JUWI SOUTH AFRICA (PTY) LTD

Proposed Development of the Mayogi Solar Energy Facility and Associated Infrastructure near Kirkwood in the Eastern Cape Province

Final Scoping Report

Issue Date:	October 2023
Revision no.:	2.0
Project No.	18222
DFFE Reference Number:	14/12/16/3/3/2/2412

Date:	16 October 2023
Document Title:	Proposed Development of the Mayogi Solar Energy Facility and Associated Infrastructure near Kirkwood in the Eastern Cape: Final Scoping Report (FSR)
Revision Number:	2.0
Author:	Michelle Nevette *Cert.Nat.Sci Rev No. 120356* *EAPASA Reg No. 2019/1560* Phumela Madubela Cand.Sci.Nat Registration No. 137670
Checked by:	Natalie Pullen MSc Environmental Biotechnology (Rhodes University) Reg. EAP (EAPASA) (#2018/132)
Approved by:	Natalie Pullen MSc Environmental Biotechnology (Rhodes University) Reg. EAP (EAPASA) (#2018/132)
Signature:	
Client:	JUWI South Africa (Pty) Ltd

Confidentiality Statement

KEY PROJECT INFORMATION

Component	Description / Dimensions
Location of site (centre point)	Mayogi PV 33°28'33.857"S 25°18'39.403"E Mayogi 1: 33°28'41.99"S 25°19'28.063"E Mayogi 2: 33°28'21.473"S 25°18'14.302"E
Application site area	1070 ha (overall farm area)
PV development area	Approximately 507ha
SG codes	C07600000000069200000
Export capacity	Up to 150 MW
PV Panels	Structure height ▪ Solar panels with a maximum height of 5m above the ground Structure orientation Fixed tilt or tracking: ▪ Fixed tilt: North-facing at a defined angle of tilt. ▪ Or panels will either be fixed to a single-axis horizontal tracking structure where the orientation of the panel varies according to the time of the day, as the sun moves from east to west; or tilted at a fixed angle equivalent to the latitude at which the site is located in order to capture the most sun. ▪ Crystalline silicon or thin film technology (To be determined at later stage) Dimensions of Panel: ▪ Width (in m) of PV panels: 2,278m ▪ Height (in m) of PV panels: 1,134m
On-site Substation	▪ Two substations are proposed with a transformation capacity of 33/132kV. ▪ Each substation housing a single 80MVA transformer ▪ Maximum height of on-site substation: approximately 3-4 m ▪ The substation area is max. 1 ha including a building for switching, measurement and control units, a high voltage transformer and high voltage overhead-lines connecting the transformer to the 132 kV grid line that is close to the site.

Component	Description / Dimensions
	▪ On site, there will be around 15-20 container-sized transformer stations (12192*2896*2438 mm; W*H*D) that step up the low voltage coming from the inverters to 33 kV medium voltage.
Battery Energy Storage Area (BESS)	▪ It will depend on future off takers requirements and the size may vary. ▪ Provision of 1ha footprint will be kept on plan ▪ Capacity: <1000MWh ▪ Flow or solid state battery technology - to be catered for.
Capacity of on-site and collector substation	33/132kV
O&M building area	Located near the onsite IPP SS and/or BESS. All Auxiliary buildings to be developed include, but are not limited to: O&M building, site office, staff lockers, bathrooms, warehouses, etc (with septic tanks and all infrastructure). Typical areas include: - Office (~250m²); - Store room (~200m²) - Staff lockers and changing room (~100m²) - Security control (~40m²) - Sanitation facilities with septic tank outside - Conservancy Tank - Borehole (if possible, somewhere on site) Footprint up to 0.1 ha (around 0.03- 0.08ha)
Construction Camp Laydown area	▪ 1 x Construction camp will be required per PV, ▪ Offices and other buildings with toilets including septic tank and infrastructure, will used during the construction phase. ▪ Around 10 40ft container, in total <0,1 ha
Temporary laydown or staging area	Typical area 20 000m² (2 ha)
On-site IPP Electrical Infrastructure	▪ The proposed project will include two on-site IPP substations. ▪ Planned size (each): 2ha - 1ha for Substation - 1ha for battery storage ▪ Substation area: One building that will include: - Office/control room (~50m²); - MV switchgear room (~100m²) ▪ Substation yard will include: - High voltage transformer and high voltage overhead-lines connecting the transformer to the existing Eskom 132 kV grid line via an approximately 200m long underground cable or OHL. This area will include construction laydown area, construction camp facilities and storage area, in the beginning.

Component	Description / Dimensions
	▪ Medium voltage cabling will link PV facility to grid connection infrastructure ▪ Internal underground lines of up to 33 kV (22kV or 33kV). *Cables will be laid underground wherever technically feasible, with overhead 33kV lines grouping PV areas to crossing valleys and ridges to get to the on-site substation."*
Internal roads	Access road/s to the site and internal roads between project components of up to 6m, with an additional 2m drainage on each site if necessary. Existing roads will be utilised as reasonably possible. Existing access roads may be upgraded by approximately 450m x 6m.
Site Access	Access to the development area can be obtained via the MN50455, which is adjacent to the R75.
Proximity to grid connection	Skilpad substation is adjacent to the site. <u>Starting point:</u> ▪ PV Panel Array - To produce up to 86MW DC each, the proposed facility will require numerous linked PV panels connected in series, which will form solar PV arrays that will comprise the PV facility. ▪ The PV array will be wired to central inverters. The inverter is a MPPT (Maximum Power Point Tracking) inverter that converts direct current (86 MW DC) electricity to alternating current (75MW AC) electricity at grid frequency. <u>Connection to the grid:</u> ▪ Connecting the array to the electrical grid requires transformation of the voltage from LV voltage to 33kV to 132kV. The normal components and dimensions of a distribution rated electrical substation will be required. Output voltage from the inverter is LV AC and this is fed into step up transformers to 33kV. From the inverter transformer an RMU is used to connect to the onsite substation ▪ The onsite substation will be required on the site to step the voltage from 33kV up to 132kV. After which the power will be evacuated into the national grid. ▪ A switching substation (and associated infrastructure) will be positioned close to the Eskom substation ▪ The metering point will be at the point of connection from the IPP substation side into the Eskom Switching Station.
Fencing	▪ Type: proposed galvanized metal mesh. ▪ Length: 16km ▪ Height: Up to 2m

Component	Description / Dimensions
Boreholes and Storage tanks (if applicable)	▪ Water will be either extracted from the borehole within the property or purchased from the neighboring farm with access to the river. ▪ Water from the borehole is used to irrigate the land. Meaning good flow rate is available. ▪ 2,5/5/10 Kl storage tanks ▪ During construction and O&M – mostly above ground tanks; 2 or 3 with 5kl or 10kl volume, close to O&M buildings normally ▪ For PV Farm: ▪ Planned size project of 150 MW AC (in total for both PVs) ▪ The plant will require an estimated amount per year ▪ During construction: 1.5 to 2 years. Estimated 7 Megalitres per year ○ Road construction and compaction ○ Concrete batching for PV mounting structures foundation ○ Dust suppressions of the internal roads ○ Provision of portable water for staff needs (if it can be used) ▪ During Operation and Maintenance: 15 to 25 years. Estimated 2 Megalitres per year ○ Dust suppression of the internal roads ○ PV panel washing ○ Office building use (eg. Toilets and washbasins)
Estimated number of employment opportunities generated by each PV project	▪ Expected Work force: During construction and O&M, based on 80MW PV plant. ▪ Construction: 350 – 700 during the 1,5 to 2 years of construction. 60-70% could possibly be locals. This includes Skilled, semi-skilled and unskilled workers ▪ O&M: 25 - 30 people during the 15 to 25 years of operation. 4-5 skilled workers and 16 – 25 un/semi-skilled workers, depending on contracts. ▪ This “Mayogi PV” project will still evolve over time and size may shrink due to clients/contracts/environmental factors. And for interest – Wind warm of 20 turbines would also take 1,5 to 2,5 years to complete with 250 – 350 workers employed during construction.
Construction: Duration and start date	Not yet specified

MAYOGI SOLAR ENERGY FACILITY

FINAL SCOPING REPORT

EXECUTIVE SUMMARY

INTRODUCTION AND PROJECT DESCRIPTION

JUWI South Africa (Pty) Ltd is proposing to construct the Mayogi Solar Energy Facility (SEF) and associated infrastructure located on Farm No. 692 adjacent to the R75 approximately 13 km southwest of Kirkwood in the Sunday's River Valley Municipality, in the Eastern Cape Province (**Figure 1**) (**DFFE Reference Number: 14/12/16/3/3/2/2412**). The overall objective of the proposed development is to supply suitable private off-taker initiatives (direct supply or wheeling agreements, as applicable), or be bid into the government coordinated Renewable Independent Power Producer Programme (REIPPP) or similar procurement program under the Integrated Resource Plan (IRP). The proposed development will have a maximum total generation capacity of up to 150 megawatt (MW).

SiVEST Environmental Division has subsequently been appointed as the independent Environmental Assessment Practitioner (EAP) to undertake the Environmental Impact Assessment (EIA) process for the proposed construction and operation of the Mayogi SEF and associated infrastructure. The proposed development requires an Environmental Authorisation (EA) from the National Department Forestry, Fisheries and the Environment (DFFE). However, the provincial authority (i.e. the Eastern Cape Department of Economic Development, Environmental Affairs and Tourism) will also be consulted. The EIA for the proposed development will be conducted in terms of the EIA Regulations, 2014 (as amended) promulgated in terms of Chapter 5 of the NEMA. In terms of these regulations, a full EIA process is required for the proposed development. All relevant legislation and guidelines will be consulted during the EIA process and will be complied with at all times.

The proposed development will have a maximum total generation capacity of up to 150 megawatts (MW). The project involves the development of a solar-energy facility comprised of Mayogi 1 and Mayogi 2 with a total generation capacity of up to 150MWac (approximately 75MWac each), from renewable solar energy to be supplied to the national Eskom grid via the existing Skilpad substation, near to the site. The necessary associated infrastructure, including BESS, site camp, substation, overhead powerlines, and Operation and Maintenance (O&M) buildings form a part of this application.

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

The following activities are applied for:

Activity No(s):	Relevant activities as set out in Listing Notices 1, 2 and 3 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
Relevant Basic Assessment Activities as set out in Listing Notice 1		
11 (i)	**GN R. 327 (as amended) Item 11:** The development of facilities or infrastructure for the transmission and distribution of electricity— (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts.	New on-site substations/collector switching stations will be constructed as part of the proposed development. The proposed substation / collector switching stations will be located outside urban areas and will have capacities of 33/132kV respectively. The substations will be connected via overhead lines.
12 (ii) (a) (c)	**GN R. 327 (as amended) Item 12:** The development of: ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs- (a) within a watercourse; (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.	Drainage lines and watercourses are scattered across the proposed site. One or more roads and/or powerlines will cross these watercourses or drainage lines or be within 32m thereof. The proposed developments will therefore entail the construction of infrastructure with physical footprints of approximately 100m^2 or more within a surface water feature / watercourse or within 32m of a surface water feature / watercourse.
14	**GN R. 327 (as amended) Item 14**: The development of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres.	"Dangerous goods" that are likely to be associated with the project include fuel stored during the construction phase and/or hazardous chemical substances at the substation during the operational phase. Threshold of 80 m^3 expected to be exceeded. The Facility will require storage and handling of dangerous goods, including fuel, cement and chemical storage onsite, that will be greater than 80m^3 but not exceeding 500m^3. The facility will install a Battery Energy Storage System (BESS) which will be either solid state or flow batteries, depending on the

Activity No(s):	Relevant activities as set out in Listing Notices 1, 2 and 3 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
		customer scope and informed by the final design. Flow batteries will require the bulk storage and handling of dangerous goods/ substances, ie. Electrolyte. Which is likely to exceed the 80 m^3
19	**GN R. 327 (as amended) Item 19**: The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;	The proposed development will involve the excavation, removal, infilling or depositing of any material of more than 10m^3 into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10m^3 from some of the identified surface water features / watercourses. Although the layout of the proposed developments will be designed to avoid the identified surface water features / watercourses as far as possible, some of the internal and/or access roads may need to traverse the identified surface water features / watercourses. In addition, during construction of these roads, soil will need to be removed from some of the identified surface water features / watercourses.
24 (ii)	**GN R. 327 (as amended) Item 24:** The development of a road - ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres.	Internal access roads of approximately 6m with an additional 2m drainage on each site if necessary. Existing roads will be used wherever possible, although new roads may need to be upgraded by approximately 450m x 6m.
28 (ii)	**GN R. 327 (as amended) Item 28:** Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development: (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;	The total area to be developed for the proposed renewable energy facilities is greater than 1ha and occurs outside an urban area in an area currently zoned as agricultural land.
48 (i) (a) (c)	**GN R. 327 (as amended) Item 48:** The expansion of-	The proposed development will entail the expansion (upgrading) of roads and other infrastructure by 100m^2 or more within a surface

Activity No(s):	Relevant activities as set out in Listing Notices 1, 2 and 3 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
	(i) infrastructure or structures where the physical footprint is expanded by 100 square metres or more; where such expansion occurs— (a) within a watercourse; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;	water feature / watercourse or within 32m from the edge of a surface water feature / watercourse. Although the layouts of the proposed developments will be designed to avoid the identified surface water features / watercourses as far as possible, some of the internal and access roads to be upgraded will need to traverse the identified surface water features / watercourses and construction will occur within some of the surface water features / watercourses and/or be within 32m of some of the surface water features / watercourses.
56 (ii)	**GN R. 327 Item 56:** The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre - (i) where the existing reserve is wider than 13,5 metres; or (ii) where no reserve exists, where the existing road is wider than 8 metres –	Internal access roads will be required to access the PV panels and the substation. Existing roads will be used wherever possible, although new roads will be constructed where necessary. The existing access roads will need to be upgraded by widening them more than 6m, or by lengthening them by more than 1km.
Relevant Scoping and EIA Activities as set out in Listing Notice 2 of the EIA Regulations, 2014 as amended		
1	**GN R. 325 (as amended) Item 1:** The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more.	The proposed development will entail the construction of 2 x SEF's, where the respective electricity output will be up to 75 MW each and a combined capacity of up to 150MW. In addition, the proposed SEF development will be located outside urban areas.
15	**GN R. 325 (as amended) Item 15:** The clearance of an area of 20 hectares or more of indigenous vegetation.	The proposed SEF development will involve the clearance of more than 20 ha of indigenous vegetation. Clearance will also be required for the proposed substations, internal access roads and other associated infrastructure.
Relevant Basic Assessment Activities as set out in Listing Notice 3 of the EIA Regulations, 2014 as amended		
4 (a)(ii)(ee)	**GN R. 324 (as amended) Item 4:** The development of a road wider than 4m with a reserve less than 13.5 metres. **a. Eastern Cape**	The development of the SEF facility and associated infrastructure will require the development of roads wider than 4 m with a reserve of less

Activity No(s):	Relevant activities as set out in Listing Notices 1, 2 and 3 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
	ii. Outside Urban Areas: (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.	than 13.5 m within a CBA 1 and CBA 2 area. These roads will occur within the Eastern Cape Province, outside urban areas.
10 (g)(ii)(iii)(ee)	**GN R. 324 (as amended) Item 10:** The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres. **a. Eastern Cape** ii. Areas within a watercourse or wetland; or within 100 metres from the edge of a watercourse or wetland; iii. Outside Urban Areas: (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.	"Dangerous goods" that are likely to be associated with the project include fuel stored during the construction phase and/or hazardous chemical substances at the substation during the operational phase. Threshold of 80 m^3 expected to be exceeded. The Facility will require storage and handling of dangerous goods, including fuel, cement and chemical storage onsite, that will be greater than 80m^3 but not exceeding 500m^3. The facility will install a Battery Energy Storage System (BESS) which will be either solid state or flow batteries, depending on the customer scope and informed by the final design. Flow batteries will require the bulk storage and handling of dangerous goods/ substances, ie. Electrolyte. Which is likely to exceed the 80 m^3
12 (a)(ii)	**GN R. 324 (as amended) Item 12:** The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. **a. Eastern Cape** (ii) Within critical biodiversity areas identified in bioregional plans.	The proposed development will entail the construction of infrastructure with physical footprints of approximately 300 m^2 or more within areas identified as CBA 1 and CBA 2 area. As such, approximately 300 m^2 or more of indigenous vegetation will likely be cleared as part of the respective proposed developments.
14 (ii)(a)(c)(a)(ii)(ff)	**GN R. 324 (as amended) Item 14:** The development of— (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs—	The proposed development will entail the development of infrastructure with physical footprints of 10m^2 or more within a watercourse / surface water feature or within 32 m from the edge of a watercourse / surface water feature.

Activity No(s):	Relevant activities as set out in Listing Notices 1, 2 and 3 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
	(a) within a watercourse; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour. **a. Eastern Cape** ii. Outside urban areas: (ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;	The construction of the infrastructure for the development will occur within CBA Areas 1 and 2.
18 (a)(ii)(ee)(ii)	**GN R. 324 (as amended) Item 18:** The widening of a road by more than 4 meters, or the lengthening of a road by more than 1 kilometer- **a. Eastern Cape** ii. Outside urban areas: (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; (ii) Areas within a watercourse or wetland; or within 100m from the edge of a watercourse or wetland.	Internal access roads will be required to access the solar panels as well as the substation. Existing roads will be used wherever possible. Internal access roads will thus be widened by more than 4 m or lengthened by more than 1 km. These roads will occur within the Eastern Cape Province, outside urban areas. The widening of the roads will occur within a CBA 1 and 2 area as well as a watercourse or wetland or within 100 m from the edge of a watercourse or wetland.
23 (ii)(a)(c) (a)(ii)(ee)	**GN R. 3245 (as amended) Item 23**: The expansion of— (ii) infrastructure or structures where the physical footprint is expanded by 10 square metres or more; where such expansion occurs— (a) within a watercourse; (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.	The proposed development will entail the development and expansion of roads and other infrastructure by 10m^2 or more within a watercourse or within 32m from the edge of a watercourse. The expansion of the infrastructure will occur within the Eastern Cape Province, outside urban areas, within a CBA 1 and 2 area. Although the layout of the proposed development will be designed to avoid the identified surface water features as far as possible, some of the existing internal and access roads will need to traverse some of the identified surface water features.

Activity No(s):	Relevant activities as set out in Listing Notices 1, 2 and 3 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
	a. Eastern Cape ii. Outside urban areas: (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;	

DETAILS OF ALTERNATIVES CONSIDERED

Prior to the initiation of the EIA, alternative properties / sites were considered for the location of the proposed development. The selection of a potential solar farm site includes several key aspects including solar resource, grid connection suitability/infrastructure as well as environmental and social constraints, topography and access. This proposed project site was selected based on the above criteria ahead of other regional properties / sites due to the cumulative assessment of all criteria. This internal process takes several weeks to complete and ensures that the least environmentally sensitive property / site is selected in the specific region of development.

Based on the reasons above no site alternatives have been considered during the EIA process for this proposed development. The placement of solar energy facilities is dependent on the factors discussed above, all of which are favourable at the proposed site location. The proposed project site has topography which is suitable for the development of a SEF and is in close proximity to a grid connection that has been identified to have sufficient capacity to evacuate the generation. In addition, the proposed site is easily accessible off the public gravel roads R75 and MN50455. The site is therefore considered highly suitable for the proposed development of a SEF and no other locations have been considered.

No other activity alternatives have been considered. Renewable Energy developments in South Africa are highly desirable from a social, environmental and development perspectives respectively. The importance of renewable energy has been outlined in Section 10 and 11 of the report, highlighting national, district and local support. The solar resource in this area along with the rapid advancements in solar energy technology efficiency serves as further motivations for the proposed development.

Specialist studies identified the environmental constraints upfront and a layout that maximises the footprint was chosen. Aside from the layout alternatives identified for the temporary laydown area, full site layout alternatives will not be assessed however the layout will be further refined should any additional constraints be identified from the various specialists. The layout has been designed to avoid sensitive areas as far as possible.

The no-go alternative will result in the current status quo being maintained as far as the avifauna, ecological and the aquatic systems are concerned. The no-go option would therefore eliminate any additional impact on the ecological integrity of the proposed development site. The no-go option would also mean that the social environment is not affected as the status quo remains. This also means that all the positive aspects associated with the project would not materialise. Consequently, there would be no job creation, no revenue streams into the local economy and municipal coffers, and a lost opportunity

to enhance the National Grid with a renewable source of energy. The no-go alternative will not be taken forward to the EIA phase for further assessment.

POTENTIAL IMPACTS IDENTIFIED FOR THE PREFERRED ALTERNATIVE

Planning

Environmental Aspect	Potential Impact During Planning	Proposed Mitigation
Agricultural	Compliance Statement	
Avifaunal	• None identified	• None Identified
Aquatic	• None identified	• None Identified
Geotechnical	• None identified	• None Identified
Terrestrial Biodiversity	• None identified	• None identified
Heritage	• None identified	• None Identified
Social	• None Identified	• None Identified
Traffic	• None Identified	• None Identified
Visual	• None Identified	• None Identified

Construction

SEF

Environmental Aspect	Potential Impact During Construction	Proposed Mitigation
Agricultural	None identified	
Avifaunal - Mammals, unlikely to occur in the way of the construction, if present likely to move away.	Direct impacts on mammals and habitat loss by destruction	Should any mammal species be encountered or exposed during the construction phase, they should be removed and relocated to natural areas in the vicinity. The contractor must ensure that no indigenous mammal species are disturbed, trapped, hunted or killed during the construction phase. Conservation-orientated clauses should be built into contracts for construction personnel, complete with penalty clauses for non-compliance. The appropriate agency should implement an ongoing monitoring and eradication program for all invasive plant species growing on the site. Any post-development re-vegetation or landscaping exercise should use grass species indigenous to the area are preferred
Avifaunal - The construction of the facility may lead to limited habitat loss and with little direct	Direct impacts on birds and habitat loss	The spatial extent of construction activities be minimized, The boundaries of the development footprint areas are to be clearly demarcated and it must be ensured that all construction activities remain within the demarcated footprint area. Any bird nests that are found during the construction period must be reported to the Environmental

Environmental Aspect	Potential Impact During Construction	Proposed Mitigation
impacts on the birds		Control Officer (ECO). Provide adequate briefing for site personnel and residents prior to construction. Breeding and foraging in the area should be minimized and controlled.
Avifaunal - Birds disturbance due to human activities	The presence of vehicles and construction workers will cause disturbance to avifauna, with the movement and activities of personnel on site and the associated noise, pollution and litter all having a negative effect on birds. In addition, the presence of construction workers will increase the probability of activities such as illegal hunting of birds. The permanent presence of a much larger number of people than presently occur at the site will result in greater disturbance of birds that use the area for foraging and breeding.	Movement of construction vehicles and workers beyond the boundary of the site must be minimized. In addition, workers must be instructed to minimize disturbance of birds at all times, and steps must be taken to ensure that no illegal hunting occurs. The boundaries of the development footprint areas are to be clearly demarcated and it must be ensured that all activities remain within the demarcated footprint area. Disturbance by residents of birds breeding and foraging in the area should be minimized. Provide adequate briefing for site personnel. Any bird nests that are found during the construction period must be reported to the Environmental Control Officer (ECO) and residents should always be aware of the importance of birds in their built environment.
Avifaunal - Birds possibility of electrocution	Electrical infrastructure such as OHL pose a potential collision risk to flying birds, and a potential electrocution risk to perching birds. The magnitudes of these risks are much lower than the corresponding risks associated with large overhead transmission lines.	Normal safety measures for electrical installations as used by Eskom
Avifaunal - Reptile or amphibia species may be influenced. The current habitat is mostly disturbed terrestrial habitat	Direct impact on herpetofauna and habitat destruction, unlikely to be present at PV construction site, Those present may move away, slower movement. The footprint for the proposed residential development will result in clearing most of the vegetation area. This will result in some loss of herpetofauna habitat.	Should any reptile or amphibia species are encountered or exposed during the construction phase, they should be removed and relocated to natural areas in the vicinity. The contractor must ensure that no indigenous herpetofauna species are disturbed, trapped, hunted or killed during the construction phase. During the construction phase there may be increased surface runoff and a decreased water quality. Completing construction during the winter months would mitigate the environmental impact. The appropriate agency should implement an ongoing monitoring and eradication program for all invasive plant species growing on the site. Any post-development re-vegetation or landscaping exercise should use species indigenous to the area.
Aquatic – Loss of aquatic species of special concern during the construction	The construction activities will not result in the disturbance of aquatic habitats that may contain listed and or protected plant or animal species. However, none	Develop and implement a Rehabilitation and Monitoring plan post Environmental Authorisation. This must be developed following the finalisation of the panel / road layout and a walk down has been completed. This plan

Environmental Aspect	Potential Impact During Construction	Proposed Mitigation
and or decommissioning of the solar facility	of these were observed during this assessment	should include relocation of suitable plant species, but more important protect any topsoil stores and promote the collection of vegetative material and propagules / seed to assist with the revegetation of the site Where possible, temporary construction lay-down or assembly areas should be sited on transformed areas; and Rapid regeneration of plant cover must be encouraged by setting aside topsoil during earthmoving and replacing onto areas where the re- establishment of plant cover is desirable to prevent erosion.
Aquatic – Damage or loss of riparian systems, ephemeral watercourses and wetland systems in construction and or decommissioning of the solar facility although all areas have been avoided	Construction could result in the loss of drainage systems that are fully functional and provide an ecosystem services within the site especially where new access roads are required or road upgrades will widen any current bridges or drifts. Loss can also include a functional loss, through change in vegetation type via alien encroachment for example.	• A pre-construction walkthrough with an aquatic specialists is recommended and they can assist with the development of the stormwater management plan and Aquatic Rehabilitation and Monitoring plan, coupled to micro-siting of the final layout. • All alien plant re-growth, which is currently low within the greater region must be monitored and should it occur, these plants must be eradicated within the project footprints and especially in areas near the proposed crossings. Where roads and crossings are upgraded, the following applies: • Existing pipe culverts must be removed and replaced with suitable sized box culverts, especially where road levels are raised to accommodate any large vehicles. • River levels, regardless of the current state of the river / water course must be reinstated thus preventing any impoundments from being formed. The related designs must be assessed by an aquatic specialist during a pre-construction walkdown. • Where large cut and fill areas are required these must be stabilised and rehabilitated during the construction process, to minimise erosion and sedimentation. • Suitable stormwater management systems must be installed along roads and other areas and monitored during the first few months of use. Any erosion / sedimentation must be resolved through whatever additional interventions maybe necessary

Environmental Aspect	Potential Impact During Construction	Proposed Mitigation
		(i.e., extension, energy dissipaters, spreaders, etc). • A detailed monitoring plan must be developed in the pre-construction phase by an aquatic specialist, where any delineated system occurs within 50 m of existing crossings.
Aquatic -. Potential impact on localised surface water quality (construction materials and fuel storage facilities) during the construction and or decommissioning of the solar facility	• During construction earthworks will expose and mobilise earth materials, and a number of materials as well as chemicals will be imported and used on site and may end up in the surface water, including soaps, oils, grease and fuels, human wastes, cementitious wastes, paints and solvents, etc. Any spills during transport or while works area conducted in proximity to a watercourse has the potential to affect the surrounding biota. Leaks or spills from storage facilities also pose a risk and due consideration to the safe design and management of the 30 000l fuel storage facility must be given. • Although unlikely, consideration must also be provided for the proposed Battery Energy Storage System (BESS), with regard safe handling during the construction phase. This to avoid any spills or leaks from this system	• All liquid chemicals including fuels and oil, including the BESS must be stored in with secondary containment (bunds or containers or berms) that can contain a leak or spill. Such facilities must be inspected routinely and must have the suitable PPE and spill kits needed to contain likely worst-case scenario leak or spill in that facility, safely. • • Washing and cleaning of equipment must be done in designated wash bays, where rinse water is contained in evaporation/sedimentation ponds (to capture oils, grease cement and sediment). • • Mechanical plant and bowsers must not be refuelled or serviced within 100m of a river channel. • • All construction camps, lay down areas, wash bays, batching plants or areas and any stores should be more than 50 m from any demarcated water courses.. • • Littering and contamination associated with construction activity must be avoided through effective construction camp management; • • No stockpiling should take place within or near a water course • • All stockpiles must be protected and located in flat areas where run-off will be minimised and sediment recoverable;
Geotechnical - Removal of subsoils (soil, rock)	Displacement of natural earth material and overlying vegetation. 1) Increase in soil and wind erosion due to clearing of vegetation. 2) Construction and earthmoving vehicles may displace soil during operations. 3) Creation of drainage paths along access tracks. 4) Potential oil spillages from heavy plant. 5) Excessive dust.	Identify protected areas prior to construction. 1) Construction of temporary berms and drainage channels to divert surface water. 2) Minimize earthworks and fills. 3) Use existing road network and access tracks. 4) Rehabilitation of affected areas (such as re-grassing, mechanical stabilization). 5) Correct engineering design and construction of gravel roads and water crossings. 6) Correct construction methods for foundation installations. 7) Vehicle repairs to be undertaken in designated areas. 8) Control stormwater flow. 9) Dust suppression

Environmental Aspect	Potential Impact During Construction	Proposed Mitigation
Terrestrial Biodiversity – Although this Albany Alluvial Vegetation Type is regarded as Endangered, little or no elements typical remained on the small patch present on the site. The vegetation is totally transformed, the plant community identified is the Arid Karoo Low species richness, **Low ecological sensitivity.**	A fairly large part of this vegetation is regarded as restricted (No-Go) area e.g. around Daniell Cheetah Project, small drainage line and overhead powerline servitudes. However, there will be some development in the vicinity of the Skilpad substation, e.g. new Alternative 3 substation south of the Skilpad, substation or Alternative 1 north of the 132 kV Overhead powerline, maybe some solar PV panels, etc. in the remaining area. This will impact on vegetation and plant species	• Except for the current Skilpad substation and planned developments leave the N0-G0 areas in the north-eastern corner intact. • Strictly control access to the No-Go area during construction phase. • Avoid any grazing to allow recovery by natural succession. Disturb as little as possible in the powerline servitude
Terrestrial Biodiversity - Vegetation and plant species in the Dry Thicket with Euphorbia: Medium species richness, Medium ecological sensitivity. Sundays Arid Thicket (=Sundays Noorsveld) is listed as Vulnerable in the 2022 NEMBA list.	Clearing of this vegetation for the solar PV panels and associated cables, access road, water piping and other associated infrastructure will result in impacts on vegetation and plant species loss.	• The clearing of vegetation must be kept to a minimum and remain within the footprint development – leave the rest of the area with natural vegetation intact, but there is very little, if any natural vegetation left. Remove alien invasive species wherever possible • Disturbed open areas must be rehabilitated immediately after construction has been completed • During the construction phase workers must be limited to areas under construction and access to adjacent areas must be strictly controlled • Rehabilitated areas must be monitored to ensure the establishment of re-vegetated areas. • Plant only indigenous grass – no alien species.
Terrestrial Biodiversity - Vegetation and plant species in the Arid Thicket on Limestone: Low species richness, Medium-Low	Clearing of this vegetation for the and for Alternative 2 Substation solar PV panels and associated cables, access road, water piping and other associated infrastructure will result in impacts on vegetation and plant species loss.	The clearing of vegetation must be kept to a minimum and remain within the footprint development – leave the rest of the area with natural vegetation intact, but there is very little, if any, natural vegetation left. Remove alien invasive species wherever possible • Disturbed open areas must be rehabilitated immediately after construction has been completed

Environmental Aspect	Potential Impact During Construction	Proposed Mitigation
ecological sensitivity		• During the construction phase workers must be limited to areas under construction and access to adjacent areas must be strictly controlled • Rehabilitated areas must be monitored to ensure the establishment of re-vegetated areas. • Plant only indigenous grass – no alien species
Terrestrial Biodiversity - Increase of alien and invasive plant species	Alien invasive plant species and weeds may encroach into any disturbed areas particularly areas cleared for the proposed development	• An alien invasive management programme must be incorporated into the Environmental Management Programme; Ongoing alien plant control must be undertaken; Areas which have been disturbed will be quickly colonised by invasive alien species. An ongoing management plan must be implemented for the clearing/eradication of alien species. Monitor all sites disturbed by construction activities for colonisation by exotics or invasive plants and control these as they emerge. Avoid planting of exotic plant species, use indigenous grass species.
Heritage (Archaeological heritage resources)	Construction activities that take place near to archaeological resources may result in their destruction	Should any previously unknown archaeological resources be impacted during construction, work must cese in the vicinity of the find and the relevant heritage authority must be contacted
Heritage (Palaeological resources)	Construction activities that take place near to palaeontological resources may result in their destruction	Implementation of the Chance Fossil Finds Procedure
Heritage (Cultural landscape)	Construction activities that take place near to cultural landscape elements may result in their destruction	Implementation of the recommendations included in the VIA
Visual - Vegetation and protected plant species	Vegetation clearing for access roads, turbines and their service areas and other infrastructure will impact on vegetation and protected plant species.	• Outline/explain the mitigation measures to be undertaken to ameliorate the impacts that are likely to arise from the proposed activity. These measures will be detailed in the EMPr.
Social	• Impact on GDP and production	• The PV solar plant developer should encourage local procurement of goods and services to be prioritised where possible. • Awareness for local businesses should be raised and extended to catering and accommodation establishments, prior to the construction phase.
	• Impact on employment	• Arrange meetings through the Sundays River Valley Local Municipality and labour unions to inform the local labour force what jobs could be applied for.

Environmental Aspect	Potential Impact During Construction	Proposed Mitigation
		• Recruit from the local labour force as far as possible and provide training prior to construction phase.
	• Contribution to skills development	• Provide basic construction training to local members prior to the construction phase. • Facilitate knowledge and skills between highly specialised technical experts and the construction crew prior and during construction phase.
	• Impact on household earnings	• Recruit as much local labour as possible to increase local household earnings. • Use local suppliers where possible and use local MSME's and B-BBEE compliant enterprises to provide transport and catering to the construction crew.
	• Impact on government revenue	• The proposed PV solar energy facility and related infrastructure will contribute to national revenue through the purchasing of goods and materials needed for construction of the facility and through the salaries and wages of temporary staff involved with construction phase of the facility
	• Impact on social conflict	• Through the SRVLM, use local municipal office as recruitment office and follow strict labour recruitment practices to reduce the number of potential job seekers loitering around in hope of finding employment. • Establish a management forum with key stakeholders to monitor potential issues that may arise due to the influx of job seekers to the area.
	• Impact on economic and social infrastructure	• Provide sufficient signage along roads near the construction site to warn motorists of construction activities taking place nearby. • Developer and contractor should ensure prior to the construction phase making use of their own social services as far as possible, i.e., mobile clinic, water tanks, generator for electricity supply.
	• Impact on the sense of place	• Natural environments not affected and needed by the proposed development should remain untouched. Regulation of boundaries of such areas need to be made transparent between all key relevant stakeholders, the developer and contractor before the construction phase.

Environmental Aspect	Potential Impact During Construction	Proposed Mitigation
Transportation– Development traffic/ related noise & dust pollution	• Temporary increase in traffic due to construction vehicle trips on the external road network/ increase in noise and dust pollution levels during construction period.	• Stagger component delivery to site; Reduce the construction period if possible; Stagger construction phase tasks; Make use of any quarries in the vicinity of the site to decrease the impact of development trips on the external roads; Staff and general trips should occur outside of peak traffic periods as much as possible; Maintenance of haulage routes and design and maintenance of internal roads.

Grid

Environmental Aspect	Potential Impact During Operation	Proposed Mitigation
Aquatic - Loss of aquatic species of special concern during the construction or decommissioning of the grid options	The construction activities will not result in the disturbance of aquatic habitats that may contain listed and or protected plant or animal species. However, none of these were observed during this assessment	Develop and implement an Rehabilitation and Monitoring plan post Environmental Authorisation. This must be developed following the finalisation of the tower positions and access tracks and a walk down has been completed. This plan should include relocation of suitable plant species, but more important protect any topsoil stores and promote the collection of vegetative material and propagules / seed to assist with the revegetation of the site. Where possible, temporary construction lay-down or assembly areas should be sited on transformed areas; and Rapid regeneration of plant cover must be encouraged by setting aside topsoil during earthmoving and replacing onto areas where the re- establishment of plant cover is desirable to prevent erosion.
Aquatic - Damage or loss of riparian systems, ephemeral watercourses and wetland systems in the construction or decommissioning of the grid options	Construction could result in the loss of drainage systems that are fully functional and provide an ecosystem services within the site especially where new access roads to install any of the grid options as both alternatives will need to span watercourses with seeps. Loss can also include a functional loss, through change in vegetation type via alien encroachment for example	A pre-construction walkthrough with an aquatic specialists is recommended and they can assist with the development of the stormwater management plan and Aquatic Rehabilitation and Monitoring plan, coupled to micro-siting of the final layout. All alien plant re-growth, which is currently low within the greater region must be monitored and should it occur, these plants must be eradicated within the project footprints and especially in areas near the proposed crossings. Where roads and crossings are upgraded, the following applies: etc).

Environmental Aspect	Potential Impact During Operation	Proposed Mitigation
		It is recommended that no new tracks or towers / pylons are placed / constructed within any of the delineated aquatic zones.
Aquatic - Potential impact on localised surface water quality (construction materials and fuel storage facilities) during the construction and decommissioning phases	During construction earthworks will expose and mobilise earth materials, and a number of materials as well as chemicals will be imported and used on site and may end up in the surface water, including soaps, oils, grease and fuels, human wastes, cementitious wastes, paints and solvents, etc. Any spills during transport or while works area conducted in proximity to a watercourse has the potential to affect the surrounding biota. Leaks or spills from storage facilities also pose a risk and due consideration to the safe design and management of the 30 000l fuel storage facility must be given. Although unlikely, consideration must also be provided for the proposed Battery Energy Storage System (BESS), with regard safe handling during the construction phase. This to avoid any spills or leaks from this system	• All liquid chemicals including fuels and oil, must be stored in with secondary containment (bunds or containers or berms) that can contain a leak or spill. Such facilities must be inspected routinely and must have the suitable PPE and spill kits needed to contain likely worst-case scenario leak or spill in that facility, safely. • Washing and cleaning of equipment must be done in designated wash bays, where rinse water is contained in evaporation/sedimentation ponds (to capture oils, grease cement and sediment). • Mechanical plant and bowsers must not be refuelled or serviced within 100m of a river channel. • All construction camps, lay down areas, wash bays, batching plants or areas and any stores should be more than 50 m from any demarcated water courses.. • Littering and contamination associated with construction activity must be avoided through effective construction camp management; • No stockpiling should take place within or near a water course • All stockpiles must be protected and located in flat areas where run-off will be minimised and sediment recoverable;

Operational

SEF

Environmental Aspect	Potential Impact During Operation	Proposed Mitigation
Agricultural	None identified	
Avifaunal - Mammals, unlikely to occur in the way of the facility during operational phase, if present likely to move away.	Maintenance of facility	Should any mammal species be encountered or exposed during the operational phase, they should be removed and relocated to natural areas in the vicinity. The contractor must ensure that no indigenous mammal species are disturbed, trapped, hunted or killed during the operational phase. Conservation-orientated clauses should be built into contracts for personnel, complete with penalty clauses for non-compliance. The appropriate agency should implement an ongoing monitoring and eradication program for all invasive plant species growing on the site. Any

Environmental Aspect	Potential Impact During Operation	Proposed Mitigation
		post-development re-vegetation or landscaping exercise should use grass species indigenous to the area are preferred
Avifaunal - Birds habitat loss or direct impact	Maintenance of facility	Any bird nests that are found during the operational period must be reported to the Environmental Control Officer (ECO). Provide adequate briefing for site personnel and residents prior to construction. breeding and foraging in the area should be minimized and controlled.
Avifaunal - Birds Disturbance due to human activities	Maintenance of facility	Movement of vehicles and workers beyond the boundary of the site must be minimized. In addition, workers must be instructed to minimize disturbance of birds at all times, and steps must be taken to ensure that no illegal hunting occurs. Disturbance of birds breeding and foraging in the area should be minimized. Provide adequate briefing for site personnel. Any bird nests that are found during the construction period must be reported to the Environmental Control Officer (ECO) and residents should always be aware of the importance of birds in their built environment.
Avifaunal - Birds electrocution	Maintenance of facility	Normal safety measures for electrical installations as used by Eskom
Avifaunal - Herpetofauna direct impact or habitat loss	Maintenance of facility	Should any reptile or amphibia species are encountered or exposed during the operational phase, they should be removed and relocated to natural areas in the vicinity. The contractor must ensure that no indigenous herpetofauna species are disturbed, trapped, hunted or killed during the operational phase. During the operational phase there may be increased surface runoff and a decreased water quality. The appropriate agency should implement an ongoing monitoring and eradication program for all invasive plant species growing on the site. Any post-development re-vegetation or landscaping exercise should use species indigenous to the area.
Aquatic - Impact on aquatic systems through the possible increase in surface water runoff on form and function during the operational phase	• Increase in hard surface areas, and roads that require stormwater management will increase through the concentration of surface water flows that could result in localised changes to flows (volume) that would result in form and function changes within aquatic systems, which are currently ephemeral. This then increases the rate of erosions and sedimentation of downstream areas	• A stormwater management plan must be developed in the preconstruction phase, detailing the stormwater structures and management interventions that must be installed to manage the increase of surface water flows directly into any natural systems. This stormwater control systems must be inspected on an annual basis to ensure these are functional. Effective stormwater management must include effective stabilisation (gabions and Reno mattresses)

Environmental Aspect	Potential Impact During Operation	Proposed Mitigation
		of exposed soil and the re-vegetation of any disturbed riverbanks
Geotechnical – Removal of subsoils (soil, rock)	Displacement of natural earth material. 1) Increase in soil erosion due to concentrated flow received off PV Panels. 2) Potential oil spillages from maintenance vehicles. 3) Sedimentation of nonperennial features caused by soil erosion.	1) Use of existing roads and tracks. 2) Rehabilitation of affected areas (such as erosion control mats). 3) Correct engineering design and construction of roads and water crossings. 4) Vehicle repairs to be undertaken in designated areas. 5) Maintenance of stormwater system.
Terrestrial Biodiversity - Although this Albany Alluvial Vegetation Type is regarded as Endangered, little or no elements typical remained on the small patch present on the site. The vegetation is totally transformed, the plant community identified is the Arid Karoo: Low species richness, Low ecological sensitivity.	• Maintenance of facility	• Except for the current Skilpad substation and planned developments leave the N0-G0 areas in the north-eastern corner intact. • Strictly control access to the No-Go area during operational phase. • Avoid any grazing to allow recovery by natural succession. Disturb as little as possible in the powerline servitude
Terrestrial Biodiversity - Vegetation and plant species in the Dry Thicket with Euphorbia: Medium species richness, Medium ecological sensitivity. Sundays Arid Thicket (= Sundays Noorsveld) is listed as Vulnerable in the 2022 NEMBA list.	• Maintenance of facility	• Remove alien invasive species wherever possible • Disturbed open areas must be rehabilitated immediately after construction has been completed • Rehabilitated areas must be monitored to ensure the establishment of re-vegetated areas. • Plant only indigenous grass – no alien species.·
Terrestrial Biodiversity - Vegetation and	• Maintenance of facility	• Remove alien invasive species wherever possible

Environmental Aspect	Potential Impact During Operation	Proposed Mitigation
plant species in the Arid Thicket on Limestone: Low species richness, Medium-Low ecological sensitivity		• Disturbed open areas must be rehabilitated immediately after construction has been completed • Rehabilitated areas must be monitored to ensure the establishment of re-vegetated areas. • Plant only indigenous grass – no alien species.·
Terrestrial Biodiversity - Increase of alien and invasive plant species	• Maintenance of facility	• An alien invasive management programme must be incorporated into the Environmental Management Programme; Ongoing alien plant control must be undertaken; Areas which have been disturbed will be quickly colonised by invasive alien species. An ongoing management plan must be implemented for the clearing/eradication of alien species. Monitor all sites disturbed by construction activities for colonisation by exotics or invasive plants and control these as they emerge. Avoid planting of exotic plant species, use indigenous grass species.
Heritage (Archaeological heritage resources)	• Operational activities that take place near to archaeological resources may result in their destruction	• Should any previously unknown archaeological resources be impacted during construction, work must cease in the vicinity of the find and the relevant heritage authority must be contacted
Heritage (Palaeological resources)	• Operational activities that take place near to palaeontological resources may result in their destruction	• Implementation of the Chance Fossil Finds Protocol
Heritage (Cultural landscape)	• Operational activities that take place near to cultural landscape elements may result in their destruction	• Implementation of the recommendations included in the VIA
Visual -	• None identifies	• None.
Social	• Impact on GDP and production	• The operator of the PV solar facility should be encouraged as far as possible, to procure materials and products for the maintenance of the facility from local suppliers to improve the positive impact on the local economy. • Operator should be encouraged to use local MSME's in security, cleaning and other sub-industries for the basic maintenance of the facility.
	• Impact on employment	• As far as possible, local MSME enterprises should be approached to investigate opportunities for supply inputs needed for the maintenance and operation of the facility.
	• Contribution to skills development	• Consider maintenance training programmes for the local labour force which will enable

Environmental Aspect	Potential Impact During Operation	Proposed Mitigation
		them to assist with general maintenance issues of the facility and elsewhere.
	• Impact on household earnings	• Use local MSME's as far as possible for the general maintenance and low-level technical repairs required at the facility after the construction has been completed.
	• Impact on government revenue	• The proposed PV solar energy facility and related infrastructure will contribute to national revenue through salaries and wages of permanent staff involved with the maintenance of the facility.
	• Impact on social conflict	• Operator of the facility should work through the SRVLM to recruit employees where possible.
	• Impact on economic and social infrastructure	• The economic and social infrastructure not owned by the facility operator should remain untouched. • Clear signage should be used to demarcate these aspects.
	• Impact on the sense of place	• Visual and Noise mitigation measures should be adhered to during the operational phase. • Natural environment not affected and needed by the proposed development should remain untouched during the operation phase and should be made transparent between all key relevant stakeholders and facility operator.
Traffic – Impact due to maintenance and permanent site staff trips/ periodical trips to site for transport of water.	• Slight increase of vehicle trips due to permanent staff traveling to site, periodically (bi-annual) trips to site for transport of water and irregular maintenance trips.	• Source on-site water supply as far as possible; Utilise cleaning systems for panels needing less vehicles trips; Schedule trips for the provision of water for the cleaning of panels outside peak traffic periods as much as possible.

Grid

Environmental Aspect	Potential Impact During Operation	Proposed Mitigation
Aquatic - Impact on aquatic systems through the possible increase in surface water runoff on form and function	Increase in hard surface areas, and roads that require stormwater management will increase through the concentration of surface water flows that could result in localised changes to flows (volume) that would result in form and function changes within aquatic systems, which are currently ephemeral. This then increases the rate of erosions and sedimentation of downstream areas.	A stormwater management plan must be developed in the preconstruction phase, detailing the stormwater structures and management interventions that must be installed to manage the increase of surface water flows directly into any natural systems. This stormwater control systems must be inspected on an annual basis to ensure these are functional. Effective stormwater management must include effective stabilisation

Environmental Aspect	Potential Impact During Operation	Proposed Mitigation
during the operational phase from any of the access tracks, although none should cross the delineated systems		(gabions and Reno mattresses) of exposed soil and the re-vegetation of any disturbed riverbanks

Decommissioning

SEF

Environmental Aspect	Potential Impact During Decommissioning	Proposed Mitigation
Agricultural	Compliance Statement	
Avifaunal - The facility will only very slightly affect Broad-scale ecological processes	Transformation and presence of the facility will only slightly contribute to cumulative habitat loss and impacts on broad-scale ecological processes	See mitigation measures above
Aquatic – Loss of aquatic species of special concern during the construction and or decommissioning of the solar facility	The construction activities will not result in the disturbance of aquatic habitats that may contain listed and or protected plant or animal species. However, none of these were observed during this assessment	Develop and implement an Rehabilitation and Monitoring plan post Environmental Authorisation. This must be developed following the finalisation of the panel / road layout and a walk down has been completed. This plan should include relocation of suitable plant species, but more important protect any topsoil stores and promote the collection of vegetative material and propagules / seed to assist with the revegetation of the site Where possible, temporary construction lay-down or assembly areas should be sited on transformed areas; and • Rapid regeneration of plant cover must be encouraged by setting aside topsoil during earthmoving and replacing onto areas where the re- establishment of plant cover is desirable to prevent erosion.
Aquatic – Damage or loss of riparian systems, ephemeral watercourses and wetland	Construction could result in the loss of drainage systems that are fully functional and provide an ecosystem services within the site especially where new access roads are required or road upgrades will widen any current bridges or drifts.	• A pre-construction walkthrough with an aquatic specialists is recommended and they can assist with the development of the stormwater management plan and Aquatic Rehabilitation and Monitoring plan, coupled to micro-siting of the final layout.

Environmental Aspect	Potential Impact During Decommissioning	Proposed Mitigation
systems in construction and or decommissioning of the solar facility although all areas have been avoided	Loss can also include a functional loss, through change in vegetation type via alien encroachment for example.	• All alien plant re-growth, which is currently low within the greater region must be monitored and should it occur, these plants must be eradicated within the project footprints and especially in areas near the proposed crossings. Where roads and crossings are upgraded, the following applies: • Existing pipe culverts must be removed and replaced with suitable sized box culverts, especially where road levels are raised to accommodate any large vehicles. • River levels, regardless of the current state of the river / water course must be reinstated thus preventing any impoundments from being formed. The related designs must be assessed by an aquatic specialist during a pre-construction walkdown. • Where large cut and fill areas are required these must be stabilised and rehabilitated during the construction process, to minimise erosion and sedimentation. • Suitable stormwater management systems must be installed along roads and other areas and monitored during the first few months of use. Any erosion / sedimentation must be resolved through whatever additional interventions maybe necessary (i.e., extension, energy dissipaters, spreaders, etc). • A detailed monitoring plan must be developed in the pre-construction phase by an aquatic specialist, where any delineated system occurs within 50 m of existing crossings.
Aquatic -. Potential impact on localised surface water quality (construction materials and fuel storage facilities) during the construction and or decommissioning of the solar facility	• During construction earthworks will expose and mobilise earth materials, and a number of materials as well as chemicals will be imported and used on site and may end up in the surface water, including soaps, oils, grease and fuels, human wastes, cementitious wastes, paints and solvents, etc. Any spills during transport or while works area conducted in proximity to a watercourse has the potential to affect the surrounding biota. Leaks or spills from storage facilities also	• All liquid chemicals including fuels and oil, including the BESS must be stored in with secondary containment (bunds or containers or berms) that can contain a leak or spill. Such facilities must be inspected routinely and must have the suitable PPE and spill kits needed to contain likely worst-case scenario leak or spill in that facility, safely. • Washing and cleaning of equipment must be done in designated wash bays, where rinse water is contained in evaporation/sedimentation ponds (to capture oils, grease cement and sediment).

Environmental Aspect	Potential Impact During Decommissioning	Proposed Mitigation
	pose a risk and due consideration to the safe design and management of the 30 000l fuel storage facility must be given. • Although unlikely, consideration must also be provided for the proposed Battery Energy Storage System (BESS), with regard safe handling during the construction phase. This to avoid any spills or leaks from this system	• Mechanical plant and bowsers must not be refuelled or serviced within 100m of a river channel. • All construction camps, lay down areas, wash bays, batching plants or areas and any stores should be more than 50 m from any demarcated water courses.. • Littering and contamination associated with construction activity must be avoided through effective construction camp management; • No stockpiling should take place within or near a water course • All stockpiles must be protected and located in flat areas where run-off will be minimised and sediment recoverable;
Geotechnical – Removal of subsoils (soil, rock)	Decommissioning of the structure will disturb the geological environment. 1) Increase in soil and wind erosion due to clearance of structures. 2) Construction and earthmoving vehicles will displace the soil. 3) Creation of drainage paths. 4) Potential oil spillages from vehicles. 5) Excessive sediments in non-perennial features.	1) Use of temporary berms and drainage channels to divert surface water during flooding. 2) Minimise earthworks and demolish footprints. 3) Use of existing roads and tracks. 4) Rehabilitation of affected areas (such as regrassing). 5) Develop a chemical spill response plan. 6) Develop dust and demolition fly suppression plan. 7) Vehicle repairs to be undertaken in designated areas. 8) Reinstate channelized drainage features.
Terrestrial Biodiversity	None identified.	None identified.
Heritage - (Archaeological heritage resources)	Decommissioning activities that take place near to archaeological resources may result in their destruction	• Should any previously unknown archaeological resources be impacted during construction, work must cease in the vicinity of the find and the relevant heritage authority must be contacted
Heritage - (Palaeological resources)	Decommissioning activities that take place near to palaeontological resources may result in their destruction	• Implementation of the Chance Fossil Finds Protocol
Heritage - (Cultural landscape)	Decommissioning activities that take place near to cultural landscape elements may result in their destruction	• Implementation of the recommendations included in the VIA
Visual - Fauna	• Fauna will be negatively affected by the decommissioning of the wind farm due to the human disturbance, the presence and operation of vehicles and heavy machinery on the site and the noise generated.	• Outline/explain the mitigation measures to be undertaken to ameliorate the impacts that are likely to arise from the proposed activity. These measures will be detailed in the EMPr.
Social	• None identified	• None identified
Transportation– Development traffic/ related	• Temporary increase in traffic due to construction vehicle trips on the external road network/ increase in	• Stagger component delivery to site; Reduce the construction period if possible; Stagger construction phase tasks; Make use of any

Environmental Aspect	Potential Impact During Decommissioning	Proposed Mitigation
noise & dust pollution	noise and dust pollution levels during construction period.	quarries in the vicinity of the site to decrease the impact of development trips on the external roads; Staff and general trips should occur outside of peak traffic periods as much as possible; Maintenance of haulage routes and design and maintenance of internal roads.

Grid

Environmental Aspect	Potential Impact During Operation	Proposed Mitigation
Aquatic - Loss of aquatic species of special concern during the construction or decommissioning of the grid options	The construction activities will not result in the disturbance of aquatic habitats that may contain listed and or protected plant or animal species. However, none of these were observed during this assessment	Develop and implement an Rehabilitation and Monitoring plan post Environmental Authorisation. This must be developed following the finalisation of the tower positions and access tracks and a walk down has been completed. This plan should include relocation of suitable plant species, but more important protect any topsoil stores and promote the collection of vegetative material and propagules / seed to assist with the revegetation of the site. Where possible, temporary construction lay-down or assembly areas should be sited on transformed areas; and Rapid regeneration of plant cover must be encouraged by setting aside topsoil during earthmoving and replacing onto areas where the re- establishment of plant cover is desirable to prevent erosion.
Aquatic - Damage or loss of riparian systems, ephemeral watercourses and wetland systems in the construction or decommissioning of the grid options	Construction could result in the loss of drainage systems that are fully functional and provide an ecosystem services within the site especially where new access roads to install any of the grid options as both alternatives will need to span watercourses with seeps. Loss can also include a functional loss, through change in vegetation type via alien encroachment for example	A pre-construction walkthrough with an aquatic specialists is recommended and they can assist with the development of the stormwater management plan and Aquatic Rehabilitation and Monitoring plan, coupled to micro-siting of the final layout. All alien plant re-growth, which is currently low within the greater region must be monitored and should it occur, these plants must be eradicated within the project footprints and especially in areas near the proposed crossings. Where roads and crossings are upgraded, the following applies: etc).

Environmental Aspect	Potential Impact During Operation	Proposed Mitigation
		It is recommended that no new tracks or towers / pylons are placed / constructed within any of the delineated aquatic zones.
Aquatic - Potential impact on localised surface water quality (construction materials and fuel storage facilities) during the construction and decommissioning phases	During construction earthworks will expose and mobilise earth materials, and a number of materials as well as chemicals will be imported and used on site and may end up in the surface water, including soaps, oils, grease and fuels, human wastes, cementitious wastes, paints and solvents, etc. Any spills during transport or while works area conducted in proximity to a watercourse has the potential to affect the surrounding biota. Leaks or spills from storage facilities also pose a risk and due consideration to the safe design and management of the 30 000l fuel storage facility must be given. Although unlikely, consideration must also be provided for the proposed Battery Energy Storage System (BESS), with regard safe handling during the construction phase. This to avoid any spills or leaks from this system	• All liquid chemicals including fuels and oil, must be stored in with secondary containment (bunds or containers or berms) that can contain a leak or spill. Such facilities must be inspected routinely and must have the suitable PPE and spill kits needed to contain likely worst-case scenario leak or spill in that facility, safely. • Washing and cleaning of equipment must be done in designated wash bays, where rinse water is contained in evaporation/sedimentation ponds (to capture oils, grease cement and sediment). • Mechanical plant and bowsers must not be refuelled or serviced within 100m of a river channel. • All construction camps, lay down areas, wash bays, batching plants or areas and any stores should be more than 50 m from any demarcated water courses.. • Littering and contamination associated with construction activity must be avoided through effective construction camp management; • No stockpiling should take place within or near a water course • All stockpiles must be protected and located in flat areas where run-off will be minimised and sediment recoverable;

Cumulative

Environmental Aspect	Potential Impact During Decommissioning	Proposed Mitigation
Agriculture	None identified	None identified
Aquatic –- Cumulative Impact of various proposed projects and associated grid lines on the natural environment (SEF & Grid)	• The cumulative assessment considers the various proposed renewable projects that occur within a 35km radius of this site, where the author has either been involved in the assessment of these projects and or review of the past assessments as part of any required Water Use Licenses	The premise of all the reviewed or assessed projects has been the avoidance of impacts on the Very High Sensitivity environments, which have been achieved by the various proposed layouts. The only remaining impacts will be the crossing of internal roads over minor watercourse / drainage lines or areas rated as LOW sensitivity.
Geotechnical	None identified	None identified
Terrestrial Biodiversity -	• Transformation and presence of the facility will only slightly contribute to	• Should any reptile or amphibia species are encountered or exposed during the

Environmental Aspect	Potential Impact During Decommissioning	Proposed Mitigation
The facility will only very slightly affect Broad-scale ecological processes	cumulative habitat loss and impacts on broad-scale ecological processes	operational phase, they should be removed and relocated to natural areas in the vicinity. The contractor must ensure that no indigenous herpetofauna species are disturbed, trapped, hunted or killed during the operational phase. During the operational phase there may be increased surface runoff and a decreased water quality. The appropriate agency should implement an ongoing monitoring and eradication program for all invasive plant species growing on the site. Any post-development re-vegetation or landscaping exercise should use species indigenous to the area.
Heritage	• Cumulative destruction of significant archaeological heritage • Cumulative destruction of significant palaeontological heritage. • Cumulative impact to the cultural landscape.	• Should any previously unknown archaeological resources be impacted during construction; work must cease in the vicinity of the find and the relevant heritage authority must be contacted. • Implementation of the Chance Fossil Finds Procedure • Implementation of the recommendations included in the VIA
Visual – Broad-scale ecological processes	• Transformation and presence of the facility will contribute to cumulative habitat loss and impacts on broad-scale ecological processes such as fragmentation.	• Outline/explain the mitigation measures to be undertaken to ameliorate the impacts that are likely to arise from the proposed activity. These measures will be detailed in the EMPr.
Social	• None identified.	• None identified.
Transportation – Construction & Operational Phase	• Further traffic impact due to planned and approved renewable developments in 30km radius are developed at the same time	• Same mitigation measures as above for construction phase. It is noted that it is unlikely that the approved developments will be constructed at the exact same time. However, for the event that the developments have similar constructions periods and use similar routes to site, it is recommended to agree on a delivery schedule between respective projects

PUBLIC PARTICIPATION PROCESS

Notification of EIA process was undertaken as follows:

- An I&AP database was compiled which includes all affected landowners, adjacent landowners, occupiers of affected and adjacent land, other I&APs, key stakeholders (such as OoS) and other surrounding project developers.

- Issuing of the notifications and initial landowner consultation was circulated to all I&APs on the **08th of September 2023** respectively as part of the Draft Scoping Report (proof is included in Appendix 5 of the Final Scoping Report).
- Placement of site notices in English and Afrikaans (as per regulations) were placed along the entrance road to the application site, around the site itself as well as in the town of Kirkwood on **07th of September 2023** (proof included in the Final Scoping Report).
- Notification letters were sent via E-mail or sms (if cellphone number / email is available, it is assuming the I&AP have an email or cellphone).
- Public notification of the EIA process was advertised in a local newspaper (namely the UD Express) on **07th September 2023**, as required according to Regulation 41(2) (c) of the EIA Regulations (2014), as amended. Proof to be included in Appendix 5 of the Final Scoping Report.

Availability of report for review:

- Report available on SiVESTs website for download.
- Electronic copies were made available to parties via a secure digital link that was emailed upon request for the documentation.
- CDs / Flash drive were posted, only if requested.
- The Draft Scoping Report was made available for review at the following locations (Proof is included in Appendix 5 of the Final Scoping Report):
    - Sunday's River Valley Public Library, 23 Middle St, Kirkwood, 6120.

PLAN OF STUDY

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

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

The following specialist studies have been undertaken for the project and the significant environmental aspects will be further in the EIA Phase:

- Desktop Geotechnical Assessment;
- Social Impact Assessment;
- Visual Assessment;
- Avifaunal Assessment;
- Agricultural Assessment;

- Aquatic Assessment;
- Heritage Assessment (including Archaeological and Paleontological Assessment)
- Terrestrial Biodiversity Assessment;
- Transportation Assessment
- Risk Assessment Report.

The findings of the specialist studies have been included in the Scoping Phase of this project. The associated Impact Assessment tables will be included in the draft EIA report. Should the need for additional specialist studies be identified through the consultation process, these studies will be commissioned in the EIA Phase to further advise on the potential impacts that may arise from the proposed development. The specialist studies may identify opportunities and constraints as associated with the site and the proposed development.

SiVEST has consulted with DFFE as follows:

- Submission of application form to obtain EIA reference number.
- The Draft Scoping report will be made available for comment to I&Aps, key stakeholders and the authorizing authority.
- All comments have been incorporated into the Issues and Response Report and Final Scoping Report.
- The Final Scoping Report has been submitted to DFFE for approval.

The following items will still be undertaken:

- Notify I&Aps and key stakeholders of acceptance of Final Scoping Report
- The Draft EIA report will be made available for comment to I&Aps, key stakeholders and the authorizing authority.
- After the Draft EIA report has been made available for comment within the public domain, comments will be incorporated into the Issues and Response Report and Final EIA Report for submission to DFFE.
- Notify I&Aps of the decision.
- Apart from the above-mentioned occasions, further consultation with authorities will occur whenever necessary.

MAYOGI SOLAR ENERGY FACILITY

FINAL SCOPING REPORT

TABLE OF CONTENTS

APPENDICES

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

LIST OF FIGURES

LIST OF TABLES

JUWI SOUTH AFRICA

MAYOGI SOLAR ENERGY FACILITY

FINAL SCOPING REPORT

1. INTRODUCTION

JUWI South Africa (Pty) Ltd is proposing to construct the Mayogi Solar Energy Facility (SEF) and associated infrastructure located on Farm No. 692 adjacent to the R75 approximately 13 km southwest of Kirkwood in the Sunday's River Valley Municipality, in the Eastern Cape Province (**Figure 1**) (**DFFE Reference Number: 14/12/16/3/3/2/2412**). The overall objective of the proposed development is to supply suitable private off-taker initiatives (direct supply or wheeling agreements, as applicable), or be bid into the government coordinated Renewable Independent Power Producer Programme (REIPPP) or similar procurement program under the Integrated Resource Plan (IRP). The proposed development will have a maximum total generation capacity of up to 150 megawatt (MW).

SiVEST Environmental Division has subsequently been appointed as the independent Environmental Assessment Practitioner (EAP) to undertake the Environmental Impact Assessment (EIA) process for the proposed construction and operation of the Mayogi SEF and associated infrastructure. The proposed development requires an Environmental Authorisation (EA) from the National Department Forestry, Fisheries and the Environment (DFFE). However, the provincial authority (i.e. the Eastern Cape Department of Economic Development, Environmental Affairs and Tourism) will also be consulted. The EIA for the proposed development will be conducted in terms of the EIA Regulations, 2014 (as amended) promulgated in terms of Chapter 5 of the NEMA. In terms of these regulations, a full EIA process is required for the proposed development. All relevant legislation and guidelines will be consulted during the EIA process and will be complied with at all times.

The proposed development will have a maximum total generation capacity of up to 150 megawatts (MW). The project involves the development of a solar-energy facility comprised of Mayogi 1 and Mayogi 2 with a total generation capacity of up to 150MWac (approximately 75MWac each), from renewable solar energy to be supplied to the national Eskom grid via the existing Skilpad substation, near to the site. The necessary associated infrastructure, including BESS, site camp, substation, overhead powerlines, and Operation and Maintenance (O&M) buildings form a part of this application.

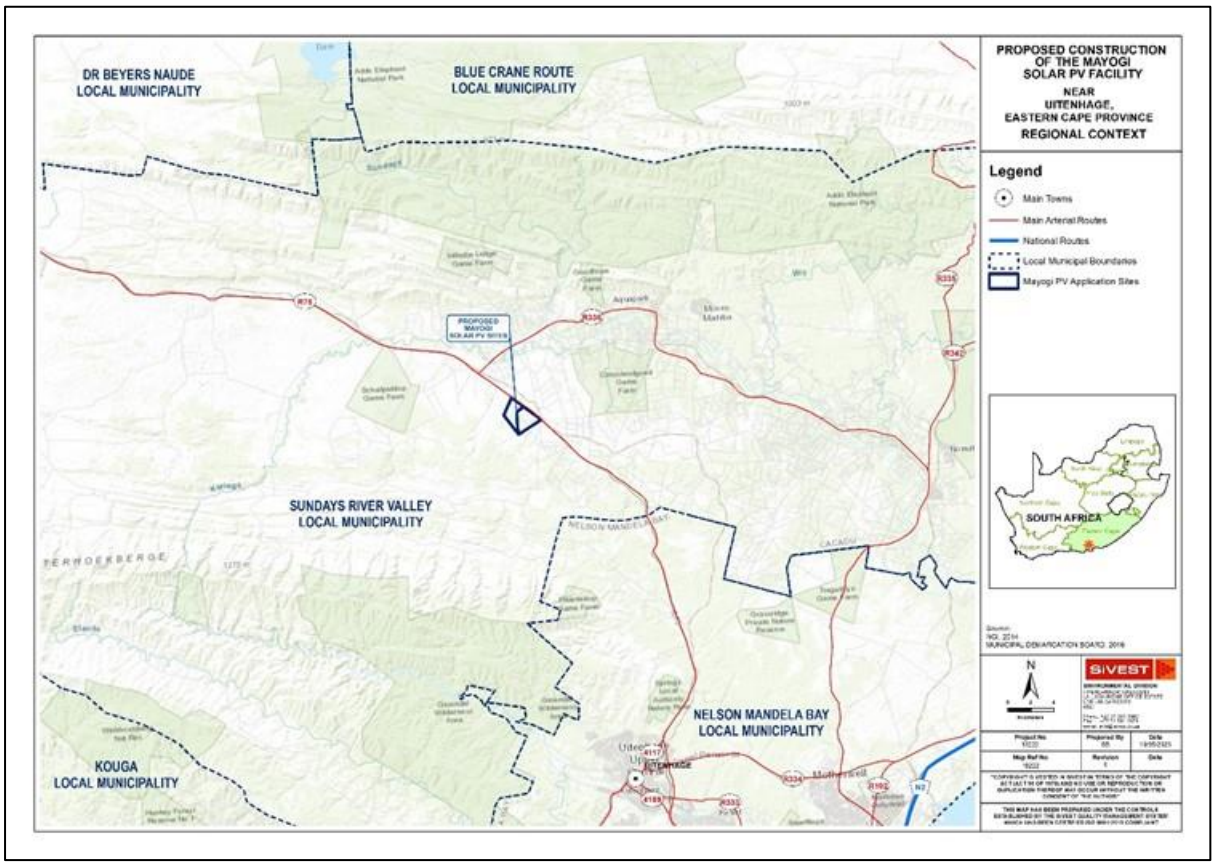

Figure 1: Mayogi SEF Regional Context

1.1 Overview of the EIA Process

The National Environment Management Act, 1998 (Act No 107 of 1998) (NEMA) promotes the use of scoping and EIA in order to ensure integrated environmental management. The purpose of an EIA is to provide the Authority with sufficient information to make an informed decision on whether an activity should proceed or not, and to assist with selecting an option that will provide the most benefit and cause the least impact. The EIA process should identify activities which may have a detrimental effect on the environment, and which would therefore require Environmental Authorisation prior to commencement.

This project requires an Environmental Authorisation (EA) in terms of the National Environmental Management Act (NEMA) (Act No. 107 of 1998, as amended) and the 2014 EIA Regulations (as amended). The process triggered is a Scoping and Environmental Impact Assessment report (S&EIR). All the phases including the Environmental Management Programme report (EMPr) must be prepared in terms of the NEMA and GN R. 982, (as amended by GN R. 326) and the associated activities listed under GN R. 983, GN R. 984 and GN R. 985 (as amended by GN R 327, GN R 325, and GN R 324 respectively).

Objectives and Overview of the Scoping Phase

The Scoping Phase involves establishing the existing environmental baseline of the site proposed for development, considering the type of development and its potential impacts on the existing

environment, and therefore determining what potential impacts should be assessed and how, within the EIA process. The EAP therefore compiles a Draft Scoping Report (inclusive of a Plan of Study for the EIA phase) which is made available for public and stakeholder comment for a period of 30 days as part of the public participation process. All comments received in response to the DSR are then considered and responded to, incorporated into the Final Scoping Phase and Plan of Study for EIA Phase.

Public Participation Process

Public and Stakeholder participation is a fundamental component of the EIA Process. The inclusion of the views of the affected and interested public aids in ensuring the EIA Process is open, transparent and robust, as well as that the decision-making process is equitable and fair. This in turn guides informed choice and better environmental outcomes. It further presents a valuable source of information on key impacts, potential mitigation measures and the identification and selection of feasible alternatives. This process allows the EAP to identify key stakeholders and Interested and Affected Parties (I&APs), as well as to identify any fatal flaws, at the onset of a project. The Draft Scoping Report will be made available to all I&APs as well as Organs of State for a period of 30 days, thereafter, all comments will be drafted and responded to in a Comments and Response Report which will then be submitted to the Department for approval. Following this, the EIA Phase can proceed.

1.2 Content Requirements for a Scoping Report

The content requirements for a Scoping Report (as provided in Appendix 2 of the EIA Regulations 2014, as amended), as well as details of which section of the report fulfils these requirements, are shown in **Table 1** below.

Table 1: Content requirements for a Scoping Report

Content Requirements	Applicable Section
(a) details of- (i) the EAP who prepared the report; and (ii) the expertise of the EAP, including a curriculum vitae;	4
(b) the location of the activity, including- (i) the 21-digit Surveyor General code of each cadastral land parcel; (ii) where available, the physical address and farm name; (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	5
(c) a plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is- (i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	5.2
(d) a description of the scope of the proposed activity, including- (i) all listed and specified activities triggered; (ii) a description of the activities to be undertaken, including associated structures and infrastructure;	6
(e) a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process;	10

Content Requirements	Applicable Section
(f) a motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	12
(g) a full description of the process followed to reach the proposed preferred activity, site and location of the development footprint within the site, including - (i) details of all the alternatives considered; (ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs; (iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them; (iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; (v) the impacts and risks which have informed the identification of each alternative, including the nature, significance, consequence, extent, duration and probability of such identified impacts, including the degree to which these impacts- (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated; (vi) the methodology used in identifying and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives; (vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; (viii) the possible mitigation measures that could be applied and level of residual risk; (ix) the outcome of the site selection matrix; (x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such and (xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity;	13
(h) a plan of study for undertaking the environmental impact assessment process to be undertaken, including- (i) a description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity; (ii) a description of the aspects to be assessed as part of the environmental impact assessment process; (iii) aspects to be assessed by specialists; (iv) a description of the proposed method of assessing the environmental aspects, including aspects to be assessed by specialists; (v) a description of the proposed method of assessing duration and significance; (vi) an indication of the stages at which the competent authority will be consulted; (vii) particulars of the public participation process that will be conducted during the environmental impact assessment process; and	14

Content Requirements	Applicable Section
(viii) a description of the tasks that will be undertaken as part of the environmental impact assessment process; (ix) identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.	
(i) an undertaking under oath or affirmation by the EAP in relation to- (i) the correctness of the information provided in the report; (ii) the inclusion of comments and inputs from stakeholders and interested and affected parties; and (iii) any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties;	Appendix 1
(j) an undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and interested and affected parties (I&APs) on the plan of study for undertaking the environmental impact assessment;	Appendix 1
(k) where applicable, any specific information required by the competent authority; and	Appendix 6
(l) any other matter required in terms of section 24(4)(a) and (b) of the Act.	All requirements have been met in this report.
(2) Where a government notice gazetted by the Minister provides for any protocol or minimum information requirement to be applied to a scoping report, the requirements as indicated in such notice will apply.	Appendix 6

2. PROJECT TITLE

Proposed Development of the Mayogi Photovoltaic Facilities and Associated Infrastructure southwest of Kirkwood in the Eastern Cape Province.

3. DETAILS OF APPLICANT

3.1 Name and contact details of the Applicant

Table 2: Name and contact details of the applicant

Business Name of Applicant	JUWI South Africa (Pty) Ltd
Physical Address	20th Floor, The Halyard, 4 Christiaan Barnard Street, Foreshore, Cape Town, 8001
Postal Address	20th Floor, The Halyard, 4 Christiaan Barnard Street, Foreshore, Cape Town, 8001
Postal Code	8001
Telephone	+27 (0) 21 831 6130
Email	pdza@juwi.co.za (Att: Justine Wyngaardt)

4. DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTIONER AND SPECIALISTS

4.1 Name and contact details of the Environmental Consultant

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

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

Business Name of EAP	SiVEST SA (PTY) Ltd
Physical Address	4 Pencarrow Crescent, La Lucia Ridge Office Estate
Postal Address	PO Box 1899, Umhlanga Rocks
Postal Code	4320
Telephone	031 581 1577
Fax	031 566 2371
Email	michellen@sivest.com

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

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

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

Name of representative of the EAP	Educational Qualifications	Professional Affiliations	Experience (years)
Michelle Nevette *(Cert.Sci.Nat.)*	MEnvMgt. (Environmental Management)	SACNASP Registration No. 120356 EAPASA Registration No. 2019/1560 IAIA	22
Natalie Pullen	MSc (Environmental Biotechnology)	EAPASA Registration No. 2018/132 IAIAsa	19
Phumela Madubela *(Cand.Sci.Nat)*	BSc (Hons) Environmental Monitoring & Modelling	Cand.Sci.Nat Registration No. 137670 IAIA	7

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

4.3 Names and expertise of the specialists

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

Table 5: Names of specialists involved in the project

Company	Name of representative of the specialist	Specialist	Educational Qualifications	Exp (yrs)
SRK Consulting	Kelly Armstrong	Visual Impact Assessment	BSocSc (Hons)	4
CTS Heritage	Jenna Lavin	Heritage Impact Assessment	MSc. Archaeology (UCT), CPD in Conservation of the Built Environment (UCT)	12
	Nicholas Wiltshire	Archaeological Specialist Study	MSc. Archaeology (UCT), BSc (Honours) Archaeology (UCT) BSc Archaeology and Environmental & Geographical Science (UCT)	16
	Elize Butler Banzai Environmental	Palaeontology Impact Assessment	MSc Zoology	28
Johann Lanz Consulting	Johann Lanz	Agriculture and Soils Impact Assessment (desktop)	M.Sc. (Environmental Geochemistry)	24
Urban-Econ	Matthew Keeley	Socio-economic Impact Assessment (desktop)	BSc (Geography and Economics) Rhodes Economics Geography (Honours) Rhodes MSc (Geography), University of South Africa	15
EcoAgent CC	Prof George Bredenkamp	Terrestrial Biodiversity Assessment (including Avifaunal Statement)	DSc (Ph.D) Plant Ecology Pr. Sci. Nat.	53
EnviroSci	Dr. Brian Colloty	Aquatic Impact Assessment	Ph.D Botany	26
JG Afrika	Priantha Subrayen	Desktop Geotechnical Impact Assessment	BSc (Hons) Environmental and Engineering Geology Pr.Sci.Nat 400009/16	6
iWink Consulting	Iris Wink	Transportation Study	MSc. Eng (Civil & Transportation) Pr. Eng	20
iSHEcon	Debra Mitchell	Quantitative Risk Assessment	MSc (Chem Eng) and Pr.Eng	25

5. LOCATION OF THE ACTIVITY

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

Table 6: 21 Digit Surveyor General Code

SG CODE	DESCRIPTION
C07600000000069200000	PORTION 0 OF FARM NO. 692

5.2 Coordinates of the site

The centre point coordinates for the sites are as follows:

Mayogi PV	
33°28'33.857"S 25°18'39.403"E	
Mayogi 1	**Mayogi 2**
33°28'44.212"S	33°28'21.473"S
25°19'0.088"E	25°18'14.302"E

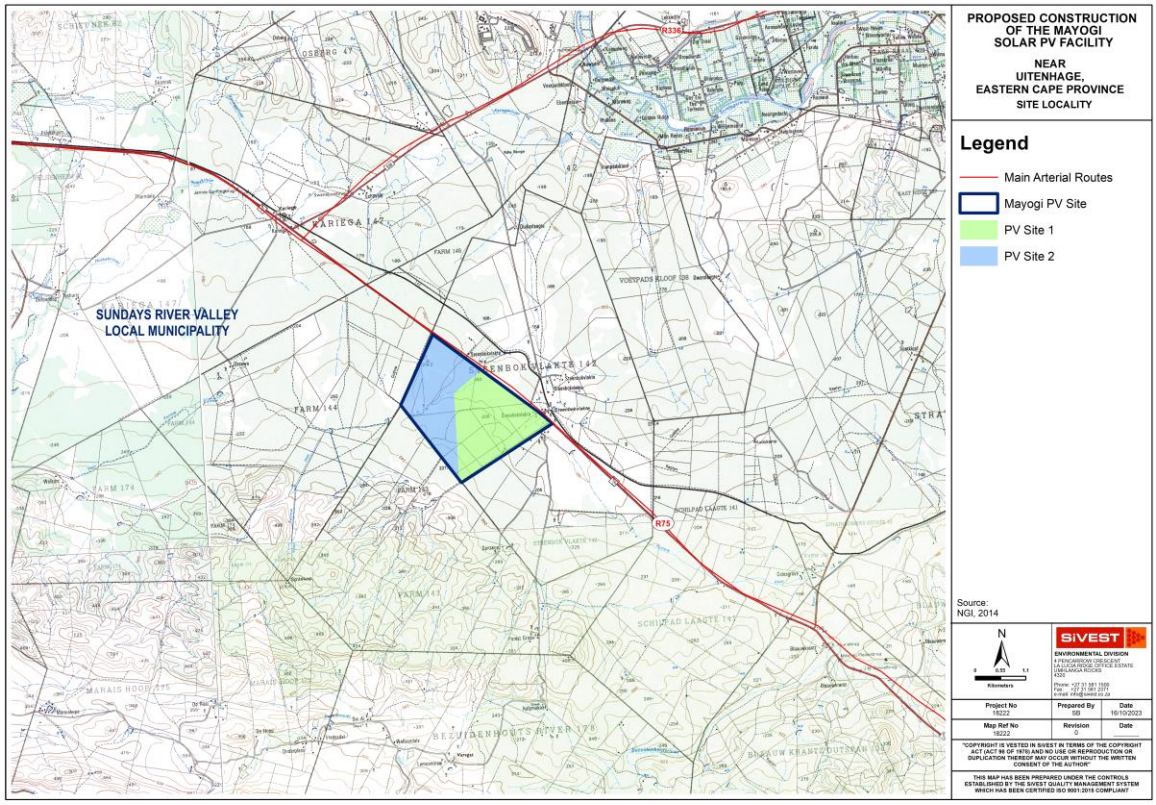

Figure 2: Site locality

The bend point coordinates for the facilities on site (Mayogi 1 and 2) have been included below:

Mayogi 1:

Table 7: Bend point coordinates for the Mayogi 1 SEF site boundary

MAYOGI 1		
COORDINATES AT CORNER POINTS (DD MM SS.sss)		
POINT	SOUTH	EAST
1	33°28'7.462"S	25°18'55.55"E
2	33°28'46.188"S	25°19'50.125"E
3	33°29'23.754"S	25°18'33.955"E
4	33°29'21.892"S	25°18'32.147"E
5	33°28'21.74"S	25°18'32.042"E
COORDINATES AT CENTRE POINT (DD MM SS.sss)		
POINT	SOUTH	EAST
6	33°28'44.212"S	25°19'0.088"E

Table 8: Corner point coordinates for Substation Option 1

MAYOGI 1: SUBTATION OPTION 1		
COORDINATES AT CORNER POINTS (DD MM SS.sss)		
Point	SOUTH	EAST
1	33°28'30.202"S	25°19'19.556"E
2	33°28'34.046"S	25°19'25.188"E
3	33°28'37.175"S	25°19'24.607"E
4	33°28'32.08"S	25°19'17.455"E
MAYOGI 1: SUBTATION OPTION 1		
COORDINATES AT CENTRE POINT (DD MM SS.sss)		
Point	SOUTH	EAST
5	33°28'33.188"S	25°19'21.601"E

Table 9: Corner point coordinates for Substation Option 2

MAYOGI 1: SUBTATION OPTION 2		
COORDINATES AT CORNER POINTS (DD MM SS.sss)		
Point	SOUTH	EAST
1	33°28'53.117"S	25°19'29.062"E
2	33°28'52.618"S	25°19'33.624"E
3	33°28'53.774"S	25°19'35.262"E
4	33°28'55.691"S	25°19'31.268"E
MAYOGI 1: SUBTATION OPTION 2		
COORDINATES AT CENTRE POINT (DD MM SS.sss)		
Point	SOUTH	EAST
5	33°28'54.004"S	25°19'32.234"E

MAYOGI 1: BESS		
COORDINATES AT CORNER POINTS (DD MM SS.sss)		
Point	SOUTH	EAST
1	33°28'56.954"S	25°19'24.33"E

2	33°28'56.173"S	25°19'30.155"E
3	33°28'59.042"S	25°19'24.298"E
MAYOGI 1: BESS		
COORDINATES AT CENTRE POINT (DD MM SS.sss)		
4	33°28'57.293"S	25°19'26.571"E

Table 10: Corner point coordinates for O&M Building & Laydown Area Option 1

MAYOGI 1: O&M Building & LAYDOWN AREA		
COORDINATES AT CORNER POINTS (DD MM SS.sss)		
POINT	**SOUTH**	**EAST**
1	33°28'25.15"S	25°19'12.314"E
2	33°28'29.893"S	25°19'19.294"E
3	33°28'31.925"S	25°19'17.137"E
4	33°28'27.281"S	25°19'10.363"E
COORDINATES AT CENTRE POINT (DD MM SS.sss)		
POINT	**SOUTH**	**EAST**
5	33°28'28.479"S	25°19'14.753"E

Table 11: Corner point coordinates for O&M Building & Laydown Area Option 2

MAYOGI 1: O&M AND LAYDOWN AREA		
COORDINATES AT CORNER POINTS (DD MM SS.sss)		
Point	**SOUTH**	**EAST**
1	33°28'25.053"S	25°19'12.309"E
2	33°28'29.898"S	25°19'19.323"E
3	33°28'31.954"S	25°19'17.147"E
4	33°28'27.243"S	25°19'10.328"E
MAYOGI 1: O&M AND LAYDOWN AREA		
COORDINATES AT CENTRE POINT (DD MM SS.sss)		
5	33°28'28.364"S	25°19'14.554"E

Table 12:Corner point coordinates for Grid

MAYOGI 1 GRID: GRID/ (POWERLINE OPTION 1)		
COORDINATES EVERY 100M (DD MM SS.sss)		
POINT	**SOUTH**	**EAST**
1	33°28'38.218"S	25°19'22.614"E
2	33°28'40.187"S	25°19'25.353"E
3	33°28'42.098"S	25°19'28.252"E
4	33°28'44.141"S	25°19'31.182"E
5	33°28'46.154"S	25°19'34.153"E

Table 13: Corner point coordinates for Grid

MAYOGI 1 GRID: PREFERRED GRID/POWERLINE
COORDINATES EVERY 100M (DD MM SS.sss)

POINT	SOUTH	EAST
1	33°28'38.218"S	25°19'22.614"E
2	33°28'40.187"S	25°19'25.353"E
3	33°28'42.098"S	25°19'28.252"E
4	33°28'44.141"S	25°19'31.182"E
5	33°28'46.154"S	25°19'34.153"E

MAYOGI 1: GRID/POWERLINE (PREFERRED)		
COORDINATES EVERY 100M (DD MM SS.sss)		
POINT	SOUTH	EAST
1	33°28'45.94"S	25°19'33.84"E
2	33°28'43.884"S	25°19'30.756"E
3	33°28'41.828"S	25°19'27.724"E
4	33°28'39.875"S	25°19'24.846"E
5	33°28'37.511"S	25°19'22.995"E

Mayogi 2:

Table 14: Bend point coordinates for the Mayogi 2 site boundary

MAYOGI 2		
COORDINATES AT CORNER POINTS (DD MM SS.sss)		
POINT	SOUTH	EAST
1	33°27'41.252"S	25°18'17.191"E
2	33°28'6.758"S	25°18'53.438"E
3	33°28'21.43"S	25°18'31.52"E
4	33°29'20.18"S	25°18'31.408"E
5	33°28'27.97"S	25°17'47.429"E
COORDINATES AT CENTRE POINT (DD MM SS.sss)		
POINT	SOUTH	EAST
6	33°28'21.473"S	25°18'14.302"E

Table 15: Corner point coordinates for Substation Option 1

MAYOGI 2: SUBTATION OPTION 1		
COORDINATES AT CORNER POINTS (DD MM SS.sss)		
Point	SOUTH	EAST
1	33°28'3.174"S	25°18'40.27"E
2	33°28'5.127"S	25°18'42.956"E
3	33°28'10.717"S	25°18'39.599"E
4	33°28'8.215"S	25°18'36.059"E
MAYOGI 2: SUBTATION OPTION 1		
COORDINATES AT CENTRE POINT (DD MM SS.sss)		
Point	SOUTH	EAST
5	33°28'6.897"S	25°18'39.526"E

Table 16: Corner point coordinates for Substation Option 2

MAYOGI 2: SUBTATION OPTION 2		
COORDINATES AT CORNER POINTS (DD MM SS.sss)		
Point	**SOUTH**	**EAST**
1	33°28'9.428"S	25°18'30.414"E
2	33°28'12.843"S	25°18'35.712"E
3	33°28'14.641"S	25°18'30.778"E
4	33°28'11.935"S	25°18'27.043"E
MAYOGI 2: SUBTATION OPTION 2		
COORDINATES AT CENTRE POINT (DD MM SS.sss)		
Point	**SOUTH**	**EAST**
5	33°28'12.174"S	25°18'30.881"E

MAYOGI 2: BESS		
COORDINATES AT CORNER POINTS (DD MM SS.sss)		
Point	**SOUTH**	**EAST**
1	33°28'9.428"S	25°18'30.414"E
2	33°28'12.843"S	25°18'35.712"E
3	33°28'14.641"S	25°18'30.778"E
4	33°28'11.935"S	25°18'27.043"E
MAYOGI 2: BESS		
COORDINATES AT CENTRE POINT (DD MM SS.sss)		
Point	**SOUTH**	**EAST**
5	33°28'12.174"S	25°18'30.881"E

Table 17: Corner point coordinates for O&M Building & Laydown Area Option 1

MAYOGI 2: O&M AND LAYDOWN AREA OPTION 1		
COORDINATES AT CORNER POINTS (DD MM SS.sss)		
Point	**SOUTH**	**EAST**
1	33°28'3.118"S	25°18'28.551"E
2	33°28'3.1"S	25°18'40.115"E
3	33°28'8.069"S	25°18'35.918"E
MAYOGI 2: O&M AND LAYDOWN AREA OPTION 1		
COORDINATES AT CENTRE POINT (DD MM SS.sss)		
Point	**SOUTH**	**EAST**
4	33°28'4.779"S	25°18'35.13"E

Table 18: Corner point coordinates for O&M Building & Laydown Area Option 2

MAYOGI 2: O&M AND LAYDOWN AREA OPTION 2		
COORDINATES AT CORNER POINTS (DD MM SS.sss)		
Point	**SOUTH**	**EAST**
1	33°28'5.779"S	25°18'24.769"E
2	33°28'9.351"S	25°18'30.32"E
3	33°28'11.908"S	25°18'26.954"E

4	33°28'8.413"S	25°18'22.032"E
MAYOGI 2: O&M AND LAYDOWN AREA OPTION 2		
COORDINATES AT CENTRE POINT (DD MM SS.sss)		
Point	**SOUTH**	**EAST**
5	33°28'8.888"S	25°18'25.99"E

Table 19: Corner point coordinates for Grid for option 1

MAYOGI 2 GRID: PREFERRED GRID/POWERLINE (ALTERNATIVE 1)		
COORDINATES EVERY 200M (DD MM SS.sss)		
POINT	**SOUTH**	**EAST**
1	33°28'12.99"S	25°18'46.606"E
2	33°28'17.087"S	25°18'52.524"E
3	33°28'21.274"S	25°18'58.538"E
4	33°28'25.456"S	25°19'4.451"E
5	33°28'29.633"S	25°19'10.263"E
6	33°28'33.735"S	25°19'16.283"E
7	33°28'37.738"S	25°19'22.005"E
8	33°28'42.179"S	25°19'28.003"E
9	33°28'46.106"S	25°19'33.934"E

Table 20: Corner point coordinates for Grid for option 2

MAYOGI 2: GRID/POWERLINE (PREFERRED)		
COORDINATES EVERY 200M (DD MM SS.sss)		
POINT	**SOUTH**	**EAST**
1	33°28'44.411"S	25°19'31.124"E
2	33°28'39.065"S	25°19'24.134"E
3	33°28'35.159"S	25°19'18.172"E
4	33°28'31.664"S	25°19'13.238"E
5	33°28'27.347"S	25°19'7.276"E
6	33°28'23.235"S	25°19'1.314"E
7	33°28'19.124"S	25°18'55.352"E
8	33°28'15.012"S	25°18'49.39"E

6. ACTIVITY INFORMATION

6.1 Project Description

6.1.1 SEF and Associated Infrastructure

The application site assessed during the scoping phase is approximately 506.99 hectares (ha) in extent.

In summary, the proposed Mayogi SEF development will include the following components:

PV Panels

- Structure height:
  - Solar panels with a maximum height of 5m above the ground.

- Structure orientation Fixed tilt or tracking:
  - Fixed tilt: north-facing at a defined angle of tilt.
  - Or panels will either be fixed to a single-axis horizontal tracking structure where the orientation of the panel varies according to the time of the day, as the sun moves from east to west; or tilted at a fixed angle equivalent to the latitude at which the site is located in order to capture the most sun.
  - Crystalline silicon or thin film technology (To be determined at later stage)

- Dimensions of Panel:
  - Width (in m) of PV panels: 2.278m.
  - Height (in m) of PV panels: 1.134m.

Access Roads

- Width of internal roads: Approximately 6m with an additional 2m drainage on each site if necessary.
- Existing roads will be utilised as far as reasonably possible.
- Site Access: Existing access roads may need to be upgraded by approximately 450m x 6m.

On-site Substation

- Two substations are proposed with a maximum capacity of 33/132kV:
  - Maximum height of on-site substation: approximately 3 to 4 m.
  - The substation area is max. 1ha including a building for switching, measurement and control units, a high voltage transformer and high voltage overhead-lines connecting the transformer to the 132 kV grid line that is close to the site.
  - On-site, there will be around 15 to 20 container-sized transformer stations (12192*2896*2438 mm; W*H*D) that step up the low voltage coming from the inverters to 33 kV medium voltage.

Construction Camp

- 2 x Construction camp will be required.
- Offices and other buildings with toilets including septic tank and infrastructure, will used during the construction phase.
- Around 10 x 40ft containers, in total <0.1ha.

Temporary Infrastructure

- Temporary laydown area: up to approximately 2ha.

O&M Buildings

- 2 x O&M building will be utilized for plant supervision and storing of spare parts.
- All auxiliary buildings to be developed include, but are not limited to: O&M building, site office, staff lockers, bathrooms, warehouses, etc (with septic tanks and all infrastructure) as follows:
  ÷ Office (~250m²).
  ÷ Storeroom (~200m²).
  ÷ Staff lockers and changing room (~100m²).
  ÷ Security control (~40m²).
  ÷ Sanitation facilities with septic tank outside.
  ÷ Conservancy Tank.
  ÷ Borehole (if possible, somewhere on site).

On- site IPP Electrical Infrastructure

- The proposed project will include two on-site IPP substations.
  ÷ Planned size: 2ha
  ÷ 1ha for Substation.
  ÷ 1ha for battery storage.
- Substation area: One building that will include:
  ÷ Office/control room (~50m²).
  ÷ MV switchgear room (~100m²).
- Substation yard will include:
  ÷ High voltage transformer and high voltage overhead-lines connecting the transformer to the existing Eskom 132 kV grid line via an approximately 200m long underground cable. This area will include construction laydown area, construction camp facilities and storage area, in the beginning.
- Medium voltage cabling will link PV facility to grid connection infrastructure.
- Internal underground lines of up to 33 kV (22kV or 33kV).
- Cables will be laid underground wherever technically feasible, with overhead 33kV lines grouping PV areas to crossing valleys and ridges to get to the on-site substation.

Fencing

- Type: proposed galvanized metal mesh.
- Length: 16km.
- Height: Up to 2m.
- Proximity to Grid Connection
  o Skilpad substation is adjacent to the site.

Starting point:

- PV Panel Array - To produce up to 150MW, the proposed facilities will require numerous linked PV panels connected in series, which will form solar PV arrays that will comprise the PV facility.
- The PV array will be wired to central inverters. The inverter is a MPPT (Maximum Power Point Tracking) inverter that converts direct current (DC) electricity to alternating current (AC) electricity at grid frequency.

Connection to the grid:

- Connecting the array to the electrical grid requires transformation of the voltage from LV voltage to 33kV to 132kV. The normal components and dimensions of a distribution rated electrical substation will be required. Output voltage from the inverter is LV AC and this is fed into step up transformers to 33kV. From the inverter transformer an RMU is uses to connect to the on-site substation.
- The on-site substations will be required on the site to step the voltage from 33kV up to 132kV. After which the power will be evacuated into the national grid.
- Switching substations (and associated infrastructure) will be positioned close to the Eskom substation.

Borehole and Storage Tanks

- Water will be either extracted from the borehole within the property or purchased from the neighbouring farm with access to the river.
- Water from the borehole is used to irrigate the land. Meaning good flow rate is available.
- 2.5/5/10 Kl storage tanks.
- During construction and O&M - 3 mostly above ground tanks; 2 or 3 with 5kl or 10kl volume, close to O&M buildings normally.

For PV Farm:

- Planned size project of 100- 150 MW PV (in total for both PVs)
- The plant will require an estimated amount per year.
  - During construction: 1.5 to 2 years. Estimated 40mL per year of Road construction and compaction.
  - Concrete batching for PV mounting structures foundation.
  - Dust suppressions of the internal roads.
  - Provision of portable water for staff needs (if it can be used).
  - During Operation and Maintenance: 15 to 25 years. Estimated 7 mL per year
  - Dust suppression of the internal roads.
  - PV panel washing.
  - Office building use (eg. Toilets and washbasins).

A Battery Energy Storage System (BESS)

- It will depend on future off takers requirements and the size may vary.
- Capacity of <1000MWh
- Provision of 1ha footprint will be kept on plan.
- Flow or solid state battery technology to be catered for.

The Preliminary Layout is reflected below in

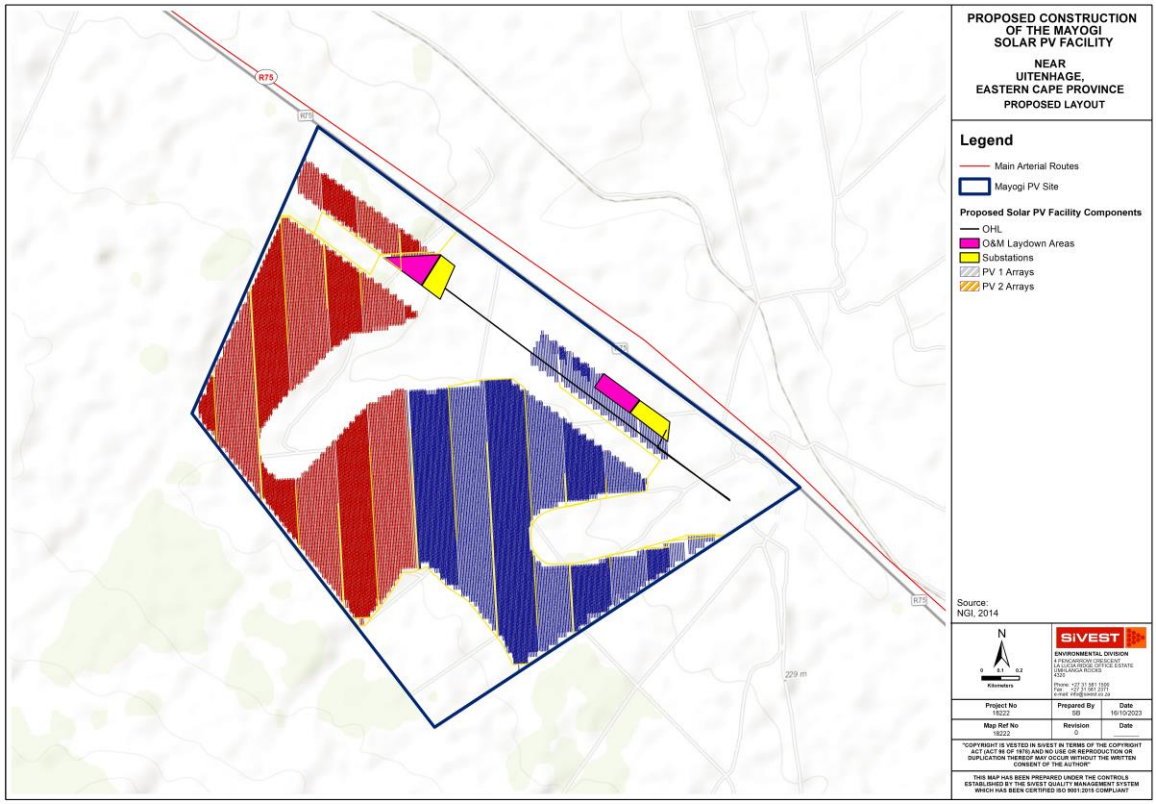

Figure 3 and attached in **Appendix 3**. Photographs of the site are included in **Appendix 4**.

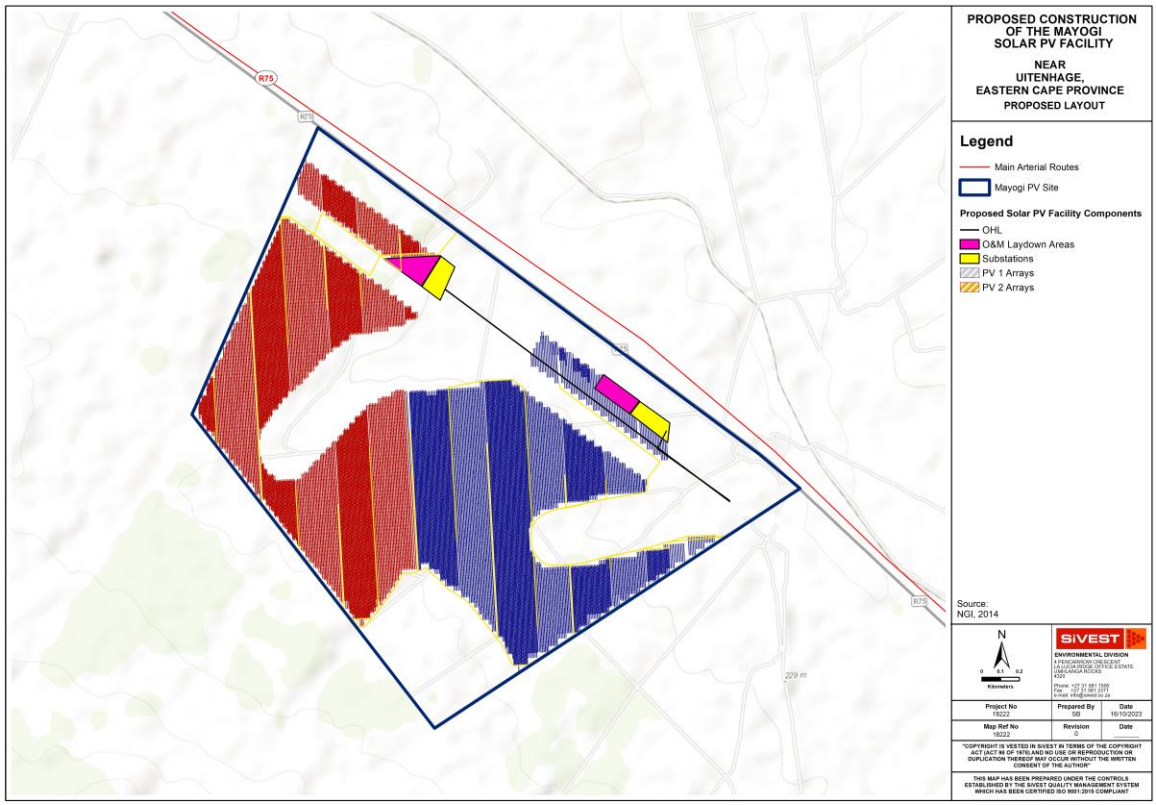

Figure 3: Preliminary layout showing proposed location of solar PV panels

The solar PV panels and all other project infrastructure will be placed strategically within the development area based on environmental constraints.

6.1.2 Main components of a Solar PV Facility

It is anticipated that the proposed Solar PV energy facility will include PV fields (arrays) comprising multiple PV panels. Solar PV panels are usually arranged in rows consisting of a number of PV modules.

Please refer to **Figure 4** below for the typical components of a solar panel.

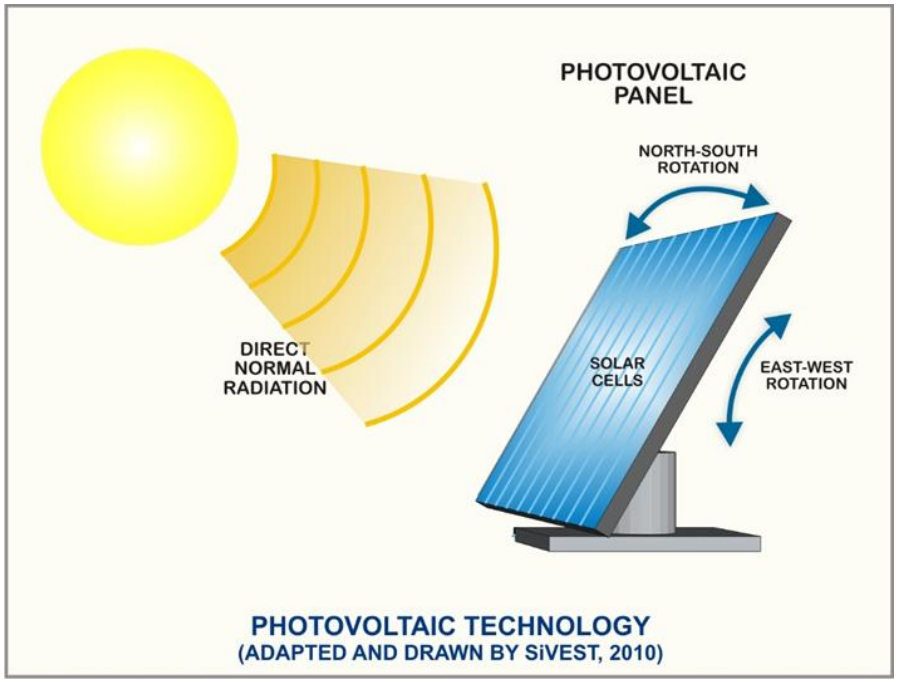

Figure 4: Typical components of a solar PV panel

The solar arrays are usually connected in strings, which are in turn connected to inverters. DC power from the panels will be converted into AC power in the inverters and the voltage will be typically stepped up to a medium voltage in the transformers. As mentioned, medium voltage cabling will link the solar PV energy facility to the grid connection infrastructure (132kV overhead power line and 33/132kV on-site substation). The medium voltage cables will be run underground (wherever technically feasible) or above ground in the facility before being fed to the on-site and/or collector substation, where the voltage will typically be stepped up.

The solar PV electricity generation process is illustrated in **Figure 5** below.

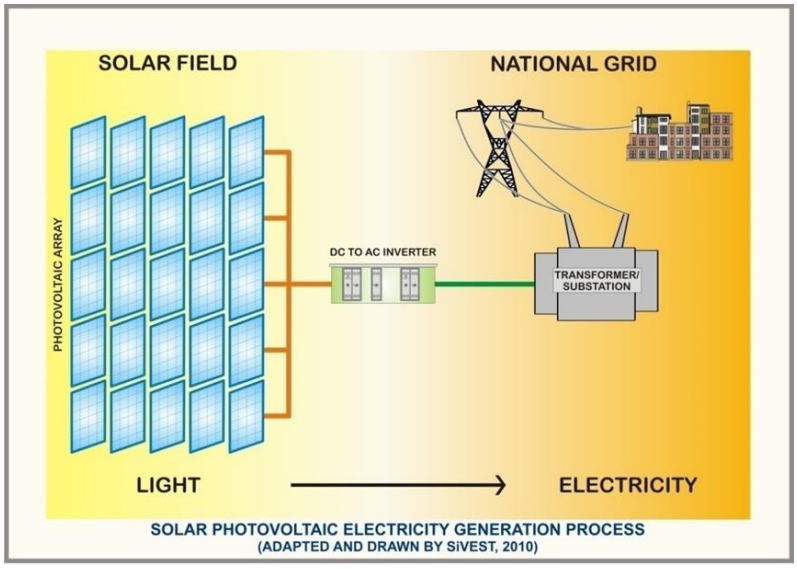

Figure 5: Solar PV electricity generation process

6.1.3 Roads

There is one site access road to the Project site. The access road is via the MN50455, which is located directly on the R75, opposite the Daniell African Arts and Cheetah Project. Internal access roads will then be required to access the solar PV panels. The site will need to provide a minimum stacking space of at least 25m between the access control and MN50455 to ensure that at least one large construction vehicle can stack in front of the security control without obstructing vehicles on the farm. The internal roads need to be designed with smooth, relatively flat gradients (recommended to be no more than 8%) to allow a larger transport load vehicle to ascend to the respective laydown areas.

6.1.4 Battery Energy Storage System (BESS)

Two BESS technology alternatives are being considered: Solid state battery electrolytes and flow battery technology.

- Solid state battery electrolytes, such as lithium-ion (Li-ion), zinc hybrid cathode, sodium ion, flow (e.g., zinc iron or zinc bromine), sodium sulphur (NaS), zinc air and lead acid batteries, can be used. Compared to other battery options, Li-ion batteries are highly efficient, have a high energy density and are lightweight. As a result of the declining costs, Li-ion technology now accounts for more than 90% of battery storage additions globally (IRENA, 2019).

- Flow batteries use solid electrodes and liquid electrolytes. The most used flow battery is the Vanadium Redox Flow Battery (VRFB), which is a type of rechargeable flow battery that employs vanadium ions in different oxidative states to store chemical potential energy.

The specific technology will only be determined following Engineering, Procurement, and Construction (EPC) procurement.The main components of the BESS include the batteries, power conversion system, and transformer which will all be stored in various rows of containers. The BESS components will arrive on site pre-assembled. The approximate footprint for the BESS is 1 ha.

A risk assessment for the BESS has been undertaken and is inlcuded in **Appendix 6**.

6.1.5 Technical Detail Summary

A summary of the project technical details is provided in **Table 21** below.

Table 21:Technical Detail Summary

Component	Description / Dimensions
Location of site (centre point)	Mayogi: Mayogi 1: 33°28'41.99"S 25°19'28.063"E Mayogi 2: 33°28'21.473"S 25°18'14.302"E
Application site area	1070 ha (overall farm area)
PV development area	Approximately 507ha
SG codes	C07600000000069200000
Export capacity	Up to 150 MW

Component	Description / Dimensions
PV Panels	Structure height ▪ Solar panels with a maximum height of 5m above the ground Structure orientation Fixed tilt or tracking: ▪ Fixed tilt: North-facing at a defined angle of tilt. ▪ Or panels will either be fixed to a single-axis horizontal tracking structure where the orientation of the panel varies according to the time of the day, as the sun moves from east to west; or tilted at a fixed angle equivalent to the latitude at which the site is located in order to capture the most sun. ▪ Crystalline silicon or thin film technology (To be determined at later stage) Dimensions of Panel: ▪ Width (in m) of PV panels: 2,278m ▪ Height (in m) of PV panels: 1,134m
On-site Substation	▪ Two substations are proposed with a transformation capacity of 33/132kV. ▪ Each substation housing a single 80MVA transformer ▪ Maximum height of on-site substation: approximately 3-4 m ▪ The substation area is max. 1 ha including a building for switching, measurement and control units, a high voltage transformer and high voltage overhead-lines connecting the transformer to the 132 kV grid line that is close to the site. ▪ On site, there will be around 15-20 container-sized transformer stations (12192*2896*2438 mm; W*H*D) that step up the low voltage coming from the inverters to 33 kV medium voltage.
Battery Energy Storage Area (BESS)	▪ It will depend on future off takers requirements and the size may vary. ▪ Provision of 1ha footprint will be kept on plan ▪ Capacity: <1000MWh ▪ Flow or solid state battery technology - to be catered for.
Capacity of on-site and collector substation	33/132kV
O&M building area	Located near the onsite IPP SS and/or BESS. All Auxiliary buildings to be developed include, but are not limited to: O&M building, site office, staff lockers, bathrooms, warehouses, etc (with septic tanks and all infrastructure). Typical areas include: - Office (~250m²); - Store room (~200m²)

Component	Description / Dimensions
	- Staff lockers and changing room (~100m²) - Security control (~40m²) - Sanitation facilities with septic tank outside - Conservancy Tank - Borehole (if possible, somewhere on site) Footprint up to 0.1 ha (around 0.03- 0.08ha)
Construction Camp Laydown area	▪ 1 x Construction camp will be required per PV, ▪ Offices and other buildings with toilets including septic tank and infrastructure, will used during the construction phase. ▪ Around 10 40ft container, in total <0,1 ha
Temporary laydown or staging area	Typical area 20 000m² (2 ha)
On-site IPP Electrical Infrastructure	▪ The proposed project will include two on-site IPP substations. ▪ Planned size (each): 2ha - 1ha for Substation - 1ha for battery storage ▪ Substation area: One building that will include: - Office/control room (~50m²); - MV switchgear room (~100m²) ▪ Substation yard will include: - High voltage transformer and high voltage overhead-lines connecting the transformer to the existing Eskom 132 kV grid line via an approximately 200m long underground cable or OHL. This area will include construction laydown area, construction camp facilities and storage area, in the beginning. ▪ Medium voltage cabling will link PV facility to grid connection infrastructure ▪ Internal underground lines of up to 33 kV (22kV or 33kV). *Cables will be laid underground wherever technically feasible, with overhead 33kV lines grouping PV areas to crossing valleys and ridges to get to the on-site substation."*
Internal roads	Access road/s to the site and internal roads between project components of up to 6m, with an additional 2m drainage on each site if necessary. Existing roads will be utilised as reasonably possible. Existing access roads may be upgraded by approximately 450m x 6m.
Site Access	Access to the development area can be obtained via the MN50455, which is adjacent to the R75.
Proximity to grid connection	Skilpad substation is adjacent to the site. <u>Starting point:</u> ▪ PV Panel Array - To produce up to 86MW DC each, the proposed facility will require numerous linked PV

Component	Description / Dimensions
	panels connected in series, which will form solar PV arrays that will comprise the PV facility. ▪ The PV array will be wired to central inverters. The inverter is a MPPT (Maximum Power Point Tracking) inverter that converts direct current (86 MW DC) electricity to alternating current (75MW AC) electricity at grid frequency. <u>Connection to the grid:</u> ▪ Connecting the array to the electrical grid requires transformation of the voltage from LV voltage to 33kV to 132kV. The normal components and dimensions of a distribution rated electrical substation will be required. Output voltage from the inverter is LV AC and this is fed into step up transformers to 33kV. From the inverter transformer an RMU is used to connect to the onsite substation ▪ The onsite substation will be required on the site to step the voltage from 33kV up to 132kV. After which the power will be evacuated into the national grid. ▪ A switching substation (and associated infrastructure) will be positioned close to the Eskom substation ▪ The metering point will be at the point of connection from the IPP substation side into the Eskom Switching Station.
Fencing	▪ Type: proposed galvanized metal mesh. ▪ Length: 16km ▪ Height: Up to 2m
Boreholes and Storage tanks (if applicable)	▪ Water will be either extracted from the borehole within the property or purchased from the neighboring farm with access to the river. ▪ Water from the borehole is used to irrigate the land. Meaning good flow rate is available. ▪ 2,5/5/10 Kl storage tanks ▪ During construction and O&M – mostly above ground tanks; 2 or 3 with 5kl or 10kl volume, close to O&M buildings normally ▪ For PV Farm: ▪ Planned size project of 150 MW AC (in total for both PVs) ▪ The plant will require an estimated amount per year ▪ During construction: 1.5 to 2 years. Estimated 7 Megalitres per year ○ Road construction and compaction ○ Concrete batching for PV mounting structures foundation ○ Dust suppressions of the internal roads ○ Provision of portable water for staff needs (if it can be used)

Component	Description / Dimensions
	▪ During Operation and Maintenance: 15 to 25 years. Estimated 2 Megalitres per year ○ Dust suppression of the internal roads ○ PV panel washing ○ Office building use (eg. Toilets and washbasins)
Estimated number of employment opportunities generated by each PV project	▪ Expected Work force: During construction and O&M, based on 80MW PV plant. ▪ Construction: 350 – 700 during the 1,5 to 2 years of construction. 60-70% could possibly be locals. This includes Skilled, semi-skilled and unskilled workers ▪ O&M: 25 - 30 people during the 15 to 25 years of operation. 4-5 skilled workers and 16 – 25 un/semi-skilled workers, depending on contracts. ▪ This "Mayogi PV" project will still evolve over time and size may shrink due to clients/contracts/environmental factors. And for interest – Wind warm of 20 turbines would also take 1,5 to 2,5 years to complete with 250 – 350 workers employed during construction.
Construction: Duration and start date	Not yet specified

6.2 NEMA Listed Activities

The amended EIA Regulations promulgated under Section 24(5) of the National Environmental Management Act, Act 107 of 1998 and published in Government Notice No. R. 326 list activities which may not commence without environmental authorization from the Competent Authority. The proposed activity is identified in terms of Government Notice No. R. 327, 325 and 324 for activities which must follow a full Environmental Impact Assessment Process. The project will trigger the following listed activities:

Table 22: Listed activities in terms of NEMA: EIA Regulations 2014 (as amended in 2017), applicable to the proposed project

Activity No(s):	Relevant activities as set out in Listing Notices 1, 2 and 3 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
Relevant Basic Assessment Activities as set out in Listing Notice 1		
11 (i)	**GN R. 327 (as amended) Item 11:** The development of facilities or infrastructure for the transmission and distribution of electricity— (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts.	New on-site substations/collector switching stations and powerlines will be constructed as part of the proposed development. The proposed substation / collector switching stations will be located outside urban areas and will have capacities of 33/132kV respectively. The substations will be connected via overhead lines.
12 (ii) (a) (c)	**GN R. 327 (as amended) Item 12:** The development of:	Drainage lines and watercourses are scattered across the proposed

Activity No(s):	Relevant activities as set out in Listing Notices 1, 2 and 3 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
	ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs- (a) within a watercourse; (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.	site. One or more roads and/or powerlines will cross these watercourses or drainage lines or be within 32m thereof. The proposed developments will therefore entail the construction of infrastructure with physical footprints of approximately 100m^2 or more within a surface water feature / watercourse or within 32m of a surface water feature / watercourse.
14	**GN R. 327 (as amended) Item 14**: The development of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres.	"Dangerous goods" that are likely to be associated with the project include fuel stored during the construction phase and/or hazardous chemical substances at the substation during the operational phase. Furthermore the development will allow for Battery Energy Storage Systems (BESS). Threshold of 80 m^3 expected to be exceeded. Consideration is being given to different BESS technologies. The Facility will require storage and handling of dangerous goods, including fuel, cement and chemical storage onsite, that will be greater than 80m^3 but not exceeding 500m^3.
19	**GN R. 327 (as amended) Item 19**: The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;	The proposed development will involve the excavation, removal, infilling or depositing of any material of more than 10m^3 into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10m^3 from some of the identified surface water features / watercourses. Although the layout of the proposed developments will be designed to avoid the identified surface water features / watercourses as far as possible, some of the internal and/or access roads may need to traverse the identified surface water features / watercourses. In addition, during construction of these roads, soil will need to be removed from

Activity No(s):	Relevant activities as set out in Listing Notices 1, 2 and 3 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
		some of the identified surface water features / watercourses.
24 (ii)	**GN R. 327 (as amended) Item 24:** The development of a road - ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres.	Internal access roads of approximately 6m with an additional 2m drainage on each site if necessary. Existing roads will be used wherever possible, although roads may need to be upgraded by approximately 450m x 6m.
28 (ii)	**GN R. 327 (as amended) Item 28:** Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development: (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;	The total area to be developed for the proposed renewable energy facilities is greater than 1ha and occurs outside an urban area in an area currently zoned as agricultural land.
48 (i) (a) (c)	**GN R. 327 (as amended) Item 48:** The expansion of- (i) infrastructure or structures where the physical footprint is expanded by 100 square metres or more; where such expansion occurs— (a) within a watercourse; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;	The proposed development will entail the expansion (upgrading) of roads and other infrastructure by 100m^2 or more within a surface water feature / watercourse or within 32m from the edge of a surface water feature / watercourse. Although the layouts of the proposed developments will be designed to avoid the identified surface water features / watercourses as far as possible, some of the internal and access roads to be upgraded will need to traverse the identified surface water features / watercourses and construction will occur within some of the surface water features / watercourses and/or be within 32m of some of the surface water features / watercourses.
56 (ii)	**GN R. 327 Item 56:** The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre - (i) where the existing reserve is wider than 13,5 metres; or (ii) where no reserve exists, where the existing road is wider than 8 metres –	Internal access roads will be required to access the PV panels and the substation. Existing roads will be used wherever possible, although new roads will be constructed where necessary. The existing access roads will need to be upgraded by widening them more than 6m, or by lengthening them by more than 1km.

Activity No(s):	Relevant activities as set out in Listing Notices 1, 2 and 3 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
Relevant Scoping and EIA Activities as set out in Listing Notice 2 of the EIA Regulations, 2014 as amended		
1	**GN R. 325 (as amended) Item 1:** The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more.	The proposed development will entail the construction of a SEF where the respective electricity output will be up to 150 MW. In addition, the proposed SEF development will be located outside urban areas.
15	**GN R. 325 (as amended) Item 15:** The clearance of an area of 20 hectares or more of indigenous vegetation.	The proposed SEF development will involve the clearance of more than 20 ha of indigenous vegetation. Clearance will also be required for the proposed substations, internal access roads and other associated infrastructure.
Relevant Basic Assessment Activities as set out in Listing Notice 3 of the EIA Regulations, 2014 as amended		
4 (a)(ii)(ee)	**GN R. 324 (as amended) Item 4:** The development of a road wider than 4m with a reserve less than 13.5 metres. **a. Eastern Cape** ii. Outside Urban Areas: (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.	The development of the SEF facility and associated infrastructure will require the development of roads wider than 4 m with a reserve of less than 13.5 m within a CBA 1 and CBA 2 area. These roads will occur within the Eastern Cape Province, outside urban areas.
10 (g)(ii)(iii)(ee)	**GN R. 324 (as amended) Item 10:** The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres. **a. Eastern Cape** ii. Areas within a watercourse or wetland; or within 100 metres from the edge of a watercourse or wetland; iii. Outside Urban Areas: (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.	"Dangerous goods" that are likely to be associated with the project include fuel stored during the construction phase and/or hazardous chemical substances at the substation during the operational phase. Furthermore, the development will allow for Battery Energy Storage Systems (BESS). Threshold of 30 m^3 expected to be exceeded. The Facility will require storage and handling of dangerous goods, including fuel, cement and chemical storage onsite, that will be greater than 80m^3 but not exceeding 500m^3.
12 (a)(ii)	**GN R. 324 (as amended) Item 12:** The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.	The proposed development will entail the construction of infrastructure with physical footprints of approximately 300 m^2 or more within areas identified as CBA 1 and CBA 2 area. As such, approximately 300 m^2 or more of indigenous vegetation will likely be

Activity No(s):	Relevant activities as set out in Listing Notices 1, 2 and 3 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
	a. Eastern Cape (ii) Within critical biodiversity areas identified in bioregional plans.	cleared as part of the respective proposed developments.
14 (ii)(a)(c)(a)(ii)(ff)	**GN R. 324 (as amended) Item 14:** The development of— (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs— (a) within a watercourse; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour. **a. Eastern Cape** ii. Outside urban areas: (ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;	The proposed development will entail the development of infrastructure with physical footprints of 10m^2 or more within a watercourse / surface water feature or within 32 m from the edge of a watercourse / surface water feature. The construction of the infrastructure for the development will occur within CBA Areas 1 and 2.
18 (a)(ii)(ee)(ii)	**GN R. 324 (as amended) Item 18:** The widening of a road by more than 4 meters, or the lengthening of a road by more than 1 kilometer- **a. Eastern Cape** ii. Outside urban areas: (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; (ii) Areas within a watercourse or wetland; or within 100m from the edge of a watercourse or wetland.	Internal access roads will be required to access the solar panels as well as the substation. Existing roads will be used wherever possible. Internal access roads will thus be widened by more than 4 m or lengthened by more than 1 km. These roads will occur within the Eastern Cape Province, outside urban areas. The widening of the roads will occur within a CBA 1 and 2 area as well as a watercourse or wetland or within 100 m from the edge of a watercourse or wetland.
23 (ii)(a)(c) (a)(ii)(ee)	**GN R. 3245 (as amended) Item 23**: The expansion of— (ii) infrastructure or structures where the physical footprint is expanded by 10 square metres or more; where such expansion occurs—	The proposed development will entail the development and expansion of roads and other infrastructure by 10m^2 or more within a watercourse or within 32m from the edge of a watercourse. The expansion of the infrastructure will occur within the Eastern Cape

Activity No(s):	Relevant activities as set out in Listing Notices 1, 2 and 3 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
	(a) within a watercourse; (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour. **a. Eastern Cape** ii. Outside urban areas: (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;	Province, outside urban areas, within a CBA 1 and 2 area. Although the layout of the proposed development will be designed to avoid the identified surface water features as far as possible, some of the existing internal and access roads will need to traverse some of the identified surface water features.

7. NATIONAL WEB-BASED ENVIRONMENTAL SCREENING TOOL

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

According to the DFFE Screening Tool Report (attached in **Appendix 8**), the following themes described in **Table 23** below are applicable to the proposed development:

Table 23: DFFE Screening Tool Environmental Sensitivity

Theme	Sensitivity	EAP/ Specialist Verification	EAP/ Specialist Sensitivity
Agriculture Theme	Medium	The Agricultural Compliance Statement is included in **Appendix 6** of the Final Scoping Report. The site has low agricultural potential and no dryland cropping potential because of both climate and soil constraints. As a result of the constraints, agricultural production is limited to grazing. The land across the site is verified in this assessment as being of low to medium agricultural sensitivity.	Low to Medium
Animal Species Theme	High	The Terrestrial Ecological Report is included **Appendix 6** of the Final Scoping Report.	Low

Theme	Sensitivity	EAP/ Specialist Verification	EAP/ Specialist Sensitivity
		The animal species sensitivity is rather LOW on the specific site, particularly on the northern part (the study site). Mayogi was a game farm and several animal species (game species) occurred from time to time. The Daniell Cheetah breeding project is located across the road. The many nature reserves/game farms in the area inflate the estimate for animal species sensitivity. Furthermore, Animal Species Sensitivity includes bird species. The impacts of the proposed development will be **Low** on the rest of the vegetation, plant species and fauna. As per the findings of this assessment, and its supporting documentation, the outcome of the sensitivity verification disputes the results of the DFFE Screening Tool for Animal Species Theme.	
Aquatic Biodiversity Theme	Very High	The Aquatic Water Report is included in **Appendix 6** of the Final Scoping Report. The DFFE National Web-Based Environmental Screening Tool designated the majority of the investigation area as having a very high aquatic biodiversity sensitivity due to the presence of NFEPA. Based on the above outcomes, the specialist refutes the environmental sensitivities identified on site. The systems observed although sensitive and shown in this assessment as No-Go i.e. Very High sensitivity, are rated as such due to the importance of conserving their functional value in supporting downstream Albany Alluvial vegetation units that may remain. This vegetation type is listed as Endangered, thus any hydrological continuity must be protected. the DFFE Screening Tool identified one sensitivity ratings within the development footprint, namely, Very High. Although there is some overlap with the findings on site and the Screening Tool's outcome, the development footprint will be developed with cognisance of these sensitivities.	Low for the majority for the site with High within the watercourses
Archaeological and Cultural Heritage Theme	Low	The Heritage Report is included in **Appendix 6** of the Final Scoping Report. The results of the assessment in terms of site sensitivity are summarised below: The archaeology assessment identified low significance surface scatters across the whole site but nothing that would require any mitigation or buffers.	Low

Theme	Sensitivity	EAP/ Specialist Verification	EAP/ Specialist Sensitivity
		As per the findings of this assessment, and its supporting documentation, the outcome of the sensitivity verification agrees with the results of the DFFE Screening Tool for Cultural Heritage and Archaeology.	
Avian Theme	Low	The animal species sensitivity is low on the site because the habitats are mostly degraded or transformed. The overall findings of this assessment agree with the results of the DFFE Screening Tool	Low
Civil Aviation Theme	Low	The entire site has a low sensitivity in terms of the civil aviation theme. No further specialist study required.	Low
Defence Theme	Low	The entire site has a low sensitivity in terms of the defence theme. No further specialist study required.	Low
Palaeontology Theme	Very High	The Heritage Report is included in **Appendix 6** of the Final Scoping Report. No highly significant palaeontological resources were identified within the development area however the sediments underlying the development area have very high palaeontological sensitivity (Moderate). As per the findings of this assessment, and its supporting documentation, the outcome of the sensitivity verification disputes the results of the DFFE Screening Tool for Palaeontology.	Medium
Plant Species Theme	Medium	The Terrestrial Ecological Report is included **Appendix 6** of the Final Scoping Report. The Screening Tool plant species sensitivity is shown as Low for most of the study site (northern part of the farm) and Medium for the southern part of the farm. This is confirmed by the current biodiversity study. The Arid Karoo plant community in the north-eastern corner of the site is also indicated as having Medium plant species sensitivity, however this is disputed as this area is totally degraded/transformed. The overall findings of this assessment is Low, and its supporting documentation, the outcome of the sensitivity verification disputes the results of the DFFE Screening Tool for Plant Species theme	Low
RFI Theme	Low	The entire site has a low sensitivity in terms of the RFI theme. No further specialist study required.	Low
Terrestrial Biodiversity Theme	Very High	The Terrestrial Ecological Report is included Appendix 6 of the Final Scoping Report.	Low

Theme	Sensitivity	EAP/ Specialist Verification	EAP/ Specialist Sensitivity
		Terrestrial Biodiversity is regarded only Low or Very High by the Screening Tool. In this case the Very High Biodiversity Sensitivity is derived from the CBA-layer, which indicates that an Ecological Support Area occurs on the site, it is in a FEPA sub-catchment and contains the Albany Floodplain endangered ecosystem. As mentioned under Plant species sensitivity, the vegetation in this area has been totally transformed to karroid vegetation. From the vertebrate fauna perspective, sensitivity on site for the Terrestrial Biodiversity cannot be Very High (disputed) and is therefore regarded as being Low and therefore the results of DFFE Screening tool is disputed.	

8. DESCRIPTION OF THE PHYSICAL ENVIRONMENT

8.1 Geographical

The proposed SEF is located approximately 10km north-west of town of Helpmekaar within the Sunday's River Valley Local Municipality and the Sarah Baartman District of the Eastern Cape Province. The R75 main road, which provides access to the site and buffers the eastern cape boundary with the Schuilpaddop, Voetpadskloof and Citruslandgoed Game Farms located to the north-west, north-east and east respectively. The regional context of the proposed application site is shown in **Figure 6** below.

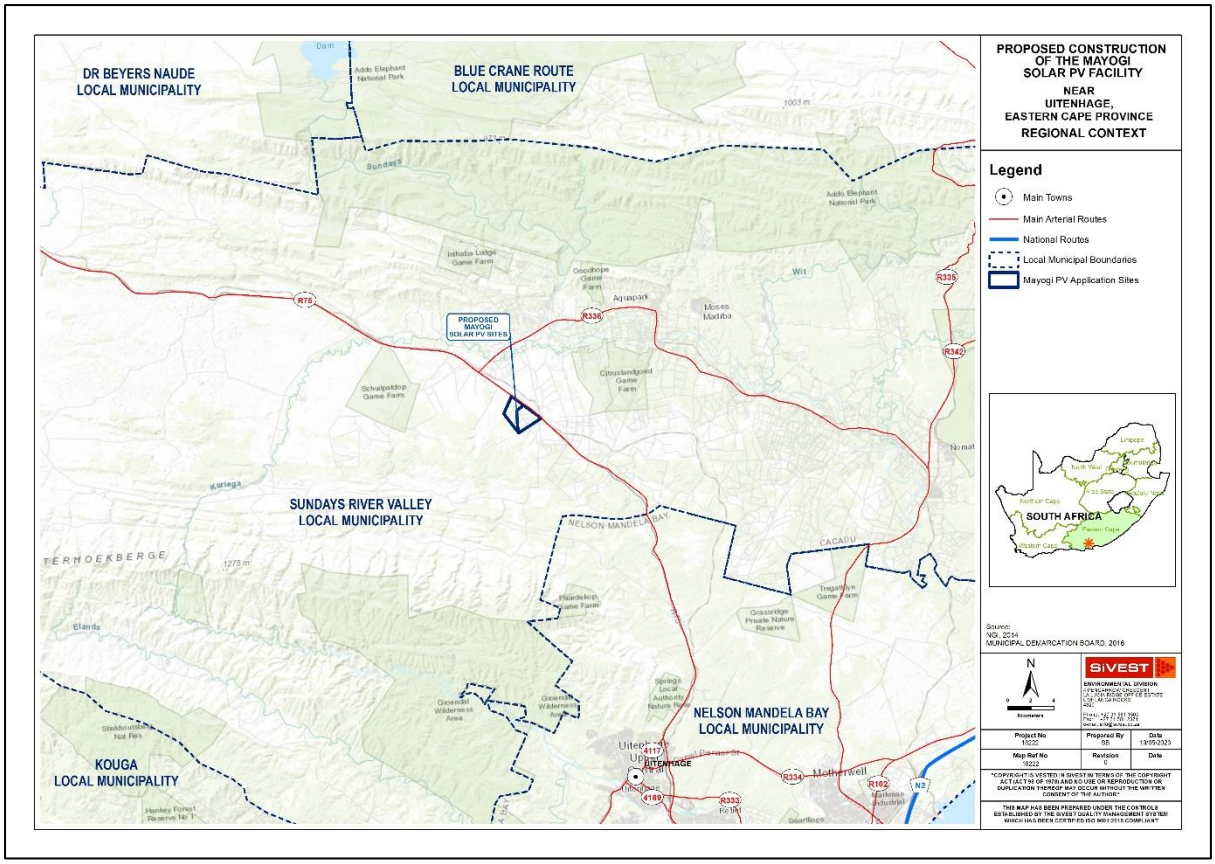

Figure 6: Regional context

8.2 Land Use

The site is currently used for cattle rearing and sheep farming. The Mayogi Farmstall is located on the property adjacent to the R75, and the Skilpad Substation is located on the south-eastern portion of the property. A powerline (~132 kV) traverses the site, parallel to the R75 and connects to the Skilpad Substation on the site. Furthermore Eskom has a servitude running along the northern part of the farm.

Figure 7: Mayogi farmstall located on the property abutting the R75

Figure 8: Existing Skilpad Substation located on the south-eastern portion of the property

The area surrounding the site is predominantly characterised by agricultural activity (mainly citrus crops) giving rise to textured patches of orchards across the landscape, private game reserves and a small node of urban development. Refer **Figure 9** below for a broad land cover classification.

Surrounding land use includes:

- Urban areas (e.g. Kirkwood);
- Farmsteads
- Powerlines
- Daniell Cheetah project

- Private game reserves:
  - Schuilpatdorp Game Farm;
  - Thorndale Safari Lodge;
  - Bluecliff Safaris;

- Agriculture:
  - Citrus orchards ; and
  - Cattle and sheep pastures.

Pictures of the land uses surrounding the site in **Figure 10 - Figure 13** below.

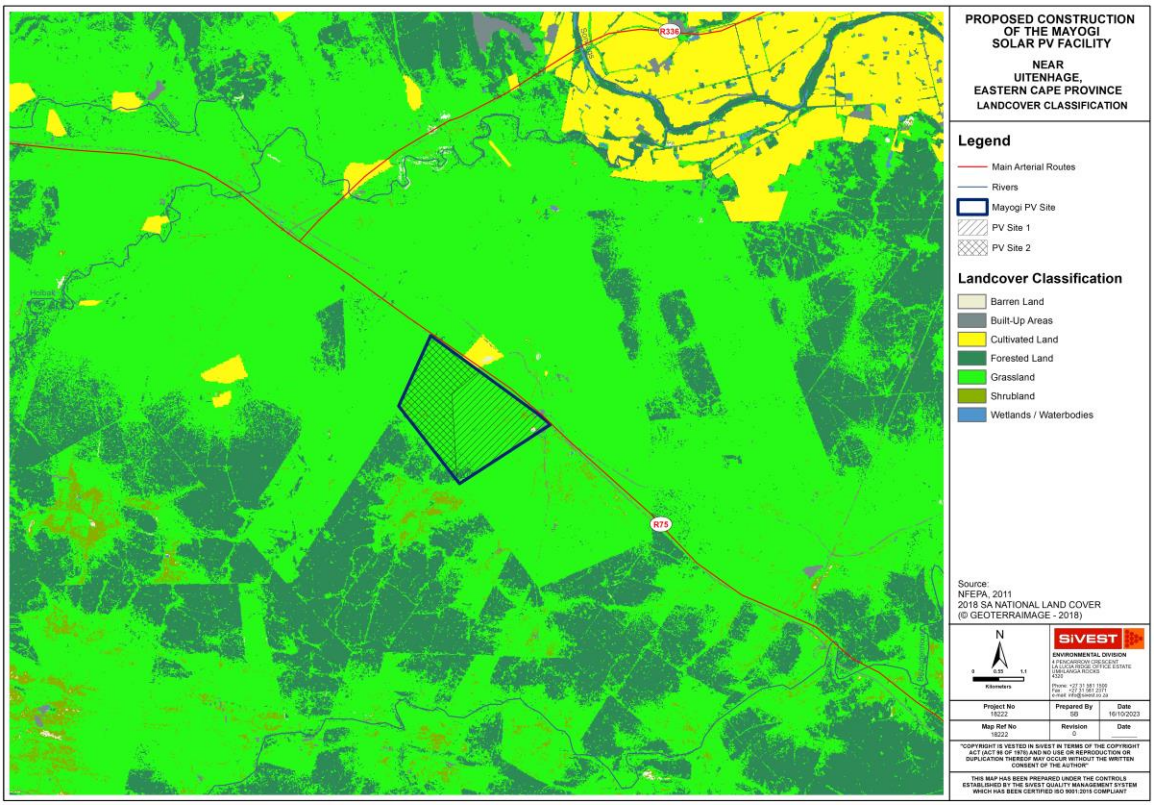

Figure 9: Land Cover Classification

Figure 10: Isolated farmsteads around the project site

Figure 11: Pylons and powerlines routed adjacent to the R75 road

Figure 12: Daniell Cheetah project

Figure 13: Citrus orchards

8.3 Climate

In accordance with the Köppen-Geiger climate classification the town of Helpmekaar is characterised by an oceanic climate with a “Cfb” classification and received an average annual precipitation of 523mm per annum. The average lowest rainfall is received in July (4mm) and the highest in January (99mm), which is a seasonal variation of 95mm.

The average maximum midday temperature for Helpmekaar ranges from 29.3°C in December to 19.7°C in June, which is a seasonal variation of 9.6°C. The most sunshine days occur in July while the month of December has the least.

Table 24: Summary of Climatic Conditions, Helpmekaar, Eastern Cape (Source:www.weatheratlas.com)

Months	Average Rainfall (mm)	Temperature		Average Sunshine Days
		Maximum	Minimum	
January	99	29.2	16	5.8
February	91	28.5	15.1	6.1
March	66	27.3	13.7	8.8
April	35	24.1	10.6	14.9
May	6	22.7	8.9	23.9
June	6	19.7	6.4	25.2
July	4	19.9	6.2	26.2
August	13	22.8	8.8	23.9
September	15	26.3	12	18.7
October	36	27.3	13.8	12.5
November	63	28.4	14.7	7.1
December	89	29.3	15.6	4.1

According to the regional contour map of climatic N-values for Southern Africa by Weinert (1980), the Weinert N-Value of the study is between 2 and 5 and is indicative of moderate climatic conditions. Weathering of rock material is predominantly by chemical processes.

8.4 Topography

The SEF is currently vacant with the exception of vegetation and trees. The topography varies minimally across the site with the elevation ranging from 236 meters above mean sea level (mamsl) in the south-west to 181 mamsl in the north-east. A slope category map depicting the topographic variation across the site is shown in Figure below.

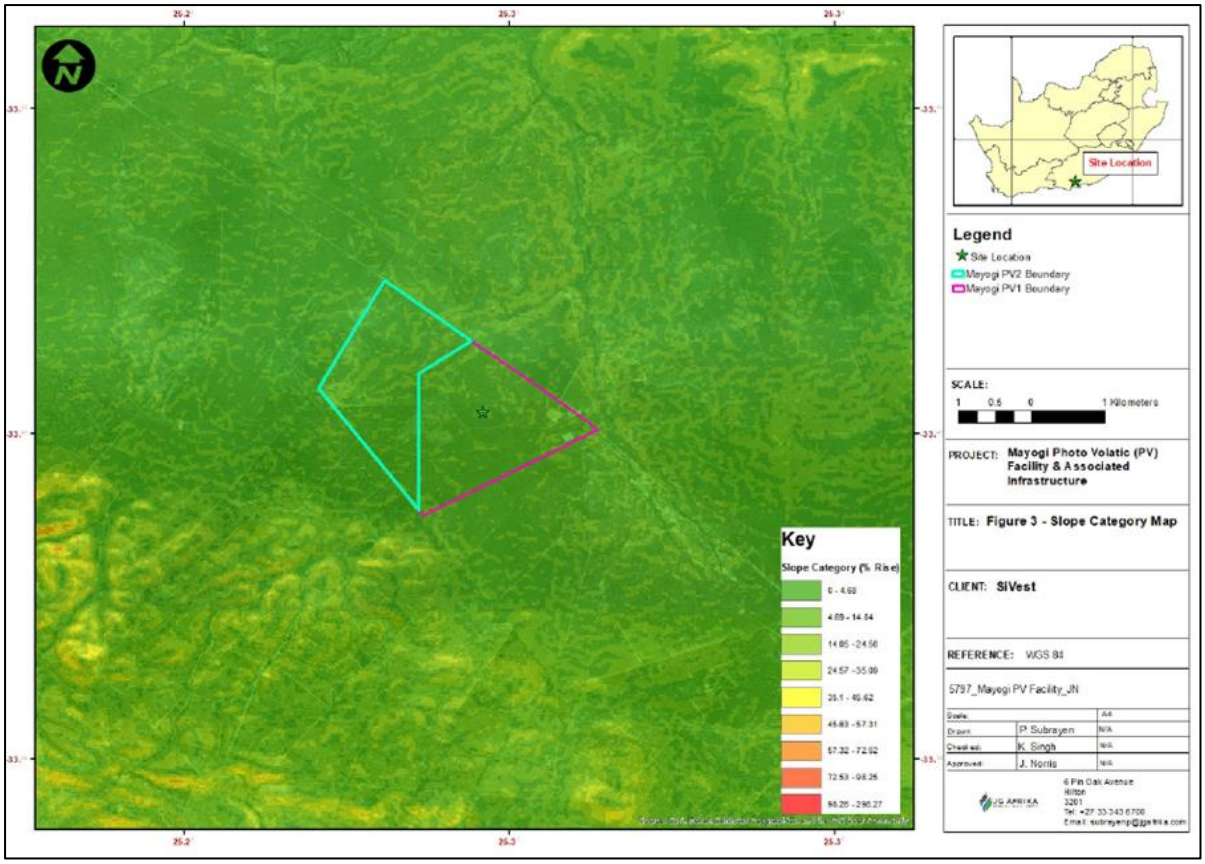

Figure 14: Slope category map

8.5 Desktop Geotechnical Assessment

A desktop geotechnical assessment was undertaken by JG AFRIKA (report dated May 2023).

8.5.1 Description of Receiving Environment

According to the 1: 250 000 scale geological map of Port Elizabeth (Map Reference 3324) (Council for Geoscience, 2000). The study area is predominantly underlain by reddish and greenish mudstone, sandstone (J-Kk) of the Kirkwood Formation while the south-western extremity being underlain by grey silty shale and siltstone with sandstone at the base (Da) of the Adolphspoort Formation. No structural lineaments in the form of dykes or faults were identified during a review of geological maps and aerial photography.

The regional geology of the site is illustrated in **Figure 15** below.

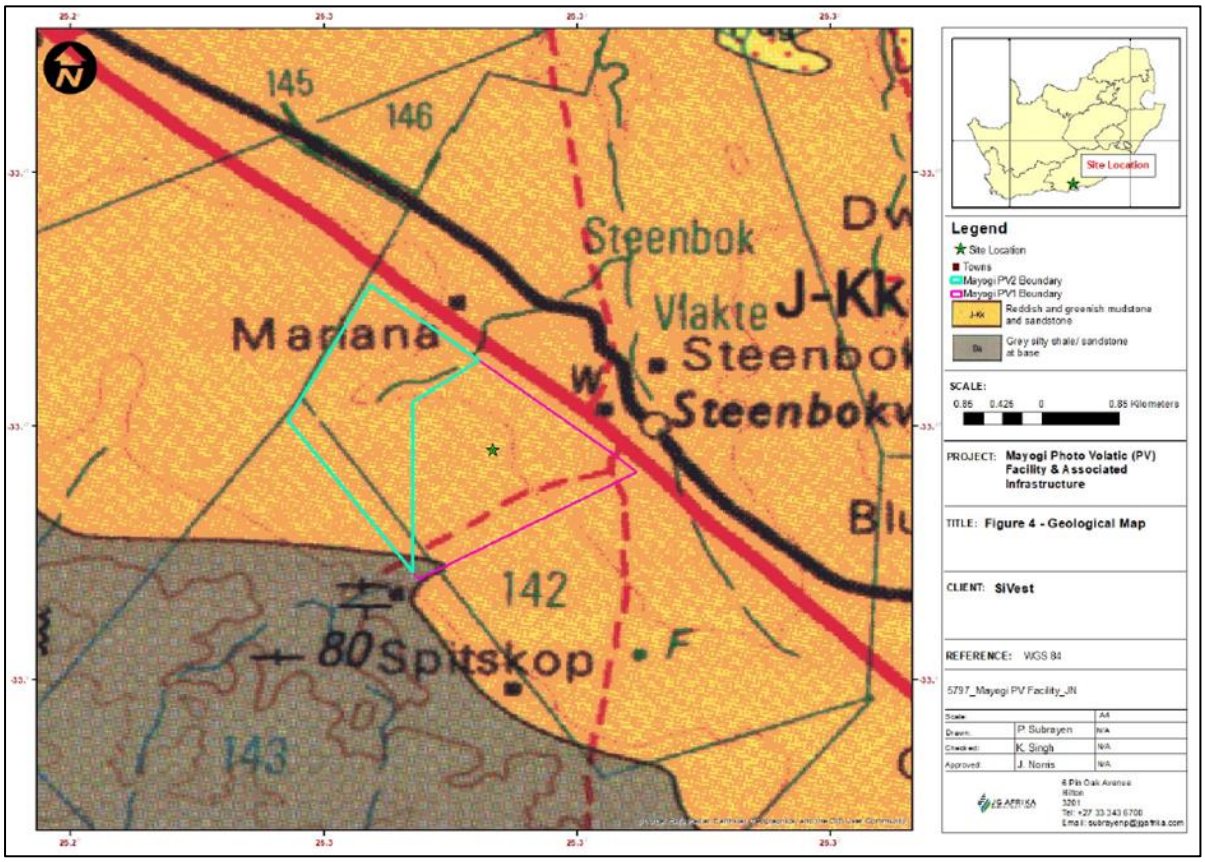

Figure 15: The regional geology of the site

8.5.2 Impact on geological environment

The impact of the development from a geotechnical perspective will be restricted to the removal and displacement of soil, boulders and bedrock referred to in this report as “subsoils”. The levelling of areas to create building platforms will also result in the displacement and exposure of subsoils. These impacts will have a negative visual impact on the environment, which in some cases can be remediated.

The potential impact of the development on the terrain and geological environment, will be the increased potential for soil erosion, caused by construction activities and the removal of vegetation. Areas of concentrated surface flow conditions can be anticipated at the PV plant, resulting in gradual erosion of unconsolidated soil, during the operational life of the facility. This can result in the creation of preferential drainage features, unless remediated through proper engineering design (i.e stormwater drainage).

Based on the impact assessment matrix undertaken for this project, from a geotechnical perspective the impact of 150MW Mayogi Solar PV Plant was found to be “Negative low impact - The anticipated impact will have negligible negative effects and will require little to no mitigation.”

8.5.3 Preliminary Conclusions

No fatal flaws from a geotechnical perspective were identified during this desktop study. Conclusions presented in this report will however have to be more accurately confirmed during the detailed geotechnical investigation phase prior to construction. The 150MW solar PV plant was found to be “Negative low impact - The anticipated impact will have negligible negative effects and will require little

to no mitigation". The site from a desktop level geotechnical study is considered suitable for the proposed PV Plant.

It recommended that a detailed geotechnical investigation be undertaken during the detailed design phase of the project. The detailed geotechnical investigation must entail the following:

- The profiling and sampling of exploratory trial pits to determine founding conditions for the substations and powerline infrastructure;
- Thermal resistivity and electrical resistivity geophysical testing for electrical design and ground earthing requirements; and
- Groundwater sampling of existing boreholes to establish a baseline of the groundwater quality for construction purposes.

8.6 Aquatic/Freshwater Assessment

An Aquatic Assessment was undertaken by EnviroSci (Pty) Ltd (report dated 25 May 2023).

8.6.1 Description of Receiving Environment

The study area (farm portion) was dominated by one type of natural aquatic feature and a small number of artificial barriers associated with catchments and rivers, as follows:

- Ephemeral water course - with or without riparian vegetation (Plate 1 - 2). These range from narrow channels to broad flood plain areas typical of areas associated with Albany Alluvial vegetation units
- Dams and weirs / berms with no wetland or aquatic features.

Notably, most of the aquatic features within the study area are located N40B Quinary Catchment of the South Eastern Coastal Belt Ecoregion in the Mzimvubu-Tsitsikamma Catchment Management Agency (PE/Gqeberha Regional Office) (**Figure 16**). The study area thus forms the upper catchment of the Sundays river systems respectively, but is not considered part of any wetland cluster, Strategic Water Resource Area, International Bird area. The proposed site is also located outside of any National Protected Area Expansion Strategy conservation sites.

The Department of Forestry, Fisheries and Environment (DFFE) identified the aquatic environment for the study area as having a Very High Sensitivity, but this was based on the only the presence of a National Freshwater Priority Ecosystem Area (NFEPA) (See **Figure 17** below). This is due to the fact that these quinary catchments are important areas in the greater Sundays River system, and the mainstem systems such as the Kariega River, downstream of the site act as important fish and invertebrate refugia, as well as make an important hydrological contribution to the region.

This particular FEPA was rated as such due to the presence of several fish species, listed below that includes one Vulnerable species indigenous fish, Oreochromis mossambicus (Mozambique tilapia).

Taxa	Number of sampling occurrences between 2002 – 2011	Status	Endemism	Conservation status (Non regional specific assessment GBIF)
Anguilla mossambica (Peters, 1852)	1	Native	Widespread	Least concern
Clarias gariepinus (Burchell, 1822)	1	Native	Widespread	Least concern
Cyprinus carpio Linnaeus, 1758	2	Non-Native	Widespread	Vulnerable
Enteromius pallidus (Smith, 1841)	1	Native	Subregional endemic	Least concern
Gambusia affinis (Baird & Girard, 1853)	2	Non-Native	Widespread	Least concern
Labeo umbratus (Smith, 1841)	1	Native	Subregional endemic	Least concern
Oreochromis mossambicus (Peters, 1852)	5	Native	Widespread	Vulnerable
Tilapia sparrmanii Smith, 1840	1	Native	Widespread	Least concern

The presence of these Very High Sensitivity features was confirmed during this assessment but linked to the drainage features and their association with a Threatened Ecosystem, namely riverine systems classified as the Endangered Albany Alluvial Vegetation unit.

No wetlands were found within the study area, only riverine features such as riparian thickets dominated by *Vachellia karroo, Searsia lancea, Euclea undulata and Gymonsporia buxifolia*

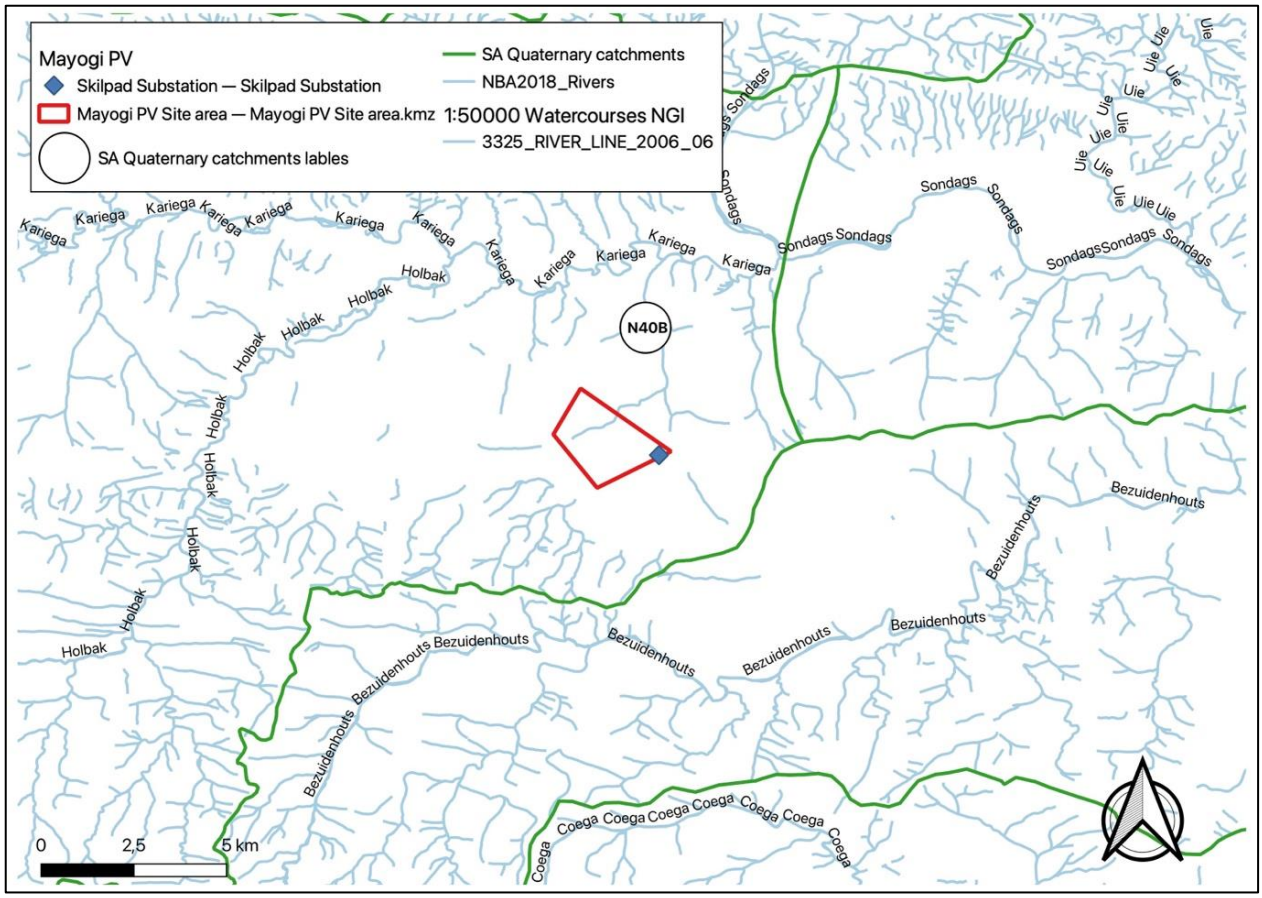

Figure 16: Project locality map indicating the various quaternary catchments and mainstem rivers (Source DWS and NGI) within the project boundary

Groundtruthed delineations were then compared to current waterbody inventories (van Deventer et al., 2020), 1: 50 000 topocadastral surveys mapping and the site. These inventories include wetland spatial data based on landcover 2007 data, previous assessments and wetland information retained by the Provincial authorities, combined into one database that formed part of the updated National Spatial Biodiversity Assessment, 2018.

A baseline map was then developed and refined using the 2022 survey data, noting that due to the complex nature of the topography and geology, the features were digitised at a scale of 1:5 000.

Coupled to the aquatic delineations, information was collected on potential species that could occur within the watercourses, especially any conservation worthy species (Listed or Protected). However no aquatic plant species were observed.

8.6.2 Present Ecological State and Conservation Importance

The Present Ecological State (PES) of a river, watercourse or wetland represents the extent to which it has changed from the reference or near pristine condition (Category A) towards a highly impacted system where there has been an extensive loss of natural habit and biota, as well as ecosystem functioning (Category E).

The PES scores have been revised for the country and based on the new models, aspects of functional importance as well as direct and indirect impacts have been included (DWS, 2014). The new PES system incorporates Ecological Importance (EI) and Ecological Sensitivity (ES) separately as opposed to Ecological Importance and Sensitivity (EIS) in the old model, although the new model is still heavily centred on rating rivers using broad fish, invertebrate, riparian vegetation and water quality indicators. The Recommended Ecological Category (REC) is still contained within the new models, with the default REC being B, when little or no information is available to assess the system or when only one of the above-mentioned parameters are assessed or the overall PES is rated between a C or D.

All of the systems assessed by DWS (2014) on a Subquaternary level within the study area were rated as PES = C or Moderately Modified. While these were also rated as High in terms of Ecological Sensitivity and Low in terms of Ecological Importance respectively.

Based on the information collected during the field investigations, these ratings are verified and upheld for the riverine systems. The High Ecological Sensitivity rating for the natural water sources, is further substantiated by the fact that the affected catchments are included in both the National Freshwater Priority Atlas and the provincial Biodiversity Spatial Plan Ecological Support Area spatial layers (**Figure 19** and **Figure 20**).

Overall, these catchment areas and subsequent rivers / watercourses are largely in a natural state with localised impacts in some areas, which include the following:

- Erosion and sedimentation associated with road crossings;
- Impeded water flow due to several in channel farm dams; and

Once the project is approved and detailed designs of any activities within regulated zones are known (i.e. within 100m of a watercourse) then detailed site specific PES / EIS determinations as part of the required Water Use Authorisation process can be calculated, but for now the ratings above apply to the site wide reaches of the systems.

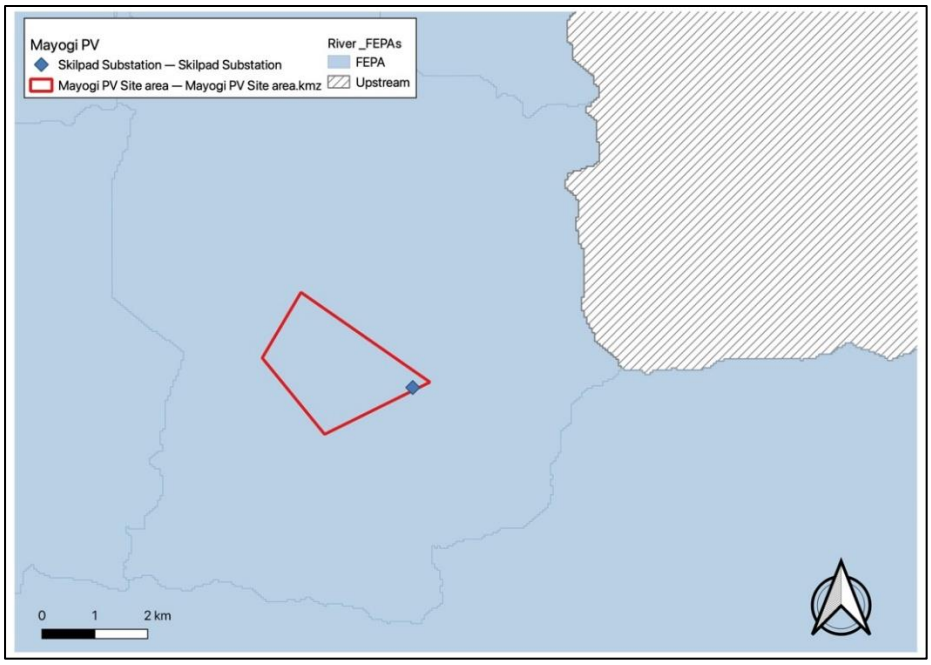

Figure 17: The Freshwater Ecosystem Priority Areas for the study site (Nel *et al,* 2011)

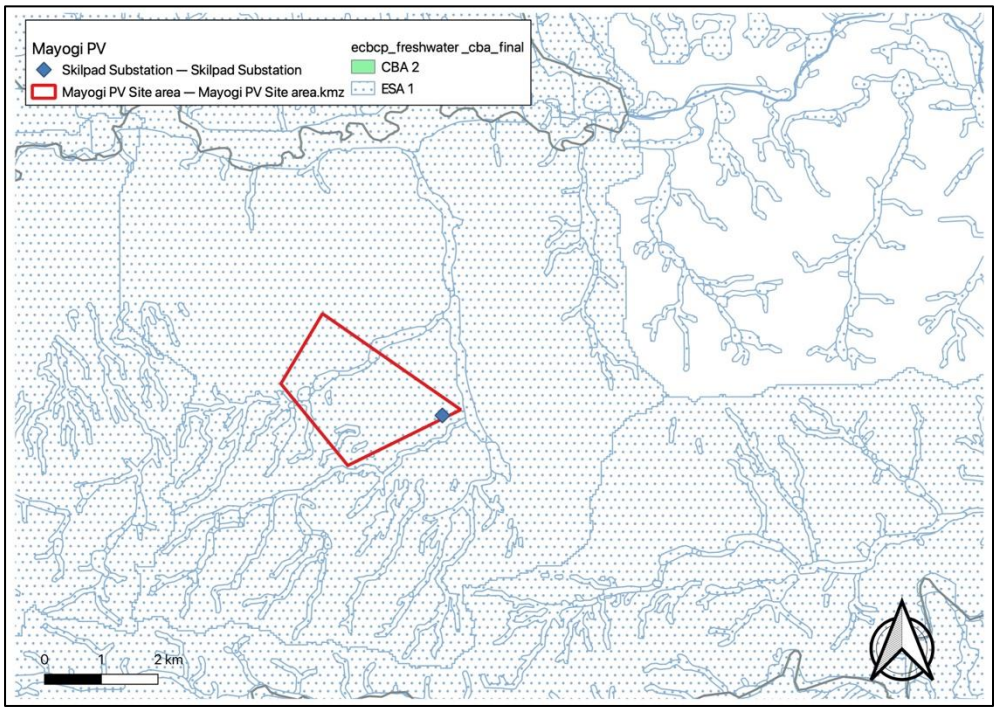

Figure 18: The Critical Biodiversity Areas as per the Eastern Cape Biodiversity Conservation Plan – ECBCP, 2019

8.6.3 Aquatic buffer zone

An aquatic impact buffer zone is defined as a zone of vegetated land designed and managed so that sediment and pollutant transport carried from source areas via diffuse surface runoff is reduced to acceptable levels (Macfarlane and Bredin 2016). Aquatic buffer zones are designed to act as barriers between human activities and sensitive water resources in order to protect them from adverse negative impacts. Buffer zones associated with water resources have been shown to perform a wide range of functions and have therefore been adopted as a standard measure to protect water resources and associated biodiversity.

Currently there are no formalised riverine or wetland buffer distances provided by the provincial authorities and as such the buffer model as described Macfarlane & Bredin (2017) for wetlands, rivers and estuaries was used. These buffer models are based on the condition of the waterbody, the state of the remainder of the site, coupled to the type of activity, as well as the proposed alteration of hydrological flows. Based then on available information for the site, the buffer model recommends a 12m buffer zone between the habitat and the activities (**Table 25**).

Table 25: Determination of buffer zone requirements

Final aquatic impact buffer requirements (including practical management considerations)	
Construction Phase	**12**
Operational Phase	**8**
Final aquatic impact buffer requirement	**12**

8.6.4 Sensitivity Mapping

These proposed constraints / buffers do not include bird and or bat specialist buffers / constraints as theirs buffers along aquatic features are at times far larger around aquatic features, than those required for the known aquatic species within this region.

Table 26: Results of the sensitivity rating/ constraints assessment

Development Component	Waterbody type	Sensitivity rating of the respective waterbody type against the development type and the required buffer	Sensitivity rating override if an impact such as a road already occurs within the proposed footprint
PV Panel areas	Watercourses	No-go with 12m buffer	
	Artificial dams	Not Applicable = If these systems have no biological value, structures could be placed within the dams, or dams could be demolished if required	
Buildings / Substations & BESS	Watercourses	No-go with 12m buffer	
	Artificial dams	Not Applicable = as these systems have no biological value, structures could be placed within the dams, or dams could be demolished if required	
Roads	Watercourses	Moderate sensitivity related to roads, and as crossings will be required no buffer is applicable	LOW if an existing crossing / road or impact is already present, that must then be included in the potential road network
	Artificial dams (off channel only)	Not Applicable = as these systems have no biological value, structures could be placed within the dams, or dams could be demolished if required	
Overhead Lines	Watercourses	Assumption is that the overhead lines could span these areas, but the towers/pylons should adhere to the buffer distances as indicated where possible as some of the alluvial system are very broad	
	Artificial dams (off channel only)		

In summary, any structures such as PV Panel areas, buildings, substations and BESS, should be placed outside of the observed watercourse, while roads and transmission could cross or span these areas.

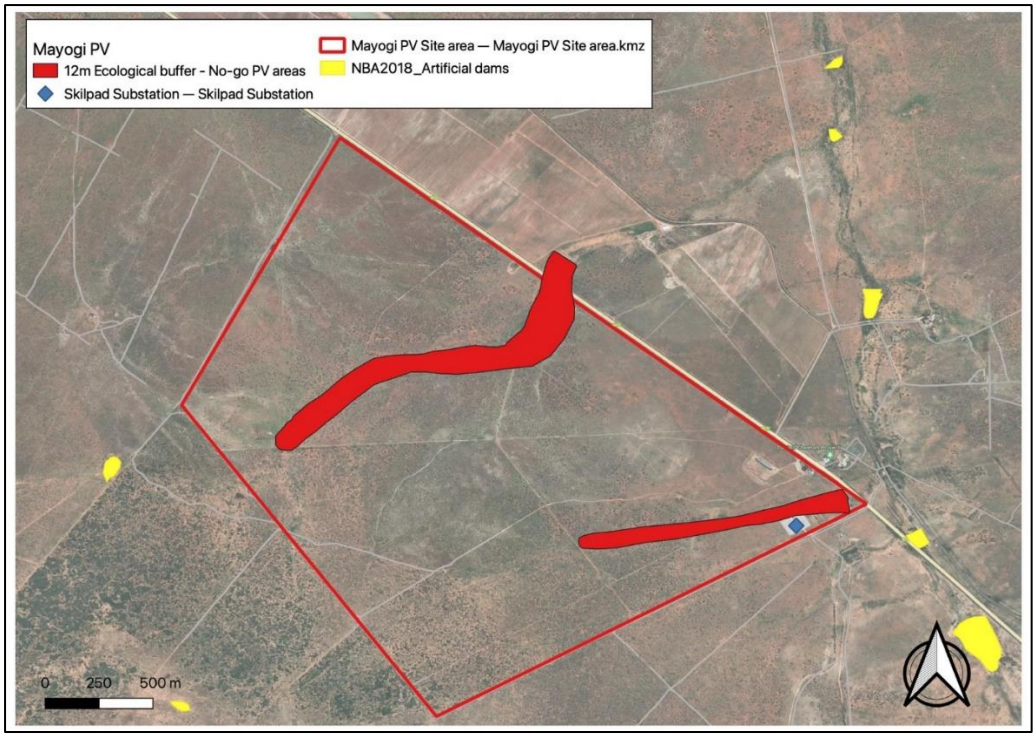

Figure 19: The delineated watercourses inclusive of the respective buffers together the applied sensitivity rating applied to PV Panel areas, buildings, substations and BESS i.e. these systems have a HIGH sensitivity to the placement of these structures within these aquatic features

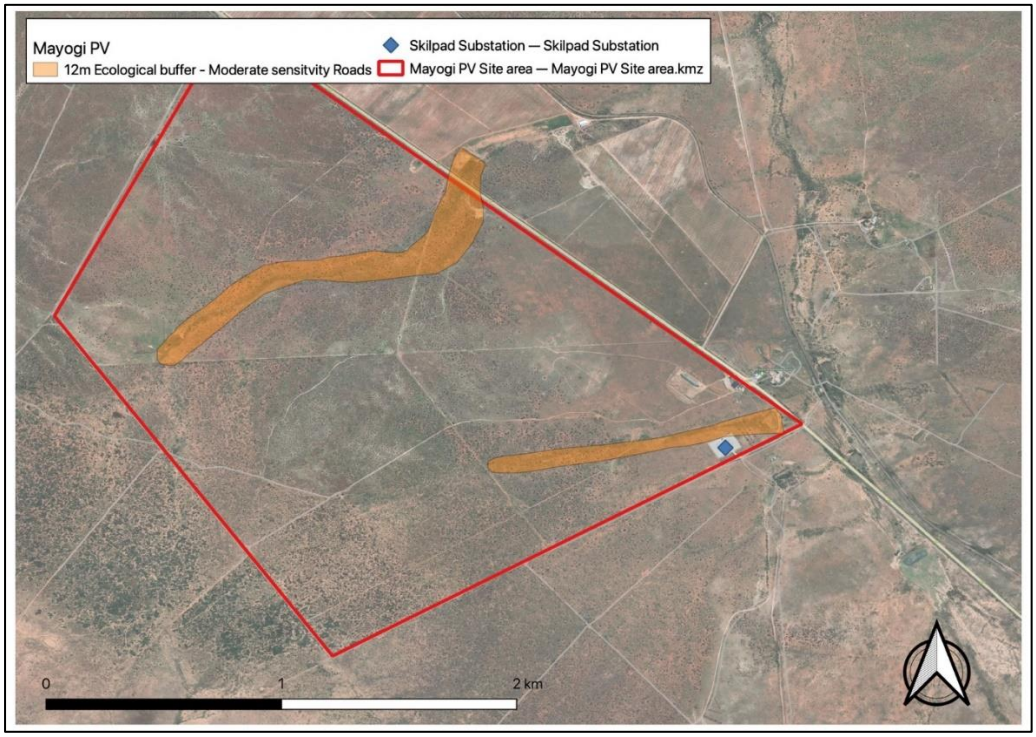

Figure 20: The delineated watercourses inclusive of the respective buffer together the applied sensitivity rating applied to roads and transmission lines, i.e. these systems have a moderate sensitivity to the placement of these structures within these aquatic features especially if impacted areas are used.

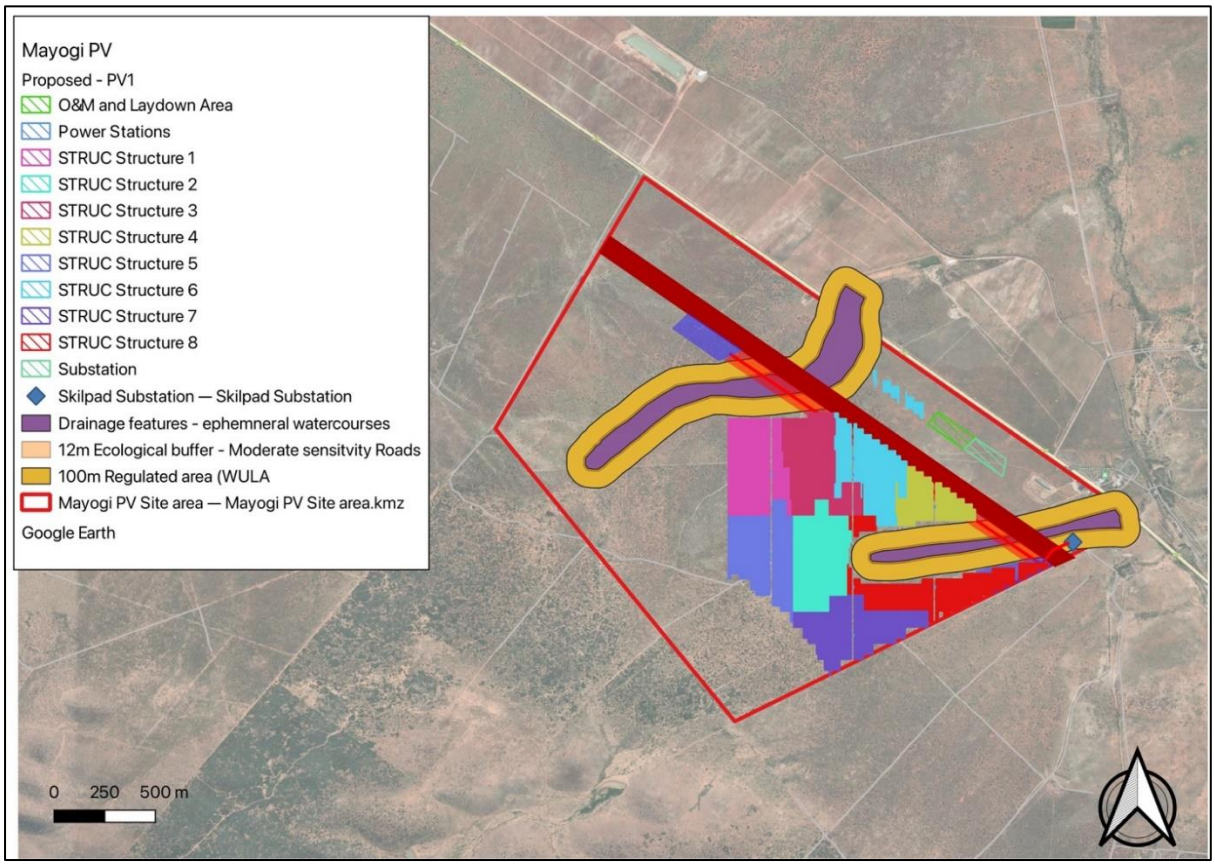

Figure 21: The current layout where with the exception of the grid connections that will span the observed systems, all of the proposed infrastructure has been located outside of the watercourse, the ecological buffers and regulated WUA areas

8.6.5 Preliminary Conclusions

The project overall has aligned the proposed footprint with the aquatic features, allowing for retention of much of the natural environment so that the systems should remain largely unaffected. Therefore, the PV site and grid options, have a low intensity impact on the aquatic resources. The grid option is also favorable, but this option will need to span areas of a watercourse, and the final towers positions must be based on the recommendations of the aquatic specialist during the walk down

The overall and cumulative impacts, as assessed, are linked to instances where complete avoidance was possible, or the nature of the activities involve a low potential risk to aquatic resources even at great distance. Overall, it is expected that the impact on the environment would be Low (-). Noteworthy areas, that have been avoided by the PV areas, and Grid Options, include the High Sensitivity areas as shown in this report.

Based on the findings of this study, the specialist finds no reason to withhold an authorisation of any of the proposed activities, assuming that key mitigations measures are implemented, coupled with a micrositing walkdown once all information is available.

8.7 Biodiversity Impact Assessment

A Biodiversity Impact Assessment was undertaken by EcoAgent (report dated May 2023).

8.7.1 Vegetation types

According to the Mucina & Rutherford (2018) revised map of Thicket vegetation, three vegetation types are present in the vicinity of the site, namely Sundays Valley Thicket (Vegetation Type AT51) on the hilly part south of the site, Sundays Arid Thicket (Vegetation Type AT49) on the northern plains part and a small patch of Albany Alluvial Vegetation (Vegetation type Aza6) in the north-eastern corner of the site (Mucina & Rutherford 2018) (**Figure 22** below).

The Mayogi PV site that is earmarked for this development is largely situated within the Sundays Arid Thicket (= Sundays Noorsveld) (Figure 22).

A very small patch in the **north-eastern corner** of the site mapped as Albany Alluvial Vegetation, which is more representative of a karroid vegetation and almost no elements typical of the original Albany Alluvial Vegetation are left. The vegetation is more typical of the Southern Karoo Alluvia (STEP)(Pierce 2003). The Skilpad substation is also situated within this alluvium vegetation.

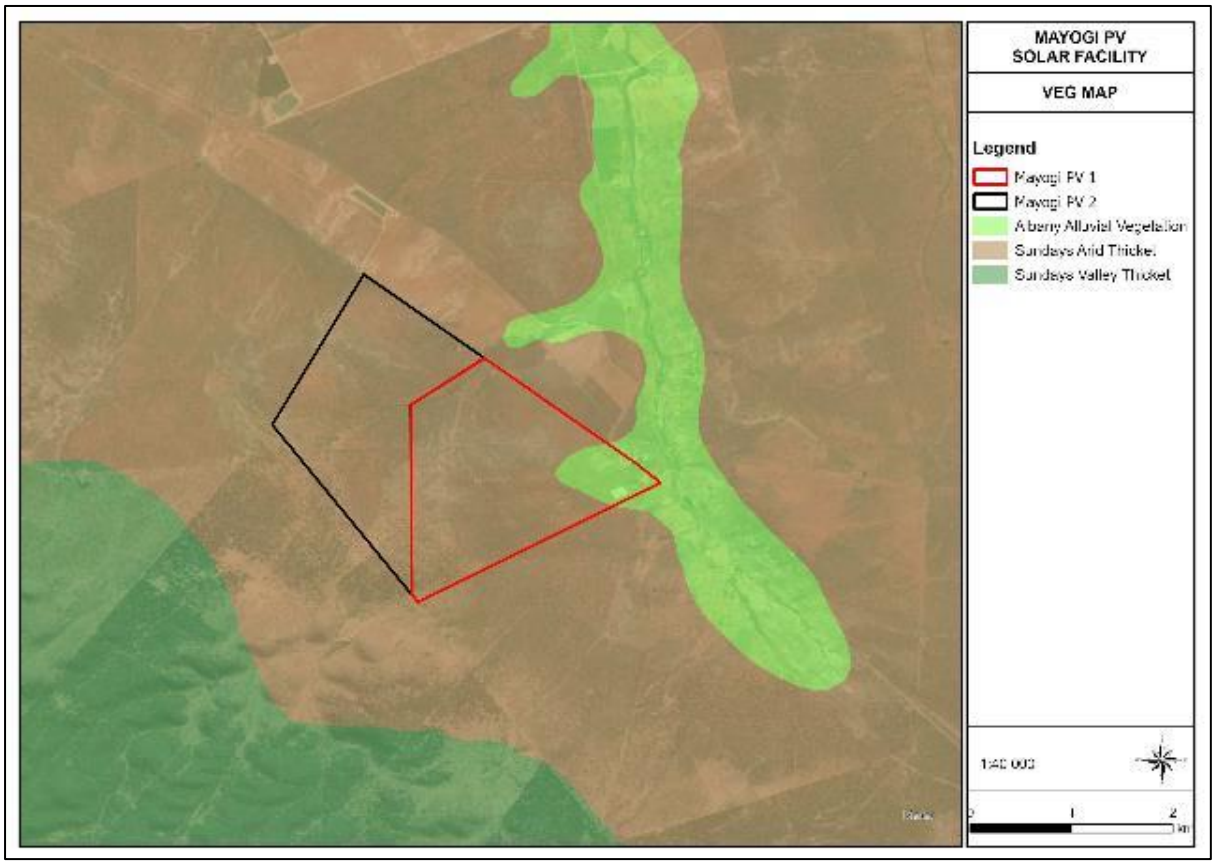

Figure 22 : The vegetation types within the site (Mucina & Rutherford 2018).

8.7.2 Threatened Ecosystem

According to Mucina & Rutherford (2006, 2018) the Albany Alluvial Vegetation is classified as **Endangered**. Only 6% is statutorily conserved in the Addo Elephant National Park and other provincial

conservation areas, and 2% in private conservation areas. About half has been transformed for agriculture, towns, roads and plantations (Mucina & Rutherford 2006). According to SANBI & DEAT (2009) and NEMBA, Government Notice 1002 (2011) and Government Notice 689 (2022) the Ecosystem status for this vegetation type is also classified as **Endangered.**

On the study site this vegetation is not typical Albany Alluvial Vegetation, but rather resembles Southern Karroo Alluvia (Pierce 2003). Alternatively it can be regarded as **transformed** by agriculture or heavy grazing, with little original indigenous vegetation remaining.

According to Mucina & Rutherford (2006, 2018) the Sundays Noorsveld and the Sundays Thicket vegetation types are classified as **Least Concern**. However, the Sundays Arid Thicket (= Sundays Noorsveld) is listed as **Vulnerable** in the 2022 NEMBA list of Threatened Ecosystems (Government Notice 689 Government Gazette 47526, 18 November 2022).

8.7.3 Critical Biodiversity Areas and Ecological Support Areas

No Irreplaceable CBAs occur in the site area. Most of the site is in Ecological Support Area 1 (**Figure 23** below).

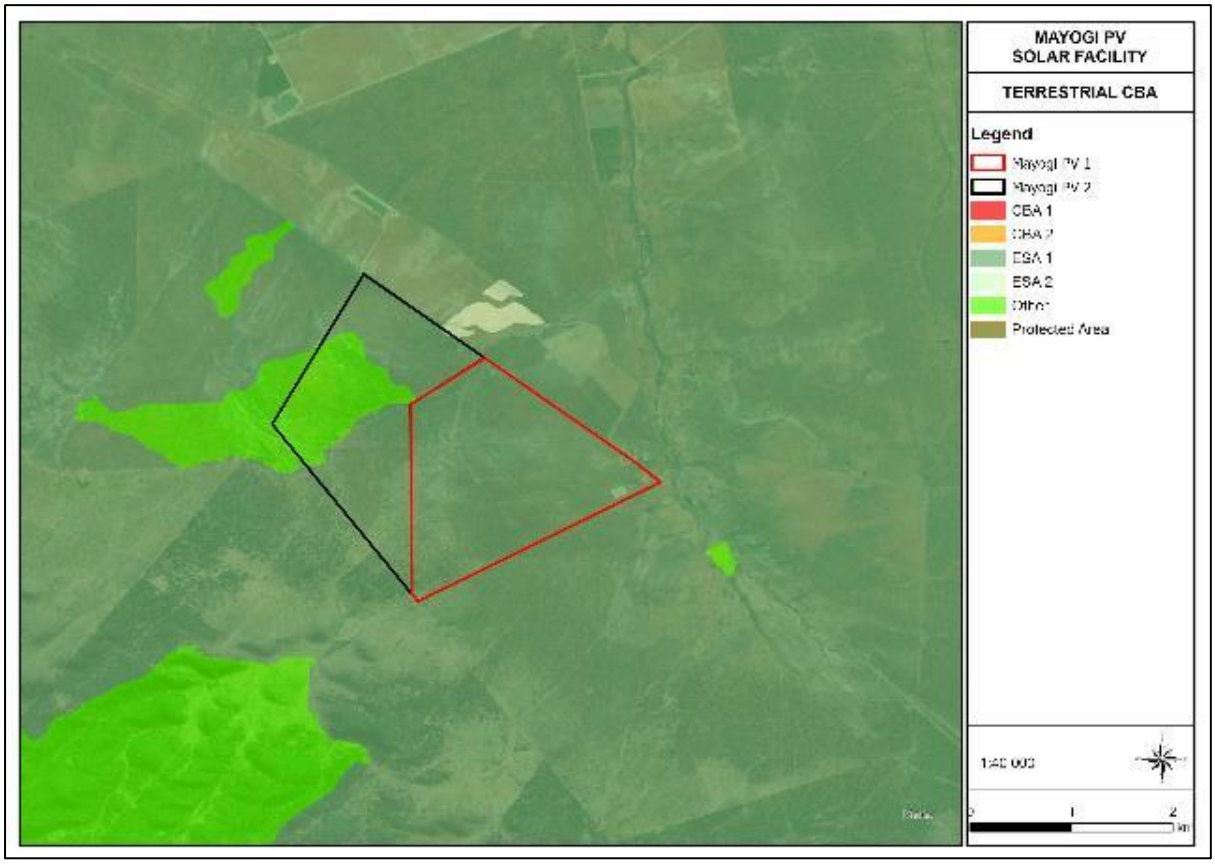

Figure 23: No "Irreplaceable" CBAs occurs in the site area. Most of the site is classified as "Ecological Support Area 1"

Protected and Conservation Areas/Protected Trees

The site is located approximately 20 km southwest of the southern boundary of the Addo Elephant National Park and about 20 km north of the Groendal Wilderness Area. There are also other private conservation areas and/or game farms in the general area.

No protected trees occur on the site.

Species of Conservation Concern (CCS), Red Listed plant species

Red Data listed plant species and Orange listed plant species (= plant species of conservation concern) are those plants that are important for South Africa's conservation decision making processes. These plants are nationally protected by the National Environmental Management: Biodiversity Act (Raimondo *et al*, 2009).

Threatened species (Red Data listed species) are those that are facing high risk of extinction, indicated by the categories Critically Endangered (CE), Endangered (EN) and Vulnerable (VU). Species of Conservation Concern include the Threatened Species.

Additionally, the Orange listed categories are Near Threatened (NT), Data Deficient (DD), (DDT = lack of taxonomic data), Critically Rare (CR), Rare (R) and Declining (D). This is in accordance with the Red List for South African Plants (Raimondo *et al*. 2009 upgraded on SANBI website).

Lists of Red Data plant species (Raimondo *et al* 2009) for the area in general were obtained from DEA Screening Tool, (2022), but the names may not be made public (**Table 27** below).

Table 27: Sensitive plant species for the area, Screening Tool Results

Sensitivity	Feature(s)
Medium	Sensitive species 1252 *Dioscorea sylvatica*
Medium	Sensitive species 1268 *Encephalartos horridus*
Medium	Sensitive species 779 *Aloe bowiea*
Medium	*Duvalia pillansii*
Medium	*Strelitzia juncea*
Medium	*Corpuscularia lehmannii*
Medium	Sensitive species 1101 *Haworthiopsis longiana*
Medium	*Asparagus spinescens*
Medium	Sensitive species 1248 *Bowiea volubilis subsp. volubilis*
Medium	*Cotyledon tomentosa* subsp. *tomentosa*
Medium	Sensitive species 19 *Haworthiopsis attenuata*

No NEMBA/TOPS plant species occur on the site.
No additional officially protected plant species were found on the site.

8.7.4 Results of the Vegetation and Flora Survey

Five plant communities were identified and mapped:

Table 28: List of mapping units with ecological sensitivity:

	Vegetation mapping unit	Sensitivity result
1	Arid Karoo Vegetation	Low
2	Dry Thicket with Euphorbia	Medium
3	Arid Thicket on limestone	Medium-Low
4	Disturbed Open Thicket	Medium-Low
5	Mesic Thicket with Spekboom	Medium-High
6	Valley with Drainage Line	High

A vegetation map showing the distribution of the mapping units is presented in **Figure 24** (below) while the ecological sensitivity is given in **Figure 25** (below). A description of the habitats is provided below:

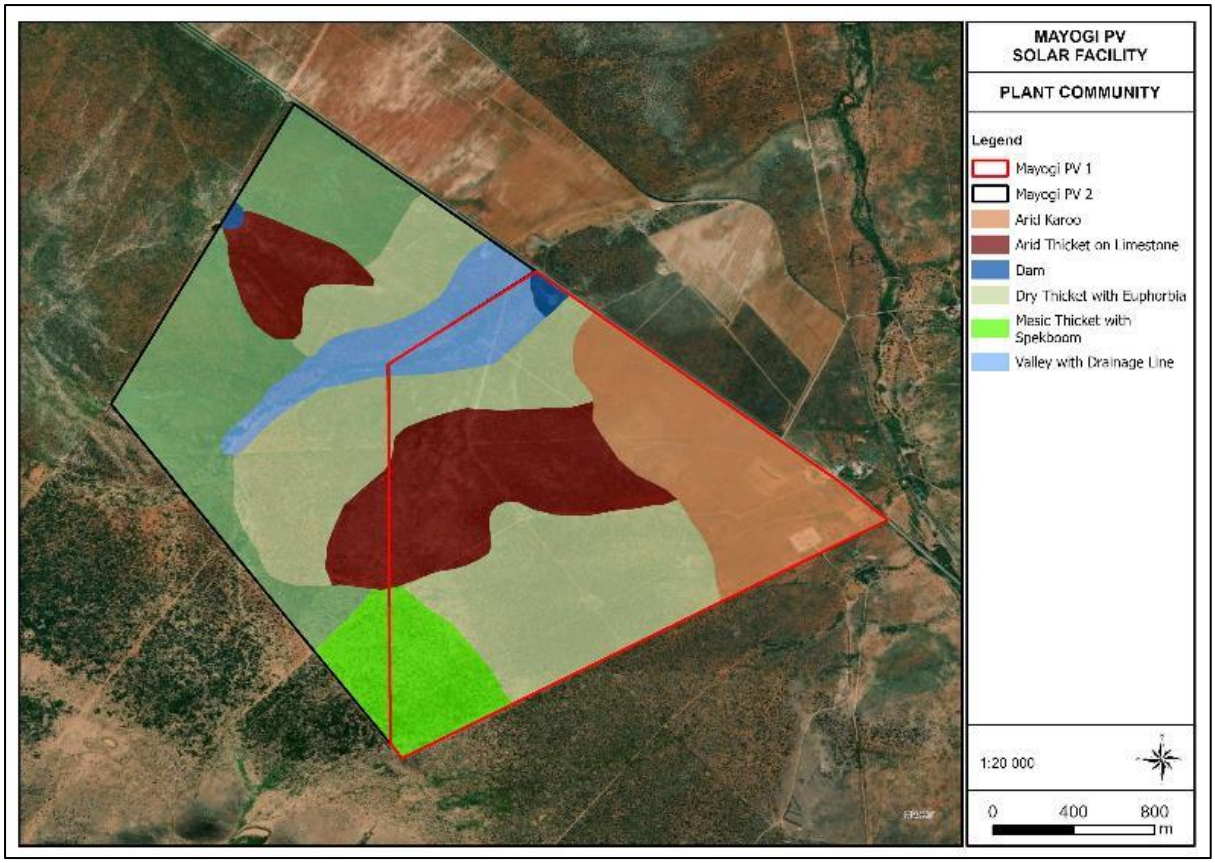

Figure 24: A vegetation map of the proposed Mayogi PV 1 and PV 2 Facility sites.

Arid Karoo Vegetation - This very arid and disturbed Karoo-veld is limited to the lower-lying plains in the northern part of the site and adjacent plains along the R75 Road. This plant community does not occur on the Mayogi PV 2 site. The existing Skilpad substation, Mayogi shop and auction venue are located within this plant community. This plant community is classified as the "Albany Alluvium Vegetation" vegetation type (Mucina & Rutherford 2006, 2018), which is regarded as **Endangered**. According to SANBI & DEAT (2009) and NEMBA Government Notice 1002, 2011 and Government Notice 689, 2022) the Ecosystem status for this vegetation type is also classified as **Endangered**.

Within the study site this vegetation is **highly degraded** and is more representative of a karroid vegetation type with almost no elements typical of the original Albany Alluvial Vegetation left. The vegetation is more typical of the Southern Karoo Alluvia (STEP, Pierce 2003).

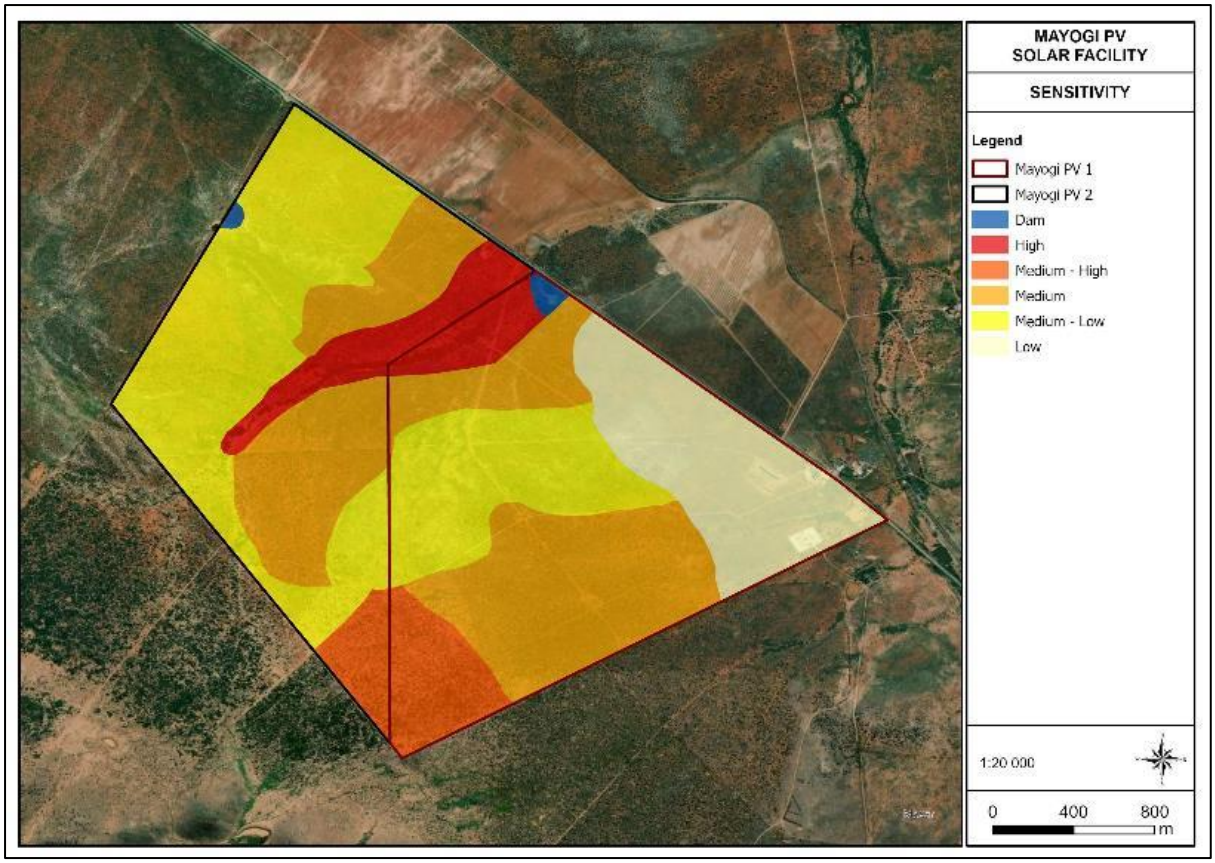

Figure 25: Ecological sensitivity of the of the proposed Mayogi PV 1 and PV 2 Facility sites

This vegetation on the study site is very dry and highly disturbed and degraded (**Figure 26**, below) and some of the dwarf shrubs are dead or dormant and could not be identified. The most abundant karroid dwarf shrub is *Pentzia incana* with *Lycium cinereum, Asparagus striatus* and *Salsola* sp also present. Two mesembs species (vygies) *Mesembryanthemum crystallinum* and *Mesembryanthemum aitonis* occurred prominently in this karoo veld, indicating the disturbed and trampled condition. Grass species that occur include *Aristida adscensionis, Aristida congesta, Chloris virgata, Eragrostis obtusa, Enneapogon desvauxii* and *Stipagrostis* sp. Much dry, dead remains of the previous season's grass were present during the time of the survey. Currently the ecological biodiversity and sensitivity, based on vegetation and flora, is **Low**, and the resulting nature conservation value is also **Low.**

Figure 26: The Arid Karroo Vegetation. Note the Skilpad substation on the left photograph

Although classified as Endangered, there is no sign of the original Albany Alluvial Vegetation, which has probably been transformed into a dry disturbed karroid vegetation. From a vegetation and flora point of view, there is no objection against the proposed development in this Arid Karoo Vegetation, which is already in a degraded condition.

Dry Thicket with Euphorbia - This plant community is typical Sundays Arid Thicket (vegetation type AT49, Mucina & Rutherford 2018), previously classified as Sundays Noorsveld (vegetation type AT5, Mucina & Rutherford 2006), or as Sundays Noorsveld, STEP, Pierce 2003**).** According to Mucina & Rutherford (2006, 2018) the Sundays Noorsveld and the Sundays Thicket vegetation types are classified as **Least Concern.**

The Sundays Arid Thicket (= Sundays Noorsveld) is listed as **Vulnerable** in the 2022 NEMBA list of Threatened Ecosystems (Government Notice 689 Government Gazette 47526, 18 November 2022). This plant community occurs on both PV 1 and PV 2 sites and occupies a large portion of the south-eastern plains and a small patch in the north (**Figure 24** above).

The high cover of *Euphorbia radyeri* (soetnoors) (**Figure 27** below) and presence of *Boscia oleoides, Pappea capensis* and *Rhigozum obovatum* is typical of this vegetation unit*. Portulacaria afra* (spekboom) is absent or sparsely present in good condition veld. The grass layer is scanty, much dry, dead remains of the previous season's grass were present during the time of the survey. Grasses such as *Cenchrus ciliata, Fingerhuthia africana* and *Panicum maximum* used to be abundant, but are now rather sparse.

The most abundant karroid dwarf shrub is *Pentzia incana* with *Lycium cinereum,* while the two mesembs species (vygies) *Mesembryanthemum crystallinum* and *Mesembryanthemum aitonis* occurred prominently, indicating the disturbed and trampled condition. Grass species that occur include *Aristida adscensionis, Aristida congesta, Eragrostis obtusa, Tragus berteronianus* and *Eragrostis lehmanniana*. Much dry, dead remains of the previous season's grass were present during the time of the survey. Currently the ecological biodiversity and sensitivity, based, based on vegetation and flora, is **Medium**, and the resulting nature conservation value is also **Medium.**

Figure 27: The Dry Thicket with Euphorbia vegetation

According to Mucina & Rutherford (2006, 2018) the Sundays Noorsveld and the Sundays Thicket vegetation types are classified as **Least Concern.** However, the Sundays Arid Thicket (= Sundays

Noorsveld) is listed as **Vulnerable** in the 2022 NEMBA list of Threatened Ecosystems (Government Notice 689 Government Gazette 47526, 18 November 2022).

From a vegetation and flora sensitivity point of view, the conservation value and ecological sensitivity are Medium. On the site this vegetation has been utilized, trampled and disturbed, limiting its conservation value. Development within this plant community can be supported though a part of this vegetation should be conserved.

Arid Thicket on Limestone - This plant community mainly occurs in both the PV 1 and PV 2 sites. Limestone stones occur scattered to dense on the soil surface. The vegetation is extremely dry, with many dry, or dead trees and shrubs. The herbaceous layer is also very scanty, with much bare soil and with the weedy *Mesembryanthemum aitonis* being the dominant plant species over much of the area. This is regarded as a very dry variant of Noorsveld and is classified as Sundays Arid Thicket (vegetation type AT49, Mucina & Rutherford 2018**).** The plant species richness is very low in this plant community.

Few scattered individuals of *Euphorbia radyeri* (soetnoors) (**Figure 28** below) and presence of *Euclea undulata* is typical of this vegetation unit.

Figure 28: The Arid Thicket on limestone with many dead trees and shrubs and poor herbaceous cover.

From a vegetation and flora sensitivity point of view, development on this area can be supported.

Disturbed Open Thicket - This plant community occurs in the western and southern parts of the PV2 site and does not occur on the PV 1 site. The woody vegetation is open, and it seems that many trees and shrubs have been removed, probably to improve the herbaceous layer for grazing. The herbaceous layer is, however, also scanty, with much bare soil and with the weedy *Mesembryanthemum aitonis* being the dominant plant species **(Figure 29 below).** This vegetation is disturbed Sundays Arid Thicket (vegetation type AT49, Mucina & Rutherford 2018).

No individuals of *Euphorbia radyeri* (soetnoors) occur here)and presence of scattered individuals of *Euclea undulata* and *Boscia oleoides* is typical of this vegetation unit

Figure 29: The Disturbed Open Thicket with scattered trees and shrubs and poor herbaceous cover. With *Mesembryanthemum aitonis* and *M. crystallinum* dominant.

From a vegetation and flora sensitivity point of view, development on this area can be supported.

Mesic Thicket with Spekboom - This plant community is a variation of Sundays Arid Thicket (vegetation type AT49, Mucina & Rutherford 2018), where *Portulacaria afra* (spekboom) is present, often dominant. This plant community occupies the south-eastern corner of the study site, still on the lower-lying plain but transitional to the hills on the southern part of the farm. The vegetation is dense thicket 2-3 m tall, with only few scattered taller trees (**Figure 30** below).

The relatively high cover of *Portulacaria afra* and the absence of *Euphorbia radyeri* (soetnoors) is typical of this plant community (Figure 5.9 below). Taller trees are only sparsely present. The grass layer is scanty, due to the high cover of the shrubs, particularly *Portulacaria afra.* Different Crassula species often occur here, e.g. *Crassula ovata, Crassula cultrata, Cotyledon orbiculata.* Shrubby species such as *Carissa bispinosa, Azima tetracantha, Gymnosporia polyacantha* from dense bush. More species occur in this dense thicket, all were not noted during the survey, due to accessibility.

Figure 30: The dense Mesic Thicket with spekboom vegetation.

From a vegetation and flora sensitivity point of view, development within medium-high sensitivity is normally not suggested. This area is therefore regarded as No-Go area.

Valley with Drainage Line - The valley is flat and shallow (**Figure 31** below) Within the PV study site, this vegetation is restricted to the north-eastern corner (**Figure 24** above). The vegetation is basically similar to that of the adjacent plant community, being Dry Thicket with *Euphorbia.* (**Figure 24** above). There is no obvious, distinct riparian zone, though locally the vegetation seems to be somewhat denser. During the field study there was no water in the drainage line.

The presence of*, Boscia oleoides, Pappea capensis, Euclea undulata, Schotia afra, Euphorbia radyeri* and several spiny species such as *Carissa bispinosa, Azima tetracantha*, *Searsia longispina* and *Gymnosporia polyacantha,* and the absence of *Portulacaria afra* are typical features. At the lower reaches the presence of *Vachellia karroo* is conspicuous. The grass layer is scanty, much dry, dead remains of the previous season's grass were present during the time of the survey.

The most abundant karroid dwarf shrub is *Pentzia incana,* while the two mesembs species (vygies) *Mesembryanthemum crystallinum* and *Mesembryanthemum aitonis* occurred prominently. Grass species that occur include *Aristida adscensionis, Aristida congesta, Eragrostis obtusa,* and *Eragrostis lehmanniana*.

Figure 31: The vegetation of the upper and middle reaches of the Valley with Drainage Line.

The Drainage Line has High conservation value and High ecological sensitivity (**Figure 25** above). Occasional occurrence of species of conservation concern is possible but the development will not be a threat for such a species, as **the Drainage Line must be excluded from the development area**. From an ecological sensitivity point of view, development within this plant community **cannot be supported** and is regarded as **No-Go** area**.**

Valley with Drainage Line - The valley is flat and shallow (**Figure 32** and **Figure 33** below). This vegetation occurs on both the PV 1 and PV 2 sites (**Figure 24** above). The vegetation is basically similar to that of the adjacent plant community, being Dry Thicket with Euphorbia. (**Figure 24** above). There is no obvious, distinct riparian zone, though locally the vegetation seems to be somewhat denser. During the field study there was no water in the drainage line.

The presence of, Boscia oleoides, Pappea capensis, *Euclea undulata, Schotia afra, Euphorbia radyeri and* several spiny species such as *Carissa bispinosa, Azima tetracantha, Searsia longispina* and

Gymnosporia polyacantha, and the absence of *Portulacaria afra* are typical features. At the lower reaches the presence of *Vachellia karroo* is conspicuous. The grass layer is scanty, much dry, dead remains of the previous season's grass were present during the time of the survey.

The most abundant karroid dwarf shrub is *Pentzia incana*, while the two mesembs species (vygies) *Mesembryanthemum crystallinum* and *Mesembryanthemum aitonis* occurred prominently. Grass species that occur include *Aristida adscensionis, Aristida congesta, Eragrostis obtusa*, and *Eragrostis lehmanniana.*

Figure 32: The vegetation of the upper and middle reaches of the Valley with Drainage Line.

Figure 33: The vegetation of the lower reaches of the Valley with Drainage Line. Note the culvert under the tarred road.

The Drainage Line has High conservation value and High ecological sensitivity **(Figure 25 above).** Occasional occurrence of species of conservation concern is possible but the development will not be a threat for such a species, as **the Drainage Line must be excluded from the development area.** From an ecological sensitivity point of view, development within this plant community **cannot be supported** and is regarded as **No-Go** area.

8.7.5 Faunal Communities

Herpetofauna: Herpetofauna Habitat Assessment

The local occurrences of reptiles and amphibians are closely dependent on broadly defined habitat types, in particular terrestrial, arboreal (tree-living), rupicolous (rock-dwelling) and wetland-associated vegetation cover. It is thus possible to deduce the presence or absence of reptile and amphibian species by evaluating the habitat types within the context of global distribution ranges. From a herpetological habitat perspective, it was established that two of the four major habitat types are well represented on the study site, namely terrestrial (the herbaceous layer) and arboreal (trees-living as habitat). Most of the study site consists of terrestrial habitat, disturbed by anthropogenic activities, resulting in dominance of two seasonal Mesembryanthemum species. Some areas of the study site have been altered by agricultural activities, overgrazing by game, invasive plants, periodical veldfires, wire fences, gravel roads and powerlines. The study site is thus ecologically disturbed in most parts. No moribund termitaria were recorded on the study site. These structures are generally good indicators of the occurrence of small herpetofauna. Little rock-embedded limestone veld (**Figure 35** below) occurs on the relevant northern part of the farm. Rock habitats are present on the southern part (**Figure 34** below), where no development is proposed. Except for small, seasonal, man-made dams there is no wetland habitat within the study site.

Accordingly, it is estimated that the herpetofauna population density for the study site is low. The basal cover was poor in many places and would not provide adequate cover for small terrestrial herpetofauna. The herbaceous layer of the study site has been transformed in some areas and due to arid conditions, prey is probably sparsely distributed, so foraging grounds would need to be extensive to support some herpetofauna species populations.

Due to the presence of natural rupicolous habitat, some species like southern karusa lizard, western rock skink and rock agama were added to the species list.

Figure 34: A ridge just south of the site boundary.

Figure 35: Rock-embedded limestone veld.

There is one non-perennial drainage line on the site. Small temporary dams occur in the drainage line. At the time of the site visit the drainage line and the dams were basically dry.

Expected and Observed Herpetofauna Species Richness

Sixty-six reptile species and 17 amphibian species may possibly occur on the study site.

The American red-eared terrapin (*Trachemys scripta elegans*) and the Brahminy blind snake (*Indotyphlops braminus*) are the only two feral reptile or amphibian species known to occur or have occurred in South Africa (De Moor and Bruton, 1988; Picker and Griffiths, 2011), but with only a few populations, they are not expected to occur on this site.

The species assemblage is typical of what can be expected of habitat that is severely disturbed or transformed, but with sufficient habitat to sustain populations. Most of the reptile species of the resident diversity are fairly common and widespread (viz. common house snake, common sand lizard, southern karusa lizard, western rock skink, variegated skink, southern rock agama. Widespread Amphibia species include raucous toad and Boettger's Caco.

The expected herpetofauna species richness is low as only two habitat types are prominent on the site.

Threatened and Red listed Reptile and Amphibian Species

The study site falls outside the natural range of the following terrestrial Eastern Cape Province Red Data herpetofauna species: Karoo dwarf tortoise, the Nile crocodile, salt marsh gecko, Cottrell's mountain lizard, coppery grass lizard, Fitzsimons' long-tailed seps, variable legless skink, Pondo dwarf chameleon, Kentani dwarf chameleon, Kwazulu dwarf chameleon, Elandsberg dwarf chameleon, forest thread snake, Albany adder, plain mountain adder, Kwazulu-Natal black snake, eastern green mamba, mistbelt chirping frog, Hogsback chirping frog, Hewitt's ghost frog, Amatola toad, kloof frog, Bilbo's rain frog and Knysna leaf-folding frog.

The study site lies near the centre of the distribution range of the Albany Sandveld Lizard (*Nucras taeniolata*) and there is a small possibility that this species, with the Red Data status of **Near Threatened**, may occur on the site.

General site assessment

The terrestrial habitat type on site has been altered by activities, clearing of vegetation, overgrazing by game, invasive plants, periodical veldfires, wire fences, gravel roads and powerlines.

Since the wetland system (one non-perennial drainage line) enjoys statutory protection, it is flagged as having a 'High Conservation Sensitivity'.

Screening Tool Animal species sensitivity is given as **High**. However, the author's impression is that the mammal species sensitivity is currently rather **Low** on the specific site, particularly on the northern part of the study site. Mayogi is (was) a game farm and several animal species (game species) occurred there from time to time. The Daniell Cheetah breeding project is located across the road. The many nature reserves/game farms in the area have inflated the estimate for animal species sensitivity:

Although Avian sensitivity is mentioned as **Low**, three bird species are mentioned under "**Animal** species sensitivity" as having medium sensitivity. A breeding pair of blue cranes were observed on the southern part of the area, which is excluded from this study.

From the vertebrate fauna perspective, sensitivity on site for the Terrestrial Biodiversity cannot be **Very High (disputed)** and is therefore regarded as being **Low.**

8.7.6 Biodiversity Sensitivities

The relevant literature and databases were used to obtain data regarding threatened, protected, alien invasive and medicinal plant species, also regional vegetation, threatened status of vegetation types, protected and conservation areas, critical biodiversity areas, wetlands and water courses.

Standard methods for vegetation surveys were applied. Plant communities were mapped and described including total floristic composition per pant community. All the above data were applied in analyses to determine conservation status and ecological sensitivity per plant community.

According to SANBI & DEAT (2009) and NEMBA, Government Notice 1002 (2011) and Government Notice 689 (2022) the Ecosystem Status for **Albany Alluvial** vegetation type is as Endangered. On the specific site the vegetation is mostly **transformed**, with very little original natural vegetation remaining. According to Mucina & Rutherford (2006, 2018) the Sundays Noorsveld and the Sundays Thicket vegetation types are classified as **Least Concern**. **The Sundays Arid Thicket** (= Sundays Noorsveld) is listed as Vulnerable in the 2022 NEMBA list of Threatened Ecosystems.

No Irreplaceable Critical Biodiversity Areas occur in the site area. Most of the site is regarded as **Ecological Support Area 1.**

Eleven plant species of conservation concern could occur in the general area of the site, but none of these were recorded during the field survey.

The vegetation study of the proposed site resulted in the identification of five different plant communities (= ecosystems on the plant community level of organisation) that could be mapped. The terrestrial plant communities identified mostly have low to medium plant species richness, no threatened, red data or protected plant species were recorded on the site.

The results of the vegetation and flora study indicate that the Valley with Drainage line has High Ecological sensitivity, therefore No-Go area. The Mesic Thicket with spekboom has Medium-High ecological sensitivity and conservation value and this has also been marked as No-Go area. The rest of the terrestrial habitat areas have low, medium-low or medium ecological sensitivity.

Most of the terrestrial vegetation areas have low to medium plant species richness, no threatened or nationally protected plant species and low to medium conservation value.

Should the Valley with the Drainage Line be conserved and protected, and the Mesic Thicket with spekboom be at least partly conserved, it is suggested that the construction of the proposed PV facility can be supported.

8.7.7 Preliminary Conclusions

Should the Valley with the Drainage Line be conserved and protected, and the Mesic Thicket with spekboom be at least partly conserved, it is suggested that the construction of the proposed PV facility can be supported. It is suggested that the planned development be supported.

8.8 Agricultural

An agricultural compliance statement and site sensitivity verification was undertaken by Johann Lanz (report dated 15 May 2023).

8.8.1 Baseline Assessment

Agricultural land use on the site is grazing only and in the surrounding area includes irrigated fruit farming. The long-term grazing capacity of the stie is classified as 21 hectares per large stock unit, which can be described as moderate-high within the range of grazing capacities across South Africa.

The site falls outside of an area that is classified as a Protected Agricultural Area. A Protected Agricultural Area is a demarcated area in which the climate, terrain, and soil are generally conducive for agricultural production and which, historically, has made important contributions to the production of the various crops that are grown across South Africa. Within Protected Agricultural Areas, the protection, particularly of arable land, is considered a priority for the protection of food security in South Africa, but the protection of land outside of these areas is not considered a food security priority.

The cropping potential of the site is limited by the combination of climate and soil limitations. Based on the lack of current, dryland crop production in the surrounding area, such production is very likely to be not economically viable. The agricultural potential of the site limits its agricultural use to grazing only.

8.8.2 Preliminary Conclusion

The conclusion of this assessment is that the agricultural impact of the proposed development is acceptable because:

- it will occupy land that is of limited land capability, which is insufficient for crop production. There is not a scarcity of such agricultural land in South Africa and its conservation for agricultural production is not therefore a priority.
- The amount of agricultural land use by the development is within the allowable development limits prescribed by the agricultural protocol. These limits reflect the national need to conserve valuable agricultural land and therefore to steer, particularly renewable energy developments, onto land with low agricultural production potential.
- The PV panels will not necessarily totally exclude agricultural production. The area may still be used to graze sheep that will, in addition, be protected against stock theft within the security fence of the facility.
- All renewable energy development in South Africa decreases the need for coal power and thereby contributes to reducing the large agricultural impact that open cast coal mining has on highly productive agricultural land throughout the coal mining areas of the country.

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

8.9 Avifauna

An Biodiversity Impact Assessment (including an Avifaunal Statement) was undertaken by EcoAgent (report dated May 2023).

8.9.1 Bird Habitat Assessment

The habitats occupied by flighted birds differ from those of most terrestrial vertebrates in being explicitly three-dimensional, especially for aerial-feeding species and in the airspace above landscapes with low relief and short vegetation, such as occur on the site. In the two primarily terrestrial dimensions, most birds are also more dependent on vegetation structure, and substrate texture and colour, than they are on vegetation composition, with the exception of a minority of species with particular food requirements of foliage, flowers, fruit or seeds. However, although the vegetation biomes and units most recently described for South Africa are defined primarily on vegetation composition, they do offer good analyses of the abiotic factors that also underlie these divisions, such as topography, geology, soil types and climate, and on general structural features of vegetation types and landscapes.

The aerial mobility of birds also demands paying attention to the principal habitats surrounding the study site and their conservation status, not just those along the immediate borders but also more distant habitats that might provide sources for species visiting the site and sinks for those breeding on site.

Birds are also a relatively visible and audible group of homeothermic vertebrates, active throughout the year, and with habitat preferences that can be evaluated from experience, by reference to the comprehensive literature available and by the subset of species that can be detected by a field survey during a particular season and time of day. Such information and experience also inform and enable searches for particular species of conservation concern.

The principal habitat types detected on the site that are most relevant to bird ecology and community structure are:

1. Different thickets (arid, disturbed, dry and mesic)
2. Limited wetlands.

The habitats directly adjacent to the study site vary and consist mostly of degraded habitats and a provincial road.

8.9.2 Expected and Observed Bird Species Richness

Most of the expected species are typical generalists that might occupy the fabricated habitats available, especially the various transformed lands and other man-induced alterations such as buildings, while others are aerial feeders that mainly use the airspace above the habitats. Species typically inhabiting aquatic habitats would be likely to occur in significant numbers due to the limited presence of this habitat.

The disturbed and arid thickets are in poor to fair condition and not sufficient to support some species dependent on this habitat.

The disturbed nature of the habitat and the location which includes busy a tar road, collectively mean that avian diversity is lower than normal.

The study site lies mostly in two Pentads (3325-2515 & 3330-2515). A total of 116 & 111 species are expected or were recorded on these Pentads respectively. These Pentads, together with Roberts Birds VII of Southern Africa, were used to compile a list of possible birds for the site

8.9.3 Threatened and Red Listed Bird Species

A total of 18 threatened or near-threatened species (Taylor, Peacock & Wanless, 2015) were previously recorded in the general area where the site is located.

However, of these 18 species, only six were recorded in the Pentads of the study site (SAPAB 2), namely the Blue crane, Kori bustard, Ludwig's bustard, Black stork, Southern black korhaan and Martial eagle. Two blue cranes were observed during the site visit in the buffer area south of the site.

There are not many full protocols for these Pentads. The possibility exists that species such as the Secretary bird may from time to time occur on the site. However, for most Red Data species the nature of the site is such that their occurrence is unlikely. Due to the limited extent and quality of the habitats, half the species are expected to be at best erratic visitors and the other half are only expected as infrequent vagrants, their inclusion being primarily due to the Precautionary Principle. As can be seen from the estimates of the habitats as support for the basic requirements of the species, they are considered at best as only mediocre for all the threatened species. The odd Verreaux's eagle may fly over the site, but the area is unlikely to be an important hunting or scavenging habitat.

Martial Eagle *(Polemaetus bellicosus)*

According to the Screening Tool Report on the Proposed development for the Mayogi PV Facility, Eastern Cape Province, scheduled for a solar farm, the Martial Eagle *(Polemaetus bellicosus)* has a high sensitivity.

The occurrence of the martial eagle on the site is very unlikely. The martial eagle requires huge areas of suitable habitat and avoids disturbed landscapes. The martial eagle is recorded in the Pentads of the site (SABAP 2).

The odd martial eagle may fly over the site, but the area is unlikely to be an important hunting or scavenging habitat. The martial eagle should not occur on the site as a breeding species.

Secretarybird *(Sagittarius serpentarius)*

According to the Screening Tool Report on the Proposed development for the Mayogi PV Facility, Eastern Cape Province, scheduled for a solar farm, the Secretarybird *(Sagittarius serpentarius*) has a high sensitivity.

The occurrence of the Secretarybird on the site is possible, but unlikely. The site is too small and disturbed to host this species. The Secretarybird is not recorded in the Pentads of the site (SABAP 2).

The odd Secretarybird may fly over the site, but the area is unlikely to be an important hunting or scavenging habitat. The Secretarybird should not occur on the site as a breeding species.

Southern Black Korhaan *(Afrotis afra)*

According to the Screening Tool Report on the Proposed development for the Mayogi PV Facility, Eastern Cape Province, scheduled for a solar farm, the southern black korhaan (Afrotis afra) has a high and medium sensitivity.

The occurrence of the southern black korhaan on the site is possible, but unlikely. The site is too small and disturbed to host this species. The southern black korhaan is recorded in the Pentads of the site (SABAP 2).

The site is too disturbed, and the area is unlikely to be an important habitat for this species. The southern black korhaan should not occur on the site as a breeding species.

8.9.4 **Preliminary Conclusion**

It is suggested that the planned development be supported.

9. DESCRIPTION OF THE SOCIO- ECONOMIC ENVIRONMENT

9.1 Socio economic characteristics

A Socio-economic Impact Assessment was undertaken by Urban-Econ (report dated May 2023).

The study area of the proposed photovoltaic (PV) solar energy facility is situated on Farm No. 692 which lies adjacent to the R75 and is approximately 13km south-east from Kirkwood in the Eastern Cape. The total area of the farm consists of 1200 ha and lies 33° 29' 11.45 "S latitude and 25° 17' 53.78 "E longitude between Kariega (Uitenhage) and Graaff-Reinet. As a result, the study area falls between two municipalities namely, the Nelson Mandela Bay Metropolitan Municipality and the Dr. Beyers Naude Local Municipality of which the latter falls under the greater Sarah Baartman District municipality. The study area itself falls within the Sundays River Valley Local Municipality. The area that the two separate PV facilities will occupy is expected to amount to 250 ha of the existing farm's total area and is intended to connect directly to the Skilpad Substation, which is also located on the property of the Mayogi farm.

9.1.1 Sarah Baartman District Municipality

The Sarah Baartman District Municipality (previously Cacadu District Municipality) is a Category C municipality (Area: 58 243km²) situated in the Eastern Cape Province. It stretches from Graaff-Reinet in the north to the Indian Ocean in the south and between the Great Fish River in the east and Bloukrans River in the west. Sarah Baartman is the biggest district in the province, making up approximately a third of its geographical area. This district is made up of seven local municipalities and these include:

- Dr Beyers Naude Local Municipality;
- Blue Crane Route Local Municipality;
- Makana Local Municipality; and
- Ndlambe Local Municipality.
- Sundays River Valley Local Municipality
- Kouga Local Municipality
- Kou-Kamma Local Municipality

9.1.2 Sundays River Valley Local Municipality

The SEF facility will be located in the Sundays River Valley local Municipality. The proposed development is to be located approximately 10km north-west of Helpmekaar within the Sunday River Valley Local Municipality in the Eastern Cape Province and can be accessed via the R75 Highway.

<u>Population</u>
In 2021, the Sundays River Valley Local Municipality had a total population of 58,708 people with a historic annual population growth rate of 1.5% over a ten-year period from 2011-2021. The disposable average monthly household income for the local municipality in 2021 was calculated at R8,421.

Education

In terms of the local region's education profile, in 2021, 15% of the region's population had no schooling. Additionally, only 16.1% obtained matric. Although there has been improvement in the level of no schooling and matric attainment, the overall level of education attainment in the region still remains low.

Employment

The Sundays River Valley Local Municipality employment profile indicates that in 2021 the region had an unemployment rate of 20.8% and a total of 15,035 people formally and informally employed. In comparison to 2011, the area had fewer people employed with a slightly lower unemployment rate of 19.1%. The increase in the recent unemployment rate of the local municipality may be due to the recent COVID-19 pandemic which resulted in many people losing employment due to the unexpected shutdown of businesses because of lockdown regulations. Other factors may include the migration of youth to larger urban centres in search of formal employment as well as formal tertiary education.

Economic Overview

In terms of total GVA (Gross Value Added) the local economy's output reached R2390.2 million (constant prices) in 2021. The agriculture sector contributed 19.1% to the total GVA in 2021 compared to the 18.1% contribution made in 2011. The Sundays River Valley Local Municipality is popularly known for its agriculture and ecotourism sectors. Citrus production is one of the largest sub-industries of the agricultural sector and takes place mainly in and around the Kirkwood and Sunday's River Valley areas. The Addo Elephant National Park located in Addo is another key contributor to the local economy, both directly and indirectly. The agricultural sector is the main contributing sector to the local economy of the region with the development and growth of this sector strongly being supported by an adequate infrastructural base consisting of suitable irrigation systems, road connections and access to the main regional airport and export node also within close proximity to the area. The manufacturing and trade sectors are also key value adding sectors in the region having contributed 18.1% and 18.7% respectively in 2021.

9.1.3 Preliminary Conclusions

The socio-economic scoping report first provided a brief overview of the study area for the proposed Mayogi PV solar energy facility comprising of Mayogi PV 1 and Mayogi PV 2.

The study area is isolated from households and structures and is surrounded by neighbouring game and citrus farms. Several small to medium accommodation establishments are found within close proximity to the study area that are mainly used for trophy hunting that takes place and leisure purposes.

The scoping report reviewed the district and local policy and planning documentation that relates to renewable energy developments in the area in order to assess the alignment of the proposed project to the development and objectives of the respective municipalities. National and provincial policy and planning documents that is believed to align with the proposed Mayogi PV solar energy facility, has been listed in this scoping report and will be discussed in further detail in the full SEIA report.

A brief overview of the population structure, employment profile, education attainment levels and the economic structure of the primary study area was also provided to highlight and discuss key socio-economic components in order to better understand the socio-economic climate of the area. The addition of the Mayogi PV solar energy facility may be considered beneficial to the area in terms of skills development and job creation during the construction of the facility in particular. The addition of

electricity generation may also be considered valuable to the area that has been found to be reliant on value adding sectors such as agriculture, manufacturing, trade.

The results of this socio-economic scoping assessment suggests that there are no foreseen complications from a socio-economic perspective indicating that the study area is unsuitable for the development of the proposed Mayogi PV solar energy facility. The scoping assessment does, however, discuss impacts to be considered for further investigation which may potentially be areas of conflict for business and eco-tourism offered by the study area. It has been briefly mentioned that at a further impact assessment level, these impacts may be mitigated accordingly in order to improve the overall significance thereof. At the scoping stage, proposed mitigation suggestions have been provided and will also be unpacked at a later stage.

The scoping report also briefly discussed the layout alternatives of the proposed Mayogi solar plant facility. As a result of all the listed alternatives still being within the boundaries of the initial demarcated study area, overall, the outcome results in no foreseen complications from a socio-economic perspective and it can be concluded that the study area remains suitable for the development for a PV solar energy facility.

9.2 Cultural/Historical Environment

A Heritage Impact Assessment was undertaken by CTS Heritage (report dated January 2023).

9.2.1 Baseline Assessment

Cultural Environment

At the beginning of the 19th century, the Sundays River formed the eastern border of the then Cape Colony. The broader area around Kirkwood was consequently the scene of many armed conflicts - Khoi against Xhosa, Khoi and Xhosa together against the Boers and British together and finally the Boers against the British during the Second Anglo-Boer War. Historic period remains are also found in the area, with early farmhouses, churches and several farm burial grounds having been noted, ranging from formal, enclosed graves to informal stone-packed burial mounds (Van Ryneveld 2016, NID 374575).

The Sundays River Valley irrigation scheme was started in the early 1920s, targeting British settlers on small holdings (10 morgen in size) along the banks of the Sundays River. A large dam was constructed on the Sundays River (Lake Mentz) to supply the area with water for irrigation, and a canal system was put in place to supply water to farms from Kirkwood, at the upper end of the valley, to Addo at the lower end.

Importantly, the ACO (2014) noted that the broader context within which this development occurs has high levels of cultural landscape significance. As noted in ACO (2014), “The construction of a major transmission line (Eskom’s 765 kW Gamma-Grassridge) has been approved but not yet built. It will cross the western side of the study area through Soutpans Poort and is expected to be a major new visual intrusion. In terms of the assessment checklist published by Baumann, Winter, Aikman (2005) the landscape is largely intact as a natural landscape and intrusions within the last 60 years have been moderate. The aesthetic qualities can be described as being of generally scenic (not dramatic) significance while certain niche areas are highly significant – especially the landscapes on the northern side of the Klein Winterhoek ridge as well as the Perdepoort which contains some dramatic scenery with a distinct character.” Furthermore, as the proposed development consists of an expansion of existing infrastructure, there is no “change of character” to the site and no negative impact to the cultural

landscape is anticipated from the proposed amendment to the road alignment.

Archaeology

As a source of freshwater, the Sundays River valley has likely been occupied continuously throughout history. According to Webley (2003 SAHRIS NID 4307), Early and Middle Stone Age scatters are found along the banks of the Sundays River. These scatters are found immediately below the topsoil, at a depth of no more than 30cm and appear to have been deposited through river action, and as such, are not in situ. The artefacts identified consist of flaked quartzite cobbles with cortex and quartzite flakes. Very few diagnostic flakes were identified. In her assessment of the number of borrow pits, van Ryneveld (2012, SAHRIS NID 49462) did not identify any archaeological resources within the two borrow pits located near the proposed development area. According to Gaigher (2013 SAHRIS NID 125198), "Excavations at sites such as Melkhoutboom and Vygeboom (inside Addo Park) have uncovered graves with rich grave goods indicating a complex belief system. The rock art too indicates the San occupants took part in trance before painting… Many of the shell middens in the Addo Park contain pottery, confirming the presence of the Khoekhoen in the area." According to Gaigher (2013), "The majority of hunter-gatherer groups had been pushed out of the Zuurberg by the 1820's and was forced to move further inland to escape European settlement on their lands."

The previous heritage studies that have been conducted in the broader area have identified isolated and scattered artefacts of the Early, Middle and Later Stone Age (Binneman, 2010; NID 7159). Generally, archaeological artefacts in this region are found in road cuttings, tracks and paths as the dense vegetation of the area largely obscures their presence elsewhere. ESA material known from the area includes handaxes and cleavers that are usually found in river gravels, although in situ ESA tools have been found in spring deposits near Addo (Binneman 2016, NID 365749). MSA flake and blade tools are similarly usually found in secondary contexts, and may be found with associated fossil bone material (Binneman 2010). LSA sites, though present, are usually obscured by the dense vegetation in this region. When found, they are usually represented by limited numbers of stone tools and bone fragments, and organic preservation is generally poor (Binneman 2016). Cave sites in the nearby mountains, on the contrary, often contain well-preserved deposits and rock paintings. Khoe sites, dating to the past 2 000 years, also occur in the area, and their sites are marked by the presence of indigenous ceramics and domesticated animal bone. These groups were also responsible for the creation of large middens of freshwater mussels, sometimes associated with human burials, that can be found on the banks of the Sunday's River (Binneman 2016). Burials and graves associated with pre-colonial as well as historic communities are also to be found in the area (Binneman 2013, NID 175196).

Historic period remains are also found in the area, with early farmhouses, churches and several farm burial grounds having been noted, ranging from formal, enclosed graves to informal stone-packed burial mounds (Van Ryneveld 2016, NID 374575).

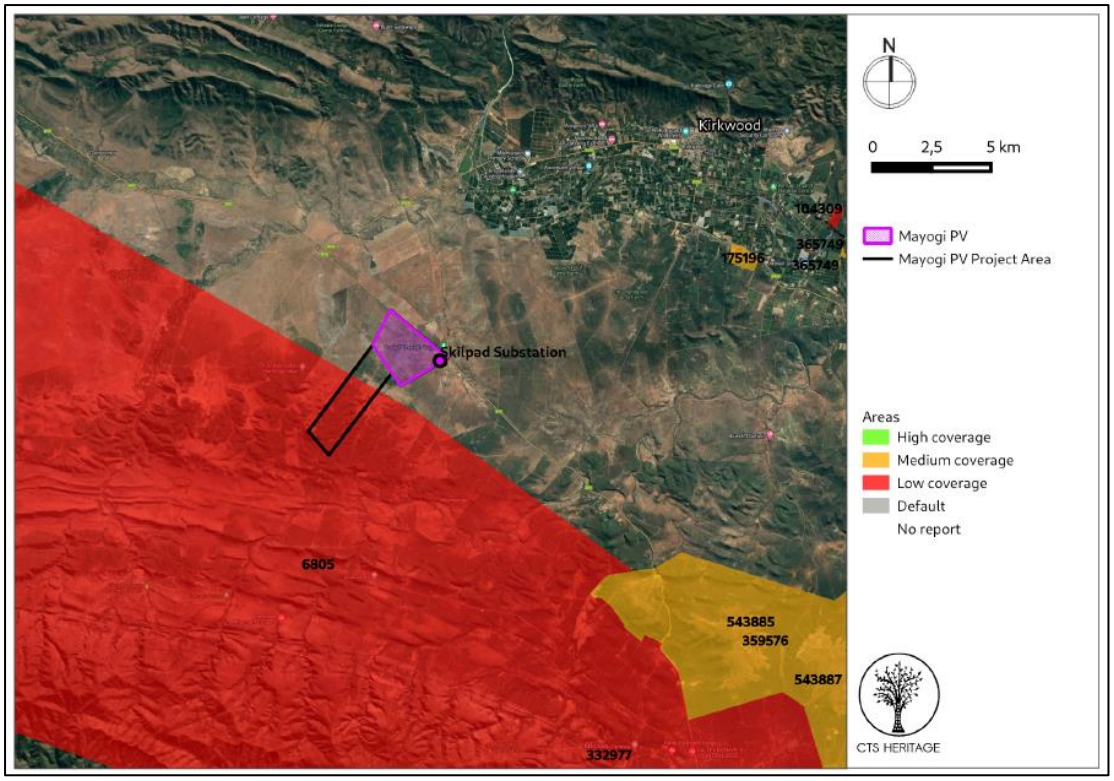

Figure 36: Spatialisation of heritage assessment conducted in proximity to the proposed development

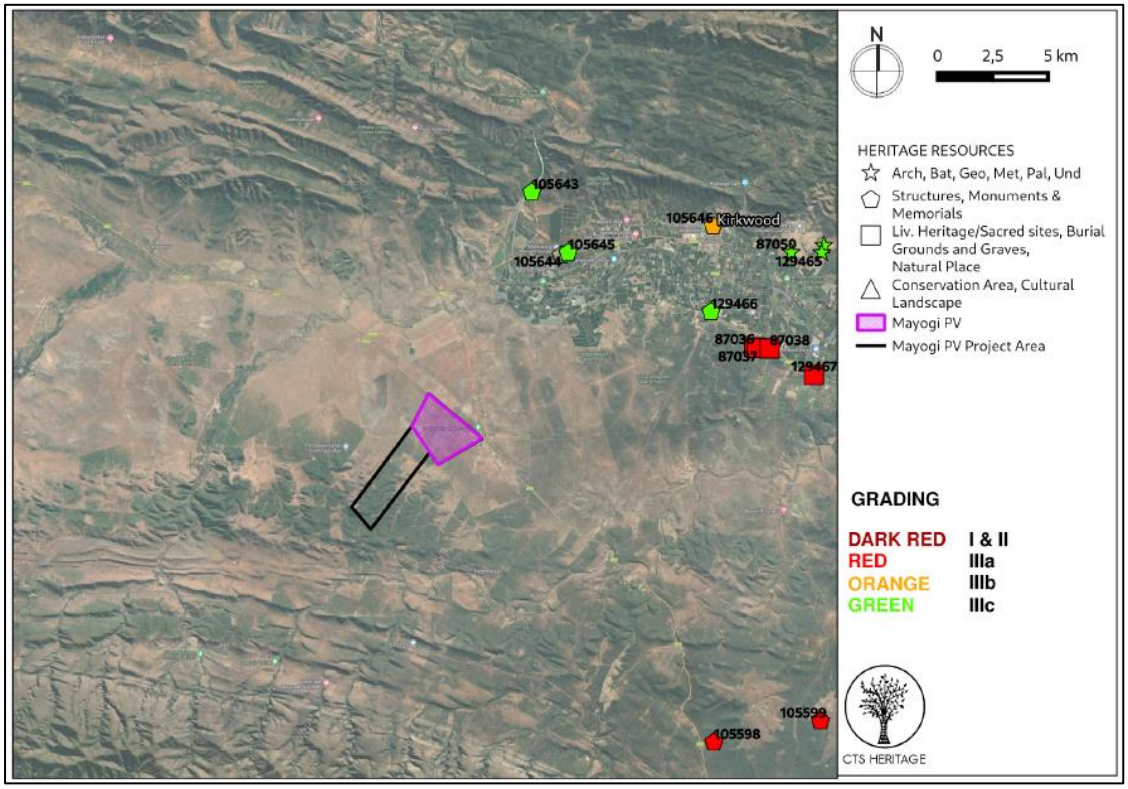

Figure 37: Spatialisation of known heritage resources in proximity to the proposed development

Palaeontology

The area proposed for development is underlain by sediments of very high palaeontological sensitivity belonging to the Kirkwood Formation according to the Council of GeoScience Map 3324. According to Almond's assessment for a nearby development (2014), "During and following the break-up of Gondwana in Early Cretaceous times the Palaeozoic bedrocks in this region were deeply weathered and eroded to form a dissected palaeosurface across which meandering rivers deposited the pebbly channel sandstones and silty overbank mudrocks of the Kirkwood Formation (Uitenhage Group). The basal contact or unconformity between the Uitenhage and Bokkeveld Group rocks preserves the original high relief of the pre-Cretaceous landscape, with hills of Gamka Formation and younger Bokkeveld wackes projecting up through the lower Uitenhage Group fluvial succession. The Kirkwood continental sediments interfinger southwards, and are eventually overlain by fine-grained estuarine to marine shelf sediments of the Sundays River Formation (Uitenhage Group) reflecting gradual flooding of the margins of southern Africa in Early Cretaceous times."

Almond (2014) goes on to note that the "Early Cretaceous fluvial sediments of the Kirkwood Formation ("Wood Beds", Uitenhage Group) that underlie valleys and lower hill slopes in large parts of the study area are generally very poorly exposed. However, where seen at surface they are often characterised by an abundance of petrified wood, including logs up to several metres long and half a metre across. Some of the fossil logs are only preserved as moulds but others retain fine details of the original woody tissue microstructure and are therefore of considerable palaeontological interest.

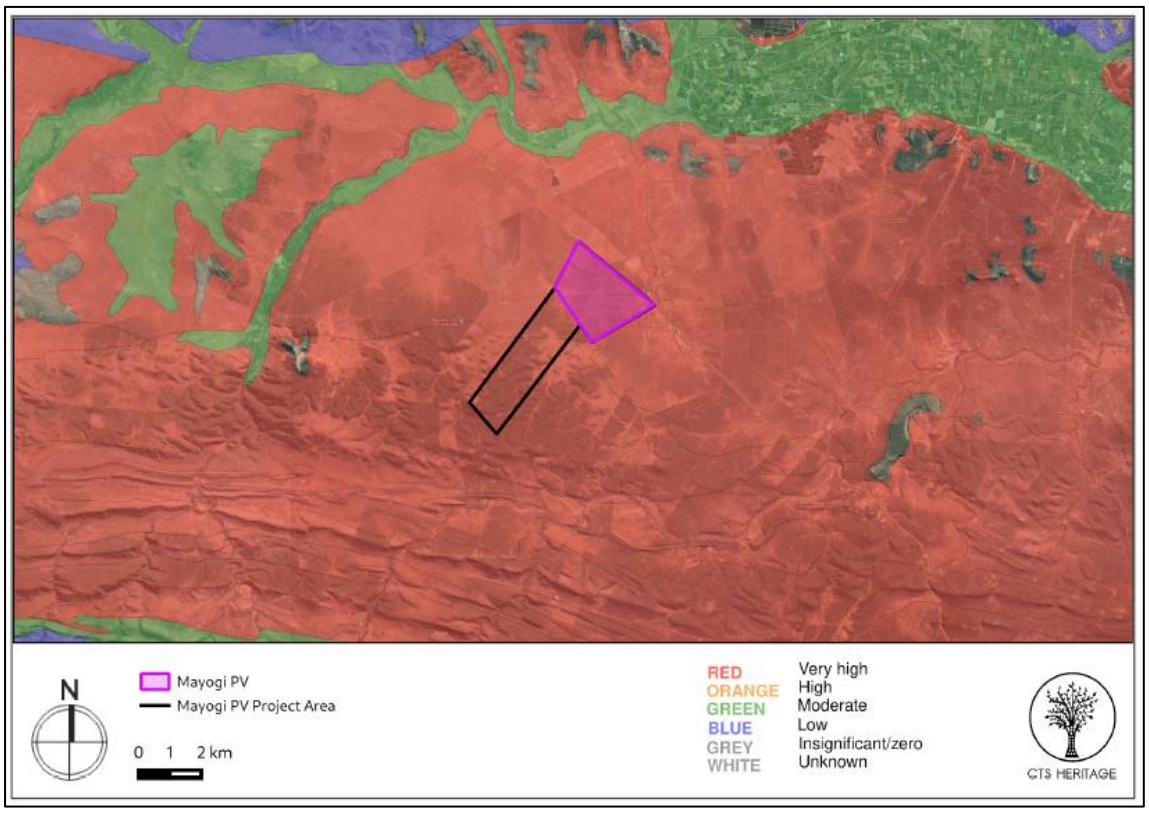

Figure 38: Palaeontological sensitivity of the proposed development area

9.2.2 Summary of Findings

Archaeology

The archaeological survey resulted in nearly 60 observations, and these were focussed in the northern area where the solar PV facilities have been proposed. Some Later Stone Age (LSA) material was found but the vast majority of sites consisted of quartzite flakes and cores dating to the MSA. A smaller contribution of siltstone flakes was also recorded but the extensive use of quartzite was indicative of the exploitation of sandstone gravels present in nearby streams and rivers. An early MSA component was also present and typical bifacial flakes and radial cores contributed to the assemblages. There were also some historical artefacts such as rusted metal, glass and ceramics closer to the R75 which are likely to be associated with the Steenbokvlakte farm and the migrant farming routes through this area from the 19th century onwards. There are no historic werfs or farm buildings in the study area and all of the modern built environment infrastructure relates to the game farming, water troughs and dams, the lodge chalets and the Skilpad substation. There are no natural shelters or overhangs on the property.

Figure 39: Existing structures located in the south east of the property

Figure 40: Skilpad substation and existing structures in the south east of the property

Figure 41: Existing grid infrastructure within the development area

Figure 42: Contextual images

Palaeontology

The proposed Mayogi Solar PV Facility is underlain by Kirkwood Formation (Uitenhage Group). The PalaeoMap of the South African Heritage Resources Information System (SAHRIS) indicates that the Palaeontological Sensitivity of the Kirkwood Formation (Uitenhage Group) is Very High (Almond and Pether, 2009; Almond et al., 2013). Recent updated Geology (Council of Geosciences) corresponds with the geological map and indicates that the proposed development is underlain by the Kirkwood Formation.

A site-specific field survey of the development footprint was conducted on foot and by motor vehicle on the weekend of 20 January 2023. No fossiliferous outcrop was detected in the proposed development area. A Medium Palaeontological Significance has been allocated to the Mayogi PV development.

Figure 43: Scattered Calcrete deposits throughout the development

Figure 44: Area mantled by red soil of the Kirkwood formation

9.2.3 Heritage Sensitivities

No archaeological or palaeontological resources of significance were identified within the area proposed for development. All of the resources identified have been determined to be Not Conservation-Worthy (NCW).

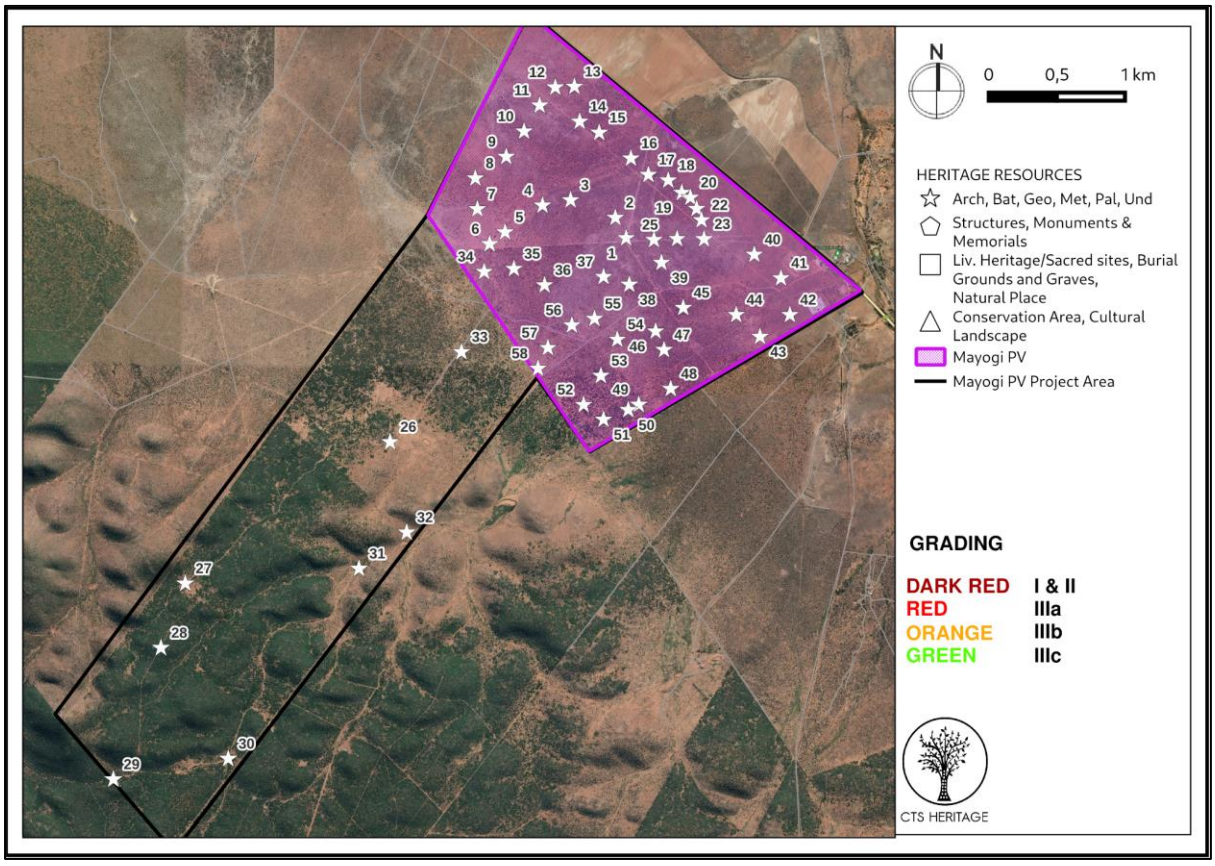

Figure 45: All heritage observations made within the development area

9.2.4 Preliminary Conclusions

The previous heritage studies that have been conducted in the broader area have identified isolated and scattered artefacts of the Early, Middle and Later Stone Age (Binneman, 2010; NID 7159). The findings of this assessment corroborate the characterisation of the area made by other specialists.

The field survey identified a number of isolated artefacts, none of which are dense enough to be considered an archaeological site. None of the archaeological observations made have sufficient scientific value to warrant their retention and as such, have been graded as Not Conservation-Worthy. The recording of their presence in this report is considered sufficient.

A Medium Palaeontological Significance has been allocated to the Mayogi PV development. It is therefore considered that the proposed development will not lead to damaging impacts on the palaeontological resources of the area. The construction of the development may thus be permitted in its whole extent, as the development footprint is not considered sensitive in terms of palaeontological resources.

Based on the outcomes of this assessment, it is unlikely that the proposed development will negatively impact on significant archaeological, palaeontolgical or cultural heritage resources. There is no objection to the proposed development.

9.3 Transportation

A Transportation Impact Assessment was undertaken by iWink Consulting (May 2023).

9.3.1 Baseline Assessment

The two solar project wills be located adjacent to each other within the Sundays River Valley Local Municipality in the Sarah Baartman District of the Eastern Cape Province of South Africa. The sites will respectively accommodate a solar power facility and associated support structures and facilities to allow for the generation and evacuation of electricity.

A feasible access road was assessed considering sight lines, access spacing requirements and road safety aspects. It is recommended to ensure that the access point is kept clear of vegetation and any other obstructions to ensure sight lines are kept.

In general, non-motorised transportation (NMT) is a dominant mode of transportation in rural areas, with private cars and minibus/taxis being the second-most used mode of transport, followed by buses. Currently, there are no known future planned public transport facilities in the vicinity of the site. However, generally the developer or appointed contractor of a renewable energy project will provide shuttle busses for workers during the construction phase.

The highest trip generator for the project is expected during the construction phase. The actual construction stage peak hour trips are dependent on the construction period, construction programming, material availability, component delivery, abnormal load permitting etc. The decommissioning phase is expected to generate similar trips as the construction phase. The traffic impact during the operational phase is considered negligible.

9.3.2 Preliminary Conclusions

For the construction and decommissioning phases, the impact expected to be generated by the vehicle trips is an increase in traffic and the associated noise, dust, and exhaust pollution. Based on the highlevel screening of impacts and mitigation, the project is expected to have a negative low impact during the construction and decommissioning stages including the recommended mitigation measures.

9.4 Visual

A Visual Impact Assessment was undertaken by SRK Consulting (report dated May 2023).

9.4.1 Description of the receiving environment

Landscape Character

The project is located on the Kirkwood Formation which is primarily comprised of sedimentary rocks such as sandstone and claystone. The Kariega, Holbak and Bezuidenhouts Rivers (tributaries of the Sundays River) and Sundays (or Sondags) River drain the Sundays River Valley. Farm dams are common on the surrounding farms. The valley is gently undulating, cradled by distant mountain ranges to the north and south of the Sundays River. This region experiences cold winters and hot summers.

A mountain range is located to the south of the site reaching ~700 m above mean sea level (mamsl). The site is located at the very base of the foothill of this mountain, where the terrain levels to the Sundays River Floodplain. The site gently slopes downwards from ~300 mamsl in the south-west to ~200 mamsl in the north-eastern portion of the site. No watercourses are mapped on the site

Visual Character

The basis for the visual character is provided by the topography, vegetation and land use of the area, which is a predominantly rural environment characterised by sprawling grazing land, a patchwork of orchards and interspersed nodes of development (e.g. towns, farmsteads, etc.). The site and the surrounding area can be described as a modified rural landscape

Visual Quality

The visual quality of the area can be experienced through rolling views across the Sundays River Valley which can be described as having a long closed landscape. The area around the site is defined by the agricultural activity and - some distance away - by urban development around the town of Kirkwood. The outskirts of Kirkwood are characterised by the patchwork of citrus orchards, albeit fewer closer to the site where the land is largely used as game reserves and for livestock farming. The naturally undulating landscape is occasionally interrupted by powerlines which are mostly routed adjacent to roads.

Visual Receptors

Visual receptors were identified based on surrounding land uses, primarily those in farming areas and recreational attractions. The visual receptors are briefly described below:

- Farmstead residents – Isolated farmsteads are interspersed throughout the area surrounding the site;
- Motorists – The site is located adjacent to the R75. The R336 intersects the R75 ~5 km to the north-west of the site. Various farm roads branch off the R75 around the site; and
- Recreational - Recreational attractions such as the Daniell Cheetah project and private game reserves are located in the area around the project. Patrons of these businesses may also be receptors to this project.

Sense of Place

The sense of place of the surrounding area is strongly influenced by the surrounding land use, which can generally be described as a rural agricultural area located within the expansive Sundays River Valley. While there are views across the valley to mountains in the distance, the sense of place is not particularly distinct from the rest of the wider region and is therefore not experienced as overly unique. Nevertheless, there are several recreational attractions in the area surrounding the project that attract tourists and patrons to the area.

9.4.2 Analysis of magnitude of the visual impact

Various factors were considered in the assessment, including:

- Visual exposure;
- Visual absorption capacity;
- Sensitivity of visual receptors;
- Visibility and viewing distance; and
- Integrity with existing landscape / townscape.

The analysis of the magnitude or intensity of the visual impact is summarized and integrated in the table below and forms the basis for the assessment and rating of the impact.

Table 29: Magnitude of overall visual impact

Criteria	Rating	Comments
Visual Exposure (Viewshed)	Moderate	The visibility of the PV array is high within 1 km of the array. Beyond this, the array will be visible up to ~2.5 km

Criteria	Rating	Comments
		to the north-east and up to 5 km to the north, south and south-west. The array will also be visible from a ~6 km section of the R75 adjacent to the site. The on-site substation, BESS and powerline are expected to be highly visible within 1 km of these components and then diminish thereafter. It is expected that these components will also be visible from the ~6 km section of the R75 routed adjacent to the site.
Visual Absorption Capacity	Low	The VAC of the area is low, particularly in the foreground due to the low growing vegetation that has limited screening potential. However, the undulating landscape in the surrounding area increases the VAC of the area for the project in the middle and background to some degree.
Viewer Sensitivity (Receptors)	Low	Only a few farmsteads are located within close proximity of the project and are therefore considered receptors. Motorists will have fleeting and / or temporary views of the project, and are considered less sensitive. Individuals visiting the Daniell Cheetah project and the Mayogi Farmstall are likely to be sensitive recreational receptors.
Viewing Distance and Visibility	Moderate	The high sensitivity of the visual receptors in close proximity to the project, e.g. recreational receptors, is moderated by the large number of motorists with fleeting views. As such, the sensitivity of the viewers or visual receptors potentially affected by the visual impact of the project is considered to be moderate.
Landscape Integrity	Low	No operational SEFs or WEFs have been identified within ~ 20 km of the project, and therefore the project will be very different to the existing land use and vary significantly from the scale and size of the infrastructure in the area around the site. Grid infrastructure such as substations and powerlines are more common in the area surrounding the proposed project, with small and large powerlines already traversing the landscape, and occasional substations.

The overall magnitude of the visual impact that is expected to result from the project is rated as ***moderate***. The area around the site has a limited ability to conceal and/or absorb the proposed project and the project is incongruent with the existing landscape. The low VAC and landscape integrity are moderated by the moderate viewing distance and visibility and low viewer sensitivity.

A number of viewpoints were selected to indicate locations from where receptors may (or may not) view the project. Current views from these points are shown in **Figure 46** below.

The visibility of the project can be summarised as follows:

- The project will not be visible from VPs over 2 km away (VP 1 - VP 3, VP 8 - VP 9);
- The project will be partially visible to receptors located over 3 km away in elevated areas (VP 7);

- The project will be visible from the R75 and from the front of Daniells Cheetah Project (VP 5 and VP 6); and
- The project will be highly visible in the foreground to receptors at VP 4.

Overall, the proposed SEF is marginally visible in the background to receptors.

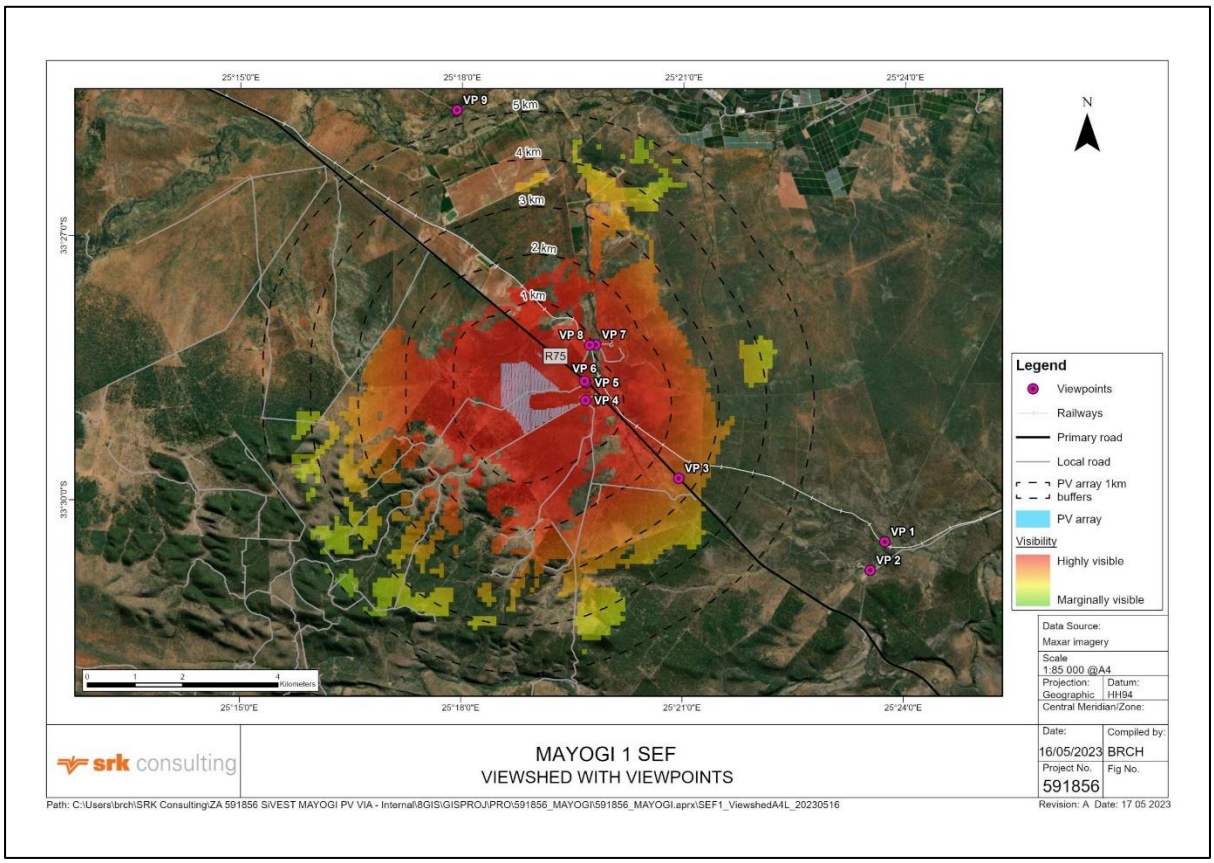

Figure 46: Viewpoints Map

The visual quality of the area is experienced through the rolling views across the Sundays River Valley which can be described as having a long closed landscape. Visual receptors were identified based on surrounding land uses and include farmstead residents, R75 and farm road motorists and recreational receptors visiting the Mayogi Farmstall, Daniell Cheetah project and private game reserves located around the project area. The sense of place of the surrounding area is strongly influenced by the surrounding land use, which can generally be described as a rural agricultural area. The sense of place is not particularly distinct from the rest of the wider region and is not overly unique.

Construction (and decommissioning) activities associated with the project such as earthworks, which can generate dust, and from construction infrastructure, plant and materials on site are anticipated to be visually intrusive. During the operational phase, the PV array is anticipated to interrupt and/or degrade views, and therefore negatively impact the sense of place and present as a visual intrusion across the landscape. The BESS, 132 kV powerlines and on-site substation will increase visual clutter and be experienced as visual intrusions across the landscape. Lighting will be installed around the substation and along the perimeter of the PV array to improve security. The installation of lighting around the substation and PV array will generate nightglow, altering the sense of place and visual quality, especially to those (farmstead) receptors not currently exposed to nightglow emanating from surrounding residential / developed areas.

9.5 BESS

A MHI Risk Assessment was undertaken by iSHECON (report dated May 2023).

9.5.1 Baseline Assessment

The purpose of this report is to provide a high-level safety and health risk assessment for the battery energy storage system (BESS) that was prepared as part of the Scoping and Environmental Impact Assessment (S&EIA) for the proposed development of an 150MW Solar PV Energy Facility (Mayogi Solar PV1 & PV 2) and associated infrastructure. According to the report, the following issues are considered:

Solid State technology BESS (for example Lithium Ion):
- noxious smoke; and
- fires/explosions.

Flow technology BESS (for example Redox: assumed vanadium for now but may be alternative chemistry):
- suitable secondary spill containment for the large volume of electrolyte.

General:
- agricultural area – only commercial locations of interest.
- location of farmsteads and watering holes.

Ideally, due to the possibility of noxious smoke from fires, lithium BESS should be located over 500m from residential areas, in this case isolated farm facilities/houses or guest lodges that are occupied. If this is not possible, it is noted that the risks are low and advice on mitigative measures should be provided to the farm occupants, e.g. shelter in place indoors.

For PV 1 the currently proposed alternative locations for the substation/BESS are shown on the map **Figure 47** below. Based on the current separation distances (see red and blue circles), there may need to be a layout that ensures the BESS for PV 1 (both Options) is at the end of the allocated area furthest from farms etc. located to the east and south east.

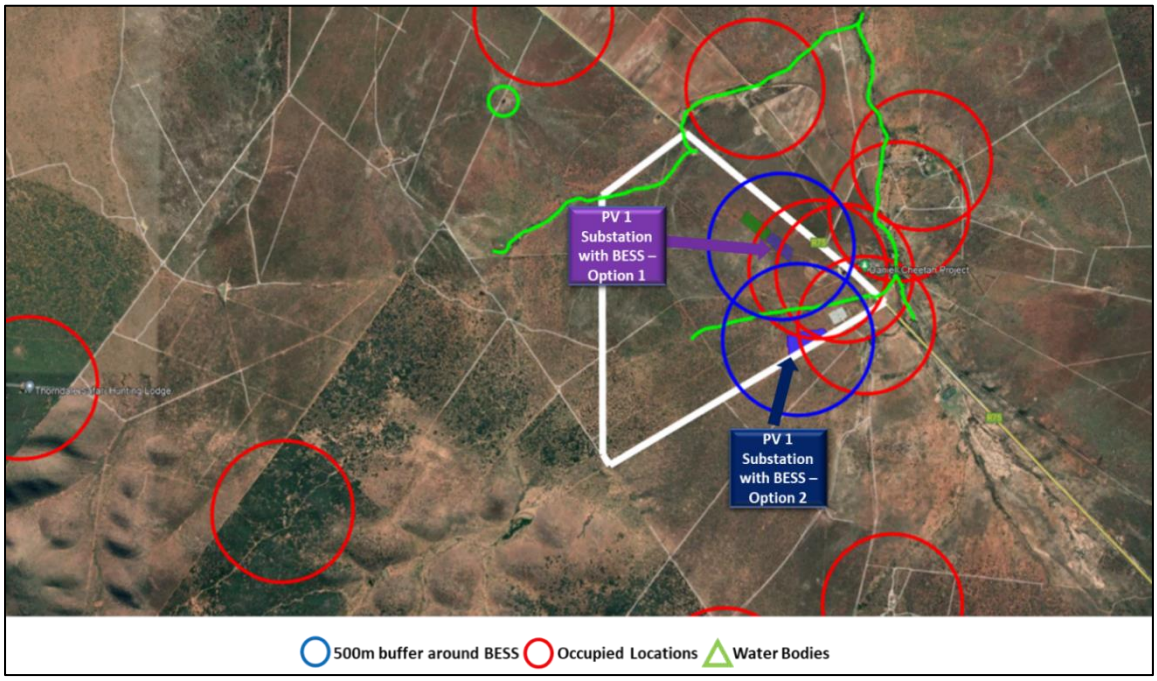

Figure 47: Satellite Image of the area showing the location of isolated farmsteads in relation to the proposed infrastructure for PV 1

The currently proposed alternative locations for the PV 2 substation/BESS are shown on the map **Figure 48** below. Based on the current separation distances (see red and blue circles showing 500m distances), for PV 2 there should not be any issues with BESS facilities being too close to farmsteads.

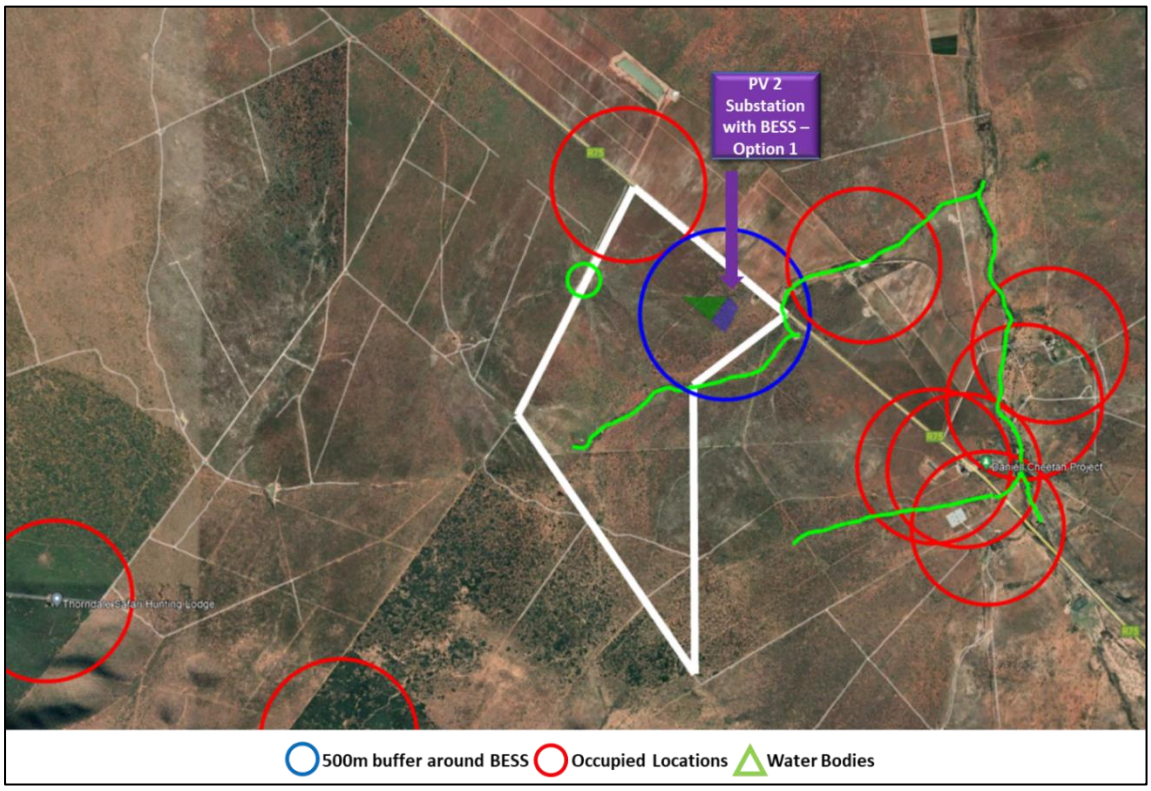

Figure 48: Satellite Image of the area showing the location of isolated farmsteads in relation to the proposed infrastructure for PV 2

Due to the fact that South Africa is not a water rich country, supplies of water such as drinking water boreholes, as well as other surface water features, should be protected from possible chemical contamination. Should redox flow batteries (such as vanadium) be the chosen technology, it is suggested that the facilities be located a suitable distance away from water courses/sources. Refer to the Aquatic Biodiversity and Geohydrology specialist studies for specific details of separation distances. Ideally the BESS should be placed at least 50 m away from known boreholes and waterpoints, and 100 m away from major surface water features, such as major rivers and wetlands.

9.5.2 Preliminary Conclusions

The BESS SHE RA is not expected to raise any unacceptably high-risk issues, i.e. the BESS facility of either technology type are not likely to be a No-Go option.

The safety and health risks associated with redox flow batteries (e.g. vanadium) will likely be lower than for the lithium-ion battery type for both employees and members of the public outside the facility. Lithium batteries pose a higher fire and explosion risk as well as the possibility of generating noxious smoke under these circumstances.

The environmental risks of surface aquatic features and groundwater contamination with the redox flow type batteries will likely be higher than for solid state batteries, due to the presence of liquids.

10. POLICY AND LEGISLATIVE CONTEXT

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

10.1 The Constitution

The Constitution of the Republic of South Africa, Act 108 of 1996 sets the legal context in which environmental law in South Africa occurs and was formulated. All environmental aspects should be interpreted within the context of the Constitution, National Environmental Management Act 107 of 1998 and the Environment Conservation Act 73 of 1989.

The Constitution has enhanced the status of the environment by virtue of the fact that an environmental right has been established (Section 24) and because other rights created in the Bill of Rights may impact on environmental management through, for example, access to health care, food and water and social security (Section 27). An objective of local government is to provide a safe and healthy environment (Section 152) and public administration must be accountable, transparent and encourage participation (Section 195(1) (e) to (g)).

Section 24 of the Constitution states that:

"Everyone has the right –

- *To an environment that is not harmful to their health or well-being; and*
- To *have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that:*
  - Prevent pollution and ecological degradation;
  - Promote conservation and

- Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development."

The Constitution is the overarching legislation for South Africa. Although it provides for certain rights and obligations, the NEMA has been promulgated in order to manage the various spheres of both the social and natural environment.

10.2 National Environmental Management Act (107 of 1998)

The National Environmental Management Act (Act No. 107 of 1998) was promulgated in 1998 but has since been amended on several occasions from this date. The act intends to provide for:

- co-operative environmental governance by establishing principles for decision-making on matters affecting the environment;
- institutions that will promote co-operative governance and procedures for coordinating environmental functions exercised by organs of state;
- to provide for the prohibition, restriction or control of activities which are likely to have a detrimental effect on the environment; and
- to provide for matters connected therewith.

NEMA is the overarching legislation which governs the EIA process and environmental management in South Africa. Sections 24 and 44 of NEMA make provision for the promulgation of regulations that identify activities which may not commence without an EA. Activities that may significantly affect the environment must be considered, investigated and assessed prior to implementation.

According to Section 2(3) of the National Environmental Management Act (NEMA) (Act No. 107 of 1998), "development must be socially, environmentally and economically sustainable", which means the integration of these three factors into planning, implementation and decision-making so as to ensure that development serves present and future generations.

The EIA Regulations, 2014 (as amended) identify lists of activities which have the potential to result in detrimental environmental impacts and thus require EA, subject to either "Basic Assessment" or "Scoping and Environmental Impact Assessment". The Regulations prescribe the procedural and substantive requirements for the undertaking of EIAs and the issue of EA's.

The proposed project triggers listed activities under Listing Notice 1, 2 and 3 (as detailed in Section 6 above), and thus requires an EA subject to an Environmental Impact Assessment (EIA) Process.

10.3 Environmental Impact Assessment (EIA) Guideline for Renewable Energy Projects, DFFE Notice 989 of 2015

The purpose of this document is primarily to provide guidance on the environmental management legal framework applicable to renewable energy operations and all the role players in the sector. The guideline is principally intended for use by the following stakeholder groups:

- Public Sector Authorities (as regulator and/or competent authority);
- Joint public sector authorities and project funders (e.g., Eskom, IDC, etc.);
- Private Sector Entities (as project funder / developer / consultant); and
- Other interested and affected parties (as determined by the project location and/or scope).

This guideline seeks to identify activities requiring authorisation prior to commencement of that activity and provide an interface between national EIA Regulations and other legislative requirements of various authorities.

The guidelines are applicable for the construction, installation and/or development of the following renewable energy projects:

- Concentrating Solar Power (CSP) Plant;
- Wind Energy Facility (WEF);
- Hydropower Station; and
- Photovoltaic (PV) Power Plant.

10.4 National Water Act (Act 36 of 1998)

The National Water Act (NWA) No 36 of 1998 was promulgated on the 20th of August 1998. This Act is important in that it provides a framework to protect water resources against over exploitation and to ensure that there is water for socio-economic and economic development, human needs and to meet the needs of the aquatic environment. The Act also recognises that water belongs to the whole nation for the benefit of all people.

Water resources as defined include a watercourse, surface water, estuary or aquifer. Specifically, a watercourse is defined as (inter alia):

- A river or spring;
- A natural channel in which water flows regularly or intermittently; and
- A wetland, lake or dam into which, or from which water flows.

Due to the possible encroachment into the wetland areas, the following Section 21 water uses in terms of the NWA may be triggered and require licensing:

- (c) impeding or diverting the flow of water in a watercourse; and
- (i) altering the bed, banks, course or characteristics of a watercourse.

In light of the above, there are a number of stipulations within the NWA that are relevant to the potential impacts on rivers, streams and wetlands that may be associated with the proposed development. An Aquatic / Freshwater Impact Assessment (**Appendix 6**) has been conducted to explore how the proposed development may impact on identified water resources as protected by the Act. Should the proposed development require a General Authorisation (GA) or Water Use Licence (WUL), it will be determined and applied for separately prior to construction**.**

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

The National Heritage Resources Act promotes good management of the heritage resources of South Africa which are deemed to have cultural significance and to enable and encourage communities to ensure that these resources are maintained for future generations.

The aim of the Act is to introduce an integrated, three-tier system for the identification, assessment and management of national heritage resources (operating at a national, provincial and local level). This

legislation makes provision for a grading system for the evaluation of heritage resources on three levels which broadly coincide with their national, provincial and local significance.

This Act requires investigation to determine the impact of heritage resources when developments exceed the thresholds list in section 38 (1) of the act:

a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length;
b) the construction of a bridge or similar structure exceeding 50 m in length;
c) any development or other activity which will change the character of a site—
   (i) exceeding 5 000 m^2 in extent; or
   (ii) involving three or more existing erven or subdivisions thereof; or
   (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
   (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
d) the re-zoning of a site exceeding 10 000 m2 in extent; or
e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority,

The proposed development would involve; (c) the development of a SEF and associated infrastructure that will change the character of more than 0.5ha, and (d), the rezoning of a site that will exceed 1ha.

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

Within the scope of this project, Section 38 of the NHRA (25 of 1999), states that, as described above, an assessment of potential heritage resources in the development area needs to be done. A Heritage Impact Assessment (HIA), Archaeological Impact Assessment (AIA), and Paleontological Impact Assessment (PIA) (**Appendix 6**) has therefore been commissioned to explore how the proposed development may impact on heritage resources and potential cultural artefacts as protected by the Act.

10.6 National Environmental Management: Biodiversity Act (NEM:BA) (Act No. 10 of 2004, as amended)

As the principal national act regulating biodiversity protection, the National Environmental Management: Biodiversity Act (NEM:BA) (Act No. 10 of 2004), which is administered by the DFFE, is concerned with the management and conservation of biological diversity, as well as the use of indigenous biological resources in a sustainable manner.

The overarching aim of the NEM:BA, within the framework of the NEMA, is to provide for:

- The management and conservation of biological diversity within South Africa, and of the components of such biological diversity;
- The use of indigenous biological resources in a sustainable manner; and

- The fair and equitable sharing among stakeholders of benefits arising from bio-prospecting involving indigenous biological resources.

In terms of this Act, the developer has a responsibility to:

- Conserve endangered ecosystems and restriction of activities according to the categorisation of the area (not just by listed activity as specified in the EIA regulations);
- Promote the application of appropriate environmental management tools in order to ensure integrated environmental management of activities thereby ensuring that all development within the area are in line with ecological sustainable development and protection of biodiversity; and
- Limit further loss of biodiversity and conserve endangered ecosystems.

The South African National Biodiversity Institute (SANBI) was established in terms of the NEM:BA, its purpose being (inter alia) to report on the status of the country's biodiversity and the conservation status of all listed threatened or protected species and ecosystems.

The NEM:BA provides for a range of measures to protect ecosystems and for the protection of species that are threatened or in need of protection to ensure their survival in the wild, including a prohibition on carrying out a 'restricted activity' involving a specimen of a listed threatened or protected species without a permit issued in terms of Chapter 7 of the Act. According to Section 57 of the Act, 'Restricted activities involving listed threatened or protected species':

An Impact Assessment of the Biodiversity (**Appendix 6**) has been conducted to explore how the proposed development may impact on biodiversity as protected by the Act.

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

10.7 National Environmental Management: Protected Areas Act, 2003 (Act No.57 of 2003 as amended)

The overarching aim of the National Environmental Management: Protected Areas Act (NEMPAA) Act No. 57 of 2003, within the framework of NEMA, is to provide for:

- the declaration and management of protected areas;
- co-operative governance in the declaration and management of protected areas;
- effect a national system of protected areas in South Africa as part of a strategy to manage and conserve its biodiversity;
- a representative network of protected areas on state land, private land and communal land;
- promote sustainable utilisation of protected areas for the benefit of people, in a manner that would preserve the ecological character of such areas;
- promote participation of local communities in the management of protected areas, where appropriate; and
- the continued existence of South African National Parks.

The proposed project is not located in any protected area.

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

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

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

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

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

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

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

A Biodiversity Assessment (**Appendix 6**) has been conducted to explore how the proposed development may impact on vegetation as protected by the Act.

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

10.9 National Veld and Forest Fire Act (Act No. 101 of 1998)

Provides requirements for veldfire prevention through firebreaks and required measures for firefighting. Chapter 4 of the Act places a duty on landowners to prepare and maintain firebreaks. Chapter 5 of the Act places a duty on all landowners to acquire equipment and have available personnel to fight fires.

10.10 Conservation of Agricultural Resources Act (CARA) (Act No. 43 of 1983)

The Conservation of Agricultural Resources Act (CARA) (Act No. 43 of 1983) controls the utilisation of natural agricultural resources in South Africa. The Act promotes the conservation of soil, water sources and vegetation as well as the combating weeds and invader plants. The Act requires the protection of land against soil erosion and the prevention of water logging and salinization of soils by means of suitable soil conservation works to be constructed and maintained. The utilisation of marshes, water sponges and watercourses are also addressed.

The primary objective of the Act is to conserve natural agricultural resources by:

- maintaining the production potential of land;

- combating and preventing erosion and weakening or destruction of the water resources;
- protecting vegetation; and
- combating weeds and invaders plants.

In terms of this Act, no degradation of natural land is permitted. Rehabilitation after disturbance to agricultural land is also managed by this Act. The CARA is relevant to the proposed development as the construction of a SEF as well as other components (such as the on-site switching substation and permanent guard house) may impact on agricultural resources and vegetation on the site. The Act prohibits the spreading of weeds and prescribes control measures that need to be complied with in order to achieve this. As such, measures will need to be taken to protect agricultural resources and prevent weeds and exotic plants from invading the site as a result of the proposed development.

Declared Weeds and Invaders in South Africa are categorised according to one (1) of the following categories:

- Category 1 plants: are prohibited and must be controlled.
- Category 2 plants: (commercially used plants) may be grown in demarcated areas providing that there is a permit and that steps are taken to prevent their spread.
- Category 3 plants: (ornamentally used plants) may no longer be planted; existing plants may remain, as long as all reasonable steps are taken to prevent the spreading thereof, except within the flood line of watercourses and wetlands.

An Agricultural and Soils Site Verification (**Appendix 6**) has been conducted to explore how the proposed development may impact on the agricultural production potential of the proposed site.

10.11 National Road Traffic Act (NRTA) (Act No. 93 of 1996, as amended)

The National Road Traffic Act (NRTA) (Act No. 93 of 1996, as amended) provides for all road traffic matters and is applied uniformly throughout South Africa. The Act enforces the necessity of registering and licensing motor vehicles. It also stipulates requirements regarding fitness of drivers and vehicles as well as making provision for the transportation of dangerous goods.

All the requirements stipulated in the NRTA will need to be complied with during the construction and operational phases of the proposed development.

10.12 Civil Aviation Act (CAA) (Act No. 13 of 2009)

The Civil Aviation Act (CAA) (Act No. 13 of 2009) controls and regulates aviation within South Africa. It provides for the establishment of a South African Civil Aviation Authority (SACAA) and independent Aviation Safety Investigation Board in compliance with Annexure 13 of the Chicago Convention. It gives effect to various conventions related to aircraft offences, civil aviation safety and security, and provides for additional measures directed at more effective control of the safety and security of aircrafts, airports and matters connected thereto.

Although the Act is not directly relevant to the proposed development, it should be considered as the establishment of electricity distribution infrastructure (such as a substation and powerlines) may impact on aviation and air traffic safety, if located directly within aircraft flight paths.

The Air Traffic and Navigation Services Company Limited (ATNS) and the SACAA will be consulted throughout the EIA process and the required approvals will be obtained, where necessary. It is not however anticipated that any approvals will be required.

10.13 Astronomy Geographic Advantage Act (Act No. 21 of 2007)

The Astronomy Geographic Advantage Act (Act No. 21 of 2007) provides for:

- The preservation and protection of areas that are uniquely suited for optical and radio astronomy; and
- Intergovernmental cooperation and public consultation on matters concerning nationally significant astronomy advantage areas and matters connected therewith.

Under Section 22(1) of the Act, the Minister has the authority to protect the radio frequency spectrum for astronomy observations within a core or central astronomy advantage area. As such, the Minister may under section 23(1) of the Act, declare that no person may undertake certain activities within a core or central Astronomy Advantage Area (AAA). These activities include the construction, expansion or operation; of any fixed radio frequency interference source, facilities for the generation, transmission or distribution of electricity, or any activity capable of causing radio frequency interference or which may detrimentally influence the astronomy and scientific endeavours.

In terms of section 7(1) and 7(2) of this Act, national government established the following AAAs:

- Karoo Central AAA (GN 198 of 2014) – proposed development falls outside this AAA
- Sutherland Central AAA – proposed development falls outside this AAA
- Northern Cape AAA (GN 115 of 2010) – proposed development falls outside of this AAA

The site falls outside the Square Kilometre Array (SKA).

10.14 National Energy Act (Act No. 34 of 2008)

South Africa has two (2) acts that direct the planning and development of the country's electricity sector, namely:

i. The National Energy Act of 2008 (Act No. 34 of 2008); and
ii. The Electricity Regulation Act (ERA) of 2006 (Act No. 4 of 2006).

The National Energy Act (Act No. 34 of 2008), promulgated in 2008, has, as one (1) of its key objectives, the promotion of diversity of supply of energy and its sources. From this standpoint, the Act directly references the importance of the renewable energy (RE) sector, with a mention of the solar energy sector included. The aim is to ensure that the South African economy is able to grow and develop, fast-tracking poverty alleviation, through the availability of a sustainable, diverse energy mix. Moreover, the goal is to provide for the increased generation and consumption of RE (Republic of South Africa, 2008).

10.15 Electricity Regulation Act (Act No. 4 of 2006)

In 2011, the electricity regulation on new generation capacity was published under Section 35(4) of the Electricity Regulation Act (ERA) (Act No. 4 of 2006). These regulations apply to the procurement of new generation capacity by organs of state.

The objectives of the regulations include:

- To facilitate planning for the establishment of new generation capacity;
- The regulation of entry by a buyer and a generator into a Power Purchase Agreement (PPA);
- To set minimum standards or requirements for PPAs;
- The facilitation of the full recovery by the buyer of all costs efficiently incurred by it under, or in connection with, a PPA including a reasonable return based on the risks assumed by the buyer thereunder and to ensure transparency and cost reflectivity in the determination of electricity tariffs; and
- The provision of a framework for implementation of an Independent Power Producer (IPP) procurement programme and the relevant agreements concluded.

The Act establishes a National Energy Regulator as the custodian and enforcer of the National Electricity Regulatory Framework. The Act also provides for licenses and registration as the manner in which generation, transmission, distribution, trading and the import and export of electricity are regulated.

10.16 Protection of Public Information Act (Act No. 4 of 2013)

The Protection of Public Information Act (Act No. 4 of 2013) (POPIA) recognises the Constitutional requirement that everyone has a right to privacy.

Ultimately the Act promotes “the protection of personal information processed by public and private bodies; to introduce certain conditions so as to establish minimum requirements for the processing of personal information; to provide for the establishment of an Information Regulator to exercise certain powers and to perform certain duties and functions in terms of this Act and the Promotion of Access to Information Act, 2000 (PAIA); to provide for the issuing of codes of conduct; to provide for the rights of persons regarding unsolicited electronic communications and automated decision making; to regulate the flow of personal information across the borders of the Republic; and to provide for matters connected therewith”.

Due to the requirements around the Public Participation Process, SIVEST will process and capture information aligned to the POPIA and always obtain consent for I&APs information to be gathered, stored and distributed for the purpose of this project.

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

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

- REDZs for large-scale wind and solar photovoltaic development;
- associated Strategic Transmission Corridors which support areas where long-term electricity grid will be developed;

- process of basic assessment to be followed and reduced decision-making timeframe for processing of applications for environmental authorisation in terms of the NEMA; and
- acceptance of routes which have been pre-negotiated with all landowners as part of applications for environmental authorisations for power lines and substations.

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

Table 30: The SEA for Wind and Solar PV Energy in South Africa (Phase 1 and Phase 2) (CSIR, 2015; CSIR, 2019) identified the following eleven (11) geographic areas for REDZs

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

It should be noted that the proposed project is located within the Eastern Corridor and not located within a REDZ. It will therefore be subject to a full EIA process in terms of the NEMA, as amended, and the EIA Regulations, 2014 (as amended).

10.18 Additional Relevant Legislation

- White Paper on the Energy Policy of the Republic of South Africa (1998)
- Occupational Health and Safety Act (Act No. 85 of 1993) [OHSA];
- Environment Conservation Act (Act 73 of 1989) [ECA]
- Road Safety Act (Act No. 93 of 1996) [RSA];
- National Environmental Management: Air Quality Act (Act No. 39 of 2004) [NEM:AQA];
- National Environmental Management: Waste Act (Act No. 59 of 2008, as amended) [NEM;WA];
- Development Facilitation Act (Act No. 67 of 1995) [DFA];
- Promotion of Access to Information Act, (Act No. 2 of 2000); [PAIA]
- The Hazardous Substances Act (Act No. 15 of 1973) [HSA];
- Water Services Act (Act No. 108 of 1998) [WSA];
- Municipal Systems Act (Act No. 32 of 2000) [MSA];
- Subdivision of Agricultural Land Act, 70 of 1970, and
- Mineral and Petroleum Resource Development Act (Act No. 28 of 2002, as amended) [MPRDA].

11. KEY DEVELOPMENT STRATEGIES AND GUIDELINES

A Socio-Economic Assessment, dated May 2023, was undertaken by Urban-Econ Development Economists (Pty) Ltd (Urban-Econ).

A policy review plays an integral role in the early stages of a development. The review establishes whether the development is aligned with the goals and aspirations of the developmental policies of a country. The following policies and strategic documents were identified as applying to the study areas and will be assessed in further detail during the EIA phase:

- National Development Plan, 2030
- National Infrastructure Plan, 2050
- Department of Mineral Resources and Energy Strategy Plan, 2020 - 2025
- Industrial Policy Action Plan, 2018/2019 – 2020/2021
- Integrated Resource Plan, 2019
- South African Renewable Energy Master Plan, 2022
- National Environmental Management Act, 1998
- New Growth Path
- Renewable Independent Power Producer Program, 2022
- Eastern Cape Vision Provincial Development Plan, 2030
- Eastern Cape Sustainable Energy Strategy, 2012
- Sarah Baartman District Municipality IDP, 2027
- Sarah Baartman District Municipality SDF, 2013
- Sundays River Valley Local Municipality IDP, 2022

11.1 Provincial Policies

Table 31: Relevant National and Provincial Policies for the Mayogi Solar PV Facility

Relevant policy	Relevance to the proposed project
National Development Plan 2030	The National Development Plan (NDP) seeks to tackle triple development challenges of poverty, inequality and unemployment in South Africa by 2030. The Plan highlights that the country needs to protect the natural environment in all respects, enhance resilience of people and the economy to climate change, reduce greenhouse gas and improve energy efficiency. The NDP prioritises the infrastructural investment of procuring at least 20 000MW of renewable energy by 2030 and decommissioning 11 000MW of ageing coal-fired power stations. Despite the fact that the NDP was adopted back in 2012, the transition to clean energy remains a key priority, therefore any development such as the proposed Mayogi PV Solar Energy facility is highly appreciated.

Relevant policy	Relevance to the proposed project
National Infrastructure Plan 2050	The National Infrastructure Plan is designed to establish the groundwork for realizing the NDP's vision of inclusiveness and expansion. The NIP 2050 strategically links the objectives of the NDP with tangible steps, aiming for rapid outcomes. The NIP has the role of driving proactive infrastructure implementation and addressing the most crucial tasks necessary for bringing about lasting changes in public infrastructure provision. According to the NIP, by 2050, energy demand is expected to double and installed generation will need to expand from 53 GW in 2018 to approximately 174 GW by 2050. While by 2030, at least 25 GW would be required to be added to installed capacity with the necessary supportive transmission and distribution infrastructure. The NIP proposes the following five conditions should be met in order to achieve the 2050 vision for the energy sector: • The reform of the energy sector must be sustainable and progressive; • Best-practice energy services must be in order and create opportunities for global competitive economic growth; • There must be a pivot to a low-carbon energy sector, including a just transition; • Access to energy sector opportunities must be ensured, and; State institutions must be capable in facilitating energy sector reform and delivery.
Department of Mineral Resources Energy Strategic Plan 2020-2025	The Energy Strategy Plan formulated by the DMRE comprises three clusters, one of which is the Energy cluster. This cluster bears the responsibility of delivering sustainable energy security to the South African economy. The Plan acknowledges the existing deficiency in energy supply within the country, which poses a challenge for the DMRE to meet the required level of energy security. In response, the DMRE has crafted a strategic approach and proposed resolution to tackle the energy supply crisis. This involves ensuring the availability of resources for energy consumption, expediting the adoption of alternative and efficient energy sources, and diversifying the technological landscape of energy provision. This strategy aims to attain substantial energy security and facilitate economic development.

Relevant policy	Relevance to the proposed project
Industrial Policy Action Plan (2018/2019-2020/2021)	The Industrial Policy Action Plan (IPAP) signifies a notable advancement in elevating the nation's endeavours to foster enduring industrialization and diverse industrial growth. The IPAP underscores the concerning escalation in electricity prices over recent years within the country, a consequence of consumer demand surpassing the available electricity supply. From an energy perspective, the IPAP introduces the Industrial Energy Efficient Project, designed to assist the industrial sector in reshaping energy consumption patterns for greater sustainability and effectiveness. This project aims to enhance the energy efficiency of industries in South Africa, thereby bolstering national initiatives to enhance energy stability and electricity provision. Simultaneously, it ensures that the shift toward energy efficiency doesn't impede GDP growth through further electricity shortages and price hikes.
Integrated Resource Plan (2019)	The Integrated Resource Plan outlines that advancing the electricity generation sector has the potential to bolster the growth of the national economy. From the perspective of the IRP, ensuring energy security entails South Africa developing ample generation capacity to satisfy consumer demand in various economic growth scenarios, both modest and improved. According to the IRP, South Africa aims to foster a varied energy mix that reduces reliance on a small subset of primary sources. As per the IRP, renewable energy provides an avenue for diversifying the energy mix through distributed generation, off-grid electricity supply, and the creation of job opportunities, novel industries, and local development throughout the value chain. The IRP observes a consistent trend in renewable energy investment, as numerous countries, including South Africa, transition their existing energy systems toward cleaner and more efficient sources.
South African Renewable Energy Master Plan (SAREM, 2022)	The preliminary version of the Renewable Energy Master Plan for South Africa outlines the vision and prospects related to the local renewable energy manufacturing process. This manufacturing chain corresponds with the renewable energy technologies mandated by the

Relevant policy	Relevance to the proposed project
	Department of Mineral Resources and Energy. The proposal suggests that the renewable energy sector can yield multiple advantages from a socio-economic standpoint. These benefits encompass the direct generation of jobs, a significant contribution to the GDP, a revamped value chain that incorporates emerging suppliers with a focus on inclusive involvement, ownership, and management. Additionally, the plan offers economic diversification to key regions in support of the Just Transition, while also facilitating skills enhancement and generating fresh opportunities for young individuals and former workers from the coal sector.
National Environmental Management Act (No. 107 of 1998)	The National Environmental Management Act serves as a legal structure for enacting the provisions of Section 24 in the Constitution of the Republic of South Africa. Its purpose is to encourage collaborative administration, ensure the well-being of both the public and the environment, and secure human rights, all while recognizing the importance of economic progress. The objective is to: • Avoid pollution and harm to the environment; • Encourage preservation; and •Ensure environmentally sustainable development and responsible use of natural resources while also supporting reasonable economic and social growth.
New Growth Path (2010)	The primary goal of the New Growth Path revolves around boosting economic expansion, generating employment opportunities, and promoting fairness. The central objective of this strategy is to generate five million jobs within the upcoming decade. This plan underscores the government's dedication to making job creation a foremost consideration in all economic strategies. It outlines tactics that will facilitate South Africa's growth with a stronger emphasis on fairness and inclusivity, while also aligning with the nation's developmental objectives. The NGP has outlined various pivotal elements and sectors of importance that require concentrated attention for the purpose of generating employment. These sectors include: • Infrastructure • Agriculture value-chain • Green economy

Relevant policy	Relevance to the proposed project
	• Manufacturing • Tourism and certain high-level service industries.
Renewable Independent Power Producer Program (2022)	The South African Renewable Independent Power Producer Programme has established a competitive selection process designed to facilitate private sector investment in grid-connected renewable energy production, with a particular focus on solar and wind sources. The DMRE is anticipated to initiate the launch of the Request for Proposals for the Sixth Bid Window within the REIPPP framework. This call for proposals invites independent power producers to propose projects that would contribute a new generation capacity of 2600 MW. This capacity comprises 1600 MW from onshore wind energy and 1000 MW from solar photovoltaic power plants. Additionally, the Sixth Bid Window has been designed to foster socio-economic and environmentally responsible development. It aims to promote increased local involvement and economic empowerment within South Africa's renewable energy sector, in harmony with the REIPPP's overarching objectives.
Eastern Cape Vision Provincial Development Plan (2030)	The Eastern Cape Provincial Development Plan (ECPDP) is a developmental strategy that branches off from the NDP 2030, while also addressing socio-economic concerns specific to the Eastern Cape Province. The ECPDP acknowledges the province's substantial potential for economic advancement due to its abundant natural resources. The ECPDP has outlined multiple objectives to realize the 2030 vision for the province. Within the realm of renewable energy, one objective aims to position the province as a primary investment centre in the energy sector, ensuring a dependable energy supply for sectors with high growth potential. The ECPDP highlights that such investments in renewable energy have the potential to drive economic progress throughout the province, particularly if the associated benefits are proactively pursued. As per the ECPDP, some of the local advantages expected to result from these energy sector investments encompass: • Affordable energy, resulting in reduced costs for products, services, and transportation, along with heightened competition for the labor market.

Relevant policy	Relevance to the proposed project
	• Employment generation through the construction, operation, and maintenance of new energy installations, as well as the provision of manufactured parts. • New rental collection systems to capture a share of the surplus coming from the new investments.
Eastern Cape Sustainable Energy Strategy (2012)	The Eastern Cape Sustainable Energy Strategy outlines the province's intended course of action within the energy sector. The primary aim of this strategy is to promote the generation of energy that is sustainable, cost-effective, and ecologically responsible. This will be accomplished by establishing conducive conditions for energy production and the growth of sustainable technologies, skills, and industries. These objectives are set to be realized through a range of initiatives, including: • Thorough training initiative for pertinent decision-makers regarding the approval of renewable energy projects; • Creation of an implementation task force to offer potential investors a centralized source of renewable energy insights within the province; • Creation of a regional viewpoint on the placement of renewable energy projects; • Advocating for Eskom to accelerate and enhance the power transmission capacity in the former Transkei area; • Advocating to the Department of Energy for the formulation of an extended program for procuring renewable energy generation. Through the pursuit of these initiatives the Eastern Cape Province seeks to become a leading and preferred destination for sustainable energy investment in South Africa.

11.2 District and Local Municipalities

The strategic policies at a district and local levels have similar objectives for the respective areas, namely, to accelerate economic growth, create jobs, and uplift communities. The proposed Mayogi is considered to align with the aims of these policies. A brief review of the most relevant district and local municipal policies is provided in the table below.

Table 32: Relevant District and Local Municipal Policies for the Mayogi Solar PV Facility

Nama	Relevance to the proposed project
Sarah Baartman District	The policy acknowledges the significance of renewable energy in the district and province at large and notes the growth opportunities that the sector offers in

Nama	Relevance to the proposed project
Municipality IDP (2022-2027)	terms of job creation. Furthermore, the policy places emphasis on the potential of the area to be a manufacturer of renewable energy generation infrastructure and the added social and economic potential benefits that may be reaped from it. The Sarah Baartman District is already a host to renewable energy projects, particularly wind energy farms. The IDP notes that the district has made steady improvement in terms of electrification, however, additional renewable energy projects in the area may assist with areas in the district that continue to experience electricity backlogs.
Sarah Baartman District Municipality SDF: (2013)	Renewable energy potential forms part of the spatial pillars of the document. The core principle of the spatial planning framework for the district regarding renewable energy is to optimize the use of the sector's potential in the area. The framework highlights the importance of developments to create opportunities that will support economically competitive communities and positively contribute to the growth of the local economy.
Sundays River Valley Local Municipality IDP (2021-2022)	The local municipality IDP draws attention to the growing need for electricity supply in the area as a result of the expansion of citrus farming in the area which has influenced the area's population. The IDP has also highlighted the advertisement of alternative energy sources within the local municipality and the call upon environmental agents from the private sector to conduct appropriate assessments in order to determine the suitability for renewable energy sources in the area.

The review of relevant legislation, policies and documentation pertaining to the proposed Mayogi PV energy solar energy facility aligns with the relevant policies and plans at both a district and local level and is considered a suitable development in terms of mandated renewable energy related policy and planning frameworks.

12. NEED AND DESIRABILITY

SA is currently experiencing electricity supply challenges, which in turn is leading to periodic load shedding. The impact of load shedding has had massive effects on the economy and society at large. Furthermore, impacts of COVID-19, reduced business confidence and national sub-investment downgrades have all had impacts on the economy of the country. This section outlines the need and desirability of the proposed project based on the above-mentioned aspects.

12.1 National Renewable Energy Requirement

In 2010, South Africa had 44,157 MW of power generation capacity installed. Current forecasts indicate that by 2025, the expected growth in demand will require the current installed power generation capacity to be almost doubled to approximately 74,000 MW (SAWEA, 2010).

This growing demand, fuelled by increasing economic growth and social development within Southern Africa, is placing increasing pressure on South Africa's existing power generation capacity. Coupled with this, is the growing awareness of environmental impact, climate change and the need for sustainable development. Despite the worldwide concern regarding Greenhouse Gas (GHG) emissions and climate change, South Africa continues to rely heavily on coal as its primary source of energy, while most of the countries renewable energy resources remain largely untapped (DME, 2003). There is

therefore an increasing need to establish a new source of generating power in SA within the next decade.

The use of renewable energy technologies, as one (1) of a mix of technologies needed to meet future energy consumption requirements is being investigated as part of Eskom's long-term strategic planning and research process. It must be remembered that solar energy is plentiful, renewable, widely distributed, clean and reduces GHG emissions when it displaces fossil-fuel derived from electricity. In this light, renewable solar energy can be seen as desirable.

The REIPPP programme and the competitive nature of the bidding process has resulted in significant lowering of solar and wind tariff prices since 2011. Further projects will increase the competitive nature of the REIPPP program and further result in cost savings to South African consumers.

12.2 National Renewable Energy Commitment

In support of the need to find solutions for the current electricity shortages, the increasing demand for energy, as well as the need to find more sustainable and environmentally friendly energy resources, South Africa has embarked on an infrastructure growth programme supported by various government initiatives. These include the National Development Plan (NDP), the Presidential Infrastructure Coordinating Commission (PICC), the DoE's IRP, the National Strategy for Sustainable Development, the National Climate Change Response White Paper, the Presidency of the Republic of South Africa's Medium-Term Framework, and the National Treasury's Carbon Tax Policy Paper.

The Government's commitment to growing the renewable energy industry in South Africa is also supported by the White Paper on Renewable Energy (2003) which sets out the Government's principals, goals and objectives for promoting and implementing renewable energy in South Africa. In order to achieve the long-term goal of achieving a sustainable renewable energy industry, the DoE has set a target of contributing 17,8GW of renewable energy to the final energy consumption by 2030. This target is to be produced mainly through, wind and solar; but also through biomass and small scale hydro (DME, 2003; IRP, 2010). Further renewable energy targets have been proposed within the latest IRP, which was gazetted in 2019.

The 2019 Integrated Resource Plan (2019) (IRP2019) was released on 18 October 2019 and includes the following capacity allocation:

- 1 500 MW of new coal power (noting that there will be decommissioning of coal capacity over the period);
- 2 50 0MW of hydro power;
- 6 000 MW solar;
- 14 400 MW wind;
- 2 000 MW of storage;
- 3 000 MW from gas.

12.3 Site Suitability

The site is preferred due to the suitable climate, conditions and topography. Proximity to the substation on the property and knowledge of an upgrading to the 132kV power line is available. The site is considered highly preferred in terms of the development of a solar PV facility. As such, no property or location alternatives have been considered.

12.3.1 Topography, Site Access and IPP Competition

The topography varies minimally across the site with the elevation ranging from 236 meters above mean sea level (mamsl) in the south-west to 181 mamsl in the north-east and is considered suitable for development.

The project site is well situated being located on the southern site of the R75. Thereafter access to the development area can be obtained via the existing MN50455 from which the Skilpad Substation gains access as well.

There is a fair amount of other IPP competition in the area, regarding renewable energy facilities; thus, the Project will further aid in the socio-economic development of the area.

12.3.2 Environmental

All the environmental constraints were considered in the area at the time of undertaking the prefeasibility analysis. Key environmental specialists were consulted with to identify any potential impacts/environmental constraints which may be associated with a proposed SEF at the onset of the project. An agricultural specialist, aquatic specialist, geotechnical specialist, heritage specialist, social specialist, visual specialist, transportation specialist, terrestrial ecologist and risk assessment specialist were appointed to undertake detailed pre-feasibility assessments which was used to determine the preliminary layout which has taken into account most of the environmental sensitivities from the onset. The National Department of Environmental Affairs (DEA) screening tool was also utilized to generate a site sensitivity report for the proposed project to guide the level of specialist input that would be required.

Thus, it was concluded that the development at the selected farm may have a minimal impact on the area's flora and fauna.

12.3.3 Land Availability

While the proposed project site is not located in an identified REDZs, the development of the proposed solar PV energy facility is still considered to be important for South Africa as it will reduce the country's overall environmental footprint from power generation (including externality costs), and thereby steer the country on a pathway towards sustainability. There is very limited land available for the development of renewable energy facilities.

The affected landowner has given their consent for the undertaking of the Scoping and EIA Process and the subsequent development of the proposed Mayogi Solar PV project.

In terms of the agricultural assessment, the site has low agricultural potential and no dryland cropping potential predominantly because of both climate and soil constraints. As such, agricultural production is limited to grazing. The land across the site is verified in this assessment as being low to medium agricultural sensitivity.
Two potential mechanisms of negative agricultural impact were identified, occupation of agricultural land and soil degradation. Two potential mechanisms of positive agricultural impact were identified as increased financial security for farming operations and improved security against stock theft and other crime. All mechanisms are likely to lead to low impact on the agricultural production potential and the agricultural impact is therefore assessed as having low significance.

12.3.4 Access to Grid

Grid connection suitability is the next fundamental element which drives the project location. The proposed project site has good grid connection potential as it is close to the existing Skilpad Substation 33/132kV. Output voltage from the inverter is LV AC and this is fed into step up transformers to 33kV. From the inverter transformer an RMU is uses to connect to the onsite substation. The onsite substation will be required on the site to step the voltage from 33kV up to 132kV. After which the power will be evacuated into the national grid.

The grid connection will be assessed as part of this application.

12.4 Job Creation

The majority of the government policy documents highlight the urgency of tackling South Africa's elevated unemployment rate. The National Development Plan (NDP) and the New Growth Path (NGP) recognizes that a viable approach to achieving this goal involves drawing in investments to the country. Such investments not only drive economic expansion but also foster the generation of job opportunities. These policies also acknowledges that to foster job-generating growth, the economy must possess a consistent and dependable energy supply. The suggested project aims to directly confront this concern, thereby contributing to resolving the unemployment challenge not only in South Africa but specifically within the SBDM and SRVLM regions.

12.5 Poverty Reduction

Addressing the issue of poverty in South Africa holds significant policy importance across all levels of government. This emphasis is evident in documents such as the National Development Plan (NDP), Industrial Policy Action Plan (IPAP), Eastern Cape Provincial Development Plan (ECPDP), and the Sarah Baartman and Sundays River Valley Integrated Development Plans (IDPs). Poverty and employment share a close connection, and economic theory indicates that any action that fosters job growth is likely to eventually result in a gradual decrease in poverty. The potential for job creation within the suggested project is thus expected to play a constructive role in diminishing poverty levels, both within the local and district municipality and on a broader scale in South Africa.

12.6 Economic Growth and Recovery

In the past ten years, South Africa has gone through multiple phases of limited economic expansion. The situation worsened due to the COVID-19 pandemic and aggravated by power shortages, ultimately causing a technical recession in the nation. Access to ample and reasonably priced electricity is a critical factor for future economic advancement. It plays a vital role in encouraging the growth of businesses, thereby leading to increased employment opportunities. Therefore, any initiative that could potentially spur economic growth is highly favorable.

12.7 Energy Diversification

South Africa heavily depends on coal-based power plants for generating the majority of its electrical power. Similarly, the country relies significantly on Eskom to deliver this electricity. This situation presents two main risks: 1) possible disruptions in coal supply; or 2) potential challenges in Eskom's ability to meet electricity demand. The 2019 Integrated Resource Plan (IRP) aims to decrease the country's reliance on coal and shift toward alternative energy sources. Simultaneously, it aims to

introduce competition from other energy providers in the sector. Therefore, a project that offers energy from a source other than coal and not tied to Eskom would align with the objectives of the IRP.

12.8 Energy Supply

The energy supply challenges in South Africa have been extensively recorded. In light of this situation, the government introduced the RMIPPPP program to swiftly tackle the existing energy shortage in the nation. Therefore, a project that aims to offer energy solutions to alleviate the current scarcity in South Africa would be favorable, aligning with both the Integrated Resource Plan (IRP) and the RMIPPPP.

13. DETAILS OF PROCESS FOLLOWED TO REACH THE PREFERRED OPTION

13.1 Details of alternatives

As per Chapter 1 of the EIA regulations (2014), as amended, feasible and reasonable alternatives are required to be considered during the EIA process. Alternatives are defined as "*different means of meeting the general purpose and requirements of the activity*". These alternatives may include:

(a) The property on which or location where it is proposed to undertake the activity;
(b) The type of activity to be undertaken;
(c) The design or layout of the activity;
(d) The technology to be used in the activity;
(e) The operational aspects of the activity; and
(f) The option of not implementing the activity.

Each of these alternatives are discussed in relation to the proposed development in the sections below. The EIA Regulations, 2010 guideline document stipulates that the environmental investigation needs to consider feasible alternatives for the proposed development. The developer should be encouraged to consider alternatives that would meet the objective of the original proposal and which could have an acceptable impact on the environment. The role of alternatives in the EIA process is therefore to find the most effective way of meeting the need and purpose of the proposal, either through enhancing the environmental benefits of the proposed activity, and/or through reducing or avoiding potentially significant negative impacts.

13.1.1 Location/Site alternatives

Prior to the initiation of the EIA, alternative properties / sites were considered for the location of the proposed development. As discussed above, the selection of a potential solar farm site includes several key aspects including solar resource, grid connection suitability/infrastructure as well as environmental and social constraints, topography and access, and willing land owner. This proposed project site was selected based on the above criteria ahead of other regional properties / sites due to the cumulative assessment of all criteria.

The placement of solar energy facilities is dependent on the factors discussed above, all of which are favourable at the proposed site location. The proposed project site has topography which is suitable for the development of a SEF and is in close proximity to a grid connection that has been identified to have sufficient capacity to evacuate the generation. In addition, the proposed site is easily accessible off the

public roads R75 and MN50455. The site is therefore considered highly suitable for the proposed development of a SEF and no other locations have been considered.

Based on the reasons above no site alternatives have been considered during the EIA process for this proposed development.

13.1.2 The type of activity to be undertaken

No other activity alternatives have been considered. Renewable Energy developments in South Africa are highly desirable from a social, environmental and development perspectives respectively. The importance of renewable energy has been outlined in **Section 10** and **11** above highlighting district and local support. The solar resource in this area along with the rapid advancements in solar energy technology efficiency serves as further motivations for the proposed development.

South Africa is under immense pressure to provide clean sources of electricity generating capacity in order to reduce the current electricity demand from aging and polluting coal-fired power stations. With the global focus on climate change, the government is under severe pressure to explore alternative energy sources in addition to coal-fired power stations. Although solar energy is not the only solution to solving the energy crisis in South Africa, it is a suitable sustainable solution to the energy crisis and this project could contribute to addressing the problem. This project will thus aid in achieving South Africa's goals in terms of sustainability, energy security, mitigating energy cost risks, local economic development and national job creation.

13.1.3 The technology to be used in the activity

The importance of renewable energy has been outlined in **Section 10** and **11** above highlighting district and local support. The solar resource in this area advocates for the use of Solar PV technology in order to generate energy. Advancements in Solar PV technology presents a renewable and sustainable way for countries like South Africa to generate low cost energy from a natural resource.

13.1.4 Design or layout of the activity

Specialist studies identified the environmental constraints upfront and a layout that maximises the footprint was chosen. Aside from the layout alternatives identified for the substations, temporary laydown area (refer section 13.3.6), full site layout alternatives will not be assessed however the layout will be further refined should any additional constraints be identified from the various specialists. The layout has been designed to avoid sensitive areas as far as possible.

13.1.5 No – go option

The option of not implementing the activity, or the "no-go" alternative, has been considered in the EIA process. South Africa is under immense pressure to provide clean sources of electricity generating capacity in order to reduce the current electricity demand from aging and polluting coal-fired power stations. With the global focus on climate change, the government is under severe pressure to explore alternative energy sources in addition to coal-fired power stations. Although solar energy is not the only solution to solving the energy crisis in South Africa, not establishing the proposed SEF and associated infrastructure would be detrimental to the mandate that the government has set to promote the implementation of renewable energy. It is a suitable sustainable solution to the energy crisis and this project could contribute to addressing the problem. This project will thus aid in achieving South Africa's goals in terms of sustainability, energy security, mitigating energy cost risks, local economic development and national job creation.

The no- go alternative is not currently the preferred alternative. No fatal flaws have been identified by the specialists and all have indicated that project should proceed with the proposed mitigation measures taken into account.

13.2 Details of Public Participation Process undertaken

Public participation is the cornerstone of any EIA. The principles of the National Environmental Management Act (NEMA) as well as the EIA Regulations (as amended 2017) govern the EIA process, including public participation. These include provision of sufficient and transparent information on an ongoing basis to stakeholders to allow them to comment, and ensuring the participation of previously disadvantaged people, women and the youth. All documents relating to the PP process have been included in **Appendix 5**.

The aim of the Scoping phase is to collect the issues, concerns and queries of interested and affected parties (I&APs) and determine the scope of the following phase of the EIA. The main objective of the Scoping phase is to:

- Inform the stakeholders about the proposed project and the environmental assessment process to be followed;
- Provide opportunity to all parties to exchange information and express their views and concerns;
- Obtain contributions from stakeholders (including the client, consultants, relevant authorities and the public) and ensure that all issues, concerns and queries raised are fully documented;
- Evaluate the issues raised and identify the significant issues; and
- Provide comment on how these issues are to be assessed as part of the Environmental Impact Assessment Process.

The public scoping processes undertaken are in accordance with the required EIA procedures prescribed within national legislation.

13.2.1 Identification of Key Stakeholder and I&AP's

Liaison with the relevant authorities plays a crucial role in the successful completion of any environmental assessment process. In addition to the competent authority, DFFE, key stakeholders, the local municipality as well as other potentially affected I&APs, including adjacent property owners and dwellers, are identified.

This list will be updated as the project progresses and based on responses received.

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

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

- Comments are submitted within the timeframes set by the competent authority or extensions of timeframes agreed to by the applicant, Environmental Assessment Practitioner (EAP) and competent authority.
- A copy of the comments submitted directly to the competent authority is served on the applicant or EAP.

- The I&AP discloses any direct business, financial, personal or other interest which that party may have in the approval or refusal of the application.

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

The comment periods during the scoping phase were implemented according to the EIA Regulations, 2014 (as amended). The comment periods which have been implemented at this stage of the scoping phase (as set out by the EIA Regulations, 2014) were as follows:

- Comment and review period for the Draft Scoping Report (DSR): 30 days.

As stipulated in the EIA Regulations, 2014 (as amended), the DSR will undergo a 30-day comment and review period from the **08 September 2023 until the 09 October 2023** (excluding public holidays). Any I&APs and key stakeholders that wished to register on the project's database or comment on the DSR are encouraged to contact SiVEST Environmental Division at the contact details provided.

Notification of EIA process to be undertaken as follows:

- An I&AP database was compiled which includes all affected landowners, adjacent landowners, occupiers of affected and adjacent land, other I&APs, key stakeholders (such as OoS) and other surrounding project developers.
- Issuing of the notifications and initial landowner consultation was circulated to all I&APs on the **08th of September 2023** respectively as part of the Draft Scoping Report (proof is included in Appendix 5 of the Final Scoping Report).
- Placement of site notices in English and Afrikaans (as per regulations) were placed along the entrance road to the application site, around the site itself as well as in the town of Kirkwood on **07th of September 2023** (proof included in the Final Scoping Report).
- Notification letters were sent via E-mail or sms (if cellphone number / email is available, it is assuming the I&AP have an email or cellphone).
- Public notification of the EIA process was advertised in a local newspaper (namely the UD Express) on **07th September 2023**, as required according to Regulation 41(2) (c) of the EIA Regulations (2014), as amended. Proof to be included in Appendix 5 of the Final Scoping Report.
- Reminder notifications of the closing of the DSR comment period were sent out on the 21st of September 2023, 04th October 2023 and 09th of October 2023 respectively to ensure that comments and/or concerns were received from the OoS and/or registered I&APs.

Availability of report for review:

- The draft Scoping report was made available on SiVESTs website for download.
- Electronic copies were made available to parties via a secure digital link upon request for the documentation.
- CDs / Flash drive were posted, if requested.
- The Draft Scoping Report was made available for review at the following location (Proof is included in Appendix 5 of the Final Scoping Report):
    - Sundays River Valley Public Library, 23 Middle Street, Kirkwood, 6120.

13.2.4 Details of notification of landowners

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

Regulation 39 (2) of the 2014 NEMA EIA Regulations, 2014 (as amended), further states that "sub-regulation (1) does not apply in respect of: (a) linear activities; (b) activities constituting, or activities directly related to prospecting or exploration of a mineral and petroleum resource or extraction and primary processing of a mineral or petroleum resource; and (c) strategic integrated projects as contemplated in the Infrastructure Development Act, 2014".

The proposed development does not constitute a linear development or SIP project and landowner consent is therefore required from the following land portions:

Table 33: Properties for Affected Landowners

SG CODE	DESCRIPTION
C07600000000069200000	PORTION 0 OF FARM NO. 692

The landowners and/or occupants of the above-mentioned farm portions have been notified accordingly. Landowner Consent Forms have been obtained for the landowners of the above-mentioned farm portions.

In terms of the Chapter 6, Section 39 of the EIA Regulations, 2014 (as amended), notification of directly adjacent landowners and occupiers is required. As a result, the affected and adjacent landowners were notified of the proposed development accordingly.

13.2.5 Summary of issues raised

Issues, comments and concerns raised during the public participation process to date have been captured in the Comments and Response Report (C&RR). The C&RR will provide a summary of the comments received and issues raised by I&APs and key stakeholders, as well as the responses provided. This information will be used to feed into the evaluation of environmental and social impacts and will be taken into consideration when compiling the FSR. All comments received to date have been included in the C&RR and attached in Appendix 5.

13.3 Impact Assessment

The potential impacts for the identified environmental aspects have been assessed and mitigation measures identified below (refer **Appendix 6**).

13.3.1 Planning

Environmental Aspect	Potential Impact During Planning	Proposed Mitigation
Agricultural	Compliance Statement	
Avifaunal	• None identified	• None Identified
Aquatic	• None identified	• None Identified
Geotechnical	• None identified	• None Identified

Environmental Aspect	Potential Impact During Planning	Proposed Mitigation
Terrestrial Biodiversity	• None identified	• None identified
Heritage	• None identified	• None Identified
Social	• None Identified	• None Identified
Traffic	• None Identified	• None Identified
Visual	• None Identified	• None Identified

13.3.2 Construction Phase

SEF

Environmental Aspect	Potential Impact During Construction	Proposed Mitigation
Agricultural	None identified	
Avifaunal - Mammals, unlikely to occur in the way of the construction, if present likely to move away.	Direct impacts on mammals and habitat loss by destruction	Should any mammal species be encountered or exposed during the construction phase, they should be removed and relocated to natural areas in the vicinity. The contractor must ensure that no indigenous mammal species are disturbed, trapped, hunted or killed during the construction phase. Conservation-orientated clauses should be built into contracts for construction personnel, complete with penalty clauses for non-compliance. The appropriate agency should implement an ongoing monitoring and eradication program for all invasive plant species growing on the site. Any post-development re-vegetation or landscaping exercise should use grass species indigenous to the area are preferred
Avifaunal - The construction of the facility may lead to limited habitat loss and with little direct impacts on the birds	Direct impacts on birds and habitat loss	The spatial extent of construction activities be minimized, The boundaries of the development footprint areas are to be clearly demarcated and it must be ensured that all construction activities remain within the demarcated footprint area. Any bird nests that are found during the construction period must be reported to the Environmental Control Officer (ECO). Provide adequate briefing for site personnel and residents prior to construction. breeding and foraging in the area should be minimized and controlled.
Avifaunal - Birds disturbance due to human activities	The presence of vehicles and construction workers will cause disturbance to avifauna, with the movement and activities of personnel on site and the associated noise, pollution and litter all having a negative effect on birds. In addition, the presence of construction workers will increase the probability of activities	Movement of construction vehicles and workers beyond the boundary of the site must be minimized. In addition, workers must be instructed to minimize disturbance of birds at all times, and steps must be taken to ensure that no illegal hunting occurs. The boundaries of the development footprint areas are to be clearly demarcated and it must be ensured that all activities remain within the demarcated

Environmental Aspect	Potential Impact During Construction	Proposed Mitigation
	such as illegal hunting of birds. The permanent presence of a much larger number of people than presently occur at the site will result in greater disturbance of birds that use the area for foraging and breeding.	footprint area. Disturbance by residents of birds breeding and foraging in the area should be minimized. Provide adequate briefing for site personnel. Any bird nests that are found during the construction period must be reported to the Environmental Control Officer (ECO) and residents should always be aware of the importance of birds in their built environment.
Avifaunal - Birds possibility of electrocution	Electrical infrastructure such as OHL pose a potential collision risk to flying birds, and a potential electrocution risk to perching birds. The magnitudes of these risks are much lower than the corresponding risks associated with large overhead transmission lines.	Normal safety measures for electrical installations as used by Eskom
Avifaunal - Reptile or amphibia species may be influenced. The current habitat is mostly disturbed terrestrial habitat	Direct impact on herpetofauna and habitat destruction, unlikely to be present at PV construction site, Those present may move away, slower movement. The footprint for the proposed residential development will result in clearing most of the vegetation area. This will result in some loss of herpetofauna habitat.	Should any reptile or amphibia species be encountered or exposed during the construction phase, they should be removed and relocated to natural areas in the vicinity. The contractor must ensure that no indigenous herpetofauna species are disturbed, trapped, hunted or killed during the construction phase. During the construction phase there may be increased surface runoff and a decreased water quality. Completing construction during the winter months would mitigate the environmental impact. The appropriate agency should implement an ongoing monitoring and eradication program for all invasive plant species growing on the site. Any post-development re-vegetation or landscaping exercise should use species indigenous to the area.
Aquatic – Loss of aquatic species of special concern during the construction and or decommissioning of the solar facility	The construction activities will not result in the disturbance of aquatic habitats that may contain listed and or protected plant or animal species. However, none of these were observed during this assessment	Develop and implement a Rehabilitation and Monitoring plan post Environmental Authorisation. This must be developed following the finalisation of the panel / road layout and a walk down has been completed. This plan should include relocation of suitable plant species, but more important protect any topsoil stores and promote the collection of vegetative material and propagules / seed to assist with the revegetation of the site Where possible, temporary construction lay-down or assembly areas should be sited on transformed areas; and Rapid regeneration of plant cover must be encouraged by setting aside topsoil during earthmoving and replacing onto areas where the re- establishment of plant cover is desirable to prevent erosion.

Environmental Aspect	Potential Impact During Construction	Proposed Mitigation
Aquatic – Damage or loss of riparian systems, ephemeral watercourses and wetland systems in construction and or decommissioning of the solar facility although all areas have been avoided	Construction could result in the loss of drainage systems that are fully functional and provide an ecosystem services within the site especially where new access roads are required or road upgrades will widen any current bridges or drifts. Loss can also include a functional loss, through change in vegetation type via alien encroachment for example.	• A pre-construction walkthrough with an aquatic specialists is recommended and they can assist with the development of the stormwater management plan and Aquatic Rehabilitation and Monitoring plan, coupled to micro-siting of the final layout. • All alien plant re-growth, which is currently low within the greater region must be monitored and should it occur, these plants must be eradicated within the project footprints and especially in areas near the proposed crossings. Where roads and crossings are upgraded, the following applies: • Existing pipe culverts must be removed and replaced with suitable sized box culverts, especially where road levels are raised to accommodate any large vehicles. • River levels, regardless of the current state of the river / water course must be reinstated thus preventing any impoundments from being formed. The related designs must be assessed by an aquatic specialist during a pre-construction walkdown. • Where large cut and fill areas are required these must be stabilised and rehabilitated during the construction process, to minimise erosion and sedimentation. • Suitable stormwater management systems must be installed along roads and other areas and monitored during the first few months of use. Any erosion / sedimentation must be resolved through whatever additional interventions maybe necessary (i.e., extension, energy dissipaters, spreaders, etc). • A detailed monitoring plan must be developed in the pre-construction phase by an aquatic specialist, where any delineated system occurs within 50 m of existing crossings.
Aquatic -. Potential impact on localised surface water quality (construction materials and fuel storage facilities) during the construction and or	• During construction earthworks will expose and mobilise earth materials, and a number of materials as well as chemicals will be imported and used on site and may end up in the surface water, including soaps, oils, grease and fuels, human wastes, cementitious wastes, paints and solvents, etc.	• All liquid chemicals including fuels and oil, including the BESS must be stored in with secondary containment (bunds or containers or berms) that can contain a leak or spill. Such facilities must be inspected routinely and must have the suitable PPE and spill kits needed to contain likely worst-case scenario leak or spill in that facility, safely.

Environmental Aspect	Potential Impact During Construction	Proposed Mitigation
decommissioning of the solar facility	Any spills during transport or while works area conducted in proximity to a watercourse has the potential to affect the surrounding biota. Leaks or spills from storage facilities also pose a risk and due consideration to the safe design and management of the 30 000l fuel storage facility must be given. • Although unlikely, consideration must also be provided for the proposed Battery Energy Storage System (BESS), with regard safe handling during the construction phase. This to avoid any spills or leaks from this system	• Washing and cleaning of equipment must be done in designated wash bays, where rinse water is contained in evaporation/sedimentation ponds (to capture oils, grease cement and sediment). • Mechanical plant and bowsers must not be refuelled or serviced within 100m of a river channel. • All construction camps, lay down areas, wash bays, batching plants or areas and any stores should be more than 50 m from any demarcated water courses.. • Littering and contamination associated with construction activity must be avoided through effective construction camp management; • No stockpiling should take place within or near a water course • All stockpiles must be protected and located in flat areas where run-off will be minimised and sediment recoverable;
Geotechnical - Removal of subsoils (soil, rock)	Displacement of natural earth material and overlying vegetation. 1) Increase in soil and wind erosion due to clearing of vegetation. 2) Construction and earthmoving vehicles may displace soil during operations. 3) Creation of drainage paths along access tracks. 4) Potential oil spillages from heavy plant. 5) Excessive dust.	Identify protected areas prior to construction. 1) Construction of temporary berms and drainage channels to divert surface water. 2) Minimize earthworks and fills. 3) Use existing road network and access tracks. 4) Rehabilitation of affected areas (such as re-grassing, mechanical stabilization). 5) Correct engineering design and construction of gravel roads and water crossings. 6) Correct construction methods for foundation installations. 7) Vehicle repairs to be undertaken in designated areas. 8) Control stormwater flow. 9) Dust suppression
Terrestrial Biodiversity – Although this Albany Alluvial Vegetation Type is regarded as Endangered, little or no elements typical remained on the small patch present on the site. The vegetation is totally transformed, the plant community identified is the Arid Karoo Low species richness,	A fairly large part of this vegetation is regarded as restricted (No-Go) area e.g. around Daniell Cheetah Project, small drainage line and overhead powerline servitudes. However, there will be some development in the vicinity of the Skilpad substation, e.g. new Alternative 3 substation south of the Skilpad, substation or Alternative 1 north of the 132 kV Overhead powerline, and some solar PV panels, etc. in the remaining area. This will impact on vegetation and plant species	• Except for the current Skilpad substation and planned developments leave the N0-G0 areas in the north-eastern corner intact. • Strictly control access to the No-Go area during construction phase. • Avoid any grazing to allow recovery by natural succession. Disturb as little as possible in the powerline servitude

Environmental Aspect	Potential Impact During Construction	Proposed Mitigation
Low ecological sensitivity.		
Terrestrial Biodiversity - Vegetation and plant species in the Dry Thicket with Euphorbia: Medium species richness, Medium ecological sensitivity. Sundays Arid Thicket (=Sundays Noorsveld) is listed as Vulnerable in the 2022 NEMBA list.	Clearing of this vegetation for the solar PV panels and associated cables, access road, water piping and other associated infrastructure will result in impacts on vegetation and plant species loss.	• The clearing of vegetation must be kept to a minimum and remain within the footprint development – leave the rest of the area with natural vegetation intact, but there is very little, if any natural vegetation left. Remove alien invasive species wherever possible • Disturbed open areas must be rehabilitated immediately after construction has been completed • During the construction phase workers must be limited to areas under construction and access to adjacent areas must be strictly controlled • Rehabilitated areas must be monitored to ensure the establishment of re-vegetated areas. • Plant only indigenous grass – no alien species.
Terrestrial Biodiversity - Vegetation and plant species in the Arid Thicket on Limestone: Low species richness, Medium-Low ecological sensitivity	Clearing of this vegetation for the and for Alternative 2 Substation solar PV panels and associated cables, access road, water piping and other associated infrastructure will result in impacts on vegetation and plant species loss.	The clearing of vegetation must be kept to a minimum and remain within the footprint development – leave the rest of the area with natural vegetation intact, but there is very little, if any, natural vegetation left. Remove alien invasive species wherever possible • Disturbed open areas must be rehabilitated immediately after construction has been completed • During the construction phase workers must be limited to areas under construction and access to adjacent areas must be strictly controlled • Rehabilitated areas must be monitored to ensure the establishment of re-vegetated areas. • Plant only indigenous grass – no alien species
Terrestrial Biodiversity - Increase of alien and invasive plant species	Alien invasive plant species and weeds may encroach into any disturbed areas particularly areas cleared for the proposed development	• An alien invasive management programme must be incorporated into the Environmental Management Programme; Ongoing alien plant control must be undertaken; Areas which have been disturbed will be quickly colonised by invasive alien species. An ongoing management plan must be implemented for the clearing/eradication of alien species. Monitor all sites disturbed by construction activities for colonisation by exotics or invasive plants and control these as they emerge. Avoid planting of

Environmental Aspect	Potential Impact During Construction	Proposed Mitigation
		exotic plant species, use indigenous grass species.
Heritage (Archaeological heritage resources)	Construction activities that take place near to archaeological resources may result in their destruction	Should any previously unknown archaeological resources be impacted during construction, work must cese in the vicinity of the find and the relevant heritage authority must be contacted
Heritage (Palaeological resources)	Construction activities that take place near to palaeontological resources may result in their destruction	Implementation of the Chance Fossil Finds Procedure
Heritage (Cultural landscape)	Construction activities that take place near to cultural landscape elements may result in their destruction	Implementation of the recommendations included in the VIA
Visual - Vegetation and protected plant species	Vegetation clearing for access roads, turbines and their service areas and other infrastructure will impact on vegetation and protected plant species.	• Outline/explain the mitigation measures to be undertaken to ameliorate the impacts that are likely to arise from the proposed activity. These measures will be detailed in the EMPr.
Social	• Impact on GDP and production	• The PV solar plant developer should encourage local procurement of goods and services to be prioritised where possible. • Awareness for local businesses should be raised and extended to catering and accommodation establishments, prior to the construction phase.
	• Impact on employment	• Arrange meetings through the Sundays River Valley Local Municipality and labour unions to inform the local labour force what jobs could be applied for. • Recruit from the local labour force as far as possible and provide training prior to construction phase.
	• Contribution to skills development	• Provide basic construction training to local members prior to the construction phase. • Facilitate knowledge and skills between highly specialised technical experts and the construction crew prior and during construction phase.
	• Impact on household earnings	• Recruit as much local labour as possible to increase local household earnings. • Use local suppliers where possible and use local MSME's and B-BBEE compliant enterprises to provide transport and catering to the construction crew.
	• Impact on government revenue	• The proposed PV solar energy facility and related infrastructure will contribute to national revenue through the purchasing of goods and materials needed for construction of the facility and through the salaries and wages of temporary staff

Environmental Aspect	Potential Impact During Construction	Proposed Mitigation
		involved with construction phase of the facility
	• Impact on social conflict	• Through the SRVLM, use local municipal office as recruitment office and follow strict labour recruitment practices to reduce the number of potential job seekers loitering around in hope of finding employment. • Establish a management forum with key stakeholders to monitor potential issues that may arise due to the influx of job seekers to the area.
	• Impact on economic and social infrastructure	• Provide sufficient signage along roads near the construction site to warn motorists of construction activities taking place nearby. • Developer and contractor should ensure prior to the construction phase making use of their own social services as far as possible, i.e., mobile clinic, water tanks, generator for electricity supply.
	• Impact on the sense of place	• Natural environments not affected and needed by the proposed development should remain untouched. Regulation of boundaries of such areas need to be made transparent between all key relevant stakeholders, the developer and contractor before the construction phase.
Transportation– Development traffic/ related noise & dust pollution	• Temporary increase in traffic due to construction vehicle trips on the external road network/ increase in noise and dust pollution levels during construction period.	• Stagger component delivery to site; Reduce the construction period if possible; Stagger construction phase tasks; Make use of any quarries in the vicinity of the site to decrease the impact of development trips on the external roads; Staff and general trips should occur outside of peak traffic periods as much as possible; Maintenance of haulage routes and design and maintenance of internal roads.

Grid

Environmental Aspect	Potential Impact During Operation	Proposed Mitigation
Aquatic - Loss of aquatic species of special concern during the construction or	The construction activities will not result in the disturbance of aquatic habitats that may contain listed and or protected plant or animal species. However, none	Develop and implement a Rehabilitation and Monitoring plan post Environmental Authorisation. This must be developed following the finalisation of the tower positions and access tracks and a walk down has been

Environmental Aspect	Potential Impact During Operation	Proposed Mitigation
decommissioning of the grid options	of these were observed during this assessment	completed. This plan should include relocation of suitable plant species, but more important protect any topsoil stores and promote the collection of vegetative material and propagules / seed to assist with the revegetation of the site. Where possible, temporary construction lay-down or assembly areas should be sited on transformed areas; and Rapid regeneration of plant cover must be encouraged by setting aside topsoil during earthmoving and replacing onto areas where the re- establishment of plant cover is desirable to prevent erosion.
Aquatic - Damage or loss of riparian systems, ephemeral watercourses and wetland systems in the construction or decommissioning of the grid options	Construction could result in the loss of drainage systems that are fully functional and provide an ecosystem services within the site especially where new access roads to install any of the grid options as both alternatives will need to span watercourses with seeps. Loss can also include a functional loss, through change in vegetation type via alien encroachment for example	A pre-construction walkthrough with an aquatic specialists is recommended and they can assist with the development of the stormwater management plan and Aquatic Rehabilitation and Monitoring plan, coupled to micro-siting of the final layout. All alien plant re-growth, which is currently low within the greater region must be monitored and should it occur, these plants must be eradicated within the project footprints and especially in areas near the proposed crossings. Where roads and crossings are upgraded, the following applies: etc).It is recommended that no new tracks or towers / pylons are placed / constructed within any of the delineated aquatic zones.
Aquatic - Potential impact on localised surface water quality (construction materials and fuel storage facilities) during the construction and decommissioning phases	During construction earthworks will expose and mobilise earth materials, and a number of materials as well as chemicals will be imported and used on site and may end up in the surface water, including soaps, oils, grease and fuels, human wastes, cementitious wastes, paints and solvents, etc. Any spills during transport or while works area conducted in proximity to a watercourse has the potential to affect the surrounding biota. Leaks or spills from storage facilities also pose a risk and due consideration to the safe design and management of the 30 000l fuel storage facility must be given. Although unlikely, consideration must also be provided for the proposed Battery Energy Storage System (BESS), with regard safe handling during the construction phase. This to	• All liquid chemicals including fuels and oil, must be stored in with secondary containment (bunds or containers or berms) that can contain a leak or spill. Such facilities must be inspected routinely and must have the suitable PPE and spill kits needed to contain likely worst-case scenario leak or spill in that facility, safely. • Washing and cleaning of equipment must be done in designated wash bays, where rinse water is contained in evaporation/sedimentation ponds (to capture oils, grease cement and sediment). Mechanical plant and bowsers must not be refuelled or serviced within 100m of a river channel. • All construction camps, lay down areas, wash bays, batching plants or areas and any stores should be more than 50 m from any demarcated water courses.

Environmental Aspect	Potential Impact During Operation	Proposed Mitigation
	avoid any spills or leaks from this system	• Littering and contamination associated with construction activity must be avoided through effective construction camp management; • No stockpiling should take place within or near a water course. • All stockpiles must be protected and located in flat areas where run-off will be minimised and sediment recoverable;

13.3.3 Operational Phase

SEF

Environmental Aspect	Potential Impact During Operation	Proposed Mitigation
Agricultural	None identified	
Avifaunal - Mammals, unlikely to occur in the way of the facility during operational phase, if present likely to move away.	Maintenance of facility	Should any mammal species be encountered or exposed during the operational phase, they should be removed and relocated to natural areas in the vicinity. The contractor must ensure that no indigenous mammal species are disturbed, trapped, hunted or killed during the operational phase. Conservation-orientated clauses should be built into contracts for personnel, complete with penalty clauses for non-compliance. The appropriate agency should implement an ongoing monitoring and eradication program for all invasive plant species growing on the site. Any post-development re-vegetation or landscaping exercise should use grass species indigenous to the area are preferred
Avifaunal - Birds habitat loss or direct impact	Maintenance of facility	Any bird nests that are found during the operational period must be reported to the Environmental Control Officer (ECO). Provide adequate briefing for site personnel and residents prior to construction. breeding and foraging in the area should be minimized and controlled.
Avifaunal - Birds Disturbance due to human activities	Maintenance of facility	Movement of vehicles and workers beyond the boundary of the site must be minimized. In addition, workers must be instructed to minimize disturbance of birds at all times, and steps must be taken to ensure that no illegal hunting occurs. Disturbance of birds breeding and foraging in the area should be minimized. Provide adequate briefing for site personnel. Any bird nests that are found during the construction period must be reported to the Environmental Control Officer (ECO) and

Environmental Aspect	Potential Impact During Operation	Proposed Mitigation
		residents should always be aware of the importance of birds in their built environment.
Avifaunal - Birds electrocution	Maintenance of facility	Normal safety measures for electrical installations as used by Eskom
Avifaunal - Herpetofauna direct impact or habitat loss	Maintenance of facility	Should any reptile or amphibia species are encountered or exposed during the operational phase, they should be removed and relocated to natural areas in the vicinity. The contractor must ensure that no indigenous herpetofauna species are disturbed, trapped, hunted or killed during the operational phase. During the operational phase there may be increased surface runoff and a decreased water quality. The appropriate agency should implement an ongoing monitoring and eradication program for all invasive plant species growing on the site. Any post-development re-vegetation or landscaping exercise should use species indigenous to the area.
Aquatic - Impact on aquatic systems through the possible increase in surface water runoff on form and function during the operational phase	• Increase in hard surface areas, and roads that require stormwater management will increase through the concentration of surface water flows that could result in localised changes to flows (volume) that would result in form and function changes within aquatic systems, which are currently ephemeral. This then increases the rate of erosions and sedimentation of downstream areas	• A stormwater management plan must be developed in the preconstruction phase, detailing the stormwater structures and management interventions that must be installed to manage the increase of surface water flows directly into any natural systems. This stormwater control systems must be inspected on an annual basis to ensure these are functional. Effective stormwater management must include effective stabilisation (gabions and Reno mattresses) of exposed soil and the re-vegetation of any disturbed riverbanks
Geotechnical – Removal of subsoils (soil, rock)	Displacement of natural earth material. 1) Increase in soil erosion due to concentrated flow received off PV Panels. 2) Potential oil spillages from maintenance vehicles. 3) Sedimentation of nonperennial features caused by soil erosion.	1) Use of existing roads and tracks. 2) Rehabilitation of affected areas (such as erosion control mats). 3) Correct engineering design and construction of roads and water crossings. 4) Vehicle repairs to be undertaken in designated areas. 5) Maintenance of stormwater system.
Terrestrial Biodiversity - Although this Albany Alluvial Vegetation Type is regarded as Endangered, little or no elements typical remained on the small patch present on the site. The vegetation is	• Maintenance of facility	• Except for the current Skilpad substation and planned developments leave the N0-G0 areas in the north-eastern corner intact. • Strictly control access to the No-Go area during operational phase. • Avoid any grazing to allow recovery by natural succession. Disturb as little as possible in the powerline servitude

Environmental Aspect	Potential Impact During Operation	Proposed Mitigation
totally transformed, the plant community identified is the Arid Karoo: Low species richness, Low ecological sensitivity.		
Terrestrial Biodiversity - Vegetation and plant species in the Dry Thicket with Euphorbia: Medium species richness, Medium ecological sensitivity. Sundays Arid Thicket (= Sundays Noorsveld) is listed as Vulnerable in the 2022 NEMBA list.	• Maintenance of facility	• Remove alien invasive species wherever possible • Disturbed open areas must be rehabilitated immediately after construction has been completed • Rehabilitated areas must be monitored to ensure the establishment of re-vegetated areas. • Plant only indigenous grass – no alien species.·
Terrestrial Biodiversity - Vegetation and plant species in the Arid Thicket on Limestone: Low species richness, Medium-Low ecological sensitivity	• Maintenance of facility	• Remove alien invasive species wherever possible • Disturbed open areas must be rehabilitated immediately after construction has been completed • Rehabilitated areas must be monitored to ensure the establishment of re-vegetated areas. • Plant only indigenous grass – no alien species.·
Terrestrial Biodiversity - Increase of alien and invasive plant species	• Maintenance of facility	• An alien invasive management programme must be incorporated into the Environmental Management Programme; Ongoing alien plant control must be undertaken; Areas which have been disturbed will be quickly colonised by invasive alien species. An ongoing management plan must be implemented for the clearing/eradication of alien species. Monitor all sites disturbed by construction activities for colonisation by exotics or invasive plants and control these as they emerge. Avoid planting of exotic plant species, use indigenous grass species.
Heritage (Archaeological	• Operational activities that take place near to archaeological	• Should any previously unknown archaeological resources be impacted

Environmental Aspect	Potential Impact During Operation	Proposed Mitigation
heritage resources)	resources may result in their destruction	during construction, work must cease in the vicinity of the find and the relevant heritage authority must be contacted
Heritage (Palaeological resources)	• Operational activities that take place near to palaeontological resources may result in their destruction	• Implementation of the Chance Fossil Finds Protocol
Heritage (Cultural landscape)	• Operational activities that take place near to cultural landscape elements may result in their destruction	• Implementation of the recommendations included in the VIA
Visual -	• None identifies	• None.
Social	• Impact on GDP and production	• The operator of the PV solar facility should be encouraged as far as possible, to procure materials and products for the maintenance of the facility from local suppliers to improve the positive impact on the local economy. • Operator should be encouraged to use local MSME's in security, cleaning and other sub-industries for the basic maintenance of the facility.
	• Impact on employment	• As far as possible, local MSME enterprises should be approached to investigate opportunities for supply inputs needed for the maintenance and operation of the facility.
	• Contribution to skills development	• Consider maintenance training programmes for the local labour force which will enable them to assist with general maintenance issues of the facility and elsewhere.
	• Impact on household earnings	• Use local MSME's as far as possible for the general maintenance and low-level technical repairs required at the facility after the construction has been completed.
	• Impact on government revenue	• The proposed PV solar energy facility and related infrastructure will contribute to national revenue through salaries and wages of permanent staff involved with the maintenance of the facility.
	• Impact on social conflict	• Operator of the facility should work through the SRVLM to recruit employees where possible.
	• Impact on economic and social infrastructure	• The economic and social infrastructure not owned by the facility operator should remain untouched. • Clear signage should be used to demarcate these aspects.

Environmental Aspect	Potential Impact During Operation	Proposed Mitigation
	• Impact on the sense of place	• Visual and Noise mitigation measures should be adhered to during the operational phase. • Natural environment not affected and needed by the proposed development should remain untouched during the operation phase and should be made transparent between all key relevant stakeholders and facility operator.
Traffic – Impact due to maintenance and permanent site staff trips/ periodical trips to site for transport of water.	• Slight increase of vehicle trips due to permanent staff traveling to site, periodically (bi-annual) trips to site for transport of water and irregular maintenance trips.	• Source on-site water supply as far as possible; Utilise cleaning systems for panels needing less vehicles trips; Schedule trips for the provision of water for the cleaning of panels outside peak traffic periods as much as possible.

Grid

Environmental Aspect	Potential Impact During Operation	Proposed Mitigation
Aquatic - Impact on aquatic systems through the possible increase in surface water runoff on form and function during the operational phase from any of the access tracks, although none should cross the delineated systems	Increase in hard surface areas, and roads that require stormwater management will increase through the concentration of surface water flows that could result in localised changes to flows (volume) that would result in form and function changes within aquatic systems, which are currently ephemeral. This then increases the rate of erosions and sedimentation of downstream areas.	A stormwater management plan must be developed in the preconstruction phase, detailing the stormwater structures and management interventions that must be installed to manage the increase of surface water flows directly into any natural systems. This stormwater control systems must be inspected on an annual basis to ensure these are functional. Effective stormwater management must include effective stabilisation (gabions and Reno mattresses) of exposed soil and the re-vegetation of any disturbed riverbanks

13.3.4 Decommissioning

SEF

Environmental Aspect	Potential Impact During Decommissioning	Proposed Mitigation
Agricultural	Compliance Statement	
Avifaunal - The facility will only very slightly affect Broad-scale ecological processes	Transformation and presence of the facility will only slightly contribute to cumulative habitat loss and impacts on broad-scale ecological processes	See mitigation measures above
Aquatic – Loss of aquatic species of	The construction activities will not result in the disturbance of aquatic habitats	Develop and implement a Rehabilitation and Monitoring plan post Environmental

Environmental Aspect	Potential Impact During Decommissioning	Proposed Mitigation
special concern during the construction and or decommissioning of the solar facility	that may contain listed and or protected plant or animal species. However, none of these were observed during this assessment	Authorisation. This must be developed following the finalisation of the panel / road layout and a walk down has been completed. This plan should include relocation of suitable plant species, but more important protect any topsoil stores and promote the collection of vegetative material and propagules / seed to assist with the revegetation of the site. Where possible, temporary construction lay-down or assembly areas should be sited on transformed areas; and Rapid regeneration of plant cover must be encouraged by setting aside topsoil during earthmoving and replacing onto areas where the re- establishment of plant cover is desirable to prevent erosion.
Aquatic – Damage or loss of riparian systems, ephemeral watercourses and wetland systems in construction and or decommissioning of the solar facility although all areas have been avoided	Construction could result in the loss of drainage systems that are fully functional and provide ecosystem services within the site especially where new access roads are required or road upgrades will widen any current bridges or drifts. Loss can also include a functional loss, through change in vegetation type via alien encroachment for example.	• A pre-construction walkthrough with an aquatic specialist is recommended and they can assist with the development of the stormwater management plan and Aquatic Rehabilitation and Monitoring plan, coupled to micro-siting of the final layout. • All alien plant re-growth, which is currently low within the greater region must be monitored and should it occur, these plants must be eradicated within the project footprints and especially in areas near the proposed crossings. Where roads and crossings are upgraded, the following applies: • Existing pipe culverts must be removed and replaced with suitable sized box culverts, especially where road levels are raised to accommodate any large vehicles. • River levels, regardless of the current state of the river / water course must be reinstated thus preventing any impoundments from being formed. The related designs must be assessed by an aquatic specialist during a pre-construction walkdown. • Where large cut and fill areas are required these must be stabilised and rehabilitated during the construction process, to minimise erosion and sedimentation. • Suitable stormwater management systems must be installed along roads and other areas and monitored during the first few months of use. Any erosion / sedimentation must be resolved through

Environmental Aspect	Potential Impact During Decommissioning	Proposed Mitigation
		whatever additional interventions maybe necessary (i.e., extension, energy dissipaters, spreaders, etc). • A detailed monitoring plan must be developed in the pre-construction phase by an aquatic specialist, where any delineated system occurs within 50 m of existing crossings.
Aquatic -. Potential impact on localised surface water quality (construction materials and fuel storage facilities) during the construction and or decommissioning of the solar facility	• During construction earthworks will expose and mobilise earth materials, and a number of materials as well as chemicals will be imported and used on site and may end up in the surface water, including soaps, oils, grease and fuels, human wastes, cementitious wastes, paints and solvents, etc. Any spills during transport or while works area conducted in proximity to a watercourse has the potential to affect the surrounding biota. Leaks or spills from storage facilities also pose a risk and due consideration to the safe design and management of the 30 000l fuel storage facility must be given. • Although unlikely, consideration must also be provided for the proposed Battery Energy Storage System (BESS), with regard safe handling during the construction phase. This to avoid any spills or leaks from this system	• All liquid chemicals including fuels and oil, including the BESS must be stored in with secondary containment (bunds or containers or berms) that can contain a leak or spill. Such facilities must be inspected routinely and must have the suitable PPE and spill kits needed to contain likely worst-case scenario leak or spill in that facility, safely. • Washing and cleaning of equipment must be done in designated wash bays, where rinse water is contained in evaporation/sedimentation ponds (to capture oils, grease cement and sediment). • Mechanical plant and bowsers must not be refuelled or serviced within 100m of a river channel. • All construction camps, lay down areas, wash bays, batching plants or areas and any stores should be more than 50 m from any demarcated water courses. • Littering and contamination associated with construction activity must be avoided through effective construction camp management. • No stockpiling should take place within or near a water course • All stockpiles must be protected and located in flat areas where run-off will be minimised and sediment recoverable.
Geotechnical – Removal of subsoils (soil, rock)	Decommissioning of the structure will disturb the geological environment. 1) Increase in soil and wind erosion due to clearance of structures. 2) Construction and earthmoving vehicles will displace the soil. 3) Creation of drainage paths. 4) Potential oil spillages from vehicles. 5) Excessive sediments in non-perennial features.	1) Use of temporary berms and drainage channels to divert surface water during flooding. 2) Minimise earthworks and demolish footprints. 3) Use of existing roads and tracks. 4) Rehabilitation of affected areas (such as regrassing). 5) Develop a chemical spill response plan. 6) Develop dust and demolition fly suppression plan. 7) Vehicle repairs to be undertaken in designated areas. 8) Reinstate channelized drainage features.
Terrestrial Biodiversity	None identified.	None identified.

Environmental Aspect	Potential Impact During Decommissioning	Proposed Mitigation
Heritage - (Archaeological heritage resources)	Decommissioning activities that take place near to archaeological resources may result in their destruction	• Should any previously unknown archaeological resources be impacted during construction, work must cease in the vicinity of the find and the relevant heritage authority must be contacted
Heritage - (Palaeological resources)	Decommissioning activities that take place near to palaeontological resources may result in their destruction	• Implementation of the Chance Fossil Finds Protocol
Heritage - (Cultural landscape)	Decommissioning activities that take place near to cultural landscape elements may result in their destruction	• Implementation of the recommendations included in the VIA
Visual - Fauna	• Fauna will be negatively affected by the decommissioning of the wind farm due to the human disturbance, the presence and operation of vehicles and heavy machinery on the site and the noise generated.	• Outline/explain the mitigation measures to be undertaken to ameliorate the impacts that are likely to arise from the proposed activity. These measures will be detailed in the EMPr.
Social	• None identified	• None identified
Transportation–Development traffic/ related noise & dust pollution	• Temporary increase in traffic due to construction vehicle trips on the external road network/ increase in noise and dust pollution levels during construction period.	• Stagger component delivery to site; Reduce the construction period if possible; Stagger construction phase tasks; Make use of any quarries in the vicinity of the site to decrease the impact of development trips on the external roads; Staff and general trips should occur outside of peak traffic periods as much as possible; Maintenance of haulage routes and design and maintenance of internal roads.

Grid

Environmental Aspect	Potential Impact During Operation	Proposed Mitigation
Aquatic - Loss of aquatic species of special concern during the construction or decommissioning of the grid options	The construction activities will not result in the disturbance of aquatic habitats that may contain listed and or protected plant or animal species. However, none of these were observed during this assessment	Develop and implement an Rehabilitation and Monitoring plan post Environmental Authorisation. This must be developed following the finalisation of the tower positions and access tracks and a walk down has been completed. This plan should include relocation of suitable plant species, but more important protect any topsoil stores and promote the collection of vegetative material and propagules / seed to assist with the revegetation of the site. Where possible, temporary construction lay-down or assembly areas should be sited on transformed areas; and

Environmental Aspect	Potential Impact During Operation	Proposed Mitigation
		Rapid regeneration of plant cover must be encouraged by setting aside topsoil during earthmoving and replacing onto areas where the re- establishment of plant cover is desirable to prevent erosion.
Aquatic - Damage or loss of riparian systems, ephemeral watercourses and wetland systems in the construction or decommissioning of the grid options	Construction could result in the loss of drainage systems that are fully functional and provide an ecosystem services within the site especially where new access roads to install any of the grid options as both alternatives will need to span watercourses with seeps. Loss can also include a functional loss, through change in vegetation type via alien encroachment for example	A pre-construction walkthrough with an aquatic specialists is recommended and they can assist with the development of the stormwater management plan and Aquatic Rehabilitation and Monitoring plan, coupled to micro-siting of the final layout. All alien plant re-growth, which is currently low within the greater region must be monitored and should it occur, these plants must be eradicated within the project footprints and especially in areas near the proposed crossings. Where roads and crossings are upgraded, the following applies: etc). It is recommended that no new tracks or towers / pylons are placed / constructed within any of the delineated aquatic zones.
Aquatic - Potential impact on localised surface water quality (construction materials and fuel storage facilities) during the construction and decommissioning phases	During construction earthworks will expose and mobilise earth materials, and a number of materials as well as chemicals will be imported and used on site and may end up in the surface water, including soaps, oils, grease and fuels, human wastes, cementitious wastes, paints and solvents, etc. Any spills during transport or while works area conducted in proximity to a watercourse has the potential to affect the surrounding biota. Leaks or spills from storage facilities also pose a risk and due consideration to the safe design and management of the 30 000l fuel storage facility must be given. Although unlikely, consideration must also be provided for the proposed Battery Energy Storage System (BESS), with regard safe handling during the construction phase. This to avoid any spills or leaks from this system	• All liquid chemicals including fuels and oil, must be stored in with secondary containment (bunds or containers or berms) that can contain a leak or spill. Such facilities must be inspected routinely and must have the suitable PPE and spill kits needed to contain likely worst-case scenario leak or spill in that facility, safely. • Washing and cleaning of equipment must be done in designated wash bays, where rinse water is contained in evaporation/sedimentation ponds (to capture oils, grease cement and sediment). • Mechanical plant and bowsers must not be refuelled or serviced within 100m of a river channel. • All construction camps, lay down areas, wash bays, batching plants or areas and any stores should be more than 50 m from any demarcated water courses. • Littering and contamination associated with construction activity must be avoided through effective construction camp management; • No stockpiling should take place within or near a water course

Environmental Aspect	Potential Impact During Operation	Proposed Mitigation
		• All stockpiles must be protected and located in flat areas where run-off will be minimised and sediment recoverable

13.3.5 Cumulative

Five (5) renewable energy facilities are located within 35 km of Mayogi Solar PV site. The information that could be obtained for the surrounding planned renewable energy developments was taken into account as part of the cumulative impact assessment. The SEFs that were considered are indicated in **Figure 49** and **Table *34*Error! Reference source not found.** below:

Table 34: Renewable Energy Projects within 35km of the Mayogi SEF

	Facility Name / Description	Status	MW
1	Coega WEFF	Approved	59.8 MW
	Coega WEFF (Motherwell)	Approved	87 MW
	Coega WEFF (PPC)	Approved	24 MW
2	Coega Zone 12 WEF	Approved	80 MW
3	SACE Ranger SEF	Approved	2.46 MW
4	Wolwefortein Wolf WEF	Approved	90 MW
5	Son Sitrus Roodtop SEF	In process	1.2 MW
6	Mobile Gasification (Uitenhage)	Refused	-
			344.46 MW

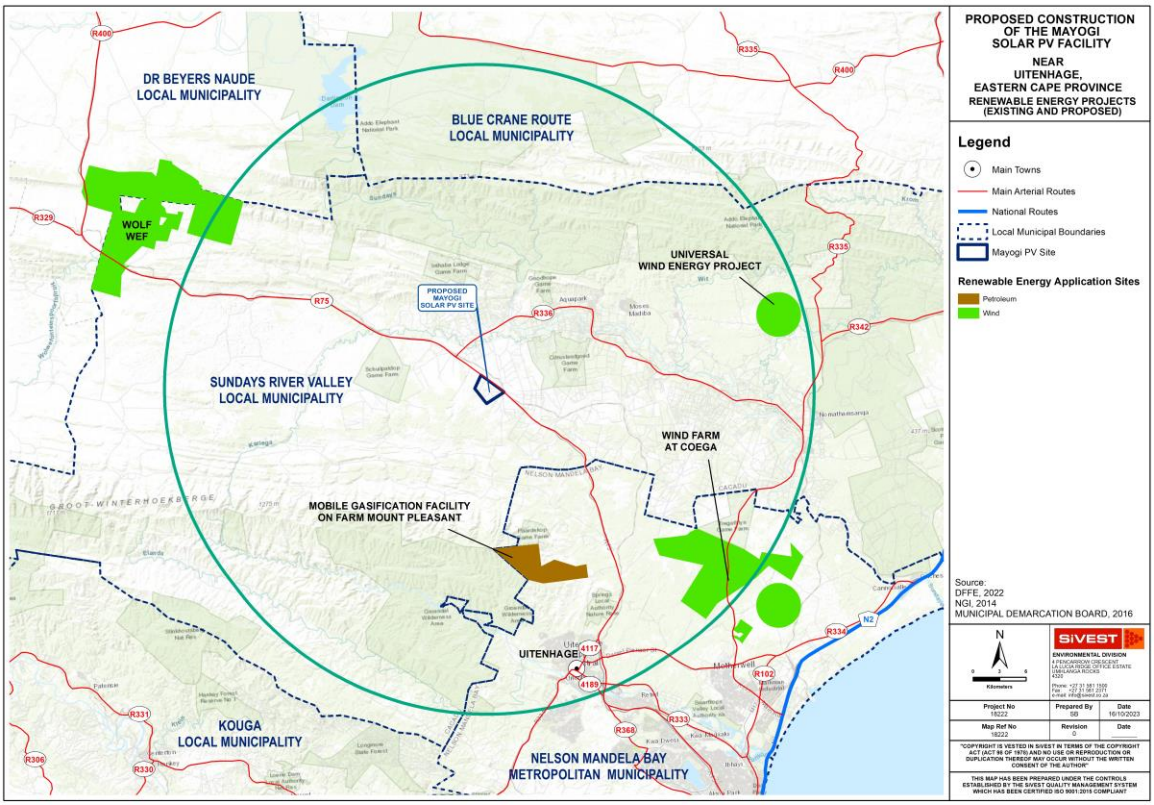

Figure 49: Renewable Energy Projects within 35km of the Mayogi SEF

Cumulative Impacts

Environmental Aspect	Potential Impact During Decommissioning	Proposed Mitigation
Agriculture	None identified	None identified
Aquatic –- Cumulative Impact of various proposed projects and associated grid lines on the natural environment (SEF & Grid)	• The cumulative assessment considers the various proposed renewable projects that occur within a 35km radius of this site, where the author has either been involved in the assessment of these projects and or review of the past assessments as part of any required Water Use Licenses	The premise of all the reviewed or assessed projects has been the avoidance of impacts on the Very High Sensitivity environments, which have been achieved by the various proposed layouts. The only remaining impacts will be the crossing of internal roads over minor watercourse / drainage lines or areas rated as LOW sensitivity.
Geotechnical	None identified	None identified
Terrestrial Biodiversity - The facility will only very slightly affect Broad-scale ecological processes	• Transformation and presence of the facility will only slightly contribute to cumulative habitat loss and impacts on broad-scale ecological processes	• Should any reptile or amphibia species be encountered or exposed during the operational phase, they should be removed and relocated to natural areas in the vicinity. The contractor must ensure that no indigenous herpetofauna species are disturbed, trapped, hunted or killed during the operational phase. During the operational phase there may be increased surface runoff and a decreased water quality. The appropriate agency should implement an ongoing monitoring and eradication program for all invasive plant species growing on the site. Any post-development re-vegetation or landscaping exercise should use species indigenous to the area.
Heritage	• Cumulative destruction of significant archaeological heritage • Cumulative destruction of significant palaeontological heritage. • Cumulative impact to the cultural landscape.	• Should any previously unknown archaeological resources be impacted during construction; work must cease in the vicinity of the find and the relevant heritage authority must be contacted. • Implementation of the Chance Fossil Finds Procedure • Implementation of the recommendations included in the VIA
Visual – Broad-scale ecological processes	• Transformation and presence of the facility will contribute to cumulative habitat loss and impacts on broad-scale ecological processes such as fragmentation.	• Outline/explain the mitigation measures to be undertaken to ameliorate the impacts that are likely to arise from the proposed activity. These measures will be detailed in the EMPr.
Social	• None identified.	• None identified.
Transportation – Construction & Operational Phase	• Further traffic impact due to planned and approved renewable developments in 30km radius are developed at the same time	• Same mitigation measures as above for construction phase. It is noted that it is unlikely that the approved developments will be constructed at the exact same time. However, for the event that the developments have similar constructions periods and use similar routes to site, it is recommended to agree on a delivery schedule between respective projects

13.3.6 Comparative Assessment of Alternatives

The proposed substations, layout downs and powerline alternatives which were investigated and comparatively assessed as part of the EIA process are shown in **Figure 50** below. Each of the alternatives have been comparatively assessed in terms of the findings from the specialist assessments conducted as part of the EIA process and is summarised in the table below

Key:

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

Specialist	**PV1: Substation Area**		**PV2: Substation Area**	
	Option 1	**Option 2**	**Option 1**	**Option 2**
Geotechnical Assessment	Favourable	Preferred	Favourable	Preferred
Social Impact Assessment	No Preference	No Preference	No Preference	No Preference
Transport Assessment	Preferred	Preferred	Preferred	Preferred
Visual Assessment	TBC	TBC	TBC	TBC
Avifaunal Assessment	Least Preferred	Preferred	Favourable	Preferred
Agricultural Assessment	No Preference	No Preference	No Preference	No Preference
Aquatic Assessment	No Preference	No Preference	No Preference	No Preference
Heritage Assessment	TBC	TBC	TBC	TBC
Biodiversity Assessment	Least Preferred	Preferred	Favourable	Preferred
Risk Assessment	Least Preferred	Preferred	Least Preferred	Preferred
	Temporary Laydown Area		**Temporary Laydown Area**	
	Option 1	**Option 2**	**Option 1**	**Option 2**
Geotechnical Assessment	No Preference	Preferred	No Preference	Preferred
Social Impact Assessment	No Preference	No Preference	No Preference	No Preference
Transport Assessment	Preferred	Preferred	Preferred	Preferred
Visual Assessment	TBC	TBC	TBC	TBC
Avifaunal Assessment	Least Preferred	Preferred	Favourable	Preferred
Agricultural Assessment	No Preference	No Preference	No Preference	No Preference
Aquatic Assessment	No Preference	No Preference	No Preference	No Preference
Heritage Assessment	TBC	TBC	TBC	TBC
Biodiversity Assessment	Least Preferred	Preferred	Favourable	Preferred
Risk Assessment	Least Preferred	Preferred	Least Preferred	Preferred
	OHL		**OHL**	
	Option 1	**Option 2**	**Option 1**	**Option 2**
Geotechnical Assessment	Favourable	Preferred	Favourable	Preferred
Social Impact Assessment	No Preference	No Preference	No Preference	No Preference
Transport Assessment	Preferred	Preferred	Preferred	Preferred
Visual Assessment	TBC	TBC	TBC	TBC
Avifaunal Assessment	Least Preferred	Preferred	Favourable	Preferred
Agricultural Assessment	No Preference	No Preference	No Preference	No Preference
Aquatic Assessment	No Preference	No Preference	No Preference	No Preference
Heritage Assessment	TBC	TBC	TBC	TBC

Specialist	PV1: Substation Area		PV2: Substation Area	
	Option 1	Option 2	Option 1	Option 2
Biodiversity Assessment	Least Preferred	Preferred	Favourable	Preferred
Risk Assessment	Least Preferred	Preferred	Least Preferred	Preferred

13.4 Concluding statement

No activity alternatives are being considered. Renewable Energy development in South Africa is highly desirable from a social, environmental and development point of view. Solar energy installations are more suitable for the site because of the good solar resource. The choice of technology selected for the Mayogi SEF was based on environmental constraints as well as technical and economic considerations.

Based on the results of the comparative assessment of substation sites, O&M building, laydown and powerline alternatives, Option 2 is preferred.

The preliminary layout has been assessed by the specialists in their respective specialist studies. All constraints identified to date as indicated in the sensitivity mapping below (**Figure 50**) will be taken into account and the preliminary layout will be amended where necessary to inform the proposed layout for the Mayogi SEF. This proposed layout will then be taken forward for assessment in the DEIR phase.

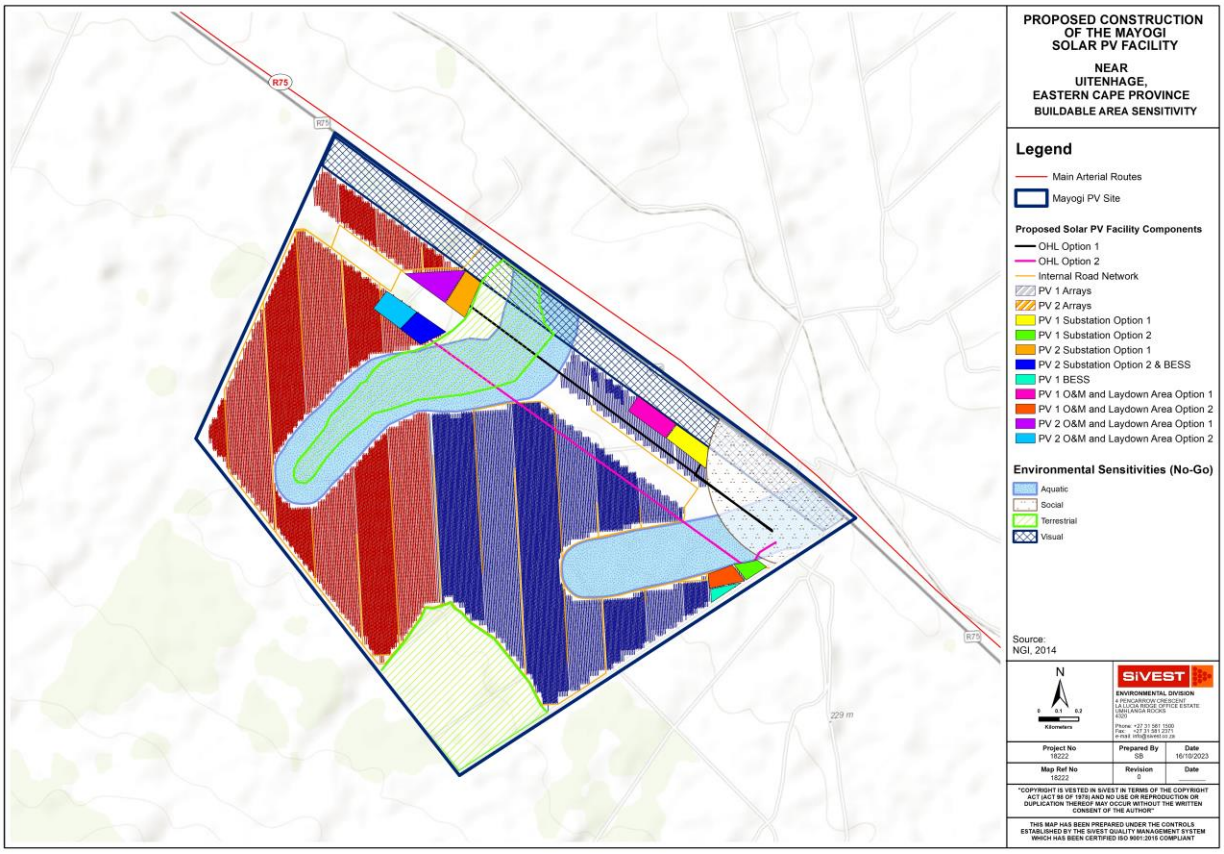

Figure 50: Preliminary layout with sensitivities (to be further updated taking into account the specialist sensitivities and included in the draft EIA Phase)

14. PLAN OF STUDY FOR EIA

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

The purpose of the EIA Phase is to:

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

The EIA Phase consists of the following processes:

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

14.1 Tasks to be undertaken

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

- The preliminary layout will be further investigated and updated in order to avoid or minimize negative impacts and maximize potential benefits;

- Environmental impact statements regarding the potential significance of residual impacts, taking into account proposed mitigation measures will be provided in the EIA;
- An Environmental Management Programme (EMPr) covering construction and decommissioning phases of the proposed development will be prepared. This will include an EMPr for the facility and another one for the on-site substation. The EMPr's will include input from specialists and will incorporate recommendations for mitigation and monitoring.

14.2 Description of alternatives to be considered and assessed

The EIA phase will include a detailed analysis of the proposed layout for the project which will include environmental (with specialist input) and technical evaluations. Any additional alternatives identified through this process will be reported on in the EIA report.

14.2.1 Location Alternatives

As mentioned in Section 12.1.1, no location alternatives are being considered for the Mayogi Photovoltaic Facilities and Associated Infrastructure as the site was selected prior to the commencement of the EIA Process.

14.2.2 Layout Alternatives

Prior to the commencement of the EIA process, a single site boundary was investigated by all specialists to identify all sensitivities within the boundary. The sensitivities informed buildable areas on which development may proceed and also informed the site boundaries for the Mayogi facilities being proposed (PV1 and PV2). Therefore, site layout alternatives will not be comparatively assessed, but rather a single layout will be refined as additional information becomes available throughout the EIA process (e.g., specialist input, additional site surveys, and ongoing stakeholder engagement). All constraints identified by the respective specialists are being considered and the layout is being refined to avoid all no-go areas.

The preliminary layout presented in the Scoping Report has been selected as a practicable option for the Mayogi Project considering technical preference and constraints, as well as initial No-Go layers informed by the relevant specialist during the initial screening studies. Substation, laydown location alternatives and powerline options within the site boundary are proposed and have been comparatively assessed by each of the respective specialists (refer section 13.3.6)

The preliminary layout (**Figure 51** below) that was prepared for the Mayogi Photovoltaic Facilities and Associated Infrastructure has been assessed by specialists to identify potential impacts that may arise from the development. Based on the findings of the specialists to date and the potential impacts identified, the proposed layout has been updated to include additional constraints and the PV field and substation locations shifted were necessary (**Figure 51** below). The proposed layout will also be further refined based on the outcomes of the public participation process of the Scoping phase and thereafter further assessed in the DEIR phase.

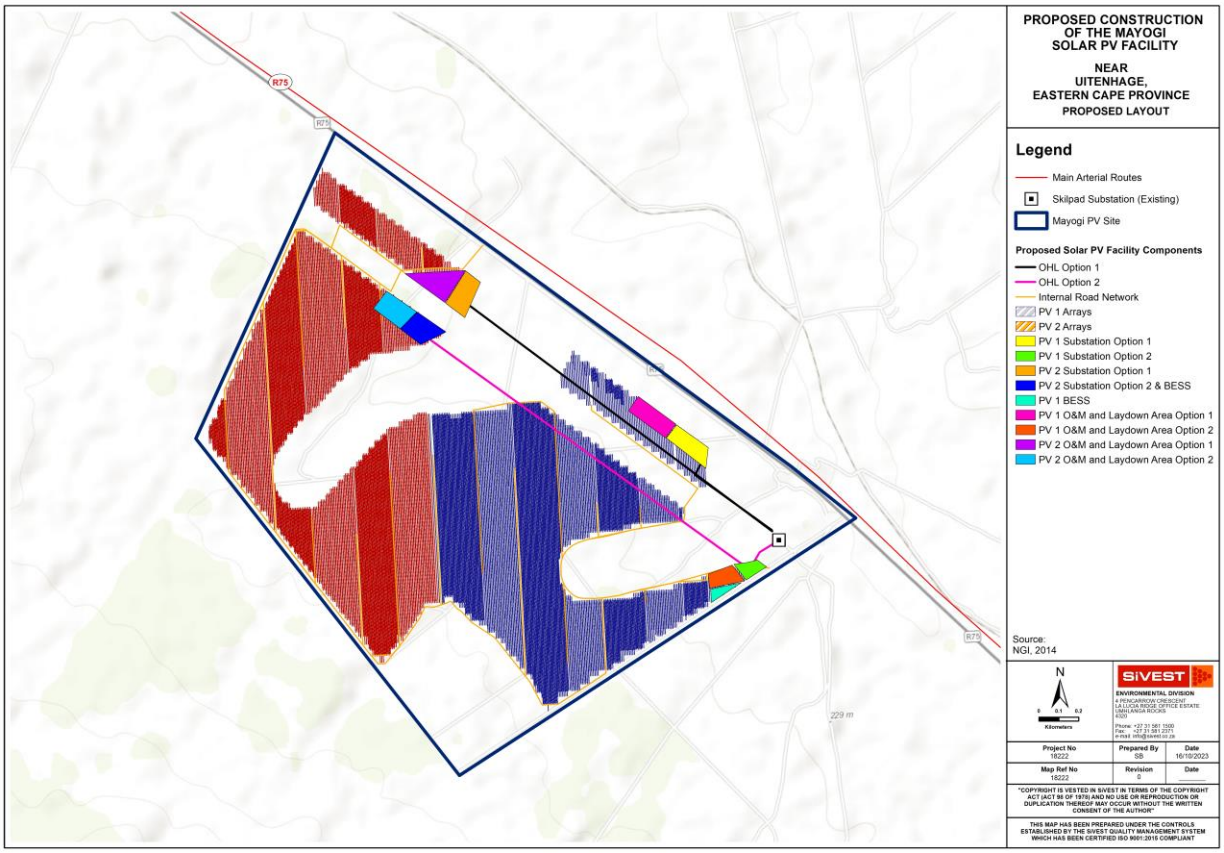

Figure 51: Preliminary site layout

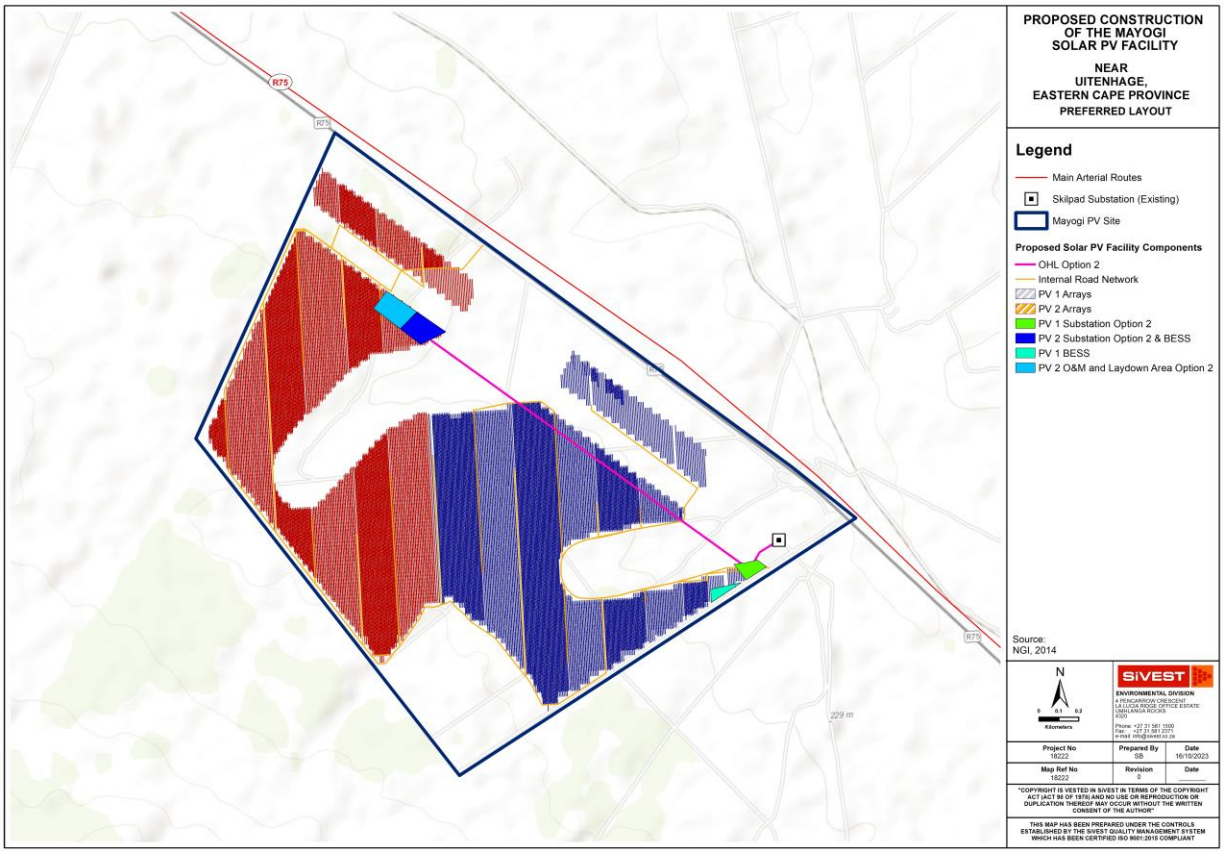

Figure 52: Proposed site layout

14.2.3 Technology Alternatives

No technology alternatives will be considered. Advancements in Solar PV technology presents a renewable and sustainable way for countries like South Africa to generate low cost energy from a natural resource.

14.2.4 No-go Alternatives

The option of not implementing the activity, or the "no-go" alternative and associated potential impacts, have been discussed in **Section 12**. Based on the specialist's assessment, no significant impacts have been identified should the development of the SEF not proceed.

14.3 Specialist Studies

The following specialist studies have been undertaken for the project and the significant environmental aspects identified will be further assessed in the EIA Phase:

- Desktop Geotechnical Assessment;
- Social Impact Assessment;
- Visual Assessment;
- Avifaunal Assessment;
- Agricultural Assessment;
- Aquatic/Freshwater Assessment;

- Heritage Assessment (including Archaeological Assessment and Palaeontological Assessment);
- Terrestrial Biodiversity Assessment;
- Transportation Assessment
- Risk Assessment Report.

The findings of the specialist studies have been included in the Scoping Phase of this project. The associated Impact Assessment tables will be included in the draft EIA report. Should the need for additional specialist studies be identified through the consultation process, these studies will be commissioned in the EIA Phase to further advise on the potential impacts that may arise from the proposed development. The specialist studies may identify further opportunities and constraints as associated with the site and the proposed development.

The specialists have undertaken the following scope of work:

Table 35: Specialist Scope of Work

Scope of Work
Specialists are requested to provide one (1) scoping phase report and / or compliance statement that provides an assessment of the proposed Mayogi SEF and associated infrastructure. During the EIA phase, specialists will be required to update the scoping phase specialist report to provide a review of their findings in accordance with revised site layouts, to assess and rate significant impacts with mitigation measures and to address any comments or concerns arising from the public participation process. The specialist report must include an explanation of the terms of reference (TOR) applicable to the specialist study. The gazetted Environmental Assessment Protocols of the NEMA EIA Regulations (2014, as amended), prescribes Procedures for the Assessment and Minimum Criteria for Reporting on the Identified Environmental Themes in terms of Sections 24(5)(A) and (H) and 44 of the National Environmental Management Act, 1998. These procedures must be considered. Where a specialist assessment is required and no specific environmental theme protocol has been prescribed, the required level of assessment must be based on the findings of the site sensitivity verification and must comply with Appendix 6 of the EIA Regulations; and any relevant legislation and guidelines deemed necessary Where relevant, a table must be provided at the beginning of the specialist report, listing the requirements for specialist reports in accordance with Appendix 6 of the EIA Regulations, 2014 (as amended) and cross referencing these requirements with the relevant sections in the report.

14.4 EIA methodology

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

14.5 Consultation with Competent Authority, Key Stakeholders and I&APs

SiVEST has consulted with DFFE as follows:

- Submission of application form to obtain EIA reference number.
- The Draft Scoping report was made available for comment to I&Aps, key stakeholders and the authorizing authority.
- All comments have been incorporated into the Issues and Response Report and Final Scoping Report.
- The Final Scoping Report has been submitted to DFFE for approval.

The following items will still be undertaken:

- Notify I&Aps and key stakeholders of acceptance of Final Scoping Report
- The Draft EIA report will be made available for comment to I&Aps, key stakeholders and the authorizing authority.
- After the Draft EIA report has been made available for comment within the public domain, comments will be incorporated into the Issues and Response Report and Final EIA Report for submission to DFFE.
- Notify I&Aps of the decision.
- Apart from the above-mentioned occasions, further consultation with authorities will occur whenever necessary.

14.6 Public Participation Process to be undertaken for the EIA Phase

Public participation forms a critical component of the EIA process, as it provides all interested and affected parties with an opportunity to learn about a project, but more importantly to understand how a project will impact on them. The following will be undertaken during the EIA Phase.

14.6.1 Updating of IAP Database

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

14.6.2 Review of Draft EIA Report

A 30-day period will be provided to IAPs to review the Draft EIA Report. Copies of the Draft EIA Report will be provided to the regulatory and commenting authorities as well. The Draft EIA Report will also be available for download on a link to be provided.

All parties on the IA&P database will be notified via email, sms or fax of the opportunity to review the Draft EIA Report, the review period and the process for submitting comments on the report.

All comments received from I&APs and the responses thereto will be included in the final EIA Report, which will be submitted to DFFE.

14.6.3 Public meetings/consultation

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

14.6.4 Inclusion of comments into the Final EIA

A Comments and Responses Report will be compiled and included in the EIA Report, which will record the date that issues were raised, a summary of each issue, and the response of the team to address the issue. The Final EIA report with all comments included will be submitted to DFFE for review and approval.

14.6.5 Notification of Environmental Authorisation

All I&APs will be notified via email, sms or fax after having received written notice from DFFE on the final decision on the application. These notifications will include the process required to lodge an appeal, as well as the prescribed timeframes in which documentation should be submitted.

15. EAP DECLARATION

The EAP declarations, CV's and qualifications for the EAP's responsible for the preparation of this report have been attached in **Appendix 1**.

16. INFORMATION REQUIRED BY CA (IF APPLICABLE)

Currently n/a.

17. CONCLUSION

This Scoping Report was compiled to meet the requirements of NEMA, with the primary aim of informing I&APs of the proposed project and allowing for an opportunity to comment on the project and the plan of study for the EIA Phase.

This Scoping Report has covered activities and findings related to the scoping process for the proposed Mayogi SEF Project. Professional experience, specialist knowledge, relevant literature and local knowledge of the area have all been used to identify the potential issues associated with the proposed project. There is no guarantee that all the potential impacts arising from the proposed SEF project have been identified within the scoping phase, however the report provides an outline of the established measures that were taken to best identify all the potential impacts.

Based on the findings of the specialists and the potential impacts identified to date, including the pre-feasibility assessments, the layout will be further refined based specialist data as well as the outcomes of the public participation process of the Scoping phase. The final layout will then be assessed by all specialists in the EIA Phase.

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

Tel +27 31 581 1577
Email info@sivest.com
www.sivest.com

Contact Person: Michelle Nevette
Email: michellen@sivest.com