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SITE SENSITIVITY VERIFICATION
AND
AGRICULTURAL COMPLIANCE STATEMENT
FOR THE VANDERKLOOF SOLAR PV & BESS
NEAR LUCKOFF, FREE STATE PROVINCE

Report by
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19 March 2025

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EXECUTIVE SUMMARY

South Africa needs electricity generation, and renewable energy offers good potential for that, but requires land. Agriculturally zoned land will inevitably need to be used for the renewable energy generation that the country requires. However, to ensure food security, energy facilities should be located where they do not exclude viable crop production from land.

The overall conclusion of this assessment is that the proposed development is acceptable because it leads to no loss of potential cropland and therefore no loss of future agricultural production potential.

This assessment therefore disputes the high sensitivity classification of the cluster footprint by the screening tool and verifies the entire cluster footprint as being of low to medium agricultural sensitivity because of its assessed cropping potential.

The climate is classified as arid (Beck et al, 2018). Climate is therefore the limiting factor for land capability, regardless of the soil and terrain capability, although very shallow soils are an additional limitation. Moisture availability is very limiting to any kind of agricultural production, including grazing and is completely insufficient for rain-fed crop production. The climate constraints mean that the cluster footprint has very low agricultural potential and its agricultural use is limited to grazing only, except where irrigation water is available for limited pivot irrigation.

An agricultural impact is a change to the future agricultural production potential of land. This is primarily caused by the exclusion of agriculture from the footprint of the development. In this case, the development footprint is considered to be below the threshold for needing to be conserved as agricultural production land because of the limitations that make it unsuitable as viable cropland. The use of this land for non-agricultural purposes will cause no loss of agricultural production potential in terms of national food security.

Due to the facts that the energy facility will not occupy scarce, viable cropland, that the land could potentially still be used to graze sheep, and that its negative impact is offset by economic and other benefits to farming, the overall negative agricultural impact of the development (loss of future agricultural production potential) is assessed here as being of low significance and as acceptable.

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

1 INTRODUCTION

Environmental and change of land use authorisation is being sought for the proposed Vanderkloof Solar PV & BESS near Luckoff, Free State Province(see location in Figure 1). In terms of the National Environmental Management Act (Act No 107 of 1998 - NEMA), an application for environmental authorisation requires an agricultural assessment. In this case, based on the low to medium agricultural sensitivity of the development footprint (see Section 8), the level of agricultural assessment required by the protocol is an Agricultural Compliance Statement.

Figure 1. *Locality map of the development south of Luckoff.*

The purpose of an agricultural assessment is to answer the question:

> Will the proposed development cause a significant reduction in future agricultural production potential, and most importantly, will it result in a loss of arable land?

Section 9 of this report unpacks this question, particularly with respect to what constitutes a significant reduction. To answer the above question, it is necessary to determine the existing agricultural production potential of the land that will be impacted, and specifically whether it is viable arable land or not. This is done in Section 8 of this report. Sections 8 and 9 of this report directly address the above question and therefore contain the essence and most important part of the agricultural impact assessment.

2 PROJECT DESCRIPTION

The Applicant, Vanderkloof Solar (Pty) Ltd, is proposing the construction of a number of photovoltaic (PV), and Battery Energy Storage System (BESS) energy facility (collectively known as Vanderkloof PV and BESS) located on the Portion 1 of Farm 113, Remainder of Farm 634, Remainder of Farm 39, Remainder of Farm 253, Remainder of Farm 1132, Portion 1 of Farm 1132 and Remainder of Farm 654 in the Letsemeng Local Municipality in the Xhariep District of the Free State Province.

Vanderkloof PV1 is situated on Portion 1 of St. Elmo 113 and Remaining Extent of Annex Goemmansberg 634 and will consist of a **250MW** PV Development with a footprint of up to 426ha. The PV footprint will include interspersed internal roads, inverters and mini substations within the footprint of the PV field. Associated infrastructure for this 250MW PV facility will include:

- On site Substation of approximately 4ha.
- Temporary laydown areas of approximately 4ha within the PV footprint.
- Permanent Laydown areas of up to 1ha.
- Permanent auxiliary buildings (~0.5ha) including:
    - Guardhouses, workshops, operations and control centres – each with associated ablutions.
    - Offices, accommodation – each with associated canteens and ablutions.
- Temporary accommodation buildings with associated canteens and ablutions of up to 0.2ha.
- Main Access roads of up to 8m wide and approximately 14km long are required to cumulatively for the Vanderkloof PV and BESS projects. Approximately 6.5km of these roads are existing (to be upgraded) and approximately 7.5km are to consist of new roads).
- Perimeter fencing not exceeding 3m in height.
- Rainwater tanks.
- Diesel tanks (up to 80m^3 cumulatively for the entire Vanderkloof Solar PV and BESS Facilities).

Vanderkloof PV2 is situated on Remaining Extent of Goedman's Berg 39 & Remaining Extent Troostenberg 253 and will consist of a **250MW** PV Development with a footprint of up to 381ha. The PV footprint will include interspersed internal roads, inverters and mini substations within the footprint of the PV field. Associated infrastructure for this 250MW PV facility will include:

- On site Substation of approximately 4ha.
- Temporary laydown areas of approximately 4ha within the PV footprint.
- Permanent Laydown areas of up to 1ha.
- Permanent auxiliary buildings (~0.5ha) including:
    - Guardhouses, workshops, operations and control centres – each with associated ablutions.
    - Offices, accommodation – each with associated canteens and ablutions.

- Temporary accommodation buildings with associated canteens and ablutions of up to 0.2ha.
- Main Access roads of up to 8m wide and approximately 14km long are required to cumulatively for the Vanderkloof PV and BESS projects. Approximately 6.5km of these roads are existing (to be upgraded) and approximately 7.5km are to consist of new roads).
- Perimeter fencing not exceeding 3m in height.
- Rainwater tanks.
- Diesel tanks (up to 80m^3 cumulatively for the entire Vanderkloof Solar PV and BESS Facilities).

Vanderkloof PV3 is situated on Remaining Extent Bergrivier 1132 & Portion 1 of Bergrivier 1132 and will consist of a **250MW** PV Development with a footprint of up to 445ha. The PV footprint will include interspersed internal roads, inverters and mini substations within the footprint of the PV field. Associated infrastructure for this 250MW PV facility will include:

- On site Substation of approximately 4ha.
- Temporary laydown areas of approximately 4ha within the PV footprint.
- Permanent Laydown areas of up to 1ha.
- Permanent auxiliary buildings (~0.5ha) including:
    - Guardhouses, workshops, operations and control centres – each with associated ablutions.
    - Offices, accommodation – each with associated canteens and ablutions.
- Temporary accommodation buildings with associated canteens and ablutions of up to 0.2ha.
- Main Access roads of up to 8m wide and approximately 14km long are required to cumulatively for the Vanderkloof Solar PV and BESS projects. Approximately 6.5km of these roads are existing (to be upgraded) and approximately 7.5km are to consist of new roads).
- Perimeter fencing not exceeding 3m in height.
- Rainwater tanks.
- Diesel tanks (up to 80m^3 cumulatively for the entire Vanderkloof Solar PV and BESS Facilities).

Vanderkloof PV4 is situated on Remaining Extent Brakleegte 654 and will consist of a **250MW** PV Development with a footprint of up to 432ha. The PV footprint will include interspersed internal roads, inverters and mini substations within the footprint of the PV field. Associated infrastructure for this 250MW PV facility will include:

- On site Substation of approximately 4ha.
- Temporary laydown areas of approximately 4ha within the PV footprint.
- Permanent Laydown areas of up to 1ha.
- Permanent auxiliary buildings (~0.5ha) including:
    - Guardhouses, workshops, operations and control centres – each with associated ablutions.
    - Offices, accommodation – each with associated canteens and ablutions.

- Temporary accommodation buildings with associated canteens and ablutions of up to 0.2ha.
- Main Access roads of up to 8m wide and approximately 14km long are required to cumulatively for the Vanderkloof Solar PV and BESS projects. Approximately 6.5km of these roads are existing (to be upgraded) and approximately 7.5km are to consist of new roads).
- Perimeter fencing not exceeding 3m in height.
- Rainwater tanks.
- Diesel tanks (up to 80m^3 cumulatively for the entire Vanderkloof Solar PV and BESS Facilities).

Vanderkloof PV5 is situated on Portion 1 of St. Elmo 113, Remaining Extent of Goedman's Berg 39, Remaining Extent of Annex Goemmansberg 634, Remaining Extent Bergrivier 1132, Portion 1 of Bergrivier 1132 & Remaining Extent Brakleegte 654 will consist of a **1000MW** PV Development with a footprint of up to 1855 ha. The PV footprint will include interspersed internal roads, inverters and mini substations within the footprint of the PV field. Associated infrastructure for this 1000MW PV facility will include:

- Three on site Substation of approximately 12ha.
- Temporary laydown areas of approximately 16ha within the PV footprint.
- Permanent Laydown areas of up to 4ha.
- Permanent auxiliary buildings (~2ha) including:
    - Guardhouses, workshops, operations and control centres – each with associated ablutions.
    - Offices, accommodation – each with associated canteens and ablutions.
- Temporary accommodation buildings with associated canteens and ablutions of up to 0.8ha.
- Main Access roads of up to 8m wide and approximately 14km long are required to cumulatively for the Vanderkloof Solar PV and BESS projects. Approximately 6.5km of these roads are existing (to be upgraded) and approximately 7.5km are to consist of new roads).
- Perimeter fencing not exceeding 3m in height.
- Rainwater tanks.
- Diesel tanks (up to 80m^3 cumulatively for the entire Vanderkloof Solar PV and BESS Facilities).

Vanderkloof BESS 1 is situated on Remaining Extent of Annex Goemmansberg 634 and will have a capacity of up to 1000MWh. The total footprint of Vanderkloof BESS 1 will be approximately 12ha and will consist of:

- An up to 8ha electrolyte tank footprint or solid-state containerized battery area with interspersed internal roads, cabling routes, and energy management system (EMS) modules.
- On-site substation of approximately 2ha.
- Temporary laydown areas which will not exceed 1ha and will be situated within the assessed footprint.
- Permanent laydown area of approximately 0.3ha.

- Permanent auxiliary buildings of approximately 0.5ha including:
    - Guardhouses, workshops, operations and control centres – each with associated ablutions.
    - Offices, accommodation – each with associated canteens and ablutions.
- Temporary accommodation buildings with associated canteens and ablutions of up to 0.1ha.
- Main Access roads of up to 8m wide and approximately 14km long are required to cumulatively for the Vanderkloof Solar PV and BESS projects. Approximately 6.5km of these roads are existing (to be upgraded) and approximately 7.5km are to consist of new roads).
- Perimeter fencing not exceeding 3m in height.
- Rainwater tanks.
- Diesel tanks (up to 80m^3 cumulatively for the entire Vanderkloof Solar PV and BESS Facilities).

Vanderkloof BESS 2 is situated on Remaining Extent of Goedman's Berg 39 and will have a capacity of up to 1000MWh. The total footprint of Vanderkloof BESS2 will be approximately 12ha and will consist of:

- An up to 8ha electrolyte tank footprint or solid-state containerized battery area with interspersed internal roads, cabling routes, and energy management system (EMS) modules.
- On-site substation of approximately 2ha.
- Temporary laydown areas which will not exceed 1ha and will be situated within the assessed footprint.
- Permanent laydown area of approximately 0.3ha.
- Permanent auxiliary buildings of approximately 0.5ha including:
    - Guardhouses, workshops, operations and control centres – each with associated ablutions.
    - Offices, accommodation – each with associated canteens and ablutions.
- Temporary accommodation buildings with associated canteens and ablutions of up to 0.1ha.
- Main Access roads of up to 8m wide and approximately 14km long are required to cumulatively for the Vanderkloof Solar PV and BESS projects. Approximately 6.5km of these roads are existing (to be upgraded) and approximately 7.5km are to consist of new roads).
- Perimeter fencing not exceeding 3m in height.
- Rainwater tanks.
- Diesel tanks (up to 80m^3 cumulatively for the entire Vanderkloof Solar PV and BESS Facilities).

Vanderkloof BESS 3 is situated on Remaining Extent Bergrivier 1132 and will have a capacity of up to 1000MWh. The total footprint of Vanderkloof BESS 3 will be approximately 12ha and will consist of:

- An up to 8ha electrolyte tank footprint or solid-state containerized battery area with interspersed internal roads, cabling routes, and energy management system (EMS) modules.
- On-site substation of approximately 2ha.

- Temporary laydown areas which will not exceed 1ha and will be situated within the assessed footprint.
- Permanent laydown area of approximately 0.3ha.
- Permanent auxiliary buildings of approximately 0.5ha including:
    - Guardhouses, workshops, operations and control centres – each with associated ablutions.
    - Offices, accommodation – each with associated canteens and ablutions.
- Temporary accommodation buildings with associated canteens and ablutions of up to 0.1ha.
- Main Access roads of up to 8m wide and approximately 14km long are required to cumulatively for the Vanderkloof Solar PV and BESS projects. Approximately 6.5km of these roads are existing (to be upgraded) and approximately 7.5km are to consist of new roads).
- Perimeter fencing not exceeding 3m in height.
- Rainwater tanks.
- Diesel tanks (up to 80m^3 cumulatively for the entire Vanderkloof Solar PV and BESS Facilities).

Vanderkloof BESS 4 is situated on Remaining Extent Brakleegte 654 and will have a capacity of up to 1000MWh. The total footprint of Vanderkloof BESS 4 will be approximately 12ha and will consist of:

- An up to 8ha electrolyte tank footprint or solid-state containerized battery area with interspersed internal roads, cabling routes, and energy management system (EMS) modules.
- On-site substation of approximately 2ha.
- Temporary laydown areas which will not exceed 1ha and will be situated within the assessed footprint.
- Permanent laydown area of approximately 0.3ha.
- Permanent auxiliary buildings of approximately 0.5ha including:
    - Guardhouses, workshops, operations and control centres – each with associated ablutions.
    - Offices, accommodation – each with associated canteens and ablutions.
- Temporary accommodation buildings with associated canteens and ablutions of up to 0.1ha.
- Main Access roads of up to 8m wide and approximately 14km long are required to cumulatively for the Vanderkloof Solar PV and BESS projects. Approximately 6.5km of these roads are existing (to be upgraded) and approximately 7.5km are to consist of new roads).
- Perimeter fencing not exceeding 3m in height.
- Rainwater tanks.
- Diesel tanks (up to 80m^3 cumulatively for the entire Vanderkloof Solar PV and BESS Facilities).

Vanderkloof BESS 5 is situated on Remaining Extent of Goedman's Berg 39 & Portion 1 of Bergrivier 1132 and will have a capacity of up to 4000MWh. The total footprint of Vanderkloof BESS 4 will be approximately 48ha and will consist of:

- An up to 32ha electrolyte tank footprint or solid-state containerized battery area with interspersed internal roads, cabling routes, and energy management system (EMS) modules.
- Three on-site substation with a total footprint of approximately 6ha.
- Temporary laydown areas which will not exceed 4ha and will be situated within the assessed footprint.
- Permanent laydown area of approximately 1ha.
- Permanent auxiliary buildings of approximately 2ha including:
    - Guardhouses, workshops, operations and control centres – each with associated ablutions.
    - Offices, accommodation – each with associated canteens and ablutions.
- Temporary accommodation buildings with associated canteens and ablutions of up to 0.5ha.
- Main Access roads of up to 8m wide and approximately 14km long are required to cumulatively for the Vanderkloof Solar PV and BESS projects. Approximately 6.5km of these roads are existing (to be upgraded) and approximately 7.5km are to consist of new roads).
- Perimeter fencing not exceeding 3m in height.
- Rainwater tanks.
- Diesel tanks (up to 80m^3 cumulatively for the entire Vanderkloof Solar PV and BESS Facilities).

3 TERMS OF REFERENCE

The terms of reference for this study are to fulfill the requirements of the *Protocol for the specialist assessment and minimum report content requirements of environmental impacts on agricultural resources by onshore wind and/or solar photovoltaic energy generation facilities where the electricity output is 20 megawatts or more*, gazetted on 20 March 2020 in GN No. 320 (in terms of Sections 24(5)(A) and (H) and 44 of NEMA.

The terms of reference for an Agricultural Compliance Statement, as stipulated in GN No. 320, are listed below, and the section number of this report which fulfils each stipulation is given after it in bold.

- The Agricultural Compliance Statement must be prepared by a soil scientist or agricultural specialist registered with the South African Council for Natural Scientific Professions (SACNASP) **- Appendix 3**.
- The compliance statement must:
    - be applicable to the preferred site and proposed development footprint **- Figure 2 and Figure 5)**;
    - confirm that the site is of “low” or “medium” sensitivity for agriculture **- Section 7**; and

- indicate whether or not the proposed development will have an unacceptable impact on the agricultural production capability of the site **- Section 12**.

- The Agricultural Compliance Statement must contain, as a minimum, the following information:
  - details and relevant experience as well as the SACNASP registration number of the soil scientist or agricultural specialist preparing the statement including a curriculum vitae **- Appendix 1**;
  - a signed statement of independence by the specialist **- Appendix 2**;
  - a map showing the proposed development footprint (including supporting infrastructure) with a 50 metre buffered development envelope, overlaid on the agricultural sensitivity map generated by the National Web-Based Environmental Screening Tool (Screening Tool) promulgated in terms of Regulation 16(1)(b)(v) of the EIA Regulations. **Figure 5**;
  - calculations of the physical development footprint area for each land parcel as well as the total physical development footprint area of the proposed development including supporting infrastructure - **Section 11.3**;
  - confirmation that the development footprint is in line with the allowable development limits contained in Table 1 of the protocol (GN No. 320) - **Section 11.3**;
  - confirmation from the specialist that all reasonable measures have been taken through micro-siting to avoid or minimize fragmentation and disturbance of agricultural activities - **Section 11.1**;
  - a substantiated statement from the soil scientist or agricultural specialist on the acceptability, or not, of the proposed development and a recommendation on the approval, or not of the proposed development - **Section 12**;
  - any conditions to which this statement is subjected - **Section 12**;
  - in the case of a linear activity, confirmation from the agricultural specialist or soil scientist, that in their opinion, based on the mitigation and remedial measures proposed, the land can be returned to the current state within two years of completion of the construction phase - **Section 11.2**;
  - where required, proposed impact management outcomes or any monitoring requirements for inclusion in the Environmental Management Programme (EMPr) - **Section 10**; and
  - a description of the assumptions made and any uncertainties or gaps in knowledge or data - **Section 5**.

4 METHODOLOGY OF STUDY

The assessment was based on an on-site investigation conducted on 1 February 2025 It was also informed by existing climate, soil, and agricultural potential data for the site (see references). The aim of the on-site assessment was to verify current cropping status, agricultural land use, and agricultural conditions across the site. An assessment of soils and long-term agricultural potential is in no way affected by the season in which the assessment is made, and therefore the date on which this assessment was done has no bearing on its results. The level of agricultural assessment is considered entirely adequate for an understanding of on-site agricultural production potential for the purposes of this assessment.

5 ASSUMPTIONS, UNCERTAINTIES OR GAPS IN KNOWLEDGE OR DATA

There are no specific assumptions, uncertainties or gaps in knowledge or data that affect the findings of this study.

6 APPLICABLE LEGISLATION AND PERMIT REQUIREMENTS

This section identifies all applicable agricultural legislation and permit requirements over and above what is required in terms of NEMA.

The development requires approval from the National Department of Agriculture, Land Reform and Rural Development (DALRRD) because it is on agriculturally zoned land. This approval is separate to the Environmental Authorisation. There are two approvals that apply. The first is a No Objection Letter for the change in land use. This letter is one of the requirements for receiving municipal rezoning. This application requires a motivation backed by good evidence that the development is acceptable in terms of its impact on the agricultural production potential of the assessed area. This agricultural assessment report will serve that purpose.

The second approval is a consent for long-term lease required in terms of the Subdivision of Agricultural Land Act (Act 70 of 1970) (SALA). SALA approval is not required if the lease is over the entire farm portion. If DALRRD approval for the development has already been obtained in the form of the No Objection letter, then SALA approval is likely to be readily forthcoming. SALA approval can only be applied for once the Municipal Rezoning Certificate and Environmental Authorisation has been obtained.

Rehabilitation after disturbance to agricultural land is managed by the Conservation of Agricultural Resources Act (Act 43 of 1983 - CARA). A consent in terms of CARA is required for the cultivation of virgin land. Cultivation is defined in CARA as “any act by means of which the topsoil is disturbed mechanically”. The purpose of this consent for the cultivation of virgin land is to ensure that only

land that is suitable as arable land is cultivated. Therefore, despite the above definition of cultivation, disturbance to the topsoil that results from construction of infrastructure does not constitute cultivation as it is understood in CARA. This has been corroborated by Anneliza Collett (Acting Scientific Manager: Natural Resources Inventories and Assessments in the Directorate: Land and Soil Management of the Department of Agriculture, Land Reform and Rural Development (DALRRD)). The construction and operation of the cluster will therefore not require consent from the Department of Agriculture, Land Reform and Rural Development in terms of this provision of CARA.

7 BASELINE DESCRIPTION OF THE AGRO-ECOSYSTEM

The purpose of this section is firstly to present the baseline information that controls the agricultural production potential of the site and then to assess that potential. Agricultural production potential, and particularly cropping potential, is one of three factors that determines the significance of an agricultural impact, together with size of footprint and duration of impact (see Section 9).

All the important parameters that control the agricultural production potential of the site are given in Table 1. The land type soil data are given in Appendix 5. A satellite image map of the development site is given in Figure 2 and site photographs are given from Figure 3 to 4.

The climate is classified as arid (Beck et al, 2018) with a mean annual rainfall of 270 mm and evaporation of 1512 mm (Schulze, 2009). Climate is therefore the limiting factor for land capability, regardless of the soil and terrain capability, although shallow, rocky soils are an additional limitation (DAFF, 2002). Moisture availability is very limiting to any kind of agricultural production, including grazing and is completely insufficient for rain-fed crop production. The climate constraints mean that the cluster footprint has very low agricultural potential and its agricultural use is limited to grazing only.

The land has a long-term grazing capacity of 20 hectares per large stock unit (DAFF, 2018). Because climate is the limiting factor that controls production potential, it is the only aspect of the agro-ecosystem description that is required for assessing the agricultural impact of this development. All other agricultural potential parameters become irrelevant under the dominant limitation of aridity.

The site is not within a Protected Agricultural Area (PAA) (DALRRD, 2020). A PAA is a demarcated area in which the climate, terrain, and soil are generally conducive for agricultural production and which, historically, or in a regional context, has made important contributions to the production of the various crops that are grown across South Africa. Within PAAs, the protection of arable land, is considered a priority for the protection of food security in South Africa.

Table 1: Parameters that control and/or describe the agricultural production potential of the site.

	Parameter	Value
Climate	Köppen-Geiger climate description (Beck *et al*, 2018)	Arid, steppe, cold
	Mean Annual Rainfall (mm) (Schulze, 2009)	368
	Reference Crop Evaporation Annual Total (mm) (Schulze, 2009)	1541
	Climate capability classification (out of 9) (DAFF, 2017)	4 (low-moderate)
Terrain	Terrain type	Hilly arid plains
	Terrain morphological unit	Varied
	Slope gradients (%)	0 to 33
	Altitude (m)	1320
	Terrain capability classification (out of 9) (DAFF, 2017)	3 (low) to 7 (high)
Soil	Geology (DAFF, 2002)	Shale, mudstone and sandstone of the Beaufort and Ecca Group, Karoo Sequence. Dolerite intrusions are rare.
	Land type (DAFF, 2002)	Da46
	Description of the soils	Very shallow, medium to heavy textured, reasonably drained, duplex soils on underlying dense clay and weathered bedrock
	Dominant soil forms	Swartland, Valsrivier
	Soil capability classification (out of 9) (DAFF, 2017)	2 (low-very low) to 4 (low-moderate)
	Soil limitations	Shallow soil depth
Land use	Agricultural land use in the surrounding area	Natural grazing with some pivot irrigation
	Agricultural land use on the site	Natural grazing with some pivot irrigation
General	Long-term grazing capacity (ha/LSU) (DAFF, 2018)	10
	Land capability classification (out of 15) (DAFF, 2017)	2 (very low) to 7 (low-moderate)
	Within Protected Agricultural Area (DALRRD, 2020)	No
	Within Renewable Energy Development Zone (REDZ)	No

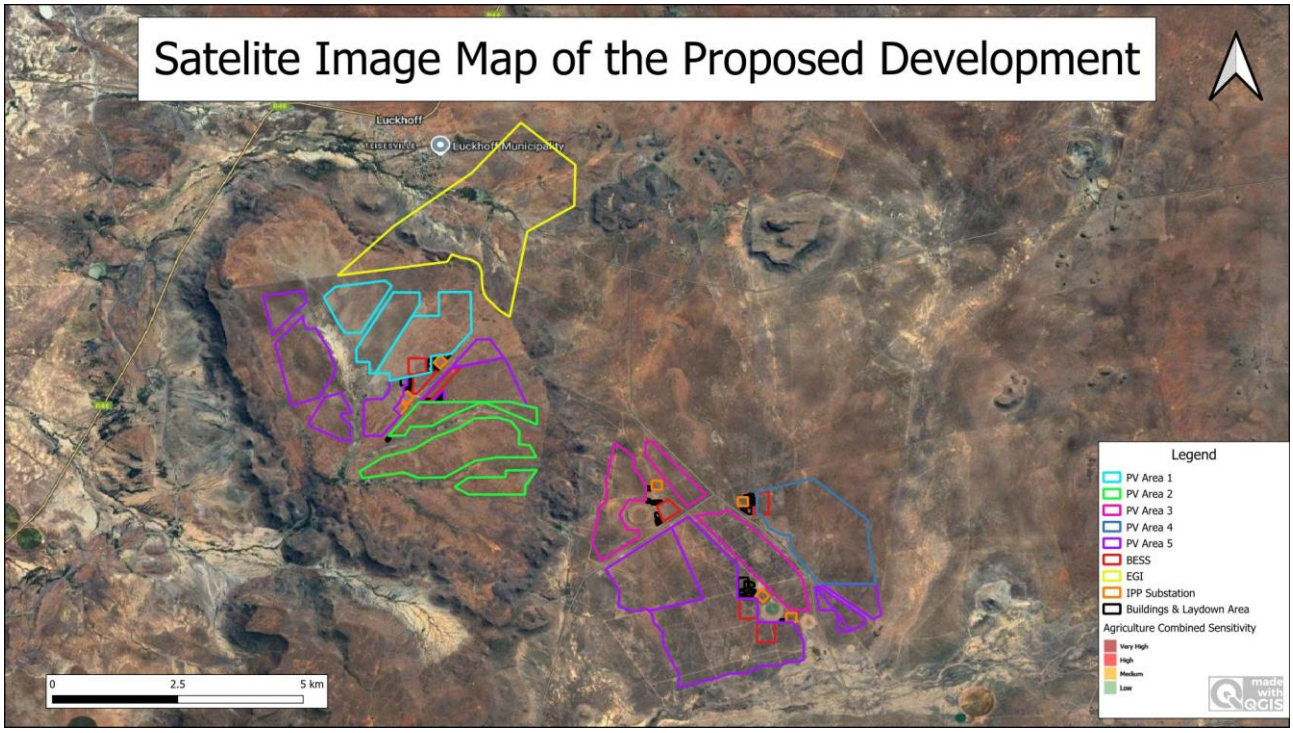


Figure 2. *Map of the cluster footprint.*

Figure 3. *Typical site conditions*

Figure 4. *Typical site conditions*

7.1 Assessment of the agricultural production potential

This assessment of the agricultural production potential of the site is based on an integration of the different parameters in Table 1 above.

The climate is classified as arid (Beck et al, 2018). Climate is therefore the limiting factor for land capability, regardless of the soil and terrain capability, although very shallow soils are an additional limitation. Moisture availability is very limiting to any kind of agricultural production, including grazing and is completely insufficient for rain-fed crop production. The climate constraints mean that the cluster footprint has very low agricultural potential and its agricultural use is limited to grazing only, except where irrigation water is available for limited pivot irrigation.

8 SITE SENSITIVITY VERIFICATION

A specialist agricultural assessment is required to include a verification of the agricultural sensitivity of the development cluster footprint as per the sensitivity categories used by the web-based environmental screening tool of the Department of Forestry, Fisheries and the Environment (DFFE).

Agricultural sensitivity is an indication of the capability of the land for agricultural production, based only on its climate, terrain, and soil capabilities and its agricultural land use. The different categories of agricultural sensitivity indicate the priority by which land should be conserved as agricultural production land. However, the screening tool's agricultural sensitivity is often of very limited value for assessing agricultural impact. What is of importance to an agricultural assessment, rather than the site sensitivity verification, is its assessment of the cropping potential and its assessment of the impact significance, both of which are not necessarily correlated with sensitivity.

The screening tool classifies agricultural sensitivity according to two independent criteria, from two independent data sets, both of which may be indicators of the land's agricultural production potential but are limited in that the first is outdated and the second is fairly course, modelled data. The two criteria are:

1. whether the land is classified as cropland or not on the field crop boundary data set (Crop Estimates Consortium, 2019), and
2. its land capability rating on the land capability data set (DAFF, 2017)

These two inputs operate independently, and agricultural sensitivity is simply determined by whichever of these two gives the highest sensitivity rating. All classified cropland is, by definition, either high or very high sensitivity. Land capability is defined as the combination of soil, climate, and terrain suitability factors for supporting rain-fed agricultural production. It is rated by the Department of Agriculture's updated and refined, country-wide land capability mapping (DAFF, 2017). The higher land capability values (≥8 to 15) are likely to indicate suitability as arable land for crop production, while lower values (<8) are likely to only be suitable as non-arable grazing land, although application to the winter rainfall areas differs. The direct relationship between land capability rating, agricultural sensitivity, and rain-fed cropping suitability is shown in Table 2, including differences between the summer and winter rainfall areas.

Table 2: Relationship between land capability, agricultural sensitivity, and rain-fed cropping suitability.

<table>
<tr><th rowspan="2">Land capability value</th><th rowspan="2">Agricultural sensitivity</th><th colspan="2">Rain-fed cropping suitability</th></tr>
<tr><th>Summer rainfall areas</th><th>Winter rainfall areas</th></tr>
<tr><td>1 - 5</td><td>Low</td><td rowspan="3">Unsuitable</td><td rowspan="2">Unsuitable</td></tr>
<tr><td>6</td><td rowspan="2">Medium</td></tr>
<tr><td>7</td><td rowspan="4">Suitable</td></tr>
<tr><td>8</td><td rowspan="2">High</td><td rowspan="3">Suitable</td></tr>
<tr><td>9 - 10</td></tr>
<tr><td>11 - 15</td><td>Very High</td></tr>
</table>

Note: There is an error in the screening tool whereby a land capability of 8 is classified as medium sensitivity, but according to NEMA's agricultural protocol, should in fact be classified as high

sensitivity. This assessment follows the agricultural protocol definition and classifies a value of 8 as high sensitivity.

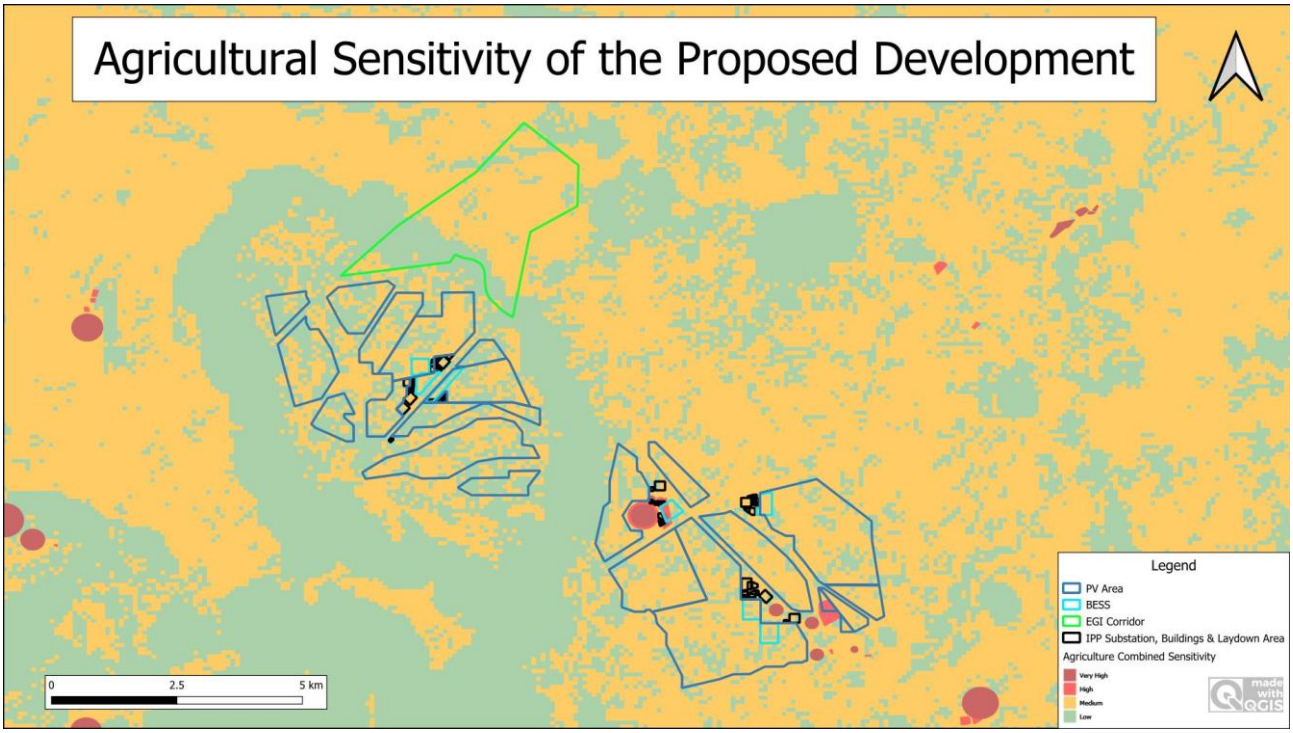


Figure 5. *The cluster footprint (dark blue & black outline) and EGI (green outline), overlaid on agricultural sensitivity, as given by the screening tool (green = low; yellow = medium; red = high; dark red = very high). The screening tool's high sensitivity is disputed by this assessment, which rates the entire assessed cluster footprint as being of low to medium agricultural sensitivity.*

The screening tool classifies the assessed cluster footprint as ranging from low to high agricultural sensitivity and therefore classifies the overall cluster footprint sensitivity, which is the highest sensitivity encountered across the cluster footprint, as high. The high sensitivity classification by the screening tool is due to a combination of some land being classified as cropland (high sensitivity). However, as shown in Section 7, the cluster footprint is not suitable for viable crop production, other than the areas where irrigation is used and its true sensitivity of the cluster footprint, as assessed on the ground, is therefore low to medium. This assessment therefore disputes the high sensitivity classification of the cluster footprint by the screening tool and verifies the entire cluster footprint as being of low to medium agricultural sensitivity because of its assessed cropping potential.

9 ASSESSMENT OF THE AGRICULTURAL IMPACT

9.1 Impact identification and assessment

It should be noted that an Agricultural Compliance Statement is not required to formally rate agricultural impacts by way of impact assessment tables. The following section applies to all Solar

PV facilities with its associated infrastructure (PV 1-5), as well as all of the BESS (BESS 1-5).

There is only ever a single agricultural impact of any development, and it is a net change to the future agricultural production potential of land. It occurs as a result of different mechanisms, some of which decrease production potential (for example exclusion of agriculture from land) and some of which increase it (for example increased financial security). Change to the future agricultural production potential of land takes place over the lifetime of a development. What is of relevance is the net change from pre-development to post-development. It is not helpful to distinguish different levels of impact during the different phases of the development such as design, construction, and operation. The total , integrated impact is what matters.

In most developments the decrease in production potential is primarily caused by the exclusion of agriculture from the footprint of the development. Soil erosion and degradation may also contribute to loss of agricultural production potential, but these can be managed so as not to cause impact. The significance of a loss of agricultural production potential is a direct function of the following three factors:

1. the size of the footprint of land from which agriculture will be excluded (or the footprint that will have its potential decreased)
2. the baseline production potential (particularly cropping potential) of that land
3. the length of time for which agriculture will be excluded (or for which potential will be decreased).

The most significant loss of agricultural land possible, for any development anywhere in the country, is of high yielding cropland, and the least significant possible, is of low carrying capacity grazing land.

Cropping potential is highlighted in factor 2, above, because the threshold, above which it is a priority to conserve land for agricultural production, is determined by the scarcity of arable crop production land in South Africa (approximately only 13% of the country's surface area) and the relative abundance of the rest of agricultural land across the country that is only good enough to be used for grazing. If land can support viable and sustainable crop production, then it is considered to be above the threshold and is a priority for being conserved as agricultural production land. If land is unable to support viable and sustainable crop production, then it is considered to be below the threshold and of much lower priority for being conserved.

In this case, the entire cluster footprint is considered to be below the threshold for needing to be conserved as agricultural production land because of the limitations that make it unsuitable as viable cropland. The use of this land for non-agricultural purposes will cause no loss of future agricultural production potential in terms of national food security.

Furthermore, the land occupied by PV panels could be used for the dual purposes of solar power generation and agricultural food production by way of sheep grazing. This has potential benefits for both activities and means that the land occupied by panels remains agriculturally productive. The benefit for sheep farming is that the security infrastructure of the solar cluster will protect the sheep within it against stock theft. The benefit for the solar cluster is that the sheep will control the height of the vegetation below the solar panels thus reducing the need to mechanically control the height of vegetation.

At the farm level, the development will provide a positive economic impact. The income generated by the farming enterprises through the lease of the land to the energy facilities will diversify the farm's income sources and provide reliable and predictable income that is independent of variable agricultural economic factors such as weather, agricultural markets and agricultural input costs. This is a big economic advantage for a farmer. It will increase financial security and may thereby improve farming operations and productivity on other parts of the farm or farms owned by the same farmer, through increased investment into farming.

Due to the facts that the cluster footprint will not occupy scarce, viable cropland, that the land could potentially still be used to graze sheep, and that its negative impact is offset by economic and other benefits to farming, the overall negative agricultural impact of the development (loss of future agricultural production potential) is assessed here as being of low significance and as acceptable.

9.2 Cumulative impact assessment

Specialist assessments for environmental authorisation are required to include an assessment of cumulative impacts. The cumulative impact of a development is the impact that development will have when its impact is added to the incremental impacts of other past, present, or reasonably foreseeable future activities that will affect the same environment.

The most important concept related to a cumulative impact is that of an acceptable level of change to an environment. A cumulative impact only becomes relevant when the impact of the proposed development will lead directly to the sum of impacts of all developments causing an acceptable level of change to be exceeded in the surrounding area. If the impact of the development being assessed does not cause that level to be exceeded, then the cumulative impact associated with that development is not significant.

The potential cumulative agricultural impact of importance is a regional loss (including by degradation) of future agricultural production potential. The defining question for assessing the cumulative agricultural impact is this:

What loss of future agricultural production potential is acceptable in the area, and will the loss associated with the proposed development, when considered in the context of all past, present or reasonably foreseeable future impacts, cause that level in the area to be exceeded?

The Department of Forestry, Fisheries and the Environment (DFFE) requires compliance with a specified methodology for the assessment of cumulative impacts. This is positive in that it ensures engagement with the important issue of cumulative impacts. However, the required compliance has some limitations and can, in the opinion of the author, result in an over-focus on methodological compliance, while missing the more important task of effectively answering the above defining question.

This cumulative impact assessment determines the quantitative loss of agricultural land if all renewable energy project applications within a 30 km radius become operational. These projects are listed in Appendix 4 of this report. Note that electrical grid infrastructure projects do not contribute to a loss of agricultural land and are not therefore included in this calculation of cumulative land loss. The area of land taken out of agricultural use as a result of all the projects listed in Appendix 4 (total generation capacity of 2730 MW) will amount to a total of approximately 6825 hectares. This is calculated using the industry standards of 2.5 and 0.3 hectares per megawatt for solar and wind energy generation respectively, as per the Department of Environmental Affairs (DEA) Phase 1 Wind and Solar Strategic Environmental Assessment (SEA) (2015). As a proportion of the total area within a 30 km radius (approximately 282,700 ha), this amounts to only 2.59% of the surface area. This is within an acceptable limit in terms of loss of low potential agricultural land, which is only suitable for grazing, and of which there is no scarcity in the country. This is particularly so when considered within the context of the following point.

For South Africa to develop the renewable energy generation that it urgently needs, agriculturally zoned land will need to be used for renewable energy generation. It is preferable to incur a cumulative loss of agricultural land, which has no crop production potential, then to lose agricultural land that has a higher potential, and that is much scarcer, to renewable energy development elsewhere in the country.

All the projects contributing to cumulative impact for this assessment have the same agricultural impacts in a very similar agricultural environment, and therefore the same mitigation measures apply to all.

It should also be noted that renewable energy development can only be located in fairly close proximity to a substation that has available capacity. This creates cumulative impact in such places. However, this is acceptable because it also effectively protects most agricultural land in the country from renewable energy development because only a small proportion of the country's total land

surface is in close enough proximity to an available substation to be viable for renewable energy development.

Furthermore, it should be noted that there are few land uses, other than renewable energy, that are competing for agricultural land use in this area. The cumulative impact from developments, other than renewable energy, is therefore likely to be low.

Specialist assessments for environmental authorisation are required, if the associated grid infrastructure is being applied for separately, to include it as part of the cumulative assessment for the cluster. However, due to their negligible agricultural impact, power lines do not contribute to the cumulative impact of the cluster. Given the small footprint of the substations, their contribution will also not be significant. Inclusion of the impact of the grid connection of the cluster does not therefore change the significance of the cumulative impact of the cluster.

The loss of agricultural potential by soil degradation can effectively be prevented for renewable energy developments by generic mitigation measures that are all inherent in the project engineering and/or are standard, best-practice for construction sites. Soil degradation does not therefore pose a cumulative impact risk.

Due to all the considerations discussed above, the cumulative impact of loss of future agricultural production potential is assessed as low. It will not have an unacceptable negative impact on the agricultural production capability of the area, and it is therefore recommended, from a cumulative agricultural impact perspective, that the development be approved.

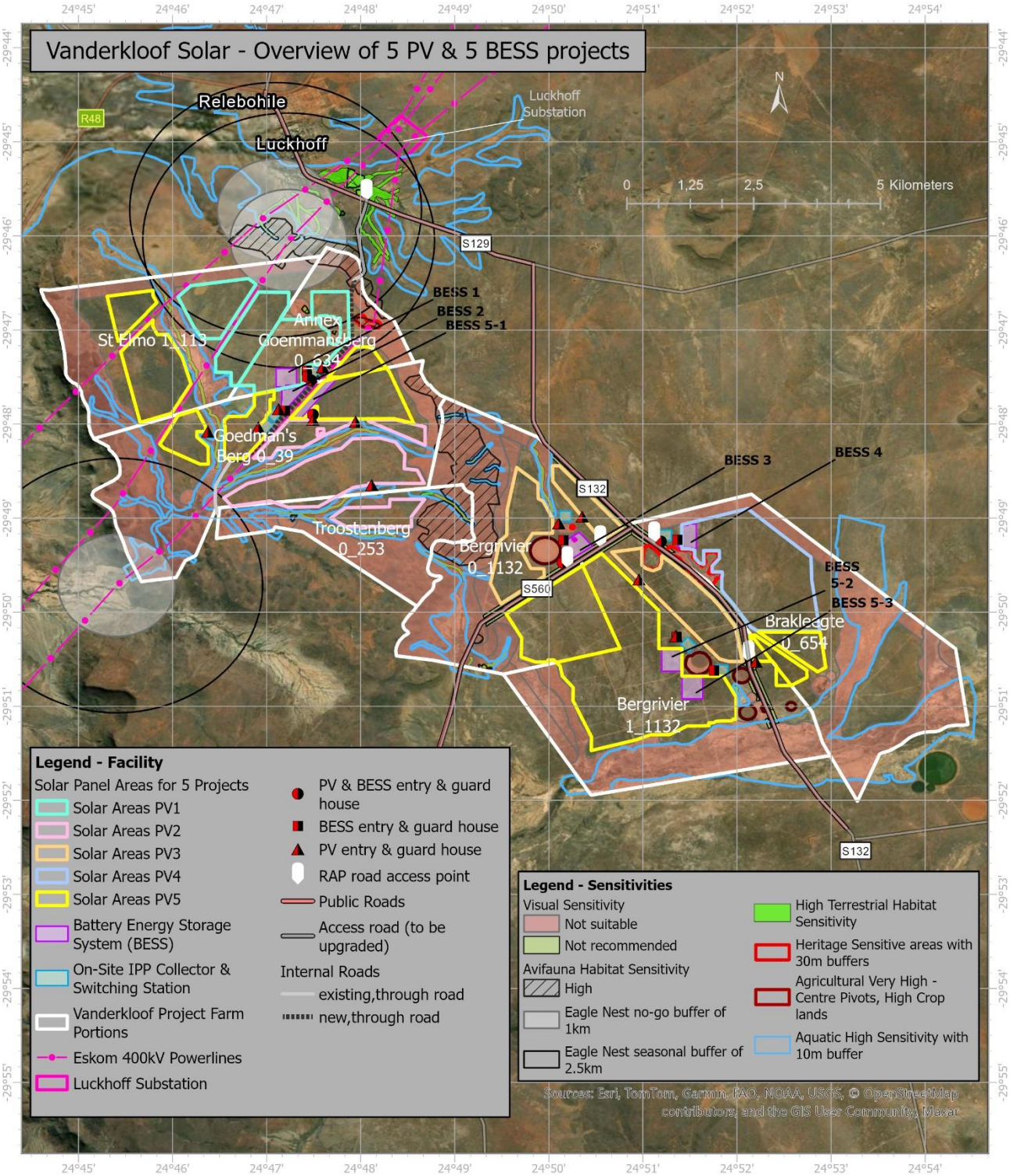
9.3 Assessment of alternatives

Specialist assessments for environmental authorisation are required to include a comparative assessment of alternatives, including the no-go alternative. The exact nature and layout of the different infrastructure within the boundary fence of a solar energy facilities has absolutely no bearing on the significance of agricultural impacts, regardless of layout. Any alternative layouts within the boundary will have equal agricultural impact and are assessed as equally acceptable.

The no-go alternative considers impacts that will occur to the agricultural environment in the absence of the proposed development. There are no agricultural impacts of the no-go alternative. Even though the impacted land has insufficient agricultural production potential for cropping, and the impact of the development is low, its negative agricultural impact is more significant than that of the no-go alternative, and so purely from an agricultural impact perspective, the no-go alternative is the preferred alternative. However, the no-go option would prevent the proposed development from contributing to the environmental, social, and economic benefits associated with the development of renewable energy in South Africa.

10 MITIGATION

The most important and effective mitigation of agricultural impacts for any development is avoidance of viable, potential cropland. This development has already applied this mitigation by selecting a site on which there is no viable, potential cropland.



Generic mitigation measures that are effective in preventing soil degradation are all inherent in the engineering of such a project and/or are standard, best-practice for construction sites. These are:

- A system of storm water management, which will prevent erosion on and downstream of the site, will be an inherent part of the engineering design on site. Any occurrences of erosion must be attended to immediately and the integrity of the erosion control system at that point must be amended to prevent further erosion from occurring there.
- Any excavations done during the construction phase, in areas that will be re-vegetated at the end of the construction phase, must separate the upper 20 cm of topsoil from the rest of the excavation spoils and store it in a separate stockpile. When the excavation is back-filled, the topsoil must be back-filled last, so that it remains at the surface. Topsoil should only be stripped in areas that are excavated. Across most of the site, including construction lay down areas, it will be much more effective for rehabilitation, to retain the topsoil in place. If levelling requires significant cutting, topsoil should be temporarily stockpiled and then re-spread after cutting, so that there is a covering of topsoil over the entire cut surface. It will be advantageous to have topsoil and vegetation cover below the panels during the operational phase to control dust and erosion.

11 ADDITIONAL ASPECTS REQUIRED IN AN AGRICULTURAL ASSESSMENT

11.1 Micro-siting

The agricultural protocol requires confirmation that all reasonable measures have been taken through micro-siting to minimize fragmentation and disturbance of agricultural activities. Because of the uniformly low agricultural potential of the environment, with no cropping, micro-siting will make no material difference to agricultural impacts and disturbance.

11.2 Confirmation of linear activity exclusion

If linear infrastructure has been given exclusion from complying with certain requirements of the agricultural protocol because of its linear nature, the protocol requires confirmation that the land impacted by that linear infrastructure can be returned to the current state within two years of completion of the construction phase. No such exclusion applies to this project.

11.3 Compliance with the allowable development limits

The agricultural protocol stipulates allowable development limits for renewable energy developments of > 20 MW. Allowable development limits refer to the area of a particular agricultural sensitivity category that can be directly impacted (i.e. taken up by the physical footprint) by a renewable energy development. The agricultural footprint is defined in the protocol as the area that is directly occupied by all infrastructures, including roads, hard standing areas, buildings, substations

etc., that are associated with the renewable energy facility during its operational phase, and that result in the exclusion of that land from potential cultivation or grazing. It excludes all areas that were already occupied by roads and other infrastructure prior to the establishment of the energy facilities but includes the surface area required for expanding existing infrastructure (e.g. widening existing roads). It excludes the corridor underneath overhead power lines but includes the pylon footprints. It therefore represents the total land that is actually excluded from agricultural use as a result of the renewable energy facilities (the agricultural footprint).

For a solar energy facility, the footprint is considered to be the total area inside the security fence of the facilities.

The allowable development limit on land of medium agricultural sensitivity with a land capability of < 8, as this site has been verified to be, is 2.5 ha per MW. This would allow the proposed facilities with a total generating capacity of 2000MW to occupy an agricultural footprint of 2000 X 2.5 = 5000 hectares. The total size within the fences has been revised down to is 2990 hectares. It is therefore confirmed that the cluster is in line with the allowable development limits contained in the agricultural protocol.

12 CONCLUSION: AGRICULTURAL COMPLIANCE STATEMENT

The overall conclusion of this assessment is that the proposed development is acceptable because it leads to no loss of potential cropland and therefore no loss of future agricultural production potential.

This assessment therefore disputes the high sensitivity classification of the cluster footprint by the screening tool and verifies the entire cluster footprint as being of low to medium agricultural sensitivity because of its assessed cropping potential.

The climate is classified as arid (Beck et al, 2018). Climate is therefore the limiting factor for land capability, regardless of the soil and terrain capability, although very shallow soils are an additional limitation. Moisture availability is very limiting to any kind of agricultural production, including grazing and is completely insufficient for rain-fed crop production. The climate constraints mean that the cluster footprint has very low agricultural potential and its agricultural use is limited to grazing only, except where irrigation water is available for limited pivot irrigation.

An agricultural impact is a change to the future agricultural production potential of land. This is primarily caused by the exclusion of agriculture from the footprint of the development. In this case, the development footprint is considered to be below the threshold for needing to be conserved as agricultural production land because of the limitations that make it unsuitable as viable cropland. The use of this land for non-agricultural purposes will cause no loss of agricultural production

potential in terms of national food security.

Due to the facts that the energy facilities will not occupy scarce, viable cropland, that the land could potentially still be used to graze sheep, and that its negative impact is offset by economic and other benefits to farming, the overall negative agricultural impact of the development (loss of future agricultural production potential) is assessed here as being of low significance and as acceptable.

From an agricultural impact point of view, it is recommended that the proposed development be approved. The conclusion of this assessment on the acceptability of the proposed development and the recommendation for its approval is not subject to any conditions, other than implementation of the proposed mitigation measures.

13 REFERENCES

Beck, H.E., N.E. Zimmermann, T.R. McVicar, N. Vergopolan, A. Berg, E.F. Wood. 2018. Present and future Köppen-Geiger climate classification maps at 1-km resolution, Nature Scientific Data. Available at: https://gis.elsenburg.com/apps/cfm/.

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Department of Environmental Affairs (DEA). 2015. Strategic Environmental Assessment for wind and solar photovoltaic development in South Africa. CSIR Report Number CSIR: CSIR/CAS/EMS/ER/2015/001/B. Stellenbosch.

Schulze, R.E. 2009. South African Atlas of Agrohydrology and Climatology, available on Cape Farm Mapper. Available at: https://gis.elsenburg.com/apps/cfm/

Soil Classification Working Group. 2018. Soil Classification: A Natural and Anthropogenic System for South Africa. ARC-Institute for Soil, Climate and Water, Pretoria.

APPENDIX 1: SPECIALIST CURRICULUM VITAE

Johann Lanz
Curriculum Vitae

Education

M.Sc. (Environmental Geochemistry)	University of Cape Town	1996 - 1997
B.Sc. Agriculture (Soil Science, Chemistry)	University of Stellenbosch	1992 - 1995
BA (English, Environmental & Geographical Science)	University of Cape Town	1989 - 1991
Matric Exemption	Wynberg Boy's High School	1983

Professional work experience

I have been registered as a Professional Natural Scientist (Pri.Sci.Nat.) in the field of soil science since 2012 (registration number 400268/12) and am a member of the Soil Science Society of South Africa.

Soil & Agricultural Consulting **Self employed** **2002 - present**

Within the past 5 years of running my soil and agricultural consulting business, I have completed more than 170 agricultural assessments (EIAs, SEAs, EMPRs) in all 9 provinces for renewable energy, mining, electrical grid infrastructure, urban, and agricultural developments. I was the appointed agricultural specialist for the nation-wide SEAs for wind and solar PV developments, electrical grid infrastructure, and gas pipelines. My regular clients include: Zutari; CSIR; SiVEST; SLR; WSP; Arcus; SRK; Environamics; Royal Haskoning DHV; ABO; Enertrag; WKN-Windcurrent; JG Afrika; Mainstream; Redcap; G7; Mulilo; and Tiptrans. Recent agricultural clients for soil resource evaluations and mapping include Cederberg Wines; Western Cape Department of Agriculture; Vogelfontein Citrus; De Grendel Estate; Zewenwacht Wine Estate; and Goedgedacht Olives.
In 2018 I completed a ground-breaking case study that measured the agricultural impact of existing wind farms in the Eastern Cape.

Soil Science Consultant **Agricultural Consultors International (Tinie du Preez)** **1998 - 2001**

Responsible for providing all aspects of a soil science technical consulting service directly to clients in the wine, fruit and environmental industries all over South Africa, and in Chile, South America.

Contracting Soil Scientist **De Beers Namaqualand Mines** **July 1997 - Jan 1998**

Completed a contract to advise soil rehabilitation and re-vegetation of mined areas.

Publications

- Lanz, J. 2012. Soil health: sustaining Stellenbosch's roots. In: M Swilling, B Sebitosi & R Loots (eds). *Sustainable Stellenbosch: opening dialogues*. Stellenbosch: SunMedia.
- Lanz, J. 2010. Soil health indicators: physical and chemical. *South African Fruit Journal*, April / May 2010 issue.
- Lanz, J. 2009. Soil health constraints. *South African Fruit Journal*, August / September 2009 issue.
- Lanz, J. 2009. Soil carbon research. *AgriProbe*, Department of Agriculture.
- Lanz, J. 2005. Special Report: Soils and wine quality. *Wineland Magazine.*

I am a reviewing scientist for the *South African Journal of Plant and Soil*.

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APPENDIX 2: SPECIALIST DECLARATION FORM AUGUST 2023

Specialist Declaration form for assessments undertaken for application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

REPORT TITLE: SITE SENSITIVITY VERIFICATION AND AGRICULTURAL COMPLIANCE STATEMENT FOR THE VANDERKLOOF SOLAR PV & BESS NEAR LUCKOFF, FREE STATE PROVINCE

Kindly note the following:

1. This form must always be used for assessment that are in support of applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting, where this Department is the Competent Authority.
2. This form is current as of August 2023. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at https://www.dffe.gov.za/documents/forms.
3. An electronic copy of the signed declaration form must be appended to all Draft and Final Reports submitted to the department for consideration.
4. The specialist must be aware of and comply with '*the Procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the act, when applying for environmental authorisation - GN 320/2020)'*, where applicable.

1. SPECIALIST INFORMATION

Title of Specialist Assessment	Agricultural Assessment
Specialist Company Name	SoilZA (sole proprietor)
Specialist Name	Johann Lanz
Specialist Identity Number	6607045174089
Specialist Qualifications:	M.Sc. (Environmental Geochemistry)
Professional affiliation/registration:	Registered Professional Natural Scientist (Pr.Sci.Nat.) Reg. no. 400268/12 Member of the Soil Science Society of South Africa
Physical address:	1a Wolfe Street, Wynberg, Cape Town, 7800
Postal address:	1a Wolfe Street, Wynberg, Cape Town, 7800
Telephone	Not applicable
Cell phone	+27 82 927 9018
E-mail	johann@soilza.co.za

2. DECLARATION BY THE SPECIALIST

I, **Johann Lanz** declare that –

- I act as the independent specialist in this application;
- I am aware of the procedures and requirements for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the National Environmental Management Act (NEMA), 1998, as amended, when applying for environmental authorisation which were promulgated in Government Notice No. 320 of 20 March 2020 (i.e. “the Protocols”) and in Government Notice No. 1150 of 30 October 2020.
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing –
  - any decision to be taken with respect to the application by the competent authority; and;
  - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 48 and is punishable in terms of section 24F of the NEMA Act.

Signature of the Specialist

SoilZA (sole proprietor)

Name of Company:

18 February 2025

Date

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, **Johann Lanz**, swear under oath that all the information submitted or to be submitted for the purposes of this application is true and correct.

Signature of the Specialist

SoilZA – sole proprietor

Name of Company

18/02/2025

Date

Signature of the Commissioner of Oaths

2023/02/18.

Date

SUID-AFRIKAANSE POLISIEDIENS
HOUT BAY
18 FEB 2025
MIO
SOUTH AFRICAN POLICE SERVICE

APPENDIX 3: SACNASP REGISTRATION CERTIFICATE

SACNASP

South African Council for Natural Scientific Professions

herewith certifies that

Johan Lanz

Registration Number: 400268/12

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)
in the following field(s) of practice (Schedule 1 of the Act)

Soil Science (Professional Natural Scientist)

Effective **15 August 2012** Expires **31 March 2025**

Chairperson

Chief Executive Officer

To verify this certificate scan this code

APPENDIX 4: PROJECTS INCLUDED IN CUMULATIVE IMPACT ASSESSMENT

Table 3: Table of all projects that were included in the cumulative impact assessment.

DFFE Reference	Project name	Technology	Capacity (MW)
14/12/16/3/3/2/953	The proposed construction of the kloofsig 3:75MW solar pv energy facility, Northern Cape Province	SEF	75
14/12/16/3/3/2/951	The proposed construction of the kloofsig 1:75 mw solar pv energy facility, Northern Cape Province	SEF	75
14/12/16/3/3/1/2400	The Power line for the Grootpoort Photovoltaic Solar Power Plant near Luckhoff, Free State Province.	SEF	100
14/12/16/3/3/2/2286	The Proposed Luckhoff Solar 3 Photovoltaic Solar Energy Facility near Luckhoff, Free State Province	SEF	240
14/12/16/3/3/2/2285	The Proposed Luckhoff Solar 2 Photovoltaic Solar Energy Facility near Luckhoff, Free State Province	SEF	240
TBC	Vanderkloof PV 1	SEF	250
TBC	Vanderkloof PV 2	SEF	250
TBC	Vanderkloof PV 3	SEF	250
TBC	Vanderkloof PV 4	SEF	250
TBC	Vanderkloof PV 5	SEF	1000
Total solar			2730
Total wind			
Total			2730

Note: Electrical grid infrastructure projects do not contribute to a loss of agricultural land and are not therefore included in this table and in the calculation of cumulative land loss.

APPENDIX 5: SOIL DATA

Table 4: Land type soil data

Land type	Soil series (forms)	Depth (mm)	Clay % A horizon	Clay % B horizon	Depth limiting layer	% of land type
Da46	Sw	30 - 200	15 - 30	30 - 45	so	63.7
Da46	Va	60 - 300	15 - 25	30 - 60	vr,pr,vp	11.5
Da46	Sw	30 - 200	15 - 30	35 - 45	so	9.0
Da46	Ms	50 - 100	15 - 25		R,ca	5.4
Da46	R					2.8
Da46	Hu Sd	100 - 500	10 - 25	10 - 30	R	2.7
Da46	Oa	600 - 1200	15 - 25	15 - 40	ne	1.9
Da46	Sd Hu	200 - 500	15 - 30	35 - 45	R	1.7
Da46	Oa	600 - 1200	15 - 25	15 - 40	ne	1.0
Da46	Gs	100 - 200	15 - 25		R	0.3
Da46	S					0.1