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

genesis eco-energy DEVELOPMENTS

FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

November 2023

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

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

CSIR
Touching lives through innovation

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FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

PART A: MAIN REPORT

CSIR
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SCOPING AND ENVIRONMENTAL IMPACT ASSESSMENT

for the

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

FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DFFE ref. no. 14/12/16/3/3/2/2349

November 2023

Prepared for:
Genesis Beau Valley Solar 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 Solar Energy Facility and associated infrastructure, near Beaufort West in the Western Cape Province: ENVIRONMENTAL IMPACT ASSESSMENT REPORT
Purpose of this report:	The purpose of this EIA 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 specialist input to facilitate informed decision-making; ▪ Provide an overview of the EIA Process that has been 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; and ▪ Provide an Environmental Management Programme (EMPr) for the relevant phases of the project. The Draft EIA 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 11 August 2023 to 11 September 2023. All comments submitted during the 30-day review period have been incorporated in a Comments and Responses Report, and addressed, as applicable and where relevant, and have been included as Appendix E in the Final EIA Report. This Final EIA Report is being submitted to the National Department of Forestry, Fisheries and the Environment (DFFE) for decision-making in terms of Regulations 23(1) and 24 of the 2014 NEMA EIA Regulations, as amended.
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FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

EXECUTIVE SUMMARY

November 2023

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

Prepared by:
CSIR Environmental Management Services,
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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) including 2 Solar Energy Facilities (SEFs) and 7 Wind Energy Facilities (WEFs). The **Northern Cluster** includes two WEFs, the **Middle Cluster** includes three WEFs, and the **Southern Cluster** includes two WEFs and two SEFs. Each of the REFs will be subjected to separate Scoping and Environmental Impact Assessments (S&EIA) processes and separate Applications for Environmental Authorisation (EA) from 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 Solar Farm, with a capacity of up to 200 MW and including the 132 kV overhead power line, is the subject of this S&EIA process (hereafter referred to as the "Beau Valley SEF" or the "proposed project") as shown in Figure A. The proposed project is located on: Portion 1 of Doornboomfontyn Farm Nr. 89

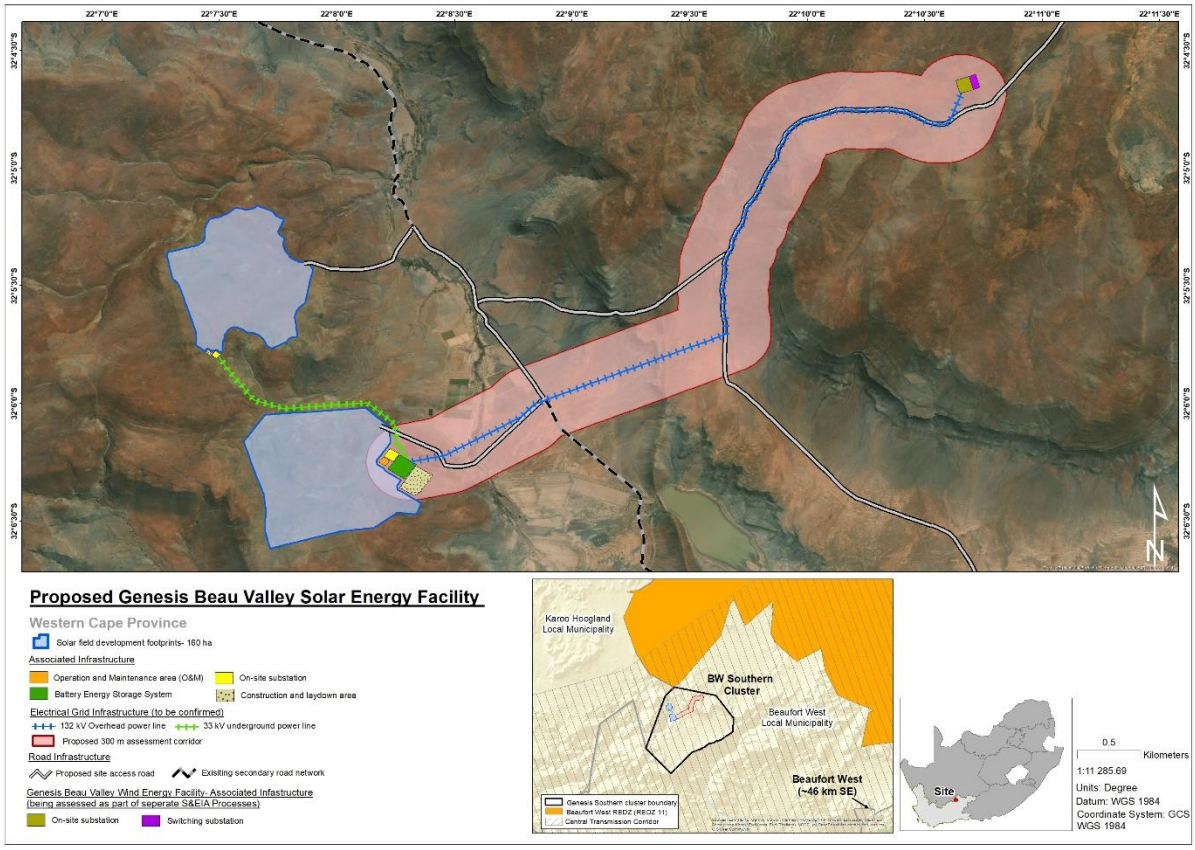

Figure A. Locality Map of the proposed Beau Valley SEF and associated infrastructure, including the 132 kV Overhead Transmission Power Line that is part of the current application and report.

The proposed project will make use of PV solar 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 SEF. 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 SEF project directly to the national electrical grid network or via a collector substation. The 132 kV power line is included as part of this current S&EIA for the Beau Valley South SEF. The proposed collector substation is located in the Middle Cluster and will facilitate the connection of the Genesis Southern and Middle Cluster REFs to the national electrical grid. A separate assessment process will be undertaken for the development of 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. Therefore, a full Scoping and EIA process with a 107-day decision-making timeframe is applicable to the proposed project.

The Competent Authority for this proposed project is the National DFFE, and the Project Applicant is Genesis Beau Valley Solar Farm (Pty) Ltd.

STUDY AREA DEFINITION

The study area or preferred site for the proposed Beau Valley SEF is the full extent of the affected farm properties on which the SEF is proposed to be constructed, as described above. The full extent of these properties has been assessed by the specialists to identify environmental sensitivities and no-go areas.

At the commencement of this Scoping and EIA Process, the total study area for proposed Beau Valley SEF was approximately 2 597 hectares (ha). Informed by the Scoping and EIA specialist assessments and the proposed specialist mitigation measures, the PV footprint that is proposed for EA has is 160 ha (as described in Chapter 7 of the EIA Report). The development footprint is where the actual development will be located, i.e., the footprint containing the PV solar arrays. The buildable areas are the full extent to be approved for development, and the development footprint detailed in the layouts is based on the current proposal.

In summary, the full extent of the study area has been assessed by the specialists and mapped accordingly in the Specialist Assessments to identify environmental sensitivities and no-go areas. This approach uses environmental and social constraints to avoid sensitive features, thus applying the mitigation hierarchy, and it leads to the selection of the least environmentally sensitive development footprint.

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 A below.

Table A. 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. 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
Toni Belcher *(Pr.Sci.Nat.)*	Private	Aquatic Biodiversity Impact Assessment
Chris van Rooyen Albert Froneman (*Pr.Sci.Nat.)*	Chris van Rooyen Consulting AfriAvian Environmental (Pty) Ltd	Avifauna Impact Assessment
Lourens Du Plessis	LOGIS	Visual Impact Assessment
John Gribble	ACO Associates	Heritage Impact Assessment (Archaeology and Cultural Landscape)
Elize Butler	BANZAI Environmental	Palaeontology Site Sensitivity Verification Report
Sue Reuther 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.)*	GEOSS South Africa (PTY) Ltd	Geohydrology Assessment
Louis Jonk (*Pr.Sci.Nat.)* Shane Teek (*Pr.Sci.Nat.)*	GEOSS South Africa (PTY) Ltd	Desktop Geotechnical Assessment
Helen Antonopoulos	CSIR	Civil Aviation Site Sensitivity Verification
Paul Lochner (Reg. EAP (2019/745))	CSIR	Defence Site Sensitivity Verification

The specialist assessments have been detailed during the EIA Phase and 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 is thus not be applicable.

PROJECT DESCRIPTION

A summary of the key components of the proposed project is provided in Table B below.

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

Component	Description
Solar Field	
Type of Technology	▪ Solar Photovoltaic (PV) Technology ▪ Bifacial or Monofacial, or a combination of both
Generation Capacity (Maximum Installed)	▪ 200 MW
Total developable area that includes all associated infrastructure within the fenced off area of the PV facility	▪ 160 ha.
PV Panel Structure	▪ Possible tracking and mounting systems: o Single Axis Tracking structures (aligned north-south); o Dual Axis Tracking (aligned east-west and north-south); o Fixed Tilt Mounting Structure; o Mono-facial Solar Modules; or o Bifacial Solar Modules. ▪ Height: Approximately 3.5 m (maximum)
132 kV Overhead Transmission Power Line (OHPL)	
Line capacity	▪ 132 kV
Approximate length	▪ 7.5 km
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

Component	Description
On-site Substation and Switching Substation	▪ 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: 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 BESS ▪ 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 1.5 m
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 EIA Report) and Chapter 2 of the EIA 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 during the detailed engineering design phase prior to construction.
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
Fencing around the PV Facility Perimeter	▪ Type: Could be palisade or mesh or fully electrified ▪ Height: Up to 3 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 4.5 ha.
Water Requirements	▪ Approximately 90 000 m^3 of water is estimated to be required per year for the construction phase. ▪ Approximately 30 000 m^3 of water is estimated to be required per year for the operational phase.

Component	Description
	▪ 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. ▪ 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 AND APPROACH TO 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 EIA Report contains the detailed list of activities contained in GN R327, R325 and R324 which are triggered by the various proposed project activities and thus form part of the assessment in 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.

The Public Participation Process (PPP) for this Scoping and EIA Process is being undertaken in compliance with Chapter 6 of the 2014 NEMA EIA Regulations (as amended). 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 March 2023 to 3 April 2023, excluding public holidays. In terms of Regulation 21(1) of the 2014 NEMA Environmental Impact Assessment Regulations (as amended), the Final Scoping Report (FSR) was due to be submitted to the Department of Forestry Fisheries and the Environment (DFFE) on 17 April 2023 (44 days following the submission of the Environmental Authorisation (EA) Application to the DFFE on 1 March 2023). The EAP had submitted the FSR to the DFFE on 18 April 2023 based on DFFE's acknowledgment of receipt of the EA Application on 3 March 2023.

Communication from the DFFE on 19 April 2023 confirmed that the EA Application (DFFE Ref. 14/12/16/3/3/2/2318) had lapsed in terms of Regulation 21(1) and invited the Applicant to re-apply for EA to the DFFE.

Therefore, the DSR (dated May 2023) was re-released and was made available to all I&APs, Organs of State and relevant stakeholders for a 30-day public participation period extending from 12 May 2023 to 12 June 2023, excluding public holidays. All comments submitted during the initial public participation period extending from 4 March 2023 to 3 April 2023 were retained in Appendix E of the DSR (dated May 2023). I&APs were provided an opportunity to submit further comments, in addition to those provided on the initial Scoping Report, to be addressed in the FSR. All additional comments submitted during the 30-day public participation period, extending from 12 May 2023 to 12 June 2023, as well as the comments submitted during the commenting period (extending 4 March 2023 to 3 April 2023) are incorporated in a Comments and Responses Report (Appendix E of this EIA Report), and addressed, as applicable and where relevant, and were included in the FSR. The FSR was submitted to the DFFE for decision-making in terms of Regulation 21(1) and Regulation 22 of the 2014 EIA Regulations (as amended) on 24 June 2023. The Final Scoping Report was accepted by the DFFE on 2 August 2023 in terms of Regulation 22 (a) of the 2014 NEMA EIA Regulations (as amended).

The Draft EIA Report was made available to all I&APs, Organs of State and relevant stakeholders for a 30-day review period, extending 11 August 2023 to 11 September 2023. Copies of all written comments received during the 30-day review of the Draft EIA Report has been be incorporated into a detailed Comments and Responses Report, and addressed, as applicable and where relevant, and included as Appendix E in the Final EIA Report. The Final EIA Report is being submitted to the DFFE, in accordance with Regulation 23 of the 2014 NEMA EIA Regulations (as amended), for decision-making.

SUMMARY OF IMPACT ASSESSMENT FINDINGS AND RECOMMENDED MANAGEMENT ACTIONS

The findings and impact assessment of the detailed specialist assessments (included in Appendix G of the EIA Report), as well as other relevant project information are included and integrated into the EIA Report. An Environmental Management Programme (EMPr) for the Solar PV Facility, as well as two Generic EMPrs for the on-site substation complex and 132 kV power line are included in Appendix H of this EIA Report. The EMPrs are based on the recommendations for mitigation measures and management actions provided by the specialist team for the planning and design, construction, operational and decommissioning phases of the proposed project.

This section provides a summary of the key impacts that were identified and assessed in detail by the specialists during the EIA Phase. Note that several mitigation measures have also been provided by the specialists, however only selected key measures are noted in Table C below.

Table C. Summary of Key Impacts that were identified and assessed during the EIA Phase as part of the Specialist Assessments, including key recommended mitigation measures

Specialist Assessment undertaken	Key Impacts Identified	Recommended Mitigation Measures
Appendix G.1: Agriculture Compliance Statement	**Negative Direct Impacts:** **Construction Phase**: • Loss of agricultural potential by occupation of land. • Loss of agricultural potential by soil degradation. Soil can be degraded by impacts in three different ways: erosion; topsoil loss; and contamination. **Decommissioning Phase**: • Loss of agricultural potential by soil degradation. Soil can be degraded by impacts in three different ways: erosion; topsoil loss; and contamination. **Positive Indirect Impacts (mainly during operations):** • Increased financial security for farming operations.	**Planning Phase:** ▪ Design an effective system of stormwater run-off control, where it is required - that is at any points where run-off water might accumulate. The system must effectively collect and safely disseminate any run-off water from all accumulation points and it must prevent any potential down slope erosion. **Construction and Decommissioning Phases:** ▪ Implement an effective system of stormwater run-off control, where it is required (as specified above). Any occurrences of erosion must be attended to immediately and the integrity of the erosion control system at that point must be amended to prevent further erosion from occurring there. ▪ Any excavations done during the construction phase, in areas that will be re-vegetated at the end of the construction phase, must separate the upper 20 cm of topsoil from the rest of the excavation spoils and store it in a separate stockpile. When the excavation is back-filled, the topsoil must be back-filled last, so that it is at the surface. Topsoil should only be stripped in areas that are excavated. **Operational Phase:** ▪ Maintain the stormwater run-off control system. Monitor erosion and remedy the stormwater control system in the event of any erosion occurring.
Appendix G.2: Terrestrial Biodiversity, Terrestrial Plant Species, and Terrestrial Animal Species Assessment	**Negative Direct Impacts:** **Construction Phase:** • Impacts on ESAs and broader-scale ecological processes • Impact on habitat loss within NPAES Focus Areas **Operational Phase:** • Impact on ecological processes within the site • Impact on Karoo Dwarf Tortoises at the site during operation due to operational activities (vehicles/disturbance) as well as predation by crows. **Cumulative Impacts:** • Cumulative habitat loss and impact on broad-scale ecological processes	**Construction Phase:** ▪ Minimise the development footprint as far as possible. ▪ Locate temporary-use areas such as construction camps and lay-down areas in low sensitivity or previously disturbed areas. ▪ Avoid mapped No-Go areas in the placement of pylons, switching stations and access tracks. ▪ Clearly demarcate riparian areas near to the development footprint as No-Go areas with appropriate signage and barriers. ▪ Appropriate design of roads and other infrastructure to minimise faunal impacts. ▪ The fencing around infrastructure should not have any electrified strands within 30cm of the ground as this may result in tortoises being electrocuted. Alternatively, guard wires or mesh can be placed outside of the fence to prevent tortoises from accessing the electrified fence. ▪ Investigate options in collaboration with SANParks as to ways in the potential impact of the development on the NPAES can be reduced and mitigated. **Operational Phase:** ▪ Heavy vehicles should be restricted to 30km/h and light vehicles to 40km/h. ▪ Service staff should remain within the development footprint and not be allowed to wander into the veld. ▪ No fauna including tortoises should be disturbed or removed from the veld.

Specialist Assessment undertaken	Key Impacts Identified	Recommended Mitigation Measures
		▪ A log should be kept detailing and fauna-related incidences or mortalities that occur on site. These should be reviewed annually by the Environmental Officer and used to inform operational management and mitigation measures. ▪ Crow nests along any overhead lines within the site, identified during annual surveys and located within 1km of suitable Karoo Dwarf Tortoise habitat should be removed following consultation with an avifaunal specialist to discourage predation of Karoo Dwarf Tortoise by crows.
Appendix G.3: Aquatic Biodiversity	**<u>Negative Direct Impacts:</u>** **Construction Phase:** ▪ Decrease in habitat integrity. ▪ Decrease in aquatic ecosystem integrity (removal of aquatic vegetation). ▪ Stress on a water resource. ▪ Decrease in aquatic ecosystem integrity (alien vegetation infestation). ▪ Decrease in water quality. **Operational Phase:** ▪ Decrease in aquatic ecosystem integrity (ongoing disturbance). ▪ Decrease in aquatic ecosystem integrity (disturbance of cover vegetation and soil). ▪ Modified hydraulics in the watercourses **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. **<u>Negative Cumulative Impacts:</u>** **Construction and Decommissioning Phases:** ▪ Increased disturbance of aquatic habitat due to the increased activity in the wider area. **Operational Phases:** ▪ Degradation of ecological condition of aquatic ecosystems	**Construction Phase:** ▪ The medium sensitivity aquatic habitats should be avoided in the layout design, with only low sensitivity habitats being disturbed during construction. ▪ Place PV modules and associated infrastructure outside of aquatic features and 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) ▪ Clearing of indigenous vegetation should not take place within the aquatic features and the recommended buffers. ▪ Water use for construction should be minimised. ▪ The road crossings should be designed to not impede flow in watercourses - low water crossing is preferred. ▪ 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. ▪ 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. ▪ Any works within aquatic features should be undertaken in the dry season where possible. ▪ Sediment traps should be used where necessary. ▪ Good housekeeping and site management measures must be implemented at the laydown areas and the construction site as per the project EMPr and monitored by the appointed ECO. **Operational Phase:** ▪ 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. ▪ 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.

Specialist Assessment undertaken	Key Impacts Identified	Recommended Mitigation Measures
		Decommissioning Phase: ▪ 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. ▪ 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 PV footprint and layout. ▪ Good housekeeping measures should be implemented as per the project EMPr and monitored by the appointed ECO.
Appendix G.4: Avifauna Assessment	**<u>Negative Direct Impacts:</u>** **Construction Phase:** ▪ Displacement due to disturbance associated with the construction of the solar PV plant and associated infrastructure. **Operational Phase:** ▪ Displacement due to habitat transformation associated with the presence of the solar PV plant and associated infrastructure. ▪ Collisions with the solar panels. ▪ Entrapment in perimeter fences. ▪ Electrocutions on the internal 33kV powerlines (if above ground) and in the onsite substation complex. ▪ Collisions with the internal 33kV powerlines (if above ground) and the 132kV grid connection. **Decommissioning Phase:** ▪ Displacement due to disturbance associated with the decommissioning of the solar PV plant and associated infrastructure. **<u>Negative Cumulative Impacts:</u>** **Construction and Decommissioning Phases:** ▪ Displacement due to disturbance associated with the construction and decommissioning of the solar PV plants and associated infrastructure. **Operational Phase:** ▪ Displacement due to habitat transformation associated with the	**Construction Phase:** ▪ 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 construction footprint is concerned. ▪ A 1 km all infrastructure exclusion zone around the Verreaux's Eagle nests (at -32° 7'18.77"S, 22° 6'39.32"E and at 32°10'18.71"S, 22° 8'41.47"E) is recommended prevent disturbance. **Operational Phase:** ▪ The recommendations of the botanical specialist must be strictly implemented, especially as far as limiting the vegetation clearance to what is absolutely necessary, and rehabilitation of transformed areas are concerned. ▪ Where possible, surface water (dams and drainage lines) must be buffered according to the freshwater specialists' recommendations to ensure unhindered access of priority species to the water. No PV panels should be constructed in this zone. ▪ A single perimeter fence should be used. ▪ 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 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. ▪ 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).

Specialist Assessment undertaken	Key Impacts Identified	Recommended Mitigation Measures
	presence of the solar PV plants and associated infrastructure. ▪ Collisions with the solar panels. ▪ Entrapment in perimeter fences. ▪ Electrocutions on the internal 33kV powerlines (if above ground) and in the onsite substation complex.	**Decommissioning Phase:** ▪ Activity should as far as possible be restricted to the footprint of the infrastructure. ▪ Maximum use should be made of existing access roads during the decommissioning phase and the construction of new roads should be kept to a minimum as far as practical.
Appendix G.5: Visual Impact Assessment	**<u>Negative Direct Impacts:</u>** **Construction Phase:** ▪ Potential visual impact of construction activities on sensitive visual receptors in close proximity (within 1 km) to the proposed PV facility. **Operational Phase:** ▪ Potential visual impact on sensitive visual receptors located within a 1km radius of the PV Facility ▪ Potential visual impact on sensitive visual receptors within the 1 – 3km radius ▪ Potential visual impact on sensitive visual receptors within the 3 – 6km radius ▪ Potential visual impact on sensitive visual receptors within the greater area (beyond 6km radius) ▪ Potential visual impact of operational, safety and security lighting of the facility at night ▪ Potential visual impact of solar glint and glare as a visual distraction and possible air/road travel hazard ▪ Potential visual impact of solar glint and glare on static ground-based receptors (residents of homesteads) in close proximity (within 1km) to the PV facility ▪ Visual impact of the ancillary infrastructure on observers in close proximity to the structures. **Decommissioning Phase:** ▪ Visual impact of construction activities on sensitive visual receptors in close proximity (within 1km) to the proposed facility. **<u>Negative Indirect Impacts:</u>** **Operational Phase:** ▪ The potential impact on the sense of place of the region. **<u>Negative Cumulative Impacts:</u>** **Construction, Operational and Decommissioning Phases:** ▪ The potential cumulative visual impact of PV facilities on the visual quality of the landscape.	**Planning Phase:** ▪ Retain/re-establish and maintain natural vegetation in all areas outside of the development footprint/servitude, but within the project site. ▪ Use anti-reflective panels and dull polishing on structures, where possible and industry standard. ▪ Plan the placement of laydown areas and temporary construction equipment camps in order to minimise vegetation clearing (i.e. in already disturbed areas) where possible. **Construction Phase:** ▪ Ensure that vegetation is not unnecessarily removed during the construction period. ▪ Restrict the activities and movement of construction workers and vehicles to the immediate construction site and existing access roads. ▪ Ensure that rubble, litter, and disused construction materials are appropriately stored (if not removed daily) and then disposed of regularly at licensed waste facilities. ▪ Reduce and control construction dust using approved dust suppression techniques as and when required ▪ Restrict construction activities to daylight hours whenever possible in order to reduce lighting impacts. ▪ Rehabilitate all disturbed areas immediately after the completion of construction works. **Operational Phase:** ▪ Maintain the general appearance of the facility as a whole. ▪ Retain/re-establish and maintain natural vegetation (if present) immediately adjacent to the development footprint, where possible. ▪ Shield the sources of light by physical barriers (walls, vegetation, or the structure itself). ▪ Limit mounting heights of lighting fixtures, or alternatively use foot-lights or bollard level lights. ▪ Make use of motion detectors on security lighting. This will allow the site to remain in relative darkness, until lighting is required for security or maintenance purposes. ▪ Use anti-reflective panels and dull polishing on structures, where possible and industry standard. ▪ If specific sensitive visual receptors are identified during operation, investigate screening at the receptor site, where possible **Decommissioning Phase:** ▪ Remove infrastructure not required for the post-decommissioning use of the site. ▪ Rehabilitate all areas as per the rehabilitation plan undertaken. Consult an ecologist regarding rehabilitation specifications. ▪ Monitor rehabilitated areas post-decommissioning and implement remedial actions as required.

Specialist Assessment undertaken	Key Impacts Identified	Recommended Mitigation Measures
Appendix G.6: Heritage Impact Assessment (Archaeology and Cultural Landscape)	**Negative Direct Impacts:** **Construction Phase:** ▪ Damage to or disturbance of archaeological sites and materials ▪ Alteration of the cultural landscape **Operational Phase:** ▪ Alteration of the cultural landscape. **Decommissioning Phase:** ▪ Alteration of the cultural landscape. **Negative Cumulative Impacts:** **Construction and Decommissioning Phases:** ▪ Potential impacts on archaeology. **Operational Phase:** ▪ Potential impacts on the cultural landscape.	**Construction Phase:** ▪ Finds of archaeological material are reported to Heritage Western Cape (HWC) and the project archaeologist ▪ Implementation of recommendations of the Visual Impact Assessment to reduce impacts to the cultural landscape. **Operational Phase:** ▪ Implementation of recommendations of the Visual Impact Assessment to reduce impacts to the cultural landscape **Decommissioning Phase:** ▪ Implementation of recommendations of the Visual Impact Assessment to reduce impacts to the cultural landscape.
Appendix G.7: Palaeontology Impact Assessment	**Negative Direct and Cumulative Impacts:** **Construction Phase:** ▪ Loss of fossil heritage	**Construction Phase:** ▪ Implement the Chance Fossil Finds Protocol that has been incorporated into the project EMPrs (Appendix H of this EIA Report).
Chapter 13: Socio-Economic Assessment	**Direct Negative Impacts** **Construction Phase:** ▪ Social disruption and change in social dynamics; and ▪ Reduced quality of life and increased risks due to construction near residences **Decommissioning Phase:** ▪ Reduced employment and funding. **Direct Positive Impacts** **Construction Phase:** ▪ Capital investment (CapEx) contributing to the national, regional and local economy; ▪ Generation of employment, income and skills. **Operational Phase:** ▪ Operational investment (OpEx) contributing to the national, regional and local economy; ▪ Generation of employment, income and skills;	Note that several mitigation and enhancement measures have been identified in the assessment. The list below is only a summary of some of the recommendations. **Positive Impacts – Enhancement Measures:** **Construction Phase:** ▪ Source as many goods and services as far as possible from the local and regional economy ▪ Provide training to staff and service providers before and/or during the construction phase, where possible and practicable. ▪ Ensure diversity and gender equality in recruitment, as far as possible. **Operational Phase:** ▪ Provide suitable training to service providers, where possible and practicable. ▪ Develop and implement a fair and transparent procurement policy. ▪ Maximise use of local skills and resources through preferential employment of locals where practicable. ▪ Regularly engage with community stakeholders to develop meaningful strategies for community development. ▪ Ensure that funding requirements for each project are considered into the future so that projects are viable and sustainable. **Negative Impacts – Mitigation Measures:** **Construction Phase:** ▪ Work together with impartial local representatives to identify local people during the recruitment process.

Specialist Assessment undertaken	Key Impacts Identified	Recommended Mitigation Measures
	▪ Increased community prosperity through contributions and income from the SEF; and ▪ Increased power generation reducing the probability of load shedding. **<u>Cumulative Positive Impacts:</u>** ▪ Stimulation of economic and employment growth; and ▪ Increased community prosperity through contributions and income from IPPs.	▪ Provide transport to site and other incentives to reduce the number of workers accommodated in EPC accommodation to an absolute minimum. ▪ Consult with the municipality regarding the capacity of existing services and infrastructure to cope with additional workers brought into the area during the construction period. ▪ Consider supporting projects that improve local services and infrastructure and/or deal with social problems or conflicts through the social upliftment programme, if the need arises. ▪ Maintain a visible security presence on site. ▪ Implement a grievance mechanism during the construction phase. ▪ Control site access. ▪ Declare areas outside of the construction site as no-go areas for construction staff. **Decommissioning Phase:** ▪ Clearly communicate project duration to staff and communities. ▪ Prolong the operational life of the project as much as possible. ▪ Assist with the sustainable administration of funds throughout the project lifetime.
Appendix G.9: Traffic Impact Assessment	**<u>Indirect Negative Impacts</u>** **Construction Phase:** ▪ Increased Road Incidents ▪ Road degradation ▪ Dust ▪ Intersection Safety **Operational Phase:** ▪ Intersection Safety. **<u>Cumulative Negative Impacts</u>** **Construction and Operational Phases:** ▪ The cumulative impact due to 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.	**Construction Phase:** ▪ 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. ▪ Traffic Management Plan (TMP) is to be compiled once the contractor has been appointed and all the relevant details of the construction process are known. ▪ 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. ▪ 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. ▪ Reduce speed at intersections and use appropriate traffic warning signs. **Operational Phase:** ▪ Compile a Traffic Management Plant (TMP). ▪ Reduce speed at intersections and use appropriate traffic warning signs.

Specialist Assessment undertaken	Key Impacts Identified	Recommended Mitigation Measures
Appendix G.10: Battery Energy Storage System High Level Safety, Health and Environment Risk Assessment	The BESS High Level Safety, Health and Environment Risk Assessment identified risks, hazards, and consequences, such as, but not limited to: ▪ Human Health - chronic exposure to toxic chemical or biological agents. Causes - Construction materials such as cement, paints, solvents, welding fumes, truck fumes etc. Consequences - Employee / contractor illness. ▪ Human Health - exposure to noise. Causes - Drilling, piling, generators, air compressors. Consequences - Adverse impact on hearing of workers. Possible nuisance factor in near-by areas. ▪ Human and Equipment Safety - exposure to fire radiationCauses – ▪ Involvement in an external fire. Fire involving fuels used in construction vehicles or vehicles themselves (e.g., tyre fire). Fire due to uncontrolled welding or other hot-work. Consequences - Injuries due to radiation especially amongst first responders and bystanders. Fatalities unlikely from the heat radiation as not highly flammable nor massive fire. ▪ Human and Equipment Safety - exposure to explosion over pressures. Transformer shorting / overheating / explosion. Consequences - Potential fatalities, e.g., amongst first responders. Damage to nearby equipment.	▪ There are numerous different battery technologies but using one consistent battery technology system for the BESS installations associated with all the developments in the Beaufort West area associated with the Genesis Renewable Energy Cluster would allow for ease of training, maintenance, emergency response and could significantly reduce risks. ▪ Where reasonably practicable, state-of-the-art battery technology should be used with all the necessary protective features e.g., draining of cells during shutdown and standby-mode, full BMS with deviation monitoring and trips, leak detection systems. ▪ The overall design should be subject to a full Hazop prior to finalization of the design. ▪ For the VRFB systems an end of life (and for possible periodic purging requirements) solution for the large quantities of hazardous electrolyte should be investigated, e.g., can it be returned to the supplier for re-conditioning. ▪ Prior to bringing any solid-state battery containers into the country, the contractor should ensure that: o An Emergency Response Plan is in place that would be applicable for the full route from the ship to the site. This plan would include details of the most appropriate emergency response to fires both while the units are in transit and once they are installed and operating. o An End-of-Life plan is in place for the handling, repurposing or disposal of dysfunctional, severely damaged batteries, modules and containers. ▪ The site layout and spacing between lithium solid-state containers should be such that it mitigates the risk of a fire or explosion event spreading from one container to another. ▪ Location of the facilities needs to ensure a suitable separation distance from public facilities/residences etc. The proposed Beau Valley BESS installation location is not within 500m of any occupied farmstead complex. This is acceptable. ▪ Where there is a choice of alternative locations for the BESS, those that are further from water courses would be preferred. It is noted that there are no tributaries of the main water courses in the area within 200m of the proposed BESS Location.
Appendix G.11: Geohydrology Assessment	**<u>Construction Phase</u>** ▪ Groundwater impact (lowering) as a result of groundwater abstraction for construction requirements; ▪ Potential impact on groundwater quality as a result of accidental oil spillages or fuel leakages, and cleaning agents. **<u>Operational Phase</u>** ▪ Groundwater impact (lowering) as a result of groundwater abstraction for operational requirements. ▪ Potential impact on groundwater quality as a result of accidental oil spillages or fuel leakages, and cleaning agents.	**Construction, Operation and Decommissioning Phases:** ▪ A quarterly groundwater monitoring programme is recommended to ensure that groundwater abstraction is sustainable due to the high number of existing boreholes in the area. The programme should ideally be initiated at least one year prior to the commencement of construction if the project timeframes permit. This would serve to confirm the baseline water levels throughout one wet and dry season cycle, as well as confirm the baseline water quality. The monitoring will also indicate if the groundwater resource is impacted and mitigation measures can be instituted before long term impacts occur. Mitigation for over-abstraction would be reduction in abstraction. It is therefore highly improbable that the groundwater resource will be depleted as a result of over abstraction, should a quarterly monitoring programme be instated. ▪ Monitoring would also ensure that the extracted volumes comply with relevant authorised abstraction volumes.

Specialist Assessment undertaken	Key Impacts Identified	Recommended Mitigation Measures
	Decommissioning Phase ▪ Potential impact on groundwater quality as a result of accidental oil spillages or fuel leakages, and cleaning agents. ▪ Groundwater impact (lowering) as a result of groundwater abstraction for decommissioning requirements.	▪ Vehicles must be regularly serviced and maintained to check and ensure there are no leakages. A designated area should be established at the construction site camp for this purpose. ▪ Any engines that stand in one place for an excessive length of time must have drip trays. ▪ Construction vehicles and equipment should also be refuelled on an impermeable surface. A designated area should be established at the construction site camp for this purpose, if off-site refuelling is not possible. ▪ If spillages occur, they should be contained and removed as rapidly as possible, with correct disposal procedures of the spilled material, and reported. ▪ Proof of disposal (waste disposal slips or waybills) should be obtained and retained on file for auditing purposes. ▪ Chemical contamination of the soils, rocks and groundwater beneath the sites that have been proposed for development also pose risk to the environment due to cleaning of solar panels, albeit low. However, it is advised that (chemical) groundwater monitoring be conducted on at least a quarterly basis as precaution for contamination during the construction phase and for a year following. If changes in the groundwater chemistry are detected (e.g. chemicals derived from cleaning agents or compounds derived from petroleum), the advice of a specialist subcontractor should be sought for remediation of the groundwater chemistry
Appendix G.12: Geotechnical Assessment	**Direct and Cumulative Negative Impacts during the Construction, Operational and Decommissioning phases:** ▪ Displacement of geologic materials ▪ Contamination of subsoils and loss of topsoil.	**Construction Phase:** ▪ Favour dolerite as an aggregate (as opposed to Karoo sandstones and mudstones). ▪ 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 prior to construction (i.e. determine that soil with an adequate bearing capacity is obtained beneath each footing). ▪ 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 in the preconstruction phase. 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). ▪ 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. ▪ Where impacted through construction-related activities, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled. ▪ 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.

Specialist Assessment undertaken	Key Impacts Identified	Recommended Mitigation Measures
		▪ Provision must be made for refuelling at the storage area/site camp, and workshop by protecting the soil with an impermeable groundcover or 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. Proof of disposal (waste disposal slips or waybills) should be obtained and retained on file for auditing purposes. **Operational Phase:** ▪ Install drainage to divert stormwater away from activities, roads/tracks, structures, where required. ▪ 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. ▪ During the execution of the operations, appropriate measures to prevent pollution and contamination of the riparian environment must be implemented. ▪ 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. ▪ If spillages occur, they should be contained and removed as rapidly as possible, with correct disposal procedures of the spilled material. Proof of disposal should be obtained and retained on file for auditing purposes. **Construction Phase:** ▪ 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. ▪ 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 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. ▪ 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. Proof of disposal should be obtained and retained on file for auditing purposes.

SUMMARY OF KEY IMPACT ASSESSMENT FINDINGS

Based on the findings of the detailed specialist impact assessments, which are included in Appendix G of this EIA Report, the proposed project is considered to have an **overall Moderate to Very Low negative environmental impact** and an **overall Moderate to Low positive socio-economic impact** (with the implementation of respective mitigation and enhancement measures). Table D below provides a summary of the impact assessment for the proposed project post mitigation for direct impacts. Table E provides the same information for the cumulative impacts.

As indicated in Table D, the **direct negative impacts** were rated with an overall **Low to Very Low** post-mitigation impact significance for the **construction phase**, with the exception of Terrestrial Biodiversity, Aquatic Biodiversity and Visual impacts being rated as Moderate. In terms of the **operational and decommissioning phases**, the majority of the direct negative impacts were rated with a **Low to Very Low** post-mitigation impact significance. In terms of **direct positive impacts**, the Socio-Economic impacts are rated as having a **Moderate** impact significance post-mitigation for the construction phase; and **Low** impact significance post-mitigation for the operational phase.

Based on Table E, the majority of the **cumulative negative impacts** were rated with a **Low** post-mitigation impact significance for the **construction phase**, with the exception of Visual impacts being rated as Moderate. In terms of the **operational phase**, the majority of the cumulative negative impacts were rated with a **Low to Very Low** post-mitigation impact significance; with the exception of Avifauna Biodiversity, Traffic impacts and Visual impacts being rated as Moderate. In terms of the **decommissioning phase**, the majority of the cumulative negative impacts were rated with a **Low to Very Low** post-mitigation impact significance; with the exception of Visual impacts being rated as Moderate. In terms of **cumulative positive impacts**, the Socio-Economic impacts are rated as having a **Moderate** impact significance post-mitigation for the construction phase; and **Low** impact significance post-mitigation for the operational phase.

Table D: Overall Impact Significance with the Implementation of Mitigation Measures for Direct Negative and Positive Impacts

Specialist Study	Construction	Operational	Decommissioning
Direct Negative Impacts			
Agriculture	Very Low	Very Low	Very Low
Terrestrial Biodiversity and Terrestrial Animal Species	Moderate	Low	Low
Karoo Dwarf Tortoise Species Assessment	Low	Low	Low
Terrestrial Plant Species	Low	Low	Low
Aquatic Biodiversity and Species	Moderate	Moderate	Low
Avifauna Assessment	Low	Low	Low
Visual Impact Assessment	Moderate	Low	Moderate
Heritage Impact Assessment (Archaeology and Cultural Heritage)	Low	Low	Low
Palaeontological Impact Assessment	Low	No impact	No impact

Specialist Study	Construction	Operational	Decommissioning
Socio-Economic Assessment	Insignificant and/or not identified and/or not applicable	Insignificant and/or not identified and/or not applicable	Low
Traffic Impact Assessment	Low	Moderate	New TIA to be undertaken at decommissioning
Geohydrology Assessment	Low	Very Low	Very Low
Geotechnical Assessment	Very Low	Very Low	Very Low
Direct Positive Impacts			
Socio-Economic Assessment	Moderate	Low	Insignificant and/or not identified and/or not applicable

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

Specialist Study	Construction	Operational	Decommissioning
Direct Negative Impacts			
Agriculture	Low	Low	Low
Terrestrial Biodiversity and Terrestrial Animal Species	Low	Low	Low
Karoo Dwarf Tortoise Species Assessment	Low	Low	Low
Terrestrial Plant Species	Low	Low	Low
Aquatic Biodiversity and Species	Low	Low	Very Low
Avifauna Assessment	Low	Moderate	Low
Visual Impact Assessment	Moderate	Moderate	Moderate
Heritage Impact Assessment (Archaeology and Cultural Heritage)	Low	Low	Low
Palaeontological Impact Assessment	Low	No impact	No impact
Socio-Economic Assessment	Insignificant and/or not identified and/or not applicable	Insignificant and/or not identified and/or not applicable	Low
Traffic Impact Assessment	Moderate	Moderate	New TIA to be undertaken at decommissioning
Geohydrology Assessment	Low	Very Low	Very Low
Geotechnical Assessment	Low	Low	Low
Direct Positive Impacts			
Socio-Economic Assessment	Moderate	Low	Insignificant and/or not identified and/or not applicable

OVERALL ENVIRONMENTAL IMPACT ASSESSMENT AND REASONED OPINION FROM THE EAP

The information presented above, contributes to this overall environmental impact statement and reasoned opinion from the EAP as to whether the proposed project should or should not be authorised, including any conditions that should be made in respect of the authorisation (should it be granted).

Based on the findings of the detailed specialist assessments and technical studies, which all recommend that the proposed project can proceed and should be authorised by the DFFE, the proposed project is considered to have an **overall Moderate to Very Low negative environmental impact, and an overall Low to Moderate positive socio-economic impact** (with the effective implementation of respective mitigation and enhancement measures).

The proposed project will take place within the development footprint on the preferred project site, as contemplated in the accepted Final Scoping Report. The development footprint and buildable areas will avoid the "no-go" sensitive features identified and mapped by the respective specialists, where relevant and applicable.

This EIA has considered the nature, scale and location of the development as well as the wise use of land. The need for new solar PV generation capacity is specified in the energy planning for the country. When considering the timing of this project, the IRP 2019 proposes to secure 17 800 MW of renewable energy capacity by 2030. It is the Project Applicant's intention to bid this project in the future bidding rounds of the REIPPPP. The proposed project will therefore assist in generating additional electricity that is urgently required to address the shortage of generation capacity in the country.

The proposed project will be in line with and will be supportive of the objective of the BWLM IDP in terms of leveraging the competitive advantages of the region's significant renewable energy resources. If approved by DFFE, the proposed Solar PV Facility will provide skills development opportunities, create contractual and permanent employment in the area, and consequently provide catalytic opportunities for downstream economic development.

Section 24 of the Constitutional Act 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 prevents pollution and ecological degradation; promotes conservation; and secures ecologically sustainable development and use of natural resources while promoting justifiable economic and social development*". Based on this, this EIA was undertaken to ensure that these principles are met through the inclusion of appropriate management and mitigation measures, and monitoring requirements. These measures will be undertaken to promote conservation by avoiding the sensitive environmental features present on site and through appropriate monitoring and management plans (refer to the EMPr in Appendix H of this EIA Report).

Furthermore, mitigation measures such as committing some of the land adjacent to the Karoo National Park (KNP) to stewardship or similar conservation commitment are being investigated. The purpose of these engagements is to co-generate a mechanism that balances and achieves the imperatives of both biodiversity conservation and renewable energy development. The conclusion of an agreement

between SANParks, the Project Applicant and the affected landowners is recommended by the EAP as a condition to be included in the EA by the Competent Authority, the DFFE.

The outcomes of this project therefore succeed in meeting the environmental management objectives of protecting the ecologically sensitive areas and supporting sustainable development and the use of natural resources, whilst promoting justifiable socio-economic development in the towns nearest to the project site. The findings of this EIA show that all natural resources will be used in a sustainable manner (i.e., this project is a renewable energy project, and the majority of the negative site specific and cumulative environmental impacts are considered to be of low significance with mitigation measures implemented), while the benefits from the project will promote justifiable economic and social development. Furthermore, additional specialist studies (not recommended by the Screening Tool) have been undertaken as part of the EIA Process to ensure that all potential environmental impacts are addressed and assessed.

Taking into consideration the findings of the Scoping and EIA Process and given the national and provincial strategic requirements for infrastructure development, particularly from an electricity generation perspective, and based on the fact that the environmental sensitivity of the study area is largely medium to low, with a few isolated high and very high sensitivity areas, it is the opinion of the EAP, that the project benefits outweigh the costs and that the project will make a positive contribution to sustainable infrastructure development in the Beaufort West Local Municipality, as well as Central Karoo District.

Provided that the specified mitigation measures and management actions are applied effectively throughout, it is recommended that the proposed project receive EA in terms of the 2014 NEMA EIA Regulations (as amended). It is recommended that the EA (should it be granted) be valid for a period of 10 years. It is understood that the information contained in this EIA Report and appendices is sufficient to make a decision in respect of the activity applied for.