

Johann Lanz
Soil Scientist (Pr.Sci.Nat.)
Reg. no. 400268/12

Cell: 082 927 9018
e-mail: johann@johannlanz.co.za

1A Wolfe Street
Wynberg
7800
Cape Town
South Africa

**SITE SENSITIVITY VERIFICATION
AND
AGRICULTURAL COMPLIANCE STATEMENT
FOR THE PROPOSED KAREEKLOOF SOLAR PV FACILITY AND BESS
NEAR DE AAR, NORTHERN CAPE PROVINCE**

**Report by
Johann Lanz**

28 September 2023

Table of Contents

Executive summary	1
1 Introduction.....	3
2 Project description	4
3 Terms of reference.....	4
4 Methodology of study	5
5 Assumptions, uncertainties or gaps in knowledge or data	6
6 Applicable legislation and permit requirements.....	6
7 Site sensitivity verification.....	7
8 Baseline description of the agro-ecosystem	9
9 Assessment of the agricultural impact.....	10
9.1 Impact identification and assessment.....	10
9.2 Cumulative impact assessment.....	12
9.3 Mitigation measures.....	13
9.4 Compliance with the allowable development limits.....	13
9.5 Assessment of alternatives	14
9.6 Micro-siting	14
9.7 Confirmation of linear activity impact	14
9.8 Conclusion: Agricultural Compliance Statement.....	15
10 References	16
Appendix 1: Specialist Curriculum Vitae	18
Appendix 2: Specialist declaration form August 2023	19
Appendix 3: SACNASP Registration Certificate	22

EXECUTIVE SUMMARY

South Africa urgently 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 not exclude viable crop production from land.

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

The site is classified as low agricultural sensitivity by the screening tool. This has been confirmed by this assessment, because of the agricultural production potential and current agricultural land use.

The arid climate (mean annual rainfall of 289 mm and evaporation of 1474 mm) is the limiting factor for land capability, regardless of the soil and terrain capability, although shallow, rocky 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 site has very low agricultural potential and its agricultural use is limited to grazing only.

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 a development. In this case, the entire assessed area is considered to be below the threshold for needing to be conserved as agricultural production land because of the limitations on its cropping potential. The production potential of the land is limited to only being suitable as grazing land, and there is no particular scarcity of such land in the country, in contrast to arable land, which is very scarce. The use of this land for solar power generation will cause minimal loss of agricultural production potential in terms of national food security.

Furthermore, the land occupied by PV panels can 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 remains agriculturally productive. At the farm level, the development will provide a positive economic impact. This is likely to increase cash flow and financial security and may improve farming operations and productivity on other parts of the farm or properties owned by the same farmer, through increased investment into farming.

Due to the facts that the energy facility will not occupy scarce, viable cropland, that the land can potentially still be used to graze sheep, and that its negative impact is offset by economic 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.

Its acceptability is further substantiated by the following points:

- 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.

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 Kareekloof Solar PV Energy Facility and BESS near De Aar, Northern Cape 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 verified low agricultural sensitivity of the assessed site (see Section 7), the level of agricultural assessment required is an Agricultural Compliance Statement.



Figure 1. Locality map of the assessed area north-east of De Aar.

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

Will the proposed development cause a significant reduction in 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. Section 8, 9, and the conclusion of

this report directly address the above question and therefore contain the essence of the agricultural impact assessment.

As is shown in Section 9, this assessed development will not result in a significant loss of viable arable land and therefore does not pose a significant threat to agricultural production potential.

2 PROJECT DESCRIPTION

The proposed facilities will consist of the standard infrastructure of a PV energy facility including PV arrays; inverters; cabling; battery energy storage system (BESS); auxiliary buildings; access and internal roads; on-site IPP substation; 132kV grid connection, including an Eskom switching station and overhead power line; temporary construction laydown areas; and perimeter fencing.

The exact nature and layout of the different infrastructure within the boundary fence of a solar energy facility has absolutely no bearing on the significance of agricultural impacts. It is therefore not necessary to detail this design and layout of the facility any further in this assessment. All that is of relevance is simply the total footprint of the facility that excludes agricultural land use or impacts agricultural land, referred to as the agricultural footprint. This is the area within the facility fence. Whether that footprint comprises, for example, a solar array, a road or a BESS is irrelevant to agricultural impact. The total assessed area as shown in Figures 2 and 3, in which the footprint will be located, is 3512 hectares.

In a low and largely uniform agricultural potential environment like the one being assessed, the exact location and layout of the facility infrastructure across the landscape actually has no real bearing on the significance of the agricultural impacts.

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 320 (in terms of Sections 24(5)(A) and (H) and 44 of NEMA, 1998).

The terms of reference for an Agricultural Compliance Statement, as stipulated in the agricultural protocol, are listed below, and the section number of this report which fulfils each stipulation is given after it in brackets.

1. 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**).

2. The compliance statement must:
 1. be applicable to the preferred site and proposed development footprint (**Figures 2 and 3**);
 2. confirm that the site is of “low” or “medium” sensitivity for agriculture (**Section 7**); and
 3. indicate whether or not the proposed development will have an unacceptable impact on the agricultural production capability of the site (**Section 10**).
3. The Agricultural Compliance Statement must contain, as a minimum, the following information:
 1. 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**);
 2. a signed statement of independence by the specialist (**Appendix 2**);
 3. a map showing the proposed development footprint (including supporting infrastructure) with a 50 m buffered development envelope, overlaid on the agricultural sensitivity map generated by the screening tool (**Figure 2**);
 4. 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 9.4**);
 5. confirmation that the development footprint is in line with the allowable development limits contained in Table 1 of the protocol (**Section 9.4**);
 6. 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 9.6**);
 7. 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 10**);
 8. any conditions to which this statement is subjected (**Section 10**);
 9. 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 9.7**);
 10. where required, proposed impact management outcomes or any monitoring requirements for inclusion in the EMPr (**Section 9.3**); and
 11. 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 a verification of current agricultural land use on the site and was

informed by existing climate, soil and agricultural potential data for the site (see references). 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

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 development site. 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 facility will therefore not require consent from the Department of Agriculture, Land Reform and Rural Development in terms of this provision of CARA.

7 SITE SENSITIVITY VERIFICATION

A specialist agricultural assessment is required to verify the agricultural sensitivity of the development site as per the sensitivity categories used by the DFFE's web-based environmental screening tool. However, such an exercise is of very limited value once the agricultural assessment, which supersedes any screening tool result, has been done. What is of much more importance to this assessment than the site sensitivity verification, is its assessment of the cropping potential (see Section 8) and its assessment of the impact significance (see Section 9).

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 relies on fairly course data. The two criteria are:

1. whether the land is classified as cropland or not on the field crop boundary data set, and
2. its land capability rating on the land capability data set

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, released in 2016. The higher land capability values (≥ 8 to 15) are likely to indicate suitability as arable land for crop production, while lower values (< 8) are only likely to be suitable as non-arable grazing land. The direct relationship between land capability rating and the screening tool's agricultural sensitivity is shown in Table 1.

Table 1: Relationship between land capability and agricultural sensitivity as given by the screening tool.

Land capability value	Agricultural sensitivity
1 - 5	low
6 - 8	medium
9 - 10	high
11 - 15	very high

The agricultural sensitivity of the site, as given by the screening tool, is shown in Figure 2.

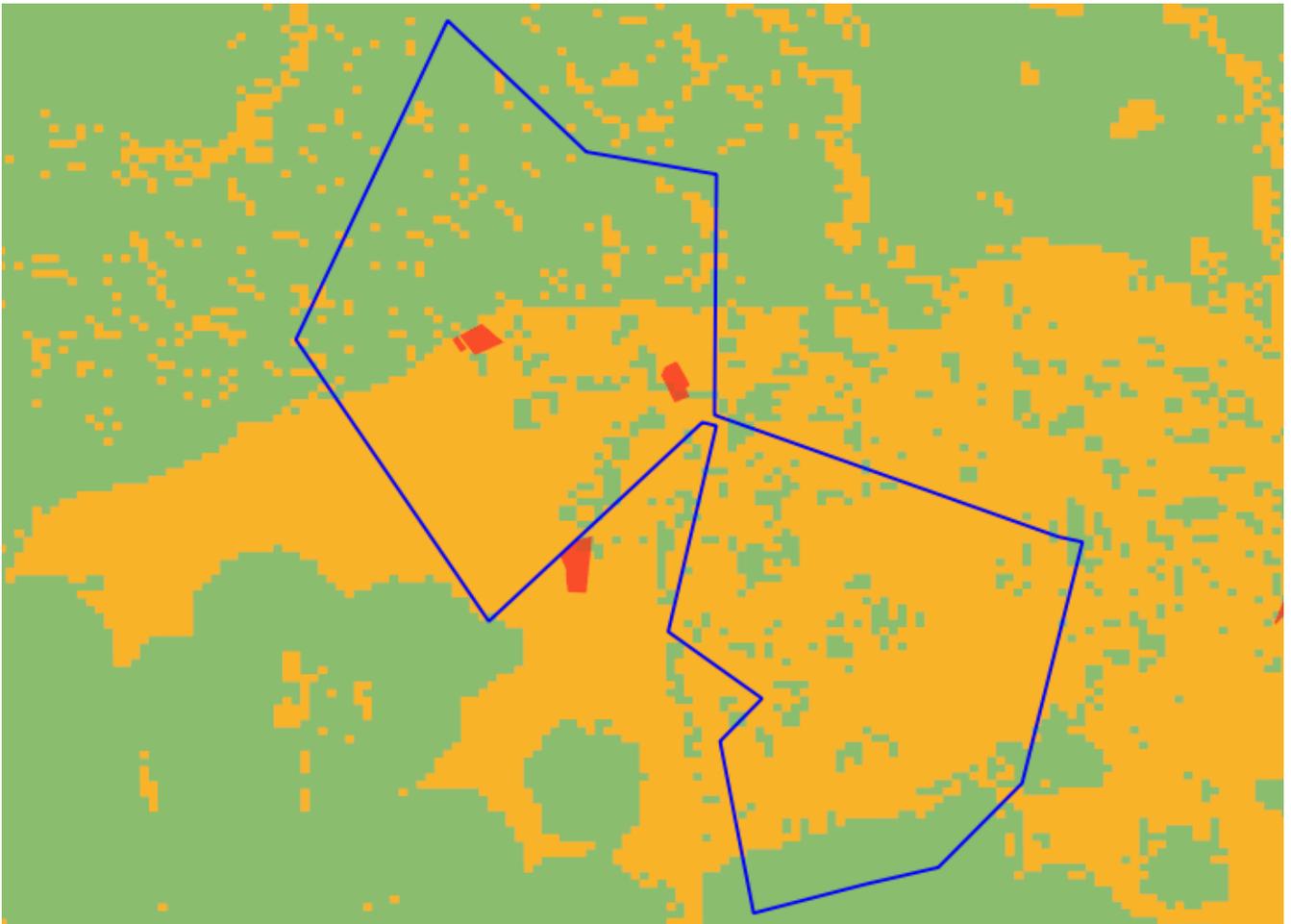


Figure 2. The assessed area (blue outline) overlaid on agricultural sensitivity, as given by the screening tool (green = low; yellow = medium; red = high; dark red = very high). The screening tool's high sensitivity is disputed by this assessment, which rates the entire assessed area as being of medium agricultural sensitivity.

The screening tool classifies the assessed area as ranging from low to high agricultural sensitivity. The high sensitivity classification is due to some of the land being classified as cropland. The land capability component of agricultural sensitivity is as per Table 1 above.

However, the data set used by the screening tool to classify cropland is outdated. All land across the assessed area is no longer used as cropland and there is no evidence, in the record of historical imagery that is available on Google Earth, of it having been cropped within at least the last ten years. This land should not, therefore, still be classified as cropland and allocated high sensitivity because of it. This assessment therefore disputes the high sensitivity rating by the screening tool that is based on cropping status.

The classified land capability of the site ranges from 1 to 7. This assessment verifies the classified land capability, based on the assessment of the cropping potential of the site in this report (see following section). This assessment rates the assessment area as being of low to medium

agricultural sensitivity.

8 BASELINE DESCRIPTION OF THE AGRO-ECOSYSTEM

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

The arid climate (mean annual rainfall of 289 mm and evaporation of 1474 mm) is the limiting factor for land capability, regardless of the soil and terrain capability, although shallow, rocky 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 site 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. 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 falls outside of an area that is classified as a Protected Agricultural Area. A Protected Agricultural Area is a demarcated area in which the climate, terrain, and soil are generally conducive for agricultural production and which, historically, has made important contributions to the production of the various crops that are grown across South Africa. Within Protected Agricultural Areas, the protection, particularly of arable land, is considered a priority for the protection of food security in South Africa, but the protection of land outside of these areas is generally not considered a food security priority.

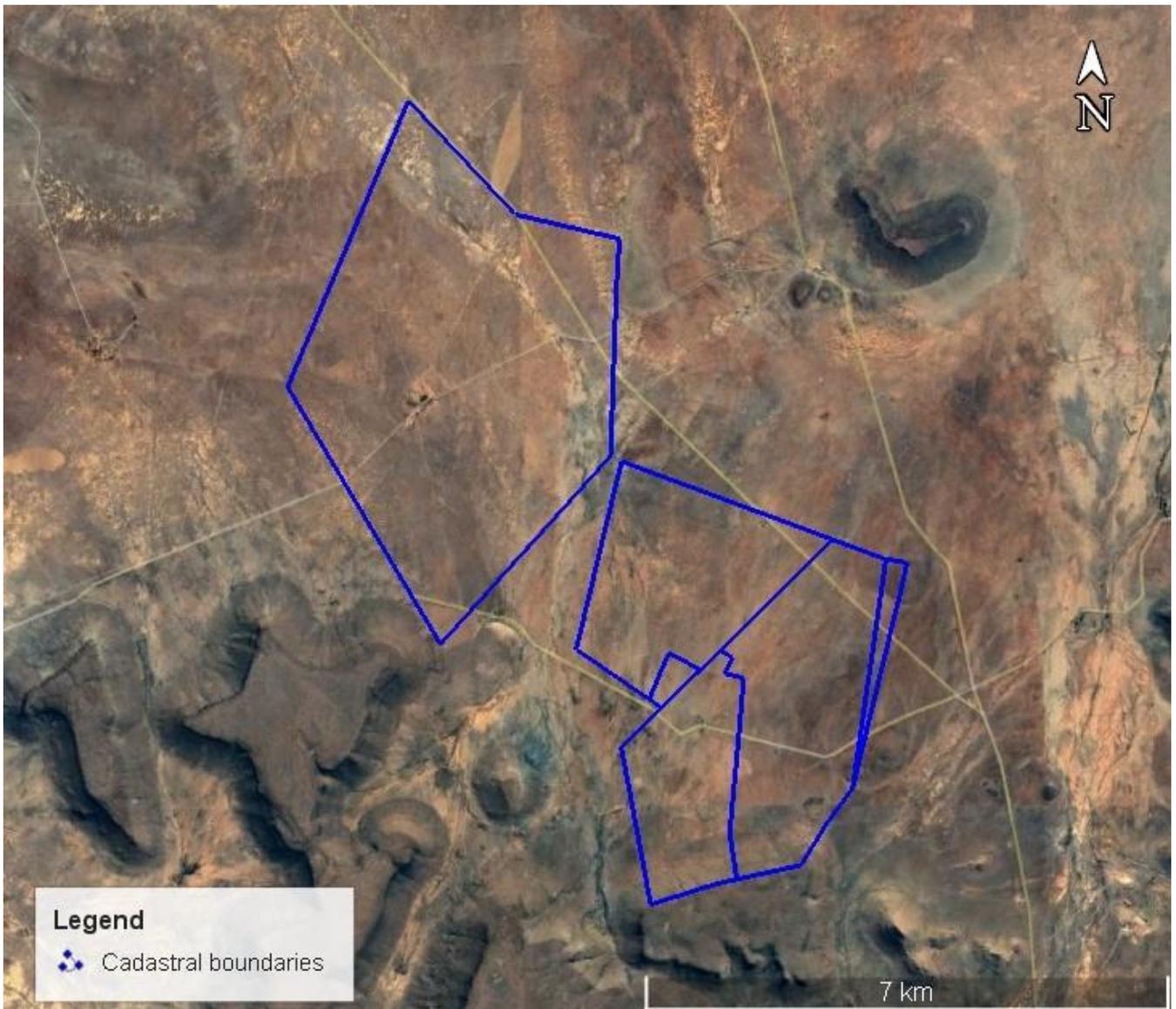


Figure 3. Satellite image map of the assessed area.

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.

An agricultural impact is a change to the future agricultural production potential of land. In most developments, including the one being assessed here, this 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. The significance of an agricultural impact 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 agricultural impact possible, for any development anywhere in the country, ignoring the length of time component, is therefore a loss of a large area of high yielding cropland and the least significant impact is a loss of a small area 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 and the relative abundance of land 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 assessed area is considered to be below the threshold for needing to be conserved as agricultural production land because of the limitations on its cropping potential, discussed in Section 8. The production potential of the land is limited to only being suitable as grazing land, and there is no particular scarcity of such land in the country, in contrast to arable land, which is very scarce. The use of this land for solar power generation will cause minimal loss of agricultural production potential in terms of national food security.

Furthermore, the land occupied by PV panels can 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 remains agriculturally productive. The benefit for sheep farming is that the security infrastructure of the solar facility will protect the sheep within it against stock theft. The benefit for the solar facility 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 facility is highly likely to exceed the potential agricultural income from the site. It 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 likely to increase cash flow and financial security and may improve farming operations and productivity on other parts of the farm or properties owned by the same farmer, through increased investment into

farming.

Due to the facts that the energy facility will not occupy scarce, viable cropland, that the land can potentially still be used to graze sheep, and that its negative impact is offset by economic 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

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?

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 will determine the quantitative loss of agricultural land if all renewable energy project applications within a 30 km radius become operational. The quantification of the cumulative impact will be done in detail in the EIA phase. This is highly likely to confirm that the cumulative impact of loss of future agricultural production potential is low. The

development is highly likely to have an acceptable impact on the agricultural production capability of the area and therefore be recommended for approval from a cumulative agricultural impact point of view.

9.3 Mitigation measures

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

- 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 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.

9.4 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 facility 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 facility (the agricultural footprint).

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

of the facility.

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 facility with a total generating capacity of up to 900 MW to occupy an agricultural footprint of $900 \times 2.5 = 2250$ hectares. Compliance with the allowable development limits will be confirmed in the EIA phase once the footprint of the fenced off area of the facility has been finalised.

9.5 Assessment of alternatives

Specialist assessments for environmental authorisation are required to assess the impacts of alternatives including the no-go alternative. As already noted, the exact nature and layout of the different infrastructure within the boundary fence of a solar energy facility has absolutely no bearing on the significance of agricultural impacts. Any alternative layouts within the boundary fence will have equal 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 marginally more significant than that of the no-go alternative, and so 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.

9.6 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. As already discussed in the section above, micro-siting within the footprint will make no material difference to agricultural impacts and disturbance.

9.7 Confirmation of linear activity impact

The agricultural protocol requires confirmation, in the case of a linear activity, that the land can be returned to the current state within two years of completion of the construction phase. This is not relevant in this case because the proposed development is not limited to being a linear one.

10 CONCLUSION: AGRICULTURAL COMPLIANCE STATEMENT

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

The site is classified as high agricultural sensitivity by the screening tool. This has been disputed by this assessment, because of the agricultural production potential and current agricultural land use, and the site is rated by this assessment as being of medium agricultural sensitivity.

The arid climate (mean annual rainfall of 289 mm and evaporation of 1474 mm) is the limiting factor for land capability, regardless of the soil and terrain capability, although shallow, rocky 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 site has very low agricultural potential and its agricultural use is limited to grazing only.

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 a development. In this case, the entire assessed area is considered to be below the threshold for needing to be conserved as agricultural production land because of the limitations on its cropping potential. The production potential of the land is limited to only being suitable as grazing land, and there is no particular scarcity of such land in the country, in contrast to arable land, which is very scarce. The use of this land for solar power generation will cause minimal loss of agricultural production potential in terms of national food security.

Furthermore, the land occupied by PV panels can 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 remains agriculturally productive. At the farm level, the development will provide a positive economic impact. This is likely to increase cash flow and financial security and may improve farming operations and productivity on other parts of the farm or properties owned by the same farmer, through increased investment into farming.

Due to the facts that the energy facility will not occupy scarce, viable cropland, that the land can potentially still be used to graze sheep, and that its negative impact is offset by economic 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.

Its acceptability is further substantiated by the following points:

- 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.

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 other conditions other than recommended mitigation.

11 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/>.

Department of Agriculture Forestry and Fisheries (DAFF). 2018. Long-term grazing capacity map for South Africa developed in line with the provisions of Regulation 10 of the Conservation of Agricultural Resources Act, Act no 43 of 1983 (CARA), available on Cape Farm Mapper. Available at: <https://gis.elsenburg.com/apps/cfm/>

Department of Agriculture, Forestry and Fisheries (DAFF). 2017. National land capability evaluation raster data layer, 2017. Pretoria.

Department of Agriculture, Forestry and Fisheries (DAFF). 2002. National land type inventories data set. Pretoria.

Department of Agriculture, Land Reform and Rural Development (DALRRD). 2020. Protected agricultural areas – Spatial data layer. 2020. Pretoria.

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. 1991. Soil classification: a taxonomic system for South Africa. Soil and Irrigation Research Institute, Department of Agricultural Development, 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; Northern 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*.



forestry, fisheries & the environment

Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

Private Bag X447, Pretoria, 0001, Environment House, 473 Steve Biko Road, Pretoria, 0002 Tel: +27 12 399 9000, Fax: +27 86 625 1042

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

The Proposed Kareekloof Solar PV Facility and BESS

Kindly note the following:

- 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.
- 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>.
- An electronic copy of the signed declaration form must be appended to all Draft and Final Reports submitted to the department for consideration.
- 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	Not applicable – 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@johannlanz.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 –
 12. any decision to be taken with respect to the application by the competent authority; and;
 13. 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

Johann Lanz – Soil Scientist (sole proprietor)

Name of Company:

19 September 2023

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

Johann Lanz – Soil Scientist – sole proprietor

Name of Company

2023/09/19

Date

Commissioner Johann Kotze

Signature of the Commissioner of Oaths

2023-09-19

Date



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 2024**



Chairperson

Chief Executive Officer

