



**BONSMARA SOLAR PV (RF) (PTY) LTD**

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**Proposed Development of the  
Bonsmara Solar PV Facility (SEF) and  
Associated Infrastructure near  
Kroonstad in the Free State Province**

**Draft Scoping Report**

Issue Date: 31 October 2022  
Revision no.: 1.0  
Project No. 17869  
DFFE Reference Number: TBC

|                         |  |
|-------------------------|--|
| <b>Date:</b>            | 31 October 2022  |
| <b>Document Title:</b>  | Proposed Development of the Bonsmara Solar PV Facility (SEF) and Associated Infrastructure near Kroonstad in the Free State Province: Draft Scoping Report (DSR) |
| <b>Revision Number:</b> | 1.0  |
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| <b>Signature:</b>       |   |
| <b>Client:</b>          | Bonsmara Solar PV (RF) (Pty) Ltd   |

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## KEY PROJECT INFORMATION

| Component                                    | Description / Dimensions  |
|--|---|
| Location of site (centre point)              | 27°46'10.08"S 27°18'34.64"E   |
| Application site area                        | 1004 ha   |
| PV development area                          | 390ha   |
| SG codes                                     | F02000000000063600000<br>F02000000000063600001  |
| Export capacity                              | Up to 100 MW  |
| Proposed technology                          | PV modules and mounting structures  |
| Max panel height from the ground             | 2.5m  |
| Substation area                              | 1 ha  |
| Battery Energy Storage Area (BESS)           | 2 ha  |
| Capacity of on-site and collector substation | 33/132kV  |
| O&M building area                            | 5000 m <sup>2</sup>   |
| Temporary Construction Laydown area          | 2 ha  |
| Width of internal access roads               | Approximately 6 m   |
| Site Access                                  | Access to the site shall be from the R76 between Kroonstad and Steynrus. The site is situated approximately 12 km from Kroonstad. |
| Proximity to grid connection                 | Approximately 2 km from application site  |
| Height of fencing (for substation)           | Approximately 3.5 m high  |
| Type of fencing (for substation)             | Galvanized palisade fencing   |

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# BONSMARA SOLAR PV FACILITY

## DRAFT SCOPING REPORT

### EXECUTIVE SUMMARY

#### INTRODUCTION AND PROJECT DESCRIPTION

Bonsmara Solar PV (RF) (Pty) Ltd is proposing to construct the Bonsmara Solar PV Facility (SEF) and associated infrastructure approximately 12 km south-east of Kroonstad in the Moqhaka Local Municipality and the Fezile Dabi District, in the Free State Province (**Figure 1**) (**DFFE Reference Number: To be Allocated**). The overall objective of the proposed development is to generate electricity by means of renewable energy technologies capturing solar energy to feed into the national grid. The proposed development will have a maximum total generation capacity of up to 100 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 Bonsmara 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. Free State Department of Economic, Small Business Development, Tourism and Environmental Affairs (DESTEA)) 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.

In order to evacuate the energy generated by the SEF to supplement the national grid, Bonsmara Solar PV (RF) (Pty) Ltd is proposing one grid connection (approximately 2km in length) which will be assessed in a separate Grid BAR (**DFFE Reference Number: To be Allocated**).

The SEF and grid connection infrastructure will require separate Environmental Authorisations (EAs) and are subject to separate Environmental Impact Assessment (EIA) and Basic Assessment (BA) processes respectively. The proposed grid connection infrastructure will be handed over to Eskom once constructed (Eskom grid connection works). The substations will include an Eskom portion (switching station) and an Independent Power Producer (IPP) portion (facility substation) hence the facility substations will be included in the respective SEF EIAs and the Eskom switching stations in the respective associated grid connection infrastructure BA in order to allow for handover to Eskom.

Although the SEF and associated grid connection infrastructure (switching station and overhead power line) will be assessed separately, it is proposed that a single public participation process be undertaken to consider both of the proposed projects [i.e. one (1) SEF EIA and one (1) grid connection BA].

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

The following activities are applied for:

| Activity No(s): | Relevant Basic Assessment Activity(ies) as set out in Listing Notices 1 of the EIA Regulations, 2014 as amended   |
|-----------------|---|
| 11 (i)          | <b>GN R. 327 (as amended) Item 11:</b> The development of facilities or infrastructure for the transmission and distribution of electricity—<br><br>(i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts.  |
| 12 (ii) (a) (c) | <b>GN R. 327 (as amended) Item 12:</b> The development of:<br>ii) infrastructure or structures with a physical footprint of 100 square metres or more;<br><br>where such development occurs-<br>(a) within a watercourse;<br>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.  |
| 14              | <b>GN R. 327 (as amended) Item 14:</b> 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.  |
| 19              | <b>GN R. 327 (as amended) Item 19:</b> The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;  |
| 24 (ii)         | <b>GN R. 327 (as amended) Item 24:</b> The development of a road -<br><br>ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres.  |
| 28 (ii)         | <b>GN R. 327 (as amended) Item 28:</b> 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:<br><br>(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare; |
| 48 (i) (a) (c)  | <b>GN R. 327 (as amended) Item 48:</b> The expansion of-<br><br>(i) infrastructure or structures where the physical footprint is expanded by 100 square metres or more;<br><br>where such expansion occurs—<br><br>(a) within a watercourse; or<br>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;                    |
| 56 (ii)         | <b>GN R. 327 Item 56:</b> The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre -<br><br>(i) where the existing reserve is wider than 13,5 metres; or<br>(ii) where no reserve exists, where the existing road is wider than 8 metres –   |
| Activity No(s): | Relevant Scoping and EIA Activity(ies) as set out in Listing Notices 2 of the EIA Regulations, 2014 as amended  |
| 1               | <b>GN R. 325 (as amended) Item 1:</b> The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more.   |

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|-------------------------------------|---|
| 15                                  | <b>GN R. 325 (as amended) Item 15:</b> The clearance of an area of 20 hectares or more of indigenous vegetation.  |
| <b>Activity No(s):</b>              | <b>Relevant Basic Assessment Activity(ies) as set out in Listing Notice 3 of the EIA Regulations, 2014 as amended</b>   |
| 4 b. i (bb) (gg)                    | <b>GN R. 324 (as amended) Item 4:</b> The development of a road wider than 4m with a reserve less than 13.5 metres.<br><br><b>b. Free State</b><br>i. Outside Urban Areas:<br>(bb) National Protected Area Expansion Strategy Focus areas;<br>(gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas  |
| 10 b. i.(bb) (gg) (hh)              | <b>GN R. 324 (as amended) Item 10:</b> 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.<br><br><b>b. Free State</b><br>i. Outside Urban Areas:<br>(bb) National Protected Area Expansion Strategy Focus areas;<br>(gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas<br>(hh) Areas within a watercourse or wetland; or within 100m from the edge of a watercourse or wetland.  |
| 12 b. (iv)                          | <b>GN R. 324 (as amended) Item 12:</b> 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.<br><br><b>b. Free State</b><br>iv. Areas within a watercourse or wetland; or within 100 meters from the edge of a watercourse or wetland   |
| 14 ii. (a) (c) b (i) (bb) (ff) (hh) | <b>GN R. 324 (as amended) Item 14:</b> The development of—<br><br>(ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs—<br><br>(a) within a watercourse; or<br>(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;<br><br>excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.<br><br><b>b. Free State</b><br>i. Outside urban areas:<br>(bb) National Protected Area Expansion Strategy Focus areas;<br>(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;<br>(hh) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas |
| 18 b (i) (bb) (gg) (hh)             | <b>GN R. 324 (as amended) Item 18:</b> The widening of a road by more than 4 meters, or the lengthening of a road by more than 1 kilometer-<br><br><b>b. Free State</b><br>i. Outside urban areas:<br>(bb) National Protected Area Expansion Strategy Focus areas;  |

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|-----------------------------------|---|
|                                   | (gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas<br>(hh) Areas within a watercourse or wetland; or within 100m from the edge of a watercourse or wetland.   |
| 23 ii. (a) (c) b (i)<br>(bb) (gg) | <b>GN R. 3245 (as amended) Item 23:</b> The expansion of—<br><br>(ii) infrastructure or structures where the physical footprint is expanded by 10 square metres or more;<br>where such expansion occurs—<br><br>(a) within a watercourse;<br>(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;<br>excluding the expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.<br><br><b>b. Free State</b><br>i. Outside urban areas:<br>(bb) National Protected Area Expansion Strategy Focus areas;<br>(gg) Areas within 10 kilometers from national parks or world heritage sites or 5 kilometers from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas |

## DETAILS OF ALTERNATIVES CONSIDERED

No other location alternatives are being considered. Many areas in South Africa are constrained from exporting capacity as per the GCCA2024. The site is located approximately 2km from a grid connection point that has been confirmed to have sufficient capacity to evacuate the generation. The land has been confirmed as available in the form of private landowners who have made the development possible on the site. Agriculture is the largest constraint in this region, however a prefeasibility study was conducted by the agricultural specialist, and the site has been identified as suitable in terms of agricultural sensitivity.

No other activity alternatives are being considered. CSP technology would not be suitable for this site because it requires a flat surface, has a high visual impact and requires large volumes of water. In addition, CSP has not been catered for in the IRP2019. The climatic conditions show that the wind resource in the area is not suitable for a wind energy facility.

Design and layout alternatives will be considered and assessed as part of the EIA taking into consideration the environmental constraints identified by the various specialists, and the layout amended were necessary. In terms of the BESS, laydown areas and substations etc., these are all optimally located in the south-east corner of the site, closest to the grid connection point and access roads.

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

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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                                 | <ul style="list-style-type: none"> <li>None identified</li> </ul>   |   |
| Aquatic                                   | <ul style="list-style-type: none"> <li>None identified</li> </ul>   |   |
| Geotechnical                              | <ul style="list-style-type: none"> <li>None identified</li> </ul>   |   |
| Terrestrial Biodiversity - Vegetation     | <ul style="list-style-type: none"> <li>Permanent or temporary loss of indigenous vegetation cover because of site clearing. Site clearing before construction will result in the blanket clearing of vegetation within the affected footprint.</li> </ul> | <ul style="list-style-type: none"> <li>Retain as a minimum the conservation target for the vegetation unit represented on site. Only clear vegetation inside the footprint).</li> </ul>       |
| Terrestrial Biodiversity - Flora Species  | <ul style="list-style-type: none"> <li>Loss of flora species of special concern during pre-construction site clearing activities.</li> </ul>  | <ul style="list-style-type: none"> <li>Identify any populations and avoid during layout design and planning and/or relocate any flora species requiring such before construction.</li> </ul>  |
| Terrestrial Biodiversity - Faunal Species | <ul style="list-style-type: none"> <li>Loss of faunal SSC due to construction activities: Activities associated with bush clearing, killing of perceived dangerous fauna, may lead to increased mortalities among faunal species.</li> </ul>              | <ul style="list-style-type: none"> <li>Identify any populations and avoid during layout design and planning and/or relocate any faunal species requiring such before construction.</li> </ul> |
| Heritage                                  | <ul style="list-style-type: none"> <li>None identified</li> </ul>   |   |
| Social                                    | <ul style="list-style-type: none"> <li>Exclusion of communities</li> </ul>  | <ul style="list-style-type: none"> <li>Active involvement of the community is required to capacitate them to make informed decisions.</li> </ul>  |
|   | <ul style="list-style-type: none"> <li>Inadequate impact identification and mitigation.</li> </ul>  | <ul style="list-style-type: none"> <li>Use of specialist SIAs teams.</li> </ul>   |

### Construction

| Environmental Aspect | Potential Impact During Construction  | Proposed Mitigation   |
|----------------------|---|---|
| Agricultural         | Compliance Statement  |   |
| Avifaunal            | <ul style="list-style-type: none"> <li>Habitat loss (including foraging and breeding) and fragmentation due to displacement (avoidance of disturbance). Habitat loss has the tendency to not only destroy existing habitat but also displace bird species from large areas of natural habitat.</li> </ul> | <ul style="list-style-type: none"> <li>Impacts associated with the loss of bird foraging habitat due to construction activity cannot be mitigated in relation to the majority of the habitats but can be mitigated by avoiding avifaunal specific highly sensitive areas and their associated buffers;</li> </ul> |

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| Environmental Aspect | Potential Impact During Construction  | Proposed Mitigation  |
|----------------------|---|--|
|                      | <p>This specifically has a greater impact on bird species restricted to a specific habitat and its requirements.</p> <ul style="list-style-type: none"> <li>• Disturbance due to noise such as, machinery movements and maintenance operations during the construction and operational phase of the proposed PV solar farm.</li> <li>• The attraction of some novel bird species due to the development of a solar farm with associated infrastructure such as perches, nest and shade opportunities</li> <li>• Chemical pollution: Chemicals being used to keep the PV panels clean from dust (suppressants) etc.</li> </ul> | <ul style="list-style-type: none"> <li>• Impact can be mitigated by timing construction in order to avoid breeding periods of species;</li> <li>• Set-back areas or buffer zones are allocated to sensitive or important habitat features to alleviate the effect of foraging and nesting/roosting habitat in particular;</li> <li>• Impacts due to bird mortalities during the operational phase are practically unavoidable for any large facility, but with the appropriate mitigation measures these impacts can be minimised. It is likely that most of the avifaunal populations will be largely displaced from the majority of the project infrastructure, although significant risks are associated with the likelihood of project vehicles flushing birds into fencing infrastructure;</li> <li>• Migratory pathways of birds cannot be changed and the resulting impacts are unavoidable. However, severity of the impacts can be reduced with appropriate mitigation measures;</li> <li>• All habitat attractants should be eliminated so that avifaunal populations will not embed themselves within the infrastructure over time. This includes bird diverters, perch deterrents and the application of Non-polarising white tape can be used around and/or across panels to minimise reflection which can attract aquatic birds and insects (food) as panels mimic reflective surfaces of waterbodies;</li> <li>• The application of strict chemical control protocols which are not detrimental to avifauna.</li> </ul> |
| Aquatic              | <ul style="list-style-type: none"> <li>• Loss of aquatic species of special concern</li> </ul>  | <ul style="list-style-type: none"> <li>• 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</li> </ul>   |

| Environmental Aspect | Potential Impact During Construction   | Proposed Mitigation  |
|----------------------|--|--|
|                      | <ul style="list-style-type: none"> <li>• Damage or loss of riparian systems, ephemeral watercourses and wetland systems in the construction phase</li> </ul> | <ul style="list-style-type: none"> <li>• Where possible, temporary construction lay-down or assembly areas should be sited on transformed areas; and</li> <li>• 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.</li> <li>• 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.</li> <li>• 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: <ul style="list-style-type: none"> <li>○ Existing pipe culverts must be removed and replaced with suitable sized box culverts, especially where road levels are raised to accommodate any large vehicles.</li> <li>○ 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.</li> <li>○ Where large cut and fill areas are required these must be stabilised and rehabilitated during the construction process, to minimise erosion and sedimentation.</li> <li>○ 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</li> </ul> </li> </ul> |

| Environmental Aspect | Potential Impact During Construction  | Proposed Mitigation   |
|----------------------|---|---|
|                      | <ul style="list-style-type: none"> <li>Potential impact on localised surface water quality (construction materials and fuel storage facilities) during the construction and decommissioning phases</li> </ul>   | <p>(i.e., extension, energy dissipaters, spreaders, etc).</p> <ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>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).</li> <li>Mechanical plant and bowsters must not be refuelled or serviced within 100m of a river channel.</li> <li>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.</li> <li>Littering and contamination associated with construction activity must be avoided through effective construction camp management;</li> <li>No stockpiling should take place within or near a water course</li> <li>All stockpiles must be protected and located in flat areas where run-off will be minimised and sediment recoverable;</li> </ul> |
| Geotechnical         | <ul style="list-style-type: none"> <li>Disturbance/ displacement/ removal of soil and rock: Ground disturbance during access road construction, foundation earthworks, platform earthworks</li> <li>Soil erosion: Increased erosion due to vegetation clearing, alteration of natural drainage</li> </ul> | <ul style="list-style-type: none"> <li>Design access roads and pile locations to minimise earthworks and levelling based on high resolution ground contour information</li> <li>Correct topsoil and spoil management</li> <li>Avoid development in preferential drainage paths</li> <li>Appropriate engineering design of road drainage and watercourse crossings</li> <li>Temporary berms and drainage channels to divert surface runoff where needed</li> <li>Landscape and rehabilitate disturbed areas timeously (e.g. regressing)</li> </ul>   |

| Environmental Aspect   | Potential Impact During Construction   | Proposed Mitigation  |
|--|--|--|
|  |  | <ul style="list-style-type: none"> <li>Use designated access and laydown areas only to minimise disturbance to surrounding areas</li> </ul>  |
| Terrestrial Biodiversity – Erosion   | <ul style="list-style-type: none"> <li>Susceptibility of some areas to erosion because of construction related disturbances. Removal of vegetation cover and soil disturbance may result in some areas being susceptible to soil erosion after completion of the activity.</li> </ul>                                    | <ul style="list-style-type: none"> <li>Appropriate soil erosion management during construction.</li> <li>Identify and avoid and/or stabilise are erosion sensitive areas (such as around watercourses and dongas and sandy slopes).</li> </ul>   |
| Terrestrial Biodiversity - Ecological Processes  | <ul style="list-style-type: none"> <li>Disturbances to ecological processes: Activity may result in disturbances to ecological processes.</li> </ul>   | <ul style="list-style-type: none"> <li>Allow for connectivity across the site and with surrounding landscape (during layout design stage). Fencing to be permeable to fauna as per specialist recommendation.</li> </ul>   |
| Terrestrial Biodiversity - Aquatic and Riparian processes                              | <ul style="list-style-type: none"> <li>Aquatic and Riparian processes: Aquatic habitat is present and could be affected.</li> </ul>  | <ul style="list-style-type: none"> <li>Retain buffer around watercourses. Stormwater management, especially runoff from panels in sloped areas.</li> </ul>   |
| Terrestrial Biodiversity - Faunal Habitat & Processes                                  | <ul style="list-style-type: none"> <li>Loss of Faunal Habitat and disruptions to processes: Activity will result in the loss of habitat for faunal species.</li> </ul>   | <ul style="list-style-type: none"> <li>Identify important or irreplaceable fauna habitat to be retained. Retain faunal corridors during layout design phase. Only clear vegetation inside the footprint).</li> </ul>   |
| Terrestrial Biodiversity - Faunal Species  | <ul style="list-style-type: none"> <li>Loss of faunal SSC due to construction activities: Activities associated with bush clearing, killing of perceived dangerous fauna, may lead to increased mortalities among faunal species.</li> </ul>   | <ul style="list-style-type: none"> <li>Identify any populations and avoid during layout design and planning and/or relocate any faunal species requiring such before construction.</li> </ul>  |
| Heritage (Archaeological, Paleontological, Cultural Landscape)                         | <ul style="list-style-type: none"> <li>Destruction of significant heritage resources</li> </ul>  | <ul style="list-style-type: none"> <li>Further site-specific work to be done to identify resources within the development area.</li> </ul>   |
| Visual - Altered Sense of Place and Visual Intrusion caused by Construction Activities | <ul style="list-style-type: none"> <li>Dust generated during construction will be visually unappealing and may detract from the visual quality (and sense of place) of the area. These impacts are typically limited to the immediate area surrounding the construction site, during the construction period.</li> </ul> | <ul style="list-style-type: none"> <li>Limit vegetation clearance and the footprint of construction to what is absolutely essential.</li> <li>Consolidate the footprint of the construction camp to a functional minimum.</li> <li>Avoid excavation, handling and transport of materials which may generate dust under very windy conditions.</li> <li>Keep stockpiled aggregates and sand covered to minimise dust generation.</li> <li>Keep construction site tidy.</li> </ul> |
| Social   | <ul style="list-style-type: none"> <li>Short and long-term employment</li> </ul>   | <ul style="list-style-type: none"> <li>Honestly communicate the temporary nature of the employment benefits associated with the solar facility.</li> </ul>   |

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| Environmental Aspect | Potential Impact During Construction   | Proposed Mitigation   |
|----------------------|--|---|
|                      | <ul style="list-style-type: none"> <li>Support for small local business</li> </ul>           | <ul style="list-style-type: none"> <li>Procurement policies should support small businesses. And timely, appropriate business preparedness measures can be considered.</li> </ul>   |
|                      | <ul style="list-style-type: none"> <li>Opportunities for local skills development</li> </ul> | <ul style="list-style-type: none"> <li>Continuous on the job training.</li> </ul>   |
|                      | <ul style="list-style-type: none"> <li>Increase in sex work</li> </ul>                       | <ul style="list-style-type: none"> <li>Facilitate HIV/AIDS awareness programmes and easy access to contraceptives and ARVs, and ensure that these are extended to the local communities.</li> </ul>   |
|                      | <ul style="list-style-type: none"> <li>Noise and dust pollution</li> </ul>                   | <ul style="list-style-type: none"> <li>Put noise buffers in place and employees with protective equipment.</li> </ul>   |
|                      | <ul style="list-style-type: none"> <li>Road and traffic hazards</li> </ul>                   | <ul style="list-style-type: none"> <li>Ensure that nearby roads are maintained properly and enforce traffic laws among transport personnel. Ensure the nearby roadways are maintained properly and police traffic laws for transporting workers, contractors, and contractors.</li> </ul> |
|                      | <ul style="list-style-type: none"> <li>Health and safety</li> </ul>                          | <ul style="list-style-type: none"> <li>Ensure consistent adherence to health and safety policies and provide workers with protective clothing and equipment.</li> </ul>   |
|                      | <ul style="list-style-type: none"> <li>Vandalism</li> </ul>                                  | <ul style="list-style-type: none"> <li>Establish or strengthen community policing in collaboration with local communities, and alongside professional security services.</li> </ul>   |

Operational

| Environmental Aspect | Potential Impact During Operation  | Proposed Mitigation   |
|----------------------|--|---|
| Agricultural         | Compliance Statement   |   |
| Avifaunal            | <ul style="list-style-type: none"> <li>Disturbance due to noise such as, machinery movements and maintenance operations during the construction and operational phase of the proposed PV solar farm.</li> <li>The attraction of some novel bird species due to the development of a solar farm with associated infrastructure such as perches, nest and shade opportunities</li> <li>Chemical pollution: Chemicals being used to keep the PV panels clean from dust (suppressants) etc.</li> </ul> | <ul style="list-style-type: none"> <li>Impacts due to bird mortalities during the operational phase are practically unavoidable for any large facility, but with the appropriate mitigation measures these impacts can be minimised. It is likely that most of the avifaunal populations will be largely displaced from the majority of the project infrastructure, although significant risks are associated with the likelihood of project vehicles flushing birds into fencing infrastructure;</li> <li>Migratory pathways of birds cannot be changed and the resulting impacts are unavoidable. However, severity of the impacts can be reduced with appropriate mitigation measures;</li> <li>All habitat attractants should be eliminated so that avifaunal populations will not embed</li> </ul> |

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| Environmental Aspect  | Potential Impact During Operation  | Proposed Mitigation   |
|---|--|---|
|   |  | <p>themselves within the infrastructure over time. This includes bird diverters, perch deterrents and the application of Non-polarising white tape can be used around and/or across panels to minimise reflection which can attract aquatic birds and insects (food) as panels mimic reflective surfaces of waterbodies;</p> <ul style="list-style-type: none"> <li>The application of strict chemical control protocols which are not detrimental to avifauna.</li> </ul>  |
| Aquatic   | <ul style="list-style-type: none"> <li>Impact on aquatic systems through the possible increase in surface water runoff on form and function during the operational phase</li> </ul>  | <ul style="list-style-type: none"> <li>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</li> </ul> |
| Geotechnical - Soil Erosion   | <ul style="list-style-type: none"> <li>Increased erosion due to alteration of natural drainage</li> </ul>  | <ul style="list-style-type: none"> <li>Maintain access roads including drainage features</li> <li>Monitor for erosion and remediate and rehabilitate timeously</li> </ul>   |
| Terrestrial Biodiversity - Alien Invasive Species                           | <ul style="list-style-type: none"> <li>Susceptibility of post construction disturbed areas to invasion by exotic and alien invasive species and removal of exotic and alien invasive species during construction. Post construction disturbed areas having no vegetation cover are often susceptible to invasion by weedy and alien species, which can not only become invasive but also prevent natural flora from becoming established.</li> </ul> | <ul style="list-style-type: none"> <li>Don't introduce topsoil from dubious source if required during post-construction rehabilitation, as a minimum should be treated as per a recognised protocol. Implement post-construction Alien Invasive Plant management plan.</li> </ul>   |
| Visual - Altered Sense of Place and Visual Intrusion caused by the PV Array | <ul style="list-style-type: none"> <li>The development of this PV array may be perceived as conflicting with the current landscape of the grassland and treescapes. The proposed PV Facility is anticipated to interrupt and/or degrade views, and therefore negatively impact the sense of place and present as a</li> </ul>  | <ul style="list-style-type: none"> <li>Plant vegetation (that will reach &gt;3 m in height) or establish a vegetated berm (&gt;3 m in height) along the south-western boundary of the site bordering the R76 upon completion of construction.</li> </ul>  |

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| Environmental Aspect   | Potential Impact During Operation   | Proposed Mitigation   |
|--|---|---|
|  | visual intrusion across the landscape.  |   |
| Visual - Altered Sense of Place and Visual Intrusion caused by the BESS, Substation and Internal Grid Infrastructure | <ul style="list-style-type: none"> <li>The BESS and internal grid connections (where possible will be installed underground). is anticipated to contribute to visual clutter on the site and therefore negatively impact the sense of place and present as a visual intrusion across the landscape.</li> </ul>  | <ul style="list-style-type: none"> <li>Plant vegetation (that will reach &gt;3 m in height) or establish a vegetated berm (&gt;3 m in height) along the south-western boundary of the site bordering the R76 upon completion of construction.</li> <li>Fence the perimeter of the site with a green or black fencing.</li> <li>Ensure that the roof colour of the proposed buildings blends into the landscape. Fence the perimeter of the site with a green or black fencing.</li> <li>Ensure that the roof colour of the proposed buildings blends into the landscape.</li> </ul> |
| Visual - Altered Visual Quality caused by Light Pollution at Night   | <ul style="list-style-type: none"> <li>The installation of lighting on the site perimeter and / or around the BESS will generate nightglow across the natural, undeveloped site and beyond. Lighting is not easily screened by vegetation or topography, and the proposed lighting for the PV Facility is anticipated to contribute to nightglow from the surrounding residential areas (e.g. Kroonstad) and alter visual quality of the surrounding area.</li> </ul> | <ul style="list-style-type: none"> <li>Reduce the height of lighting masts to a workable minimum.</li> <li>Direct lighting inwards and downwards to limit light pollution.</li> </ul>   |
| Social   | <ul style="list-style-type: none"> <li>Employment creation</li> </ul>   | <ul style="list-style-type: none"> <li>Maximise the creation of employment through indirect jobs, especially for semi-skilled and unskilled workers.</li> </ul>   |
|  | <ul style="list-style-type: none"> <li>Small business promotion</li> </ul>  | <ul style="list-style-type: none"> <li>In order to support business readiness, there needs to be integration into the value chain of solar facilities</li> </ul>  |
|  | <ul style="list-style-type: none"> <li>Influx of migrants may result in recruitment/job related conflicts</li> </ul>  | <ul style="list-style-type: none"> <li>Recruitment processes should prioritise the locals as much as possible. Social management plans must be put in place to address the consequences of project-induced migration.</li> </ul>  |
|  | <ul style="list-style-type: none"> <li>Community investment</li> </ul>  | <ul style="list-style-type: none"> <li>Strategically plan for and effectively manage community investments to create lasting positive impact for local economy and community.</li> </ul>  |



Decommissioning

| Environmental Aspect | Potential Impact During Decommissioning   | Proposed Mitigation  |
|----------------------|---|--|
| Agricultural         | Compliance Statement  |  |
| Avifaunal            | <ul style="list-style-type: none"> <li>• None identified</li> </ul>   |  |
| Aquatic              | <ul style="list-style-type: none"> <li>• Loss of aquatic species of special concern</li> </ul>  | <ul style="list-style-type: none"> <li>• 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</li> <li>• Where possible, temporary construction lay-down or assembly areas should be sited on transformed areas; and</li> <li>• 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.</li> </ul>  |
|                      | <ul style="list-style-type: none"> <li>• Potential impact on localised surface water quality (construction materials and fuel storage facilities) during the construction and decommissioning phases</li> </ul> | <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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).</li> <li>• Mechanical plant and bowsers must not be refuelled or serviced within 100m of a river channel.</li> <li>• All construction camps, lay down areas, wash bays, batching plants or areas and any stores should be more than 50 m from any demarcated water courses. Note comment regards Camp A that requires micro-siting.</li> <li>• Littering and contamination associated with construction activity must be avoided through effective construction camp management;</li> </ul> |

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| Environmental Aspect   | Potential Impact During Decommissioning   | Proposed Mitigation   |
|--|---|---|
|  |   | <ul style="list-style-type: none"> <li>No stockpiling should take place within or near a water course</li> <li>All stockpiles must be protected and located in flat areas where run-off will be minimised and sediment recoverable;</li> </ul>  |
| Geotechnical – Soil Erosion  | <ul style="list-style-type: none"> <li>Disturbance/ displacement/ removal of soil and rock: Ground disturbance during access road construction, foundation earthworks, platform earthworks</li> </ul>   | <ul style="list-style-type: none"> <li>Restore natural site topography</li> <li>Landscape and rehabilitate access roads and disturbed areas timeously (e.g. regressing).</li> </ul>   |
|  | <ul style="list-style-type: none"> <li>Soil erosion: Increased erosion due to vegetation clearing, alteration of natural drainage</li> </ul>  | <ul style="list-style-type: none"> <li>Temporary berms and drainage channels to divert surface runoff where needed</li> <li>Restore natural site topography</li> <li>Use designated access and laydown areas only to minimise disturbance to surrounding areas.</li> </ul>  |
| Terrestrial Biodiversity   | <ul style="list-style-type: none"> <li>None identified</li> </ul>   |   |
| Heritage   | <ul style="list-style-type: none"> <li>None Identified</li> </ul>   |   |
| Visual - Altered Sense of Place caused by the decommissioning activities | <ul style="list-style-type: none"> <li>Dust generated during decommissioning will be visually unappealing and may detract from the visual quality (and sense of place) of the area. These impacts are typically limited to the immediate area surrounding the site, during the decommissioning period.</li> </ul> | <ul style="list-style-type: none"> <li>Limit vegetation clearance and the footprint of decommissioning to what is absolutely essential.</li> <li>Avoid excavation, handling and transport of materials which may generate dust under very windy conditions.</li> <li>Keep stockpiled aggregates and sand covered to minimise dust generation.</li> <li>Keep site tidy.</li> </ul> |
| Social   | <ul style="list-style-type: none"> <li>Job losses</li> </ul>  | <ul style="list-style-type: none"> <li>Deployment of those with transferable skills to other RE facilities.</li> </ul>  |
|  | <ul style="list-style-type: none"> <li>Loss of associated developments</li> </ul>   | <ul style="list-style-type: none"> <li>Promote business incubators and access to loans for local businesses.</li> <li>Promote investments in the area through incentives.</li> </ul>  |
|  | <ul style="list-style-type: none"> <li>Economic contraction at the local level</li> </ul>   | <ul style="list-style-type: none"> <li>Promote investments in the area and investor confidence through tax incentives.</li> </ul>   |

### Cumulative

| Environmental Aspect | Potential Impact During Decommissioning  | Proposed Mitigation  |
|----------------------|--|--|
| Agricultural         | <ul style="list-style-type: none"> <li>Compliance Statement</li> </ul>   |  |
| Avifaunal            | <ul style="list-style-type: none"> <li>None identified</li> </ul>  |  |
| Aquatic              | <ul style="list-style-type: none"> <li>Cumulative impact of various proposed renewable farms and associated grid lines on the natural environment</li> </ul> | <ul style="list-style-type: none"> <li>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</li> </ul> |

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| Environmental Aspect                                      | Potential Impact During Decommissioning   | Proposed Mitigation  |
|---|---|--|
|   |   | impacts will be the crossing of internal roads over minor watercourse / drainage lines or areas rated as LOW sensitivity.  |
| Geotechnical  | <ul style="list-style-type: none"> <li>None identified</li> </ul>   |  |
| Terrestrial Biodiversity                                  | <ul style="list-style-type: none"> <li>To be further investigated during the EIA Phase</li> </ul>   |  |
| Heritage  | <ul style="list-style-type: none"> <li>None Identified</li> </ul>   |  |
| Visual - Altered Sense of Place caused by the PV Facility | <ul style="list-style-type: none"> <li>There are already numerous substations and powerlines in the region, already affecting visual quality and sense of place in this modified rural landscape. As such, the proposed powerlines, BESS and substations associated with these projects are not the first of their kind in the visual landscape. The Bonsmara PV Facility and other proposed facilities listed above have a combined footprint of approximately ~4 705 ha; although large, the facilities are far apart and do not constitute a spatially concentrated, high density network of PV facilities, which mitigates cumulative impacts.</li> </ul> | <ul style="list-style-type: none"> <li>Encourage other project owners to implement measures to mitigate the impact of these projects on visual intrusion and altered sense of place, such as screening (vegetation and/or berms) and limit the light pollution generated by these facilities.</li> </ul> |
| Social  | <ul style="list-style-type: none"> <li>To be further investigated during the EIA Phase</li> </ul>   |  |

## PUBLIC PARTICIPATION PROCESS

### Notification of EIA process to be undertaken as follows:

- Issuing of the notifications and initial landowner consultation (to be circulated to all I&APs in October 2022 respectively as part of the Draft Scoping Report (proof to be included in Final Scoping Report).
- Placement of site notices in English and Afrikaans (as per regulations) were placed along the entrance road to the application site and around the site itself on 19 October 2022 (proof included in the Scoping Report).
- Notification letters to be 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 has been advertised in a local newspaper (namely the Vrystaat Kroon) on 26<sup>th</sup>October 2022 as required according to Regulation 41(2) (c) of the EIA Regulations (2014), as amended. Proof to be included in Appendix 5.

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### **Availability of report for review:**

- Report available on SiVESTs website for download.
- Electronic copies can be made available to parties via a secure digital link that will be emailed upon request for the documentation.
- CDs / Flash drive to be posted, only if requested.
- The Draft Scoping Report will be located and available for review at the following location:
  - Mqohaka Local Municipality – Hill Street, Kroonstad, Free State Province, South Africa

### **PLAN OF STUDY**

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

- The proposed final 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/Freshwater Assessment;
- Heritage Assessment;
- Terrestrial Biodiversity Assessment;
- Risk Assessment Report (if required).

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 will consult with DFFE as follows:

- Submission of application form to obtain EIA reference number.

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- The Draft Scoping report will be made available for comment to I&Aps, key stakeholders and the authorizing authority.
- After the Draft Scoping Report has been made available for comment within the public domain, comments will be incorporated into the Issues and Response Report and Final Scoping Report.
- The Final Scoping Report will then be submitted to DFFE for approval.
- 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.

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# BONSMARA SOLAR PV FACILITY

## DRAFT SCOPING REPORT

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# BONSMARA SOLAR PV FACILITY

## DRAFT SCOPING REPORT

### 1. INTRODUCTION

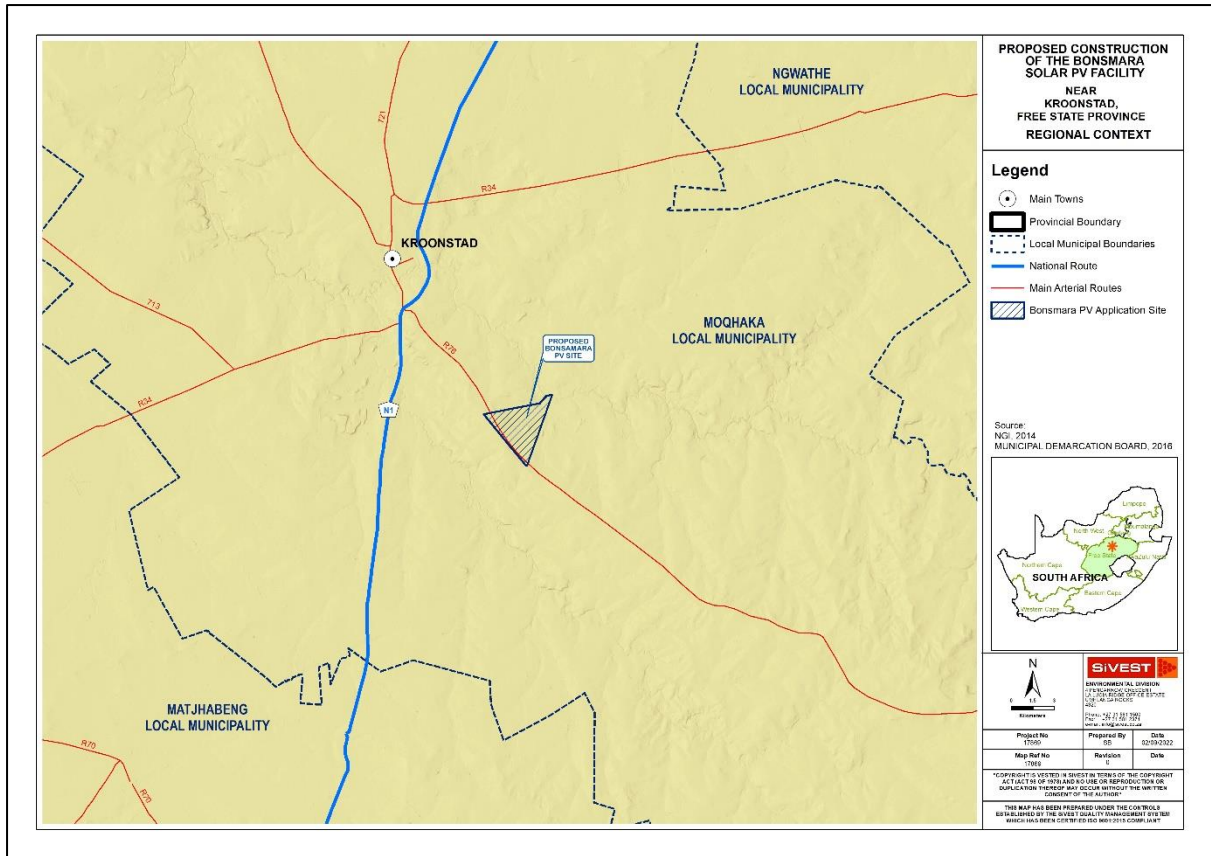
Bonsmara Solar PV (RF) (Pty) Ltd is proposing to construct the Bonsmara Solar PV Facility (SEF) and associated infrastructure approximately 12 km south-east of Kroonstad in the Moqhaka Local Municipality and the Fezile Dabi District, in the Free State Province (**Figure 1**) (**DFFE Reference Number: To be Allocated**). The overall objective of the proposed development is to generate electricity by means of renewable energy technologies capturing solar energy to feed into the national grid. The proposed development will have a maximum total generation capacity of up to 100 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 Bonsmara 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 Free State Department of Economic, Small Business Development, Tourism and Environmental Affairs (DESTEA)) 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.

In order to evacuate the energy generated by the SEF to supplement the national grid, Bonsmara Solar PV (RF) (Pty) Ltd is proposing one grid connection which will be assessed in a separate Grid BAR (**DFFE Reference Number: To be Allocated**).

The SEF and grid connection infrastructure will require separate Environmental Authorisations (EAs) and are subject to separate Environmental Impact Assessment (EIA) and Basic Assessment (BA) processes respectively. The proposed grid connection infrastructure will be handed over to Eskom once constructed (Eskom grid connection works). The substations will include an Eskom portion (switching station) and an Independent Power Producer (IPP) portion (facility substation) hence the facility substations will be included in the respective SEF EIAs and the Eskom switching stations in the respective associated grid connection infrastructure BA in order to allow for handover to Eskom.

Although the SEF and associated grid connection infrastructure (switching station and overhead power line) will be assessed separately, it is proposed that a single public participation process be undertaken to consider both of the proposed projects [i.e. one (1) SEF EIA and one (1) grid connection BA].



**Figure 1: Bonsmara Regional Context**

### 1.1 Overview of the EIA Process

The National Environmental 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-<br>(i) the EAP who prepared the report; and<br>(ii) the expertise of the EAP, including a curriculum vitae;  | 4                  |
| (b) the location of the activity, including-<br>(i) the 21-digit Surveyor General code of each cadastral land parcel;<br>(ii) where available, the physical address and farm name;<br>(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-<br>(i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or<br>(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-<br>(i) all listed and specified activities triggered;<br>(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                 |
| (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                 |



| Content Requirements  | Applicable Section |
|---|--------------------|
| <p>(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 -</p> <ul style="list-style-type: none"> <li>(i) details of all the alternatives considered;</li> <li>(ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;</li> <li>(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;</li> <li>(iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;</li> <li>(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- <ul style="list-style-type: none"> <li>(aa) can be reversed;</li> <li>(bb) may cause irreplaceable loss of resources; and</li> <li>(cc) can be avoided, managed or mitigated;</li> </ul> </li> <li>(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;</li> <li>(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;</li> <li>(viii) the possible mitigation measures that could be applied and level of residual risk;</li> <li>(ix) the outcome of the site selection matrix;</li> <li>(x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such and</li> <li>(xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity;</li> </ul> | 13                 |
| <p>(h) a plan of study for undertaking the environmental impact assessment process to be undertaken, including-</p> <ul style="list-style-type: none"> <li>(i) a description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity;</li> <li>(ii) a description of the aspects to be assessed as part of the environmental impact assessment process;</li> <li>(iii) aspects to be assessed by specialists;</li> <li>(iv) a description of the proposed method of assessing the environmental aspects, including aspects to be assessed by specialists;</li> <li>(v) a description of the proposed method of assessing duration and significance;</li> <li>(vi) an indication of the stages at which the competent authority will be consulted;</li> <li>(vii) particulars of the public participation process that will be conducted during the environmental impact assessment process; and</li> </ul>  | 14                 |

| Content Requirements   | Applicable Section                             |
|--|--|
| (viii) a description of the tasks that will be undertaken as part of the environmental impact assessment process;<br>(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-<br>(i) the correctness of the information provided in the report;<br>(ii) the inclusion of comments and inputs from stakeholders and interested and affected parties; and<br>(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 Bonsmara Solar PV Facility (SEF) and Associated Infrastructure near Kroonstad in the Free State Province.

## 3. DETAILS OF APPLICANT

### 3.1 Name and contact details of the Applicant

**Table 2: Name and contact details of the applicant**

|                                   |  |
|-----------------------------------|--|
| <b>Business Name of Applicant</b> | Bonsmara Solar PV (RF) (Pty) Ltd   |
| <b>Physical Address</b>           | Third Floor, Sunclare Building, 21 Dreyer Street, Claremont, Cape Town         |
| <b>Postal Address</b>             | PO Box 762, Wilderness   |
| <b>Postal Code</b>                | 7708   |
| <b>Telephone</b>                  | 083 785 1492   |
| <b>Email</b>                      | <a href="mailto:mangnall@wkn-windcurrent.com">mangnall@wkn-windcurrent.com</a> |

## 4. DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER AND SPECIALISTS

### 4.1 Name and contact details of the Environmental Consultant

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

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

|                             |  |
|-----------------------------|--|
| <b>Business Name of EAP</b> | SiVEST SA (PTY) Ltd  |
| <b>Physical Address</b>     | 4 Pencarrow Crescent, La Lucia Ridge Office Estate                 |
| <b>Postal Address</b>       | PO Box 1899, Umhlanga Rocks  |
| <b>Postal Code</b>          | 4320   |
| <b>Telephone</b>            | 031 581 1500   |
| <b>Fax</b>                  | 031 566 2371   |
| <b>Email</b>                | <a href="mailto:michelleg@sivest.co.za">michelleg@sivest.co.za</a> |

### 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**

| <b>Name of representative of the EAP</b>     | <b>Educational Qualifications</b>      | <b>Professional Affiliations</b>   | <b>Experience (years)</b> |
|--|--|--|---------------------------|
| Michelle Nevette<br>( <i>Cert.Sci.Nat.</i> ) | MEnvMgt.<br>(Environmental Management) | SACNASP Registration No. 120356<br>EAPASA Registration No. 2019/1560<br>IAIA | 19                        |
| Michelle Guy<br>( <i>Pr.Sci.Nat</i> )        | MSc<br>Environmental Science           | SACNASP Registration No. 126338<br>EAPASA Registration No. 2019/868<br>IAIA  | 10                        |
| Luvanya Naidoo<br>( <i>Pr.Sci.Nat</i> )      | BSc Geography                          | SACNASP Registration No. 126107<br>EAPASA Registration No. 2019/1404<br>IAIA | 12                        |

CV's of SiVEST 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   | Experience (years) |
|---------------------------|--|---|--|--------------------|
| SRK Consulting            | Kelly Armstrong                          | Visual Impact Assessment                          | BSocSc (Hons)  | 4                  |
|                           | Chris Dalglish                           |   | BBusSci (Hons)<br>M Phil (Env)<br>EAPASA                                   | 35                 |
| CTS Heritage              | Jenna Lavin                              | Heritage Impact Assessment                        | MSc. Archaeology (UCT), CPD in Conservation of the Built Environment (UCT) | 12                 |
| Johann Lanz Consulting    | Johann Lanz                              | Agriculture and Soils Impact Assessment (desktop) | M.Sc. (Environmental Geochemistry)   | 24                 |
| Synergy Global Consulting | Teboho Mosuoetsi                         | Socio-economic Impact Assessment (desktop)        | Doctor of Philosophy (PhD) in Anthropology - Rhodes University (2019)      | 8                  |
|                           | Thandiwe Chidzingu                       |   | Hons Geography and MSc Geography and Environmental Studies                 | 5                  |
| n/a                       | Jamie Pote                               | Terrestrial Impact Assessment                     | BSc (Hons)<br>Pr. Sci. Nat. 115233   | 18                 |
| Enviro Insight            | Sam Laurence                             | Avifaunal Impact Assessment                       | BSc, BSc Hons,<br>M.Sc. candidate.<br>Pr. Sci. Nat.<br>Zoological Science  | 15                 |
| EnviroSci (Pty) Ltd       | Dr Brian Colloty                         | Surface Water Impact Assessment                   | Ph D (Botany – Estuaries & Mangroves)<br>Pr. Sci. Nat.<br>400268/07        | 25                 |
| GaGE Consulting (Pty) Ltd | Duan Swart                               | Desktop Geotechnical Impact Assessment            | MSc Engineering Geology<br>Pr.Sci.Nat 137543                               | 4                  |

## 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                                |
|-----------------------|--|
| F02000000000063600000 | PORTION 0 OF THE FARM SCHEVENINGEN NO. 636 |
| F02000000000063600001 | PORTION 1 OF THE FARM SCHEVENINGEN NO. 636 |

## 5.2 Coordinates of the site

The centre point coordinates for the sites are as follows:

- Latitude: 27° 45' 51.71" S
- Longitude: 27° 19' 13.44" E

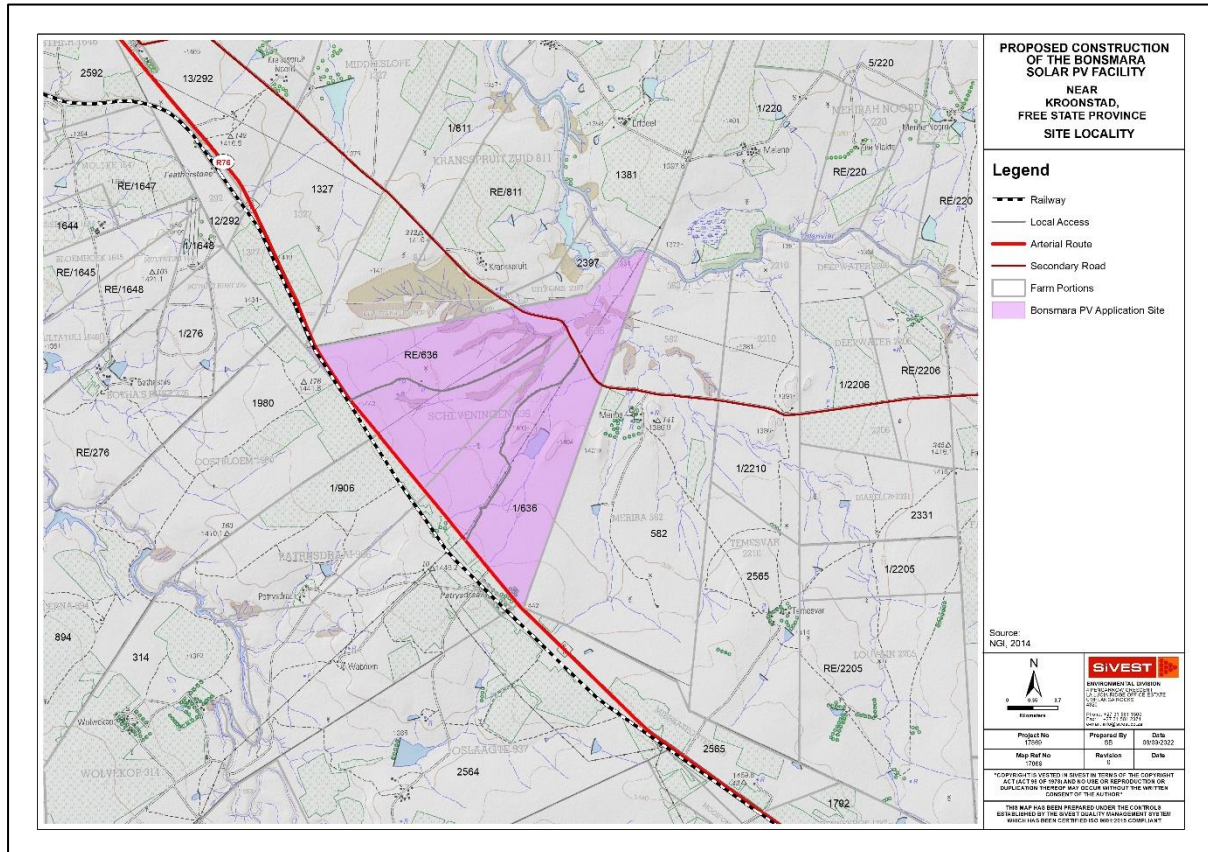


Figure 2: Site locality

The bend point coordinates of the site have been included below:

Table 7: Bend point coordinates for the Bonsmara SEF site boundary

| BONSMARA SEF: APPLICATION SITE              |               |               |
|---|---------------|---------------|
| COORDINATES AT CORNER POINTS (DD MM SS.sss) |               |               |
| POINT                                       | SOUTH         | EAST          |
| 1   | 27°45'19.63"S | 27°17'36.88"E |
| 2   | 27°44'58.69"S | 27°20'0.41"E  |
| 3   | 27°44'41.92"S | 27°20'18.09"E |
| 4   | 27°44'42.63"S | 27°20'20.19"E |
| 5   | 27°44'42.32"S | 27°20'23.08"E |
| 6   | 27°44'41.19"S | 27°20'24.88"E |
| 7   | 27°44'39.93"S | 27°20'26.19"E |
| 8   | 27°44'39.65"S | 27°20'27.90"E |
| 9   | 27°44'40.40"S | 27°20'31.86"E |

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| <b>BONSMARA SEF: APPLICATION SITE</b>              |               |               |
|--|---------------|---------------|
| <b>COORDINATES AT CORNER POINTS (DD MM SS.sss)</b> |               |               |
| <b>POINT</b>                                       | <b>SOUTH</b>  | <b>EAST</b>   |
| 10   | 27°44'40.79"S | 27°20'32.68"E |
| 11   | 27°47'19.58"S | 27°19'23.11"E |
| 12   | 27°47'18.60"S | 27°19'20.30"E |

**Table 8: Bend point coordinates for the substation, BESS, temporary laydown, operation and maintenance area, auxiliary buildings, offices**

| <b>BONSMARA SEF: SUBSTATION, BESS AND ASSOCIATED INFRASTRUCTURE LOCATION</b> |               |               |
|--|---------------|---------------|
| <b>COORDINATES AT CORNER POINTS (DD MM SS.sss)</b>                           |               |               |
| <b>POINT</b>   | <b>SOUTH</b>  | <b>EAST</b>   |
| 1  | 27°46'10.04"S | 27°18'23.30"E |
| 2  | 27°46'1.62"S  | 27°18'37.95"E |
| 3  | 27°46'6.75"S  | 27°18'42.97"E |
| 4  | 27°46'8.01"S  | 27°18'43.29"E |
| 5  | 27°46'11.34"S | 27°18'42.28"E |
| 6  | 27°46'18.36"S | 27°18'30.24"E |
| <b>COORDINATES AT CENTRE POINT (DD MM SS.sss)</b>                            |               |               |
| <b>POINT</b>   | <b>SOUTH</b>  | <b>EAST</b>   |
| 7  | 27°46'10.08"S | 27°18'34.64"E |

Please note that all the supporting infrastructure described above and below (e.g., substation, BESS, temporary laydown, O&M building etc.) will be located within a 15ha area that has been identified on site.

## 6. ACTIVITY INFORMATION

### 6.1 Project Description

#### 6.1.1 SEF and Associated Infrastructure

The application site assessed during the scoping phase (which incorporates the farm portions / properties listed above) is approximately 1004 hectares (ha) in extent.

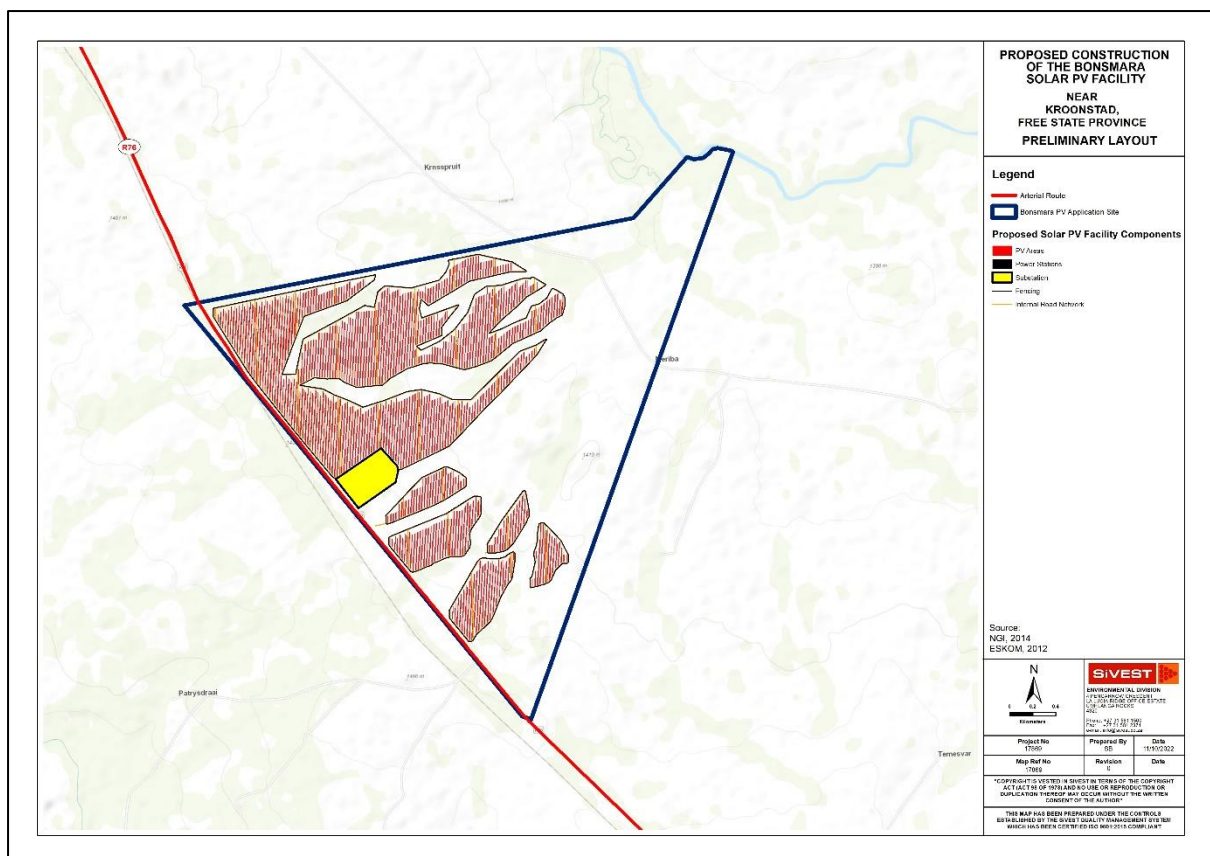
At this stage, it is anticipated that the proposed Solar PV energy facility will include PV fields (arrays) comprising of multiple PV panels. The number of panels and the layout of the arrays will however be dependent on the outcome of the specialist studies conducted during the EIA process, as well as the area available for the erection of PV panels. In summary, the proposed Bonsmara SEF development will include the following components:

- PV modules and mounting structures (monofacial or bifacial) with fixed, single or double axis tracking mounting structures. The modules will be either crystalline silicon or thin film technology. Each panel will be approximately 2.5m above ground.



- Site and internal access roads, up to 6m wide, will provide access to the PV arrays. Existing site roads will be used wherever possible, although new site roads will be constructed where necessary.
- Operation and maintenance (O&M) building (including offices, warehouses, workshops, canteen, visitors centre, ablution facilities and staff lockers), occupying a site of approximately 5000 m<sup>2</sup>.
- Battery Energy Storage System (BESS) of approximately 2 ha;
- Temporary construction laydown/staging area during construction phase approximately 2 ha in size (which will become the permanent laydown area for the BESS during the operational phase);
- Associated stormwater management infrastructure;
- Auxiliary buildings (offices, parking etc.) approximately 1 ha in size.
- One new 33/132kV on-site substation (facility substation) occupying an area of up to approximately 1 ha.
- Medium voltage cabling will link the PV facility to the facility substation / grid connection infrastructure. These cables will be laid underground wherever technically feasible (up to 33kV).
- Galvanized palisade perimeter fencing;
- Rainwater and/or groundwater storage tanks and associated water transfer infrastructure.
- Water will either be sourced from either the Local Municipality, supplied from a private contractor and trucked in, from existing boreholes located within the application site or from a new borehole if none of these options are available.

The Preliminary Layout is reflected below in **Figure 33** 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**



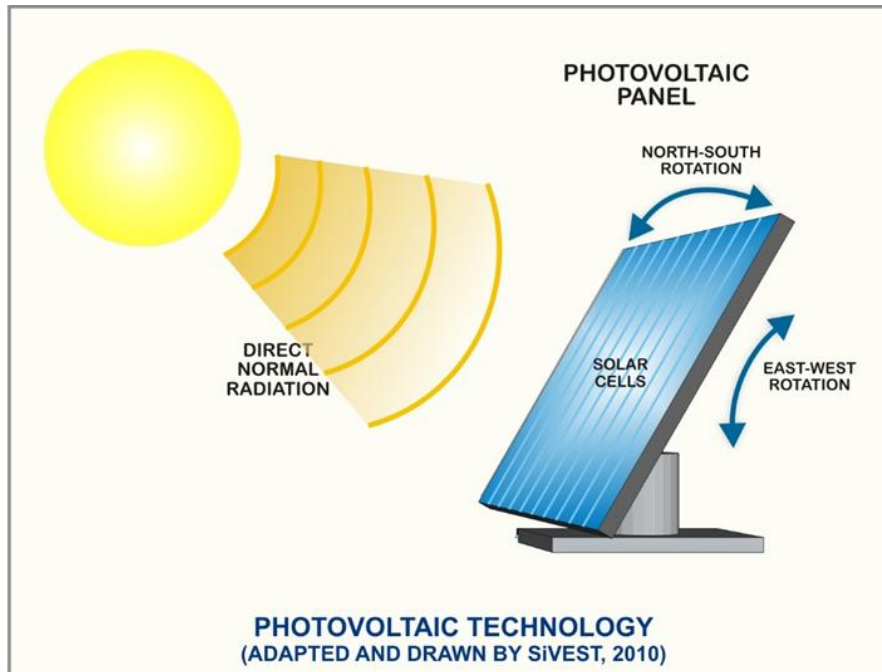
The solar PV panels and all other project infrastructure will be placed strategically within the development area based on environmental constraints.

### 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

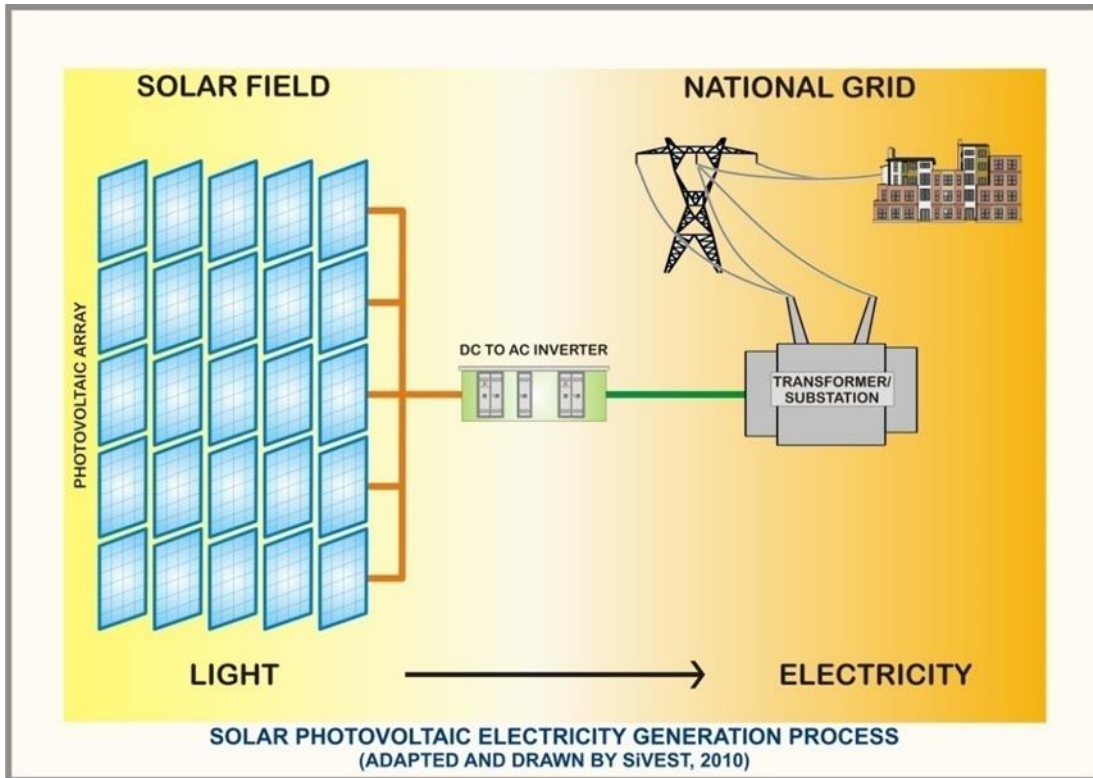
**Figure 44** below for the typical components of a solar panel.



**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) 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

The main access for the Bonsmara SEF is off the regional tarred R76 which lies adjacent to the site. Internal access roads will then be required to access the solar PV panels. The site and internal roads will have a width of up to approximately 6 m and will consist of both new roads and roads that will be upgraded.

### 6.1.4 Battery Energy Storage System

A Battery Energy Storage System (BESS) of approximately 2 ha in size is proposed to be included as part of the Bonsmara SEF. The BESS is proposed to be constructed on the site that will be used as the temporary construction laydown area during the construction phase. Two BESS technology alternatives are considered: Solid state battery electrolytes (e.g., lithium-ion (Li-ion) zinc hybrid cathode, sodium ion, zinc bromine, sodium sulphur) and Redox-flow technology.

### 6.1.5 Technical Detail Summary

A summary of the project technical details is provided in **Table 9** below.

**Table 9: Technical Detail Summary**

| Component                       | Description / Dimensions                       |
|---------------------------------|--|
| Location of site (centre point) | 27°46'10.08"S 27°18'34.64"E                    |
| Application site area           | 1004 ha  |
| PV development area             | 390ha  |
| SG codes                        | F02000000000063600000<br>F02000000000063600001 |

| Component                                    | Description / Dimensions  |
|--|---|
| Export capacity                              | Up to 100 MW  |
| Proposed technology                          | PV modules and mounting structures  |
| Max panel height from the ground             | 2.5m  |
| Substation area                              | 1 ha  |
| Battery Energy Storage Area (BESS)           | 2 ha  |
| Capacity of on-site and collector substation | 33/132kV  |
| O&M building area                            | 5000 m <sup>2</sup>   |
| Temporary Construction Laydown area          | 2 ha  |
| Width of internal access roads               | Approximately 6 m   |
| Site Access                                  | Access to the site shall be from the R76 between Kroonstad and Steynrus. The site is situated approximately 12 km from Kroonstad. |
| Proximity to grid connection                 | Approximately 2 km from application site  |
| Height of fencing (for substation)           | Approximately 3.5 m high  |
| Type of fencing (for substation)             | Galvanized palisade fencing   |

## 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 10: 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.   |
|--|--|---|
| <b>Relevant Basic Assessment Activities as set out in Listing Notice 1</b> |  |   |
| 11 (i)   | <b>GN R. 327 (as amended) Item 11:</b> The development of facilities or infrastructure for the transmission and distribution of electricity—<br><br>(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. |
| 12 (ii) (a) (c)  | <b>GN R. 327 (as amended) Item 12:</b> The development of:<br><br>ii) infrastructure or structures with a physical footprint of 100 square metres or more;<br><br>where such development occurs-<br>(a) within 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.   |

| 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.  |
|-----------------|--|--|
|                 | (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.  | The proposed developments will therefore entail the construction of infrastructure with physical footprints of approximately 100m <sup>2</sup> or more within a surface water feature / watercourse or within 32m of a surface water feature / watercourse.  |
| 14              | <b>GN R. 327 (as amended) Item 14:</b> 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 <sup>3</sup> expected to be exceeded.<br><br>The proposed development will include the construction of an on-site Battery Energy Storage System (BESS) using solid state / liquid flow or redox flow batteries with hazardous material of more than 80m <sup>3</sup> .  |
| 19              | <b>GN R. 327 (as amended) Item 19:</b> 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 <sup>3</sup> into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10m <sup>3</sup> from some of the identified surface water features / watercourses.<br><br>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 may need to be removed from some of the identified surface water features / watercourses. |
| 24 (ii)         | <b>GN R. 327 (as amended) Item 24:</b> The development of a road -<br><br>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 will be required to access the PV panels and substations. Existing roads will be used wherever possible, however new roads will be constructed where necessary.  |
| 28 (ii)         | <b>GN R. 327 (as amended) Item 28:</b> Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation   | 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 agriculture land.   |

| 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.  |
|---|--|--|
|   | <p>on or after 01 April 1998 and where such development:</p> <p>(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;</p>  |  |
| 48 (i) (a)<br>(c)   | <p><b>GN R. 327 (as amended) Item 48:</b> The expansion of-</p> <p>(i) infrastructure or structures where the physical footprint is expanded by 100 square metres or more;</p> <p>where such expansion occurs—</p> <p>(a) within a watercourse; or<br/>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;</p> | <p>The proposed development will entail the expansion (upgrading) of roads and other infrastructure by 100m<sup>2</sup> or more within a surface water feature / watercourse or within 32m from the edge of a surface water feature / watercourse.</p> <p>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.</p> |
| 56 (ii)   | <p><b>GN R. 327 Item 56:</b> The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre -</p> <p>(i) where the existing reserve is wider than 13,5 metres; or<br/>(ii) where no reserve exists, where the existing road is wider than 8 metres –</p>  | <p>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.</p>  |
| <b>Relevant Scoping and EIA Activities as set out in Listing Notice 2 of the EIA Regulations, 2014 as amended</b> |  |  |
| 1   | <p><b>GN R. 325 (as amended) Item 1:</b> The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more.</p>   | <p>The proposed development will entail the construction of a SEF where the respective electricity output will be up to 100 MW. In addition, the proposed SEF development will be located outside urban areas.</p>   |
| 15  | <p><b>GN R. 325 (as amended) Item 15:</b> The clearance of an area of 20 hectares or more of indigenous vegetation.</p>  | <p>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.</p>   |

| 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.  |
|--|---|--|
| <b>Relevant Basic Assessment Activities as set out in Listing Notice 3 of the EIA Regulations, 2014 as amended</b> |   |  |
| 4 b. i (bb) (gg)   | <p><b>GN R. 324 (as amended) Item 4:</b> The development of a road wider than 4m with a reserve less than 13.5 metres.</p> <p><b>b. Free State</b><br/> i. Outside Urban Areas:<br/> (bb) National Protected Area Expansion Strategy Focus areas;<br/> (gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas</p>   | The proposed development is located within 5km of a nature reserve and a portion of the site is located within areas identified as NPAES.  |
| 10 b. i.(bb) (gg) (hh)   | <p><b>GN R. 324 (as amended) Item 10:</b> 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.</p> <p><b>b. Free State</b><br/> i. Outside Urban Areas:<br/> (bb) National Protected Area Expansion Strategy Focus areas;<br/> (gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas<br/> (hh) Areas within a watercourse or wetland; or within 100m from the edge of a watercourse or wetland.</p> | “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 <sup>3</sup> expected to be exceeded.   |
| 12 b. (iv)   | <p><b>GN R. 324 (as amended) Item 12:</b> 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.</p> <p><b>b. Free State</b><br/> iv. Areas within a watercourse or wetland; or within 100 meters from the edge of a watercourse or wetland</p>  | The proposed development will entail the construction of infrastructure (caballing and roads) with physical footprints of approximately 300 m <sup>2</sup> or more. As such, approximately 300 m <sup>2</sup> or more of indigenous vegetation will likely be cleared as part of the respective proposed developments. |
| 14 ii. (a) (c) b (i) (bb) (ff) (hh)  | <p><b>GN R. 324 (as amended) Item 14:</b> The development of—</p>   | The proposed development will likely entail the development of infrastructure with physical footprints of 10m <sup>2</sup> or more within a watercourse / surface water feature or within 32 m   |



| 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.   |
|---|---|---|
|   | <p>(ii) infrastructure or structures with a physical footprint of 10 square metres or more;</p> <p>where such development occurs—</p> <p>(a) within a watercourse; or</p> <p>(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;</p> <p>excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.</p> <p><b>b. Free State</b></p> <p>i. Outside urban areas:</p> <p>(bb) National Protected Area Expansion Strategy Focus areas;</p> <p>(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</p> <p>(hh) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas</p> | <p>from the edge of a watercourse / surface water feature.</p> <p>Although the layouts of the respective proposed developments will be designed to avoid the identified surface water features / watercourse as far as possible, some of the infrastructure / structures will need to traverse the identified surface water features / watercourses.</p> <p>The construction of the infrastructure (MV cabling and roads) for the development will occur within Ecosystem Support Areas located outside of urban areas and within 5km of a protected area as well as areas identified as NPAES.</p> |
| <p>18 b (i)<br/>(bb) (gg)<br/>(hh)</p>        | <p><b>GN R. 324 (as amended) Item 18:</b> The widening of a road by more than 4 meters, or the lengthening of a road by more than 1 kilometer-</p> <p><b>b. Free State</b></p> <p>i. Outside urban areas:</p> <p>(bb) National Protected Area Expansion Strategy Focus areas;</p> <p>(gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas</p> <p>(hh) Areas within a watercourse or wetland; or within 100m from the edge of a watercourse or wetland.</p>  | <p>Internal access roads will be required to access the solar panels as well as the respective substations. 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 Free State Province, outside urban areas. The widening of the roads will occur within a watercourse or wetland or within 100 m from the edge of a watercourse or wetland and be within 5km of a protected area as well as areas identified as NPAES.</p>  |
| <p>23 ii. (a) (c)<br/>b (i) (bb)<br/>(gg)</p> | <p><b>GN R. 3245 (as amended) Item 23:</b> The expansion of—</p>  | <p>The proposed development will entail the development and expansion of roads and other infrastructure by 10m<sup>2</sup> or more within a watercourse or within 32m from the edge of a watercourse.</p>   |

| 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.   |
|-----------------|---|---|
|                 | <p>(ii) infrastructure or structures where the physical footprint is expanded by 10 square metres or more; where such expansion occurs—</p> <p>(a) within a watercourse;</p> <p>(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.</p> <p><b>b. Free State</b></p> <p>i. Outside urban areas:</p> <p>(bb) National Protected Area Expansion Strategy Focus areas;</p> <p>(gg) Areas within 10 kilometers from national parks or world heritage sites or 5 kilometers from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas</p> | <p>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.</p> <p>The proposed development within 5km of a protected area as well as areas identified as NPAES.</p> |

## 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 11** below are applicable to the proposed development:

**Table 11: DFFE Screening Tool Environmental Sensitivity**

| Theme                | Sensitivity | Comment   |
|----------------------|-------------|---|
| Agriculture Theme    | High        | <p>The Agricultural Compliance Statement is included in <b>Appendix 6</b> of the Draft Scoping Report.</p> <p>This site sensitivity verification verifies the entire site as being of medium agricultural sensitivity with a land capability value of 6. The land capability value is in keeping with the soil limitations that make the site unsuitable for crop production.</p> |
| Animal Species Theme | Medium      | The Terrestrial Ecological Report is included <b>Appendix 6</b> of the Draft Scoping Report.  |



| Theme                                      | Sensitivity | Comment  |
|--|-------------|--|
|  |             | The Animal Species Theme is Medium, associated with the Reptile <i>Smaug giganteus</i> (Sungazer) and Mammal Spotted Necked Otter ( <i>Hydriectis maculicollis</i> ). Site verification confirms that suitable habitat is present, however initial investigations did not identify Sungazer colonies within the footprint area and the most suitable habitat for Spotted Necked Otters is the Vals River, which is also outside of the proposed footprint. |
| Aquatic Biodiversity Theme                 | Very High   | The Surface Water Report is included in <b>Appendix 6</b> of the Draft Scoping Report.<br><br>Based on the DFFE Screening Tool, the site contains areas of very high sensitivity due to the presence of wetlands and a Strategic Water Resources Area. The remaining area within the development footprint is deemed to be of Low sensitivity.   |
| Archaeological and Cultural Heritage Theme | Low         | The Heritage Report is included in <b>Appendix 6</b> of the Draft Scoping Report.<br><br>The site sensitivity verification will be confirmed during the EIA Phase once the full site assessment has been completed.  |
| Avian Theme                                | Low         | The Avifaunal Report is included in <b>Appendix 6</b> of the Draft Scoping Report.<br><br>The proposed solar project has the potential to be of low to medium sensitivity from an avifaunal point of view. Some of the priority bird species are not habitat bound to the area for nesting and/or foraging purposes  |
| Civil Aviation (Solar PV) Theme            | Low         | The closest airport is the Kroonstad Airfield, located approximately 13 km from the site.  |
| Defence Theme                              | Low         | The entire site has a low sensitivity in terms of the defence theme. No further specialist study required.   |
| Landscape (Solar) Theme                    | Very High   | The Visual Assessment is included in <b>Appendix 6</b> of the Draft Scoping Report.<br><br>The site sensitivity verification finds the site to be of high landscape sensitivity rather than very high as suggested by the Screening Tool.  |
| Palaeontology Theme                        | Very High   | The Heritage Report is included in <b>Appendix 6</b> of the Draft Scoping Report.<br><br>The areas proposed for development are underlain by sediments of moderate to very high palaeontological sensitivity. The site sensitivities will be verified once the full palaeontology survey has been undertaken during the EIA Phase.   |

| Theme                          | Sensitivity | Comment   |
|--------------------------------|-------------|---|
| Plant Species Theme            | Low         | <p>The Terrestrial Ecological Report is included <b>Appendix 6</b> of the Draft Scoping Report.</p> <p>The Plant Species Theme is Low with no flagged species of conservation concern. The detailed site visit will assess the presence or likely presence of any other species of conservation concern, including those requiring permits for removal, however none were identified during the initial site verification.</p>  |
| RFI Theme                      | Low         | <p>The screening tool described the study area as low for the RFI theme. Correspondence with SARAO during the PPP will be undertaken to determine if they have any comments/requirements.</p>   |
| Terrestrial Biodiversity Theme | Very High   | <p>The Terrestrial Ecological Report is included <b>Appendix 6</b> of the Draft Scoping Report.</p> <p>The Terrestrial Biodiversity Theme is Very High, with Ecological Support Area 1 &amp; 2 (ESA) covering the site and broader surrounding area, as well as being adjacent to a private nature reserve.</p> <p>The site visit and assessment confirmed that the vegetation is generally natural and thus the ESA 1 &amp; 2 categorisation is feasible. Due to having a low conservation status, in conjunction with having an ESA rather than a CBA categorisation, the grassland habitat is deemed to have a moderate sensitivity status and would potentially provide a suitable footprint for the proposed activity.</p> |

## 8. DESCRIPTION OF THE PHYSICAL ENVIRONMENT

### 8.1 Geographical

The proposed SEF is located approximately 12 km south-east of Kroonstad in the Moqhaka Local Municipality and the Fezile Dabi District, in the Free State Province. The regional context of the proposed application site is shown in **Figure 6** below.

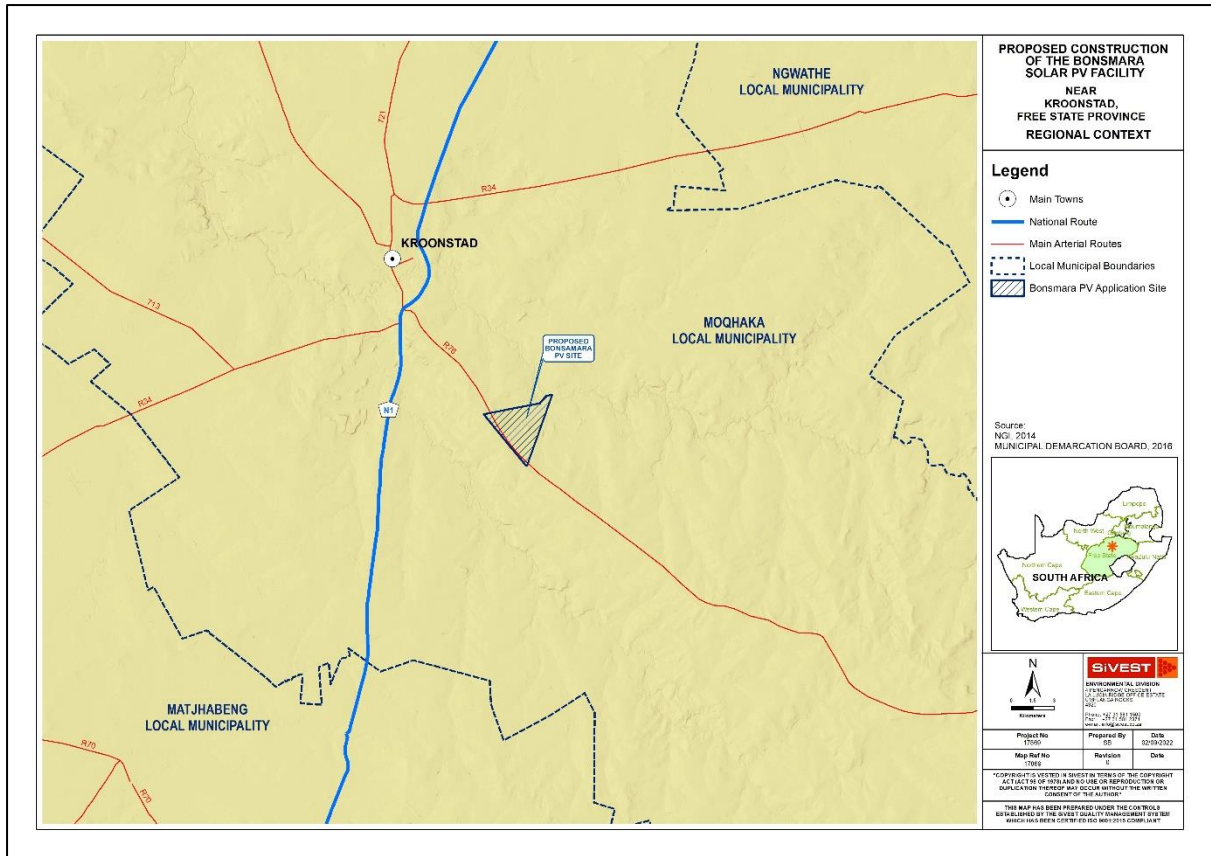


Figure 6: Regional context

## 8.2 Land Use

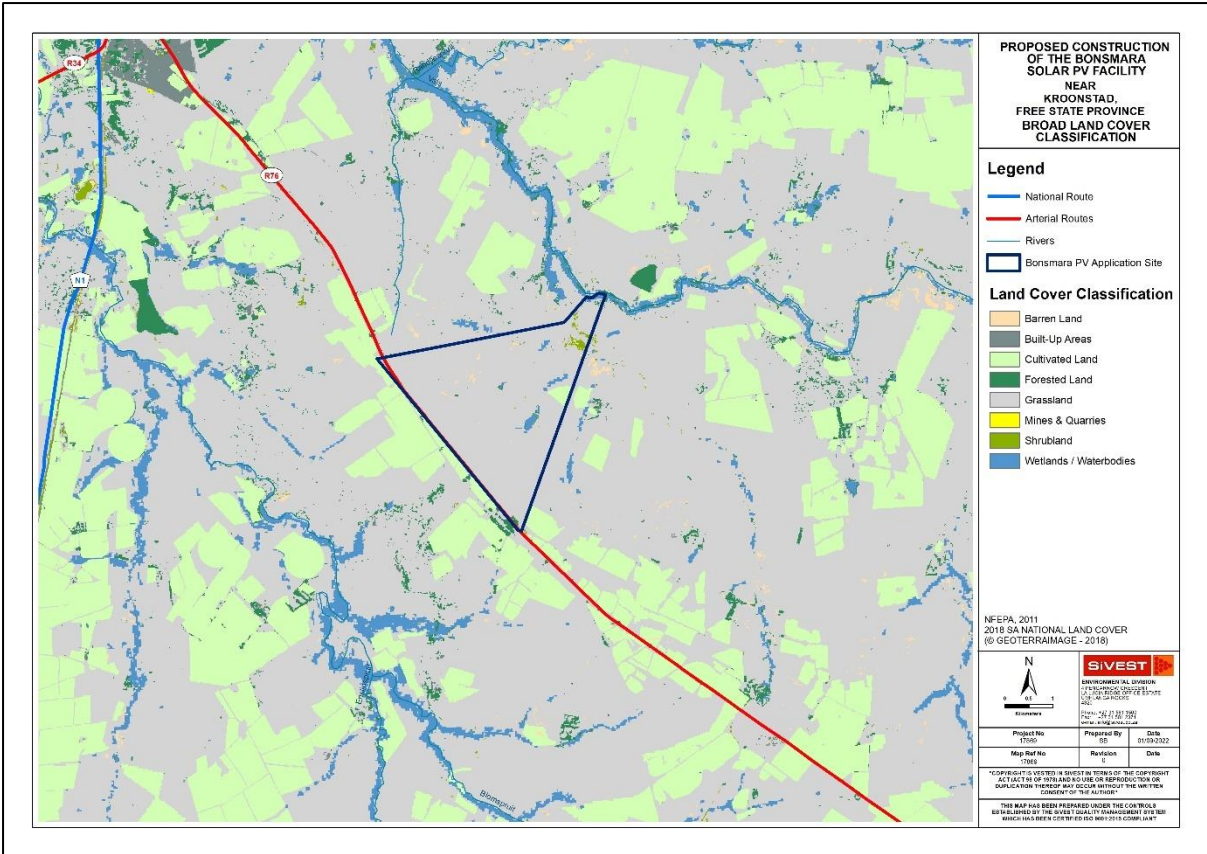
The area surrounding the site is predominantly characterised by agricultural activities, small urban centres, infrastructure (roads and rail) and natural highveld grassland. Agriculture, mainly crop and cattle farming, is the predominant land use surrounding the site, with farmsteads interspersed throughout the area. National, regional and provincial roads crisscross the region, converging in Kroonstad. A railway line runs parallel to the R76 (regional road) to the south-west of the site. An existing 132 kV powerline traverses the site in a northeasterly – southwesterly direction. Refer **Figure 7** below for a broad land cover classification.

The two farms that constitute the project site are undeveloped, covered in grasslands and small clusters of trees and used for grazing. The indigenous vegetation is mostly near natural to natural with transformed and cultivated patches more widespread in the area surrounding the proposed site. The topography is flat to gently undulating landscape supporting short grassland.

The land type across the site has a very high proportion of shallow, clay-rich soils predominantly of the Valsrivier soil form but including the Swartland, Mispah, Bonheim and Glenrosa soil forms as well as rock outcrops. These soils are all unsuitable for crop production due to their limited depth. The on-site soil investigation confirmed the dominance of these shallow, clay-rich soils across the site. The shallow soils have too little potential root volume and moisture reservoir to support viable cropping. This land is therefore only suitable for grazing.

Pictures of the typical site area are included in **Figures 8-11** with the existing powerlines in **Figure 12**.





**Figure 7: Land Cover Classification**



**Figure 8: Typical site area**



**Figure 9: Typical site area**



**Figure 10: Typical site area**



**Figure 11: Typical site area**



**Figure 12: Existing 132kV powerline extending across the site and over the R76**

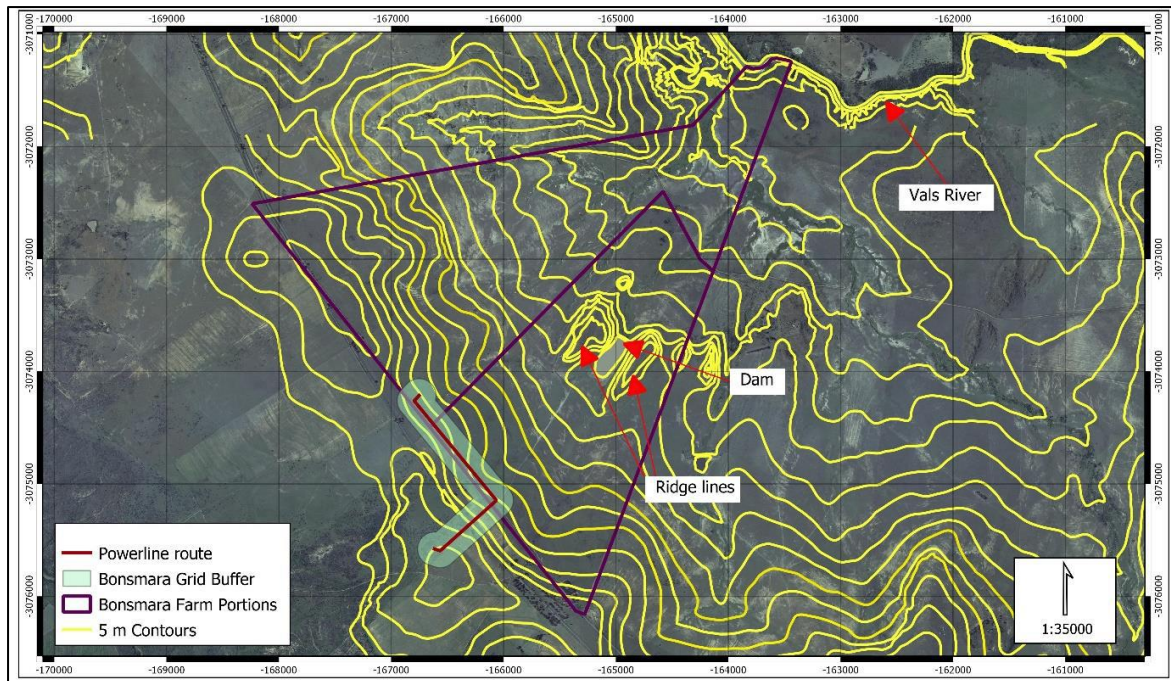
### **8.3 Climate**

The area surrounding Kroonstad is considered to be a local steppe climate. There is little rainfall throughout the year. The area is considered to be a cold, semi-arid, climate. The average annual rainfall is 615 mm with the average temperatures of 17.4°C.

### **8.4 Topography**

The site is located on a relatively flat portion of land, on the crest of a hill, in a gently undulating landscape. The site topography slopes between 2° to 5° towards the northeast. Minor portions of the site have slope angles up to 10° adjacent to small ridges. The site exists between the elevations of 1435 m to 1350 m above mean sea level (AMSL). The undulations have caused surface water to congregate into the lower-lying valleys and formed erosion gullies and rills which occur throughout most of the site. The site drainage is expected to occur as sheetwash into the rills and gullies, becoming concentrated flow into the Vals River to the northeast of the site (**Figure 13**).





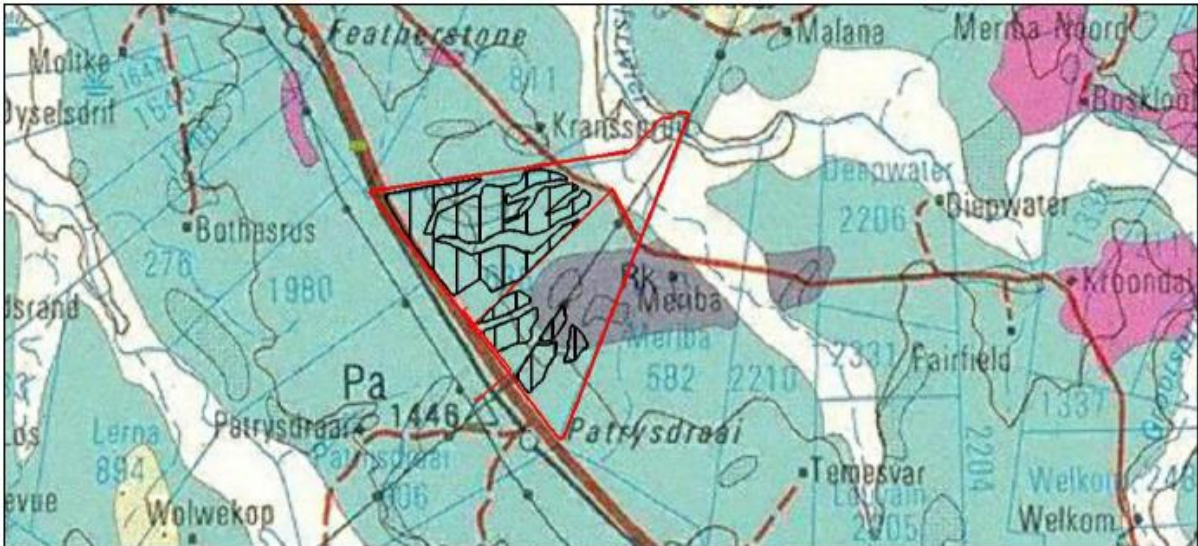
**Figure 13: Topography**

## 8.5 Desktop Geotechnical Assessment

A desktop geotechnical assessment was undertaken by Gage Consulting (report dated October 2022).

The assessment area is underlain by rock units of Beaufort Group of Karoo Supergroup and Klipriviersberg Group.

The topography over the assessment area (as discussed above) is generally flat and undulating terrain sloping between 2° to 5°. Minor portions of the site have slope angles up to 10° adjacent to small ridges. The site is underlain by alternating sandstone, mudstone and siltstone of Adelaide Subgroup, Beaufort Group, Karoo Supergroup. A portion of the eastern section of the site is underlain by porphyritic lava, amygdale-free and amygdaloidal lava of the Klipriviersberg Group forming part of the Ventersdorp Supergroup (**Figure 14**).



| Symbol | Age        | Sedimentary and Volcanic Rocks |                |           | Intrusive Rocks | Geological Unit Type           |
|--------|------------|--------------------------------|----------------|-----------|-----------------|--------------------------------|
|        |            | Supergroup                     | Group          | Formation |                 |                                |
|        | Quaternary | N/A                            |                |           |                 | Alluvium                       |
| Jd     | Jurassic   | -                              | -              | -         | Dykes / Sills   | Dolerite                       |
| Pa     | Permian    | Karoo                          | Beaufort       | Adelaide  | -               | Sandstone, mudstone, siltstone |
| Rk     | Randian    | Ventersdorp                    | Klipriversberg | -         | -               | Porphyritic lava               |

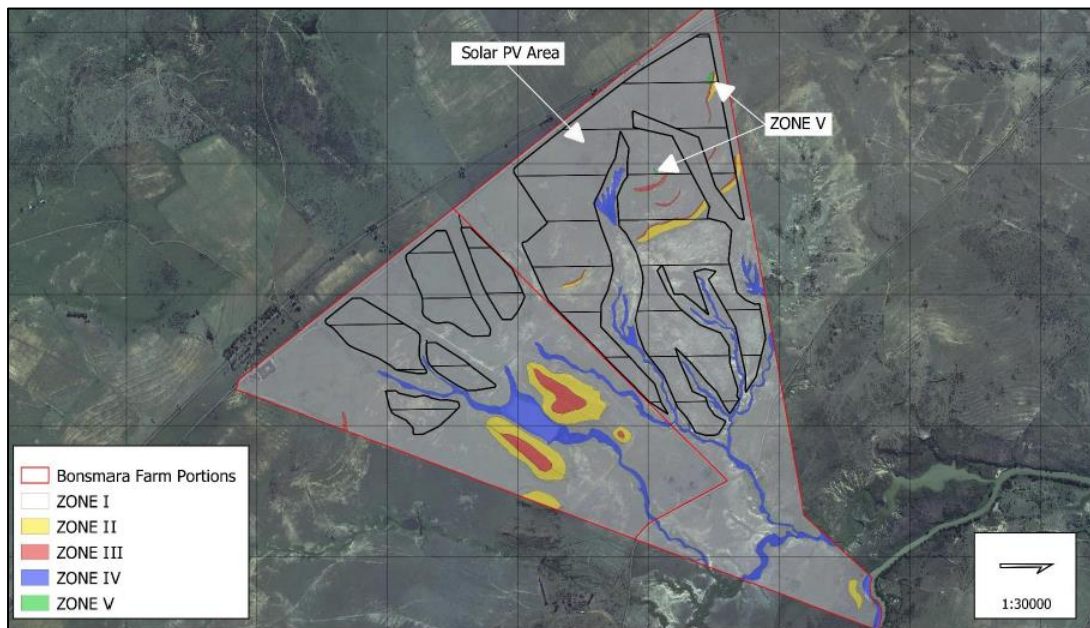
**Figure 14: Regional geology of the site**

Some geotechnical constraints have been identified, primarily shallow and outcropping bedrock which may cause excavation difficulties, localised steep slopes and existing borrow pit areas. These constraints may be mitigated via standard engineering design and construction measures. Refer table below.



**Table 12: Summary of geotechnical conditions/constraints**

| Ground Unit | Shallow Geology                         | Geotechnical Conditions / Constraints  | Impacts on Engineering Design and Construction  |
|-------------|---|--|---|
| I           | Bedrock covered by transported material | <ul style="list-style-type: none"> <li>Sandy transported soil on surface</li> <li>Locally occurring, variably cemented ferricrete at depths between 0.50 m to 2.00 m BGL</li> <li>Residual soils sandy to clayey depending on underlying bedrock</li> <li>Possible, localised, low to medium expansive potential soil material at depth</li> <li>Localised shallow subsurface water seepage</li> </ul> | <ul style="list-style-type: none"> <li>Generally good founding conditions for structures at shallow depths</li> <li>Minor earth works required at founding level</li> <li>Conventional shallow foundations suitable</li> <li>Conventional subgrade preparation for roads</li> <li>Variable excavation conditions</li> <li>Pre-drilled holes, filled with G5 material required for ground mount PV system</li> </ul> |
| II          | Steep slopes (Talus on foot slopes)     | <ul style="list-style-type: none"> <li>Mass earthworks on gradients greater than 1:10</li> <li>Potentially unstable slopes</li> </ul>  | <ul style="list-style-type: none"> <li>Terracing and slope stabilisation required</li> </ul>  |
| III         | Outcropping / shallow bedrock           | <ul style="list-style-type: none"> <li>Hard excavation conditions</li> </ul>   | <ul style="list-style-type: none"> <li>Heavy plant machinery / pneumatic methods / required for excavations (pole planting earthworks / trenching / foundations)</li> <li>Good founding conditions for structures</li> <li>Overbreak is anticipated during trenching</li> </ul>   |
| IV          | Alluvium                                | <ul style="list-style-type: none"> <li>Loose sandy soils</li> <li>Potentially collapsible soils</li> <li>Moderate soil cover</li> <li>Moderate bedrock depth</li> <li>Increased erosion potential</li> <li>Deep erosion gullies and rills</li> </ul>   | <ul style="list-style-type: none"> <li>Deeper spread footings (found below alluvial sands)</li> <li>Soft excavation conditions becoming intermediate with depth</li> <li>Unstable trench sidewalls – shoring/battering required</li> <li>Erodible soils</li> <li>Surface drainage measures required to minimise risk of flooding and erosion</li> </ul>   |
| V           | Borrow Pits                             | <ul style="list-style-type: none"> <li>Existing borrow excavations</li> </ul>  | <ul style="list-style-type: none"> <li>Rehabilitation required</li> </ul>   |



**Figure 15: Geotechnical desktop zonation for solar PV facility**



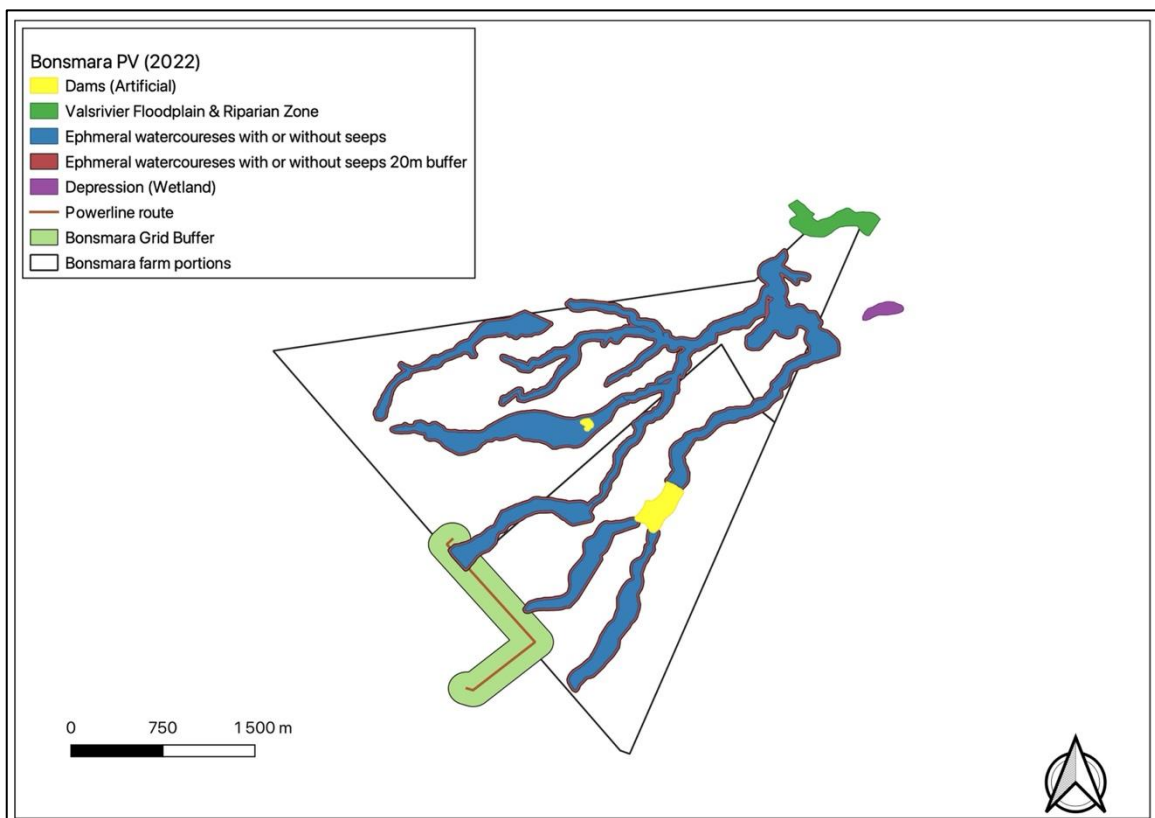
No fatal flaws or ‘no-go’ areas have been identified that would render any assessment areas unsuitable from a geological and geotechnical perspective. No geologically or geotechnically sensitive areas were identified within or near the assessment area. It is recommended however that areas of steeper slope gradients are avoided when determining the final infrastructure layout. The proposed developments are assessed to have a “Negative Low impact - the anticipated impact will have negligible negative effects and will require little to no mitigation” provided that the recommended mitigation measures are implemented. The remaining mitigation measures provided to minimise the impacts relate to the appropriate engineering design of earthworks and site drainage, erosion control and topsoil and spoil material management. These do not exceed civil engineering and construction best practice. It is recommended that the proposed activity be authorised.

## 8.6 Aquatic/Freshwater Assessment

An Aquatic Ecological Study was undertaken by EnviroSci (report dated October 2022).

Four key aquatic habitats were observed and mapped and then rated based on their sensitivity to the proposed development (**Figure 16**). These habitats included:

- Mainstem river (Valsrivier) with riparian vegetation
- Ephemeral watercourse some with seepage areas but most with head-cuts and or erosion channels
- Depression wetland (ca. 1.4 km from the closest PV Panel Area)
- Artificial dams



**Figure 16: Waterbodies delineated as part of the assessment**

The features listed above, drain the study area in a westerly region, forming part of the C60D Quinary Catchment, as these systems form part of the headwaters of the Valsrivier (Vals River), which flows beyond the site. A small portion of the PV panel area and grid (substation) falls within the C60F catchment of the Blomspruit, a tributary of the Vals River, however no watercourses associated with this catchment would be affected (situated on the catchment divide).

### 8.6.1 Description of Receiving Environment

Present Ecological State and conservation importance – All of the systems assessed by DWS (2014) on a Sub quaternary level within the study area were rated as PES = D (SQ2473) or Largely Modified. The vegetation component scored particularly poorly due to the transformation of natural habitat and erosion.

Ecosystem services and functional importance: The assessment showed that the wetlands are highly important for the provisioning services such as water supply and agricultural uses. However, the wetlands scored poorly for the other ecosystem services assessed due to their degraded ecological state.

Aquatic Buffer Zones - Based then on the available information, the buffer model recommends a 20m buffer zone between wetland habitat and the activities. Refer table below:

**Table 13: Buffer zone requirements**

| Final aquatic impact buffer requirements (including practical management considerations) |           |
|--|-----------|
| Construction Phase   | 20        |
| Operational Phase  | 20        |
| <b>Final aquatic impact buffer requirement</b>   | <b>20</b> |

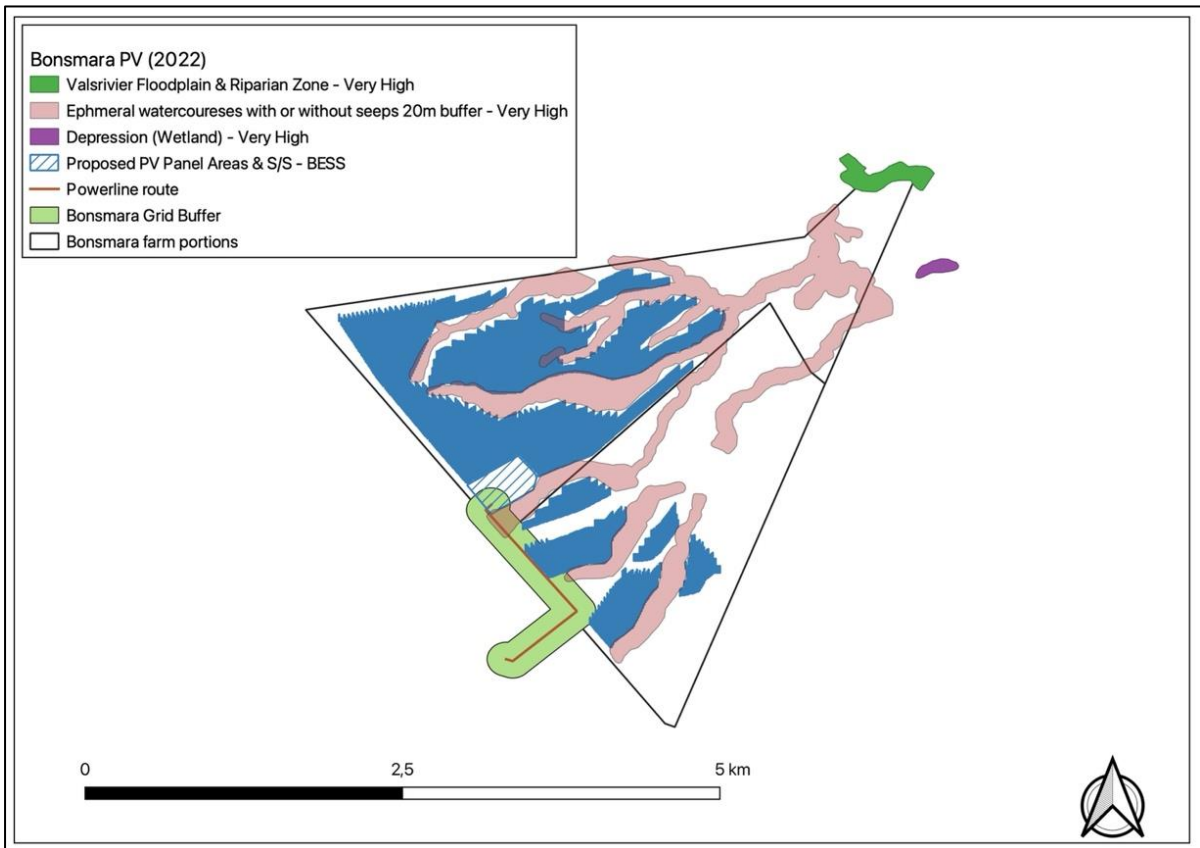
### 8.6.2 Sensitivity Categories

Using the baseline description and field data while considering the current disturbances and site characteristics, the features in **Figure 17** were identified, then categorized into one of a number of pre-determined sensitivity categories (**Table 14**) to provide, protect and/or guide the layout planning and design processes.

**Table 14: Species and habitat sensitivity rating definitions**

| Sensitivity Rating       | Description   |
|--------------------------|---|
| <b>Very High (No Go)</b> | Avoidance mitigation – no destructive development activities should be considered. Offset mitigation is not acceptable/not possible (i.e. last remaining populations of species, last remaining good condition patches of ecosystems/ unique species assemblages). Destructive impacts for species/ecosystems where persistence target remains. |
| <b>High</b>              | Avoidance mitigation wherever possible. Minimisation mitigation – changes to project infrastructure design to limit the amount of habitat impacted; limited   |

|                                       |  |
|---------------------------------------|--|
|                                       | development activities of low impact acceptable. Offset mitigation may be required for high impact activities.                                       |
| <b>Medium</b>                         | Minimisation and restoration mitigation – development activities of medium impact acceptable followed by appropriate restoration activities.         |
| <b>Low</b>                            | Minimisation and restoration mitigation – development activities of medium to high impact acceptable followed by appropriate restoration activities. |
| <b>Not sensitive (uncatergorised)</b> | Minimisation mitigation – development activities of medium to high impact are acceptable and restoration activities may not be required.             |



**Figure 17: Habitat Sensitivity map inclusion of aquatic habitats assessed**

### 8.6.3 Summary of Findings

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 is such that it carries a low intensity impact on the aquatic resources. Some areas, especially when considering the associated roads and cables will however need to cross some of the aquatic systems.

However, the current layout has the potential, to a large degree, to avoid these sensitive features, but will need to take cognizance of some of the buffer areas. This will further reduce the potential overall impact and environmental risk.

The overall and cumulative impacts, as assessed, are linked to instances where complete avoidance was not possible, or the nature of the activities involve a potential risk to aquatic resources even at great distance. Overall, it is expected that the impact on the environment would be Low (-). Noteworthy areas that should be avoided include the Very High Sensitivity areas as shown in **Figure 17** above. Existing crossings may be used and/or upgraded that intersect these systems however, a detailed monitoring plan must be developed in the pre-construction phase for these crossings.

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 mitigation measures are implemented. However, this must all still be assessed once the final layout has been provided, coupled to a micro-siting walkdown once all information is available.

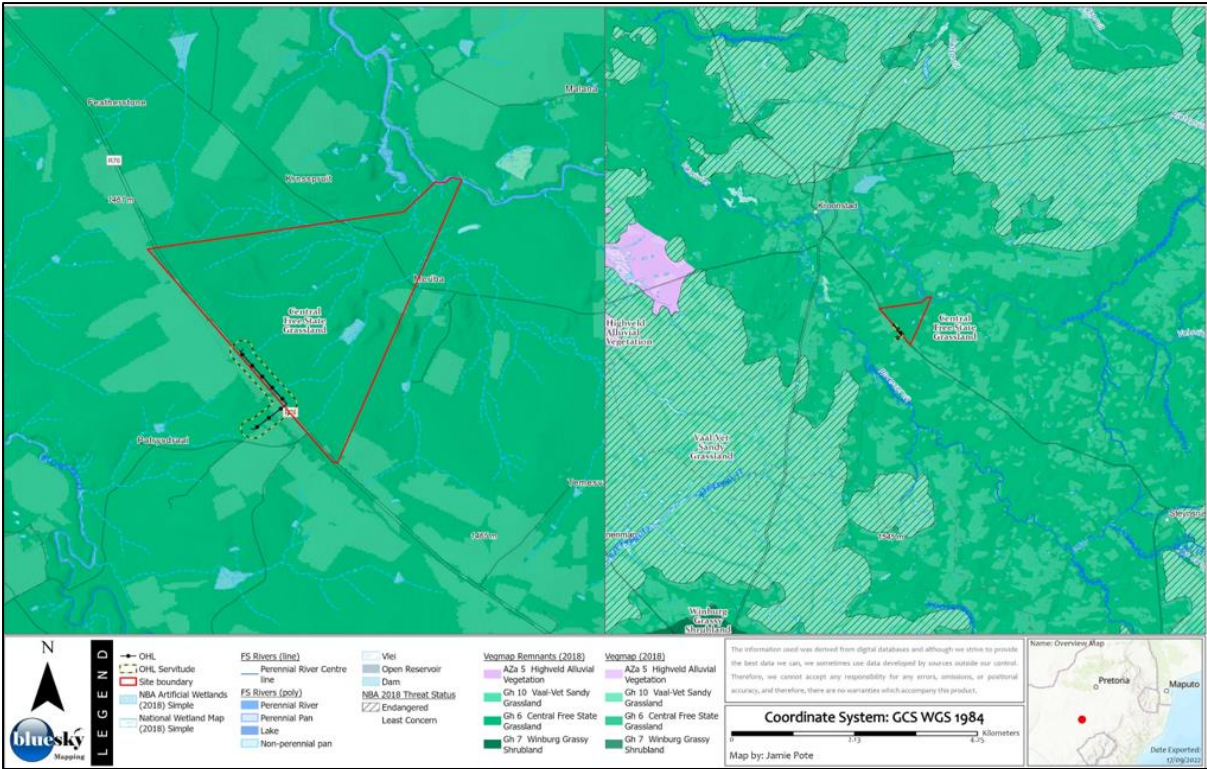
## 8.7 Terrestrial Ecological Assessment

A Terrestrial Biodiversity Study was undertaken by Jamie Pote (report dated October 2022).

### 8.7.1 Systematic Planning Frameworks

A single vegetation unit is primarily affected by the proposed development. The site is located entirely within the Central Free State Grassland (having least concern conservation status) (**Figure 18**). Development of a portion of the site will thus not significantly affect conservation targets for the affected vegetation unit(s). Elements of Vaal-Vet Sandy Grassland (Endangered), Eastern Free State Sandy Grassland (Least Concern), and Winburg Grassy Shrubland (Least Concern) may be present on slopes and rocky hills or mesas. Highveld Alluvial Vegetation elements may be represented in alluvial or wetland areas.

As is evident from land-use coverages, the broader area surrounding the site is somewhat fragmented because of agriculture related land-use, including agriculture and urbanisation to the north. The specific site is relatively unmodified. Some erosion along watercourses and surrounding drainage lines is evident from aerial photographs supported by initial site observations, which could be indicative of historical overgrazing.



**Figure 18: Vegetation and Status (National)**

The site falls predominantly within an Ecological Support Area (ESA) 1 designated area, with patches of ESA 2, Other Natural Areas and Degraded Areas. No Critical Biodiversity Area (CBA) was located on the site (Figure 19).



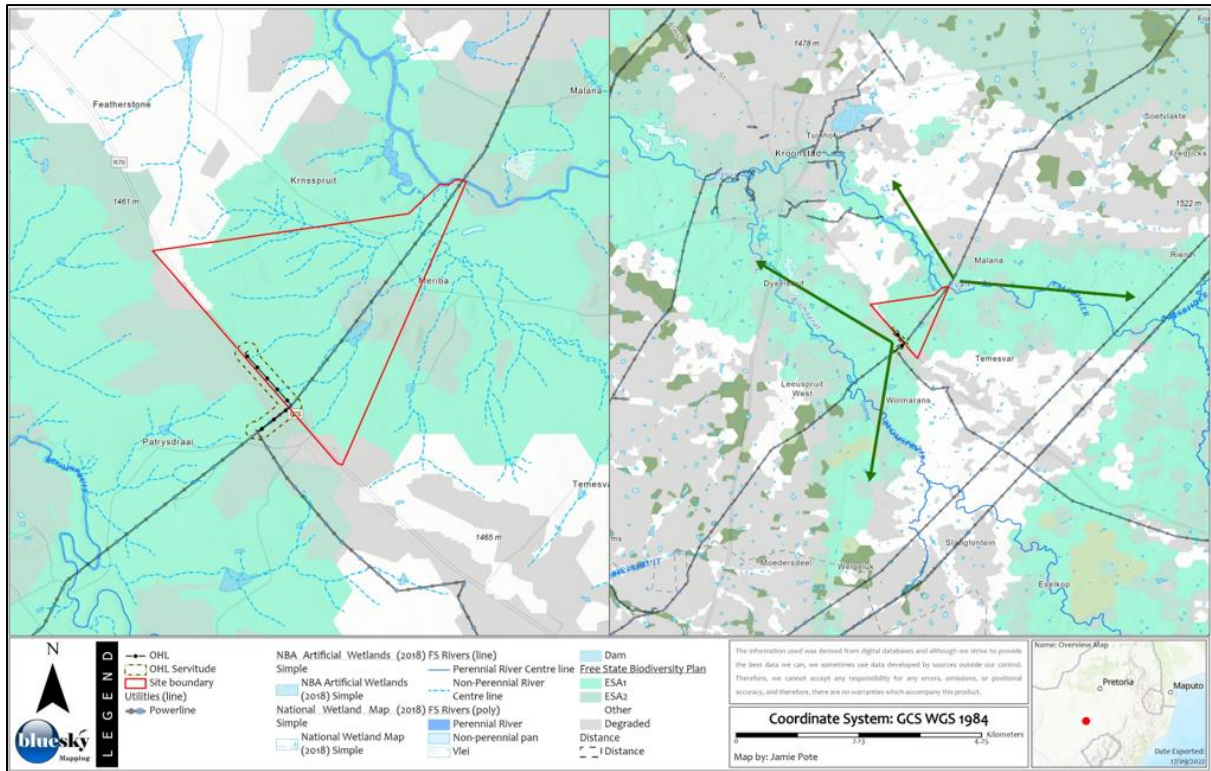


Figure 19: Free State Biodiversity Plan

## 8.7.2 Baseline Biodiversity Description

### Preliminary Mapped Vegetation

**Natural Grassland** – Natural/Near Natural grassland, most likely used for grazing. Grassland is represented on the site, most likely near natural to pristine, having a Least Concern conservation status. On-site assessment will clarify intactness and/or species composition, including any species of conservation concern, however notable levels of grazing and overgrazing were noted during the site verification in some areas.

**Rocky habitat** – Rocky hills and slopes are present. While these areas offer additional habitat, they are not necessarily deemed to have a significantly higher sensitivity compared to the typical grassland, however they cover a smaller proportion of the area and will provide habitat for species that may not occur in the typical grassland habitat with sandy soils. Steeper slopes in these areas may preclude suitability for PV development.

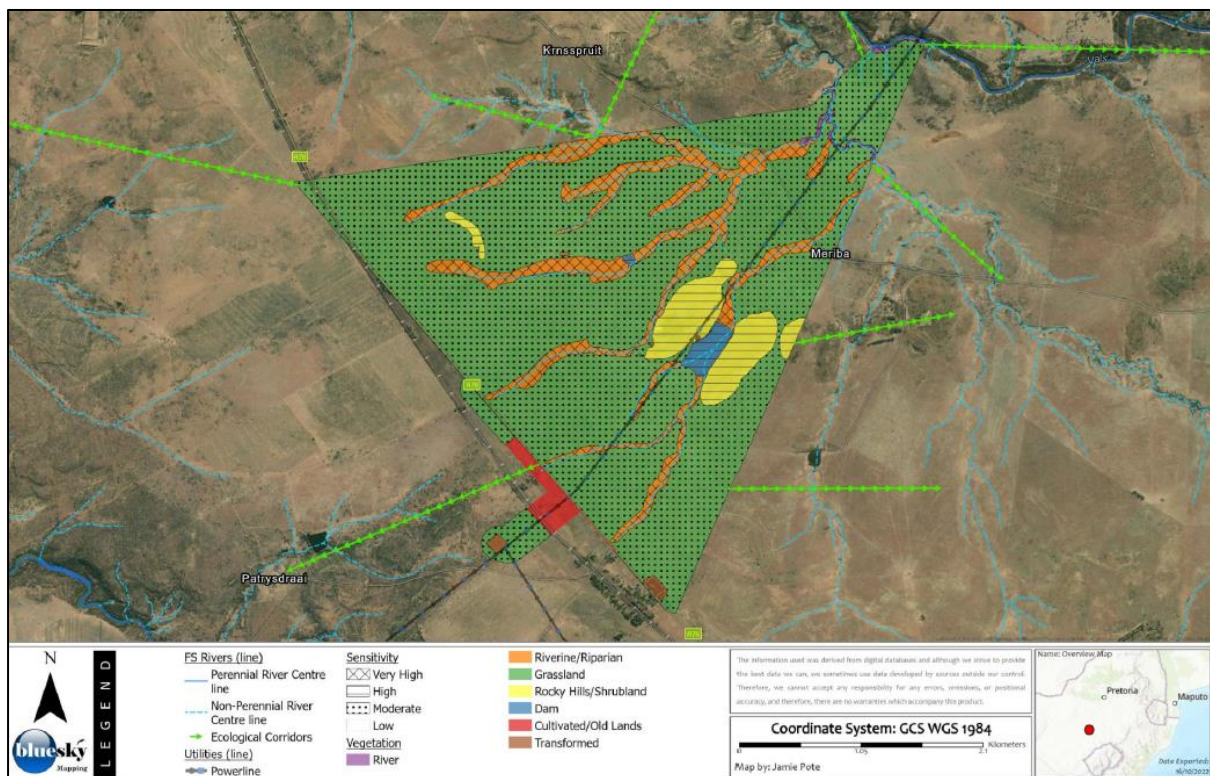
**Riparian** – Natural vegetation surrounding watercourses and seeps, most likely having riparian elements with some seep functionality at watercourse sources. Grassland vegetation most likely having riparian elements, would not be suitable due to ecological & connectivity importance.

**Transformed** – Generally where all indigenous vegetation has been removed and replaced with hardened surfaces such as houses, access roads, other infrastructure (including dams). Includes areas that are not currently used for agriculture. Includes what appears to be a sedimentation or stormwater pond or similar, adjacent to the coal processing plant on the north-western boundary. Transformed areas cover a negligible proportion of the site.

**Secondary/Degraded/Old Lands** – Old lands or other disturbed areas, where grasses regenerate from the surrounding landscape. These areas typically have lower species diversity. No such areas are differentiated in this desktop assessment.

**Cultivated** – Cultivated areas are not a significant component of the site and transformation for agricultural is minimal. No irrigated pivots are present and lack of a large water supply in the area suggests that these are dryland crops (i.e., not irrigated). Further analysis of historical aerial photographs as well as ground truthing will clarify extent of historical cultivation. Although such areas would be most suitable for the proposed activity having lower conservation priority, development thereof would potentially have an indirect consequence of replacement areas being required if developed.

A layout of the mapped vegetation with sensitivities has been included below with a description of the sensitivities in **Table 15**.



**Figure 20: Preliminary mapped vegetation with sensitivity**



**Table 15: Mapped vegetation/habitat sensitivity**

| HABITAT DESCRIPTION   | SENSITIVITY | AREA (HA)         |
|---|-------------|-------------------|
| <u>Natural (Indigenous)</u> – Natural/Near Natural Grassland and Shrubland.   | Moderate    | 835.9 Ha          |
| <u>Riverine/Riparian/River</u> - Natural vegetation surrounding watercourses and seeps, most likely having riparian elements.   | Very High   | 113.3 Ha          |
| <u>Rocky Hills/Shrubland</u> – Rocky areas having natural grassland with more developed shrub elements.   | High        | 54.3              |
| <u>Cultivated/Old Lands</u> - extensive areas have been transformed for agricultural use either as pastures or crops. No irrigated pivots are present and lack of a large water supply in the area suggests that these are dryland crops (i.e., not irrigated).   | Low         | 15.4 Ha           |
| <u>Dams/Rivers</u> – includes man made dams or artificial water impoundments as well as rivers that may serve as habitat for aquatic species that have limited habitat available in the surrounding landscape.  | High        | 14.6 Ha           |
| <u>Transformed areas</u> - Generally where all indigenous vegetation has been removed and replaced with hardened surfaces such as houses, access roads, other infrastructure. Includes areas that are not currently used for agriculture. Includes what appears to be a sedimentation or stormwater pond or similar, adjacent to the coal processing plant on the north-western boundary. | Low         | 3.9 Ha            |
| <b>TOTAL AREA</b>   |             | <b>1 022.8 Ha</b> |

### Flora

No Vulnerable, Endangered or Critically Endangered flora species were confirmed to be present nor are known to be present in the affected area and no species are flagged in terms of the National Environmental Screening Tool, having distributions ranges that extend significantly further than the site.

### Fauna

The habitats and microhabitats present on the project site are not unique and although highly fragmented, are widespread in the broader area, hence the local impact associated with the footprint would be of low significance if mitigation measures are adhered to.

Mammals - National Environmental Screening Tool identifies *Hydrictis maculicollis* (Spotted-necked Otter) as possibly occurring in the area. Its preferred habitat is standing or permanent water, thus it is not likely to pose any significant risk. Possible otter tracks (identification unconfirmed) and burrows were observed during preliminary site visit along the Vals River along the northern boundary, but other than the dam on Portion 1 of Farm Scheveningen 636, no other permanent standing water likely to contain fish was seen. It is not anticipated that the PV facilities will extend in proximity to the Vals River along the northern boundary.

Reptiles - National Environmental Screening Tool identifies *Smaug giganteus* (Giant Dragon Lizard or Sungazer), as possibly occurring in the area. Preliminary site investigation and discussions with a landowner and farm manager suggest that this species is known from nearby farms but has not been observed on the affected farm portions. Initial site visit, which included 70 km of walked and driven track across the ~1000 Ha site did not identify any possibly Sungazers or Sungazer burrows within the grassland areas.

### **8.7.3 Findings and Recommendations**

The vegetation unit present, Central Free State Grassland, has a Least Concern status, indicating that less than 40% has been transformed regionally and there will likely be minimal loss or disruptions to ecological functioning. Development of a portion of the site will not significantly affect conservation

targets for the affected vegetation unit(s), as long as at least 24 % (i.e. the conservation target) is retained.

The site is near several aquatic features or aquatic functional zones that traverse the property. The closest perennial rivers are the Vals River (Class C: Moderately Modified) to the north-east, along the north-eastern boundary of the site as well as the Blomspruit River situated further to the south and west of the site. The proposed activity is however unlikely to significantly affect these rivers (or wetlands & seeps) above surrounding levels of disturbance as long as they do not encroach into the remaining vegetation buffers around any watercourses and runoff is managed appropriately. Any aquatic, riverine or riparian habitat should be excluded from further development other than strategically sited linear activities such as access roads and powerlines.

The site falls predominantly within an ESA 1 designated area, with patches of ESA 2, Other Natural Areas and Degraded Areas. Some habitat loss is generally acceptable within these areas; however, ecological functioning and connectivity should not be compromised. Any development of the site should thus make allowances for ecological connectivity as a minimum.

No National Parks are situated within 10 km of the site and a single Private Nature Reserve is situated within 5 km of the site, the Erfdeel Private Nature Reserve which abuts the north-eastern boundary of the site. A buffer would be recommended on the northern side of the site to incorporate an undeveloped buffer between any PV infrastructure and the Nature Reserve.

Some rocky areas are likely present, in particular a series of small hills situated surrounding the dam on Portion 1 of Farm Scheveningen 636. It is recommended to avoid these areas as possible, or as a minimum at least ensure that not all such areas are developed. Steep slopes are in any case not likely to be suitable for PV facilities. Similarly, a series of steeper rocky slopes traverse the site in a Remainder of Farm Scheveningen 636 in a North-South direction.

Due to having a low conservation status, the grassland habitat is deemed to have a moderate sensitivity status and would potentially provide a suitable footprint for the proposed activity, bearing in mind watercourse and ecological process and connectivity buffers as well as possible faunal species of conservation concern. Due to the ESA designation, it will be important to also incorporate an undeveloped network for connectivity purposes within the site and the surrounding landscape. The current preliminary layout retains buffers around watercourses and also keeps the eastern side of the site largely undeveloped which will connect the north and south portions of the site as well as incorporate the rocky hills and the farm dam, all of which are important habitat.

The preliminary layout (**Figure 21**) has been compiled with guidance from a preliminary desktop sensitivity screening process which identified the key terrestrial biodiversity and ecological aspects and/or likely sensitive habitat. Initial site verification confirms that the initial site desktop screening process was largely accurate, and the current preliminary layout will address the key ecological risks with a few minor layout adjustments.

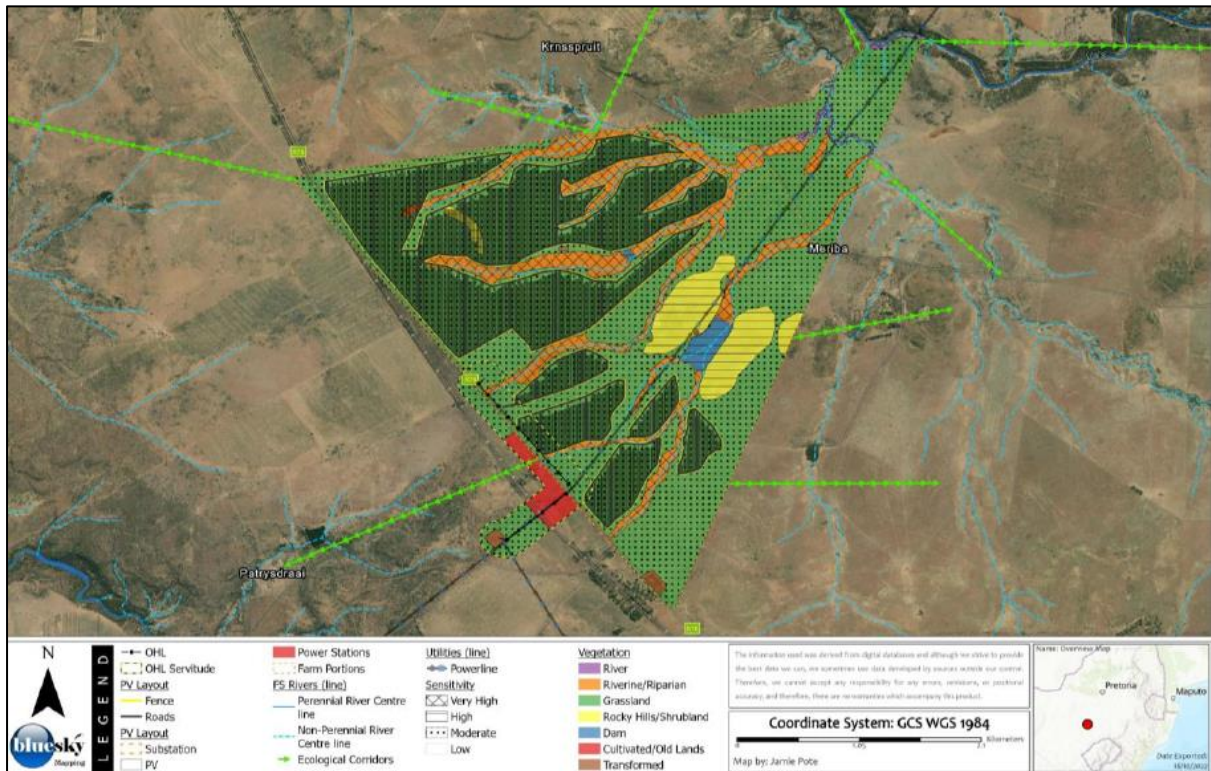


Figure 21: Preliminary layout with site sensitivity

## 8.8 Agricultural

An agricultural compliance statement and site sensitivity verification was undertaken by Johann Lanz (report dated 22 September 2022).

A map of the proposed development area overlaid on the screening tool sensitivity is given in **Figure 22** below. The entire site was verified in this assessment as being of medium sensitivity for impacts on agricultural resources with a land capability value of 6. The land was assessed as being of insufficient land capability for viable and sustainable future crop production. The cropping potential of the site is limited by the shallow soils limited by dense clay and weathered bedrock in the subsoil.

Two potential negative mechanisms of agricultural impact were identified, occupation of land, and soil erosion and degradation. Two positive mechanisms of agricultural impact were identified as increased financial security for farming operations, and improved security against stock theft and other crime. All of these are likely to have a low impact on future agricultural production potential and are therefore assessed as having low significance.

The conclusion of this assessment is that the proposed development will not have an unacceptable negative impact on the agricultural production capability of the site. Instead, the development is an opportunity for a renewable energy facility to be integrated with agricultural production in a way that provides benefits to agriculture and leads to little loss of future agricultural production potential.

This is substantiated by the following points:

BONSMARA SOLAR PV (RF) (PTY) LTD

Prepared by:



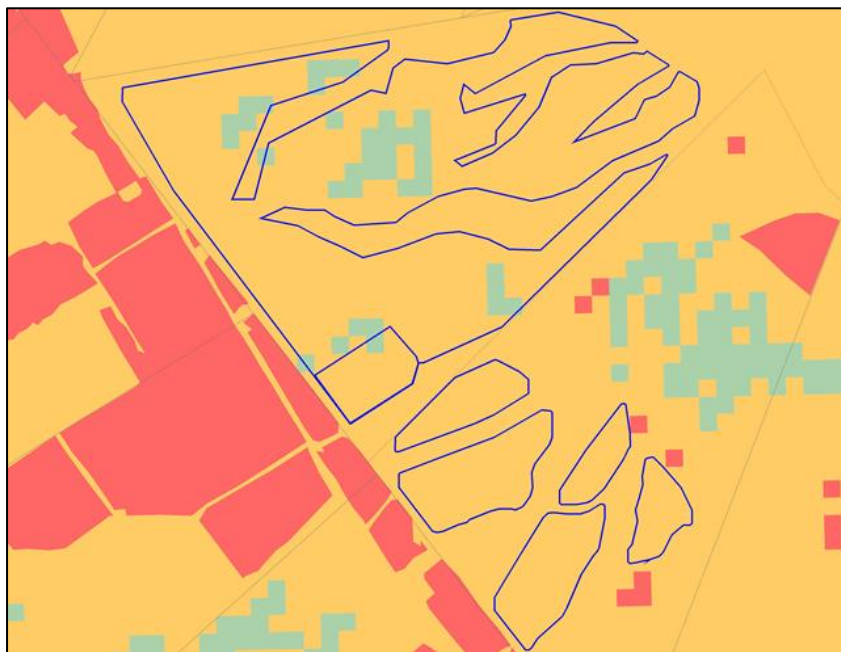
Project No. 17869  
Description Proposed Bonsmara Solar PV Facility  
Revision No. 1.0

Date: October 2022

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- The layout of the facility has been deliberately designed to include only land that was identified as having soil limitations that make it unsuitable for supporting viable and sustainable crop production. There is not a scarcity of such agricultural land in South Africa and it is therefore considered to be below the threshold for being prioritised for conservation as agricultural production land.
- The amount of agricultural land loss 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 lower agricultural production potential.
- The proposed development offers positive impact on agriculture by way of improved financial security for farming operations, as well as security benefits against stock theft and other crime.
- The PV panels will not totally exclude agricultural production. The area can still be used to graze sheep that will, in addition, be protected against stock theft within the security area of the facility.
- The loss of agricultural potential by occupation of land is not permanent. The land will become fully available again for agricultural production once the proposed activity ceases.
- The proposed development poses a low risk in terms of causing soil degradation, which can be adequately and fairly easily managed by standard, best practice mitigation management actions.
- The proposed development will also have the wider societal benefits of generating additional income and employment in the local economy.
- In addition, the proposed development will contribute to the country's urgent need for energy generation, particularly renewable energy that has much lower environmental and agricultural impact than existing, coal powered energy generation.
- 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.

The impact of the proposed development on the agricultural production capability of the site is assessed as being acceptable because of the above factors. Therefore, from an agricultural impact point of view, it is recommended that the development be approved.



**Figure 22: Proposed development footprint overlaid on agricultural sensitivity (green=low sensitivity; yellow = medium, red = high)**

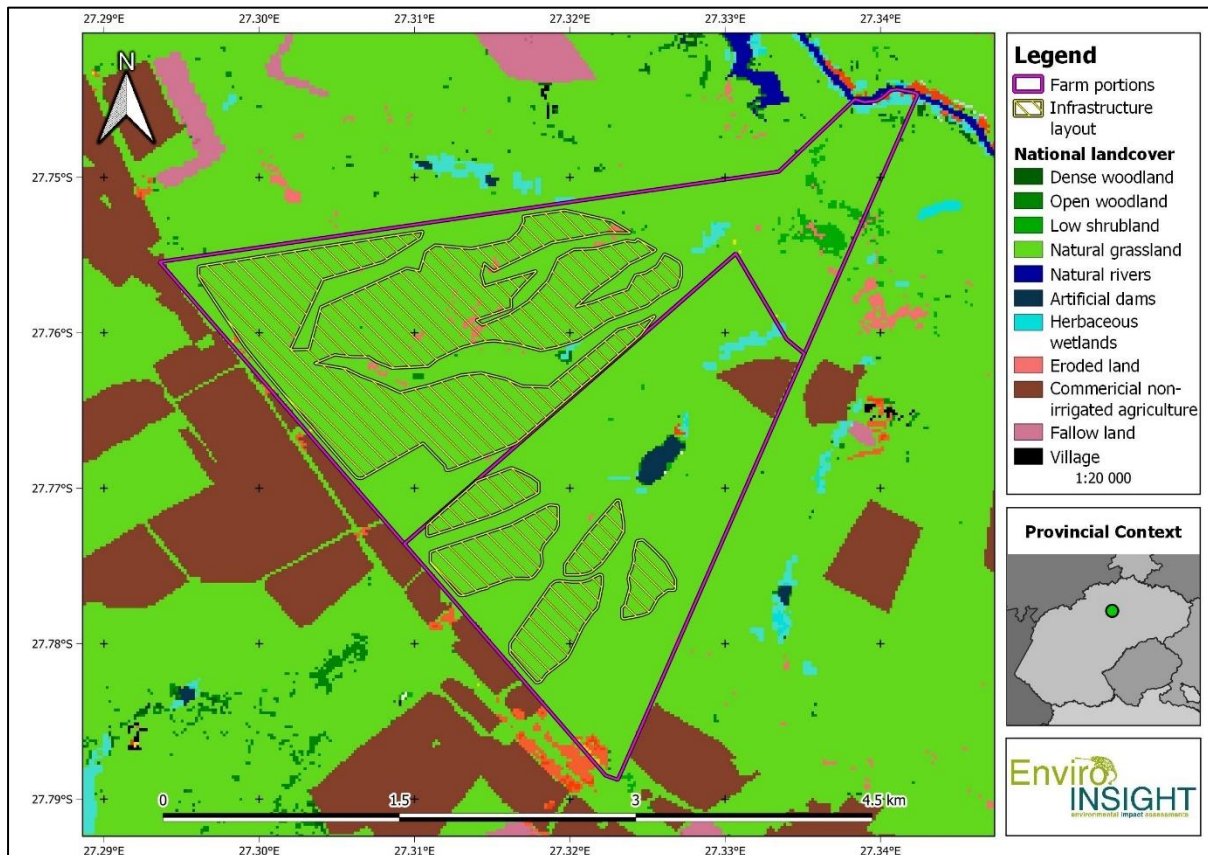


## 8.9 Avifauna

An Avifaunal Assessment was undertaken by Enviro Insight (report dated October 2022).

### 8.9.1 Description of major bird habitats

The overall habitat delineation as expressed in **Figure 23** below is more complex than the habitats described below. However, for the purposes of avifaunal monitoring, the monitoring can be confined to the below-described habitat types which will encompass all delineated habitats below.



**Figure 23: Habitat delineation of the project footprint**

#### Open grassland interspersed with woodland

The open grassland supports a mix of grassland, wetland and drought-tolerant grass species interspersing the grassland habitats in low densities. The vegetation type is the most dominant type for the proposed project. Due to the vegetation type being the only habitat for the proposed study area, it is of medium sensitivity. This type of vegetation also supports many priority avifauna species expected within the study area such as large terrestrial bird species (Northern Black Korhaan), raptor species such as Black-winged Kite, Pale Chanting Goshawk and Black-chested Snake Eagle as well as the highest likelihood for Secretarybird.

#### Isolated small Rocky ridges “koppies”

The small rocky ridges found in and around the study area (**Figure 24**), differs in size and height but do not form extensive ridge systems and often form near isolated small “Koppies” as is typical of the habitat

type. There are some relatively higher undulations to the south of the proposed project footprint. Although, no nests were found within the “koppies”, this vegetation type is of high sensitivity as it supports great habitat for different fauna and flora species found within the study area.



**Figure 24: Rocky ridges “koppies”**

#### Waterbodies

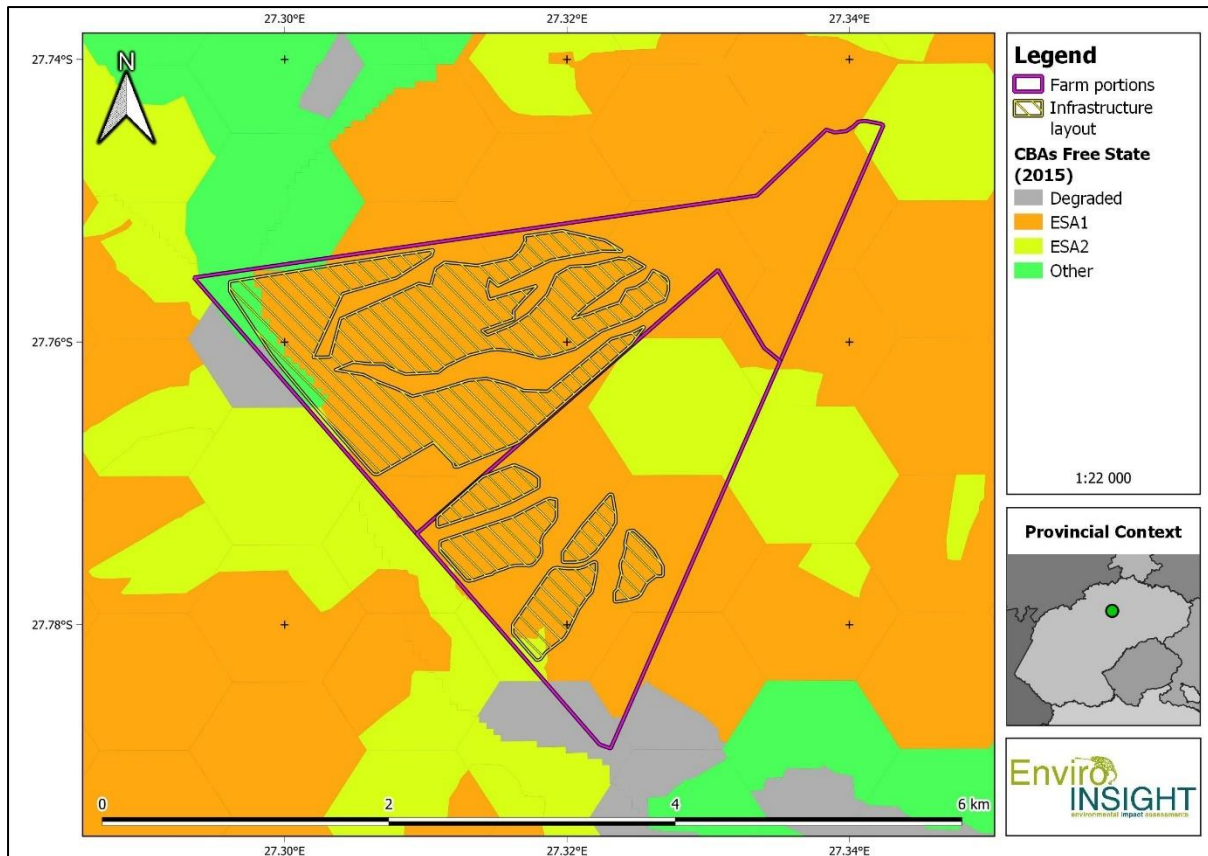
All the waterbodies found within the study area are man-made and mostly fills up after heavy rains. The main artificial waterbody impoundment situated within the study area is relatively large and has wisely been buffered from the infrastructure footprint. The smaller dams and water holes observed within the study area, did not support any waterbirds although large densities of small birds such as swifts congregated around some habitats still containing water from the excellent rains in 2022. Congregations around these habitats were primarily due to nesting habitat and a lack of standing water throughout the region during the survey period (providing a localised attractant). All waterbodies will be observed during the wet season as well, so that the bird activity can be compared to the initial survey.

#### Drainage lines

The drainage lines throughout the project area were primarily herbaceous and dry with some structural differences to the surrounding Open Grasslands. It is anticipated that these habitats will provide significantly different survey results during the wet season and the potential for priority species being present is considered to be high. Occasionally and in some localised locations, standing water still persisted within these habitats.

### **8.9.2 Critical Biodiversity Area (CBAs)**

A map of the study in relation to the 2016 Free State CBA's is presented in **Figure 25**, indicating that the study area is located mainly in ESA1 with a small portion in Other natural areas. This was supported by the field verification although this does not discount the habitats of higher sensitivity such as the Drainage Lines and Waterbodies.



**Figure 25: Critical Biodiversity Area**

### 8.9.3 Important Bird Areas

The proposed solar farm does not occur within an area of influence of any Important Bird and Biodiversity Area (IBA) with both the Willem Pretorius and Rooiberge Riemland reserves being situated more than 50 km and 75 km away respectively.

### 8.9.4 Expected and Observed Avifauna

A total of 55 priority species are expected to occur within and surrounding the study area, of which seven (7) species are listed as regionally/globally threatened and near-threatened species.

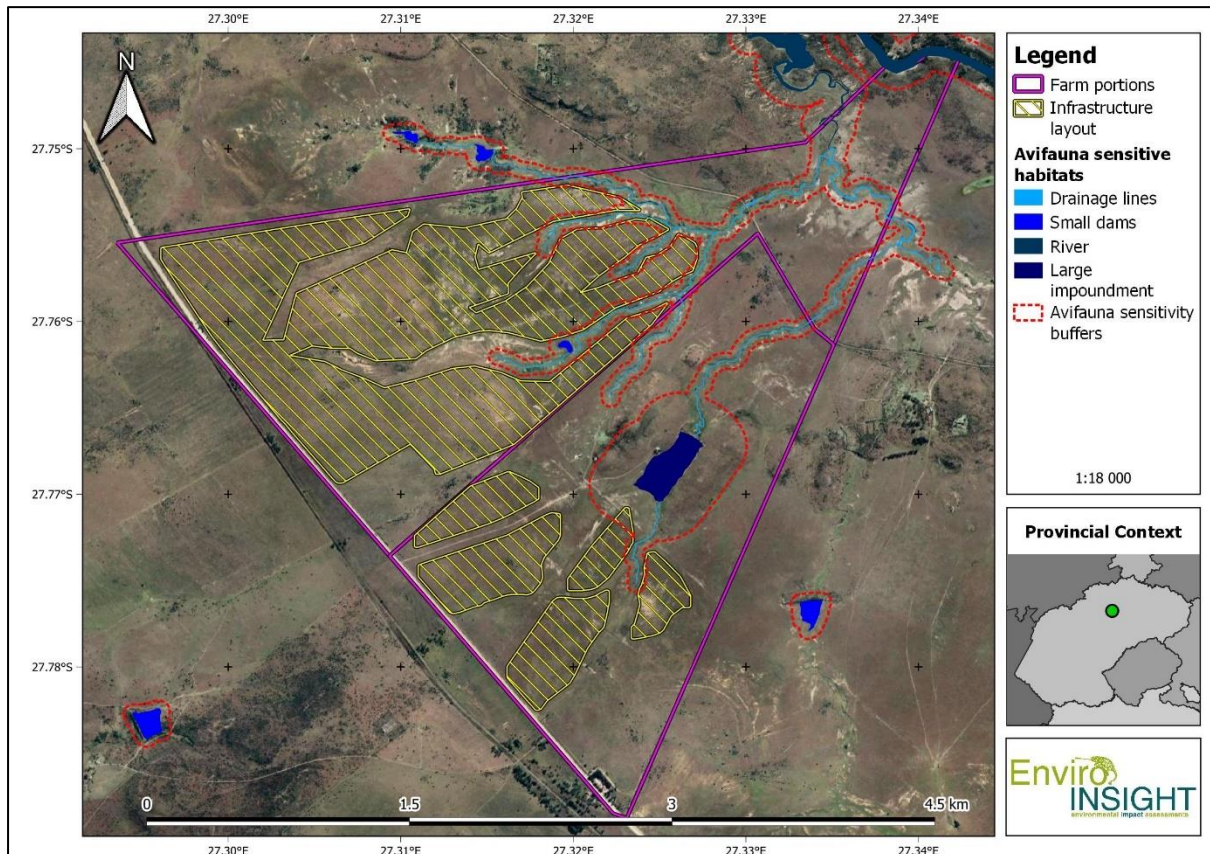
Every effort will be taken to capture all aspects of priority species observed within the field survey to allow for careful evaluation of potential impacts and application of suitable mitigation measures to reduce these impacts where possible.

### 8.9.5 Preliminary Sensitivity

The study area mostly consists of Open Grassland with some drainage line habitats found in parts of the proposed project footprint. The Grassland (including woodland permeations) and Koppie vegetation provides potential nesting habitat for bird species such as small Raptors, Larks, Pipits, Cisticola's and korhaan and possibly including hunting/foraging habitat for species such as Lanner Falcon, Secretary bird and other larger raptors. The woodland and ridge areas found within the project area consist of succulents and some large thorn bushes which might provide possible nesting and foraging habitat for species such as Chats and Prinia's, including sensitivity species such as the Secretarybird.



The site visit in September 2022 took place during the late dry season, which means the habitat conditions were at their least optimal. When conditions are sub-optimal, avifaunal assemblages will carry out small scale migrations to more ecologically productive habitats (such as permanent water courses) and return after the post rain green flush. Even the large artificial impoundment showed almost no significant bird activity, with expected species such as ducks, geese, stilts, stints, and plovers all but absent. However, it is anticipated that within the drainage lines and impoundment areas, migratory patterns during summer and higher rainfall will provide optimal foraging habitat for sensitive species with a possibility to occur on site such as Bustards, Storks, Waders, and a plethora of other priority species. Accordingly, all watercourses are mapped as preliminarily sensitive and buffered at 50 metres with side of the edge of the habitat delineation (**Figure 26**).



**Figure 26: Preliminary avifauna sensitivity map**

### 8.9.6 Preliminary Conclusions

The study area is situated within the Central Free State Grassland vegetation type. The study area is not anticipated to support breeding populations of several large terrestrial bird species such as cranes, bustards and Red-Listed korhaans and large raptor species in sufficiently large densities or within breeding habitat that may be considered highly significant. However, given the size of the area, the proximity to a very large wetland impoundment and the large amount of herbaceous drainage line habitat within the project footprint, final conclusions must be subject to wet season verification under a Regime 2 survey. Thus, in order to confirm that the study area is of low sensitivity in terms of conservation of these type of bird species a February 2023 survey is recommended as per the aforementioned methods.

The study area is classified as a Regime 2 assessment (Jenkins et al. 2017). Even though it is not within a REDZ and will require a full S&EIA, the methods will follow the appropriate sampling method, A total of fifty-five (55) priority species has the possibility of occurring within and around the study area, although only seven Red Listed species have been identified and all are of moderate likelihood to occur within the project footprint and most will be irregular foraging visitors and not resident. Once again, this is subject to the follow up wet season verifications.

The proposed solar project has the potential to be of low to medium sensitivity from an avifaunal point of view. Some of the priority bird species are not habitat bound to the area for nesting and/or foraging purposes and is therefore important to focus on some of the most significant cumulative impacts for the proposed solar project.

## 9. DESCRIPTION OF THE SOCIO- ECONOMIC ENVIRONMENT

### 9.1 Socio economic characteristics

A Socio-economic Impact Assessment was undertaken by Synergy Global Consulting (report dated September 2022).

The Free State is one of the nine provinces of South Africa. It represents 10.6% of the total land area of the country, with a total area of 130 041.5 km<sup>2</sup>, a population density of 21.8 people per km<sup>2</sup>, and a population of 2834 714. The educational levels in the Free State Province are low, with a 39.7 % matric completion rate and 68.6 % having completed Grade 9. The employment rate is 36%, with the rest of the population either unemployed (17%), discouraged job seekers (6%) or not economically employed (41%).

An estimated 4.8% (134,750) of the population in the Free State has no access to electricity, lower than the national rate of 7.29%. Approximately 74% have access to flush or chemical toilets, higher than the national rate (63.53%). On the other hand, 1.3% (36,831) have no access to any toilets in the province, which is about half the national rate of 2.39% (1,332,582). Water is provided to an estimated 94.2% (269,748) of the population by a regional or local service provider, which is approximately 10% higher than the rate in South Africa, at 86.2%. There are 946,637 formal households, less than 10% of South Africa's total of 16,923,307. An estimated 14% (132, 448) of households are informal dwellings (shacks), which is about 10% higher than the national rate of 12.96% (2,193,968).

The SEF facility will be located in the Fezile Dabi District Municipality (DM).

#### 9.1.1 Fezile Dabi District Municipality

The Fezile Dabi District Municipality is the smallest district in the province, making up 16% of its geographical area and consists of four local Municipalities. These include the following:

- Moqhaka Local Municipality;
- Metsimaholo Local Municipality;
- Ngwathe Local Municipality; and
- Mafube Local Municipality.

The main attraction, the Vredefort Dome, which is the third-largest meteorite site in the world, is located within the district, making it a tourist destination.

The vision of the municipality is to be a community-orientated entity characterised by a sound political and administrative capacity, with sustainable and enabling business environment. With the main challenges within the municipal area being poverty, and unemployment sitting at 46.03% (STATSSA 2011), this proposed project will contribute towards the creation of employment, and to some level of poverty reduction.

### 9.1.2 Moqhaka Local Municipality

The SEF facility will be located in the Moqhaka Local Municipality. The Moqhaka LM is situated in the southern part of the Fezile Dabi DM. The former Kroonstad, Steynsrus, and Viljoenskroon Transitional Local Councils and sections of the Riemland, Kroonkop, and Koepel Transitional Rural Councils are included in the Moqhaka Local Municipality. A large proportion of the rural population is active within the agricultural sector.

In terms of the socio-economic profile, the employment status of the district and local municipalities where the proposed Bonsmara SEF will be located is represented below.

**Table 16: Employment status in Fezile Dabi DM and Moqhaka LM**

| Employment Status         | Fezile Dabi DM | Moqhaka LM |
|---------------------------|----------------|------------|
| Employed                  | 37%            | 34%        |
| Unemployed                | 19%            | 18%        |
| Discouraged Job Seeker    | 4%             | 4%         |
| Not Economically Employed | 40%            | 44%        |

A high percentage of the population within the Fezile Dabi DM is not employed, a trend reflected in Moqhaka Local Municipality.

The need for sustainable, clean energy supply, nationally, is also applicable in the Moqhaka municipal area. The Moqhaka LM IDP (2022-2027) notes that while 98% of households within the municipality have access to electricity, there is a need for the expansion of public lighting. The proposed SEF will contribute to the national grid, which, in turn, will add to the supply of electricity for communities across the country.

### 9.1.3 Key Findings and Recommendations

From a social perspective at the scoping stage, it is concluded that the negative impacts from the planning to the decommissioning phases are within the acceptable limits and can be mitigated.

The project may be beneficial to the local people through the creation of employment other economic opportunities. On a broader level the project would also contribute to the national power grid.

It is, therefore, recommended that a full SIA be conducted as part of the EIA. Based on the scoping process, the following recommendations are suggested:

- Review the comments from the multi-stakeholder engagements that include the local communities, local businesses, policymakers, and relevant government departments.
- Make necessary changes to existing baseline information using new information obtained from site visits and proponents.

- Assess the nature, magnitude, intensity, duration, status, significance, and degree of irreversibility of impacts
- Identify potential mitigation measures to ameliorate the demerits and boost the merits for consideration in an environmental management programme (EMPr).
- Identify any monitoring requirements for inclusion in the EMPr or Environmental Authorisation (EA).
- Consider gender equity, migrant worker recruitment, local SMMEs, as well as any factors likely to cause local opposition against the project.

The proposed development can be authorised considering the new skills development and upgrading of transferable skills that would be gained. Furthermore, solar energy is environmentally friendly and thus contributes to climate change mitigation, with minimal negative impacts limited to silicon component manufacturing. South Africa imports already manufactured components, thus reducing the pollution borne during manufacturing. Moreover, solar energy provides an alternative source of energy that is not dependent on coal. Once installed, it is cost-effective and readily available given the abundance of sunshine in South Africa. All these positive impacts render the Bonsmara SEF beneficial to local communities and the country.

## 9.2 Cultural/Historical Environment

A Heritage Screener Assessment was undertaken by CTS Heritage (report dated August 2022).

As stated in the heritage screener report, Kroonstad still holds much of the inherent rugged beauty which led the Voortrekkers to establish the town where they did and it is situated in an area characterised by open spaces and an abundant variety of vegetation that makes it particularly beautiful.

According to Van Schalkwyk (2013), “Most farmsteads were burned down during the Anglo-Boer War, with the result that very little of the built environment dates to the 19th century.” “The cultural landscape qualities of the region essentially consist of a rural setup. In this the human occupation is made up of a pre-colonial element consisting of limited Stone Age and Iron Age occupation, as well as a much later colonial (farmer) component.

This was soon followed by the development of a number of urban centres or towns. Originally these mostly served the surrounding farming communities, but with the discovery of the Free State Gold Fields, they expanded rapidly in order to serve this industry as well.” The proposed Solar Energy Facility and its associated grid connections are located some distance from the historic core of Kroonstad town. Furthermore, the areas proposed for development are located more than 10km away from the site of the Boer War concentration camps and associated burial grounds.

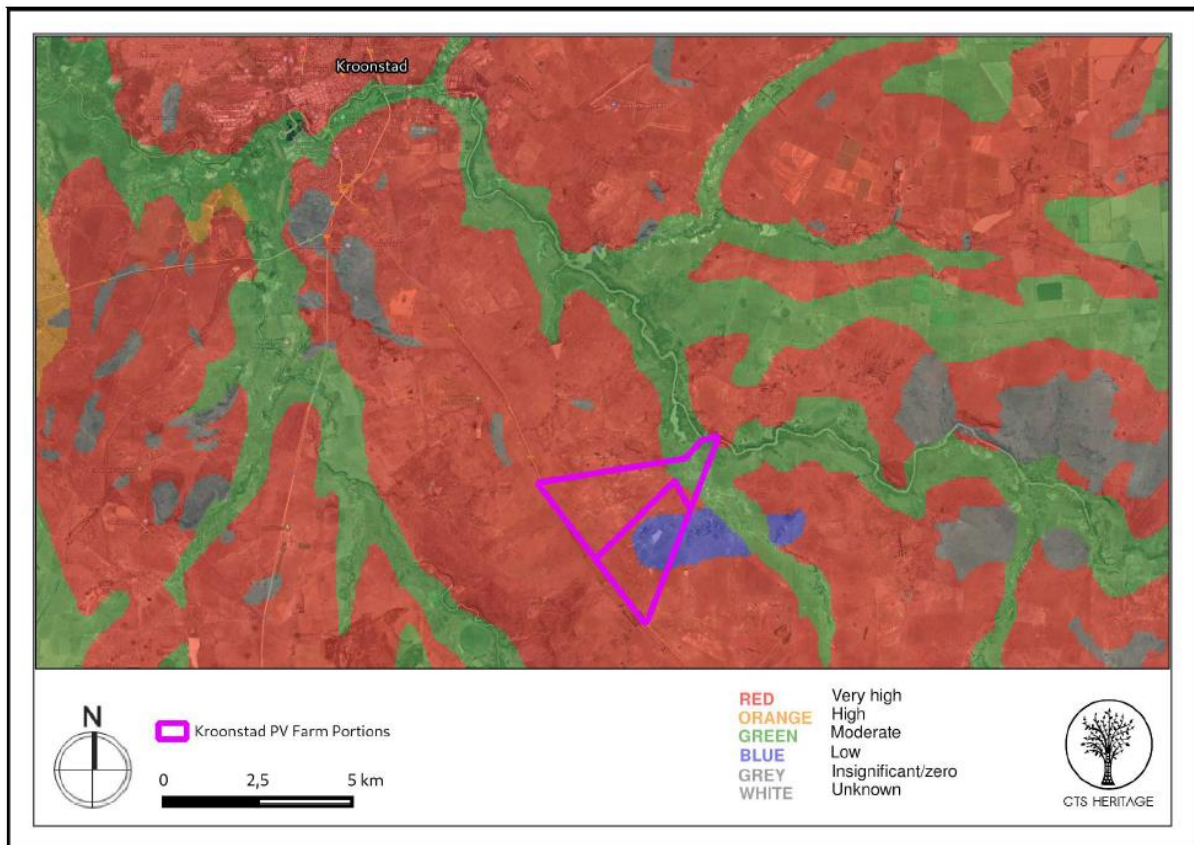
Prior to colonial settlement in 1855, the area proposed for development formed part of a landscape that was occupied by indigenous Khoe herders and San hunter-gatherers. These indigenous communities were displaced by Bantu-speaking people who began to occupy the area in the Iron Age. Sites dating to the Late Iron Age are known to occur in the region, especially in the vicinity of the Sandrivier, whereas some are known to occur to the northwest of Ventersburg, These are typical stone walled sites that are linked with Sothospeakers and date to the period after 1600. As such, it is possible that Early, Middle or Later Stone Age artefacts may be located within the proposed development footprint. Furthermore, it is possible that evidence of Iron Age settlement may also be located within the proposed development areas.

Recent archaeological field assessment conducted for other solar PV facilities located approximately 10km from the proposed development area identified some cultural remains but with varied value and



preservation. It is likely that similar heritage resources may be present within this development area. As such, an archaeological assessment of the areas proposed for development will be completed and anticipated impacts to such resources assessed.

According to the SAHRIS Palaeosensitivity Map (**Figure 27**), the areas proposed for development are underlain by sediments of moderate to very high palaeontological sensitivity. According to the Council of GeoScience 2726 Kroonstad Map, the development area is underlain by sediments of the Karoo Supergroup including the Adelaide Subgroup (Pa) which have very high palaeontological sensitivity. This formation forms part of the Dicynodon and Lystrosaurus assemblage zones and is known to include fossils of fish, amphibians, reptiles, therapsids and vertebrate burrows. Diverse terrestrial and freshwater tetrapods of Pristerognathus to Dicynodon Assemblage Zones (amphibians, true reptiles, synapsids – especially therapsids) have been found in this formation, as well as, palaeoniscoid fish, freshwater bivalves, trace fossils (including tetrapod trackways), sparse to rich assemblages of vascular plants (Glossopteris Flora, including spectacular petrified logs) and insects. Based on the known palaeontological sensitivities of the Adelaide Subgroup, it is recommended that a palaeontological assessment of the areas proposed for development is completed. This will be included in the EIA Phase.



**Figure 27: SAHRIS Palaeosensitivity Map**

### 9.3 Visual

A Visual Impact Assessment was undertaken by SRK Consulting (report dated October 2022).

### 9.3.1 Landscape Character

#### Land Use

The area surrounding the site is predominantly characterised by agricultural activities, small urban centres, infrastructure (roads and rail) and natural highveld grassland. Agriculture, mainly crop and cattle farming, is the predominant land use surrounding the site, with farmsteads interspersed throughout the area. National, regional and provincial roads criss-cross the region, converging in Kroonstad. A railway line runs parallel to the R76 (regional road) to the south-west of the site. An existing 132 kV powerline traverses the site in a north-easterly – south-westerly direction. The two farms that constitute the project site are undeveloped, covered in grasslands and small clusters of trees and used for grazing.

#### 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 the undulating, vegetated landscape, albeit with pockets of settlements and regional and national roads routed through the surrounding area. The rolling expanse of vegetated landscape surrounding the site evokes a rural, undeveloped environment. The project area can therefore be defined as a modified rural landscape as it is mostly rural but settlements, powerlines and roads and railway are visible in the landscape.

#### Visual Quality

The visual quality of the area can be experienced through rolling views of the gentle hills in the landscape, especially from and across the site (**Figure 27**). The study area is defined by the fabric of the agricultural grazing activity taking place in the area. The naturally undulating landscape is intermittently interrupted by powerlines and railway lines which detract from the visual quality of the surrounding area. The streams, rivers and dams in the area add to the somewhat unspectacular visual quality.



Figure 28: Rolling views of the undulating landscape

## Visual Receptors

Visual receptors have been identified based on surrounding land uses, including the residential and recreational areas. The visual receptors are briefly described below and linked to viewpoints (VP) indicated in the table below:

- Surrounding residents (VP 1, VP 4 - VP 7, VP 11 - VP 12) - isolated farmsteads area interspersed throughout the area
- Railway Passengers and Personnel (VP 1 and VP 4 - A railway line extends parallel to the R76 to the south-west of the site.
- Motorists (VP 2 - VP 3, VP 6 - VP 12) - Two roads are located in close proximity to the project site; the R76 and the Unnamed Gravel Road. The south-western boundary of the site directly abuts the tarred R76, which extends in a north-westerly to south-easterly direction, connecting Kroonstad and Steynrus. The Unnamed Gravel Road branches off from the R76 to the north of the site, then extends in a south-easterly direction, and borders the site to the north-east.

**Table 17: Visibility from viewpoints**

| Viewpoint # | Location          | Co-ordinates                             | Direction of view  | Potential Receptors   | Visibility   |
|-------------|-------------------|--|--------------------|---|--|
| VP 1        | Dennehof Farm     | 27° 49'<br>25.79"S<br>27° 22'<br>8.58"E  | Looking north-west | Farmsteads on Dennehof Farm and motorists on R76.   | <b>Not Visible</b><br>The site is visible from the farmstead and R76 due the undulating topography.  |
| VP 2        | R76 south         | 27° 47'<br>50.49"S<br>27° 19'<br>55.40"E | Looking north      | Motorists on R76.   | <b>Marginally Visible</b><br>The site is screened by tall, mature trees, limiting visibility of the site in the background from this VP.   |
| VP 3        | R76 Bonsmara      | 27° 46'<br>52.61"S<br>27° 18'<br>57.81"E | Looking north-east | Motorists on R76.   | <b>Highly Visible</b><br>The site is visible to motorists in the foreground.   |
| VP 4        | Patrijsdraai Farm | 27° 47'<br>7.95"S<br>27° 18'<br>59.98"E  | Looking north-east | Residents of farms to the west of the R76, e.g. Patrijsdraai and individuals travelling on the railway. | <b>Visible</b><br>The site is visible to motorists travelling to and from the farmsteads to the west and receptors travelling by train. The project will not be visible to the residents to the west of the site as they are located at a lower elevation than the site. |
| VP 5        | Farmstead 1       | 27° 45'<br>22.08"S<br>27° 15'<br>57.63"E | Looking south-east | Residents of Farmstead.   | <b>Not Visible</b><br>The site is not visible to the residents of this farmstead as it is located at a lower elevation than the site.  |
| VP 6        | Lan Crest         | 27° 44'<br>57.43"S<br>27° 15'<br>53.72"E | Looking south-east | Residents of Lan Crest and motorists.   | <b>Not Visible</b><br>The site is not visible to the residents or motorists as the farmstead and road are located at a lower elevation than the site   |
| VP 7        | Farmstead 2       | 27° 43'<br>25.46"S                       | Looking south      | Motorists travelling on the   | <b>Not Visible</b>   |



| Viewpoint # | Location            | Co-ordinates                             | Direction of view  | Potential Receptors  | Visibility  |
|-------------|---------------------|--|--------------------|--|---|
|             |                     | 27° 17'<br>26.58"E                       |                    | gravel road and residents of the farmstead in close proximity to VP 7. | The site is not visible to the farmstead due to screening provided by the topography.                                     |
| VP 8        | Unnamed Gravel Road | 27° 44'<br>36.89"S<br>27° 18'<br>47.25"E | Looking south      | Motorists on unnamed gravel road.                                      | <b>Visible</b><br>The site is visible to the motorists in the background.   |
| VP 9        | Unnamed Gravel Road | 27° 45'<br>4.81"S<br>27° 19'<br>25.68"E  | Looking south-west | Motorists on unnamed gravel road                                       | <b>Highly Visible</b><br>The site is visible to the motorists in the foreground.  |
| VP 10       | Unnamed Gravel Road | 27° 45'<br>16.95"S<br>27° 19'<br>50.77"E | Looking west       | Motorists on unnamed gravel road.                                      | <b>Highly Visible</b><br>The site is visible to the motorists in the middleground.  |
| VP 11       | Farmstead 3         | 27° 45'<br>43.29"S<br>27° 20'<br>27.21"E | Looking west       | Residents of the farmstead and motorists on unnamed gravel road.       | <b>Marginally Visible</b><br>The site will be marginally visible to the motorists in the background.                      |
| VP 12       | Farmstead 4         | 27° 43'<br>23.84"S<br>27° 20'<br>7.01"E  | Looking south-west | Residents of farmstead and motorists.                                  | <b>Not Visible</b><br>The site is not visible to the farmstead and motorists due to screening provided by the topography. |

### Sense of Place

The region has scenic value in terms of its undulating natural landscape and the views over large portions of agricultural land. The natural landscape and rustic character contrast with the anthropogenic influence in the region, viz. urban development, albeit, some 12 km away. 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 memorable.

### 9.3.2 Analysis of magnitude of the visual impact

#### Visual exposure

It is anticipated that visibility of the PV array will be moderate due to the size and nature of the project (i.e. a large ~390 ha reflective PV array located in a rural area). It is anticipated that the BESS and on-site substation will be visible to receptors to the north-west, south-east and west of the site due to the location of this infrastructure along the south-western boundary of the site. The smaller dimensions of these components are expected to limit their visibility from across the site to the north.

The viewshed analysis shows the proposed PV array will be highly visible from the few elevated areas to the north-east, east and south-east of the site. Few of the isolated farmsteads surrounding the site are located within areas identified as having visibility of the site. Motorists on the R76 will have a view

of the project when travelling adjacent to the south-western boundary of the site, however beyond this portion of the R76 motorists will have limited visibility of the project.

The visual exposure of proposed infrastructure is thus deemed moderate.

#### Visual Absorption Capacity (VAC)

Generally rural areas have a lower VAC, however the VAC of the project area is marginally increased by undulating topography and - to a far more limited extent - by grassland (veld) and small clusters of trees, providing screening to the project. The low vertical profile of the PV panels is anticipated to increase the screening potential of the vegetation and topography. However, vegetation is not able to provide screening to the associated infrastructure such as the substation and pylons (associated with the powerline). The undulating topography will marginally absorb the associated infrastructure.

Urban development can help to increase VAC, but is some distance from the project site, reducing this effect. In addition, the large ~390 ha footprint of the PV array also reduces the VAC.

The study area has a low VAC for the PV Facility

#### Sensitivity of Visual Receptors

The sensitivity of the visual receptors potentially affected by the visual impact of the project is considered to be moderate due to the distance from farmsteads, and proximity to roads and rail infrastructure. It is anticipated that the visual receptors will be more sensitive to the PV array, on-site substation and BESS.

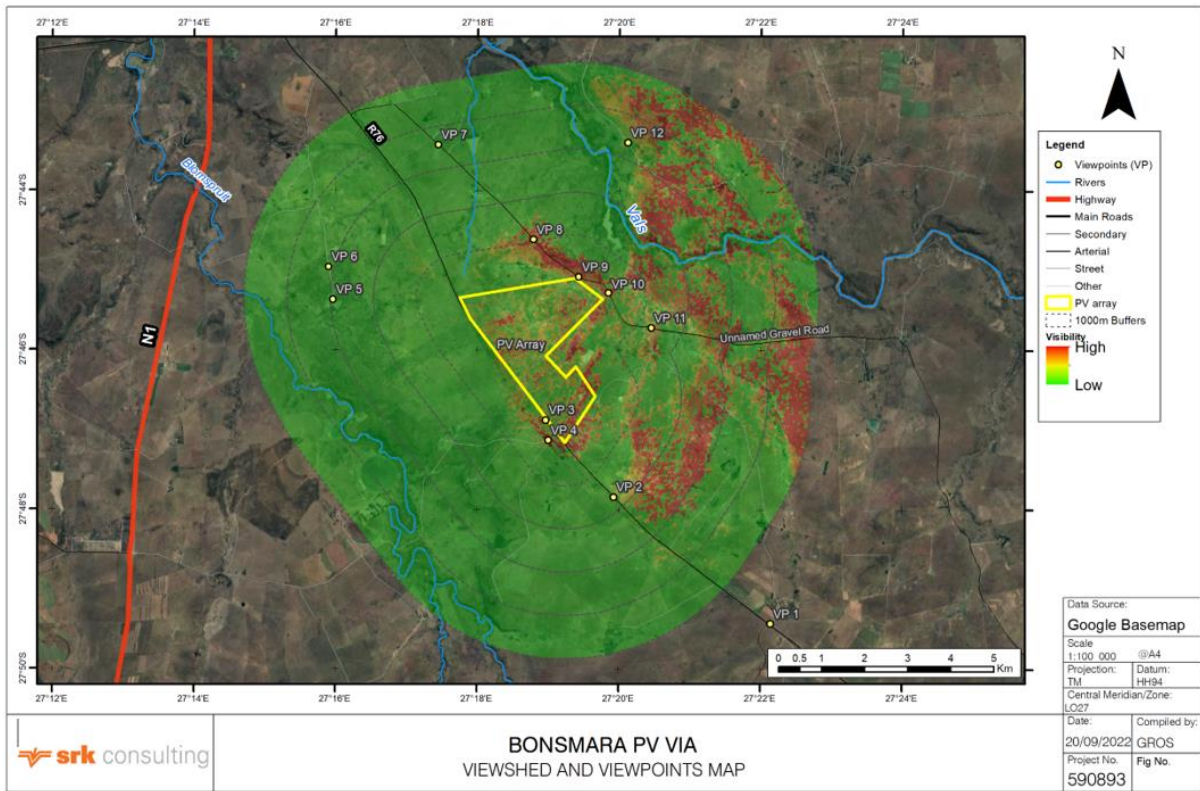
#### Viewing Distance and Visibility

A number of viewpoints were selected to indicate locations from where receptors may (or may not) view the project. The viewpoints are described in **Table 16** above and show in in **Figure 29** below.

The visibility of the project can be summarised as follows:

- The project will be highly visible in the foreground from to motorists travelling to the east and west of the site (VP 3, VP 9, VP 10);
- The project will be partially screened to motorists and railway passengers travelling to the west and south-east of the site by an vegetation; and
- The project will marginally visible / not visible to surrounding residents largely due to topography screening the site and distance from the site.

Overall, the visibility of the project is moderate due to the number of receptors in the foreground and middle ground, albeit transient and temporary receptors.



**Figure 29: Viewpoints Map**

Compatibility with Landscape Integrity

The proposed PV array will introduce a large, uniform, reflective facility into the area and will be discordant with the current land use, scale and texture of the surrounding area. The BESS will also introduce a novel structure into the landscape that is different and incongruent to the type, size and scale of the existing land use and development in the area. However, the on-site substation will be moderately consistent and congruent with the use, texture, size and form of existing infrastructure and land use surrounding the site.

The project is deemed to have low integrity with the surrounding landscape.

Magnitude of Overall Visual Impact

The overall magnitude of the visual impact that is expected to result from the project is rated as moderate. The moderate visual exposure, low compatibility with landscape integrity and low VAC (for the PV Facility) are moderated by the moderate viewer sensitivity and viewing distance, with the project largely screened by vegetation and / or landscape to residents of the surrounding farmsteads.

**Table 18: Magnitude of overall visual impact**

| Criteria                   | Rating   | Comments  |
|----------------------------|----------|---|
| Visual Exposure (Viewshed) | Moderate | The project area will be highly visible from the few elevated areas to the north-east, east and south-east of the site. Few of the isolated farmsteads surrounding the site are located within areas identified as having visibility of the site. Motorists on the R76 will have a view of the site when travelling adjacent to the south-western boundary of the site, |

| Criteria                        | Rating            | Comments  |
|---------------------------------|-------------------|---|
|                                 |                   | however beyond this portion of the R76 motorists will have limited visibility.  |
| Visual Absorption Capacity      | Low (PV Facility) | The VAC of the area is marginally increased by the undulating topography, and - to far more limited extent – by the grassland (veld) and small clusters of trees, providing screening to the project. The low vertical profile of the PV panels is anticipated to increase the screening potential of the vegetation and topography. However, the vegetation is not able to provide screening to the associated infrastructure such as the substation and pylons. The undulating topography will marginally absorb the associated infrastructure.                               |
| Viewer Sensitivity (Receptors)  | Moderate          | Due to the distance of the project from farmsteads (moderately sensitive receptors) and the proximity to roads and rail infrastructure, the viewer sensitivity is considered moderate. It is anticipated that the visual receptors will be more sensitive to the PV array, on-site substation and BESS than the proposed powerline due to the (familiarity with) existing powerlines in the landscape.  |
| Viewing Distance and Visibility | Moderate          | A number of receptors in the foreground and middleground are affected.  |
| Landscape Integrity             | Low               | The proposed PV array will introduce a large, uniform, reflective facility into the area and will be discordant with the current land use, scale and texture of the surrounding area. The BESS will also introduce a novel structure into the landscape that is different and incongruent to the type, size and scale of the existing land use and development in the area. The on-site substation and proposed 132 kV powerline will be moderately consistent and congruent with the use, texture, size and form of existing infrastructure and land use surrounding the site. |

### 9.3.3 Impact Statement

The undulating landscape provides some VAC for the PV Facility. The proposed project is anticipated to have a limited impact on highly sensitive receptors due to the limited number of highly sensitivity visual receptors directly adjacent to the project area. However, railway passengers and motorists – to a greater degree – will have the greatest visibility of the site. This visibility is anticipated to be moderated by their low sensitivity as transient and temporary receptors.

This project will be largely incongruent with the existing agricultural landscape. As such, visual impacts include altered sense of place, visual intrusion and light pollution. This VIA demonstrates that the project will generally result in a moderate visual impact, despite not being located within a REDZ.

Based on the assessment and the assumption that the mitigation measures will be implemented, the specialist is of the opinion that the visual impacts of the project are acceptable and, from a visual perspective, there is no reason not to authorise the project.

## 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<sup>2</sup> 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 m<sup>2</sup> 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':

A Terrestrial Biodiversity Assessment (**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 DENC) 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 located adjacent to a Private nature Reserve which is identified as a 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 Terrestrial 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 DENC) 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

Even though the proposed development falls outside the respective AAAs, the relevant authorities, including the Square Kilometre Array (SKA) and South African Large Telescope (SALT), will be consulted throughout the EIA process.

#### **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 19: 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 not located within a REDZ and will 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

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

- *One of the priority investment areas is to rapidly expand energy generation capacity.*
- *Restoring Eskom to operational and financial health and accelerating its restructuring process is central to achieving this objective. Eskom has been restructured into three separate entities for generation, transmission and distribution.*
- *A Section 34 Ministerial Determination will be issued shortly to give effect to the Integrated Resource Plan 2019, enabling the development of additional grid capacity from renewable energy, natural gas, hydro power, battery storage and coal.*

- *We will initiate the procurement of emergency power from projects that can deliver electricity into the grid within 3 to 12 months from approval.*
- *The Department of Mineral Resources and Energy gazetted the Amended Schedule 2 of the Electricity Regulation Act 4 of 2006 on 12 August 2021, for 100 Megawatts of embedded electricity generation as approved by Minister Gwede Mantashe.*
- *We will negotiate supplementary power purchase agreements to acquire additional capacity from existing wind and solar plants.*
- *We will also put in place measures to enable municipalities in good financial standing to procure their own power from independent power producers.*

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

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

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

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

A more efficient and competitive infrastructure is envisaged, particularly infrastructure that facilitates economic activity and is conducive to growth and job creation. The plan identifies key services that need strengthening; namely commercial transport, energy, telecommunications and water, while ensuring their long-term affordability and sustainability. The National Planning Commission maintains that South Africa has missed a generation of capital investment in many infrastructure opportunities including electricity. Therefore, one (1) infrastructure investment priority is in the procurement of at least 20,000 MW of renewable energy-efficiency (National Planning Commission, 2011).

The proposed project is thus well aligned with the aims of the NDP which is further detailed in the following national and provincial plans:

- National Integrated Resource Plan for Electricity (2010-2030);

- Integrated Resource Plan (IRP 2019)
- National Infrastructure Plan 2012, as amended;
- Constitution of the Republic of South Africa, 1996
- National Environmental Management Act (No. 107 of 1998) (NEMA)
- White Paper on the Energy Policy of the Republic of South Africa (1998)
- National Energy Act (No. 34 of 2008)
- Integrated Energy Plan (IEP) (2015)
- National Development Plan (NDP) 2030 (2012)
- Strategic Infrastructures (SIPs).
- Free State Provincial Growth and Development Strategy (FSGDS) (2005 – 2014)
- Free State Provincial Growth and Development Strategy (FSGDS), Revised October 2007
- Free State Provincial Spatial Development Framework (PSDF) - Executive Summary (Inception Report)
- Free State Climate Change Response Strategy (2017)
- Free State Green Economy Strategy (2014)
- Free State Investment Prospectus (2019).
- Integrated Development Plan (IDP) of the Fezile Dabi District Municipality 2016-2017
- Integrated Development Plan (IDP) of the Moqhaka Local Municipality 2021/2022.

The proposed project is also well aligned with the Fezile Dabi District Municipality 2016/2017 and the Moqhaka Local Municipality 2021/2022 (discussed further below).

## 11.1 Provincial Policies

**Table 20: Relevant Provincial Policies for the Bonsmara Solar PV Facility**

| Relevant policy   | Relevance to the proposed project   |
|---|---|
| Free State Provincial Growth and Development Strategy (FSGDS) (2005 - 2014) | <p>The overarching goal of the Free State Growth and Development Strategy (FSGDS) is to align the provincial and national policies and programmes, and to guide development in terms of effective and efficient management and governance to achieve growth and development. The strategy is a living document that uses the latest business planning and evaluation tools in order to maximise the effect of all spending.</p> <p>Based on the social and economic development challenges of the province, the strategy identifies a few primary objectives, including stimulating economic development and developing and enhancing the infrastructure for economic growth and social development, poverty alleviation through human and social development, ensuring a safe and secure environment for all, and the promotion of effective and efficient governance and administration.</p> <p>The development of the energy and infrastructure development supports the overall objective of stimulating economic development and infrastructure investment towards growth and social development, by contributing to the energy mix, supply and infrastructure of the province. The development of the facility will also contribute to the alleviation of poverty through the creation of direct and indirect employment opportunities.</p> |
| Free State Provincial Spatial Development Framework (PSDF) -                | <p>The Free State PSDF is a provincial spatial and strategic planning policy that responds to and complies with, in particular, the National Development Plan Vision 2030 and the National Spatial Development Perspective (NSDP). The latter encourages all spheres of government to prepare spatial development plans and frameworks (such as the PSDF) that promote a developmental state</p>  |



| Relevant policy                          | Relevance to the proposed project   |
|--|---|
| Executive Summary (Inception Report)     | <p>in accordance with the principles of global sustainability as is advocated by, among others, the South African Constitution and the enabling legislation.</p> <p>The Free State Provincial Growth and Development Strategy states that sustainable economic development is the only effective means by which the most significant challenge of the Free State, namely poverty, can be addressed. The PSDF gives practical effect to sustainable development, which is defined as development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs.</p> <p>The proposed RE facility will contribute to sustainable economic development objectives of the Free State PSDF, through the generation of clean energy and creation of jobs and business opportunities.</p> |
| Free State Green Economy Strategy (2014) | <p>This green economy strategy for Free State Province (FSGES) was developed in alignment with the national green economy strategy elaborated in the National Green Economy Framework and Green Economy Accord, as well as the Free State Provincial Growth and Development Strategy.</p> <p>The objective was to develop a green economy strategy to assist the province to, inter alia, improve environmental quality and economic growth, and to develop green industries and energy efficiency within the province.</p> <p>The proposed SEF development will contribute to the aim of energy efficiency and green industry while promoting economic growth, and is therefore consistent with this strategy.</p>   |
| Free State Investment Prospectus (2019)  | <p>The prospectus states that opportunities are opening up in the province for the energy sector, including renewable energy. Rezoning for the development of multiple solar energy facilities has already been undertaken in the province. The development of a Solar Farm in the Moqhaka LM is seen as a driver of growth along the banks of the Orange River.</p> <p>Considering future opportunities available for the development of renewable energy facilities (including solar PV facilities), the development of the Bonsmara SEF is considered to be in-line with the Investment Prospectus of the Province.</p>  |

## 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 Bonsmara SEF 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 21: Relevant District and Local Municipal Policies for the Bonsmara Solar PV Facility**

| Relevant policy  | Relevance to the proposed project   |
|--|---|
| Integrated Development Plan (IDP) of the Fezile Dabi District Municipality 2016-2017 | <p>The vision of the municipality is to be a community-orientated entity characterised by a sound political and administrative capacity, with sustainable and enabling business environment. With the main challenges within the municipal area being poverty, and unemployment sitting at 46.03% (STATSSA 2011), this proposed project will contribute towards the creation of employment, and to some level of poverty reduction.</p> |

| Relevant policy   | Relevance to the proposed project   |
|---|---|
| Integrated Development Plan (IDP) of the Moqhaka Local Municipality (2022-2027) | The need for sustainable, clean energy supply, nationally, is also applicable in the Moqhaka municipal area. The Moqhaka LM IDP (2022-2027) notes that while 98% of households within the municipality have access to electricity, there is a need for the expansion of public lighting. The proposed SEF will contribute to the national grid, which, in turn, will add to the supply of electricity for communities across the country. |

The review of relevant legislation, policies and documentation pertaining to the proposed development indicates that the establishment of the solar farm and associated infrastructure is supported at a national, provincial, and local levels, and that the proposed project will contribute positively towards several targets and policy aims.

## 12. NEED AND DESIRABILITY

### 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:

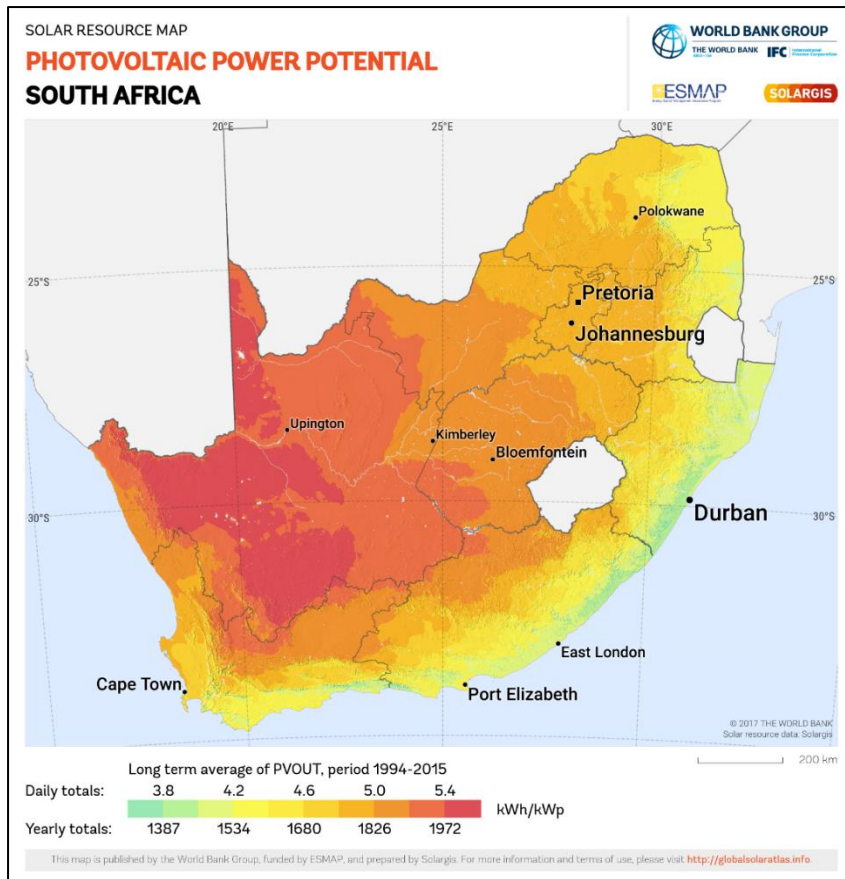
- 1 500 MW of new coal power (noting that there will be decommissioning of coal capacity over the period);
- 2 500 MW of hydro power;
- 6 000 MW solar;
- 14 400 MW wind;
- 2 000 MW of storage;
- 3 000 MW from gas.

### 12.3 Site Suitability

The selection of a potential site for the proposed solar PV energy facility included several key aspects, namely solar resource, climate, topography, environmental, grid connections and access to the site. As mentioned, the proposed project site has been identified through a pre-feasibility desktop analysis based on the estimation of the solar energy resource as well as other determining factors.

#### 12.3.1 Solar Resource

According to the Photovoltaic Power Potential map (2020 *The World Bank, Source: Global Solar Atlas 2.0, Solar resource data: Solargis*) in **Figure 30** below, the Free State has a very high solar potential when compared to other provinces. The project site is thus suitable for the establishment of the proposed solar PV energy facility. Based on an estimation of the solar energy resource as well as pre-feasibility studies conducted by the applicant, the site has been identified as optimal for the proposed Bonsmara Solar PV Energy Facility.



**Figure 30: Photovoltaic Power Potential in South Africa**

### 12.3.2 Site Access

The main access route to the proposed Bonsmara SEF the regional tarred road (R76) which runs adjacent to the proposed site. The site therefore has good access and is situated approximately 12km from the town of Kroonstad.

### 12.3.3 Topography

The site identified for the Bonsmara SEF is relatively flat, homogenous and north facing which is preferential for a solar facility in South Africa.

### 12.3.4 Environmental

The applicant conducted an extensive environmental screening/pre-feasibility process using various available desktop data and tools to determine the suitability of the site.

Furthermore, 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, terrestrial ecologist and freshwater ecologist 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.

### 12.3.5 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. The proposed development will provide socio-economic benefits to the region it is situated in and will have a high commercial attractiveness. In addition, the negative environmental impacts associated with the proposed development can be mitigated to acceptable levels.

All affected landowners have given their consent and have signed letters of consent for the undertaking of the Scoping and EIA Process and the subsequent development of the proposed Bonsmara Solar PV project.

In terms of the agricultural assessment, the land was assessed as being of insufficient land capability for viable and sustainable future crop production. The cropping potential of the site is limited by the shallow soils limited by dense clay and weathered bedrock in the subsoil. As such, it is not envisioned that farming activities will be negatively impacted by the proposed development.

### 12.3.6 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 and is in close proximity to a grid connection.

**The site is considered suitable for the reasons provided above. The investigation of an alternative site is not currently proposed within this Scoping Report. There is therefore no Site alternative for the Bonsmara SEF.**

## 12.4 Reduce dependency on fossil fuels

At present, more than 90% of South Africa's energy is generated by coal-fired power stations. Apart from the fact that these are finite resources that will eventually run out, fossil fuels are also harmful to the environment when used to produce electricity. During combustion, fossil fuels such as coal emit many by-products into the atmosphere, two (2) of which are carbon dioxide (CO<sub>2</sub>) and sulphur dioxide (SO<sub>2</sub>). Both these gases have been shown to contribute to the worsening climate crisis. Solar is a free and infinite resource that occurs naturally in the environment. Converting solar energy into electricity releases no harmful by-products into the environment and will reduce the dependency on fossil fuels.

## 12.5 Stimulate the economy

A significant portion of the capital expenditure envisaged for the project will be spent on procurement of goods and services within South Africa and specifically within the Free State Province. If goods and services are procured locally (i.e. within South Africa), it increases the production of the respective industries. This has a positive impact on the national economy and economies of the municipalities where inputs are procured.

The proposed development has the potential to stimulate the demand for other industries, among others construction services, engineering service, transport services, steel structures, cement and other aggregates, and electrical equipment. At the local level, increase in demand for accommodation, personal services, perishable and non-perishable goods is expected, which will stimulate the local



economies of the towns and settlements, where labour will be procured from or where migrant workers will be temporarily located.

Some of the local businesses could benefit from sub-contracting opportunities, if the construction companies appointed by the developer implement a local community procurement policy, and consumer expenditure of the construction crew. Furthermore, the demand for hospitality services (including accommodation and catering in the town of Kroonstad and other nearby towns) is expected to increase and provide for much-needed stimulus for the local economy.

## **12.6 Job opportunities and household livelihoods**

Solar energy projects create both temporary and permanent job opportunities in South Africa for both skilled and unskilled workers. According to the Social Impact Assessment, the erection of solar PV in the area will create employment opportunities for both skilled and unskilled workers during the construction stage. If recruitment processes are efficiently managed, work opportunities can be localised as much as possible, with a trend visible in the industry that local people will be most ready to take up unskilled jobs, while employment requiring specialised skills tends to attract specialists from across the country. Business opportunities associated with the construction phase may also be open for local enterprises, especially in the supply of goods and services, such as food and other essential supplies.

In addition to those benefitting from direct employment created at the project, various multiplier effects will assist in temporarily supporting existing jobs in the businesses offering services and goods that will be procured during construction activities. The increased temporary income earned by these businesses will, in turn, stimulate consumer spending, creating another round of multiplier effect, positively impacting on the employment situation in the area. There will be opportunities for skills development (refer below) and training.

## **12.7 Skills development**

In addition to the job creation, there is valuable opportunities for skills enhancement/development/training and knowledge transfer as quite often input from experts are required in this field. Therefore, opportunities for guiding and training of local workers is created. A variation of skill sets is required ranging from semi-skilled construction workers to highly skilled engineers. The skill set of the majority of the municipality's residents comprises of low-skills, which means that with proper planning and recruitment strategies, many of the local unemployed residents could be hired as temporary construction workers on site provided they satisfy any other recruitment criteria.

Those employed will either develop new skills or enhance current skills. This insinuates that inexperienced workers will have the opportunity to attain and develop new skills, while experienced workers will further improve their existing skills. Albeit the employment is temporary, the skills attained will be of long-term benefit to employees. However, as any skills set it will need to be supported and practised on a regular basis to maintain its currency.

## 13. 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. 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 R76 regional road. The site is therefore considered highly suitable for the proposed development of a SEF and no other locations have been considered.

#### 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 national, district and local support. CSP technology would not be suitable for this site because it requires a flat surface, has a high visual impact and requires large volumes of water. CSP was not catered for in the IRP2019. In terms of wind energy, the climatic conditions show that there is not a suitable wind resource for a wind facility.

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 national, district and local support. As stated above, CSP technology would not be suitable for this site because it requires a flat surface, has a high visual impact and requires large volumes of water. CSP was not catered for in the IRP2019. In terms of wind energy, the climatic conditions show that there is not a suitable wind resource for a wind facility.

### **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. Therefore, site layout alternatives will not be assessed. The layout will be further refined should any additional constraints be identified from the various specialists and will be 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 31<sup>st</sup> October 2022 until the 30<sup>th</sup> November 2022 (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 will be circulated to all I&APs on the 28<sup>th</sup> of October 2022 respectively as part of the Draft Scoping Report (proof to be included in Final Scoping Report).
- Placement of site notices in English and Afrikaans (as per regulations) were placed along the entrance road to the application site and around the site itself on 19<sup>th</sup> October 2022 (proof included in the Scoping Report).
- Notification letters to be 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 has been advertised in a local newspaper (namely the Vrystaat Kroon) on 26<sup>th</sup> October 2022, 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 can be made available to parties via a secure digital link that will be emailed upon request for the documentation.
- CDs / Flash drive to be posted, only if requested.
- The Draft Scoping Report will be located and available for review at the following location:
  - Mqohaka Local Municipality – Hill Street, Kroonstad, Free State Province, South Africa

**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 22: Properties for Affected Landowners**

| SG CODE               | DESCRIPTION                                |
|-----------------------|--|
| F02000000000063600000 | PORTION 0 OF THE FARM SCHEVENINGEN NO. 636 |
| F02000000000063600001 | PORTION 1 OF THE FARM SCHEVENINGEN NO. 636 |



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. Proof will be included in **Appendix 5** of the Final Scoping Report.

### **13.2.5 Summary of issues raised**

Issues, comments and concerns raised during the public participation process to date will be 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.

### 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                                 | <ul style="list-style-type: none"> <li>None identified</li> </ul>   |   |
| Aquatic                                   | <ul style="list-style-type: none"> <li>None identified</li> </ul>   |   |
| Geotechnical                              | <ul style="list-style-type: none"> <li>None identified</li> </ul>   |   |
| Terrestrial Biodiversity - Vegetation     | <ul style="list-style-type: none"> <li>Permanent or temporary loss of indigenous vegetation cover because of site clearing. Site clearing before construction will result in the blanket clearing of vegetation within the affected footprint.</li> </ul> | <ul style="list-style-type: none"> <li>Retain as a minimum the conservation target for the vegetation unit represented on site. Only clear vegetation inside the footprint).</li> </ul>       |
| Terrestrial Biodiversity - Flora Species  | <ul style="list-style-type: none"> <li>Loss of flora species of special concern during pre-construction site clearing activities.</li> </ul>  | <ul style="list-style-type: none"> <li>Identify any populations and avoid during layout design and planning and/or relocate any flora species requiring such before construction.</li> </ul>  |
| Terrestrial Biodiversity - Faunal Species | <ul style="list-style-type: none"> <li>Loss of faunal SSC due to construction activities: Activities associated with bush clearing, killing of perceived dangerous fauna, may lead to increased mortalities among faunal species.</li> </ul>              | <ul style="list-style-type: none"> <li>Identify any populations and avoid during layout design and planning and/or relocate any faunal species requiring such before construction.</li> </ul> |
| Heritage                                  | <ul style="list-style-type: none"> <li>None identified</li> </ul>   |   |
| Social                                    | <ul style="list-style-type: none"> <li>Exclusion of communities</li> </ul>  | <ul style="list-style-type: none"> <li>Active involvement of the community is required to capacitate them to make informed decisions.</li> </ul>  |
|   | <ul style="list-style-type: none"> <li>Inadequate impact identification and mitigation.</li> </ul>  | <ul style="list-style-type: none"> <li>Use of specialist SIAs teams.</li> </ul>   |

### 13.3.2 Construction Phase

| Environmental Aspect | Potential Impact During Construction  | Proposed Mitigation  |
|----------------------|---|--|
| Agricultural         | Compliance Statement  |  |
| Avifaunal            | <ul style="list-style-type: none"> <li>• Habitat loss (including foraging and breeding) and fragmentation due to displacement (avoidance of disturbance). Habitat loss has the tendency to not only destroy existing habitat but also displace bird species from large areas of natural habitat. This specifically has a greater impact on bird species restricted to a specific habitat and its requirements.</li> <li>• Disturbance due to noise such as, machinery movements and maintenance operations during the construction and operational phase of the proposed PV solar farm.</li> <li>• The attraction of some novel bird species due to the development of a solar farm with associated infrastructure such as perches, nest and shade opportunities</li> <li>• Chemical pollution: Chemicals being used to keep the PV panels clean from dust (suppressants) etc.</li> </ul> | <ul style="list-style-type: none"> <li>• Impacts associated with the loss of bird foraging habitat due to construction activity cannot be mitigated in relation to the majority of the habitats but can be mitigated by avoiding avifaunal specific highly sensitive areas and their associated buffers;</li> <li>• Impact can be mitigated by timing construction in order to avoid breeding periods of species;</li> <li>• Set-back areas or buffer zones are allocated to sensitive or important habitat features to alleviate the effect of foraging and nesting/ roosting habitat in particular;</li> <li>• Migratory pathways of birds cannot be changed and the resulting impacts are unavoidable. However, severity of the impacts can be reduced with appropriate mitigation measures;</li> <li>• All habitat attractants should be eliminated so that avifaunal populations will not embed themselves within the infrastructure over time. This includes bird diverters, perch deterrents and the application of Non-polarising white tape can be used around and/or across panels to minimise reflection which can attract aquatic birds and insects (food) as panels mimic reflective surfaces of waterbodies;</li> <li>• The application of strict chemical control protocols which are not detrimental to avifauna.</li> </ul> |
| Aquatic              | <ul style="list-style-type: none"> <li>• Loss of aquatic species of special concern</li> </ul>  | <ul style="list-style-type: none"> <li>• 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</li> </ul>   |

| Environmental Aspect | Potential Impact During Construction   | Proposed Mitigation   |
|----------------------|--|---|
|                      | <ul style="list-style-type: none"> <li>• Damage or loss of riparian systems, ephemeral watercourses and wetland systems in the construction phase</li> </ul> | <ul style="list-style-type: none"> <li>• Where possible, temporary construction lay-down or assembly areas should be sited on transformed areas; and</li> <li>• 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.</li> <li>• 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.</li> <li>• 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: <ul style="list-style-type: none"> <li>○ Existing pipe culverts must be removed and replaced with suitable sized box culverts, especially where road levels are raised to accommodate any large vehicles.</li> <li>○ 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.</li> <li>○ Where large cut and fill areas are required these must be stabilised and rehabilitated during the construction process, to minimise erosion and sedimentation.</li> <li>○ 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).</li> </ul> </li> </ul> |

| Environmental Aspect | Potential Impact During Construction  | Proposed Mitigation  |
|----------------------|---|--|
|                      | <ul style="list-style-type: none"> <li>Potential impact on localised surface water quality (construction materials and fuel storage facilities) during the construction and decommissioning phases</li> </ul>   | <ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>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).</li> <li>Mechanical plant and bowsers must not be refuelled or serviced within 100m of a river channel.</li> <li>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.</li> <li>Littering and contamination associated with construction activity must be avoided through effective construction camp management;</li> <li>No stockpiling should take place within or near a water course</li> <li>All stockpiles must be protected and located in flat areas where run-off will be minimised and sediment recoverable;</li> </ul> |
| Geotechnical         | <ul style="list-style-type: none"> <li>Disturbance/ displacement/ removal of soil and rock: Ground disturbance during access road construction, foundation earthworks, platform earthworks</li> <li>Soil erosion: Increased erosion due to vegetation clearing, alteration of natural drainage</li> </ul> | <ul style="list-style-type: none"> <li>Design access roads and pile locations to minimise earthworks and levelling based on high resolution ground contour information</li> <li>Correct topsoil and spoil management</li> <li>Avoid development in preferential drainage paths</li> <li>Appropriate engineering design of road drainage and watercourse crossings</li> <li>Temporary berms and drainage channels to divert surface runoff where needed</li> </ul>  |



| Environmental Aspect   | Potential Impact During Construction   | Proposed Mitigation  |
|--|--|--|
|  |  | <ul style="list-style-type: none"> <li>• Landscape and rehabilitate disturbed areas timeously (e.g. regressing)</li> <li>• Use designated access and laydown areas only to minimise disturbance to surrounding areas</li> </ul>  |
| Terrestrial Biodiversity – Erosion   | <ul style="list-style-type: none"> <li>• Susceptibility of some areas to erosion because of construction related disturbances. Removal of vegetation cover and soil disturbance may result in some areas being susceptible to soil erosion after completion of the activity.</li> </ul>                                    | <ul style="list-style-type: none"> <li>• Appropriate soil erosion management during construction.</li> <li>• Identify and avoid and/or stabilise are erosion sensitive areas (such as around watercourses and dongas and sandy slopes.</li> </ul>  |
| Terrestrial Biodiversity - Ecological Processes  | <ul style="list-style-type: none"> <li>• Disturbances to ecological processes: Activity may result in disturbances to ecological processes.</li> </ul>   | <ul style="list-style-type: none"> <li>• Allow for connectivity across the site and with surrounding landscape (during layout design stage). Fencing to be permeable to fauna as per specialist recommendation.</li> </ul>   |
| Terrestrial Biodiversity - Aquatic and Riparian processes                              | <ul style="list-style-type: none"> <li>• Aquatic and Riparian processes: Aquatic habitat is present and could be affected.</li> </ul>  | <ul style="list-style-type: none"> <li>• Retain buffer around watercourses. Stormwater management, especially runoff from panels in sloped areas.</li> </ul>   |
| Terrestrial Biodiversity - Faunal Habitat & Processes                                  | <ul style="list-style-type: none"> <li>• Loss of Faunal Habitat and disruptions to processes: Activity will result in the loss of habitat for faunal species.</li> </ul>   | <ul style="list-style-type: none"> <li>• Identify important or irreplaceable fauna habitat to be retained. Retain faunal corridors during layout design phase. Only clear vegetation inside the footprint).</li> </ul>   |
| Terrestrial Biodiversity - Faunal Species  | <ul style="list-style-type: none"> <li>• Loss of faunal SSC due to construction activities: Activities associated with bush clearing, killing of perceived dangerous fauna, may lead to increased mortalities among faunal species.</li> </ul>   | <ul style="list-style-type: none"> <li>• Identify any populations and avoid during layout design and planning and/or relocate any faunal species requiring such before construction.</li> </ul>  |
| Heritage (Archaeological, Paleontological, Cultural Landscape)                         | <ul style="list-style-type: none"> <li>• Destruction of significant heritage resources</li> </ul>  | <ul style="list-style-type: none"> <li>• Further site-specific work to be done to identify resources within the development area.</li> </ul>   |
| Visual - Altered Sense of Place and Visual Intrusion caused by Construction Activities | <ul style="list-style-type: none"> <li>• Dust generated during construction will be visually unappealing and may detract from the visual quality (and sense of place) of the area. These impacts are typically limited to the immediate area surrounding the construction site, during the construction period.</li> </ul> | <ul style="list-style-type: none"> <li>• Limit vegetation clearance and the footprint of construction to what is absolutely essential.</li> <li>• Consolidate the footprint of the construction camp to a functional minimum.</li> <li>• Avoid excavation, handling and transport of materials which may generate dust under very windy conditions.</li> </ul> |

| Environmental Aspect | Potential Impact During Construction   | Proposed Mitigation   |
|----------------------|--|---|
|                      |  | <ul style="list-style-type: none"> <li>Keep stockpiled aggregates and sand covered to minimise dust generation.</li> <li>Keep construction site tidy.</li> </ul>  |
| Social               | <ul style="list-style-type: none"> <li>Short and long-term employment</li> </ul>             | <ul style="list-style-type: none"> <li>Honestly communicate the temporary nature of the employment benefits associated with the solar facility.</li> </ul>  |
|                      | <ul style="list-style-type: none"> <li>Support for small local business</li> </ul>           | <ul style="list-style-type: none"> <li>Procurement policies should support small businesses. And timely, appropriate business preparedness measures can be considered.</li> </ul>   |
|                      | <ul style="list-style-type: none"> <li>Opportunities for local skills development</li> </ul> | <ul style="list-style-type: none"> <li>Continuous on the job training.</li> </ul>   |
|                      | <ul style="list-style-type: none"> <li>Increase in sex work</li> </ul>                       | <ul style="list-style-type: none"> <li>Facilitate HIV/AIDS awareness programmes and easy access to contraceptives and ARVs, and ensure that these are extended to the local communities.</li> </ul>   |
|                      | <ul style="list-style-type: none"> <li>Noise and dust pollution</li> </ul>                   | <ul style="list-style-type: none"> <li>Put noise buffers in place and employees with protective equipment.</li> </ul>   |
|                      | <ul style="list-style-type: none"> <li>Road and traffic hazards</li> </ul>                   | <ul style="list-style-type: none"> <li>Ensure that nearby roads are maintained properly and enforce traffic laws among transport personnel. Ensure the nearby roadways are maintained properly and police traffic laws for transporting workers, contractors, and contractors.</li> </ul> |
|                      | <ul style="list-style-type: none"> <li>Health and safety</li> </ul>                          | <ul style="list-style-type: none"> <li>Ensure consistent adherence to health and safety policies and provide workers with protective clothing and equipment.</li> </ul>   |
|                      | <ul style="list-style-type: none"> <li>Vandalism</li> </ul>                                  | <ul style="list-style-type: none"> <li>Establish or strengthen community policing in collaboration with local communities, and alongside professional security services.</li> </ul>   |

### 13.3.3 Operational Phase

| Environmental Aspect | Potential Impact During Operation   | Proposed Mitigation  |
|----------------------|---|--|
| Agricultural         | Compliance Statement  |  |
| Avifaunal            | <ul style="list-style-type: none"> <li>Disturbance due to noise such as, machinery movements and maintenance operations during the construction and operational phase of the proposed PV solar farm.</li> </ul> | <ul style="list-style-type: none"> <li>Impacts due to bird mortalities during the operational phase are practically unavoidable for any large facility, but with the appropriate mitigation measures these impacts can be minimised. It is likely that most of the avifaunal populations will</li> </ul> |

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| Environmental Aspect                              | Potential Impact During Operation   | Proposed Mitigation   |
|---|---|---|
|   | <ul style="list-style-type: none"> <li>The attraction of some novel bird species due to the development of a solar farm with associated infrastructure such as perches, nest and shade opportunities</li> <li>Chemical pollution: Chemicals being used to keep the PV panels clean from dust (suppressants) etc.</li> </ul>   | <p>be largely displaced from the majority of the project infrastructure, although significant risks are associated with the likelihood of project vehicles flushing birds into fencing infrastructure;</p> <ul style="list-style-type: none"> <li>Migratory pathways of birds cannot be changed and the resulting impacts are unavoidable. However, severity of the impacts can be reduced with appropriate mitigation measures;</li> <li>All habitat attractants should be eliminated so that avifaunal populations will not embed themselves within the infrastructure over time. This includes bird diverters, perch deterrents and the application of Non-polarising white tape can be used around and/or across panels to minimise reflection which can attract aquatic birds and insects (food) as panels mimic reflective surfaces of waterbodies;</li> <li>The application of strict chemical control protocols which are not detrimental to avifauna.</li> </ul> |
| Aquatic   | <ul style="list-style-type: none"> <li>Impact on aquatic systems through the possible increase in surface water runoff on form and function during the operational phase</li> </ul>   | <ul style="list-style-type: none"> <li>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</li> </ul>   |
| Geotechnical - Soil Erosion                       | <ul style="list-style-type: none"> <li>Increased erosion due to alteration of natural drainage</li> </ul>   | <ul style="list-style-type: none"> <li>Maintain access roads including drainage features</li> <li>Monitor for erosion and remediate and rehabilitate timeously</li> </ul>   |
| Terrestrial Biodiversity - Alien Invasive Species | <ul style="list-style-type: none"> <li>Susceptibility of post construction disturbed areas to invasion by exotic and alien invasive species and removal of exotic and alien invasive species during construction. Post construction disturbed areas having no vegetation cover are often susceptible to invasion by weedy and alien species, which can not</li> </ul> | <ul style="list-style-type: none"> <li>Don't introduce topsoil from dubious source if required during post-construction rehabilitation, as a minimum should be treated as aper a recognised protocol. Implement post-construction Alien Invasive Plant management plan.</li> </ul>  |

| Environmental Aspect   | Potential Impact During Operation   | Proposed Mitigation   |
|--|---|---|
|  | only become invasive but also prevent natural flora from becoming established.  |   |
| Visual - Altered Sense of Place and Visual Intrusion caused by the PV Array  | <ul style="list-style-type: none"> <li>The development of this PV array may be perceived as conflicting with the current landscape of the grassland and treescapes. The proposed PV Facility 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.</li> </ul>  | <ul style="list-style-type: none"> <li>Plant vegetation (that will reach &gt;3 m in height) or establish a vegetated berm (&gt;3 m in height) along the south-western boundary of the site bordering the R76 upon completion of construction.</li> </ul>  |
| Visual - Altered Sense of Place and Visual Intrusion caused by the BESS, Substation and Internal Grid Infrastructure | <ul style="list-style-type: none"> <li>The BESS and internal grid connections (where possible will be installed underground). is anticipated to contribute to visual clutter on the site and therefore negatively impact the sense of place and present as a visual intrusion across the landscape.</li> </ul>  | <ul style="list-style-type: none"> <li>Plant vegetation (that will reach &gt;3 m in height) or establish a vegetated berm (&gt;3 m in height) along the south-western boundary of the site bordering the R76 upon completion of construction.</li> <li>Fence the perimeter of the site with a green or black fencing.</li> <li>Ensure that the roof colour of the proposed buildings blends into the landscape. Fence the perimeter of the site with a green or black fencing.</li> <li>Ensure that the roof colour of the proposed buildings blends into the landscape.</li> </ul> |
| Visual - Altered Visual Quality caused by Light Pollution at Night   | <ul style="list-style-type: none"> <li>The installation of lighting on the site perimeter and / or around the BESS will generate nightglow across the natural, undeveloped site and beyond. Lighting is not easily screened by vegetation or topography, and the proposed lighting for the PV Facility is anticipated to contribute to nightglow from the surrounding residential areas (e.g. Kroonstad) and alter visual quality of the surrounding area.</li> </ul> | <ul style="list-style-type: none"> <li>Reduce the height of lighting masts to a workable minimum.</li> <li>Direct lighting inwards and downwards to limit light pollution.</li> </ul>   |
| Social   | <ul style="list-style-type: none"> <li>Employment creation</li> </ul>   | <ul style="list-style-type: none"> <li>Maximise the creation of employment through indirect jobs, especially for semi-skilled and unskilled workers.</li> </ul>   |
|  | <ul style="list-style-type: none"> <li>Small business promotion</li> </ul>  | <ul style="list-style-type: none"> <li>In order to support business readiness, there needs to be integration into the value chain of solar facilities</li> </ul>  |
|  | <ul style="list-style-type: none"> <li>Influx of migrants may result in recruitment/job related conflicts</li> </ul>  | <ul style="list-style-type: none"> <li>Recruitment processes should prioritise the locals as much as possible. Social management plans must be put in place to address the consequences of project-induced migration.</li> </ul>  |

| Environmental Aspect | Potential Impact During Operation                                      | Proposed Mitigation  |
|----------------------|--|--|
|                      | <ul style="list-style-type: none"> <li>Community investment</li> </ul> | <ul style="list-style-type: none"> <li>Strategically plan for and effectively manage community investments to create lasting positive impact for local economy and community.</li> </ul> |

### 13.3.4 Decommissioning

| Environmental Aspect | Potential Impact During Decommissioning   | Proposed Mitigation  |
|----------------------|---|--|
| Agricultural         | Compliance Statement  |  |
| Avifaunal            | <ul style="list-style-type: none"> <li>None identified</li> </ul>   |  |
| Aquatic              | <ul style="list-style-type: none"> <li>Loss of aquatic species of special concern</li> </ul>  | <ul style="list-style-type: none"> <li>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</li> <li>Where possible, temporary construction lay-down or assembly areas should be sited on transformed areas; and</li> <li>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.</li> </ul> |
|                      | <ul style="list-style-type: none"> <li>Potential impact on localised surface water quality (construction materials and fuel storage facilities) during the construction and decommissioning phases</li> </ul> | <ul style="list-style-type: none"> <li>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.</li> <li>Washing and cleaning of equipment must be done in designated wash bays, where rinse water is contained in</li> </ul>   |



| Environmental Aspect   | Potential Impact During Decommissioning   | Proposed Mitigation   |
|--|---|---|
|  |   | <p>evaporation/sedimentation ponds (to capture oils, grease cement and sediment).</p> <ul style="list-style-type: none"> <li>• Mechanical plant and bowsers must not be refuelled or serviced within 100m of a river channel.</li> <li>• All construction camps, lay down areas, wash bays, batching plants or areas and any stores should be more than 50 m from any demarcated water courses. Note comment regards Camp A that requires micro-siting.</li> <li>• Littering and contamination associated with construction activity must be avoided through effective construction camp management;</li> <li>• No stockpiling should take place within or near a water course</li> <li>• All stockpiles must be protected and located in flat areas where run-off will be minimised and sediment recoverable;</li> </ul> |
| Geotechnical – Soil Erosion  | <ul style="list-style-type: none"> <li>• Disturbance/ displacement/ removal of soil and rock: Ground disturbance during access road construction, foundation earthworks, platform earthworks</li> </ul>   | <ul style="list-style-type: none"> <li>• Restore natural site topography</li> <li>• Landscape and rehabilitate access roads and disturbed areas timeously (e.g. regressing).</li> </ul>   |
|  | <ul style="list-style-type: none"> <li>• Soil erosion: Increased erosion due to vegetation clearing, alteration of natural drainage</li> </ul>  | <ul style="list-style-type: none"> <li>• Temporary berms and drainage channels to divert surface runoff where needed</li> <li>• Restore natural site topography</li> <li>• Use designated access and laydown areas only to minimise disturbance to surrounding areas.</li> </ul>  |
| Terrestrial Biodiversity   | <ul style="list-style-type: none"> <li>• None identified</li> </ul>   |   |
| Heritage   | <ul style="list-style-type: none"> <li>• None Identified</li> </ul>   |   |
| Visual - Altered Sense of Place caused by the decommissioning activities | <ul style="list-style-type: none"> <li>• Dust generated during decommissioning will be visually unappealing and may detract from the visual quality (and sense of place) of the area. These impacts are typically limited to the immediate area surrounding the site, during the decommissioning period.</li> </ul> | <ul style="list-style-type: none"> <li>• Limit vegetation clearance and the footprint of decommissioning to what is absolutely essential.</li> <li>• Avoid excavation, handling and transport of materials which may generate dust under very windy conditions.</li> <li>• Keep stockpiled aggregates and sand covered to minimise dust generation.</li> <li>• Keep site tidy.</li> </ul>   |

| Environmental Aspect | Potential Impact During Decommissioning   | Proposed Mitigation  |
|----------------------|---|--|
| Social               | <ul style="list-style-type: none"> <li>• Job losses</li> </ul>                              | <ul style="list-style-type: none"> <li>• Deployment of those with transferable skills to other RE facilities.</li> </ul>   |
|                      | <ul style="list-style-type: none"> <li>• Loss of associated developments</li> </ul>         | <ul style="list-style-type: none"> <li>• Promote business incubators and access to loans for local businesses.</li> <li>• Promote investments in the area through incentives.</li> </ul> |
|                      | <ul style="list-style-type: none"> <li>• Economic contraction at the local level</li> </ul> | <ul style="list-style-type: none"> <li>• Promote investments in the area and investor confidence through tax incentives.</li> </ul>  |

### 13.3.5 Cumulative

Five (5) solar PV facilities (two approved and three proposed) are located within 35 km of Bonsmara 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 the Figure and Table below:

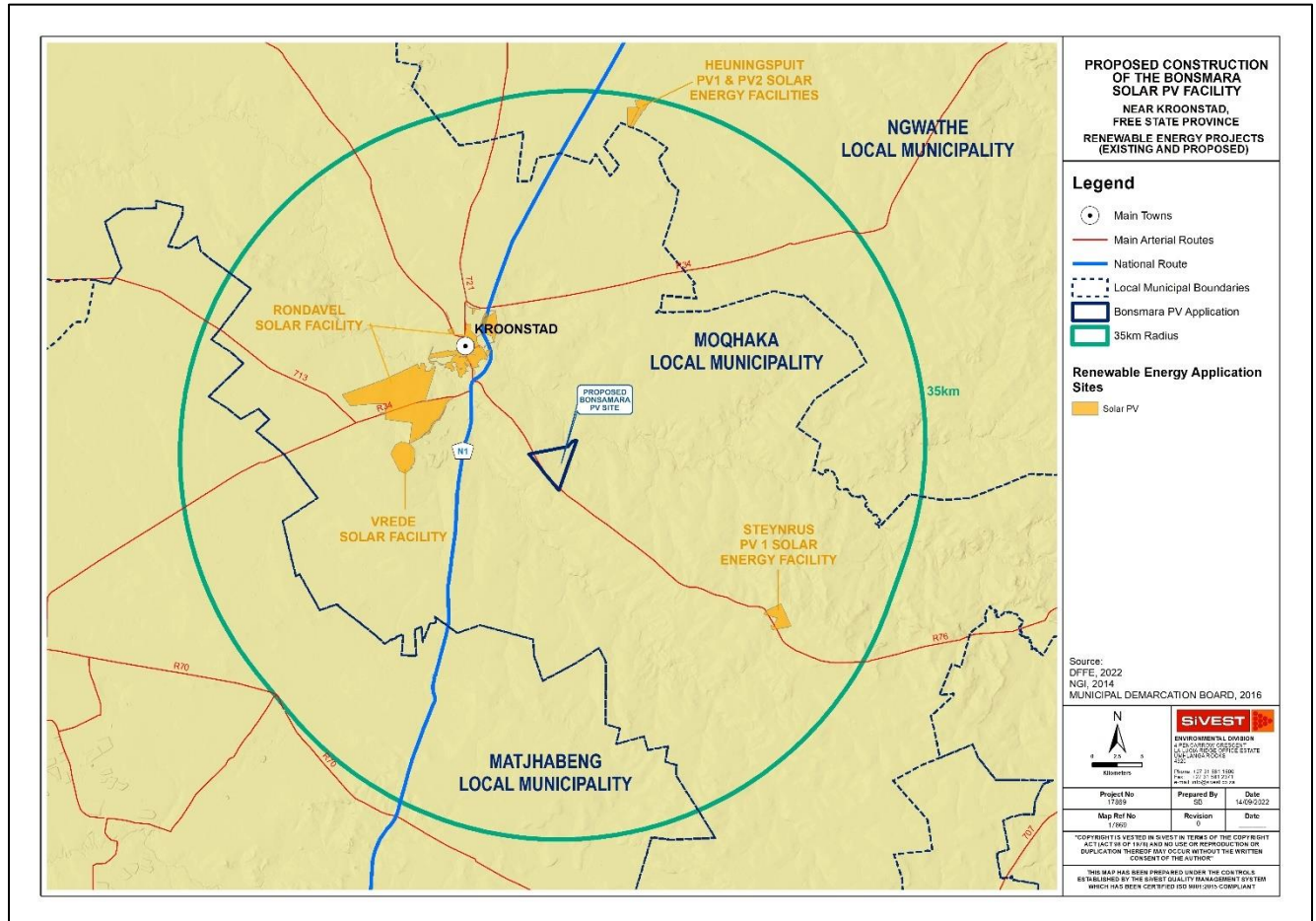


Figure 31: Renewable Energy Projects within 35km of the Bonsmara SEF

Table 23: Renewable Energy Projects within 35km of the Bonsmara SEF

| Project Name              | Status          | MW     | Approximate Footprint |
|---------------------------|-----------------|--------|-----------------------|
| Rondavel Solar Facility   | Approved        | 100 MW | ~3 500 ha             |
| Steynrus Solar Facility   | Under Amendment | 5 MW   | ~350 ha               |
| Vrede Solar Facility      | In process      | 100 MW | ~540 ha               |
| Heuningspuit PV1 Facility | In process      | 5 MW   | ~140 ha               |
| Heuningspuit PV2 Facility | In process      | 5 MW   | ~175 ha               |

## Cumulative Impacts

| Environmental Aspect                                      | Potential Impact During Decommissioning   | Proposed Mitigation  |
|---|---|--|
| Agricultural  | <ul style="list-style-type: none"> <li>Compliance Statement</li> </ul>  |  |
| Avifaunal   | <ul style="list-style-type: none"> <li>None identified</li> </ul>   |  |
| Aquatic   | <ul style="list-style-type: none"> <li>Cumulative impact of various proposed renewable farms and associated grid lines on the natural environment</li> </ul>  | <ul style="list-style-type: none"> <li>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.</li> </ul> |
| Geotechnical  | <ul style="list-style-type: none"> <li>None identified</li> </ul>   |  |
| Terrestrial Biodiversity                                  | <ul style="list-style-type: none"> <li>To be further investigated during the EIA Phase</li> </ul>   |  |
| Heritage  | <ul style="list-style-type: none"> <li>None Identified</li> </ul>   |  |
| Visual - Altered Sense of Place caused by the PV Facility | <ul style="list-style-type: none"> <li>There are already numerous substations and powerlines in the region, already affecting visual quality and sense of place in this modified rural landscape. As such, the proposed powerlines, BESS and substations associated with these projects are not the first of their kind in the visual landscape. The Bonsmara PV Facility and other proposed facilities listed above have a combined footprint of approximately ~4 705 ha; although large, the facilities are far apart and do not constitute a spatially concentrated, high density network of PV facilities, which mitigates cumulative impacts.</li> </ul> | <ul style="list-style-type: none"> <li>Encourage other project owners to implement measures to mitigate the impact of these projects on visual intrusion and altered sense of place, such as screening (vegetation and/or berms) and limit the light pollution generated by these facilities.</li> </ul>   |
| Social  | <ul style="list-style-type: none"> <li>To be further investigated during the EIA Phase</li> </ul>   |  |

### 13.3.6 Comparative Assessment of Alternatives

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 development area presented in the Scoping Report has been selected as a practicable option for the Bonsmara SEF considering technical preference and constraints, as well as initial No-Go layers informed by the relevant specialist during the screening studies.

### 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 Bonsmara SEF was based on environmental constraints as well as technical and economic considerations.

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 32**) will be taken into account and the layout will be amended where necessary to inform the proposed layout for the Bonsmara SEF. This layout will then be taken forward for assessment in the DEIR phase.



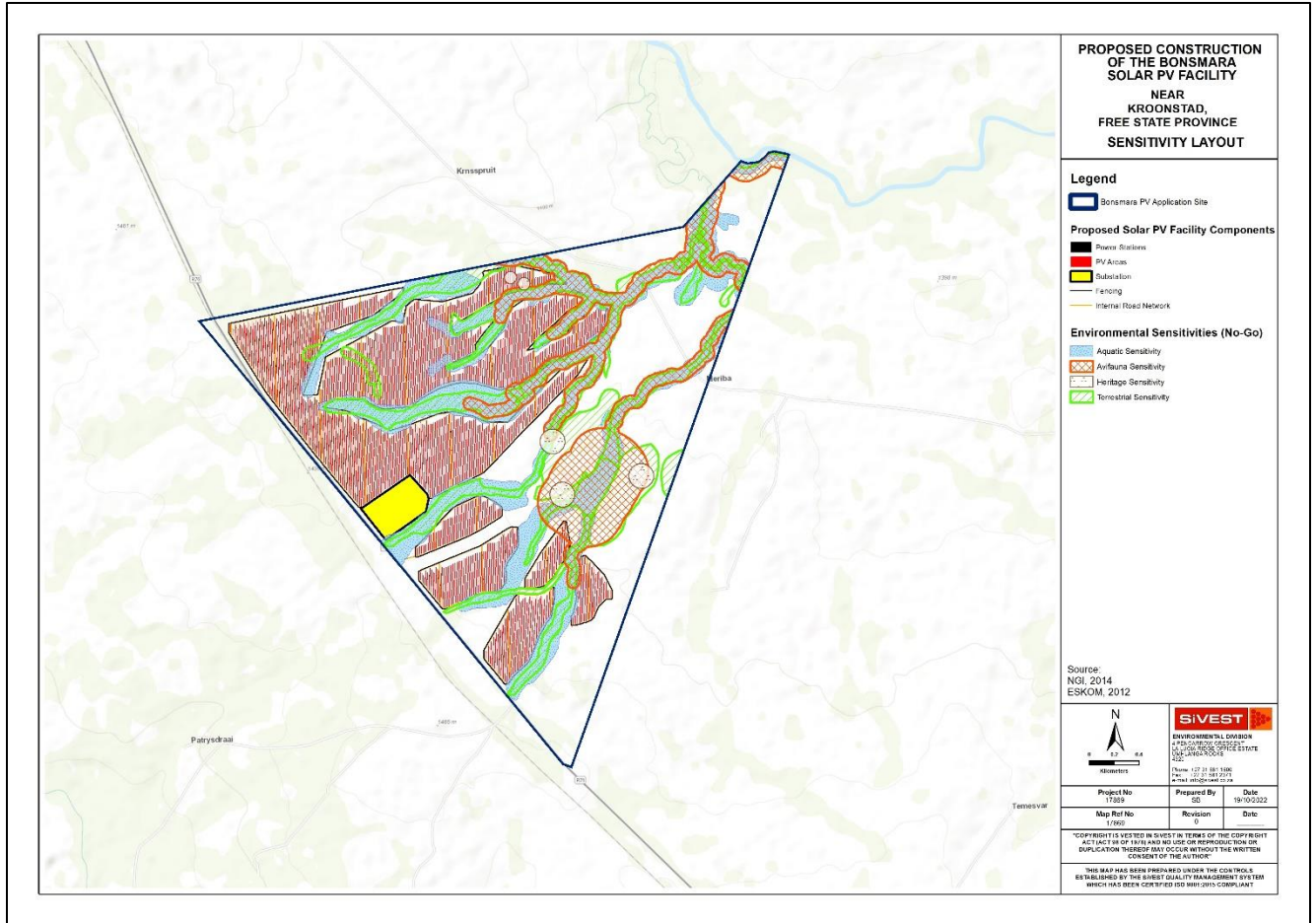


Figure 32: Preliminary layout with sensitivities

## 14. PLAN OF STUDY FOR EIA

This Plan of Study, which explains the approach to be adopted to conduct the EIA for the proposed Bonsmara 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;

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- *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 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.

#### **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 Bonsmara SEF as the site was selected prior to the commencement of the EIA Process.

### 14.2.2 Layout Alternatives

The preliminary layout that was prepared for the Bonsmara SEF (**Figure 34**) 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 preliminary layout will be updated to include additional constraints and the PV field will be shifted were necessary (**Figure 33** below). The 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.

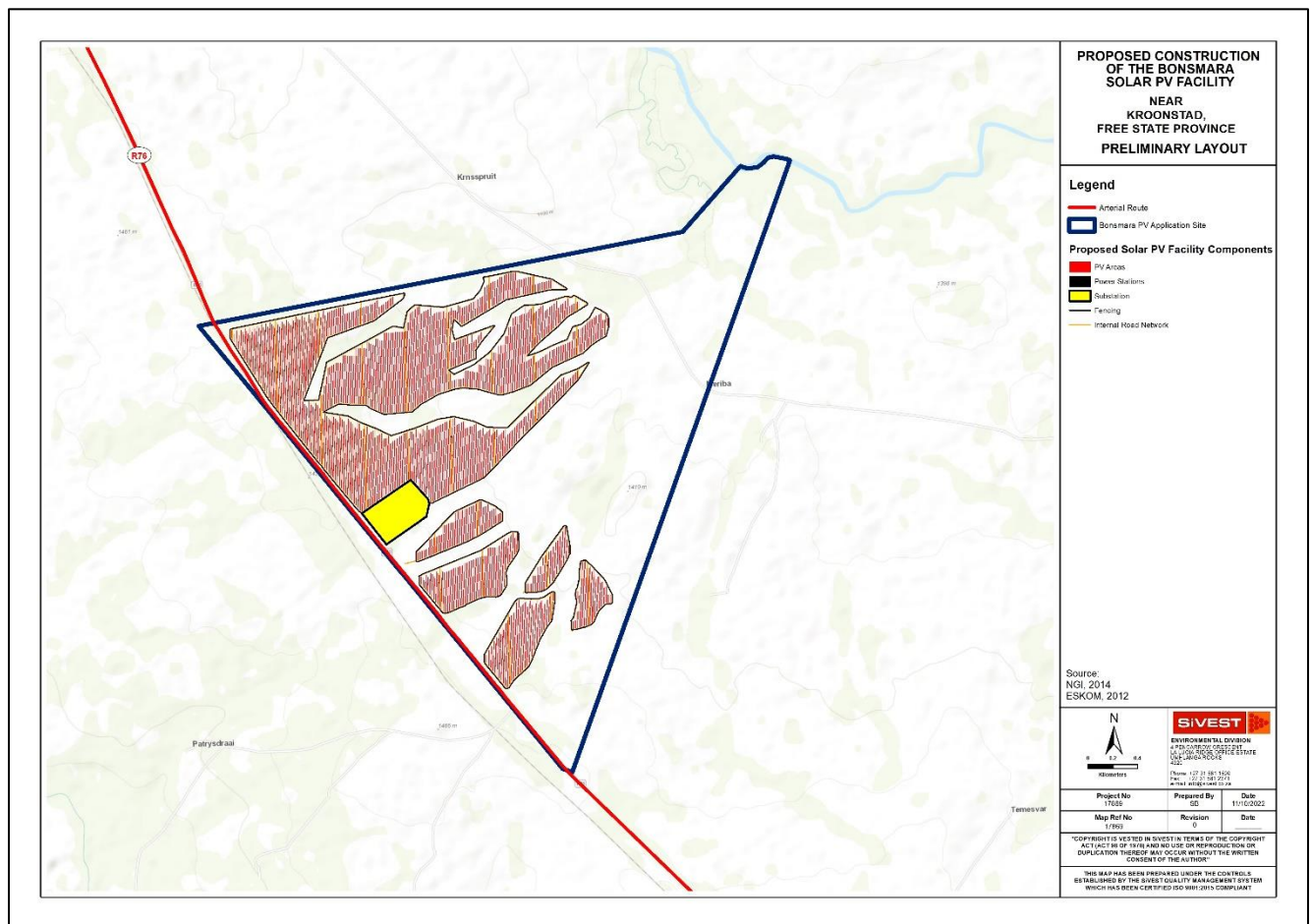


Figure 33: Preliminary site layout

### 14.2.3 Technology Alternatives

No technology alternatives will be considered. CSP technology would not be suitable for this site because it requires a flat surface, has a high visual impact and requires large volumes of water. CSP was not catered for in

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the IRP2019. In terms of wind energy, the climatic conditions show that there is not a suitable wind resource for a wind facility.

#### 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 from an ecological/avifaunal/aquatic perspective should the development of the SEF not proceed. There is however a high negative impact from a social perspective for the no-go alternative. As such, the no-go alternative will not be taken forward to the EIA phase for further assessment.

#### 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;
- Terrestrial Biodiversity Assessment;
- Risk Assessment Report (if required).

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 24: 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 Bonsmara 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),  |

### Scope of Work

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

SiVEST will consult 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.
- After the Draft Scoping Report has been made available for comment within the public domain, comments will be incorporated into the Issues and Response Report and Final Scoping Report.
- The Final Scoping Report will then be submitted to DFFE for approval.
- 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 Bonsmara 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 on 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.

## 18. WAY FORWARD

The Draft Scoping Report is currently being circulated for public participation for a period of 30 days (excluding public holidays) from **31<sup>th</sup> October 2022** until **30<sup>th</sup> November 2022**.

All comments received will be responded to in a C&RR, which will be included prior to submission of the Final Scoping Report to the decision-making authority, namely the DFFE. Comments received on the report will be taken into consideration, incorporated into the report (where applicable) and will be used when compiling the Final Scoping and the Draft EIA Report.

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

Contact: Hlengiwe Ntuli  
✉ PO Box 2921, RIVONIA, 2128  
☎ Phone: (011) 798 0600  
✉ E-mail: [sivest\\_ppp@sivest.co.za](mailto:sivest_ppp@sivest.co.za)  
☎ Fax: (011) 803 7272  
Website: [www.sivest.com](http://www.sivest.com)

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



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