
Road crossing structures may impede flow in the aquatic features	Status	Negative	Very Low (5)	The road crossing structures should be designed to not impede flow in watercourses - low water crossing is preferred.	Very Low (5)	High
	Spatial Extent	Site specific				
	Duration	Long term				

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Impact	Impact Criteria		Significance Ranking (Pre-mitigation)		Potential mitigation measures	Significance Raking (Post-mitigation)	Confidence Level
	Consequence	Slight			Use existing crossings, as best as possible and where allowable. The existing road infrastructure should be utilised as far as possible to access new infrastructure to minimise the overall disturbance. It is recommended that any new linear type of infrastructure crossings over watercourses be placed where there are existing structures or road crossings within the watercourse corridors.		
	Probability	Unlikely					
	Reversibility	High					
	Irreplaceability	Low					
Alien vegetation infestation may occur within the aquatic features due to disturbance	Status	Negative	Low (4)		- Avoid disturbing aquatic habitats. - Construction materials brought onto the site should be free of alien plant seed. - Sources of alien seed should be prevented from being brought onto the site with imported materials. - Rehabilitate disturbed aquatic habitats once construction works are complete. - Undertake monitoring for the growth of alien vegetation during the post-construction phase.	Very Low (5)	High
	Spatial Extent	Site specific					
	Duration	Medium or long term					
	Consequence	Moderate					
	Probability	Unlikely					
	Reversibility	High					
	Irreplaceability	Low					
Increased sedimentation and risks of contamination of surface water runoff may result from construction works	Status	Negative	Very Low (5)		- Any works within aquatic features should be undertaken in the dry season where possible. - Sediment traps should be used where necessary. - Construction sites and laydown areas should be located within the assessed buildable areas. - Good housekeeping and site management measures must be implemented at the laydown areas and the construction site as per the project Environmental Management Programme (EMPr) and monitored by the appointed Environmental Control Officer (ECO).	Very Low (5)	High
	Spatial Extent	Local					
	Duration	Short term					
	Consequence	Moderate					
	Probability	Very likely					
	Reversibility	Low					
	Irreplaceability	Moderate					
OPERATIONAL PHASE							
Ongoing disturbance of aquatic features and associated vegetation along access roads or adjacent to the	Status	Negative	Low (4)	Very Low (5)	The medium sensitivity aquatic habitats should be avoided in the layout design, with only low sensitivity habitats being disturbed during construction.	Very Low (5)	High
	Spatial Extent	Site specific					
	Duration	Long term					
	Consequence	Slight to moderate					

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Impact	Impact Criteria		Significance Ranking (Pre-mitigation)		Potential mitigation measures	Significance Raking (Post-mitigation)	Confidence Level
infrastructure that needs to be maintained	Probability	Likely to Unlikely			- Invasive alien plant growth and signs of erosion should be monitored on an ongoing basis to ensure that the disturbed areas do not become infested with invasive alien plants. - Disturbance of aquatic habitats would only result in a negligible alteration to aquatic ecosystems and processes.		
	Reversibility	Moderate					
	Irreplaceability	Low					
Modified runoff characteristics from hardened surfaces at the substation and along access roads has the potential to result in erosion of adjacent watercourses	Status	Negative	Very Low (5)	- Develop a stormwater management plan for the proposed development that addresses the stormwater runoff from the developed areas. - Stormwater run-off infrastructure must be designed to mitigate both the flow and water quality impacts of any stormwater leaving the developed areas. The runoff should rather be dissipated over a broad area covered by natural vegetation or managed using appropriate shaping of the road with berms or channels and swales adjacent to hardened surfaces where necessary. Should any erosion features develop, they should be stabilised immediately.	Very Low (5)	High	
	Spatial Extent	Local					
	Duration	Long term					
	Consequence	Moderate					
	Probability	Likely					
	Reversibility	Moderate					
	Irreplaceability	Low					
Water supply and water quality impacts (e.g. contamination from sewage) as a result of the operation of the site	Status	Negative	Very Low (5)	A sustainable water supply should be sought. Sewage generated within the site should be discharged to a conservancy tank that is properly serviced and regularly evacuated to nearby wastewater treatment works.	Very Low (5)	High	
	Spatial Extent	Site specific					
	Duration	Long term					
	Consequence	Slight					
	Probability	Unlikely					
	Reversibility	Low					
	Irreplaceability	Low					
DECOMMISSIONING PHASE							
Increased disturbance of aquatic habitat due to the increased activity on the site	Status	Negative	Very Low (5)	- Minimise works within aquatic ecosystems. If the project layout avoided these areas, the decommissioning works would also be able to avoid aquatic habitats on the property. - Rehabilitate and revegetate disturbed areas, where required. - Mitigation and follow-up monitoring of residual impacts (alien vegetation growth and erosion) may be required. - The road network should be returned to that resembling pre-construction, with all additional roads removed where possible.	Very Low (5)	High	
	Spatial Extent	Site specific					
	Duration	Short term					
	Consequence	Slight					
	Probability	Unlikely					
	Reversibility	High					
	Irreplaceability	Low					

Impact	Impact Criteria		Significance Ranking (Pre-mitigation)	Potential mitigation measures	Significance Raking (Post-mitigation)	Confidence Level
Increased sedimentation and risks of contamination of surface water runoff	Status	Negative	Very Low (5)	- Decommissioning activities within aquatic features should be undertaken in the dry season where possible - Sediment traps should be used where necessary. - Laydown areas should be placed within approved WEF footprint and layout. - Good housekeeping measures should be implemented as per the project EMPr and monitored by the appointed ECO. This should specifically address on-site stormwater management and prevention of pollution during decommissioning. Any stormwater that does arise within the decommissioning site must be handled appropriately to trap sediments and pollutants.	Very Low (5)	High
	Spatial Extent	Site specific				
	Duration	Short term				
	Consequence	Slight				
	Probability	Unlikely				
	Reversibility	High				
	Irreplaceability	Low				
CUMULATIVE IMPACTS						
CONSTRUCTION PHASE						
Increased disturbance of aquatic habitat due to the increased activity in the wider area	Status	Negative	Very Low (5)	- Minimise works within aquatic ecosystems as far as possible. - Construct in the dry season where possible. - Rehabilitate disturbed areas. - Rationalise infrastructure as far as possible by sharing the infrastructure or using existing disturbed areas. - Manage stormwater impacts.	Very Low (5)	High
	Spatial Extent	Local				
	Duration	Long term				
	Consequence	Moderate				
	Probability	Likely				
	Reversibility	Moderate				
	Irreplaceability	Moderate				
OPERATIONAL PHASE						
Degradation of ecological condition of aquatic ecosystems	Status	Negative	Very Low (5)	- Monitor and manage for impacts such as alien vegetation growth and erosion. - Limit disturbance and rehabilitate disturbed areas. - Ensure there is sufficient stormwater management to prevent erosion of watercourses. - Ensure road crossing structures are properly designed prevent blockage in the watercourses or erosion. - Limit and monitor water use.	Very Low (5)	High
	Spatial Extent	Local				
	Duration	Long term				
	Consequence	Moderate				
	Probability	Likely				
	Reversibility	Moderate				
	Irreplaceability	Moderate				

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Impact	Impact Criteria		Significance Ranking (Pre-mitigation)	Potential mitigation measures	Significance Raking (Post-mitigation)	Confidence Level
DECOMMISSIONING PHASE						
Increased disturbance of aquatic habitat due to the increased activity in the wider area	Status	Negative	Very Low (5)	- Decommissioning works near aquatic features should preferably be undertaken in the dry season where possible. - Minimise disturbance and rehabilitate.	Very Low (5)	High
	Spatial Extent	Local				
	Duration	Long term				
	Consequence	Moderate				
	Probability	Likely				
	Reversibility	Moderate				
	Irreplaceability	Moderate				

6.4 Bats

Wind energy facilities have the potential to affect bats directly through collisions and barotrauma resulting in mortality, and indirectly through the modification of habitats. Habitat loss and displacement impacts for the proposed project are relatively small and should not pose a significant risk because the development footprint (i.e. turbines, roads, buildings, etc.) is relatively small. Direct impacts to bats will be limited to species that make use of the airspace in the rotor-swept zone of the wind turbines. The key potential direct impacts on bats from the proposed development activities that have been identified in the Scoping Phase include:

- **Construction Phase:**
 - Displacement of bats due to habitat loss / habitat transformation.
 - Roost disturbance; and
 - Roost destruction;
- **Operational Phase:**
 - Mortality of bats due to turbine collisions while commuting/foraging;
 - Mortality of bats due to turbine collisions during migrations; and
 - Light pollution associated risks including loss of insect prey and increased collision risks for bats foraging closer to turbines.
- **Decommissioning Phase:**
 - Displacement of bats due to disturbance associated with the decommissioning activities.

Refer to the Bat Species Scoping Level Assessment in Appendix G.12 of this Scoping Report for additional information on the potential impacts identified and high-level mitigation measures recommended. Table 6.4 provides a summary of the Scoping Level impact assessment for this study.

Table 6.4: Scoping level assessment of the potential Bat Species risks and impacts of the proposed project.

Impact	Impact Criteria		Significance Ranking (Pre-mitigation)	Potential mitigation measures	Significance Raking (Post-mitigation)	Confidence Level
DIRECT IMPACTS						
CONSTRUCTION PHASE						
Displacement of bats due to habitat loss / habitat transformation	Status	Negative	Very Low (5)	- During construction laydown areas and temporary access roads should be kept to a minimum in order to limit direct vegetation loss and habitat fragmentation. Construction of the infrastructure should, where possible, be situated in areas that are already disturbed. - This impact must be reduced by limiting the removal of vegetation, particularly large mature trees within 50 m of turbine positions. - Following construction, rehabilitation of all areas disturbed (e.g. temporary access tracks and laydown areas) must be undertaken and a habitat restoration plan must be developed by a specialist and included within the EMPr	Very Low (5)	Medium
	Spatial Extent	Local				
	Duration	Long term				
	Consequence	Slight				
	Probability	Very Unlikely				
	Reversibility	High				
	Irreplaceability	Low				
Roost Disturbance	Status	Negative	Very Low (5)	- It may be possible to limit roost abandonment by avoiding construction activities near roosts. - Large mature trees within 50 m of the turbine positions should be inspected for roosting bats. - It is recommended that potential roosts, specifically buildings and rocky crevices, are buffered by 200 m, inside which no turbine infrastructure may be placed. No turbines should be installed within 50 m of large mature trees	Very Low (5)	Medium
	Spatial Extent	Local				
	Duration	Short term				
	Consequence	Slight				
	Probability	Unlikely				
	Reversibility	High				
	Irreplaceability	Replaceable				
Roost Destruction	Status	Negative	Low (4)	- The WEF must be designed and constructed in such a way as to avoid the destruction of potential and actual roosts, particularly large mature trees, buildings, and rocky crevices (if blasting is required). - It is recommended that potential roosts, specifically buildings and rocky crevices, are buffered by 200 m, inside which no turbine infrastructure may be placed. No turbines should be installed within 50 m of large mature trees	Very Low (5)	Medium
	Spatial Extent	Local				
	Duration	Permanent				
	Consequence	Substantial				
	Probability	Very Unlikely				
	Reversibility	Non-reversible				
	Irreplaceability	Moderate				

SCOPING REPORT: Scoping and Environmental Impact Assessment (EIA) Process for the Proposed Development of the Genesis Beau Valley Wind Energy Facility and associated infrastructure, near Beaufort West, Western Cape Province

Impact	Impact Criteria		Significance Ranking (Pre-mitigation)	Potential mitigation measures	Significance Raking (Post-mitigation)	Confidence Level
OPERATIONAL PHASE						
Mortality of bats due to turbine collisions while commuting/foraging	Status	Negative	High (2)	▪ Designing the layout of the project to avoid areas that are more frequently used by bats will reduce the likelihood of mortality and should be the primary mitigation measure. These areas include key microhabitats such as water features, large mature trees, buildings, and rocky crevices. These areas have been buffered by 200 m. No turbines are currently located within the buffers. ▪ The height of the lower blade swept area must be maximised, and should try to be kept above 50 m. If the minimum blade sweep is lower than 50 m, the facility runs the risk of reaching fatality thresholds sooner. ▪ Operational monitoring should be done according to the guidelines for the first 2 years and every 5 years thereafter. During this monitoring fatality estimations would need to be evaluated every 3 – 4 months against the South African Bat Assessment Association fatality threshold guidelines (i.e. if they exceed an estimated 52 bat fatalities per year) to determine escalation of mitigation options. ▪ Blade feathering should be implemented at the start of operation. ▪ Apply curtailment during spring, summer and autumn based on an appropriate curtailment plan and/or instal acoustic deterrents (based on input from an appropriate bat specialist) if mortality occurs beyond threshold levels as determined based on applicable guidance (MacEwan et al. 2018). The threshold calculations must be done at a minimum of once a quarter (i.e. not only after the first year of operational monitoring) so that mitigation can be applied as quickly as possible should thresholds be reached.	Low (4)	Medium
	Spatial Extent	Local				
	Duration	Long term				
	Consequence	Severe				
	Probability	Very Likely				
	Reversibility	Moderate				
	Irreplaceability	High				
Mortality of bats due to turbine collisions during migrations	Status	Negative	Moderate (3)	▪ Designing the layout of the project to avoid areas that are more frequently used by bats will reduce the likelihood of mortality and should be the primary mitigation measure.	Low (4)	Medium
	Spatial Extent	Regional				
	Duration	Long term				

SCOPING REPORT: Scoping and Environmental Impact Assessment (EIA) Process for the Proposed Development of the Genesis Beau Valley Wind Energy Facility and associated infrastructure, near Beaufort West, Western Cape Province

Impact	Impact Criteria		Significance Ranking (Pre-mitigation)	Potential mitigation measures	Significance Ranking (Post-mitigation)	Confidence Level
	Consequence	Substantial		These areas include key microhabitats such as water features, large mature trees, buildings, and rocky crevices. These areas have been buffered by 200 m. No turbines are currently located within the buffers. - The height of the lower blade swept area must be maximised, and should try to be kept above 50 m. If the minimum blade sweep is lower than 50 m, the facility runs the risk of reaching fatality thresholds sooner. - Operational monitoring should be done according to the guidelines for the first 2 years and every 5 years thereafter. During this monitoring fatality estimations would need to be evaluated every 3 – 4 months against the South African Bat Assessment Association fatality threshold guidelines (i.e. if they exceed an estimated 52 bat fatalities per year) to determine escalation of mitigation options. - Blade feathering should be implemented at the start of operation. - Apply curtailment during spring, summer and autumn based on an appropriate curtailment plan and/or instal acoustic deterrents (based on input from an appropriate bat specialist) if mortality occurs beyond threshold levels as determined based on applicable guidance (MacEwan et al. 2018). The threshold calculations must be done at a minimum of once a quarter (i.e. not only after the first year of operational monitoring) so that mitigation can be applied as quickly as possible should thresholds be reached.		
	Probability	Unlikely				
	Reversibility	Moderate				
	Irreplaceability	Moderate				
Light pollution associated risks including loss of insect prey and increased collision risks for bats foraging closer to turbines	Status	Negative	Very Low (5)	- This impact can be mitigated by using as little lighting as possible, and only where essential for operation of the facility. - Where lights need to be used such as at the collector substation and switching station and elsewhere, these should have low attractiveness for insects such as low pressure sodium and warm white LED lights (Rydell 1992; Stone 2012). High pressure sodium and white mercury lighting is	Very Low (5)	Medium
	Spatial Extent	Local				
	Duration	Long term				
	Consequence	Slight				
	Probability	Likely				
	Reversibility	High				
	Irreplaceability	Low				

Impact	Impact Criteria		Significance Ranking (Pre-mitigation)	Potential mitigation measures	Significance Raking (Post-mitigation)	Confidence Level
				attractive to insects (Blake et al. 1994; Rydell 1992; Svensson & Rydell 1998) and should not be used as far as possible. ▪ Lighting should be fitted with movement sensors to limit illumination and light spill, and the overall lit time. In addition, light spread should be directed downwards and below the horizontal plane to minimise light trespass and sky glow. ▪ Increasing the spacing between lights, and the height of light units can reduce the intensity and volume of the light to minimise the area illuminated and give bats an opportunity to fly in relatively dark areas between and over lights.		
DECOMMISSIONING PHASE						
Displacement of bats due to disturbance associated with the decommissioning activities	Status	Negative	Very Low (5)	▪ The impacts to bats during this phase are likely to be restricted to disturbance. Provided decommissioning activities are restricted to daylight hours, the impact to bats are predicted to be negligible.	Very Low (5)	Medium
	Spatial Extent	Local				
	Duration	Short term				
	Consequence	Slight				
	Probability	Unlikely				
	Reversibility	High				
	Irreplaceability	Replaceable				
CUMULATIVE IMPACTS						
Cumulative Bat Mortality Impacts	Status	Negative	High (2)	▪ Designing the layout of the project to avoid areas that are more frequently used by bats will reduce the likelihood of mortality and should be the primary mitigation measure. These areas include key microhabitats such as water features, large mature trees, buildings, and rocky crevices. These areas have been buffered by 200 m. No turbines are currently located within the buffers. ▪ The height of the lower blade swept area must be maximised, and should try to be kept above 50 m. If the minimum blade sweep is lower than 50 m, the facility runs the risk of reaching fatality thresholds sooner. ▪ Operational monitoring should be done according to the guidelines for the first 2 years and every 5 years thereafter. During this monitoring fatality estimations would need to be	Low (4)	Medium
	Spatial Extent	Local				
	Duration	Long term				
	Consequence	Severe				
	Probability	Likely				
	Reversibility	Moderate				
	Irreplaceability	High				

Impact	Impact Criteria		Significance Ranking (Pre-mitigation)	Potential mitigation measures	Significance Raking (Post-mitigation)	Confidence Level
				evaluated every 3 – 4 months against the South African Bat Assessment Association fatality threshold guidelines (i.e. if they exceed an estimated 52 bat fatalities per year) to determine escalation of mitigation options. ▪ Blade feathering should be implemented at the start of operation. ▪ Apply curtailment during spring, summer and autumn based on an appropriate curtailment plan and/or instal acoustic deterrents (based on input from an appropriate bat specialist) if mortality occurs beyond threshold levels as determined based on applicable guidance (MacEwan et al. 2018). The threshold calculations must be done at a minimum of once a quarter (i.e. not only after the first year of operational monitoring) so that mitigation can be applied as quickly as possible should thresholds be reached.		

6.5 Avifaunal Impacts

The pre-construction avifaunal monitoring programme was conducted between December 2020 and December 2021. Surveys were also conducted in 2023. The potential direct impacts on avifauna identified during the Scoping Phase are listed below:

Construction Phase:

- Displacement due to disturbance associated with the construction of the WEF and associated infrastructure.
- Displacement due to habitat transformation associated with the construction of the WEF and associated infrastructure.

Operational Phase:

- Displacement due to habitat transformation and disturbance associated with the presence of the WEF and associated infrastructure.
- Mortality due to collisions with the wind turbines.
- Mortality due to electrocutions on the overhead sections of the internal 33kV cables and in the on-site substation complex.
- Mortality due to collisions with the overhead sections of the internal 33kV cables
- Mortality due to collisions with the 132kV overhead powerline.

Decommissioning Phase:

- Displacement due to disturbance associated with the decommissioning of the WEF and associated infrastructure.

Cumulative Impacts:

- Displacement due to disturbance associated with the construction of the WEF and associated infrastructure.
- Displacement due to habitat transformation associated with the construction of the WEF and associated infrastructure.
- Mortality due to collisions with the wind turbines.
- Mortality due to electrocutions on the overhead sections of the internal 33kV cable and on-site substation complex.
- Mortality due to collisions with the overhead sections of the internal 33kV cables.
- Mortality due to collisions with the 132kV overhead powerline.

Refer to the Avifauna Scoping Level Assessment in Appendix G.4 of this Scoping Report for additional information on the potential impacts identified and high-level mitigation measures recommended. Table 6.5 provides a summary of the Scoping Level impact assessment for this study.

Table 6.5: Scoping level assessment of the potential Avifauna risks and impacts of the proposed project.

Impact	Impact Criteria		Significance Ranking (Pre-mitigation)	Potential mitigation measures	Significance Raking (Post-mitigation)	Confidence Level
DIRECT IMPACTS						
CONSTRUCTION PHASE						
The noise and movement associated with the construction activities at the WEF footprint, associated infrastructure, and 132kV powerlines will be a source of disturbance which would lead to the displacement of avifauna from the area.	Status	Negative	Moderate (3)	- No construction activity should take place in the “all infrastructure exclusion zones” as indicated in Figure 4. - 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. - Construction of new roads should only be considered if existing roads cannot be upgraded. - Measures to control noise and dust should be applied according to current best practice in the industry. - The recommendations of the ecological and botanical specialist studies must be strictly implemented, especially as far as limitation of the activity footprint is concerned	Low (4)	High
	Spatial Extent	Site specific				
	Duration	Short term				
	Consequence	Substantial				
	Probability	Very likely				
	Reversibility	High				
	Irreplaceability	Low				
Total or partial displacement of avifauna due to habitat transformation associated with the presence of the wind turbines, associated infrastructure, and 132kV powerlines.	Status	Negative	Low (4)	- Vehicle and pedestrian access to the site should be controlled and restricted to the construction footprint as much as possible to prevent unnecessary destruction of vegetation. - The recommendations of the ecological and botanical specialist studies must be strictly implemented, especially as far as limitation of the activity footprint is concerned. - Formal live-bird monitoring should be resumed once the turbines have been constructed, as per the most recent edition of the Best Practice Guidelines (Jenkins et al. 2015). The purpose of this would be to establish if displacement of priority species has occurred and to what extent. The exact time when operational monitoring should commence, will depend on the construction schedule, and should commence when the first turbines start operating. The Best Practice Guidelines require that, as an absolute minimum, operational monitoring should be	Low (4)	Medium
	Spatial Extent	Site specific				
	Duration	Long term				
	Consequence	Moderate				
	Probability	Likely				
	Reversibility	High				
	Irreplaceability	Low				

SCOPING REPORT: Scoping and Environmental Impact Assessment (EIA) Process for the Proposed Development of the Genesis Beau Valley Wind Energy Facility and associated infrastructure, near Beaufort West, Western Cape Province

Impact	Impact Criteria		Significance Ranking (Pre-mitigation)	Potential mitigation measures	Significance Raking (Post-mitigation)	Confidence Level
				undertaken for the first two (preferably three) years of operation, and then repeated in year 5, and again every five years thereafter for the operational lifetime of the facility.		
OPERATIONAL PHASE						
Birds will get killed or injured due to collisions with the wind turbines.	Status	Negative	High (2)	- No turbines should be located in the buffer zones as indicated in the sensitivity map in Figure 4. Buffer zones are linked to surface water, which could attract many birds, including some threatened raptors species such as the Martial Eagle and Verreaux's Eagle. Buffer zones are also linked to the presence of SCC nests. - The results of the pre-construction monitoring must guide the lay-out of the turbines, especially as far as proposed no-turbine zones are concerned. No turbines must be located in the buffer zones which were identified based on the results of the pre-construction monitoring, with a specific view to limiting the risk of collisions to a variety of birds, including several Red Data species . - Formal live-bird monitoring and carcass searches should be implemented in the operational phase, as per the most recent edition of the Best Practice Guidelines at the time (Jenkins et al. 2015) to assess collision rates. - If estimated annual collision rates indicate unacceptable mortality levels of priority species, i.e., if it exceeds the pre-determined threshold determined by the avifaunal specialist in consultation with BirdLife South Africa, additional measures will have to be implemented which could include shut down on demand or other proven measures.	Moderate (3)	High
	Spatial Extent	Site specific				
	Duration	Long term				
	Consequence	Severe				
	Probability	Very likely				
	Reversibility	High				
	Irreplaceability	Low				
Electrocution of priority species in the onsite substation complex and on the 33kV internal powerlines.	Status	Negative	Moderate (3)	The hardware within the proposed substation yards is too complex to warrant any mitigation for electrocution at this stage. It is recommended that if on-going impacts are recorded once operational, site-specific mitigation (insulation) be applied reactively. This is an acceptable approach because Red List	Very Low (5)	High
	Spatial Extent	Local				
	Duration	Long term				
	Consequence	Severe				
	Probability	Unlikely				

SCOPING REPORT: Scoping and Environmental Impact Assessment (EIA) Process for the Proposed Development of the Genesis Beau Valley Wind Energy Facility and associated infrastructure, near Beaufort West, Western Cape Province

Impact	Impact Criteria		Significance Ranking (Pre-mitigation)	Potential mitigation measures	Significance Raking (Post-mitigation)	Confidence Level
	Reversibility	High		priority species are unlikely to frequent the substation and be electrocuted. In instances where the medium voltage cables cannot be buried due to technical constraints, a bird-friendly pole design must be used for the overhead lines. The avifaunal specialist must approve the pole design.		
	Irreplaceability	Low				
Collision mortality of powerline sensitive species due to collisions with the 33kV internal powerlines and the 132kV grid connections.	Status	Negative	High (2)	Bird Flight Diverters must be fitted to all overhead lines according to the applicable Eskom Engineering Instruction (Eskom Unique Identifier 240 – 93563150: The utilisation of Bird Flight Diverters on Eskom Overhead Lines).	Moderate (3)	Medium
	Spatial Extent	Local				
	Duration	Long term				
	Consequence	Severe				
	Probability	Likely				
	Reversibility	High				
	Irreplaceability	Low				
DECOMMISSIONING PHASE						
The noise and movement associated with the activities at the study area will be a source of disturbance which would lead to the displacement of avifauna from the area.	Status	Negative	Moderate (3)	- Activity should as far as possible be restricted to the footprint of the infrastructure. - Measures to control noise and dust should be applied according to current best practice in the industry. - Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum as far as practical. - The recommendations of the ecological and botanical specialist studies must be strictly implemented, especially as far as limitation of the activity footprint is concerned.	Low (4)	High
	Spatial Extent	Site specific				
	Duration	Short term				
	Consequence	Substantial				
	Probability	Very likely				
	Reversibility	High				
	Irreplaceability	Low				
CUMULATIVE IMPACTS						
CONSTRUCTION PHASE						
The noise and movement associated with the construction activities at the WEF footprint, associated infrastructure, and	Status	Negative	Moderate (3)	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.	Low (4)	High
	Spatial Extent	Site specific				
	Duration	Short term				
	Consequence	Substantial				
	Probability	Very likely				
	Reversibility	High				

SCOPING REPORT: Scoping and Environmental Impact Assessment (EIA) Process for the Proposed Development of the Genesis Beau Valley Wind Energy Facility and associated infrastructure, near Beaufort West, Western Cape Province

Impact	Impact Criteria		Significance Ranking (Pre-mitigation)	Potential mitigation measures	Significance Raking (Post-mitigation)	Confidence Level
132kV powerlines will be a source of disturbance which would lead to the displacement of avifauna from the area.	Irreplaceability	Low		- Removal of vegetation must be restricted to a minimum and must be rehabilitated to its former state where possible after construction. - Construction of new roads should only be considered if existing roads cannot be upgraded. - Measures to control noise and dust should be applied according to current best practice in the industry. - The recommendations of the ecological and botanical specialist studies must be strictly implemented, especially as far as limitation of the activity footprint is concerned		
Total or partial displacement of avifauna due to habitat transformation associated with the presence of the wind turbines, associated infrastructure, and 132kV powerlines.	Status	Negative	Low (4)	- Vehicle and pedestrian access to the site should be controlled and restricted to the construction footprint as much as possible to prevent unnecessary destruction of vegetation. - The recommendations of the ecological and botanical specialist studies must be strictly implemented, especially as far as limitation of the activity footprint is concerned. - Formal live-bird monitoring should be resumed once the turbines have been constructed, as per the most recent edition of the Best Practice Guidelines (Jenkins et al. 2015). The purpose of this would be to establish if displacement of priority species has occurred and to what extent. The exact time when operational monitoring should commence, will depend on the construction schedule, and should commence when the first turbines start operating. The Best Practice Guidelines require that, as an absolute minimum, operational monitoring should be undertaken for the first two (preferably three) years of operation, and then repeated in year 5, and again every five years thereafter for the operational lifetime of the facility.	Low (4)	Medium
	Spatial Extent	Site specific				
	Duration	Long term				
	Consequence	Moderate				
	Probability	Likely				
	Reversibility	High				
	Irreplaceability	Low				
OPERATIONAL PHASE						
	Status	Negative	High (2)	No turbines should be located in the buffer zones as indicated in the sensitivity map in Figure 4. Buffer zones are linked to	Moderate (3)	High
	Spatial Extent	Site specific				

SCOPING REPORT: Scoping and Environmental Impact Assessment (EIA) Process for the Proposed Development of the Genesis Beau Valley Wind Energy Facility and associated infrastructure, near Beaufort West, Western Cape Province

Impact	Impact Criteria		Significance Ranking (Pre-mitigation)	Potential mitigation measures	Significance Raking (Post-mitigation)	Confidence Level
Birds will get killed or injured due to collisions with the wind turbines.	Duration	Long term		surface water, which could attract many birds, including some threatened raptors species such as the Martial Eagle and Verreaux's Eagle. Buffer zones are also linked to the presence of SCC nests. - The results of the pre-construction monitoring must guide the lay-out of the turbines, especially as far as proposed no-turbine zones are concerned. No turbines must be located in the buffer zones which were identified based on the results of the pre-construction monitoring, with a specific view to limiting the risk of collisions to a variety of birds, including several Red Data species . - Formal live-bird monitoring and carcass searches should be implemented in the operational phase, as per the most recent edition of the Best Practice Guidelines at the time (Jenkins et al. 2015) to assess collision rates. - If estimated annual collision rates indicate unacceptable mortality levels of priority species, i.e., if it exceeds the pre-determined threshold determined by the avifaunal specialist in consultation with BirdLife South Africa, additional measures will have to be implemented which could include shut down on demand or other proven measures.		
	Consequence	Severe				
	Probability	Very likely				
	Reversibility	High				
	Irreplaceability	Low				
Electrocution of priority species on the internal 33kV network and on-site substation.	Status	Negative	Moderate (3)	- Use underground cabling as much as is practically possible. - Where the use of overhead lines is unavoidable due to technical reasons, the avifaunal specialist must be consulted to ensure that a raptor friendly pole design is used, and that appropriate mitigation is implemented pro-actively for complicated pole structures e.g., insulation of live components to prevent electrocutions on terminal structures and pole transformers.	Low (4)	High
	Spatial Extent	Local				
	Duration	Long term				
	Consequence	Severe				
	Probability	Unlikely				
	Reversibility	High				
	Irreplaceability	Low				
Collision mortality of powerline sensitive species due to collisions with the 33kV internal	Status	Negative	High (2)	Bird Flight Diverters must be fitted to all overhead lines according to the applicable Eskom Engineering Instruction (Eskom Unique Identifier 240 – 93563150: The utilisation of Bird Flight Diverters on Eskom Overhead Lines).	Moderate (3)	Medium
	Spatial Extent	Local				
	Duration	Long term				
	Consequence	Severe				

SCOPING REPORT: Scoping and Environmental Impact Assessment (EIA) Process for the Proposed Development of the Genesis Beau Valley Wind Energy Facility and associated infrastructure, near Beaufort West, Western Cape Province

Impact	Impact Criteria		Significance Ranking (Pre-mitigation)	Potential mitigation measures	Significance Raking (Post-mitigation)	Confidence Level
powerlines and the 132kV grid connections.	Probability	Likely				
	Reversibility	High				
	Irreplaceability	Low				
DECOMMISSIONING PHASE						
The noise and movement associated with the activities at the study area will be a source of disturbance which would lead to the displacement of avifauna from the area.	Status	Negative	Moderate (3)	- Activity should as far as possible be restricted to the footprint of the infrastructure. - Measures to control noise and dust should be applied according to current best practice in the industry. - Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum as far as practical. - The recommendations of the ecological and botanical specialist studies must be strictly implemented, especially as far as limitation of the activity footprint is concerned.	Low (4)	High
	Spatial Extent	Site specific				
	Duration	Short term				
	Consequence	Substantial				
	Probability	Very likely				
	Reversibility	High				
	Irreplaceability	Low				

6.6 Noise

Potential noise-related impacts resulting from the construction and operational phases of this proposed WEF project can only be modelled and correctly calculated once more information regarding the duration of construction, equipment to be used and possible locations of major ancillary activity sites are known and confirmed. It is anticipated that during operation of the development, the large majority of the project site will continue with small density livestock farming as it is the current land use. The only development related activities on site during the operational phase would entail routine servicing and unscheduled maintenance. The noise impact from maintenance activities is considered to be insignificant, with the main noise source being the operating wind turbine blades and the nacelle.

The key potential noise impacts resulting from the proposed development, which are all considered direct impacts, include the following:

- **Construction Phase:**
 - Noise pollution i.e. increase in ambient sound levels due to construction activities (e.g. equipment and vehicle noise).
- **Operational Phase:**
 - Mechanical and aerodynamic noise from the operation of the wind turbine components.
- **Decommissioning Phase:**
 - Noise pollution i.e. increase in ambient sound levels due to decommissioning activities (e.g. equipment and vehicle noise).

To mitigate the potential noise impacts of the proposed development, the following measures should be considered if needed:

- **Construction Phase:**
 - Conduct Noise Sensitivity Training for all construction staff where construction takes place close to sensitive receptors.
 - No construction should occur during night-time hours (22:00-06:00).
 - If possible, piling activities should occur during the hottest part of the day to take advantage of the unstable atmospheric conditions.
 - Residual Noise Monitoring should be conducted during the construction phase at sensitive NSAs.
- **Operational Phase:**
 - Wind Turbine Generators (WTGs) should not be placed within 500m of any occupied Noise Sensitive Area (NSA).
 - If the night-time noise rating limit for rural areas (35dB(A)) is exceeded, the WTGs could be operated in a lower power mode at certain wind speeds or be relocated further away from an NSA.
- **Decommissioning Phase:**
 - Conduct Noise Sensitivity Training for all construction staff where construction takes place close to sensitive receptors.
 - No construction should occur during night-time hours (22:00-06:00).
 - If possible, piling activities should occur during the hottest part of the day to take advantage of the unstable atmospheric conditions.

Based on a scoping level assessment, the proposed project will result in increased noise levels in the area. The fact that there would be a number of wind turbines operating simultaneously in an area where there are noise-sensitive developments increase the possibility that a noise impact could occur. However, at this preliminary stage it is impossible to determine whether the significance of this noise impact would be low, medium or high and what potential impact it could have on the quality of living for the surrounding receptors. Previous studies have indicated that with the implementation of correct mitigation measures (especially a sufficient setback or buffer zone) it would be possible to minimize the potential noise risks and reduce the noise impacts to a more acceptable medium or low significance.

During the EIA phase, the Noise Specialist will be required to compile a full Noise Impact Assessment in adherence to the gazetted Environmental Assessment Protocols, specifically the 'Protocol for the Specialist Assessment and Minimum Report Content Requirements for Noise Impacts' (GG 43110 / GN R320, 20 March 2020). This protocol replaces the requirements of Appendix 6 of the 2014 NEMA EIA Regulations, as amended. In addition, the Specialist Assessment should also take into consideration any additional relevant legislation and guidelines that may be deemed necessary (e.g. noise standards, measurements and calculations stipulated in SANS 10103:2008 Version 6 and SANS 10357:2004 Version 2.1). The relevant mitigation and management actions will be incorporated into the EMP that will form part of the EIA Report. Refer to Chapter 7 of this Scoping Report for the ToRs specified for the Noise Impact Assessment to be undertaken.

6.7 Visual Impacts

The potential impacts on visually sensitive and landscape receptors identified during the Scoping Phase include the following:

- The visibility of the facility to, and potential visual impact on residents of dwellings within the study area, with specific reference to the farm residences in closer proximity to the proposed development.
- The visibility of the operational facility and ancillary infrastructure to, and potential visual impact on observers within the region.
- The visibility of the facility and ancillary infrastructure to, and potential visual impact on observers travelling along the main roads, as well as, secondary roads within the study area.
- The potential visual impact of the facility on the visual character or sense of place of the region.
- The potential visual impact of the facility on tourist routes or tourist destinations/facilities (R381 and Karoo National Park).
- The potential visual impact of the construction of ancillary infrastructure (i.e. internal access roads, buildings, power line, etc.) on observers in close proximity to the facility.
- The visual absorption capacity of the natural vegetation (if applicable).

- Potential cumulative visual impacts (or consolidation of visual impacts), with specific reference to the placement of the WEF within an area where various solar and wind energy generation are being considered (i.e. Genesis Beaufort West Renewable Energy Cluster).
- The potential visual impact of operational, safety and security lighting of the facility at night on observers residing in close proximity of the facility.
- The potential visual impacts of shadow flicker on sensitive and potentially sensitive visual receptors in close proximity.
- Potential visual impacts associated with the construction phase.
- The potential to mitigate visual impacts and inform the design process.

Refer to the Visual Scoping Level Assessment in Appendix G.5 of this Scoping Report for additional information on the potential impacts identified. Please note that additional detail will be confirmed in the full Visual Impact Assessment during the EIA phase.

6.8 Heritage (including Archaeology and Cultural Landscape)

The potential direct impacts on heritage features identified during the Scoping Phase are listed below:

Construction Phase:

- **Damage to or destruction of archaeological materials:** Archaeological materials may be affected during construction when equipment is brought onto site and earthworks and excavation takes place.
- **Damage to or destruction of graves:** Graves could be impacted almost anywhere but the probability of this occurring is extremely low.
- **Alteration of the cultural landscape:** The landscape will be affected if the proposed project goes ahead, however it has a relatively low cultural significance.

Operational Phase:

- **Alteration of the cultural landscape:** The impact would definitely occur during the operational phase; however, the landscape has a relatively low cultural significance.

Decommissioning Phase:

- **Alteration of the cultural landscape:** In the event of decommissioning, the landscape will be affected, however the landscape has a relatively low cultural significance.

Cumulative Impacts:

- **Construction and Decommissioning Phases:**

- Potential impacts on archaeology.
- **Operational Phase:**
 - Potential impacts on the cultural landscape.

Refer to the Heritage Scoping Level Assessment in Appendix G.6 of this Scoping Report for additional information on the potential impacts identified and high-level mitigation measures recommended. Table 6.6 provides a summary of the Scoping Level impact assessment for this study.

Table 6.6: Scoping level assessment of the potential Heritage risks and impacts of the proposed project.

Impact	Impact Criteria		Significance Ranking (Pre-mitigation)	Potential mitigation measures	Significance Ranking (Post-mitigation)	Confidence Level
DIRECT IMPACTS						
CONSTRUCTION PHASE						
Damage to or destruction of archaeological materials	Status	Negative	Low (4)	▪ Report any chance finds to the Heritage Western Cape (HWC) and/or the project archaeologist.	Very Low (5)	High
	Spatial Extent	Site				
	Duration	Permanent				
	Consequence	Moderate				
	Probability	Very likely				
	Reversibility	Non-reversible				
	Irreplaceability	High				
Damage to or destruction of graves	Status	Negative	Low (4)	▪ Stop work in the vicinity immediately, leave the remains in situ and report the find to HWC and/or the project archaeologist.	Very Low (5)	High
	Spatial Extent	Site				
	Duration	Permanent				
	Consequence	Extreme				
	Probability	Very unlikely				
	Reversibility	Non-reversible				
	Irreplaceability	High				
Alteration of the cultural landscape	Status	Negative	Low (4)	▪ Minimise the disturbance footprint. ▪ Rehabilitate all areas not needed during operation.	Low (4)	High
	Spatial Extent	Local				
	Duration	Long Term				
	Consequence	Moderate				
	Probability	Very Likely				
	Reversibility	High				
	Irreplaceability	Replaceable				
OPERATIONAL PHASE						
Alteration of the cultural landscape	Status	Negative	Low (4)	▪ None required.	Low (4)	High
	Spatial Extent	Local				
	Duration	Long Term				
	Consequence	Moderate				
	Probability	Very Likely				
	Reversibility	High				
	Irreplaceability	Replaceable				

SCOPING REPORT: Scoping and Environmental Impact Assessment (EIA) Process for the Proposed Development of the Genesis Beau Valley Wind Energy Facility and associated infrastructure, near Beaufort West, Western Cape Province

Impact	Impact Criteria		Significance Ranking (Pre-mitigation)	Potential mitigation measures	Significance Ranking (Post-mitigation)	Confidence Level
DECOMMISSIONING PHASE						
Alteration of the cultural landscape	Status	Negative	Low (4)	▪ None suggested.	Low (4)	High
	Spatial Extent	Local				
	Duration	Long Term				
	Consequence	Moderate				
	Probability	Very Likely				
	Reversibility	High				
	Irreplaceability	Replaceable				
CUMULATIVE IMPACTS						
CONSTRUCTION PHASE						
Impacts to archaeology, graves and the cultural landscape	Status	Negative	Low (4)	▪ Avoid or mitigate sites as proposed in the specialist reports. ▪ Report any chance finds to HWC and/or a project archaeologist. ▪ Follow the recommendations of the Visual Specialist.	Low (4)	High
	Spatial Extent	Regional				
	Duration	Permanent				
	Consequence	Moderate				
	Probability	Very likely				
	Reversibility	Non-reversible				
	Irreplaceability	High				
OPERATIONAL PHASE						
Alteration of the cultural landscape	Status	Negative	Low (4)	▪ None required.	Low (4)	High
	Spatial Extent	Regional				
	Duration	Long term				
	Consequence	Moderate				
	Probability	Very likely				
	Reversibility	Non-reversible				
	Irreplaceability	High				
DECOMMISSIONING PHASE						
Impacts to archaeology, graves and the cultural landscape	Status	Negative	Low (4)	▪ Ensure implementation of approved rehabilitation plans across projects.	Low (4)	High
	Spatial Extent	Regional				
	Duration	Long-term				
	Consequence	Moderate				
	Probability	Very likely				
	Reversibility	Non-reversible				
	Irreplaceability	High				

6.9 Palaeontology

The potential palaeontological impacts identified during the Scoping Phase are listed below:

Construction Phase:

- Loss of fossil Heritage

Operational and Decommissioning Phase:

- No impact on Fossil Heritage

Cumulative Impacts (Construction Phase):

- Loss of fossil Heritage

Refer to the Palaeontological Scoping Level Assessment in Appendix G.7 of this Scoping Report for additional information on the potential impacts identified and high-level mitigation measures recommended. Table 6.7 provides a summary of the Scoping Level impact assessment for this study. Please note that additional detail will be confirmed by the specialist during the EIA phase.

Table 6.7: Scoping level assessment of the potential Heritage risks and impacts of the proposed project.

Impact	Impact Criteria		Significance Ranking (Pre-mitigation)	Potential mitigation measures	Significance Ranking (Post-mitigation)	Confidence Level
DIRECT IMPACTS						
CONSTRUCTION PHASE						
Loss of fossil heritage	Status	Negative	Low (4)	▪ Chance Find Protocol	Very Low (5)	High
	Spatial Extent	Site specific				
	Duration	Permanent				
	Consequence	Moderate Risk				
	Probability	Unlikely				
	Reversibility	Non-reversible				
	Irreplaceability	Irreplaceable				
OPERATIONAL PHASE						
No impact on fossil heritage	Status					High
	Spatial Extent					
	Duration					
	Consequence					
	Probability					
	Reversibility					
	Irreplaceability					
DECOMMISSIONING PHASE						
No impact on fossil heritage	Status					High
	Spatial Extent					
	Duration					
	Consequence					
	Probability					
	Reversibility					
	Irreplaceability					

SCOPING REPORT: Scoping and Environmental Impact Assessment (EIA) Process for the Proposed Development of the Genesis Beau Valley Wind Energy Facility and associated infrastructure, near Beaufort West, Western Cape Province

Impact	Impact Criteria		Significance Ranking (Pre-mitigation)	Potential mitigation measures	Significance Ranking (Post-mitigation)	Confidence Level
CUMULATIVE IMPACTS						
CONSTRUCTION PHASE						
Loss of fossil heritage	Status	Negative	Medium (3)	▪ Chance Find Protocol	Low (4)	High
	Spatial Extent	Site specific				
	Duration	Permanent				
	Consequence	Moderate Risk				
	Probability	Unlikely				
	Reversibility	Non-reversible				
	Irreplaceability	Irreplaceable				

6.10 Socio-Economic

The potential socio-economic impacts identified during the Scoping Phase are listed below:

Construction Phase:

- Capital investment (CapEx) contributing to the national, regional and local economy;
- Generation of employment, income and skills;
- Social disruption and change in social dynamics; and
- Reduced quality of life and increased risks due to construction near residences

Operational Phase:

- Operational investment (OpEx) contributing to the national, regional and local economy;
- Generation of employment, income and skills;
- Increased community prosperity through contributions and income from the WEF; and
- Increased power generation reducing the probability of load shedding.

Decommissioning Phase:

- Reduced employment and funding.

Cumulative Impacts:

- Stimulation of economic and employment growth; and
- Increased community prosperity through contributions and income from IPPs.

Refer to the Socio-Economic Scoping Level Assessment in Appendix G.8 of this Scoping Report for additional information on the potential impacts identified. Please note that additional detail will be confirmed by the specialist during the EIA phase.

6.11 Traffic

The potential traffic related issues identified during the Scoping Phase include:

Construction Phase:

- **Increased road incidents.** The increased traffic volumes on the public roads will increase the potential of incidents on the road network within the study area;
- **Road degradation.** The increased traffic volumes on the public roads will increase the potential for localised road network degradation within the study area.
- **Dust.** The increased traffic volumes on the unpaved public roads will generate more dust. The larger the vehicle, the more dust is likely to be generated. This dust hinders the drivers wishing to over-take without a clear view for over-taking, resulting in drivers taking unnecessary chances, which could result in unfavourable consequences; and
- **Intersection safety.** The increased traffic volumes at intersections will increase the potential risk of accidents at the intersections, resulting in serious injuries or even fatalities, especially at the intersection on the main roads, when vehicles from the site need to cross over oncoming traffic.

Operational Phase:

- **Intersection safety.** The increased traffic volumes at intersections will increase the potential risk of accidents at the intersections, resulting in serious injuries or even fatalities, especially at the intersection on the main roads, when vehicles from the site need to cross over oncoming traffic.

Decommissioning Phase:

- A separate traffic impact assessment should be undertaken as part of the decommissioning process since many of the characteristics related to the traffic impact assessment, i.e. access routes, road geometry, traffic volumes, etc., would have changed over the operational life of the development. Thus, no traffic assessment for the decommissioning phase has been undertaken as of yet.

Refer to the Traffic Scoping Level Assessment in Appendix G.9 of this Scoping Report for additional information on the potential impacts identified and mitigation measures recommended. Table 6.7 provides a summary of the Scoping Level impact assessment for this study. Please note that additional detail will be confirmed by the specialist during the EIA phase.

Table 6.7: Scoping level assessment of the potential Traffic risks and impacts of the proposed project.

Impact		Impact Criteria		Significance Ranking (Pre-mitigation)	Potential mitigation measures	Significance Raking (Post-mitigation)	Confidence Level
IMPACTS							
CONSTRUCTION PHASE							
Increased Incidents	Road	Status	Negative	Moderate (3)	- Post relevant road signage along affected routes. - Create a local WhatsApp Group, notifying other road users of expected deliveries and associated routes. - Ensure all vehicles are roadworthy, visible, adequately marked, and operated by an appropriately licenced operator. - Transport Management Plan (TMP) is to be compiled once the contractor has been appointed and all the relevant details of the construction process are known. The TMP needs to address, inter alia: - clearly defined route/s to the site for specific vehicles needed to transport equipment and materials - scheduled deliveries to avoid local congestion.	Low (4)	TBC
		Spatial Extent	Local				
		Duration	Short Term				
		Consequence	Medium				
		Probability	Definite / Continuous				
		Reversibility	Irreparably damaged				
		Irreplaceability	Irreparably damaged				
Road degradation		Status	Negative	Moderate (3)	- Create a local WhatsApp Group for the local community and post notices of road conditions and proposed alternatives. - Developer to contribute to the maintenance of the public roads in the area during the construction phase of the development/s. - A photographic record of the road condition should be maintained throughout the various phases of the development/s. This provides an objective assessment and mitigates any subjective view from road users. - Upgrade unpaved roads to a suitable condition for proposed construction vehicles. - Ensure that the roads are left in the same or better condition, post-construction.	Low (4)	TBC
		Spatial Extent	Local				
		Duration	Short Term				
		Consequence	Medium				
		Probability	Definite / Continuous				
		Reversibility	Recoverable				
		Irreplaceability	No irreparable damage				

Impact	Impact Criteria		Significance Ranking (Pre-mitigation)	Potential mitigation measures	Significance Raking (Post-mitigation)	Confidence Level
Dust	Status	Negative	Moderate (3)	- Reduce travel speed for construction vehicles on the gravel road to reduce dust. - Dust suppression of the roads in the immediate vicinity of the site where feasible. - Regular preventative maintenance of roads within the immediate vicinity of the site should be conducted over weekends to minimise the impact on the average construction period.	Low (4)	TBC
	Spatial Extent	Regional				
	Duration	Medium Term				
	Consequence	High				
	Probability	Possible/ Frequent				
	Reversibility	Permanently modified				
	Irreplaceability	Irreparable				
Intersection Safety	Status	Negative	Moderate (3)	- Compile a Traffic Management Plant (TMP). - Reduce speed at intersections and use appropriate traffic warning signs. - Identify alternative routes where possible. - Request the assistance of local law enforcement. - Ensure that all construction vehicles are roadworthy, visible, adequately marked, and operated by an appropriately licenced operator.	Moderate (3)	TBC
	Spatial Extent	Site				
	Duration	Short Term				
	Consequence	Moderate				
	Probability	Definite / Continuous				
	Reversibility	Permanently modified				
	Irreplaceability	Irreparable				
OPERATIONAL PHASE						
Intersection safety	Status	Negative	Moderate (3)	- Compile a Traffic Management Plant (TMP). - Reduce speed at intersections and use appropriate traffic warning signs. - Identify alternative routes where possible. - Request the assistance of local law enforcement. - Ensure that all site vehicles are roadworthy, visible, adequately marked, and operated by an appropriately licenced operator.	Moderate (3)	TBC
	Spatial Extent	Slte				
	Duration	Short Term				
	Consequence	Moderate				
	Probability	Definite / Continuous				
	Reversibility	Permanently modified				
	Irreplaceability	Irreparable				

Impact	Impact Criteria		Significance Ranking (Pre-mitigation)	Potential mitigation measures	Significance Raking (Post-mitigation)	Confidence Level
DECOMMISSIONING PHASE						
The impact assessment for the decommissioning phase has yet to be provided.						
CUMULATIVE IMPACTS						
CONSTRUCTION PHASE						
Increased Road Incidents; Road Degradation; Dust;	Status	TBC	Moderate (3)	TBC	Low (4)	TBC
	Spatial Extent	TBC				
	Duration	TBC				
	Consequence	TBC				
	Probability	TBC				
	Reversibility	TBC				
	Irreplaceability	TBC				
Intersection Safety	Status	TBC	Moderate (3)	TBC	Moderate (3)	TBC
	Spatial Extent	TBC				
	Duration	TBC				
	Consequence	TBC				
	Probability	TBC				
	Reversibility	TBC				
	Irreplaceability	TBC				
OPERATIONAL PHASE						
Intersection Safety	Status	TBC	Moderate (3)	TBC	Moderate (3)	TBC
	Spatial Extent	TBC				
	Duration	TBC				
	Consequence	TBC				
	Probability	TBC				
	Reversibility	TBC				
	Irreplaceability	TBC				
DECOMMISSIONING PHASE						
The impact assessment for the decommissioning phase has yet to be provided.						

6.12 Battery Energy Storage System (BESS) Risk Assessment

A high-level Safety, Health and Environment (SHE) Risk Assessment was commissioned for the Battery Energy Storage System (BESS) proposed as part of the WEF. The main issues identified in the desktop Risk Assessment at the Scoping Phase is discussed in this section, where the following issues are of consideration:

Solid State (Lithium-ion or Sodium-ion) BESS:

- Noxious smoke; and
- Fires/ explosions.

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

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

General:

- Extremely isolated arid area – no commercial locations of interest.
- Location of isolated farmsteads, water courses and watering holes.

Refer to the BESS SHE Risk Assessment (Scoping Level) in Appendix G.10 of this Scoping Report for additional information on the potential issues identified and high-level recommendations. The BESS SHE Risk Assessment is a technical study, and therefore a Scoping Level impact assessment is not required.

6.13 Geotechnical

Potential impacts on the geotechnical conditions as a consequence of the proposed development are as follows for the construction, operation and decommissioning phases:

- **Displacement of geologic materials.** This is related to increased unnatural hard surfaces that will yield increased runoff, potentially increasing erosion. Removal of rocks and other geologic materials for site levelling and grading during construction and decommissioning, resulting in loss of geologic materials, e.g. topsoil removal/loss, and potentially the destruction of habitats of endemic species.
- **Contamination of subsoils and loss of topsoil.** This includes contamination of geologic materials as a consequence of the construction and decommissioning activities by earthworks machinery and other apparatus; as well as through typical maintenance activities during the operation phase, such as washing with cleaning agents, or spillages associated with the BESS.

Refer to the Geotechnical Scoping Level Assessment in Appendix G.12 of this Scoping Report for additional information on the potential impacts identified and high-level mitigation measures recommended. Table 6.8 provides a summary of the Scoping Level impact assessment for this study.

Table 6.8: Scoping level assessment of the potential Geotechnical risks and impacts of the proposed project.

Impact	Impact Criteria		Significance Ranking (Pre-mitigation)	Potential mitigation measures	Significance Raking (Post-mitigation)	Confidence Level
DIRECT IMPACTS						
CONSTRUCTION PHASE						
Displacement of geologic materials	Status	Negative	Low (4)	- Favour dolerite as an aggregate (as opposed to Karoo sandstones and mudstones). Subject to investigation. - Any road cuttings should be designed by an appropriately qualified professional. - Drainage on site should be designed and managed appropriately. - Investigate and confirm the geotechnical suitability of each structure (or other appropriate level of investigation) prior to construction (i.e. determine that soil with an adequate bearing capacity is obtained beneath each footing). Such investigations would not be required to fulfil the requirements of the EIA process. However, it would be necessary prior to construction. - Only strip vegetation necessary for the next phase of construction. - Install temporary drainage to divert stormwater away from active construction activities, where required. - Stormwater Management Plan must be developed and included in the Environmental Management Programme. It should detail the stormwater structures and management interventions that must be installed to manage the increase of surface water flow directly into any natural systems (in consultation with suitably qualified professionals). Effective stormwater management must include effective stabilisation (e.g. gabions and Reno mattresses) of exposed soil. - Suitable stormwater management systems must be installed along roads and other areas and be monitored during the first few months of use. Any erosion/sedimentation must be resolved through any additional interventions that may be necessary (e.g., extension, energy dissipaters, spreaders, etc.).	Very Low (5)	Medium
	Spatial Extent	Local				
	Duration	Short term				
	Consequence	Moderate				
	Probability	Very likely				
	Reversibility	Moderate				
	Irreplaceability	Moderate				

Impact	Impact Criteria		Significance Ranking (Pre-mitigation)	Potential mitigation measures	Significance Ranking (Post-mitigation)	Confidence Level
				- Where impacted through construction-related activities, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled. - Sloped areas stabilised using designed structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly. - Any rehabilitation should be scheduled to ensure rehabilitation can take place at the optimal time for vegetation establishment. - Where earthwork is being undertaken near any watercourses, slopes must be stabilised using suitable materials, e.g. sandbags or geotextile fabric, to prevent sand and rock from entering the channel. Subject to mitigation measures specified by the Aquatic specialist. - Appropriate rehabilitation and re-vegetation measures for any disturbed watercourse banks must be implemented timeously. In this regard, the banks should be appropriately and incrementally stabilised as soon as development allows. Subject to mitigation measures specified by the Aquatic specialist.		
Contamination of geologic materials	Status	Negative	Low (4)	- During the execution of the works, appropriate measures to prevent pollution and contamination of the riparian environment must be implemented, e.g. including ensuring that construction equipment is well maintained. - Provision must be made for refuelling at the storage area/site camp, and workshop by protecting the soil with an impermeable groundcover. Where dispensing equipment is used, a drip tray must be used to ensure small spills are contained. - Where refuelling away from the dedicated refuelling station is required, a mobile refuelling unit must be used. Appropriate ground protection such as drip trays must be used. - A spill kit should be maintained on site. If spillages occur, they should be contained and removed as rapidly as possible, with	Very Low (5)	Medium
	Spatial Extent	Local				
	Duration	Short term				
	Consequence	Moderate				
	Probability	Very likely				
	Reversibility	Moderate				
	Irreplaceability	Moderate				

SCOPING REPORT: Scoping and Environmental Impact Assessment (EIA) Process for the Proposed Development of the Genesis Beau Valley Wind Energy Facility and associated infrastructure, near Beaufort West, Western Cape Province

Impact	Impact Criteria		Significance Ranking (Pre-mitigation)	Potential mitigation measures	Significance Raking (Post-mitigation)	Confidence Level
				correct disposal procedures of the spilt material, as reported. Proof of disposal (waste disposal slips or waybills) should be obtained and retained on file for auditing purposes.		
OPERATIONAL PHASE						
Displacement of geologic materials	Status	Negative	Low (4)	- Install drainage to divert stormwater away from activities, roads/tracks, structures, where required. - Generic management for typical infrastructure of the proposed development, including: - Stormwater Management Plan must be developed in the preconstruction phase and should detail the stormwater structures and management interventions that must be installed to manage the increase of surface water flows directly into any natural systems, where possible and lawful. Effective stormwater management must include effective stabilisation (e.g. gabions and Reno mattresses) of exposed soil etc. - 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 any additional interventions that may be necessary (e.g., extension, energy dissipaters, spreaders, etc.). - Sloped areas stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. - No regular maintenance activities to take place outside of the authorised footprint and all vehicles to remain on authorised roads and tracks.	Very Low (5)	Medium
	Spatial Extent	Local				
	Duration	Long				
	Consequence	Moderate				
	Probability	Likely				
	Reversibility	Moderate				
	Irreplaceability	Moderate				
Contamination of geologic materials	Status	Negative	Low (4)	During the execution of the operations, appropriate measures to prevent pollution and contamination of the riparian environment	Very Low (5)	Medium
	Spatial Extent	Local				
	Duration	Short term				

SCOPING REPORT: Scoping and Environmental Impact Assessment (EIA) Process for the Proposed Development of the Genesis Beau Valley Wind Energy Facility and associated infrastructure, near Beaufort West, Western Cape Province

Impact	Impact Criteria		Significance Ranking (Pre-mitigation)	Potential mitigation measures	Significance Raking (Post-mitigation)	Confidence Level
	Consequence	Moderate		must be implemented e.g. including ensuring that construction equipment is well maintained. - Provision must be made for refuelling at the storage area by protecting the soil with an impermeable groundcover/bunding. Where dispensing equipment is used, a drip tray must be used to ensure small spills are contained. - Where refuelling away from the dedicated refuelling station is required, a mobile refuelling unit must be used. Appropriate ground protection such as drip trays must be used. - If spillages occur, they should be contained and removed as rapidly as possible, with correct disposal procedures of the spilled material, as reported. Proof of disposal (waste disposal slips or waybills) should be obtained and retained on file for auditing purposes.		
	Probability	Very likely				
	Reversibility	Moderate				
	Irreplaceability	Moderate				
DECOMMISSIONING PHASE						
Displacement of geologic materials	Status	Negative	Very Low (5)	- Only drive and park vehicles where necessary. - Land rehabilitation to near natural state, i.e. removal of foundations and backfilling of any resultant voids within the soil, as well as removal of hard surfaced areas. Replacement soil should be sourced locally to ensure homogeneity. Reseeding with natural vegetation grasses, and seeds will further mitigate future displacement. - Reinstate natural topography where cut-to-fill embankments have been constructed. - Implement generic environmental management procedures for infrastructure.	Very Low (5)	Medium
	Spatial Extent	Local				
	Duration	Short				
	Consequence	Slight				
	Probability	Likely				
	Reversibility	Moderate				
Contamination of geologic materials	Status	Negative	Very Low (5)	- During the execution of the decommissioning, appropriate measures to prevent pollution and contamination of the riparian environment must be implemented e.g. including ensuring that equipment is well maintained. - Provision must be made for refuelling at the storage area / site by protecting the soil with an impermeable groundcover. Where	Very Low (5)	Medium
	Spatial Extent	Local				
	Duration	Short				
	Consequence	Slight				
	Probability	Likely				
	Reversibility	Moderate				

SCOPING REPORT: Scoping and Environmental Impact Assessment (EIA) Process for the Proposed Development of the Genesis Beau Valley Wind Energy Facility and associated infrastructure, near Beaufort West, Western Cape Province

Impact	Impact Criteria		Significance Ranking (Pre-mitigation)	Potential mitigation measures	Significance Raking (Post-mitigation)	Confidence Level
	Irreplaceability	Moderate		dispensing equipment is used, a drip tray must be used to ensure small spills are contained. - Where refuelling away from the dedicated refuelling station is required, a mobile refuelling unit must be used. Appropriate ground protection such as drip trays must be used. - A spill kit should be maintained on site. If spillages occur, they should be contained and removed as rapidly as possible, with correct disposal procedures of the spilled material, as reported. Proof of disposal (waste disposal slips or waybills) should be obtained and retained on file for auditing purposes.		
CUMULATIVE IMPACTS						
CONSTRUCTION PHASE						
Displacement of geologic materials	Status	Negative	Moderate (3)	The mitigation measures are the same as those recommended for the Construction Phase.	Low (4)	Medium
	Spatial Extent	Regional				
	Duration	Medium-term				
	Consequence	Substantial				
	Probability	Very likely				
	Reversibility	Moderate				
	Irreplaceability	Moderate				
Contamination of geologic materials	Status	Negative	Moderate (3)	The mitigation measures are the same as those recommended for the Construction Phase.	Low (4)	Medium
	Spatial Extent	Regional				
	Duration	Medium-term				
	Consequence	Substantial				
	Probability	Very likely				
	Reversibility	Moderate				
	Irreplaceability	Moderate				
OPERATIONAL PHASE						
Displacement of geologic materials	Status	Negative	Moderate (3)	The mitigation measures are the same as those recommended for the Operational Phase.	Low (4)	Medium
	Spatial Extent	Regional				
	Duration	Medium-term				
	Consequence	Substantial				

SCOPING REPORT: Scoping and Environmental Impact Assessment (EIA) Process for the Proposed Development of the Genesis Beau Valley Wind Energy Facility and associated infrastructure, near Beaufort West, Western Cape Province

Impact	Impact Criteria		Significance Ranking (Pre-mitigation)	Potential mitigation measures	Significance Raking (Post-mitigation)	Confidence Level
	Probability	Very likely				
	Reversibility	Moderate				
	Irreplaceability	Moderate				
Contamination of geologic materials	Status	Negative	Moderate (3)	The mitigation measures are the same as those recommended for the Operational Phase.	Low (4)	Medium
	Spatial Extent	Regional				
	Duration	Medium-term				
	Consequence	Substantial				
	Probability	Very likely				
	Reversibility	Moderate				
	Irreplaceability	Moderate				
DECOMMISSIONING PHASE						
Displacement of geologic materials	Status	Negative	Moderate (3)	The mitigation measures are the same as those recommended for the Decommissioning Phase.	Low (4)	Medium
	Spatial Extent	Local				
	Duration	Short term				
	Consequence	Substantial				
	Probability	Likely				
	Reversibility	Moderate				
	Irreplaceability	Moderate				
Contamination of geologic materials	Status	Negative	Moderate (3)	The mitigation measures are the same as those recommended for the Construction, Operational and Decommissioning Phases (as relevant).	Low (4)	Medium
	Spatial Extent	Local				
	Duration	Short term				
	Consequence	Substantial				
	Probability	Likely				
	Reversibility	Moderate				
	Irreplaceability	Moderate				

6.14 Civil Aviation

As indicated in Chapter 3 and Chapter 4 of this Scoping Report, the National Web-Based Environmental Screening Tool (Screening Tool) has indicated that the study area falls within an area of low sensitivity from a Civil Aviation perspective. The low sensitivity was verified and confirmed via a site visit. An SSV is provided in Appendix G.13 of this Scoping Report. Based on the requirements of GN 320, if a site is verified as low sensitivity, there are no further requirements. Therefore, no impact assessment is required in this regard.

6.15 Defence

As indicated in Chapter 3 and Chapter 4 of this Scoping Report, the Screening Tool has indicated that the study area falls within an area of low sensitivity from a Defence perspective. The low sensitivity was verified and confirmed via a site visit. An SSV is provided in Appendix G.14 of this Scoping Report. Based on the requirements of GN 320, if a site is verified as low sensitivity, there are no further requirements. Therefore, no impact assessment is required in this regard.

6.16 Conclusion

Table 6.11 below provides a summary of the overall impact significance assessed by the relevant specialists at the Scoping Level. It includes the overall impact significance, based on the implementation of mitigation measures for each phase of the proposed project, including direct and cumulative impacts. Where information is not provided, it means that the impacts were not predicted for that phase and will be confirmed in the EIA Phase.

Overall, based on Table 6.9 it can be deduced that the effect of potential impacts can be limited or reduced to acceptable levels through avoidance, minimisation and the implementation of appropriate mitigation measures and management actions during the construction, operational and decommissioning phases. Therefore, based on the scoping level specialist input, potential negative impacts associated with the proposed project are anticipated to mainly be of low to very low significance after mitigation, whilst some impacts of moderate significance are expected post mitigation.

Table 6.9: Overall Impact Significance with the Implementation of Mitigation Measures for Direct and Cumulative Impacts for the proposed project.

Phase → Specialist Study ↓	Construction	Operational	Decommissioning
Direct Impacts			
Terrestrial Biodiversity, Terrestrial Plant Species and Terrestrial Animal Species	Low	Low	Low
Aquatic Biodiversity and Species	Very Low	Very Low	Very Low
Bat species Assessment	TBC in EIA Phase	TBC in EIA Phase	TBC in EIA Phase
Avifauna Assessment	Low	Medium	Low
Noise Impact Assessment	TBC in EIA Phase	TBC in EIA Phase	TBC in EIA Phase
Visual Impact Assessment	TBC in EIA Phase	TBC in EIA Phase	TBC in EIA Phase
Heritage Impact Assessment (Archaeology and Cultural Heritage)	Very Low Low	Low	Low
Palaeontological Assessment	Low	No Impact	No Impact
Socio-Economic Assessment	TBC in EIA Phase	TBC in EIA Phase	TBC in EIA Phase
Traffic Impact Assessment	Moderate Low	Moderate	TIA Not Provided
Geotechnical Assessment	Very Low	Very Low	Very Low
Cumulative Impacts			
Terrestrial Biodiversity, Terrestrial Plant Species and Terrestrial Animal Species	TBC in EIA Phase	TBC in EIA Phase	TBC in EIA Phase
Aquatic Biodiversity and Species	Low	Low	Low
Bat species Assessment	TBC in EIA Phase	TBC in EIA Phase	TBC in EIA Phase
Avifauna Assessment	Low	Moderate	Low
Noise Impact Assessment	TBC in EIA Phase	TBC in EIA Phase	TBC in EIA Phase
Visual Impact Assessment	TBC in EIA Phase	TBC in EIA Phase	TBC in EIA Phase
Heritage Impact Assessment (Archaeology and Cultural Heritage)	Low	Low	Low
Palaeontological Assessment	Low	No Impact	No Impact
Socio-Economic Assessment	TBC in EIA Phase	TBC in EIA Phase	TBC in EIA Phase
Traffic Impact Assessment	Moderate Low	Moderate	TIA Not Provided
Geotechnical Assessment	Low	Low	Low

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SCOPING REPORT

CHAPTER 7: Plan of Study for EIA



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7. PLAN OF STUDY FOR THE EIA

This chapter presents the Plan of Study for the Environmental Impact Assessment (PSEIA), which sets out the process to be followed in the Environmental Impact Assessment (EIA) Phase as required by the 2014 National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) EIA Regulations, as amended. The PSEIA is based on the outcomes of the Scoping Phase (to date) and provides the Terms of Reference (ToR) for the specialist assessments that have been identified, the alternatives that will be considered and assessed, as well as the public participation process (PPP) that will be undertaken during the EIA Phase. The details presented in this chapter applies to the proposed Beau Valley Wind Energy Facility (hereafter referred to as the “Beau Valley WEF” or the “proposed project”).

7.1 Purpose of EIA and Requirements of the EIA Regulations

As captured in Section 2 of Appendix 3 of the 2014 NEMA EIA Regulations (as amended), which specifies the content requirements for EIA Reports, “the purpose of the EIA Phase is to, through a consultative process:

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

The EIA Phase consists of three parallel and overlapping processes:

- Central assessment process through which inputs are integrated and presented in an EIA Report that is submitted for approval to the National Department of Forestry, Fisheries and the Environment (DFFE) and other commenting authorities (Sections 7.2, 7.3 and 7.4 of this chapter);
- Undertaking of a PPP whereby findings of the EIA Phase are communicated and discussed with Interested and Affected Parties (I&APs) and responses are documented (Section 7.3 of this chapter); and
- Undertaking of specialist assessments that provide additional information or assessments required to address the issues raised in the Scoping Phase (Sections 7.5, 7.6 and 7.8 of this chapter).

Table 7.1 below shows the requirements for the PSEIA in accordance with Appendix 2 (2) (1) (h) of the 2014 NEMA EIA Regulations (as amended).

Table 7.1: Requirements for the Plan of Study for EIA in accordance with the 2014 NEMA EIA Regulations (as amended)

Section of the EIA Regulations: Appendix 2 (2) (1) (h)	Requirements for a PSEIA in the Scoping Report in terms of Appendix 2 of the 2014 NEMA EIA Regulations, as amended (Government Notice (GN) R326)	Section of this Chapter of the PSEIA in which the required information is discussed
h	A plan of study for undertaking the EIA process to be undertaken, including –	
i	a description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity;	Section 7.7
ii	a description of the aspects to be assessed as part of the environmental impact assessment process;	Sections 7.5 to 7.8
iii	aspects to be assessed by specialists;	Sections 7.5 to 7.8
iv	a description of the proposed method of assessing the environmental aspects including aspects to be assessed by specialists;	Section 7.5
v	a description of the proposed method of assessing duration and significance;	Section 7.5
vi	an indication of the stages at which the Competent Authority will be consulted;	Section 7.3 and Section 7.4
vii	particulars of the public participation process that will be conducted during the environmental impact assessment process;	Section 7.3
viii	a description of the tasks that will be undertaken as part of the environmental impact assessment process; and	Section 7.2, Section 7.3, Section 7.4, Section 7.5 and Section 7.8
ix	identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.	Section 7.8 (note that Chapter 6 includes high-level management actions identified during the Scoping Phase. Section 7.8 of this chapter highlights which specialist studies will include such measures)

7.2 Overview of Approach to Preparing the EIA Report and EMPr

The specialist studies are being undertaken based on compliance with relevant legislation and based on the ToR indicated in Section 7.8 of this chapter. The results of the specialist assessments and other relevant project information and research undertaken for this proposed project will be integrated into the Draft EIA Report. A separate Draft EIA Report will be compiled for each of the 9 REFs (2 x SEF and 7 x WEF) that form the GEED hybrid renewable energy cluster near Beaufort West. The Draft EIA Report will be released for a 30-day I&AP and authority comment period, as outlined in Sections 7.3 and 7.4 of this chapter. I&APs registered on the project database will be notified in writing of the release of the Draft EIA Report for comment.

Comments raised on the Draft Scoping Report and Draft EIA Report, through written correspondence (emails and letters) will be captured in a Comments and Responses Report for inclusion in the Final Scoping Report (see Appendix E of this Final Scoping Scoping Report), and the Draft and Final EIA Report that will be submitted to the DFFE for decision-making. Refer to Section 7.3.2 of this chapter for additional information regarding this process.

The Draft and Final EIA Reports will include an Environmental Management Programme (EMPr), which will be prepared in compliance with the relevant regulations. The content of an EMPr must either contain the information set out in Appendix 4 of the 2014 NEMA EIA Regulations (as amended) or must be a Generic EMPr relevant to an application as identified and gazetted by the Minister in a Government Notice (GN). As part of the 2016 Electricity Grid Infrastructure (EGI) Strategic Environmental Assessment (SEA), a Generic EMPr was compiled for the development and expansion of (a) overhead electricity transmission and distribution infrastructure; and (b) substation infrastructure for the transmission and distribution of electricity. On 2 March 2018, these two Generic EMPs were gazetted in Government Gazette (GG) 41473, GN 162 and GN 163, for public comment for a period of 45 days. On 22 March 2019, these two Generic EMPs were gazetted for implementation, in GG 42323, GN 435.

As noted in previous chapters, the Beau Valley WEF S&EIA process includes the assessment of EGI which comprises 132 kV power lines and an on-site substation. Therefore, the Draft and Final EIA reports for the proposed project will include three (3) EMPs. This includes an EMPr to be compiled for the proposed WEF that complies with Appendix 4 of the 2014 NEMA EIA Regulations (as amended), as well as one EMPr for the on-site substation and one EMPr for the 132 kV power line that comply with the requirements of the gazetted EMPs for power line and substation infrastructure (Gazette 42323, GN 435), where relevant.

The EMPs will be based broadly on the environmental management philosophy presented in the ISO 14001 standard, which embodies an approach of continual improvement. Actions in the EMPr will be drawn primarily from the impact management actions in the specialist assessments for the construction and operational phases of the project. If the project components are decommissioned or re-developed this will need to be done in accordance with the relevant environmental standards and clean-up/remediation requirements applicable at the time. However, general management actions for the decommissioning phase will be provided.

7.3 Public Participation Process

The PPP in the EIA Phase will be undertaken in compliance with Chapter 6 of the 2014 NEMA EIA Regulations (as amended).

The need for a Public Participation Plan was originally stipulated in the directives published in GG 43412, GN R650 on 5 June 2020, regarding measures to address, prevent and combat the spread of COVID-19 relating to national environmental management permits and licences. GN 650 was applicable to Alert Level 3 and was repealed by GN 970 which was published on 9 September 2020 and applied for the period of the national state of disaster. However, GN R650 and GN R970 were repealed on 22 March 2022 by GG 46075, GN 1914. Due to the repeal of the above directives and the associated requirement for a public participation plan, a public participation plan was not compiled for this study. However, it is understood that even though GN R650 is repealed, it may be used as a guideline to inform the public participation process.

The key steps in the PPP for the EIA Phase are described below. The PPP for the Scoping Phase is described in detail in Chapter 4 of this Scoping Report.

As discussed in Chapter 1 and Chapter 4 of this Scoping Report, an integrated PPP (as agreed to by DFFE in the pre-application meeting, see Appendix F) is being undertaken for the proposed GEED Southern Cluster Beau Valley WEF project and the GEED Northern Cluster Projects (including the Eland WEF and Windy Plains WEF projects), as well as their associated infrastructure, which will entail that all public participation documents will serve to notify the I&APs and Organs of State of the joint availability of the reports for the aforementioned projects, and will provide I&APs with an opportunity to comment on the reports.

7.3.1 Task 1 – I&AP Review of the EIA Report and EMPr

The first stage in the process will entail the release of the Draft EIA Report for a 30-day I&AP and stakeholder comment period. Relevant stakeholders, Organs of State and I&APs will be informed of the review period in the following manner:

- **Database Maintenance:** In line with Regulation 42 of GN R326, an initial database of potential I&APs (including key stakeholders and Organs of State) was developed for the Scoping and EIA processes and will be updated throughout the process. Appendix D of this Scoping Report includes a copy of the I&AP database, which indicates interaction with I&APs, key stakeholders and all I&APs that have been added to the electronic project database, to date. While I&APs have been encouraged to register their interest in the project from the start of the process, following the public announcements, the identification and registration of I&APs is ongoing for the duration of the study. As a result, I&AP details will be captured and automatically updated as and when information is distributed to or received from I&APs. I&APs will only be removed or de-registered from the database, upon request. The updated database will be used to provide written notification of the release of the Draft EIA Report for comment.
- **Protection of Personal Information:** In accordance with the Protection of Personal Information Act (Act 4 of 2013), the CSIR will conduct itself responsibly when collecting, processing, storing and sharing any personal information collected for the purposes of PPP

in terms of the 2014 NEMA EIA Regulations (as amended). By registering as an I&AP and/or submitting information and comments, the stakeholder essentially consents to the collection, collation, processing, and storing of such information and the use and disclosure of such information for the aforementioned purpose¹. The stakeholders will also be given an opportunity to send an email to the EAP if they wish to opt out of communications on the proposed project.

- **Advertisements to Register Interest:** An advertisement will be placed in English, Afrikaans and isiXhosa in at least one local newspaper, at the commencement of the 30-day comment period for the Draft EIA Report. A copy of the content of the advertisement will be included as an Appendix in the Draft EIA Report, along with proof of placement included in the Final EIA Report.
- **Letter 4² to I&APs (Outcome of decision-making on Final Scoping Report (FSR) and commencement of EIA Phase for GEED Southern Cluster REFs):** Written notification of the outcome of decision-making on the FSR and the commencement of the EIA Phase (i.e. Letter 4) will be sent to all I&APs and Organs of State included on the updated project database via email, where email addresses are available. This letter will be sent once the outcome of decision making on the FSR is received by the CA (i.e. at most 43 days after acknowledgment of receipt of the FSR by the DFFE). Letter 4 will include notification of the commencement of the EIA Phase for the proposed projects, and it will be written in English. Copies of Letter 4 and emails sent will be included in the Draft EIA Report that will be released for a 30-day review period.
- **Letter 5 to I&APs (Availability of the Draft EIA Reports for GEED Southern Cluster REFs for public comment):** Written notification of the availability of the Draft EIA Reports (i.e. Letter 5) will be sent to all I&APs, Stakeholders and Organs of State included on the updated project database via email, where email addresses are available. This letter will be sent at the commencement of the 30-day review period on the Draft EIA Report, and will include information on the proposed projects and notification of the release and availability of the reports. Letter 5 will be written in English. Proof of email, as well as copies of the Letter 5, will be included in the Final EIA Reports that will be submitted to the DFFE for decision-making.
- **Text Messaging:** SMS texts will also be sent to all I&APs on the updated project database, where cell phone numbers are available, to inform them of the proposed projects and how to access the Draft EIA Reports.
- **Local Networks:** Where possible, communication will be made with the relevant Municipal Ward Councillor and/or similar community forums to request that they send notifications of the proposed projects, report availability and executive summaries via their local networks (such as WhatsApp groups, Neighbourhood Watch groups, other social media mechanisms etc.).

¹ CSIR Privacy Notice. Website: <https://www.csir.co.za/csir-privacy-notice>

² Note that Letters 1, 2, and 3 are addressed in Chapter 4 of this Scoping Report and apply to the Scoping Phase.

- **30-day Comment Period:** As noted above, potential I&APs, including authorities and Organs of State, will be notified via Letter 5, of the 30-day comment and registration period within which to submit comments on the Draft EIA Reports and/or to register on the I&AP database.
- **Executive Summaries:** Executive summaries of the Draft EIA Reports will also be emailed to I&APs on the database, where email addresses are available, together with Letter 5, and uploaded to the project website and alternative web-platforms.
- **Availability of Information:** The Draft EIA Reports will be uploaded to the project website (i.e. <https://www.csir.co.za/environmental-impact-assessment>) for I&APs to access it. As a supplementary mechanism, the Draft EIA Reports will also be uploaded to other alternative web-platforms such as Dropbox or Google Drive. If an I&AP cannot access the reports via the project website, via the alternative web-platforms such as Dropbox or Google Drive, and if additional information is required (other than what is provided in the Executive Summaries), then the I&AP can contact the EAP, who will then make an electronic copy available (where feasibly possible).

7.3.2 Task 2 – Comments and Responses Report

A key component of the EIA process is documenting and responding to the comments received from I&APs and the authorities. Copies of all written comments received during the review of the Draft EIA Reports will be compiled into a Comments and Responses Report for inclusion in an appendix to the Final EIA Reports that will be submitted to the DFFE for decision-making. The Comments and Responses Report will indicate the nature of the comment, as well as when and who raised the comment. The comments received will be considered by the EIA team and appropriate responses provided by the relevant member of the EIA team, the Project Developer and/or specialists. The response provided will indicate how the comment received has been dealt with in the EIA Process and considered in the Final EIA Reports, the project design or EMPs. Should the comment received fall beyond the scope of this EIA, clear reasoning will be provided.

7.3.3 Task 3 – Compilation of the Final EIA Reports for Submission to DFFE

Following the 30-day commenting period on the Draft EIA Reports and incorporation of the comments received into the reports, the Final EIA Reports will be submitted to the DFFE for decision-making in line with Regulation 23 (1) (a) of the 2014 NEMA EIA Regulations (as amended). The report will be submitted electronically to the DFFE via the Novell S-Filer system, as recommended by the DFFE since June 2020.

In line with best practice, I&APs on the project database will be notified via **Letter 6** via email (where email addresses are available) of the submission of the Final EIA Reports to the DFFE for decision-making. To ensure ongoing access to information, copies of the Final EIA Reports that have been submitted for decision-making and the Comments and Response Reports (detailing comments received during the EIA Phase and responses thereto) will be placed on the project website (i.e. <https://www.csir.co.za/environmental-impact-assessment>). As a supplementary mechanism, the Final EIA Reports will also be uploaded to other alternative web-platforms such as Dropbox or Google Drive.

The Final EIA Reports, which will be submitted for decision-making to the DFFE, will include proof of the PPP that was undertaken to inform Organs of State, Stakeholders and I&APs of the availability of the Draft EIA Reports for the 30-day comment period (as explained above).

The DFFE will have 107 days (from receipt of the Final EIA Reports) to either grant or refuse EA (in line with Regulation 24 (1) of the 2014 NEMA EIA Regulations, as amended).

7.3.4 Task 4 – Environmental Authorisation (EA) and Appeal Process

Subsequent to the decision-making phase, if EAs are granted by the DFFE for the proposed projects, all registered I&APs, Organs of State and Stakeholders on the project database will receive notification of the issuing of the EAs and the associated appeal period. The 2014 NEMA EIA Regulations (as amended) (i.e. Regulation 4 (1)) states that after the Competent Authority has reached a decision, it must inform the Project Applicant of the decision, in writing, within 5 days of such decision. Regulation 4 (2) of the 2014 NEMA EIA Regulations (as amended) stipulates that I&APs need to be informed of the EA and associated appeal period within 14 days of the date of the decision.

The distribution of the EAs (should such authorisations be granted by the DFFE), as well as the notification of the appeal period, will include a letter (i.e. **Letter 7** (Release of EAs and Notification of Opportunity to Appeal)) to be sent via email to all registered I&APs, Stakeholders and Organs of State on the project database, where email addresses are available. The letter will include information on the appeal period, as well as details regarding where to obtain a copy of the EAs. The EAs will be uploaded to the project website (i.e. <https://www.csir.co.za/environmental-impact-assessment>). SMS texts will also be sent to all I&APs on the database, where cell phone numbers are available, to inform them of the EA decisions reached by the DFFE.

7.4 Authority Consultation during the EIA Phase

Authority consultation is integrated into the PPP, with meetings or discussions held on online platforms with the lead authorities, where necessary. It is proposed that the Competent Authority (DFFE) as well as other lead authorities will be consulted at various stages during the EIA Process, if required. At this stage, the following authorities have been identified for the purpose of this EIA Process (additional authorities might be added to this list as the EIA Process progresses):

- | | |
|---|--|
| ▪ Air Traffic Navigation Services (ATNS) | ▪ DFFE Protected Areas Directorate; |
| ▪ AgriSA; | ▪ Endangered Wildlife Trust; |
| ▪ Birdlife South Africa; | ▪ Eskom SOC Ltd; |
| ▪ Cape Nature; | ▪ National Energy Regulator of South Africa (NERSA); |
| ▪ Department of Transport; | ▪ Heritage Western Cape; |
| ▪ Department of Water and Sanitation; | ▪ Western Cape Department of Environmental Affairs and Development Planning (DEADP); |
| ▪ DFFE Integrated Environmental Authorisations Directorate; | ▪ Central Karoo District Municipality; |
| ▪ DFFE Biodiversity and Conservation Directorate; | |

- Beaufort West Local Municipality;
- South African Civil Aviation Authority (CAA);
- South African Heritage Resources Agency (SAHRA)
- South African Local Government Association (SALGA) (Western Cape)
- South African National Parks (SANParks);
- South African National Roads Authority (SANRAL);
- South African Radio Astronomy Observatory (SARAO);
- South African Weather Services;
- Wildlife and Environmental Society of South Africa (WESSA); and
- World Wildlife Fund (WWF).

The authority consultation process for the EIA Phase is outlined in Table 7.2 below.

Table 7.2: Authority Communication Schedule

STAGE IN EIA PHASE	FORM OF CONSULTATION
During the EIA Process	Site visit with authorities (including DFFE), if required.
During preparation of EIA Report	Communication (via email or online platforms (i.e. Microsoft Teams) with the DFFE on the outcome of Specialist Studies, if required.
On submission of EIA Report for comment	Online meetings with dedicated departments, if requested by the DFFE, with jurisdiction over particular aspects of the project (e.g. Local Authority).

7.5 Approach to the Impact Assessment Methodology and Specialist Assessments

This section outlines the assessment methodology and legal context for specialist assessments, as recommended by the then Department of Environmental Affairs (DEA) 2006 Guideline on Assessment of Impacts, and the International Finance Corporation's (2012) Environmental and Social Performance Standards, as well as the World Bank's (2016) Environmental and Social Framework.

7.5.1 Impact Assessment Methodology

The Impact Assessment Methodology has been aligned with the requirements for EIA Reports as stipulated in Appendix 3 (3) (1) (j) of the 2014 NEMA EIA Regulations (as amended) which states the following:

“An environmental impact 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 an assessment of each identified potentially significant impact and risk, including-

- (i) cumulative impacts;
- (ii) the nature, significance and consequences of the impact and risk;
- (iii) the extent and duration of the impact and risk;
- (iv) the probability of the impact and risk occurring;
- (v) the degree to which the impact and risk can be reversed;

- (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 mitigated”.

The identification of potential impacts includes impacts that may occur during the construction, operational and decommissioning phases of the development. The assessment of impacts includes direct, indirect as well as cumulative impacts. In order to identify potential impacts (both positive and negative) it is important that the nature of the proposed project is well understood so that the impacts associated with the project can be assessed. The process of identification and assessment of impacts will include:

- Determining the current environmental conditions in sufficient detail so that there is a baseline against which impacts can be identified and measured;
- Determining future changes to the environment that will occur if the activity does not proceed;
- Develop an understanding of the activity in sufficient detail to understand its consequences; and
- The identification of significant impacts, which are likely to occur if the activity is undertaken.

The following principles underpin the application of this methodology:

- Transparent and repeatable process - specialists are to describe the thresholds and limits they apply in their assessment, wherever possible.
- Adapt parameters to context (where justified) – the methodology proposes some thresholds (e.g. for spatial extent, in Step 3 below), however, if the nature of the impact requires a different definition of the categories of spatial extent, then this can be provided and described by the specialist.
- Combination of a quantitative and qualitative assessment – where possible, specialists are to provide quantitative assessments (e.g. areas of habitat affected, number of jobs), however, it is recognised that not all impacts can be quantified, and then qualitative assessments are to be provided.

As per the then Department of Environmental Affairs and Tourism (DEAT) Guideline 5: Assessment of Alternatives and Impacts, the following methodology is applied to the prediction and assessment of impacts and risks. Potential impacts and risks will be rated in terms of direct, indirect and cumulative impacts:

- **Direct impacts** are impacts that are caused directly by the activity and generally occur at the same time and at the place of the activity. These impacts are usually associated with the construction, operation or maintenance of an activity and are generally obvious and quantifiable.
- **Indirect impacts** of an activity are indirect or induced changes that may occur as a result of the activity. These types of impacts include all the potential impacts that do not manifest immediately when the activity is undertaken, or which occur at a different place as a result of the activity.
- **Cumulative impacts** are impacts that result from the incremental impact of the proposed activity on a common resource when added to the impacts of other past, present or reasonably foreseeable future activities. Cumulative impacts can occur from the collective

impacts of individual minor actions over a period of time and can include both direct and indirect impacts.

In addition to the above, the Impact Assessment Methodology includes the following aspects:

- **Step 1: Nature of impact/risk** - this reviews the type of effect that a proposed activity will have on the environment and includes “what will be affected and how?” The term environment has a broad interpretation that includes both the natural (biophysical) environment and the socio-economic environment. The term socio-ecological system is also used to describe the natural and socio-economic environment and the interactions amongst these components.
- **Step 2: Status** - Whether the impact/risk on the overall environment (social, biophysical and economic) will be:
 - Positive - environment overall will benefit from the impact/risk;
 - Negative - environment overall will be adversely affected by the impact/risk; or
 - Neutral - environment overall will not be affected.
 - Note: The significance of a negative impact may be called a risk, and the significance of a positive impact may be called an opportunity.
- **Step 3: Qualitative determination of the consequence of the impact/risk by identifying the a) spatial extent; b) duration; c) reversibility; and d) irreplaceability.**
 - **A) Spatial extent** – The size of the area that will be affected by the impact/risk:
 - Site specific;
 - Local (<10 km from site);
 - Regional (<100 km of site / within the district municipality);
 - National; or
 - International (e.g. Greenhouse Gas emissions or migrant birds).
 - **B) Duration** – The timeframe during which the impact/risk will be experienced:
 - Very short term (instantaneous);
 - Short term (less than 1 year);
 - Medium term (1 to 10 years);
 - Long term (the impact will cease after the operational life of the activity (i.e. the impact or risk will occur for the project duration)); or
 - Permanent (mitigation will not occur in such a way or in such a time span that the impact can be considered transient (i.e. the impact will occur beyond the project decommissioning)).
 - **C) Reversibility** of the Impacts - the extent to which the impacts/risks are reversible assuming that the project has reached the end of its life cycle (decommissioning phase):
 - High reversibility of impacts (impact is highly reversible at end of project life i.e. this is the most favourable assessment for the environment);
 - Moderate reversibility of impacts;
 - Low reversibility of impacts; or

- Impacts are non-reversible (impact is permanent, i.e. this is the least favourable assessment for the environment).
- **D) Irreplaceability** of Receiving Environment/Resource Loss caused by impacts/risks – the degree to which the impact causes irreplaceable loss of resources assuming that the project has reached the end of its life cycle (decommissioning phase):
 - High irreplaceability of resources (project will destroy unique resources that cannot be replaced, i.e. this is the least favourable assessment for the environment);
 - Moderate irreplaceability of resources;
 - Low irreplaceability of resources; or
 - Resources are replaceable (the affected resource is easy to replace/rehabilitate, i.e. this is the most favourable assessment for the environment).

These criteria are then combined in a qualitative manner to determine the **consequence**. The consequence terms ranging from slight to extreme (as described below) will be calibrated per Specialist Study, where required, so that there is transparency and consistency in the way a risk/impact is measured.

- **Consequence** – The anticipated consequence of the risk/impact is generally defined as follows:
 - Extreme (extreme alteration of natural or socio-economic systems, patterns or processes, i.e. where environmental or socio-economic functions and processes are altered such that they permanently cease);
 - Severe (severe alteration of natural or socio-economic systems, patterns or processes, i.e. where environmental or socio-economic functions and processes are altered such that they temporarily or permanently cease);
 - Substantial (substantial alteration of natural or socio-economic systems, patterns or processes, i.e. where environmental or socio-economic functions and processes are altered such that they temporarily or permanently cease);
 - Moderate (notable alteration of natural or socio-economic systems, patterns or processes, i.e. where the natural or socio-economic environment continues to function but in a modified manner; or
 - Slight (negligible and transient alteration of natural or socio-economic systems, patterns or processes, i.e. where natural systems/environmental or socio-economic functions, patterns, or processes are not affected in a measurable manner, or if affected, that effect is transient and the system recovers).
- **Step 4:** The **probability** of the impact/risk must be rated using the criteria below:
 - **Probability** – The probability of the impact/risk occurring:
 - Extremely unlikely (little to no chance of occurring);
 - Very unlikely (<30% chance of occurring);
 - Unlikely (30-50% chance of occurring)
 - Likely (51 – 90% chance of occurring); or
 - Very Likely (>90% chance of occurring regardless of prevention measures).

- **Step 5:** Determination of the **significance** of the identified impact/risk using both the **consequence** and **probability** (qualitatively as shown in Figure 7.1). The approach incorporates internationally recognised methods from the Intergovernmental Panel on Climate Change (IPCC) (2014) assessment of the effects of climate change and is based on an interpretation of existing information in relation to the proposed activity, to generate an integrated picture of the risks related to a specified activity in a given location, with and without mitigation. Risk is assessed for each significant stressor (e.g. physical disturbance), on each different type of receiving entity (e.g. the municipal capacity, a sensitive wetland), qualitatively (very low, low, moderate, high, very high) against a predefined set of criteria. Significance definitions and rankings are provided below:

Probability	Very Likely					Very High Risk/Impact
	Likely					High Risk/Impact
	Unlikely			Moderate Risk/Impact		
	Very Unlikely		Low Risk/Impact			
	Extremely Unlikely	Very Low Risk/Impact				
		Slight	Moderate	Substantial	Severe	Extreme
		Consequence**				
		**[Qualitatively determined based on Spatial Extent, Duration, Reversibility and Irreplaceability]				

Figure 7.1: Guide to assessing risk/impact significance as a result of consequence and probability

- **Significance** – Will the impact cause a notable alteration of the environment?
 - Very low (the risk/impact may result in very minor alterations of the environment and can be easily avoided by implementing appropriate mitigation measures, and will not have an influence on decision-making);
 - Low (the risk/impact may result in minor alterations of the environment and can be easily avoided by implementing appropriate mitigation measures, and will not have an influence on decision-making);
 - Moderate (the risk/impact will result in moderate alteration of the environment and can be reduced or avoided by implementing the appropriate mitigation measures, and will only have an influence on the decision-making if not mitigated);
 - High (the risk/impact will result in major alteration to the environment even with the implementation on the appropriate mitigation measures and will have an influence on decision-making); and
 - Very high (the risk/impact will result in very major alteration to the environment even with the implementation on the appropriate mitigation measures and will have an influence on decision-making (i.e. the project cannot be authorised unless major changes to the engineering design are carried out to reduce the significance rating)).

With the implementation of mitigation measures, the residual impacts/risks are ranked as follows in terms of significance:

- Very low = 5;
 - Low = 4;
 - Moderate = 3;
 - High = 2; and
 - Very high = 1.
-
- **Step 6:** Determine the **Confidence Level** – The degree of confidence in predictions based on available information and specialist knowledge:
 - Low;
 - Medium; or
 - High.

Other aspects to be taken into consideration in the assessment of impact significance are:

- Impacts are to be evaluated for the construction, operational and decommissioning phases of the development. The assessment of impacts for the decommissioning phase will be brief, as there is limited understanding at this stage of what this might entail. The relevant rehabilitation guidelines and legal requirements applicable at the time will need to be applied;
- Impacts will be evaluated with and without mitigation in order to determine the effectiveness of mitigation measures on reducing the significance of a particular impact;
- The impact evaluation will, where possible, take into consideration the cumulative effects associated with this and other Wind and Solar PV projects which are either developed or in the process of being developed in the local area (i.e. within 30 km from the proposed Beau Valley WEF). Refer to Section 7.5.2 for a description of the cumulative impact assessment methodology; and
- The impact assessment will attempt to quantify the magnitude of potential impacts (direct, indirect and cumulative effects) and outline the rationale used. Where appropriate, national standards are to be used as a measure of the level of impact.

Impacts will then be collated into the EMPr and these will include the following:

- Quantifiable standards for measuring and monitoring mitigatory measures and enhancements will be set. This will include a programme for monitoring and reviewing the recommendations to ensure their ongoing effectiveness;
- Identifying negative impacts and prescribing mitigation measures to avoid or reduce negative impacts. Where no mitigatory measures are possible this will be stated; and
- Positive impacts will be identified and augmentation measures will be identified to potentially enhance positive impacts where possible.

Table 7.3 below will be used by the specialists for the rating of impacts, and repeated for the Construction, Operational and Decommissioning Phases.

Table 7.3: Example of Table for Assessment of Impacts/Risks

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation)	Potential mitigation measures	Significance and Ranking (Post-Mitigation)	Confidence Level
CONSTRUCTION PHASE						
Habitat and species loss as a result of clearance of vegetation for the Wind Energy Facility	Status	Negative	Moderate (3)	Plant search and rescue (EMPr)	Low (4)	Medium
	Spatial Extent	Site Specific				
	Duration	Long-term				
	Consequence	Substantial				
	Probability	Very likely				
	Reversibility	Moderate				
	Irreplaceability	Moderate				

7.5.2 Cumulative Impact Assessment Methodology

The cumulative impact assessment will include other renewable energy projects (i.e. Wind and Solar PV) projects within a 30 km radius that are in different stages of planning and/or development (e.g. have received an EA, BA/EIA in progress at the commencement of this Scoping and EIA Process, or has been constructed); including the proposed REFs comprising the GEED Renewable Energy Cluster. The information has been sourced from the National DFFE Renewable Energy EIA Application (REEA) database; as well as from the South African Heritage Resources Information System (SAHRIS). Table 7.4 provides more details, whilst Figure 7.2 provides an illustration of the projects that will be considered in the cumulative impact assessment. All withdrawn or lapsed projects will not be considered.

Table 7.4: Proposed renewable energy projects, located within 30 km of the proposed Beau Valley WEF, that will be considered in the Cumulative Impact Assessment (in addition to the GEED Renewable Energy Cluster and EGI Projects) (Source: DFFE REEA, Quarter 3, 2022; and SAHRIS)

CSIR NO.	DFFE REFERENCE	TECHNOLOGY	MW	STATUS	PROJECT TITLE	ASSESSMENT PROCESS	APPLICANT	EAP (firm)
1	14/12/16/3/3/2/2044	Onshore Wind	280	EA Awarded	Nuweveld East Wind Farm	S&EIA	Red Cap Nuweveld East (Pty) Ltd	Zutari (Pty) Ltd
	14/12/16/3/3/2/2044/AM1							
2	14/12/16/3/3/2/2043	Onshore Wind	280	EA Awarded	Nuweveld West Wind Farm	S&EIA	Red Cap Nuweveld West (Pty) Ltd	Zutari (Pty) Ltd
3	14/12/16/3/3/1/2604	Onshore Wind	420	EA Awarded	Hoogland Wind Farm (03)	BA	Red Cap Hoogland 3 (Pty) Ltd	SLR South Africa Consulting (Pty) Ltd
4	14/12/16/3/3/1/2605	Onshore Wind	420	EA Awarded	Hoogland Wind Farm (04)		Red Cap Hoogland 4 (Pty) Ltd	SLR South Africa Consulting (Pty) Ltd
Renewable Energy Facilities comprising the GEED Middle Cluster								
5	To Be Allocated (TBA)	Onshore Wind	230	Pre-application	Genesis Aloe WEF	S&EIA	Genesis Aloe Wind Farm (Pty) Ltd	CSIR
6	TBA	Onshore Wind	390	Pre-application	Genesis Gazania WEF	S&EIA	Genesis Gazania Wind Farm (Pty) Ltd	CSIR
7	TBA	Onshore Wind	530	Pre-application	Genesis Elegia WEF	S&EIA	Genesis Elegia Wind Farm (Pty) Ltd	CSIR
Renewable Energy Facilities comprising the GEED Southern Cluster								
8	14/12/16/3/3/2/2413	Onshore Wind	250	Scoping Phase	Genesis Beau Valley WEF	S&EIA	Genesis Beau Valley Wind Farm (Pty) Ltd	CSIR
	14/12/16/3/3/2/2349	Solar PV	200	EIA Phase	Genesis Beau Valley SEF	S&EIA	Genesis Beau Valley Solar Farm (Pty) Ltd	CSIR
9	TBA	Onshore Wind	110	Pre-application	Genesis DBF South WEF	S&EIA	Genesis DBF South Wind Farm (Pty) Ltd	CSIR
	14/12/16/3/3/2/2317	Solar PV	400	EIA Phase	Genesis DBF South SEF	S&EIA	Genesis DBF South Solar Farm (Pty) Ltd	CSIR

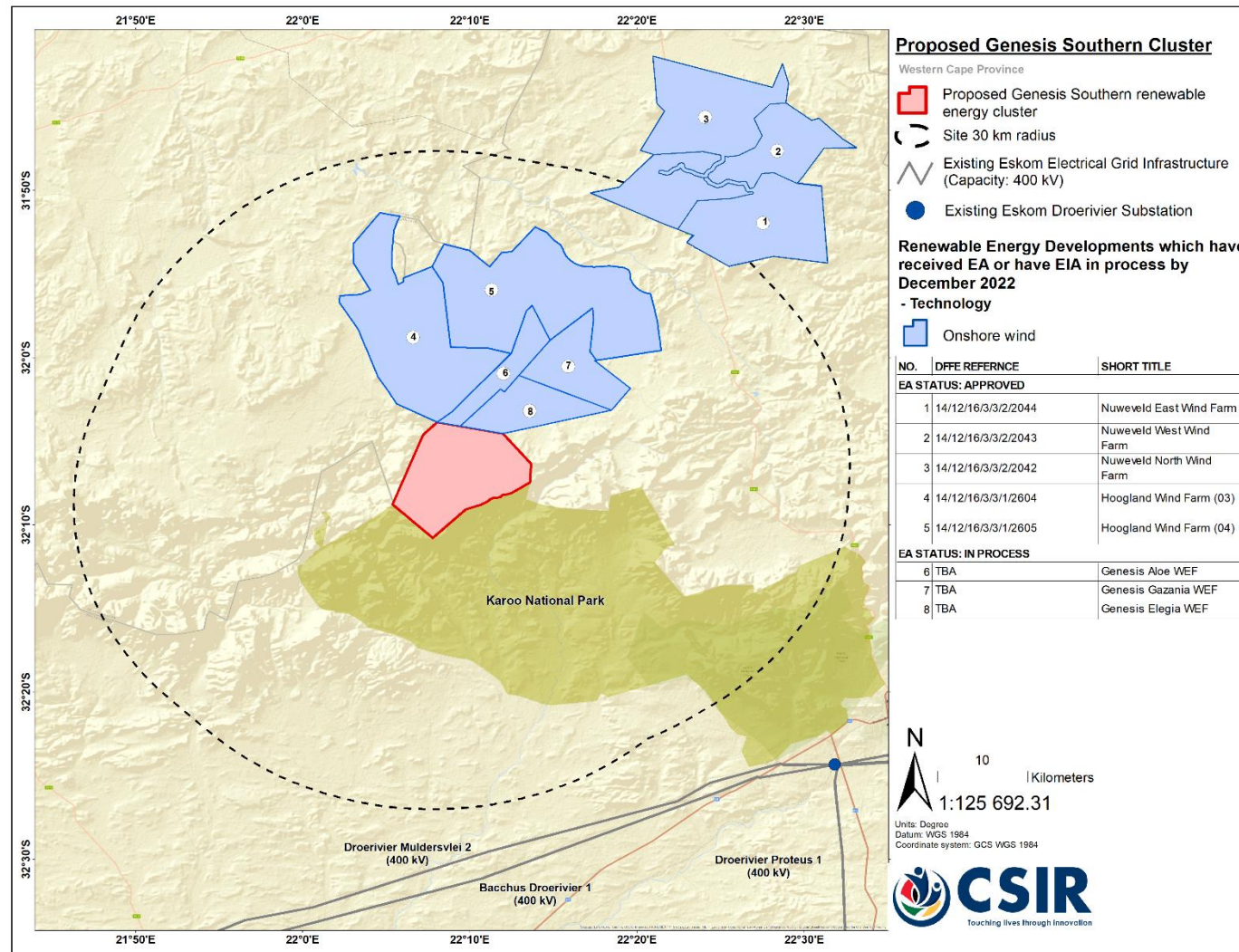


Figure 7.2: Renewable Energy projects within the 30 km radius considered for the Cumulative Impact Assessment (Source: DFFE REEA Quarter 3, 2022; and SAHRIS, Red Cap Energy (Pty) Ltd (2023)).

7.6 Issues or impacts to be assessed as part of the EIA Process

The issues and impacts presented in this section have been identified based on scoping level assessment input from specialists that form part of the EIA project team. These issues and impacts will be assessed in further detail during the EIA Phase through the specialist assessments and are included in Chapter 6 of this Scoping Report; however, for ease of reference, they have been summarised below in Table 7.5 for the Beau Valley WEF project. It must be noted that additional issues may be raised during the Scoping Phase, which could potentially be assessed during the EIA Phase. It is emphasised that the Scoping Report in general provides preliminary impacts, sensitivities and impact significance ratings which will be updated and finalised, as relevant, and presented in more detail in the detailed Specialist Studies and in the EIA Report.

Table 7.5: Summary of Issues to be addressed during the EIA Phase as part of the specialist assessments for the Beau Valley WEF and associated infrastructure project

SPECIALIST ASSESSMENT INPUT	KEY ISSUES TO BE ADDRESSED
Agriculture and Soils Compliance Statement	Negative potential impacts: - Construction and Operational Phases: Loss of agricultural potential by occupation of land. - Construction, Operational and Decommissioning Phases: Loss of agricultural potential by soil erosion and degradation. Positive potential impacts (Construction, Operation and Decommissioning Phases): - Increased financial security for farming operations.
Terrestrial Biodiversity, Terrestrial Species, Terrestrial Plant and Animal Species	Construction Phase: - Impacts on vegetation and listed or protected plant species - Direct Faunal Impacts - Impacts on Riverine Rabbit - Impact on the Karoo Dwarf Tortoise - Erosion Risk - Impacts on ESA, CBAs and broad-scale ecological processes - Impact on Expansion of the Karoo National Park Operational Phase: - Erosion risk - Impact on adjacent NPAES focus areas
Aquatic Biodiversity Impact Assessment	Construction Phase: - Disturbance of aquatic habitat and the associated impact on sensitive aquatic biota - Removal of indigenous aquatic vegetation and associated loss of aquatic ecological integrity and functionality - Water supply for construction and associated stress on available water resources - Road crossing structures may impede flow in the aquatic features - Alien vegetation infestation may occur within the aquatic features due to disturbance - Increased sedimentation and risks of contamination of surface water runoff may result from construction works Operational Phase: - Decrease in aquatic ecosystem integrity (ongoing disturbance). - Decrease in aquatic ecosystem integrity (disturbance of cover vegetation and soil).

SCOPING REPORT: Scoping and Environmental Impact Assessment (EIA) Process for the
Proposed Development of Genesis Beau Valley Wind Energy Facility and associated
infrastructure, near Beaufort West, Western Cape Province

SPECIALIST ASSESSMENT INPUT	/ KEY ISSUES TO BE ADDRESSED
	▪ Modified runoff characteristics from hardened surfaces at the substation and along access roads has the potential to result in erosion of adjacent watercourses ▪ Water supply and water quality impacts (e.g. contamination from sewage) as a result of the operation of the site Decommissioning Phase: ▪ Increased disturbance of aquatic habitat due to the increased activity on the site ▪ Increased sedimentation and risks of contamination of surface water runoff Cumulative Impacts: ▪ Construction and Decommissioning Phases: Increased disturbance of aquatic habitat due to the increased activity in the wider area ▪ Operational Phase: Degradation of ecological condition of aquatic ecosystems
Bat Species Assessment	Construction Phase: ▪ Displacement of bats due to habitat loss / habitat transformation. ▪ Roost disturbance; and ▪ Roost destruction Operational Phase: ▪ Mortality of bats due to turbine collisions while commuting/foraging; ▪ Mortality of bats due to turbine collisions during migrations; and ▪ Light pollution associated risks including loss of insect prey and increased collision risks for bats foraging closer to turbines Decommissioning Phase: ▪ Displacement of bats due to disturbance associated with the decommissioning activities
Avifauna Impact Assessment	Construction Phase: ▪ Displacement due to disturbance and habitat transformation associated with the construction of the WEF and associated infrastructure. Operational Phase: ▪ Displacement due to habitat transformation and disturbance associated with the presence of the WEF and associated infrastructure. ▪ Mortality due to collisions with the wind turbines. ▪ Mortality due to electrocutions on the overhead sections of the internal 33kV cables and in the on-site substation complex. ▪ Mortality due to collisions with the overhead sections of the internal 33kV cables ▪ Mortality due to collisions with the 132kV overhead powerline. Decommissioning Phase: ▪ Displacement due to disturbance associated with the decommissioning of the WEF and associated infrastructure. Cumulative Impacts: ▪ Displacement due to disturbance associated with the construction of the WEF and associated infrastructure. ▪ Displacement due to habitat transformation associated with the construction of the WEF and associated infrastructure. ▪ Mortality due to collisions with the wind turbines. ▪ Mortality due to electrocutions on the overhead sections of the internal 33kV cable and on-site substation complex.

SCOPING REPORT: Scoping and Environmental Impact Assessment (EIA) Process for the
Proposed Development of Genesis Beau Valley Wind Energy Facility and associated
infrastructure, near Beaufort West, Western Cape Province

SPECIALIST ASSESSMENT INPUT	/ KEY ISSUES TO BE ADDRESSED
	▪ Mortality due to collisions with the overhead sections of the internal 33kV cables. ▪ Mortality due to collisions with the 132kV overhead powerline.
Noise Assessment Impact	Construction Phase: ▪ Noise pollution i.e. increase in ambient sound levels due to construction activities (e.g. equipment and vehicle noise). Operational Phase: ▪ Mechanical and aerodynamic noise from the operation of the wind turbine components. Decommissioning Phase: ▪ Noise pollution i.e. increase in ambient sound levels due to decommissioning activities (e.g. equipment and vehicle noise).
Visual Assessment Impact	Construction Phase: ▪ The potential visual impact of the construction of ancillary infrastructure (i.e. internal access roads, buildings, power line, etc.) on observers in close proximity to the facility. Operational Phase: ▪ The visibility of the facility to, and potential visual impact on, observers travelling along the secondary road in closer proximity to the proposed infrastructure. ▪ The visibility of the facility to, and potential visual impact on residents of dwellings within the study area, with specific reference to the farm residences in closer proximity to the proposed development. ▪ The potential visual impact of the facility on the visual character or sense of place of the region. ▪ The potential visual impact of the facility on tourist routes or tourist destinations/facilities (R381 and Karoo National Park). ▪ The visual absorption capacity of the natural vegetation (if applicable). ▪ The potential visual impact of operational, safety and security lighting of the facility at night on observers residing in close proximity of the facility. ▪ The potential visual impacts of shadow flicker on sensitive and potentially sensitive visual receptors in close proximity. ▪ Potential visual impacts associated with the construction phase. ▪ The potential to mitigate visual impacts and inform the design process.
Heritage Impact Assessment (Archaeology and Cultural Landscape)	Construction Phase: ▪ Potential impacts on archaeology ▪ Potential impacts on graves and burials ▪ Potential impacts on the cultural landscape Operational Phase: ▪ Potential impacts on the cultural landscape Decommissioning Phase: ▪ Potential impacts on the cultural landscape Cumulative Impacts: ▪ Potential impacts on archaeology ▪ Potential impacts on graves and burials ▪ Potential impacts on the cultural landscape

SCOPING REPORT: Scoping and Environmental Impact Assessment (EIA) Process for the
Proposed Development of Genesis Beau Valley Wind Energy Facility and associated
infrastructure, near Beaufort West, Western Cape Province

SPECIALIST ASSESSMENT INPUT	/ KEY ISSUES TO BE ADDRESSED
Palaeontology Site Sensitivity Verification Report	Construction Phase: ▪ Loss of fossil Heritage Cumulative Impacts (Construction Phase): ▪ Loss of fossil Heritage
Socio-Economic Impact Assessment	Construction Phase: ▪ Capital investment (CapEx) contributing to the national, regional and local economy; ▪ Generation of employment, income and skills; ▪ Social disruption and change in social dynamics; and ▪ Reduced quality of life and increased risks due to construction near residences. Operational Phase: ▪ Operational investment (OpEx) contributing to the national, regional and local economy; ▪ Generation of employment, income and skills; ▪ Increased community prosperity through contributions and income from the WEF; and ▪ Increased power generation reducing the probability of load shedding. Decommissioning Phase: ▪ Reduced employment and funding. Cumulative Impacts ▪ Stimulation of economic and employment growth; and ▪ Increased community prosperity through contributions and income from IPPs.
Traffic Assessment Impact	Construction Phase: ▪ The increased traffic volumes on the public roads will increase the potential of incidents on the road network within the study area ▪ The increased traffic volumes on the public roads will increase the potential for localised road network degradation within the study area. ▪ The increased traffic volumes on the unpaved public roads will generate more dust. ▪ The increased traffic volumes at intersections will increase the potential risk of accidents at the intersections, resulting in serious injuries or even fatalities, especially at the intersection on the main roads, when vehicles from the site need to cross over oncoming traffic. Operational Phase: ▪ The increased traffic volumes at intersections will increase the potential risk of accidents at the intersections, resulting in serious injuries or even fatalities, especially at the intersection on the main roads, when vehicles from the site need to cross over oncoming traffic. Decommissioning Phase: ▪ As part of the decommissioning process, a separate traffic impact assessment should be undertaken since many of the characteristics related to the traffic impact assessment, i.e. access routes, road geometry, traffic volumes, etc., would have changed over the operational life of the development. This will be confirmed before the decommissioning phase commences. Thus, the impact assessment for the decommissioning phase will not be provided. Cumulative Impacts ▪ The increased traffic volumes on the public roads will increase the potential of incidents on the road network within the study area ▪ The increased traffic volumes on the public roads will increase the potential for localised road network degradation within the study area.

SCOPING REPORT: Scoping and Environmental Impact Assessment (EIA) Process for the Proposed Development of Genesis Beau Valley Wind Energy Facility and associated infrastructure, near Beaufort West, Western Cape Province

SPECIALIST ASSESSMENT INPUT	KEY ISSUES TO BE ADDRESSED
	▪ The increased traffic volumes on the unpaved public roads will generate more dust. ▪ The increased traffic volumes at intersections will increase the potential risk of accidents at the intersections, resulting in serious injuries or even fatalities, especially at the intersection on the main roads, when vehicles from the site need to cross over oncoming traffic.
Battery Storage High Level Safety, Health and Environment Risk Assessment	▪ Solid State (Lithium-ion or Sodium-ion) Battery Energy Storage System (BESS): ○ Noxious smoke from potential fires. ○ Risk of fires or explosions. ▪ Redox flow BESS: ○ Risk of spills due to the large volume of electrolyte handled.
Geotechnical Assessment	Construction Phase: ▪ Increased unnatural hard surfaces that will yield increased runoff, potentially increasing erosion. ▪ Removal of rocks and other geologic materials for site levelling and grading, resulting in loss of geologic materials, e.g. topsoil removal/loss, and potentially the destruction of habitats of endemic species. ▪ Contamination of geologic materials as a consequence of the construction activities by earthworks machinery and other apparatus. Operational Phase: ▪ Increased unnatural hard surfaces yielding increased runoff, potentially increasing erosion. ▪ Contamination of geologic materials as a consequence of typical maintenance activities, as example. Decommissioning Phase: ▪ Increased unnatural hard surfaces yielding increased runoff, potentially increasing erosion. ▪ Removal of rocks and other geological materials for site levelling and grading, resulting in loss of geologic materials, e.g. topsoil removal/loss, and potentially the destruction of habitats of endemic species. Cumulative Impacts: ▪ The cumulative impacts identified include the impacts related to the construction, operational and decommissioning phases across the proposed development including the entire GEED Renewable Energy Cluster near Beaufort West, and neighbouring similar proposed developments occurring within a 30 km radius from the study area.
Civil Aviation Site Sensitivity Verification Report	▪ A Civil Aviation Site Sensitivity Verification was undertaken, which confirmed that the study area does not include any civil aviation installations, and therefore the low sensitivity is confirmed. No further requirements need to be fulfilled in terms of the Assessment Protocols of March 2020 (GN R320).
Defence Site Sensitivity Verification Report	▪ A Defence Site Sensitivity Verification was undertaken, which confirmed that the study area does not include any defence installations, and therefore the low sensitivity is confirmed. No further requirements need to be fulfilled in terms of the Assessment Protocols of March 2020 (GN R320).

7.7 Alternatives to be assessed in the EIA Phase

A description of the alternatives that will be assessed or considered during the EIA Phase is provided in Chapter 5 of this Scoping Report. However, they have been summarised below for ease of reference:

- **No-Go Alternative:**

- The no-go alternative assumes that the proposed project will not go ahead i.e. it is the option of not constructing the proposed Beau Valley WEF. This alternative would result in no environmental impacts (positive and negative) on the preferred site or surrounding local area, as a result of the proposed project. It will provide a baseline against which other alternatives will be compared and considered during the EIA Phase. The no-go alternative will be assessed in detail by all the specialists on the project team. **At this Scoping Phase, the no-go alternative is not preferred.**

- **Land-Use Alternative:**

- The current land-use is agriculture, specifically low density small stock grazing. There is no cultivation in the area. The study area has low agricultural sensitivity and is **not deemed feasible to assess further during the EIA Phase**. The proposed project offers some positive impact on agriculture by way of improved financial security for farming operations, as well as wider, societal benefits. The development of the proposed project at the preferred site is more favourable than the agricultural land-use alternative.

- **Type of Activity Alternative:**

- This relates to the generation of electricity from a renewable energy source, and in this particular case, from wind. The generation of electricity from a renewable energy source was the only activity considered by the Project Applicant, and thus considered in this Scoping Report. No other activity types were considered or deemed appropriate based on the expertise of the Project Applicant.

- **Renewable Energy Alternatives:**

- The Project Developer is undertaking Scoping and EIA processes for a holistic renewable energy cluster consisting of both wind and solar energy REFs. In terms of the suitability of WEF development at this location, the proposed project study area falls within the second highest GHI category of 2 000 kWh/m² to 2 200 kWh/m² in terms of the long-term yearly total. The mean wind power density map shows that the project study area falls within an area of approximately 101 – 300 W/m² (Figure 5.1). Local conditions are, therefore, favourable to the complement of renewable energy developments proposed by the Project Developer. Based on the findings of the Avifauna Scoping Level Assessment, the specific site proposed for the Beau Valley WEF outside the 3.7 km turbine exclusion buffer from Verreux's Eagle nests, therefore the proposed site is best suited to WEF development.
- In addition, **Hydro Power and Biomass Energy** are deemed **unsuitable**. These will not be further assessed in the EIA phase.

- **Preferred Site and Development Footprint within the site:**

- The preferred site for the proposed Beau Valley WEF comprises the following farm portions which covers an area of 8 355 ha, which serves as the study area for this Scoping and EIA Process:
 - Portion 1 of Doornboomfontyn Farm Nr. 89;
 - Remaining Extent of Doornboomfontyn Farm Nr. 89.
- The proposed 132 kV overhead power line within the 300 metre wide assessment corridor will extend from
 - Portion 1 of Doornboomfontyn Farm Nr. 89; to
 - Matjesfontein Farm No. 412.
- This led to the identification of the Original Scoping Buildable Areas within the preferred site. Furthermore, a screening and site verification exercise of the study area was undertaken by the specialist team during this Scoping Phase. The Scoping Level Specialist Assessments are included in Appendix G of this Scoping Report. The findings of the Scoping Level Specialist Assessments were used to determine the Revised Scoping Buildable Areas. The Revised Scoping Buildable Areas avoid the no-go sensitivities identified by the specialists.
- The preferred project layout will be confirmed following the input from the various specialists during the EIA Phase.

- **Technology Alternatives**

- The following types of BESS technologies will be assessed in the EIA Phase and the preferred alternative will thereafter be selected or both alternatives will be put forward for approval in the EA (should it be granted):
 - Lithium-ion or Sodium-ion BESS; and
 - RFB.

It is important to note that where alternatives are not feasible or will not be assessed, a motivation has been provided in Chapter 5 of this Scoping Report. The preferred alternatives will be assessed during the EIA Phase.

7.8 Terms of Reference for the Specialist Assessments

The ToRs for the Specialist Assessments will essentially consist of the generic assessment requirements and the specific issues identified for each discipline. The ToRs will be updated to include relevant comments received from I&APs and authorities during the 30-day commenting period of the Scoping Report.

The following Specialist Assessments have been identified following consultation with the Screening Tool³ to determine a baseline description of the prevalent environmental sensitivities within the proposed project site and based on an understanding of potential issues associated with REF projects. The ToR for each Specialist Assessment is discussed in detail below. The Specialist Assessments and associated Specialists are indicated in Table 7.6 for the proposed WEF S&EIA process. Additional Specialist Assessments could possibly be commissioned as a result of concerns raised during the Scoping Phase.

³ The National Screening Tool can be accessed at <https://screening.environment.gov.za/screeningtool/#/pages/welcome>

Table 7.6: Specialist Assssments and associated Specialist Consultants commissioned to assess the environmental sensitivites for the Beau Valley WEF and associated infrastructure

NAME	ORGANISATION	ROLE/STUDY TO BE UNDERTAKEN
Johann Lanz (<i>Pr.Sci.Nat.</i>)	Private	Agriculture and Soils Compliance Statement
Simon Todd (<i>Pr.Sci.Nat.</i>)	3Foxes Biodiversity Solutions	Terrestrial Biodiversity, Terrestrial Plant Species, and Terrestrial Animal Species
Kevin McCann	Biodiversity Outcomes	Biodiversity Stewardship Consultant
To Be Appointed (TBA)	TBA	Biodiversity Offset Study ⁴
Toni Belcher (<i>Pr.Sci.Nat.</i>)	Private	Aquatic Biodiversity Impact Assessment
Chris van Rooyen ⁵ Albert Froneman (<i>Pr.Sci.Nat.</i>)	Chris van Rooyen Consulting, AfriAvian Environmental (Pty) Ltd	Avifauna Impact Assessment
Mark Hodgson (<i>Pr.Sci.Nat.</i>) Ashlin Bodasing (<i>Pr.Sci.Nat.</i>) Craig Campbell (<i>Pr.Sci.Nat.</i>)	ARCUS	Bat Species Impact Assessment
Lourens Du Plessis Tosca de Villiers	LOGIS	Visual Impact Assessment
Dr Brett Williams Jason Hutten	Safetech	Noise Impact Assessment
John Gribble	ACO Associates	Heritage Impact Assessment (Archaeology and Cultural Landscape)
Elize Butler	BANZAI Environmental	Palaeontology Site Sensitivity Verification Report
Sue Reuter Christopher Dalglish	SRK Consulting	Socio-Economic Impact Assessment
Athol Schwartz (<i>Pr. Tech.</i>)	Private	Traffic Impact Assessment
Debbie Mitchell (<i>Pr Eng</i>)	Ishecon cc	Battery Storage High Level Safety, Health and Environment Risk Assessment
Louis Jonk (<i>Pr.Sci.Nat.</i>) Shane Teek (<i>Pr.Sci.Nat.</i>)	GEOSS South Africa (PTY) Ltd	Desktop Geotechnical Assessment
Helen Antonopoulos Lizande Kellerman (<i>Pr.Sci.Nat.</i>)	CSIR	Civil Aviation Site Sensitivity Verification
Helen Antonopoulos Lizande Kellerman (<i>Pr.Sci.Nat.</i>)	CSIR	Defence Site Sensitivity Verification

The requirements for Specialist Assessments are specified in Appendix 6 of the 2014 NEMA EIA Regulations (as amended), and, where relevant, the Assessment Protocols that were published on 20 March 2020, in GG 43110, GN R320; and on 30 October 2020 in GG 43855, GN R1150. These protocols stipulate the procedures for the assessment and Minimum Reporting Criteria for

⁴ A Biodiversity Offset specialist is in the process of being appointed to undertake a cumulative biodiversity offset study for Beau Valley WEF, SEF and DBF South SEF in accordance with the National Biodiversity Offset Guideline gazetted on 23 June 2023 in GN 3569 of GG 48841. The biodiversity offset study will be made available to I&APs with the Draft EIA Report and will be used to inform the stewardship programme and conservation agreement with SANParks as the management authority of the Karoo National Park.

⁵ Please note that the Avifauna Scoping Report was authored by Chris van Rooyen before his passing in June 2023. Mr van Rooyen worked under the supervision and in association with Albert Froneman. Following Mr van Rooyen's passing, Albert Froneman has assumed lead authorship as the avifaunal specialist and will continue to provide specialist input on the proposed project under AfriAvian Environmental (Pty) Ltd.

identified environmental themes in terms of Sections 24 (5) (a) and (h) and Section 44 of the NEMA when applying for EA.

The Assessment Protocols in GN R320 include the following sections:

- **Part A:** This includes the Site Sensitivity Verification requirements where a Specialist Assessment is required but no Specific Assessment Protocol has been prescribed. This is applicable to the following specialist assessments for this project: Visual Impact Assessment; Heritage Impact Assessment; Palaeontology Assessment; Socio-Economic Assessment; Traffic Impact Assessment; Geohydrology Assessment; and Geotechnical Assessment. The current use of the land and the environmental sensitivity of the site under consideration identified by the Screening Tool, where determined, must be verified and confirmed by undertaking a Site Sensitivity Verification. A Site Sensitivity Verification must be compiled. Where there are no sensitivity layers on the Screening Tool for a particular Specialist Assessment, then this must be stated in the actual Specialist Assessment. For example, as of December 2022, there are no sensitivity layers on the Screening Tool for Socio-Economic, Traffic, Geohydrology, and Geotechnical features. These relevant Specialist Assessments must comply with Appendix 6 of the 2014 NEMA EIA Regulations (as amended).
- **Part B:** This includes the Site Sensitivity Verification requirements and the Assessment and Minimum Reporting Criteria where a Specialist Assessment is required, and a specific Assessment Protocol has been prescribed. The following prescribed protocols are relevant to this proposed project:
 - **Agriculture:** Site Sensitivity Verification Report required and specific Assessment Protocol to be followed. This applies to all onshore wind and/or solar PV energy activities requiring EA;
 - **Terrestrial Biodiversity:** Site Sensitivity Verification Report required and specific Assessment Protocol to be followed. This applies to all relevant activities requiring EA (based on the classification identified by the Screening Tool);
 - **Aquatic Biodiversity:** Site Sensitivity Verification Report required and specific Assessment Protocol to be followed. This applies to all relevant activities requiring EA (based on the classification identified by the Screening Tool);
 - **Civil Aviation:** Site Sensitivity Verification Report required and specific Assessment Protocol to be followed. This applies to all relevant activities requiring EA (based on the classification identified by the Screening Tool); and
 - **Defence:** Site Sensitivity Verification Report required and specific Assessment Protocol to be followed. This applies to all relevant activities requiring EA (based on the classification identified by the Screening Tool).

GN 1150 prescribes protocols in respect of specific environmental themes for the assessment of, as well as the minimum report content requirements on, the environmental impacts for activities requiring EA. GN 1150 includes a protocol for the specialist assessment and minimum report content requirements for environmental impacts on a) **terrestrial animal species** and b) **terrestrial plant species**. The requirements of these protocols apply from the date of publication (i.e. from 30 October 2020). **Therefore, these protocols are applicable to the project.**

As noted above, the specialist assessments will comply with Appendix 6 of the 2014 NEMA EIA Regulations (as amended), or the Assessment Protocols published in GN R320 on March 2020; or the Assessment Protocols published in GN R1150 on October 2020. The BESS Risk Assessment will serve as a technical report, and the aforementioned legislation will thus not be applicable.

7.8.1 Agricultural Compliance Statement

The Agricultural Compliance Statement must comply with the Assessment Protocols that were published on 20 March 2020, in GG 43110, GN R320. This specifically includes the Agriculture Protocol that applies to all onshore wind and/or solar PV energy activities requiring EA. This protocol replaces the requirements of Appendix 6 of the 2014 NEMA EIA Regulations (as amended).

The Agricultural Compliance Statement will include the following:

- Specification of development setbacks or buffers required (if any), and clear motivations for these recommendations;
- A map showing the proposed development footprint (including supporting infrastructure) with a 50m buffered development envelope, overlaid on the agricultural sensitivity map generated by the Screening Tool;
- Calculations of the physical development footprint area for each land parcel as well as the total physical development footprint area of the proposed development including supporting infrastructure;
- Confirmation that the development footprint is in line with the allowable development limits contained in GN R320;
- Identification of the direct, indirect and cumulative impacts associated with the proposed development, where possible, (although an assessment and rating of impacts is not strictly required for a Compliance Statement stipulated in GN R320);
- Cumulative impacts to be identified by considering other renewable energy projects within 30 km of the proposed projects (refer to Table 7.4 above);
- Confirmation that all reasonable measures have been taken through micro-siting to avoid or minimise fragmentation and disturbance of agricultural activities;
- A substantiated statement indicating the level of acceptability of the proposed development and a recommendation if the development should go ahead or not; as well as any conditions to which this statement is subjected;
- A description of assumptions, any uncertainties or gaps in knowledge or data, and limitations;
- The compliance statement must be applicable to the preferred site and proposed development footprint; confirm that the site is of “low” or “medium” sensitivity for agriculture; and indicate whether or not the proposed development will have an unacceptable impact on the agricultural production capability of the site.
- A signed specialist statement of independence and details and relevant expertise as well as the South African Council for Natural Scientific Professions (SACNASP) registration number of the specialist, including a Curriculum Vitae;
- Where required, provide recommendations with regards to proposed impact management outcomes or any monitoring requirements for inclusion in the EMP, which will be appended to the Draft and Final EIA Reports; and
- Determine mitigation and/or management measures, which could be implemented to as far as possible, reduce the effect of negative impacts and enhance the effect of positive impacts.

The scoping phase Agricultural Compliance Statement (Appendix G.1 of this Draft Scoping Report) has already fulfilled all the above requirements for the EIA phase. The Agricultural specialist indicated in the scoping phase Agricultural Compliance Statement that all that remains is to amend the Compliance Statement in the EIA phase with:

- Updated maps with the final proposed layout following revisions based on scoping level input from the other specialists and their further assessment during the EIA phase;

- Completed the cumulative impact assessment calculations and allowable footprint calculations

The Specialist is also required to:

- Incorporate and address relevant comments and concerns raised by the stakeholders, commenting authorities and I&APs prior to submitting the Final EIA Report to the Competent Authority for decision-making; and
- Review the Generic EMPr for Substations (GN R435) and confirm if there are any specific environmental sensitivities or attributes present on the project site and any resultant site-specific impact management outcomes and actions that are not included in the pre-approved generic EMPr. If so, a list of the required specific impact management outcomes and actions must be provided.

7.8.2 Terrestrial Biodiversity and Species Impact Assessment

The Terrestrial Biodiversity Specialist is required to compile a Specialist Assessment in adherence to the following gazetted Environmental Assessment Protocols, which replace the requirements of Appendix 6 of the 2014 NEMA EIA Regulations (as amended):

- Protocol for the Specialist Assessment and Minimum Report Content Requirements of Environmental Impacts on Terrestrial Biodiversity (GG 43110 / GN R320, 20 March 2020);
- Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Animal Species (GG 43855 / GN R1150, 30 October 2020); and
- Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Plant Species (GG 43855 / GN R1150, 30 October 2020).

Based on the findings of the site visit and the Site Sensitivity Verification undertaken by the specialist, and the Terrestrial Biodiversity and Species Scoping Level Specialist Assessment (included in Appendix G.2 of this Scoping Report), it was confirmed that a Terrestrial Biodiversity Specialist Assessment Report, Terrestrial Plant Species Compliance Assessment Report, Terrestrial Animal Species Compliance Statement, Mountain Reedbuck Species Assessment, and a Karoo Dwarf Tortoise Species Assessment are required during the EIA Phase.

The Terrestrial Biodiversity Assessment, and Terrestrial Animal Species and Plant Species Compliance Statements, will be based on existing information, national and provincial databases, and professional experience and fieldwork conducted by the specialist, as considered necessary and in accordance with relevant legislated requirements. The Assessment Report and Compliance Statement must also be in adherence to any additional relevant legislation and guidelines that may be deemed necessary. One combined report will be provided to address the Terrestrial Biodiversity, Terrestrial Plant Species and Terrestrial Animal Species Protocols. Note that the Avifauna Assessment is undertaken separately, in compliance with the Terrestrial Animal Species (GG 43855 / GN R1150, 30 October 2020).

The Terrestrial Biodiversity Assessment will include the following:

- Contact details of the specialist, SACNASP registration number, field of expertise, relevant experience, and a Curriculum Vitae;
- A signed statement of independence by the specialist;
- Liaison with the South African National Biodiversity Institute (SANBI) to obtain information on any sensitive species flagged in the Screening Tool (where species names are obscured / only numbered);
- A statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;
- A description of the methodology used to undertake the site verification and impact assessment and site inspection, including equipment and modelling used, where relevant;
- Description of the terrestrial ecology and ecosystem features of the project site, with focus on features that are to be potentially impacted by the proposed project. The description will include the major habitat forms within the study area, giving due consideration to terrestrial fauna and flora;
- A motivation must be provided if there were development footprints identified that were identified as having a “low” terrestrial biodiversity sensitivity and that were not considered appropriate;
- A motivation must be provided if there were any development footprints identified that were identified as having “low” or “medium” terrestrial plant species sensitivity and were not considered appropriate;
- Determination, description and mapping of the baseline environmental condition and sensitivity of the study area. Specification of development setbacks or buffers required, and clear motivations for these recommendations. Include a description of the extent of disturbance and transformation of the site;
- Provide review input on the preferred infrastructure layout following the sensitivity analysis and layout identification;
- A location of the areas not suitable for development, which are to be avoided during construction and operation (where relevant);
- Consideration of seasonal changes and long-term trends, such as due to climate change;
- Identification of any species of conservation concern (SCC) or protected species found on site or those suspected to occur on site (e.g. protected tree and provincially protected species);
- The online database name, hyperlink and record accession numbers for disseminated evidence of SCC found within the study area;
- Assessment of local and regional biodiversity conservation planning relevant to the project area;
- Identification and assessment of the potential direct, indirect and cumulative impacts of the proposed developments on terrestrial biodiversity and species:
 - Cumulative impacts to be assessed by considering other renewable energy and EGI projects within 30 km of the proposed projects (refer to Table 7.4 above).
 - Impact significance must be rated both without and with mitigation, and must cover the construction, operational and decommissioning phases of the project. The Impact Assessment Methodology to be followed is contained in Section 7.5.1 of this Chapter, and must include the degree to which impacts and risks can be mitigated; reversed; and can cause loss of irreplaceable resources.
- A substantiated statement indicating the acceptability of the proposed development and a recommendation if the development should go ahead or not; and any conditions to which this statement is subjected;

- A description of assumptions and limitations in the report and any uncertainties or gaps in knowledge or data;
- A statement of the timing and intensity of site inspection observations (linked to GN R320);
- A description of the mean density of observations/number of sample sites per unit area of site inspection observations, where possible, as noted in the Species Environmental Assessment Guideline;
- Identification of any additional protocols, licensing and/or permitting requirements that are relevant to the project and the implications thereof;
- Assessment of the project alternatives and identification of a preferred alternative with motivation for this selection;
- Provision of recommendations with regards to potential monitoring programmes; and
- Determine mitigation, impact management actions and outcomes, which could be implemented to as far as possible, reduce the effect of negative impacts and enhance the effect of positive impacts. Also, identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts. This will be included in the EMP, which will be appended to the Draft and Final EIA Reports.

The Terrestrial Animal Species and Plant Species Specialist Compliance Statements will be prepared by a specialist registered with SACNASP and will include the following:

- The compliance statement will be applicable to the study area; confirm that the study area, is of “low” sensitivity for terrestrial animal species; and indicate whether or not the proposed development will have any impact SCC.
- Contact details and relevant experience as well as the SACNASP registration number of the specialist, including a Curriculum Vitae;
- Signed statement of independence by the specialist;
- Statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;
- A description of the methodology used to undertake the site survey and to prepare the compliance statement, including equipment and modelling used where relevant;
- The mean density of observations/number of samples sites per unit area, where possible, as noted in the Species Environmental Assessment Guideline;
- Where required, proposed impact management actions and outcomes or any monitoring requirements for inclusion in the EMP, which will be appended to the Draft and Final EIA Reports;
- A description of the assumptions made and any uncertainties or gaps in knowledge or data; and
- Any conditions to which the compliance statement is subjected.

The Terrestrial Biodiversity and Species specialist recommended in the scoping phase Terrestrial Biodiversity and Species Report (Appendix G.2) that the EIA phase study and report include the following activities and outcomes:

- The conditions on the site to date have been relatively dry with the result that vegetation surveys conducted to date are not likely to have captured the full suite of species present. Additional detailed vegetation surveys across the site will be conducted. Particular attention will also be paid to the presence of rare or specialised habitats on the site. To date, no species of high conservation concern have been observed and should the situation remain the same, the site sensitivity in terms of flora would be low and a

compliance statement would be the appropriate level of study for vegetation in the EIA phase.

- Verify the final footprint of the development in the field to ensure that it avoids the sensitive features of the site and to confirm site sensitivity from a terrestrial biodiversity perspective.
- Identify in the field and based on the Wind Farm layout any additional impacts that may occur as a result of the development that have not been identified thus far.
- Identify any additional mitigation and avoidance measures for inclusion in the EMPr that should be implemented to further reduce the impacts of the development on terrestrial biodiversity.

The Specialist is also required to:

- Incorporate and address relevant comments and concerns raised by the stakeholders, commenting authorities and I&APs prior to submitting the Final EIA Report to the Competent Authority for decision-making; and
- Review the Generic EMPr for Substations (GN R435) and confirm if there are any specific environmental sensitivities or attributes present on the project site and any resultant site-specific impact management outcomes and actions that are not included in the pre-approved generic EMPr (Part B – Section 1). If so, a list of the required specific impact management outcomes and actions must be provided.

7.8.3 Biodiversity Offset Study

As indicated in the previous chapters and the Comments and Responses Report, a cumulative Biodiversity Offset Study will be undertaken in terms of the NEMA s24J National Biodiversity Offset Guideline published in Government Notice 3569 of *Government Gazette* 48841 on 23 June 2023. As per Government Notice 3569 of 2023, Biodiversity Offset Reports are not “specialist reports” as envisaged in the EIA Regulations, thus Appendix 6 of the 2014 NEMA EIA Regulations (as amended) will thus **not** be applicable.

The ToR for the Biodiversity Offset Study that will be completed during the EIA Phase of the project include:

- A description of the region and local features;
- Reference to the Terrestrial Biodiversity Assessment Report and the identified residual impact significance that is required to be offset;
- Assess the significance of the residual negative biodiversity impact;
- Determine the right ratio of the biodiversity offset;
- Take into consideration unique or special biodiversity features;
- A study of the suitability of the 1 800 ha area that has been made available for offset by the landowner, or to select alternative candidate biodiversity offset sites that will enable the expansion of the Karoo National Park;
- Identification of the offset ratio/ metric to be used to determine that amount of land area to be offset;
- Recommendation and assessment on declaring the proposed Beau Valley WEF, Beau Valley SEF and DBF South SEF sites as protected environments;
- Identification of relevant legislation and legal requirements;
- Provide a declaration of interest under commissioner of oaths; and
- Providing recommendations on roles and responsibilities to be included in the biodiversity offset agreement between SANParks, the Developer and the affected landowners.

As provided by the National Biodiversity Offset Guideline (June 2023, p50-52), “It is strongly advised that a Biodiversity Offset Report is prepared by a specialist, or specialists, with the appropriate skills and experience, in collaboration with the EAP. A Biodiversity Offset Report is submitted by the EAP, together with the BA/ EIA Report, to the CA at the end of the EIA phase. The Biodiversity Offset Report must, as a minimum, specify the following:

- That the mitigation hierarchy, including due consideration of project alternatives to avoid or minimise impacts, has been appropriately applied before considering biodiversity offsetting. It is worth noting here that the EAP is also required to demonstrate the application of the mitigation hierarchy in the BA Report or EIA Report. The EAP, being in charge of the overall assessment process, is therefore in the best position to make a statement on the mitigation hierarchy. However, it recommended that the specialist preparing the Biodiversity Offset Report checks the application of the mitigation hierarchy and engages the EAP, particularly where it appears that residual negative impacts on biodiversity necessitating offsets could be eliminated or significantly reduced by adopting siting or design changes. The EAP would then modify the proposed project and activities and revise the measure of residual negative impacts which either still need to be offset, or could remove the need for an offset.
- A justification as to why a biodiversity offset is required under the circumstances, and where relevant, why the “no-go” option is not recommended.

- The degree of risk that residual negative impacts cannot be offset (i.e. residual negative impacts on irreplaceable biodiversity and/or major constraints on finding suitable biodiversity offset sites to meet the offset requirements) and how the risk is to be addressed or mitigated.
- A measure of significant residual negative biodiversity impacts which must be offset.
- The applicable biodiversity offset ratios for impacted ecosystems.
- Any other considerations which are relevant to determining the size and characteristics of the biodiversity offset (for example, impacts on species of conservation concern with specific habitat requirements, impacts on ecological corridors and connectivity in the landscape, and impacts on important ecological infrastructure), and how the size of offset is to be adjusted to take these considerations into account.
- An explicit statement on the required size of the biodiversity offset to remedy the residual negative biodiversity impacts, applying the basic offset ratio and adjustments as appropriate.
- The portfolio of candidate biodiversity offset sites, including the likelihood of each site's availability and feasibility.
- A description of the biodiversity offset site, and the reasons for the selection of that site from the portfolio of candidate biodiversity offset sites.
- The required biodiversity outcomes on the biodiversity offset site.
- The management measures that would need to be employed as part of the biodiversity offset for a defined period, for which the applicant would be responsible. It is recommended in this guideline that this period is not less than 30 years, and is longer if the impacting activity, or activities, will last beyond 30 years.
- The comments received from commenting authorities and interested and affected parties on the draft Biodiversity Offset Report as well as responses to those comments.
- Where the relevant information is available, a Biodiversity Offset Report should in those instances, also include the following information:
 - An estimate of the financial needs related to securing, rehabilitating and managing a suitable biodiversity offset site for an appropriate period, which is recommended in this guideline to be a minimum of 30 years.
 - The legal mechanism, or mechanisms, in terms of which the biodiversity offset site would be secured.
 - Any comments received from, or the outcomes of discussions with, a relevant conservation authority regarding the candidate biodiversity offset sites, the proposed mechanism for securing those sites and the proposed biodiversity offset outcomes for those sites.
- The specialist, or specialists, preparing the report may well want to include proposed EA conditions. It should however be noted that the CA does not have to use those conditions.
- A biodiversity offset report may recommend specific conditions that can be considered by the CA, to give effect to the requirements, commitments, opportunities and limitations encountered during the determination of the offset, location of, and arrangements for security and management of the offset site, or offset sites, to be included in an EA as a biodiversity offset condition."

7.8.4 Aquatic Biodiversity and Species Impact Assessment

The Aquatic Biodiversity Specialist is required to compile a Specialist Assessment in adherence to the gazetted Environmental Assessment Protocols, specifically the “Protocol for the Specialist Assessment and Minimum Report Content Requirements of Environmental Impacts on Aquatic Biodiversity” (GG 43110 / GN R320, 20 March 2020). This protocol replaces the requirements of Appendix 6 of the 2014 NEMA EIA Regulations (as amended).

Based on the findings of the site visit and the Site Sensitivity Verification undertaken by the specialist, and the Aquatic Biodiversity and Species Scoping Level Specialist Assessment (included in Appendix G.3 of this Scoping Report), an Aquatic Biodiversity Specialist Assessment Report is required during the EIA Phase.

The Aquatic Biodiversity and Species Impact Assessment is to be based on existing information, national and provincial databases, and professional experience and fieldwork conducted by the Specialist, as considered necessary and in accordance with relevant legislated requirements (e.g. GN R320). The Impact Assessment Report must also be in adherence to any additional relevant legislation and guidelines that may be deemed necessary.

The Aquatic Biodiversity and Species Impact Assessment will include the following:

- Contact details of the specialist, SACNASP registration number, field of expertise, relevant experience, and a Curriculum Vitae;
- A signed statement of independence by the specialist;
- A statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;
- A description of the methodology used to undertake the site verification and impact assessment and site inspection, including equipment and modelling used, where relevant;
- Description of the aquatic biodiversity and ecosystems of the project site, with focus on features that are to be potentially impacted by the proposed project. The description should include the aquatic ecosystem types, presence of aquatic species, the major habitat forms giving due consideration to the composition of aquatic species communities, their habitat, distribution and movement patterns within the study area;
- Describe the extent of disturbance and transformation of the site, as necessary;
- Indication of the historic ecological condition (reference) and the Present Ecological State (PES) of identified aquatic features (in- stream, riparian and floodplain habitat), and on site that are to be potentially impacted by the proposed project i.e. possible changes to the channel and flow regime (surface and groundwater); and comment on the recommended ecological condition of aquatic habitats to be achieved within the project area;
- A map (if possible) describing the ecosystem processes that operate in relation to the aquatic ecosystems on and immediately adjacent to the project site (e.g. movement of surface and subsurface water, recharge, discharge, sediment transport, etc.);
- Identify and delineate wetlands that may occur on the sites, using the relevant protocols established;
- An indication of the national and provincial priority status of the aquatic ecosystem, including a description of the criteria for the given status (i.e. if the site includes a wetland or a river freshwater ecosystem priority area or sub catchment, a strategic water source area, whether or not they are free-flowing rivers, wetland clusters, a critical biodiversity or ecologically sensitive area);

- Consideration of seasonal changes and long-term trends, such as due to climate change;
- Identify any SCC or protected species on site;
- Compilation of a Risk Matrix (Appendix A to GN R309 of 2016) and determining whether an application for Water Use Authorisation (e.g. General Authorisation or Water Use License) is required and if so, determining the requirements thereof;
- Assessment of local and regional biodiversity conservation planning relevant to the project area;
- A motivation must be provided if there were development footprints identified that were identified as having a "low" aquatic biodiversity sensitivity and that were not considered appropriate;
- Provide review input on the preferred infrastructure layout following the sensitivity analysis and layout identification;
- Assessment of the project alternatives and identification of a preferred alternative with motivation for this selection;
- Determination, description and mapping of the baseline environmental condition and sensitivity of the study area. Specification of development setbacks or suitable construction and operational buffers for the aquatic ecosystem, using the accepted methodologies, and clear motivations for these recommendations including a description of the location of areas not suitable for development and to be avoided during construction and operation, where relevant;
- A section indicating how the Screening Tool was interrogated and whether classification of the site is accurate or not. If not, it must be motivated why the classification is not accurate;
- The threat status of the ecosystem and species as identified by the Screening Tool;
- Identification and assessment of the potential direct, indirect and cumulative impacts of the proposed developments on aquatic biodiversity and species:
 - Cumulative impacts to be assessed by considering other renewable energy and EGI projects within 30 km of the proposed projects (refer to Table 7.4 above).
 - Impact significance must be rated both without and with mitigation, and must cover the construction, operational and decommissioning phases of the project. The Impact Assessment Methodology to be followed is contained in Section 7.5.1 of this Chapter, and must include the degree to which impacts and risks can be mitigated; reversed; and can cause loss of irreplaceable resources.
- A substantiated statement indicating the acceptability of the proposed development and a recommendation if the development should receive approval or not; and any conditions to which this statement is subjected;
- A description of assumptions and limitations in the report and any uncertainties or gaps in knowledge or data;
- Identification of any additional protocols, licensing and/or permitting requirements that are relevant to the project and the implications thereof;
- Provision of recommendations with regards to potential monitoring programmes; and
- Determine mitigation, impact management actions and outcomes, which could be implemented to as far as possible, reduce the effect of negative impacts and enhance the effect of positive impacts. Also, identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts. This will be included in the EMP, which will be appended to the Draft and Final EIA Reports.

The Specialist is also required to:

- Incorporate and address relevant comments and concerns raised by the stakeholders, commenting authorities and I&APs prior to submitting the Final EIA Report to the Competent Authority for decision-making; and
- Review the Generic EMPr for Substations (GN R435) and confirm if there are any specific environmental sensitivities or attributes present on the project site and any resultant site-specific impact management outcomes and actions that are not included in the pre-approved generic EMPr (Part B – Section 1). If so, a list of the required specific impact management outcomes and actions must be provided.

7.8.5 Avifauna Impact Assessment

The Avifauna Specialist is required to compile a Specialist Assessment in adherence to the protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Animal Species (GG 43855 / GN R1150, 30 October 2020). This protocol replaces the requirements of Appendix 6 of the 2014 NEMA EIA Regulations (as amended). The Avifauna Assessment will also be undertaken in terms of the following:

- Guidelines for the Implementation of the Terrestrial Flora and Terrestrial Fauna Species Protocols for EIAs in South Africa produced by the SANBI on behalf of the Department of Environment, Forestry and Fisheries (2020); and
- The BirdLife South Africa (BLSA) Guidelines guidelines for avian monitoring and impact mitigation at proposed wind energy development sites in southern Africa⁶ to determine the level of survey effort that is required.

A pre-construction monitoring programme was conducted between December 2020 and December 2021 in accordance with the BLSA Birds and Wind Energy best practice guidelines (Jenkins et al. 2015).

Based on the findings of the site visit and the Site Sensitivity Verification undertaken by the specialist, and the Avifauna Scoping Level Specialist Assessment (included in Appendix G.4 of this Scoping Report), it was confirmed that a full assessment is required during the EIA Phase.

The Avifauna Specialist Assessment will be based on existing information, national and provincial databases, and professional experience and fieldwork conducted by the Specialist, as considered necessary and in accordance with relevant legislated requirements. The Assessment Report must also be in adherence to any additional relevant legislation and guidelines that may be deemed necessary.

The Avifauna Impact Assessment will include the following:

- Contact details of the specialist, SACNASP registration number, field of expertise, relevant experience, and a Curriculum Vitae;
- A signed statement of independence by the specialist;

⁶ Jenkins, A.R., Van Rooyen, C.S., Smallie, J.J., Anderson, M.D., & A.H. Smit. 2015. *Best practice guidelines for avian monitoring and impact mitigation at proposed wind energy development sites in southern Africa*. Produced by the Wildlife & Energy Programme of the Endangered Wildlife Trust & BirdLife South Africa.

- A statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;
- A description of the methodology used to undertake the Site Sensitivity Verification, impact assessment and site inspection, including equipment and modelling used where relevant;
- A description of the mean density of observations/number of sample sites per unit area of site inspection observations, where possible, as noted in the Species Environmental Assessment Guideline;
- Details of all SCC found or suspected to occur on site, ensuring sensitive species are appropriately reported;
- Finalisation of the findings and outcomes of the pre-construction avifaunal monitoring programme that was conducted over four seasons in accordance with the BLSA guideline for Wind Energy developments;
- Determination, description and mapping of the baseline environmental condition and sensitivity of the study area in terms of avifaunal features such as habitat use, roosting, feeding and nesting/breeding;
- Specification of development setbacks or buffers required, and provide clear motivations for these recommendations, including a description of the location of areas not suitable for development and to be avoided during construction and operation, where relevant;
- A motivation must be provided if there were any development footprints identified as having “low” or “medium” terrestrial animal species sensitivity and were not considered appropriate.
- Provide review input on the preferred infrastructure layout following the sensitivity analysis and layout identification;
- Assessment of the project alternatives and identification of a preferred alternative with motivation for this selection;
- Describe the affected environment from an avifaunal perspective, including consideration of the surrounding habitats and avifaunal features (e.g. Ramsar sites, Important Bird Areas, wetlands, migration routes, feeding, roosting and nesting areas, etc.);
- Describe and map bird habitats on the site, based on on-site monitoring, desk-top review, collation of available information, studies in the local area and previous experience. The assessment must also consider the maps generated by the Screening Tool;
- Identification and assessment of the potential direct, indirect and cumulative impacts of the proposed development on birds:
 - Cumulative impacts to be assessed by considering other renewable energy and EGI projects within 30 km of the proposed projects (refer to Table 7.4 above).
 - Impact significance must be rated both without and with mitigation, and must cover the construction, operational and decommissioning phases of the project. The Impact Assessment Methodology to be followed is contained in Section 7.5.1 of this Chapter and must include the degree to which impacts and risks can be mitigated; reversed; and can cause loss of irreplaceable resources.
- A reasoned opinion, based on the findings of the specialist assessment, indicating the acceptability of the proposed development and a recommendation if the development should receive approval or not; and any conditions to which the opinion is subjected if relevant;
- A description of the assumptions made, any uncertainties or gaps in knowledge or data, and limitations in the report;
- A section indicating how the Screening Tool was interrogated and whether classification of the site is accurate or not. If not, it must be motivated why the classification is not accurate;
- Identification of any additional protocols, licensing and/or permitting requirements that are relevant to the project and the implications thereof;

- Recommendations for mitigation of impacts to acceptable levels (where possible) and potential monitoring programmes;
- Determine mitigation, impact management actions and outcomes, which could be implemented to as far as possible, reduce the effect of negative impacts and enhance the effect of positive impacts. Also, identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts. This will be included in the EMPr, which will be appended to the Draft and Final EIA Reports.

The Specialist is also required to:

- Incorporate and address relevant comments and concerns raised by the stakeholders, commenting authorities and I&APs prior to submitting the Final EIA Report to the Competent Authority for decision-making; and
- Review the Generic EMPr for Substations (GN R435) and confirm if there are any specific environmental sensitivities or attributes present on the project site and any resultant site-specific impact management outcomes and actions that are not included in the pre-approved generic EMPr (Part B – Section 1). If so, a list of the required specific impact management outcomes and actions must be provided.

7.8.6 Visual Impact Assessment

The Visual Specialist is required to undertake a Specialist Assessment in adherence with “Part A - General Protocol for the Site Sensitivity Verification and Minimum Report Content Requirements where a Specialist Assessment is required but no specific Environmental Theme Protocol has been prescribed” (GG 43110 / GNR 320, 20 March 2020).

The Visual Impact Assessment (VIA) Report must be compiled in adherence to Appendix 6 of the 2014 NEMA EIA Regulations (as amended), as well as to any other additional relevant legislation and guidelines that may be deemed necessary, if applicable.

The Visual Impact Assessment must include the following:

- Determination, description and mapping of the baseline environmental condition and sensitivity of the study area. Specify set-backs or buffers, and provide clear reasons for these recommendations;
- Description of the visual character and visual absorption capacity of the local area. Any significant visual features or visual disturbances must be identified and mapped, as well as any sensitive visual receptors within the proposed project area or within viewsheds of the proposed project;
- Assessment of the preferred project layout following the Site Sensitivity Verification and layout identification;
- Viewshed for various elements of the proposed development must be calculated, defined and presented, and the varying sensitivities of these viewsheds must be highlighted;
- Mapping of visual sensitivity of the site taking into consideration visual receptors outside the site, and sensitivity to development on the site for potentially affected visual receptors of “very high” sensitivity;
- Provide review input on the preferred infrastructure layout following the sensitivity analysis and layout identification;

- Identification and assessment of the potential direct, indirect and cumulative impacts of the proposed development on the receiving environment from a visual perspective;
 - Cumulative impacts to be assessed by considering other renewable energy and EGI projects within 30 km of the proposed projects (refer to Table 7.4 above).
 - Impact significance must be rated both without and with mitigation, and must cover the construction, operational and decommissioning phases of the project. The Impact Assessment Methodology to be followed is contained in Section 7.5.1 of this Chapter.
- Maps depicting viewsheds or line of sight across the sites should be generated and included in the VIA Report. These maps must indicate current viewsheds/visual landscape/obstructions, as well as expected visual impacts during the construction, operational and decommissioning phases of the proposed project, as relevant.
- A reasoned opinion indicating the acceptability of the proposed development and a recommendation if the development should go ahead or not;
- A description of assumptions and limitations in the report;
- A section indicating how the Screening Tool was interrogated and whether classification of the site is accurate or not. If not, it must be motivated why the classification is not accurate;
- Identification of any additional protocols, licensing and/or permitting requirements that are relevant to the project and the implications thereof;
- Specialist Declaration of Independence and Curriculum Vitae;
- Provide recommendations with regards to potential monitoring programmes; and
- Determine mitigation and/or management measures, which could be implemented to as far as possible, reduce the effect of negative impacts and enhance the effect of positive impacts. Also, identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts. This will be included in the EMPr, which will be appended to the Draft and Final EIA Reports.

The Specialist is also required to:

- Assist the EAP and Applicant in refining the turbine location and height specifications to ensure that turbine visibility from the Karoo National Park (KNP) is avoided and minimised as to not cause a high visual impact on the aesthetic quality or visitor experience in the KNP.
- Incorporate and address relevant comments and concerns raised by the stakeholders, commenting authorities and I&APs prior to submitting the Final EIA Report to the Competent Authority for decision-making; and
- Review the Generic EMPr for Substations (GN R435) and confirm if there are any specific environmental sensitivities or attributes present on the project site and any resultant site-specific impact management outcomes and actions that are not included in the pre-approved generic EMPr (Part B – Section 1). If so, a list of the required specific impact management outcomes and actions must be provided.

7.8.7 Noise Impact Assessment

The Noise Specialist is required to compile a Specialist Assessment in adherence to the gazetted Environmental Assessment Protocols, specifically the 'Protocol for the Specialist Assessment and Minimum Report Content Requirements for Noise Impacts' (GG 43110 / GN R320, 20 March 2020). This protocol replaces the requirements of Appendix 6 of the 2014 NEMA EIA Regulations, as amended. In addition, the Specialist Assessment should also take into

consideration any additional relevant legislation and guidelines that may be deemed necessary (e.g., noise standards, measurements and calculations stipulated in SANS 10103:2008 Version 6 and SANS 10357:2004 Version 2.1).

The Specialist conducted a scoping level assessment in order to estimate the potential impact that noise emissions from the proposed development could have on noise sensitive receptors within and beyond the project area, and to verify and confirm the assigned sensitivity and land use as per the National Web-Based Screening Tool. Based on the findings from the site visit and the Site Sensitivity Verification Report (included in Appendix G.14 of this Scoping Report) prepared by the Specialist in accordance with the requirements documented in the Assessment Protocol (GG 43110 / GN R320 of 20 March 2020), it was confirmed that a Noise Impact Assessment (the input complying with the content requirements of the said Noise Protocol) is required during the EIA Phase. The Noise Impact Assessment is to be based on existing information, national and provincial databases, and professional experience and fieldwork conducted by the Specialist, as considered necessary and in accordance with relevant legislated requirements.

The Noise Impact Assessment will include the following tasks:

- The duration and date of the site inspection and the relevance of the season and weather conditions to the outcome of the assessment;
- A description of the methodology used to undertake the on-site assessment inclusive of the equipment and models used, as relevant, together with results of the noise assessment
- Description and assessment of the noise sensitive receptors located within as well as in the vicinity of the project area that are likely to be impacted by the proposed development;
- A map showing the proposed development footprint (including supporting infrastructure) with a 50m buffered development envelope;
- Specification of development setbacks or buffers required, and provide clear motivations for these recommendations;
- Identification and assessment of the potential direct, indirect and cumulative impacts of the proposed WEF development. Impact significance must be rated both without and with mitigation, and must cover the construction, operational and decommissioning phases of the project;
 - Cumulative impacts to be assessed by considering renewable energy projects and other applicable (and relevant) projects within 30 km of the proposed projects (refer to Table 7.3 above);
 - Impact significance must be rated both without and with mitigation, and must cover the construction, operational and decommissioning phases of the project. The Impact Assessment Methodology will follow that contained in Section 7.5.1 of this chapter.
- An impact a substantiated statement indicating the acceptability of the proposed development and a recommendation if the development should go ahead or not and any conditions to which this statement is subjected;
- A description of assumptions, limitations and/or any uncertainties or gaps in knowledge in the report;
- A section indicating how the National Web-Based Screening Tool was interrogated and whether classification of the site is accurate or not. If not, it must be motivated why the classification is not accurate;

- Identification of any additional protocols, licensing and/or permitting requirements that are relevant to the project and the implications thereof;
- Assessment of the project alternatives and identification of a preferred alternative with motivation for this selection;
- A statement confirm that all reasonable measures have been considered, or not, in the micro- siting of the proposed development to minimise disturbance of receptors;
- Specialist Declaration of Independence and Curriculum Vitae;
- Provide recommendations with regards to potential monitoring programmes; and
- Determine mitigation and/or management measures, which could be implemented to as far as possible, reduce the effect of negative impacts and enhance the effect of positive impacts. Also, identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts. This will be included in the EMPr, which will be appended to the EIA Report.

The Specialist is also required to:

- The Noise Impact Assessment must specifically include an assessment to determine whether or not low-frequency noise (i.e. infrasound) effects may emanate from the proposed WEF development, and whether the proposed wind turbines will impact on species that may be sensitive to low-frequency noise (i.e. infrasound). Appropriate mitigation measures which may extend to, but is not limited to, detailing the type of turbine technology to be constructed should be provided.
- Incorporate and address all relevant comments and concerns raised by the stakeholders, commenting authorities and I&APs prior to submitting the Final EIA Report to the Competent Authority for decision-making; and
- Review of the Generic EMPr for Substations (GN R435) and confirm if there are any specific environmental sensitivities or attributes present on the project site and any resultant site-specific impact management outcomes and actions that are not included in the pre-approved generic EMPr (Part B – Section 1). If so, a list of the required specific impact management outcomes and actions must be provided.

7.8.8 Heritage Impact Assessment

The Heritage Specialist is required to undertake a Specialist Assessment in adherence to “Part A - General Protocol for the Site Sensitivity Verification and Minimum Report Content Requirements where a Specialist Assessment is required but no specific Environmental Theme Protocol has been prescribed” (GG 43110 / GNR 320, 20 March 2020).

The Heritage Impact Assessment (HIA) Report will be compiled in adherence to Appendix 6 of the 2014 NEMA EIA Regulations (as amended). The HIA must also comply with the requirements of SAHRA. The HIA must also be in adherence to any other additional relevant legislation and guidelines that may be deemed necessary, if applicable.

The Heritage Impact Assessment must include the following:

- Description and assessment of the heritage features of the sites and surrounding area. This is to be based on desktop reviews, fieldwork, available databases and findings from other heritage studies in the area, where relevant. Reference to the grade of heritage feature and any heritage status the feature may have been awarded will be included (where possible);

- Specification of development setbacks or buffers required, and clear motivations for these recommendations;
- Map the heritage sensitivity for the study area, clearly showing any “no-go” areas in terms of heritage (i.e. “very high” sensitivity).
- Provide review input on the preferred infrastructure layout following the sensitivity analysis and layout identification;
- Identify and assess the potential direct, indirect and cumulative impacts of the proposed developments on the full scope of heritage features, including archaeology and the cultural-historical landscape, as required by heritage legislation:
 - Cumulative impacts to be assessed by considering other renewable energy and EGI projects within 30 km of the proposed projects (refer to Table 7.4 above).
 - Impact significance must be rated both without and with mitigation, and must cover the construction, operational and decommissioning phases of the project. The Impact Assessment Methodology to be followed is contained in Section 7.5.1 of this Chapter.
- Liaison with the relevant authorities (i.e. SAHRA) in order to obtain a letter of approval, comments or a Permit in terms of the National Heritage Resources Act (Act 25 of 1999), including Regulations issued thereunder, as necessary. This also includes meeting the reporting requirements of SAHRA.
- A reasoned opinion indicating the acceptability of the proposed development and a recommendation if the development should go ahead or not;
- A description of assumptions and limitations in the report;
- A section indicating how the Screening Tool was interrogated and whether classification of the site is accurate or not. If not, it must be motivated why the classification is not accurate;
- Identification of any additional protocols, licensing and/or permitting requirements that are relevant to the project and the implications thereof;
- Assessment of the project alternatives and identification of a preferred alternative with motivation for this selection;
- Specialist Declaration of Independence and Curriculum Vitae;
- Provide recommendations with regards to potential monitoring programmes; and
- Determine mitigation and/or management measures, which could be implemented to as far as possible, reduce the effect of negative impacts and enhance the effect of positive impacts. Also, identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts. This will be included in the EMPr, which will be appended to the Draft and Final EIA Reports.

The Archaeology and Cultural Heritage specialist indicated that the scoping phase Heritage Report (Appendix G.6) is a high-level impact statement; therefore, it is required that the EIA phase study and report confirm the impact ratings based on the results of more detailed desktop study and further fieldwork.

The Specialist is also required to:

- Incorporate and address relevant comments and concerns raised by the stakeholders, commenting authorities and I&APs prior to submitting the Final EIA Report to the Competent Authority for decision-making; and
- Review the Generic EMPr for Substations (GN R435) and confirm if there are any specific environmental sensitivities or attributes present on the project site and any resultant site-specific impact management outcomes and actions that are not included in the pre-approved

generic EMPr (Part B – Section 1). If so, a list of the required specific impact management outcomes and actions must be provided.

7.8.9 Palaeontology Assessment

The appointed Palaeontologist is required to undertake a Site Sensitivity Verification in adherence to with “Part A - General Protocol for the Site Sensitivity Verification and Minimum Report Content Requirements where a Specialist Assessment is required but no specific Environmental Theme Protocol has been prescribed” (GG 43110 / GNR 320, 20 March 2020).

The Palaeontologist conducted a ten-day comprehensive site visit and field surveys in January 2023 to identify the level of sensitivity assigned to the project area, and to verify and confirm this sensitivity and land use as per the Screening Tool. The Palaeontology Site Sensitivity Verification is included in Appendix G.7 of this Scoping Report. According to the Screening Tool, the majority of the study area is of Very High palaeo-sensitivity. This provisional assessment has been contested by the specialist, based on a 10-day palaeontological site visit during which time no fossils were recovered from the Beau Valley WEF site. It is concluded that the study area is of low palaeo-sensitivity in general. If any fossiliferous deposits are exposed by surface clearance or excavations during the construction phase of the development, the Chance Fossils Finds Protocol included in Appendix G.7 should be fully implemented. Provided that the Chance Fossil Finds Protocol is incorporated into the EMPr and fully implemented during the construction phase, the specialist has confirmed that there are no objections on palaeontological heritage grounds to authorisation of the proposed project, and that no further specialist palaeontological studies, reporting, monitoring or mitigation are recommended (pending the discovery of significant new fossil finds before or during construction).

7.8.10 Socio-Economic Impact Assessment

The Socio-Economic Specialist is required to undertake a Specialist Assessment in adherence to Appendix 6 of the 2014 NEMA EIA Regulations (as amended), as well as to any other additional relevant legislation and guidelines that may be deemed necessary, if applicable.

The Screening Tool does not include any sensitivity layers relating to socio-economic information (as of December 2022); therefore, a Site Sensitivity Verification is technically not possible. Scoping level inputs provided by the Socio-Economic Specialist is included as Appendix G.8 of this Scoping Report.

The Socio-Economic Impact Assessment must include the following:

- Describe the socio-economic context of the study area, focusing on aspects that are potentially affected by the proposed project, and taking into consideration the current situation as well as the local trends, the local planning (Integrated Development Plans and Spatial Development Frameworks), and other developments in the area. The economic aspect of the assessment is anticipated to include aspects such as direct employment figures, feedback on the Gross Domestic Product (GDP) etc., and is not expected to require a detailed economic analysis;
- Identify the potential social and economic impacts (including benefits) associated with the proposed project, including inter alia impacts associated with loss of farmland (grazing),

contribution to economic growth and job creation, training and skills development opportunities, quality of life, local community income and influx of workers / job seekers;

- Consider social issues such as potential in-migration of job seekers, opportunities offered by training and skills development, phasing of employment over the duration of the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP), cumulative effects with other REIPPPP projects in the local area, implications for local planning and resource use;
- Apply a variety of appropriate options for sourcing information, such as review of analogous studies, available databases and social indicators, use of interviews with key stakeholders such as local communities, local landowners and government officials (local and regional), etc., where possible, to inform the assessment. Undertake the collection of both primary and secondary data;
- Evaluate the implications of the social investment programme associated with REIPPPP projects on the local socio-economic context;
- Identify and assess the potential direct, indirect and cumulative impacts of the proposed development on the receiving environment from a socio-economic perspective:
 - Cumulative impacts to be assessed by considering other renewable energy and EGI projects within 30 km of the proposed projects (refer to Table 7.4 above).
 - Impact significance must be rated both without and with mitigation, and must cover the construction, operational and decommissioning phases of the project. The Impact Assessment Methodology to be followed is contained in Section 7.5.1 of this Chapter.
- A reasoned opinion indicating the acceptability of the proposed development and a recommendation if the development should go ahead or not;
- A description of assumptions and limitations in the report;
- Identification of additional protocols, licensing and/or permitting requirements that are relevant to the project and the implications thereof, if any;
- Specialist Declaration of Independence and Curriculum Vitae;
- Provide recommendations with regards to potential monitoring programmes; and
- Determine mitigation and/or management measures, which could be implemented to as far as possible, reduce the effect of negative impacts and enhance the effect of positive impacts. Also, identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts. This will be included in the EMPr, which will be appended to the Draft and Final EIA Reports.

The Specialist is also required to:

- Incorporate and address relevant comments and concerns raised by the stakeholders, commenting authorities and I&APs prior to submitting the Final EIA Report to the Competent Authority for decision-making.
- Review the Generic EMPr for Substations (GN R435) and confirm if there are any specific environmental sensitivities or attributes present on the project site and any resultant site-specific impact management outcomes and actions that are not included in the pre-approved generic EMPr (Part B – Section 1). If so, a list of the required specific impact management outcomes and actions must be provided.

7.8.11 Bat Impact Assessment

The Bat Specialist is required to undertake a Specialist Assessment in adherence to the gazetted Environmental Assessment Protocols, specifically with 'Part A - General Protocol for the Site Sensitivity Verification and Minimum Report Content Requirements where a Specialist Assessment is required but no specific Environmental Theme Protocol has been prescribed' (GG 43110 / GNR 320, 20 March 2020).

The pre-construction bat monitoring took place prior to the appointment of the EAP and included multiple site visits over a period of 12 months which commenced on 30 May 2021 and ended on 26 May 2022 (362 sample nights) as well as a desktop study of relevant information, in accordance with the *"South African Best Practice Guidelines for Pre-construction Monitoring of Bats at Wind Energy Facilities"*. Scoping level inputs provided by the Bat Specialist is included as Appendix G.13 to this Scoping Report.

The Bat Impact Assessment Report must be compiled in adherence to Appendix 6 of the 2014 NEMA EIA Regulations, as amended, as well as any other additional relevant legislation and guidelines that may be deemed necessary, if applicable. Recommendations from the results obtained during the pre-construction bat monitoring programme and must be included in the Bat Impact Assessment Report will form part of the EMP that will be included in the EIA Report.

The Bat Impact Assessment must include the following tasks:

- Description of the affected environment from a bat perspective, including consideration of the surrounding habitats and bat habitat/foraging features (e.g., caves, ridges, crevices, migration routes, feeding, roosting & nesting areas, etc.);
- Assessment of the preferred project layout following the site sensitivity verification and layout identification;
- Specification of development setbacks or buffers required, and provide clear motivations for these recommendations;
- Identification of any SCC or protected species on site;
- Identification of the potential direct, indirect and cumulative impacts of the proposed development on bats, including impacts that may be seasonal or diurnal, or linked to specific species and their feeding, roosting or nesting habitats and habits;
 - Cumulative impacts to be assessed by considering renewable energy projects and other applicable (and relevant) projects within 30 km of the proposed projects (refer to Table 7.3 above).
 - Impact significance must be rated both without and with mitigation, and must cover the construction, operational and decommissioning phases of the project. The Impact Assessment Methodology to be followed is contained in Section 7.5.1 of this Chapter.
- Assessment of and recommendations for definite measurements for the preferred hub height and rotor diameter of the wind turbines;
- An impact statement indicating the acceptability of the proposed development and a recommendation if the development should go ahead or not;
- A description of assumptions and limitations in the report;
- A section indicating how the National Web-Based Screening Tool was interrogated and whether classification of the site is accurate or not. If not, it must be motivated why the classification is not accurate;

- Identification of any additional protocols, licensing and/or permitting requirements that are relevant to the project and the implications thereof;
- Specialist Declaration of Independence and Curriculum Vitae;
- Provision of recommendations with regards to potential monitoring programmes; and
- Determine mitigation and/or management measures, which could be implemented to as far as possible, reduce the effect of negative impacts and enhance the effect of positive impacts. Also, identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts. This will be included in the EMPr, which will be appended to the EIA Report.

The Specialist is also required to:

- Incorporate and address all relevant comments and concerns raised by the stakeholders, commenting authorities and I&APs prior to submitting the Final EIA Report to the Competent Authority for decision-making; and
- Review the Generic EMPr for Substations (GN R435) and confirm if there are any specific environmental sensitivities or attributes present on the project site and any resultant site-specific impact management outcomes and actions that are not included in the pre-approved generic EMPr (Part B – Section 1). If so, a list of the required specific impact management outcomes and actions must be provided.

7.8.12 Traffic Impact Assessment

The Traffic Specialist is required to undertake a Specialist Assessment in adherence to Appendix 6 of the 2014 NEMA EIA Regulations (as amended), as well as to any other additional relevant legislation and guidelines that may be deemed necessary, if applicable.

The Screening Tool does not include any sensitivity layers relating to traffic information (as of December 2022); therefore, a Site Sensitivity Verification is technically not possible. Scoping level inputs provided by the Traffic Specialist is included as Appendix G.9 of this Scoping Report.

The Traffic Impact Assessment must include the following tasks:

- Undertake a site visit to gather relevant information in terms of access, road conditions etc. and provide feedback following the site visit confirming if there are any aspects that need to be considered in the layout planning;
- Describe the traffic and transportation context of the study area, focusing on aspects that are potentially affected by the proposed project;
- Determine and describe the baseline transport and traffic condition of the study area;
- Consider traffic issues such as impact on the road network, congestion etc.;
- Description of the identified traffic features including the surrounding road network and potential traffic disturbances of the local area;
- Assessment of the preferred project layout and how it relates to traffic impact;
- Determine the national and local haulage routes between port of entry/manufacture and site;
- Assessment of proposed internal roads and site access points;
- Assessment of freight requirements and permitting needed for abnormal loads;
- Identification and assessment of the potential direct, indirect and cumulative impacts of the proposed development on the receiving environment from a traffic perspective;

- Cumulative impacts to be assessed by considering other renewable energy and EGI projects within 30 km of the proposed projects (refer to Table 7.4 above).
- Impact significance must be rated both without and with mitigation, and must cover the construction, operational and decommissioning phases of the project. The Impact Assessment Methodology to be followed is contained in Section 7.5.1 of this Chapter.
- A description of assumptions and limitations in the report;
- A reasoned opinion indicating the acceptability of the proposed development and a recommendation if the development should go ahead or not;
- Identification of any additional protocols, licensing and/or permitting requirements that are relevant to the project and the implications thereof;
- Specialist Declaration of Independence and Curriculum Vitae;
- Provide recommendations with regards to potential monitoring programmes; and
- Determine mitigation and/or management measures, which could be implemented to as far as possible, reduce the effect of negative impacts and enhance the effect of positive impacts. Also, identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts. This will be included in the EMPr, which will be appended to the Draft and Final EIA Reports.

The Specialist is also required to:

- Incorporate and address relevant comments and concerns raised by the stakeholders, commenting authorities and I&APs prior to submitting the Final EIA Report to the Competent Authority for decision-making; and
- Review the Generic EMPr for Substations (GN R435) and confirm if there are any specific environmental sensitivities or attributes present on the project site and any resultant site-specific impact management outcomes and actions that are not included in the pre-approved generic EMPr (Part B – Section 1). If so, a list of the required specific impact management outcomes and actions must be provided.

7.8.13 High Level Safety, Health, and Environment Risk Assessment for the Battery Energy Storage Systems

As indicated in the previous chapters, a High Level Safety, Health, and Environment Risk Assessment will be undertaken to study the risks associated with the proposed BESS. The Risk Assessment serves as a **technical report**, and thus Appendix 6 of the 2014 NEMA EIA Regulations (as amended) will thus **not** be applicable.

The ToR for the desktop assessment that will be completed during the EIA Phase of the project include:

- A description of the region and local features;
- A study of the battery technologies to be used;
- Identification of sensitive receptors in the area;
- Identifying the potential impacts on the health and safety of employees, contractors and public persons;
- Identification of relevant legislation and legal requirements; and
- Providing recommendations on possible preventative and mitigation measures for inclusion in the EMPr.

Refer to Appendix G.10 of this Scoping Report for the Scoping High Level BESS Safety, Health, and Environment Risk Assessment, which describes the proposed methodology for the assessment during the EIA Phase.

7.8.14 Desktop Geotechnical Assessment

A Desktop Geotechnical Assessment will be undertaken in the EIA phase and will be included in the Draft and Final EIA Reports. The primary objective of the desktop assessment is to summarise the geology of the area, including the likely distribution of potential geotechnical challenges related to the underlying geology for the proposed project.

The study will comply with Appendix 6 of the 2014 NEMA EIA Regulations (as amended), as well as any other additional relevant legislation and guidelines that may be deemed necessary, if applicable.

The ToR for the desktop assessment that will be completed during the EIA Phase of the project include:

- Determine whether problem soils are likely to be encountered within the study area;
- Describe the geology and anticipated soil conditions;
- Include a general discussion of possible and likely engineering characteristics of the respective geological materials;
- Identify possible development constraints that may be present across the study area, e.g., topographical constraints, major discontinuities, or shallow groundwater conditions (permanent or non-permanent);
- Evaluation of the seismic potential of the area based on available published literature;
- Provide commentary on any potentially sensitive areas across the study area, such as ridges, outcrops and exposures.
- Provide broad recommendations that may be used to guide the geotechnical design and plan future investigations within the study area;
- Specification of set-backs or buffers, and provide clear reasons for these recommendations;
- Provide review input on the preferred infrastructure layout following the sensitivity analysis and layout identification;
- Identify and assess the potential direct, indirect and cumulative impacts of the proposed development on the receiving environment from a geotechnical perspective:
 - Cumulative impacts to be assessed by considering other renewable energy and EGI projects within 30 km of the proposed projects (refer to Table 7.4 above).
 - Impact significance must be rated both without and with mitigation, and must cover the construction, operational and decommissioning phases of the project. The Impact Assessment Methodology to be followed is contained in Section 7.5.1 of this Chapter.
- A reasoned opinion indicating the acceptability of the proposed development and a recommendation if the development should go ahead or not;
- A description of assumptions and limitations in the report;
- Identification of additional protocols, licensing and/or permitting requirements that are relevant to the project and the implications thereof, if any;
- Specialist Declaration of Independence and Curriculum Vitae;
- Provide recommendations with regards to potential monitoring programmes; and

- Determine mitigation and/or management measures, which could be implemented to as far as possible, reduce the effect of negative impacts and enhance the effect of positive impacts. Also, identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts. This will be included in the EMPr, which will be appended to the Draft and Final EIA Reports.

The Specialist is also required to:

- Incorporate and address relevant comments and concerns raised by the stakeholders, commenting authorities and I&APs prior to submitting the Final EIA Report to the Competent Authority for decision-making.
- Review the Generic EMPr for Substations (GN R435) and confirm if there are any specific environmental sensitivities or attributes present on the project site and any resultant site-specific impact management outcomes and actions that are not included in the pre-approved generic EMPr (Part B – Section 1). If so, a list of the required specific impact management outcomes and actions must be provided.

7.8.15 Civil Aviation

Civil Aviation Assessments are required to comply with the “Protocol for the Specialist Assessment and Minimum Report Content Requirements of Environmental Impacts on Civil Aviation Installations” (GG 43110 / GN R320, 20 March 2020). As indicated in Chapter 3, Chapter 4, and Appendix G.15 of this Scoping Report, the entire study area is classified as low sensitivity on the Screening Tool. Therefore, in line with GN R320, only a Site Sensitivity Verification is necessary to confirm the site as a low sensitivity. This has been verified and confirmed by means of a site visit. Therefore, there are no further requirements as per GN R320.

7.8.16 Defence

Defence Assessments are required to comply with the “Protocol for the Specialist Assessment and Minimum Report Content Requirements of Environmental Impacts on Defence Installations” (GG 43110 / GN R320, 20 March 2020). As indicated in Chapter 3, Chapter 4, and Appendix G.16 of this Scoping Report, the entire study area is classified as low sensitivity on the Screening Tool. Therefore, in line with GN R320, only a Site Sensitivity Verification is necessary to confirm the site as a low sensitivity. This has been verified and confirmed by means of a site visit. Therefore, there are no further requirements as per GN R320.

7.9 Project Layout to be Assessed during the EIA Phase

The preferred site for the proposed Beau Valley WEF comprises the following farm portions which covers an area of 8 355 ha, which serves as the study area for this Scoping and EIA Process:

- Portion 1 of Doornboomfontyn Farm Nr. 89;
- Remaining Extent of Doornboomfontyn Farm Nr. 89.

The proposed 132 kV overhead power line within the 300 metre wide assessment corridor will extend from

- Portion 1 of Doornboomfontyn Farm Nr. 89; to
- Matjesfontein Farm No. 412.

The full extent of these properties have been assessed by the specialists to identify environmental sensitivities and no-go areas.

At the commencement of this Scoping and EIA Process, the Original Scoping Buildable Areas which fall within the study area were identified following the completion of high-level environmental screening based on the Screening Tool.

As part of this Scoping Phase, the specialists assessed and considered the Original Scoping Buildable Areas which fall within the study area.

Following the identification of sensitivities by the specialists during the Scoping Phase, the Project Developer took such sensitivities, and other considerations, into account and formulated the Revised Scoping Buildable Areas.

The Revised Scoping Buildable Areas will be used to inform the design of the layout and will be further assessed during the EIA Phase in order to identify the location of the development footprint within the study area of the affected farm properties (i.e. the preferred site). The final development footprint to be identified during the EIA Phase will be located anywhere within the boundary of the study area, provided that the no-go areas identified by the specialists and landowners are avoided. Therefore, the Revised Scoping Buildable Areas are not necessarily considered to be the exact development footprint at this stage.

Figure 7.3 illustrates the Revised Scoping Buildable Area for the WEF, the on-site substation complex, the power line corridor and environmental sensitivities that have been identified. This serves as a combined layout and sensitivity map, to be refined as part of the EIA Phase.

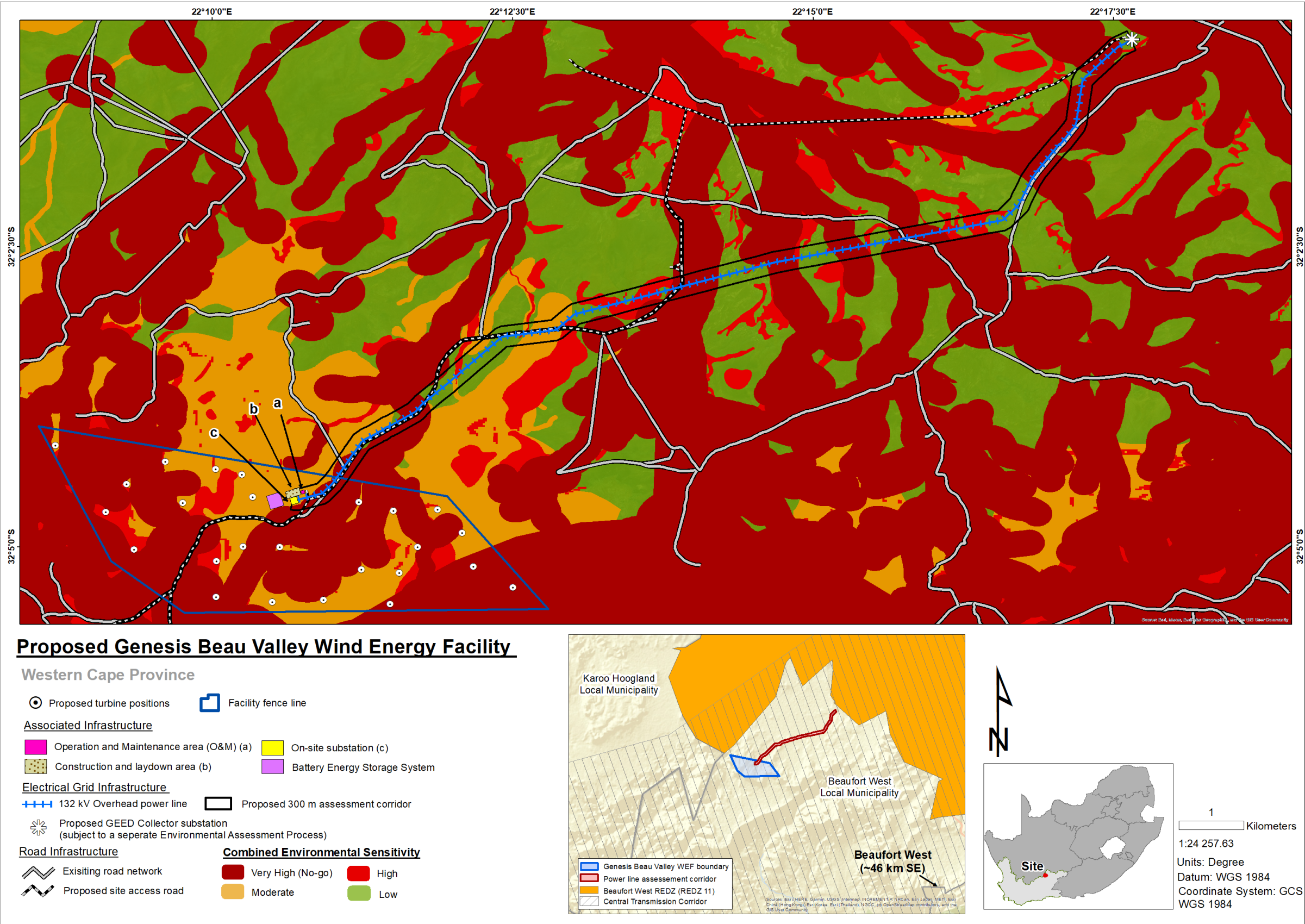


Figure 7.3: Scoping Phase Proposed Development Footprint overlain on the Environmental Sensitivities for the proposed project.