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SITE SENSITIVITY VERIFICATION
AND
AGRICULTURAL COMPLIANCE STATEMENT
FOR
THE PROPOSED DEVELOPMENT OF A 400 KV LOOP-IN-LOOP-OUT (LILO) AND MAIN TRANSMISSION SUBSTATION FOR THE GRID CONNECTION OF THE PROPOSED UJEKAMAMZI WIND ENERGY FACILITY 1 NEAR ERMELO IN MPUMALANGA PROVINCE

Report by
Johann Lanz

19 May 2023

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EXECUTIVE SUMMARY

All four MTS site alternatives have been verified in this assessment as being on land of medium agricultural sensitivity.

The conclusion of this assessment is that the agricultural impact of the proposed development is assessed as being of low significance and is acceptable because:

1. The proposed development will exclude only a small area of land (16 ha) from future agricultural production and that land is of insufficient land capability to be viable for crop production.
2. The proposed grid connection is a necessary part of the greater Ujekamanzi renewable energy project which offers a valuable opportunity for renewable energy facilities to be integrated with agricultural production in a way that provides renewable energy to the country as well as benefits to agriculture with very little loss of future agricultural production potential. The agricultural benefits are increased economic viability for agricultural operations on site, security benefits against stock theft and other crime, an improved road network, with associated storm water handling system, and that the project will decrease the need for coal power and thereby contribute to reducing the large agricultural impact that open cast coal mining has on highly productive agricultural land in the area.

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

All four alternatives are equally preferred and acceptable from an agricultural impact point of view.

1 INTRODUCTION

Environmental authorisation is being sought for the GRID CONNECTION of the proposed Ujekamamzi Wind Energy Facility 1 near Ermelo in Mpumalanga 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 medium agricultural sensitivity of the main transmission substation (MTS) site (see Section 7), and the fact that the LILO connection is linear infrastructure, the required level of agricultural assessment is an Agro-Ecosystem Specialist Assessment.

Johann Lanz was appointed as an independent agricultural specialist to conduct this agricultural assessment. The objective and focus of an agricultural assessment are to assess whether or not the proposed development will have an unacceptable agricultural impact, and based on this, to make a recommendation on whether or not it should be approved.

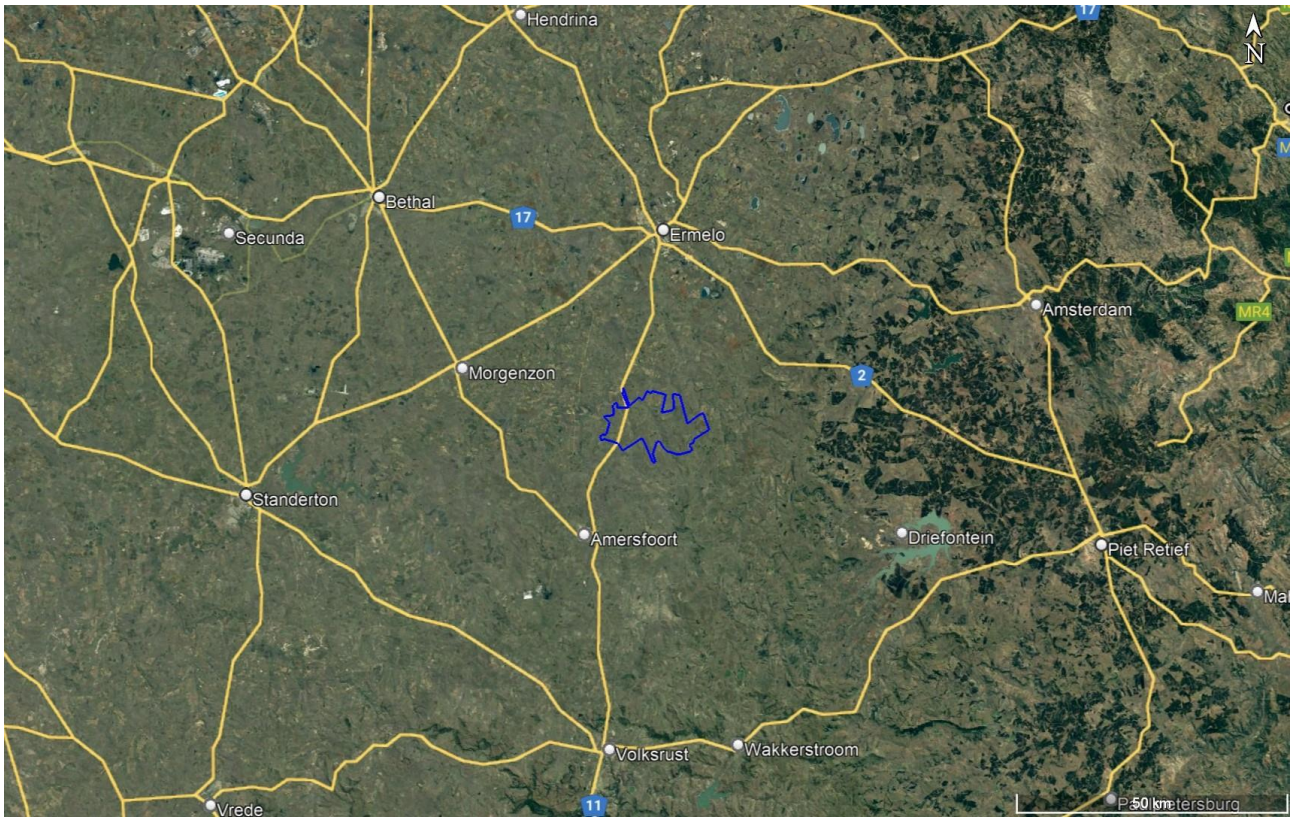

Figure 1. *Locality map of the cadastral boundary of the proposed energy facility (blue outline) to the south of the town of Ermelo.*

The purpose of the agricultural component in the environmental assessment process is to preserve agricultural production potential by ensuring that development does not unnecessarily exclude existing or potential agricultural production from land, or unnecessarily impact agricultural land to the extent that its production potential is reduced. The primary focus is on preservation of the

agricultural production potential of scarce, arable land. In this case, the small extent of land loss and the fact that it does not impinge on cropland, means that there is minimal impact on the crop production potential of the site.

The grid connection is obviously an integral part of the Ujekamanzi 1 Wind Energy Facility and the impact of the grid connection cannot sensibly be assessed in isolation from that of the facility of which it is an integral part.

2 PROJECT DESCRIPTION

The proposed development comprises:

- a substation with a footprint of up to 19 hectares incorporating the facility substation, switchyard, collector infrastructure, battery energy storage system (BESS) and associated O&M buildings.
- a 400 kV Loop-In-Loop-Out (LILO) from the existing 400 kV Overhead Power Line to the proposed on-site MTS

The exact nature and layout of the different infrastructure within the boundary fence of the MTS 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 and it will be up to 19 hectares in extent.

This assessment includes the power line of the grid connection. However, the agricultural impact of a power line is entirely insignificant in this environment because agriculture is not excluded from the land underneath a power line. The power line corridor is not therefore considered to be part of the agricultural footprint, in keeping with NEMA's agricultural protocol.

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* 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 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 **(Figure 1)**;
    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. 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 9.5)**;
    5. 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)**;
    6. any conditions to which this statement is subjected **(Section 10)**;
    7. 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 9.6)**;
    8. where required, proposed impact management outcomes or any monitoring requirements for inclusion in the EMPr **(not applicable)**; and
    9. 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 of the soils and agricultural conditions and was also informed by existing soil and agricultural potential data for the site. The aim of the on-site assessment was to:

1. ground-truth cropland status and consequent agricultural sensitivity;
2. ground truth the land type soil data and achieve an understanding of the general range and distribution patterns of different soil conditions across the site;
3. gain an understanding of overall agricultural production potential across the site.

This was achieved by a drive and walk-over investigation across the site. The site investigation was conducted from 18 to 20 April 2023. An interview was also conducted with several of the farmers for information on farming practices on the site. Soils were investigated based on the investigation of existing soil exposures in combination with indications of the surface conditions and topography. Soils were classified according to the South African soil classification system (Soil Classification Working Group, 1991). This level of soil assessment is considered entirely adequate for an understanding of on-site soil potential for the purposes of this assessment.

The following sources of existing information were also used to inform the assessment:

- Soil data was sourced from the land type data set, of the Department of Agriculture, Forestry and Fisheries (DAFF). This data set originates from the land type survey that was conducted from the 1970's until 2002. It is the most reliable and comprehensive national database of soil information in South Africa and although the data was collected some time ago, it is still entirely relevant as the soil characteristics included in the land type data do not change within time scales of hundreds of years.
- Land capability data was sourced from the 2017 National land capability evaluation raster data layer produced by the DAFF, Pretoria.
- The spatial demarcation of Protected Agricultural Areas was obtained from the National Department of Agriculture, Land Reform and Rural Development (DALRRD).
- Field crop boundaries were sourced from Crop Estimates Consortium, 2019. *Field Crop Boundary data layer, 2019*. Pretoria. Department of Agriculture, Forestry and Fisheries
- Rainfall and evaporation data was sourced from the SA Atlas of Climatology and Agrohydrology (2009, R.E. Schulze) available on Cape Farm Mapper. Note that Cape Farm Mapper includes national coverage of climate, grazing and certain other data.
- Grazing capacity data was sourced from the 2018 DAFF long-term grazing capacity map for South Africa, available on Cape Farm Mapper.
- Satellite imagery of the site and surrounds was sourced from Google Earth.

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

A substation requires approval from the National Department of Agriculture, Land Reform and Rural Development (DALRRD) if the facility is on agriculturally zoned land. 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. It is advisable to apply for this as early in the development process as possible because not receiving this DALRRD approval is a fatal flaw for a project. Note that a positive EA does not assure DALRRD's approval of this. 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 assessment report will serve that purpose.

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

Powerlines require the registration of a servitude for each farm portion crossed. In terms of the Subdivision of Agricultural Land Act (Act 70 of 1970) (SALA), the registration of a powerline servitude requires written consent of the Minister unless either of the following two conditions apply:

1. if the servitude width does not exceed 15 metres; and
2. if Eskom is the applicant for the servitude.

If one or both of these conditions apply, then no agricultural consent is required. The second condition is likely to apply, even if another entity gets Environmental Authorisation for and constructs the powerline, but then hands it over to Eskom for its operation. Eskom is currently exempt from agricultural consent for powerline servitudes.

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

Agricultural sensitivity is a direct function of the capability of the land for agricultural production. The agricultural sensitivity of the site, as given by the web-based environmental screening tool, is shown in Figure 2. The screening tool classifies agricultural sensitivity according to only two independent criteria, both of which are indicators of the land's agricultural production potential – whether the land is cropland or not, and what its land capability rating is. Land capability is rated by the Department of Agriculture's updated and refined, country-wide land capability mapping, released in 2016. The data is generated by GIS modelling. It is usable on a scale of 1:50 000 to 1:100 000 and is not therefore accurate at a farm scale. Land capability is defined as the combination of soil, climate and terrain suitability factors for supporting rain-fed agricultural production. It is an indication of what level and type of agricultural production can sustainably be achieved on any land, based on its soil, climate and terrain. The higher land capability values (≥8 to 15) are likely to be suitable as arable land for crop production, while lower values are only likely to be suitable as non-arable grazing land. The direct relationship between land capability rating and 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 area covered by Figure 2 includes a range of classified agricultural sensitivities from low to high. The screening tool sensitivity is however disputed by this assessment and the field-verified and updated indication of high agricultural sensitivity areas is shown in Figures 2 and 3.

The classified land capability of the wind farm site is predominantly 8, but varies from 3 to 11. Soil capability is determined in the land capability data largely by an average soil capability value attributed to each land type. However, there are a range of soil capabilities within each land type, which the scale of the land capability data is unable to take account of and map. On the ground, the soils (and therefore the land capability) vary in a fairly complex pattern across the landscape,

which is not reflected at the scale of the land capability data. The most reliable indication of soil cropping potential or soil capability is historical land use. The suitable versus the unsuitable soils have been identified over time through trial and error. In an agricultural environment like the one being assessed, all the suitable soils are generally cropped and therefore have a real land capability of ≥ 8. Uncropped soils can fairly reliably be considered to have limitations that make them unsuitable for crop production with the result that their real land capability is less than 8.

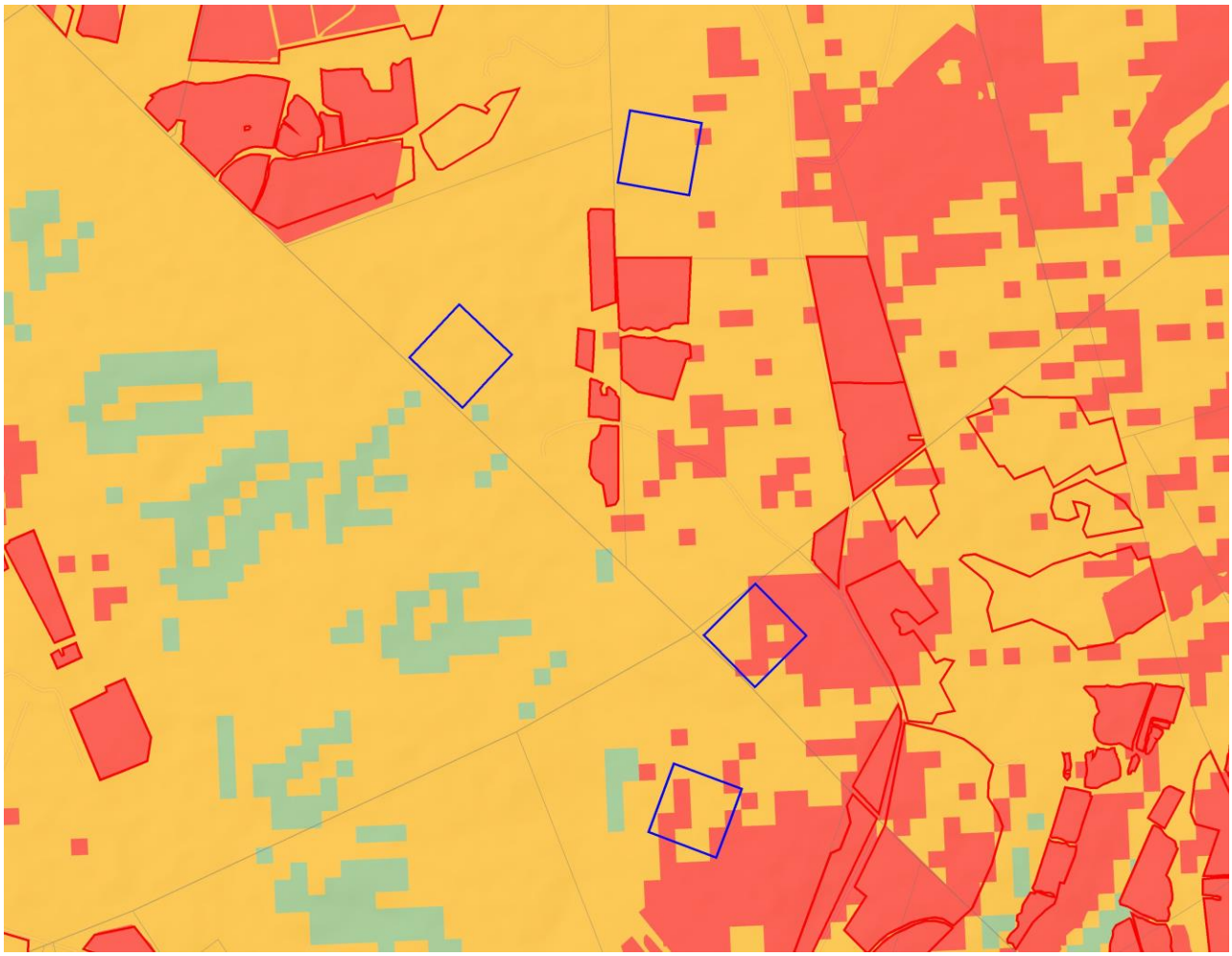

Figure 2. *The proposed MTS footprint alternatives (dark blue outlines) overlaid on agricultural sensitivity, as given by the screening tool (green = low; yellow = medium; red = high; dark red = very high). Alternatives are numbered from 1 (the preferred alternative) in the south to 4 in the north. Note that the screening tool sensitivity is disputed by this assessment and the verified high agricultural sensitivity areas (croplands) are shown as red outlines. All other land is verified as medium agricultural sensitivity.*

This site sensitivity verification verifies those parts of the site that are indicated as cropland in Figures 2 and 3 as being of high agricultural sensitivity and the rest of the site as being of medium agricultural sensitivity.

The screening tool sensitivity of the power line corridor for the LILO connection has very little relevance to the assessment of its agricultural impact. It is important to recognise that the agricultural sensitivity of land, in terms of a particular development, is not only a function of the screening tool sensitivity, which equates to agricultural potential, but is also a function of the severity of the impact which that development poses to agriculture. The agricultural impact of a power line is usually negligible (see impact assessment section), regardless of the agricultural sensitivity of the land which it traverses. Therefore, in the context of overhead power lines, almost no land can be considered to have high agricultural sensitivity. For this reason, this site sensitivity verification disputes the screening tool sensitivity and verifies the entire corridor as being of low agricultural sensitivity for a power line development.

8 BASELINE DESCRIPTION OF THE AGRO-ECOSYSTEM

The purpose of this section of the 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 is one of the main factors that determines the significance of the agricultural impact.

A satellite image map of the development site is shown in Figure 3 and photographs of site conditions are shown in Figures 4 to 5.

The wind farm site has a summer rainfall with an annual mean of between 596 and 710 mm and a mean annual evaporation of approximately 1265 mm (Schulze, 2009). The climate capability rating, which forms a component of Department of Agriculture's land capability rating, varies form 5 (out of 9) which is described as moderate to 6 which is moderate-high. The site is situated in low, hilly terrain with a range of slope gradients and an altitude of between approximately 1600 and 1750 metres. The terrain capability rating varies greatly from 3 (out of 9) (low) to 7 (high). The geology is Karoo dolerite and fine to coarse grained sandstone, shale, and coal seam of the Vryheid formation. The following land types occur on the site in decreasing order of the proportion of the site that they occupy: Ca3, Ea22, Ac39, Ea25, and Ba51. The land type soil data is given in Appendix 4. In general, the soils across approximately 70% of the site have insufficient capability for viable crop production and those on the remaining 30% are suitable for viable cropping. Soil limitations for crop production are predominantly the result of limited depth due to underlying bedrock or hardpan (soils of the Mayo, Milkwood, Glencoe, Swartland, Glenrosa, Mispah, and shallow members of the Clovelly and Hutton soil forms) or underlying clay (soils of the Kroonstad, Estcourt, and Valsrivier soil forms) or poor drainage (soils of the Kroonstad, Estcourt, Longlands, Wasbank, and Rensburg soil forms). The soil capability rating varies greatly across the site from 3 (out of 9) (low) to 7 (high). As discussed in Section 7, above, the crop-suitable versus unsuitable soils have been identified over time through trial and error. All the suitable soils are generally cropped and uncropped soils can fairly reliably be considered to have limitations that make them

unsuitable for crop production. Deeper soils of the Bonheim, Avalon, Hutton and Clovelly soil forms allow for crop production on approximately 30% of the surface area.

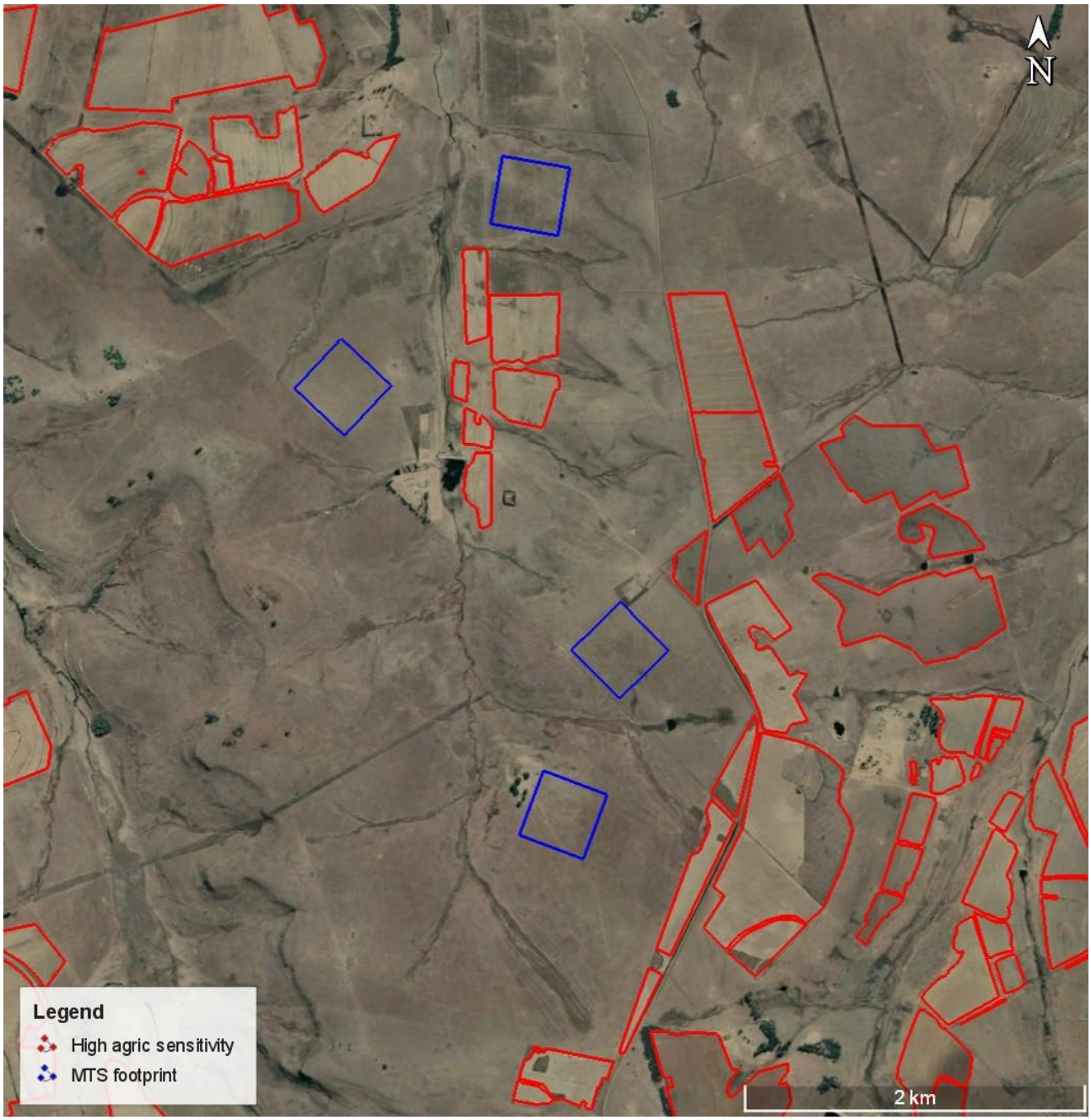

Figure 3. *Satellite image map of the proposed development site showing the proposed MTS footprint alternatives (dark blue outlines). Alternatives are numbered from 1 (the preferred alternative) in the south to 4 in the north..*

The site is located in a predominantly cattle farming area that includes grain. Agricultural land use on the site and surrounds is predominantly grazing of both cattle and sheep on the lower potential soils in combination with dryland crop production of maize, soya and *Oulandsgras* for hay on the higher potential soils.

In general, the agricultural production potential of the site is high and it is within an area that makes a significant contribution to food production in the country. Due to the favourable climate, crop yields are high on the suitable soils with average maize yields of around 7 tons per hectare according to the farmers on site. The long-term grazing capacity of the site is classified as 4 hectares per large stock unit, which can be categorised as very high within the range of grazing capacities across South Africa.

Figure 4. *Photograph of the preferred alternative site for the MTS.*

The site falls within an area that is classified as a Protected Agricultural Area. A Protected Agricultural Area is an area that has been demarcated because the climate, terrain, and soil are generally conducive for agricultural production and because, historically, it has made important contributions to the production of the various crops that are grown across South Africa. The protection, particularly of arable land, within Protected Agricultural Areas is considered a priority for the protection of food security in South Africa. Obviously, all land within a Protected Agricultural Area is not necessarily of sufficient agricultural potential to be suitable for crop production, due to site-specific terrain, soil, and other constraints, and all land within the area is therefore not necessarily worthy of prioritised protection as agricultural production land. The proposed MTS site alternatives are on such land that, although in a Protected Agricultural Area, are not specifically of sufficient agricultural potential to be suitable for crop production.

9 ASSESSMENT OF AGRICULTURAL IMPACT

9.1 What constitutes and agricultural impact?

An agricultural impact is a temporary or permanent change to the future production potential of land. The significance of the agricultural impact is directly proportional to the extent of the change in production potential. If a development will not change the future production potential of the land, then there is no agricultural impact. A decrease in future production potential is a negative impact and an increase is a positive impact.

9.2 The significance of agricultural impact and the factors that determine it

The grid connection is obviously an integral part of the Ujekamanzi 1 Wind Energy Facility and the impact of the grid connection cannot sensibly be assessed in isolation from that of the facility of which it is an integral part.

The purpose of the agricultural component in the environmental assessment process is to ensure that South Africa balances the need for development against the need to ensure the conservation of the natural agricultural resources, including land, required for agricultural production and national food security.

When the agricultural impact of a development involves the permanent or long term loss/ non-agricultural use of potential agricultural land, as it does in this case, the focus and defining question of the agricultural impact assessment is:

> Does the loss of future agricultural production potential that will result from this development, justify keeping the land solely for potential future agricultural production and therefore not approving the development?

If the loss is small, then it is unlikely to justify non approval. If the loss is big, then it is likely to justify it.

The extent of the loss is a direct function of two things, firstly the amount of land that will be lost and secondly, the production potential of the land that will be lost. In the case of wind farms, the first factor, amount of land loss, is so small that the total extent of the loss of future agricultural production potential is insignificantly small, regardless of how much production potential the land has. This is because the required spacing between turbines means that the amount of land actually excluded from agricultural use is extremely small in relation to the surface area over which a wind farm is distributed. Wind farm infrastructure (including all associated infrastructure and roads) typically occupies less than 2% of the surface area, according to the typical surface area

requirements of wind farms in South Africa (DEA, 2015). Most wind energy facilities, for which I have recently done assessments, occupy less than 1% of the surface area. All agricultural activities are able to continue unaffectedly on all parts of the farmland other than this small agricultural footprint and the actual loss of production potential is therefore insignificant.

It is also important to note that renewable energy facilities have both positive and negative affects on the production potential of land (see Section 9.3) and so it is the net sum of these positive and negative affects that determines the extent of the change in future production potential.
The significance of the small loss of production potential is reduced even more because it is compensated by the positive impacts that enhance production potential.

A study done to measure the impact of existing wind farms on agricultural production potential (Lanz, 2018) is highly informative of the extent of the agricultural impact that is likely for this proposed development. Although the study was done in a different agricultural environment, it is similar in terms of being a highly productive and intensively farmed environment with cultivation. There is no reason that the results obtained in that study would not be applicable to the area in this assessment. The overall conclusion of the study was that, although wind farms have been established within an area of cultivated farmland that supports intensive and productive farming, it is highly unlikely that this has caused a reduction in agricultural production. Small amounts of production land have been lost, but the consequence of this for agricultural production has been negligible. It is likely that the positive financial impacts of wind farming have outweighed the negative impacts and that wind farming has benefited agriculture and agricultural production in the area.

9.3 Impact identification

The only impact of this development (the grid connection) is the loss of 19 hectares of agricultural land on the site of the substation. The other components of the grid connection have no agricultural impact. The agricultural impact of a power line is totally insignificant because agriculture is not excluded from the land underneath a power line.

9.4 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 agricultural land, with a consequent decrease in agricultural production. 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 consider all renewable energy projects within a 30 km radius. 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.

9.5 Impacts of the no-go alternative

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.

The wind farm development offers an additional income source to agriculture, without excluding agriculture from the land. Therefore, the negative agricultural impact of the no-go alternative is more significant than that of the development, and so, from an agricultural impact perspective, the proposed development is the preferred alternative between the development and the no-go. In addition, 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.

9.6 Alternative development footprints and comparative assessment of alternatives

The agricultural protocol requires identification of any alternative development footprints within the preferred site which would be of “medium” or “low” sensitivity for agricultural resources as identified by the screening tool and verified through the site sensitivity verification.

This is not relevant in this case because all of the four alternatives are on land that has been verified as medium agricultural sensitivity. All four alternatives are equally preferred and acceptable from an agricultural impact point of view.

9.7 Long term project benefits versus agricultural benefits

The wind farm development will generate a significant and reliable additional income for the farming enterprises, without compromising the existing farming income. It will also generate additional income and employment in the local economy. In addition, it will contribute to the country's need for energy generation, particularly renewable energy that has lower environmental and agricultural impact than existing, coal powered energy generation.

9.8 Additional environmental impacts

There are no additional environmental impacts of the proposed development that are relevant to agriculture.

9.9 Micro-siting to minimize fragmentation and disturbance of agricultural activities

The agricultural protocol requires confirmation that all reasonable measures have been taken through micro-siting to minimize fragmentation and disturbance of agricultural activities. It is hereby confirmed that all four alternative locations minimize fragmentation and disturbance of agricultural activities.

9.10 Mitigation measures

There are no additional mitigation measures required, over and above what has already been included in the Generic Environmental Management Programmes (EMPr's) For The Development And Expansion For Overhead Electricity Transmission And Distribution Infrastructure and Of Substation Infrastructure For The Transmission And Distribution Of Electricity as per Government Notice 435, which was published in Government Gazette 42323 on 22 March 2019.

9.11 Impact assessment

The detailed impact assessment using the prescribed, semi-quantitative rating methodology will be done in the EIA phase. However, that system does not rate agricultural impacts in a sensible or particularly useful way. As has been discussed above, the significance of the agricultural impact is simply the degree to which the future agricultural production potential of the site will be changed and that is predominantly a function of the size of the area of land that is impacted and the production potential of that impacted land. The dominant factor in this case is the small size of the area of land that will be impacted and the fact that all of the impacted land is of insufficient land capability to be viable for crop production. The agricultural impact of the proposed development is therefore assessed as being of low significance.

10 CONCLUSIONS

All four MTS site alternatives have been verified in this assessment as being on land of medium agricultural sensitivity.

The conclusion of this assessment is that the agricultural impact of the proposed development is assessed as being of low significance and is acceptable because:

3. The proposed development will exclude only a small area of land (16 ha) from future agricultural production and that land is of insufficient land capability to be viable for crop production.
4. The proposed grid connection is a necessary part of the greater Ujekamanzi renewable energy project which offers a valuable opportunity for renewable energy facilities to be integrated with agricultural production in a way that provides renewable energy to the country as well as benefits to agriculture with very little loss of future agricultural production potential. The agricultural benefits are increased economic viability for agricultural operations on site, security benefits against stock theft and other crime, an improved road network, with associated storm water handling system, and that the project will decrease the need for coal power and thereby contribute to reducing the large agricultural impact that open cast coal mining has on highly productive agricultural land in the area.

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

All four alternatives are equally preferred and acceptable from an agricultural impact point of view.

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 recommended mitigation.

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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*.

environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

APPENDIX 2: DETAILS OF THE SPECIALIST, DECLARATION OF INTEREST AND UNDERTAKING UNDER OATH

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)

PROJECT TITLE

THE PROPOSED DEVELOPMENT OF A 400 KV LOOP-IN-LOOP-OUT (LILO) AND MAIN TRANSMISSION SUBSTATION FOR THE GRID CONNECTION OF THE PROPOSED UJEKAMAMZI WIND ENERGY FACILITY 1 NEAR ERMELO IN MPUMALANGA PROVINCE

Kindly note the following:

- This form must always be used for 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 01 September 2018. 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.environment.gov.za/documents/forms.
- A copy of this form containing original signatures must be appended to all Draft and Final Reports submitted to the department for consideration.
- All documentation delivered to the physical address contained in this form must be delivered during the official Departmental Officer Hours which is visible on the Departmental gate.
- All EIA related documents (includes application forms, reports or any EIA related submissions) that are faxed; emailed; delivered to Security or placed in the Departmental Tender Box will not be accepted, only hardcopy submissions are accepted.

Departmental Details

Postal address: Department of Environmental Affairs, Attention: Chief Director: Integrated Environmental Authorisations, Private Bag X447, Pretoria, 0001
Physical address: Department of Environmental Affairs, Attention: Chief Director: Integrated Environmental Authorisations, Environment House, 473 Steve Biko Road, Arcadia

Queries must be directed to the Directorate: Coordination, Strategic Planning and Support at:
Email: EIAAdmin@environment.gov.za

1. SPECIALIST INFORMATION

Specialist Company Name:	Johann Lanz – Soil Scientist			
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)	4	Percentage Procurement recognition	100%
Specialist name:	Johann Lanz			
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			
Postal code:	7800	Cell:	082 927 9018	
Telephone:	082 927 9018	Fax:	Who still uses a fax? I don't	
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 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 Act.

Signature of the Specialist

Johann Lanz – Soil Scientist (sole proprietor)

Name of Company:

16/04/2023

Date

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, **Johann Lanz**, swear under oath / affirm 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

16/04/2023

Date

Signature of the Commissioner of Oaths

2023-04-16

Date

SUID-AFRIKAANSE POLISIEDIENS
CSM
WYNBERG KP
16 APR 2023
CSM
WYNBERG CP
SOUTH AFRICAN POLICE SERVICE

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 fields(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

To verify this certificate scan this code

APPENDIX 4: PROJECTS INCLUDED IN CUMULATIVE IMPACT ASSESSMENT

Table 1**:** Table of all projects that were included in the cumulative impact assessment.

DFFE Reference	Project name	Technology	Capacity (MW)
Total solar			
Total wind			
Total			

Cumulative impacts will be assessed in detail in the EIA phase.

APPENDIX 5: SOIL DATA OF LAND TYPES

Land type	Soil series (forms)	Depth (mm)	Clay % A horizon	Clay % B horizon	Depth limiting layer	% of land type
Ca3	Kroonstad, Estcourt	400 - 900	8 - 15	30 - 40	gc	14,3
Ca3	Avalon	500 - 1000	10 - 20	12 - 25	sp	12,8
Ca3	Valsrivier	300 - 400	20 - 30	35 - 45	vp,gc	11,5
Ca3	Clovelly	400 - 900	10 - 20	12 - 25	so,lc	9,8
Ca3	Glencoe	400 - 900	10 - 20	12 - 25	hp	8,8
Ca3	Hutton	500 > 1200	25 - 30	25 - 40	so,lc,hp	7,5
Ca3	Pinedene	500 - 1000	10 - 20	12 - 25	gc	7,3
Ca3	Longlands, Wasbank	400 - 900	8 - 15		sp	7,0
Ca3	Rensburg	400 - 600	40 - 50		gc	6,0
Ca3	Rock outcrops					3,8
Ca3	Glenrosa	300 - 400	10 - 15		so,lc	3,8
Ca3	Mispah	200 - 400	8 - 15		hp	2,5
Ca3	Bonheim	> 1200	35 - 45	35 - 50		1,5
Ca3	Milkwood	250 - 400	30 - 40		R	1,3
Ca3	Mispah	200 - 400	10 - 30		R	1,3
Ca3	Mispah	200 - 400	6 - 15		hp	1,3
Ea22	Arcadia	300 - 900	40 - 70		so,lc	19,5
Ea22	Mayo, Bonheim	200 - 500	30 - 55	20 - 45	so,lc	14,8
Ea22	Mayo	300 - 500	30 - 55	20 - 45	so,lc	14,8
Ea22	Milkwood	200 - 400	30 - 45		H	10,5
Ea22	Swartland	250 - 400	20 - 30	35 - 45	so,lc	8,5
Ea22	Rock outcrops					6,3
Ea22	Rensburg	600 - 1000	40 - 70		gc	5,5
Ea22	Valsrivier	250 - 400	20 - 30	35 - 50	vp	4,3
Ea22	Kroonstad	500 - 1000	15 - 30	40 - 60	gc	4,3
Ea22	Bonheim	700 > 1200	30 - 55	30 - 50	so,lc	3,3
Ea22	Avalon	600 - 1000	25 - 35	35 - 45	sp	2,8

Land type	Soil series (forms)	Depth (mm)	Clay % A horizon	Clay % B horizon	Depth limiting layer	% of land type
Ea22	Hutton	400 > 1200	25 - 35	35 - 45	so,lc	2,8
Ea22	Mispah	100 - 300	20 - 30		H,P	2,0
Ea22	Stream bed					1,0
Ac39	Hutton	450 - 1200	20 - 35	30 - 45	so,hp	36,8
Ac39	Mayo	300 - 450	30 - 45		lc	7,8
Ac39	Rock outcrops					7,5
Ac39	Mispah	200 - 450	15 - 25		R	7,4
Ac39	Shortlands	400 - 800	30 - 45	35 - 60	so	7,4
Ac39	Clovelly	500 - 1200	20 - 35	25 - 45	so	7,3
Ac39	Glencoe	500 - 1200	20 - 30	25 - 35	hp	4,9
Ac39	Glenrosa	300 - 450	15 - 25		lc	4,9
Ac39	Bonheim	> 1200	30 - 50	35 - 60		3,0
Ac39	Swartland, Valsrivier	200 - 450	30 - 40	40 - 55	vp	2,8
Ac39	Milkwood	300 - 450	30 - 45		R	2,7
Ac39	Longlands	450 - 900	15 - 25	30 - 40	sp	2,6
Ac39	Mispah	200 - 450	15 - 25		hp	2,5
Ac39	Griffin	> 1200	30 - 45	35 - 60		2,4
Ea25	Rock outcrops					40,3
Ea25	Mayo	200 - 400	30 - 40		so	14,8
Ea25	Milkwood	200 - 300	35 - 40		R(H)	9,5
Ea25	Arcadia	400 - 600	40 - 60		so	7,5
Ea25	Shortlands	250 - 400	35 - 45	35 - 50	so	7,3
Ea25	Mayo	300 - 450	35 - 45		so	5,3
Ea25	Glenrosa	200 - 300	25 - 30		so	4,8
Ea25	Bonheim	400 - 900	30 - 40	30 - 50	so	4,5
Ea25	Hutton	400 - 700	30 - 40	35 - 40	so	3,5
Ea25	Shortlands	400 - 700	35 - 45	35 - 60	so	1,8
Ea25	Rensburg	400 - 600	40 - 60		gc	1,0

Land type	Soil series (forms)	Depth (mm)	Clay % A horizon	Clay % B horizon	Depth limiting layer	% of land type
Ea22	Arcadia	300 - 900	40 - 70		so,lc	19,5
Ea22	Mayo, Bonheim	200 - 500	30 - 55	20 - 45	so,lc	14,8
Ea22	Mayo	300 - 500	30 - 55	20 - 45	so,lc	14,8
Ea22	Milkwood	200 - 400	30 - 45		H	10,5
Ea22	Swartland	250 - 400	20 - 30	35 - 45	so,lc	8,5
Ea22	Rock outcrops					6,3
Ea22	Rensburg	600 - 1000	40 - 70		gc	5,5
Ea22	Valsrivier	250 - 400	20 - 30	35 - 50	vp	4,3
Ea22	Kroonstad	500 - 1000	15 - 30	40 - 60	gc	4,3
Ea22	Bonheim	700 > 1200	30 - 55	30 - 50	so,lc	3,3
Ea22	Avalon	600 - 1000	25 - 35	35 - 45	sp	2,8
Ea22	Hutton	400 > 1200	25 - 35	35 - 45	so,lc	2,8
Ea22	Mispah	100 - 300	20 - 30		H,P	2,0
Ea22	Stream bed					1,0