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

genesis eco-energy DEVELOPMENTS

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

CSIR
Touching lives through innovation

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

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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:
Council for Scientific and Industrial Research (CSIR)

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Mapping:
Dhiveshni Moodley (CSIR)

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Magdel van der Merwe (DTP Solutions)

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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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

EXECUTIVE SUMMARY

October 2023

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

Prepared by:
CSIR Environmental 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.

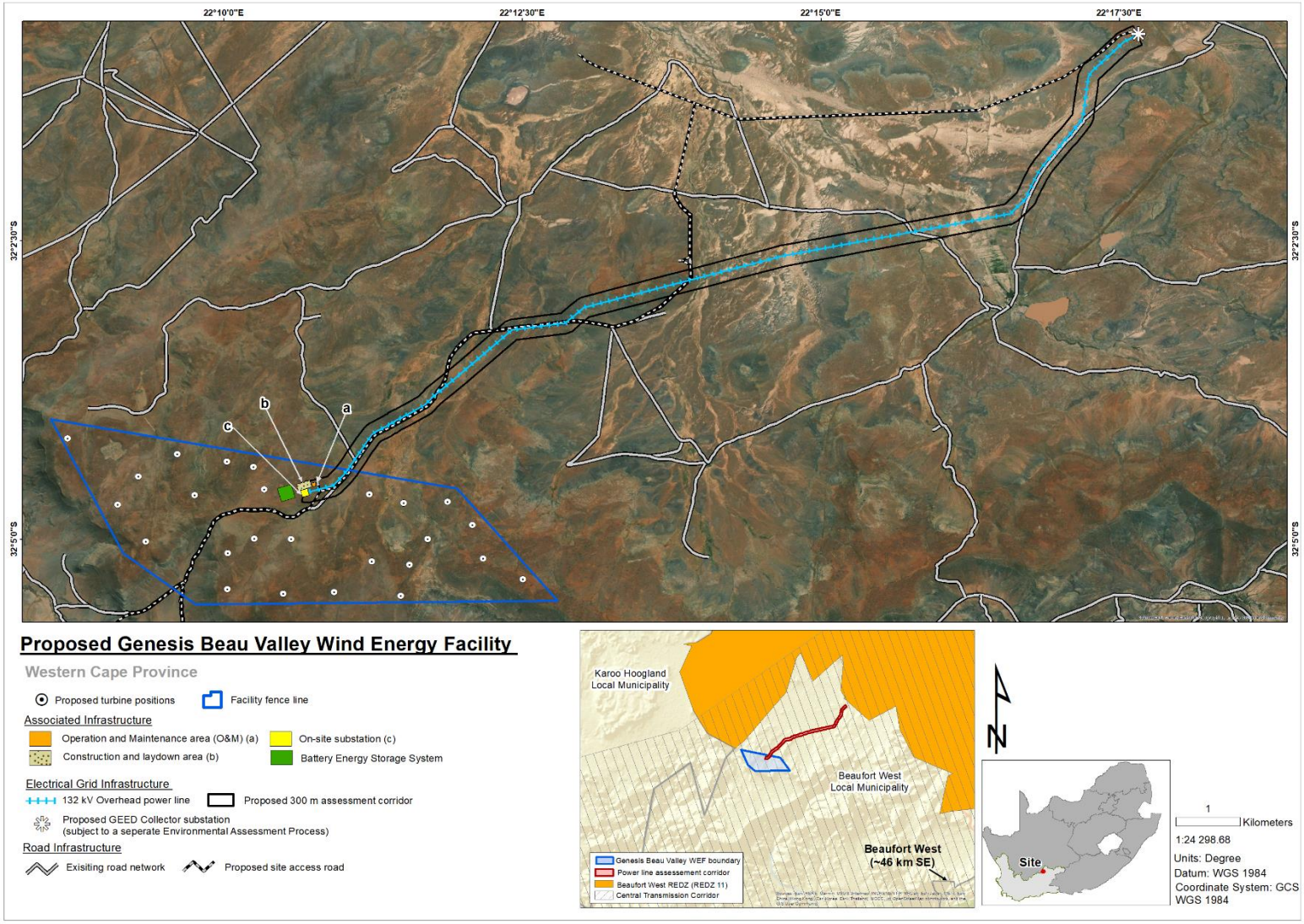

Figure A. Locality Map of the proposed Beau Valley WEF and associated infrastructure, including the 132 kV Overhead Transmission Power Line that is part of the current application and report.

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
CSIR Environmental Management Services		
Paul Lochner *(Registered EAP (2019/745))*	CSIR	EAP, Technical Advisor and Quality Assurance
Willan Adonis	CSIR	Project Manager
Helen Antonopoulos	CSIR	Project Officer
Dhiveshni Moodley *(Cand. Pr.Sci.Nat.)*	CSIR	GIS Specialist
Sonto Mkize	CSIR	Project Officer
Specialists		
Johann Lanz (*Pr.Sci.Nat.)*	Private	Agriculture and Soils Compliance Statement
Simon Todd (*Pr.Sci.Nat.)*	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 *(Pr.Sci.Nat.)*	Private	Aquatic Biodiversity Impact Assessment
Chris van Rooyen[2] Albert Froneman (*Pr.Sci.Nat.)*	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.

NAME	ORGANISATION	ROLE/STUDY TO BE UNDERTAKEN
Mark Hodgson (*Pr.Sci.Nat.)* Ashlin Bodasing (*Pr.Sci.Nat.)* Craig Campbell (*Pr.Sci.Nat.)*	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 (*Pr. Tech.*)	Private	Traffic Impact Assessment
Debbie Mitchell *(Pr Eng)*	Ishecon cc	Battery Storage High Level Safety, Health and Environment Risk Assessment
Louis Jonk (*Pr.Sci.Nat.)* Shane Teek (*Pr.Sci.Nat.)*	GEOSS South Africa (PTY) Ltd	Desktop Geotechnical Assessment
Helen Antonopoulos Lizande Kellerman *(Pr.Sci.Nat.)*	CSIR	Civil Aviation Site Sensitivity Verification
Helen Antonopoulos Lizande Kellerman *(Pr.Sci.Nat.)*	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≈804.25/ 0,08ha) and this will be placed alongside the 80 m x 45 m (3600 m2 /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	▪ Type: Monopole or steel lattice type pylons, or combination of both where required. ▪ Span: The pylons will have a span of 200 m to 350 m for monopole pylons and up to approximately 500 m for lattice structures. ▪ Working area: The working area required around a pylon position during the construction phase is approximately 30 m x 30 m. ▪ Footprint: 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.

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	▪ Type: 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. ▪ Cumulative Footprint: Approximately up to 5000 m^2 ▪ Height: Up to 10 m
Inverter/Transformer Stations	Several transformers will be installed with the following specifications: ▪ Height: Approximately 3 m ▪ Footprint: Approximately 220 m^2 each
On-site Substation and Switching Substation Complex	▪ Footprint: Approximately 1 ha ▪ Height of the on-site substation complex (including switching substation): 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. ▪ Capacity of the on-site substation complex: up to 132 kV ▪ Fence: Galvanized palisade fencing to be used at the substations ▪ Fence height: Up to 2.5 m
Associated Infrastructure	
Battery Energy Storage System (BESS)	▪ Preferred Technology: Lithium-Ion or Sodium-Ion (Solid state) ▪ Alternative Technology: Redox Flow ▪ Footprint: Up to 2 ha ▪ Height: Up to 10 m ▪ Capacity: Up to 1 200 MWh
On-site medium voltage internal cables	▪ Placement: Underground (maybe above ground pending technical constraints) ▪ Capacity: 33 kV ▪ Depth: Maximum depth of 3 m ▪ Safety: 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: o Divisional Road 2312 (DR02312); o Trunk Road 5801 (TR05801); and o 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	▪ Internal access roads: 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.

	▪ Details: New internal service roads will need to be established. These would either comprise farm roads (compacted dirt/gravel) or paved roads. ▪ Width: 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 m^3 of water is estimated to be required per year for the construction phase. ▪ Approximately 3 500 m^3 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):** o Noxious smoke from potential fires. o Risk of fires or explosions. ▪ **Redox flow BESS:** o 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