



**Soil And Agricultural Compliance Statement and
Walkdown Report for the Proposed Aries-Paulputs-
Kokerboom 400kv Loop-In-Loop-Out and
Substation Upgrade**

**Namakwa and ZF Mgcawu District Municipalities,
Northern Cape Province, South Africa**

19/06/26

Prepared by:

The Biodiversity Company

Cell: +27 81 319 1225

Fax : +27 86 527 1965

info@thebiodiversitycompany.com

www.thebiodiversitycompany.com




Report Name	Soil And Agricultural Compliance Statement and Walkdown Report for the Proposed Aries-Paulputs-Kokerboom 400kv Loop-In-Loop-Out and Substation Upgrade	
Specialist Theme	Soil and Agricultural Theme	
Project Reference	Aries-Paulputs: Aries Kokerboom 400kV LILO	
Report Version	11/14/2025	
Environmental Assessment Practitioner		
Report Writer	Cathrine Mathye (SACNASP 127950)	
Reviewer	Matthew Mamera (SACNASP 113907)	
Declaration	<p>The Biodiversity Company and its associates operate as independent consultants under the auspice of the South African Council for Natural Scientific Professions. We declare that we have no affiliation with or vested financial interests in the proponent, other than for work performed under the Environmental Impact Assessment Regulations, 2017 (as amended). We have no conflicting interests in the undertaking of this activity and have no interests in secondary developments resulting from the authorisation of this project. We have no vested interest in the project, other than providing a professional service within the constraints of the project (timing, time, and budget) based on the principals of science.</p>	

Table of Contents

1	Introduction.....	1
1.1	Background	1
1.2	Project Description	3
1.3	Terms of Reference.....	3
1.4	Scope of Work	4
1.5	Assumptions and Limitations.....	4
1.6	Key Legislative Requirements	4
1.7	Legislative Framework	5
2	Fieldwork.....	5
2.1	Walkdown	5
3	Results and Discussion.....	6
3.1	Desktop Information	6
3.1.1	Climate	6
3.1.2	Geology & Soils.....	7
3.2	Baseline Findings	9
3.3	Sensitivity Verification.....	13
3.3.1	Screening Report – Aries-Paulputs-Kokerboom LILO Powerline Project.....	13
3.4	Walkdown Site Observations.....	17
4	CARA Requirements.....	23
5	Impact and Management Measures.....	23
5.1	Anticipated Impact Framework.....	25
5.2	Mitigations	26
5.3	Management Measures.....	27
6	Conclusion.....	30
6.1	Specialist Statement	30
6.2	Statement Conditions	30
7	References	31
8	Appendix Items.....	32
8.1	Appendix A: Methodology.....	32
8.1.1	Desktop Assessment	32
8.1.2	Field Survey	32
8.1.3	Land Capability.....	32

8.2	Appendix B: Impact Assessment	35
8.3	Appendix C: Specialist Declarations	37
8.4	Appendix D: Curriculum Vitae	39

List of Tables

Table 1-1	Agricultural Compliance Statement information requirements as per the relevant protocol, including the location of the information within this report	5
Table 3-1	Soils expected at the respective terrain units within the Ag 2 land type, respectively (Land Type Survey Staff, 1972 - 2006)	9
Table 3-2	Soils expected at the respective terrain units within the Ag 3 land type, respectively (Land Type Survey Staff, 1972 - 2006)	9
Table 3-3	Soils expected at the respective terrain units within the Ag 37 land type, respectively (Land Type Survey Staff, 1972 - 2006)	9
Table 3-4	Summary of the screening tool vs specialist assigned sensitivities	16
Table 3-5	Site specific summary (Soil form, land potential, overall sensitivity), comments and recommendations on the route associated with the Aries-Paulputs-Kokerboom 400 KV LILO Powerline and associated Substation Project.....	17
Table 5-1	Anticipated impacts for the proposed Powerline, substation expansion and access roads on the agricultural resources.....	26
Table 5-2	Mitigation Measures and Management Outcomes for the construction, operation, decommissioning and rehabilitation phases.	28
Table 8-1	Land capability class and intensity of use (Smith, 2006)	32
Table 8-2	The combination table for land potential classification.....	33
Table 8-3	The Land Potential Classes	33
Table 8-4	National Land Capability Values (DAFF,2017)	33
Table 8-5	Impact assessment related to the loss of the land capability during the planning, construction, operation, decommissioning and rehabilitation phases for the proposed LILO Powerline and associated infrastructure	35

List of Figures

Figure 1-1	Spatial regional context of the proposed development	2
Figure 1-2	Locality map of the proposed project area (EIMS, 2025).....	2
Figure 2-1	Map illustrating the fieldwork tracks for the proposed powerline	6
Figure 3-1	Summarised climate for the region (Mucina & Rutherford, 2006).....	7
Figure 3-2	Land type associated with the proposed project area.....	8
Figure 3-3	Illustration of land type Ag 2 terrain units (Land Type Survey Staff, 1972 – 2006)	8
Figure 3-4	Illustration of land type Ag 3 terrain units (Land Type Survey Staff, 1972 – 2006)	8
Figure 3-5	Illustration of land type Ag 37 terrain units (Land Type Survey Staff, 1972 – 2006)	9
Figure 3-6	Soil forms found within the proposed project area	10
Figure 3-7	Diagnostic soil forms and soil horizons identified on-site: A-B) Coega soil from(Orthic topsoil horizon/ hard carbonate subsoil horizon); C) Glenrosa (Orthic topsoil horizon/ lithic subsoil horizon); D-E) Mispah soil form (Orthic topsoil horizon/ hard rock); and F) Vaalbos soil form (Orthic topsoil horizon/ red apedal subsoil horizon/ hard rock).	11
Figure 3-8	Current land use; A-B) Windmill and artificial dam; C-D) Natural veld; E) Small hill (Koppie) and F) existing substation.	12
Figure 3-9	Land potentials found within the proposed project area	13
Figure 3-10	Map of Relative Agricultural Theme Sensitivity for the Aries-Paulputs-Kokerboom 400 KV LILO and Substation Upgrade generated by the Environmental Screening Tool	14
Figure 3-11	Overall site verified sensitivity of the project area	16

1 Introduction

1.1 Background

The Biodiversity Company (TBC) was appointed to conduct a soil, agricultural potential and walkdown assessment for the proposed Paulputs: Aries Kokerboom 400 kilo-Volt (kV) loop-in-loop-out powerline and Paulputs substation expansion. Eskom has identified a need for an additional 400 KV infeed is proposed via a loop in loop out from the Aries – Kokerboom 400 kV line which is approximately 45 km away Paulputs Substation. The powerline runs across the Kai! Garib Local Municipality and across two district municipalities Namakwa and ZF Mgcawu in the Northern Cape Province, South Africa. The spatial context map with the 50 m buffer area for the soil and agricultural assessment and locality map for the proposed powerline are shown in Figure 1-1 and Figure 1-2.

The approach adopted for this assessment has taken cognisance of Government Notice 320 in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) dated 20 March 2020: “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 NEMA, 1998, when applying for Environmental Authorisation”. The National Web based Environmental Screening Tool (DFFE, 2024) has characterised the agricultural theme sensitivity of the project area as predominantly “Low” with marginal areas having “Medium” sensitivities, with a key consideration of this assessment being the determination of agricultural theme sensitivities for the project. Based on the verified baseline findings, the proposed project area was found to have evenly low to medium sensitivities areas. Furthermore, according to the Government Gazette 43110, Government Notice No. 320, a site is found to be of a “medium” or “low” sensitivity if the application is for a linear activity, for which impacts on the agricultural resource are temporary and the land in the opinion of the soil scientist or agricultural specialist, based on the mitigation and remedial measures, can be returned to the current land capability within two years of the completion of the construction phase. Therefore, the proposed project area was found to have low and medium sensitivity. Therefore, an agricultural compliance statement is compiled. The GNR 320 requirements of an Agricultural Compliance Statement stipulate that a 50 m buffered development envelope be considered.

This report aims to present and discuss the findings from the soil resources identified within the 50 m buffered area. The report will also identify the soil suitability and land potential of these soils, the land uses within the assessment area and the risks associated with the proposed project from an agricultural and soil resources management perspective.

This report should be interpreted after taking into consideration the findings and recommendations provided by the specialist (Section 3, 4, and 5 of this report). Further, this report should inform and guide the Environmental Assessment Practitioner (EAP) and regulatory authorities, enabling informed decision making, as to the soil resources of the proposed project.

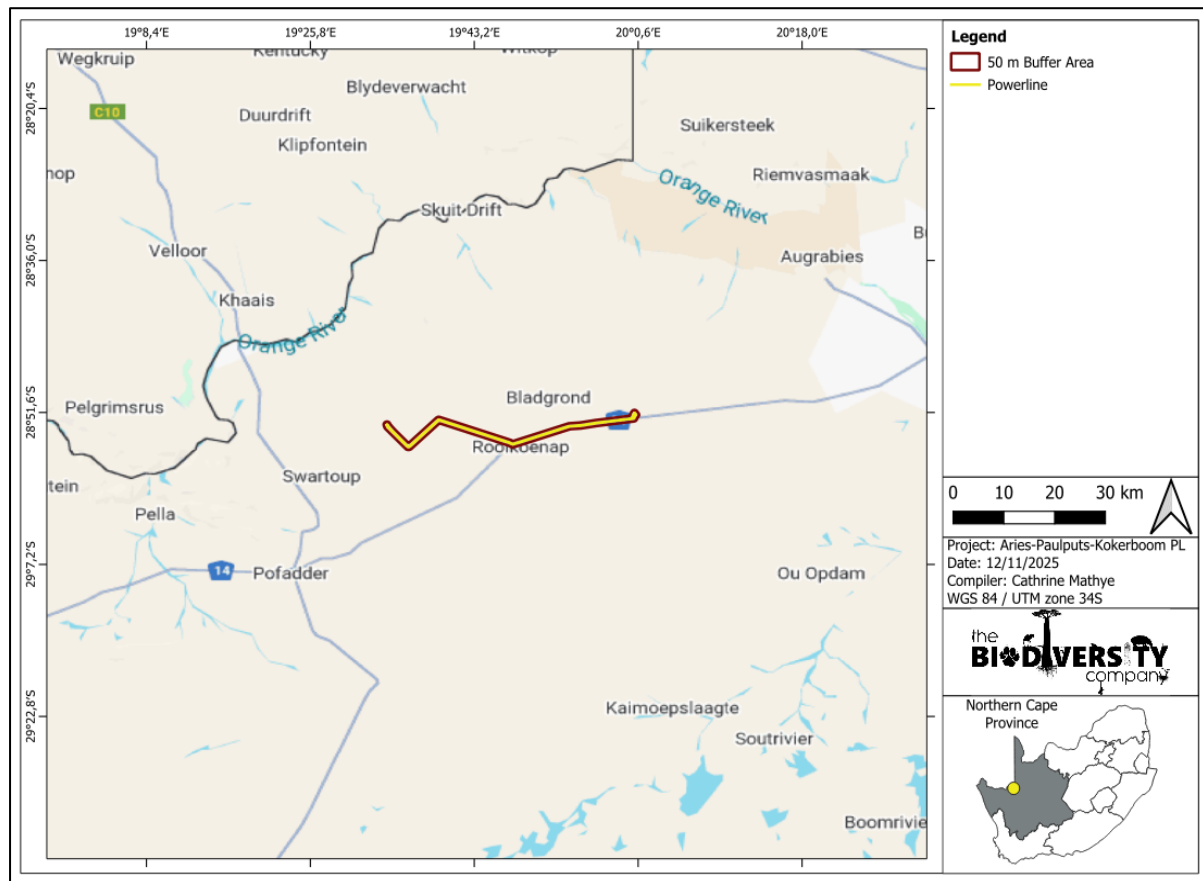


Figure 1-1 Spatial regional context of the proposed development

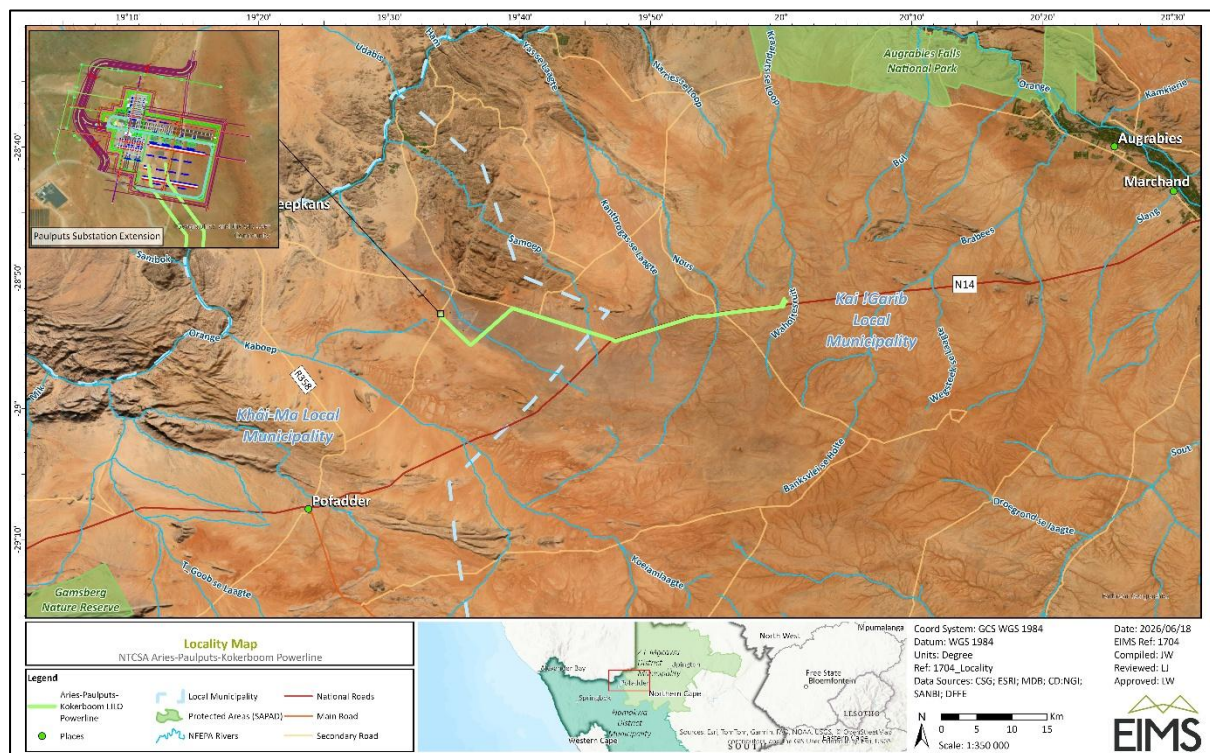


Figure 1-2 Locality map of the proposed project area (EIMS, 2025).

1.2 Project Description

According to the Scope of work (provided by EIMS), the project is part of the group of projects identified for the Northern Cape network strengthening requirements in meeting the IRP 2019 renewables generation integration. The installed generation capacity in the Northern Cape already exceeds the peak load in the province. Generation capacity is expected to increase in the province as a result of bulk renewable energy generation capacity allocation due to favourable sun and wind conditions. Therefore, significant network infrastructure is required to enable the integration and evacuation of power from the renewable energy plants anticipated in the province.

To provide future reliability and flexibility in the evacuation of renewable power from Paulputs Substation, an additional 400 kV infeed is proposed via a loop in loop out from the Aries – Kokerboom 400 kV line which is approximately 45 km away. Although there is uncertainty regarding the phasing of IPP integration at the various substations in the province, it is crucial that all project development activities are prioritised and advanced to a stage of execution readiness to ensure timeous integration of the expected renewable generation.

The following is the scope of work as provided by EIMS:

- Loop in loop out the Aries – Kokerboom 400 kV line into Paulputs (~2 x 40 km);
- Establish/Equip 2 x 400 kV feeder bays at Paulputs Substation;
- Install a 100 MVA busbar reactor at Paulputs Substation
- Paulputs-Konkoonsies 33 kV OHL Deviation
- Build new MV OHL with new switchgear and equipment
- -± 1 km of new MV OHL (±800m of 33 kV OHL & ±200m of 19 kV SWER OHL)
- -New 33 kV Recloser
- -New 33 kV CT/VT metering unit
- -New 33/19 kV SWER Transformer
- New SWER 19 kV Single Phase Recloser
- -Disconnect, Decommission & Dismantle old equipment (the existing 33kV and associated infrastructure)

1.3 Terms of Reference

The Terms of Reference (ToR) for this assessment include the following:

- Physical walkdown of the powerline corridor (tower to tower).
- Review of existing specialist studies and identification of shortcomings or gaps, where necessary.
- Identification of sensitive areas along the route.
- Recommendations regarding moving of tower positions within agricultural sensitive areas.

- Compilation of a draft and final report.

1.4 Scope of Work

In addition to the requirements stipulated in GNR 320, the following Terms of Reference apply to the Agricultural Compliance Statement:

- Ensure a thorough assessment, which includes both the desktop assessment of databases and aerial photography; a description of the on-site verification of the agricultural potential of the area; and the soil forms present in the development area;
- Identify and assess potential impacts on both agricultural potential and soil resulting from the proposed project;
- Identify and describe potential cumulative soil, agricultural potential and land capability impacts resulting from the proposed project in relation to proposed and existing developments in the surrounding area; and
- Recommend mitigation, management, and monitoring measures, to minimise impacts and/or optimise benefits associated with the proposed project.

1.5 Assumptions and Limitations

The following aspects were considered as limitations;

- The 50 m buffer area was based on the project footprint area as provided by the client. Any alterations to the area and/or missing GIS information pertaining to the assessment area would have affected the area surveyed and hence the results of this assessment;
- The 500 m corridor (on either side) of the powerline was delineated using the soil desktop data;
- It has been assumed that the extent of the development area provided by the responsible party is accurate; and
- No heavy metals have been assessed, nor fertility been analysed for the relevant classified soils.

1.6 Key Legislative Requirements

The report follows the protocols as stipulated for agricultural assessment in Government Notice 320 of 2020 (GNR 320). This Notice provides the procedures and minimum criteria for reporting in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act (No. 107 of 1998) (NEMA). The above mentioned are supported by additional legislation that aims to manage the impact of development on the environment and the natural resource base of the country. Related legislation to this effect includes:

- Conservation of Agricultural Resources Act (Act 43 of 1983);
- National Environmental Management Act (Act 107 of 1998); and
- National Water Act (Act 36 of 1998).

1.7 Legislative Framework

In line with the protocol for the specialist assessment and minimum report content requirements for environmental impacts on soil and agricultural assessment as per the Government Notice 320 published in terms of NEMA, dated 20 March 2020: "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 National Environmental Management Act, 1998, when applying for Environmental Authorisation" – the following has been assumed:

- An applicant intending to undertake an activity identified in the scope of this protocol on a site identified on the screening tool as being of:
 - "Low & Medium sensitivity" for agriculture, must submit an Agricultural Compliance Statement.
 - The application includes a linear activity for which impacts to the agricultural resource are temporary and the land in the opinion of the soil scientist or agricultural specialist, based on the mitigation and remedial measures, can be returned to the current land capability within two years of the completion of the construction phase.

An Agricultural Compliance Statement must contain the information as presented in Table 1-1 below.

Table 1-1 *Agricultural Compliance Statement information requirements as per the relevant protocol, including the location of the information within this report*

Information to be Included (as per GN 320, 20 March 2020)	Report Section
Details and relevant expertise as well as the SACNASP registration number of the soil scientist or agricultural specialist preparing the statement including a curriculum vitae	Page i, Appendix D
A signed statement of independence by the specialist	Appendix C
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	Section 3.3
Confirmation from the specialist that all reasonable measures have been taken through micro-siting to avoid or minimise fragmentation and disturbance of agricultural activities	Section 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 6.2
Any conditions to which this statement is subjected	Section 6.3
Where required, proposed impact management outcomes or any monitoring requirements for inclusion in the EMP	Section 5.3
A description of the assumptions made and any uncertainties or gaps in knowledge or data	Section 1.5

A signed copy of the compliance statement must be appended to the Basic Assessment Report or Environmental Impact Assessment Report.

2 Fieldwork

Field assessments for the proposed project area were conducted from 3rd to the 6th of November 2025. Seasonality has no bearing on the soil assessment and fieldwork is therefore deemed sufficient for the proposed development. A map illustrating the field work tracks is presented in Figure 2-1 below.

2.1 Walkdown

The powerline pylons positions were supplied by the client. The precise locations of each tower/pylon were visited and used as guidelines during the walkdown and the soil evaluation phase. GPS accuracy during the field surveys is accurate to 5 m. The findings for the pylons are discussed in the subsequent sections.

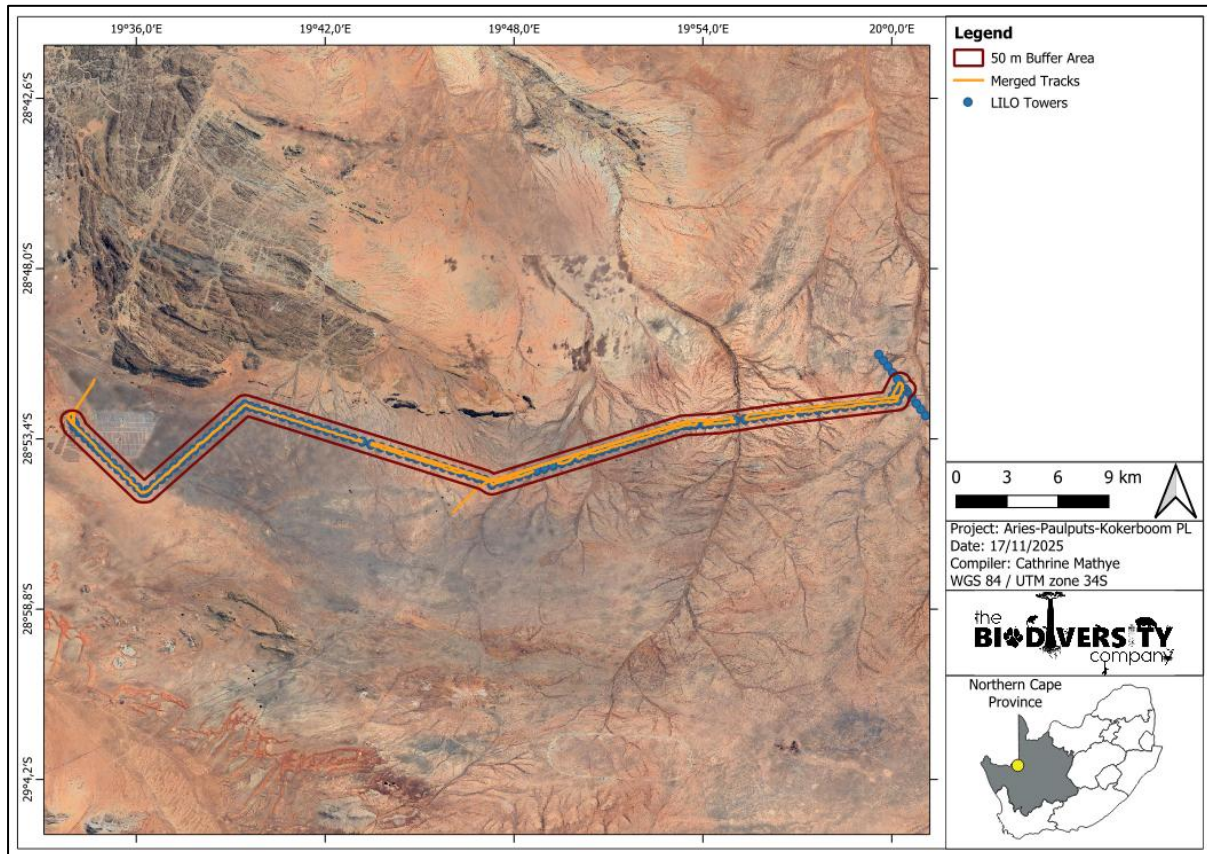


Figure 2-1 Map illustrating the fieldwork tracks for the proposed powerline

3 Results and Discussion

3.1 Desktop Information

3.1.1 Climate

The project area falls within the Bushmanland Arid Grassland vegetation. The area receives late summer rainfall which vary from year to year. The area has an overall mean average precipitation (MAP) ranging from 70 mm to 300 mm. The mean maximum and minimum monthly temperatures for Kenhardt are 40.6°C and -3.7°C for January and July respectively. The corresponding values for Pofadder are 38.6°C and -0.6°C. Frost incidences range around 10 frost days per year in the northwest to about 35 days in the east. Whirl winds are mostly common on hot summer days (Mucina & Rutherford, 2006; and South African National Biodiversity Institute, 200-2024, Figure 3-1).

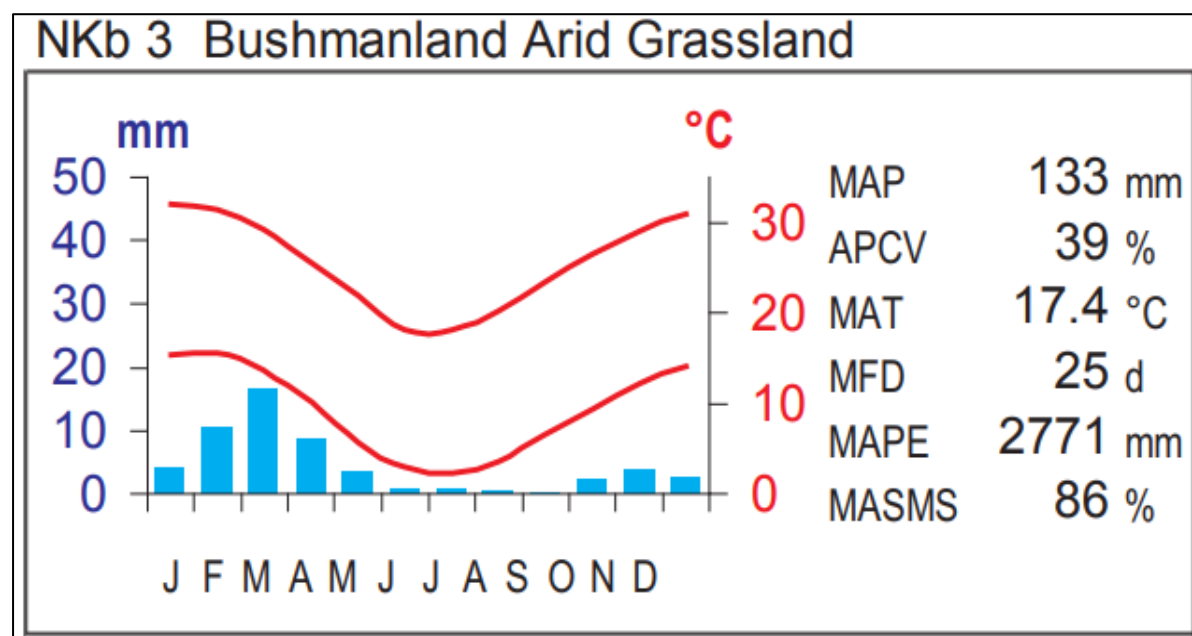


Figure 3-1 Summarised climate for the region (Mucina & Rutherford, 2006)

3.1.2 Geology & Soils

The geology of the area is mostly covered by the recent Quaternary alluvium and calcrete. The Superficial deposits of the Kalahari Group are also present in the east. The extensive Palaeozoic diamictites of the Dwyka Group also outcrop in the area as do gneisses and metasediments of Mokolian age. According to the land type database (Land Type Survey Staff, 1972 - 2006) the assessment area to be focused on mainly falls within the Ag 2, Ag 3, and Ag 37 land types (see Figure 3-2). The Ag 2 and Ag 3 land types are predominated by Hutton and Mispah soil forms with also the occurrence of other soils occurring throughout the terrain, following the South African soil classification working group. The Ag 37 land types are predominated by Hutton, Dundee and Oakleaf soil forms with also the occurrence of other soils occurring throughout the terrain, following the South African soil classification working group (2018).

In addition, the Ag land types are also commonly dominated by red, yellow apedal, freely drained soils: red with high base status and less than 300 mm in depth. The terrain units for the land types found within the proposed project area are presented below in Figure 3-3 to Figure 3-5 and Table 3-1 to Table 3-3, respectively.

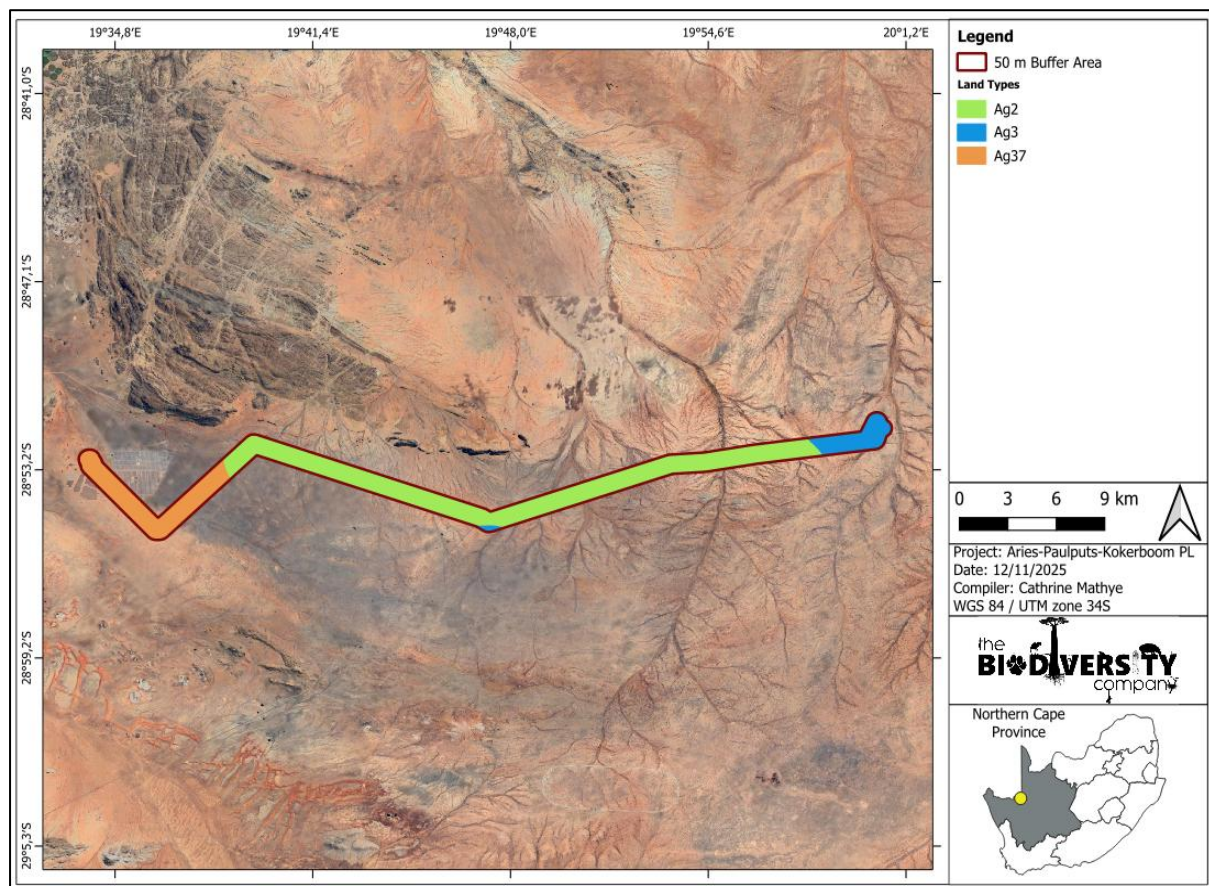


Figure 3-2 Land type associated with the proposed project area

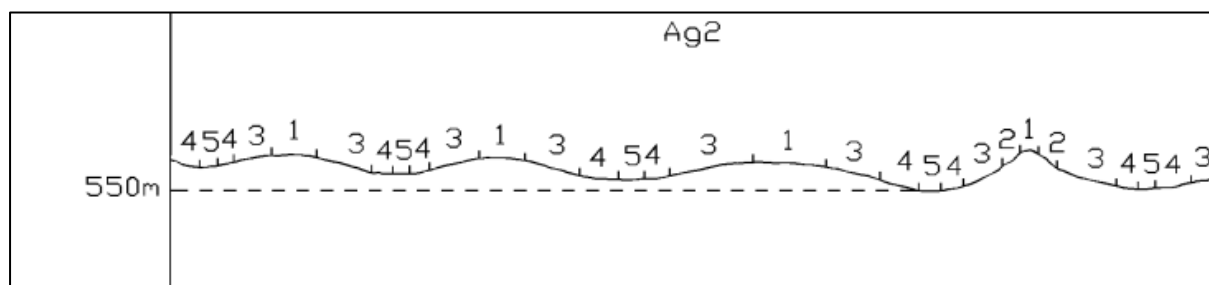


Figure 3-3 Illustration of land type Ag 2 terrain units (Land Type Survey Staff, 1972 – 2006)

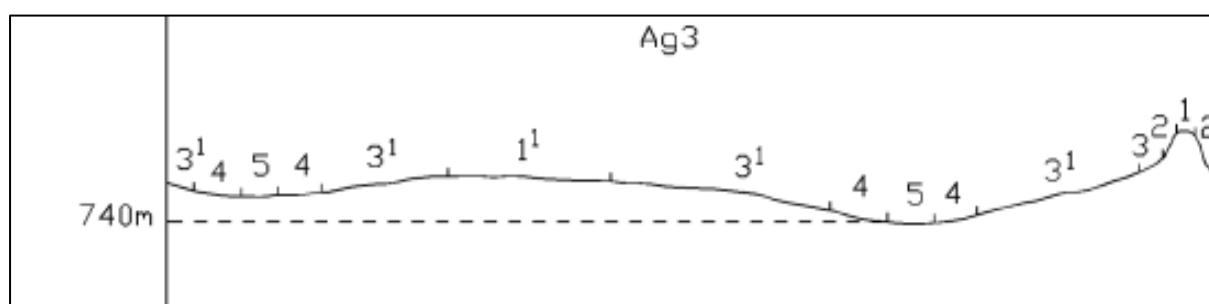


Figure 3-4 Illustration of land type Ag 3 terrain units (Land Type Survey Staff, 1972 – 2006)

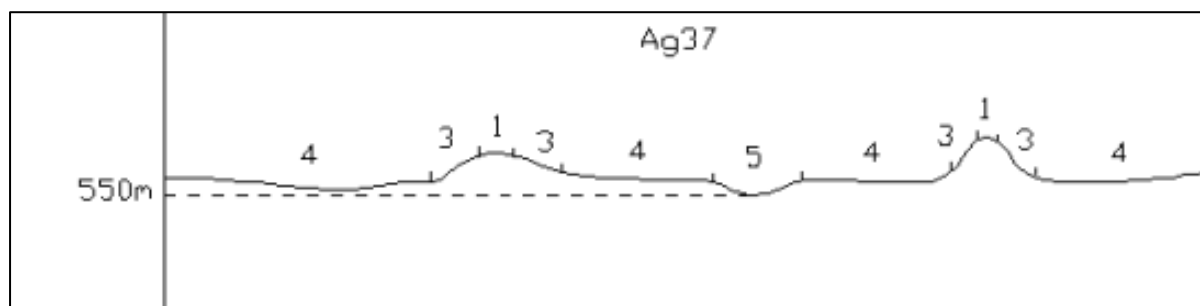


Figure 3-5 Illustration of land type Ag 37 terrain units (Land Type Survey Staff, 1972 – 2006)

Table 3-1 Soils expected at the respective terrain units within the Ag 2 land type, respectively (Land Type Survey Staff, 1972 - 2006)

Terrain units									
1 (21%)		2 (0.5%)		3 (42%)		4(19.5%)		5 (17%)	
Mispah	54%	Bare Rocks	100%	Hutton	44%	Hutton	78%	Hutton	81%
Hutton	21%			Mispah	35%	Mispah	14%	Stream Beds	12%
Glencoe	20%			Glenrosa	14%	Glenrosa	5%	Dundee	5%
Glenrosa	14%			Bare Rocks	7%	Bare Rocks	3%	Bare Rocks	2%
Bare Rocks	11%								

Table 3-2 Soils expected at the respective terrain units within the Ag 3 land type, respectively (Land Type Survey Staff, 1972 - 2006)

Terrain units													
1 (0.3%)		1(1) (32%)		2 (0.3%)		3 (0.4%)		3 (1) (50%)		4(10%)		5 (7%)	
Bare Rocks	67%	Mispah	54%	Bare Rocks	100%	Bare Rocks	75%	Hutton	67%	Hutton	86%	Hutton	76%
Mispah	33%	Hutton	31%			Mispah	25%	Mispah	25%	Mispah	10%	Dundee	14%
		Bare Rocks	15%					Bare Rocks	8%	Bare Rocks	4%	Stream beds	7%
												Mispah	3%

Table 3-3 Soils expected at the respective terrain units within the Ag 37 land type, respectively (Land Type Survey Staff, 1972 - 2006)

Terrain units							
1 (5%)		3 (15%)		4 (60%)		5 (20%)	
Bare Rocks	100%	Bare Rocks	80%	Hutton	80%	Dundee, Oakleaf	60%
		Mispah	20%	Mispah	10%	Hutton	40%
				Dundee, Oakleaf	5%		
				Bare Rocks	5%		

3.2 Baseline Findings

Eight (8) representative soil forms were identified during the walkdown, which include the Vaalbos, Dundee, Coega, Glenrosa, Mispah, Grabouw, Witbank and Johannesburg soil forms (see Figure 3-6). The proposed powerline route falls predominantly in shallow soil profiles with limited and impermeable horizons which include Glenrosa and Mispah soil forms, together with the identified Coega, Witbank,

Grabouw, and Johannesburg soil forms are considered to have a very low agricultural potential and low suitability for crop production. These soils comprise of impermeable underlying horizons with solid and fractured rocks, cemented surface pan layer and cemented calcareous horizons.

Other soils that were identified within the proposed project area include Vaalbos and Dundee soil forms. Such medium sensitive soils have a weak to moderate structure, with good drainage, well-aerated and are suitable for agricultural practices such as crop production. The present slope and climatic conditions of the proposed project area, with areas coinciding with a medium sensitivity agricultural capability in the proposed powerline route were also considered. These soils were found along the natural veld, drainage lines and rocky mountainous areas. Some of the identified soil horizons within the proposed project area, as well as the current land uses are illustrated in Figure 3-7 and Figure 3-8 Figure 3-8, respectively.

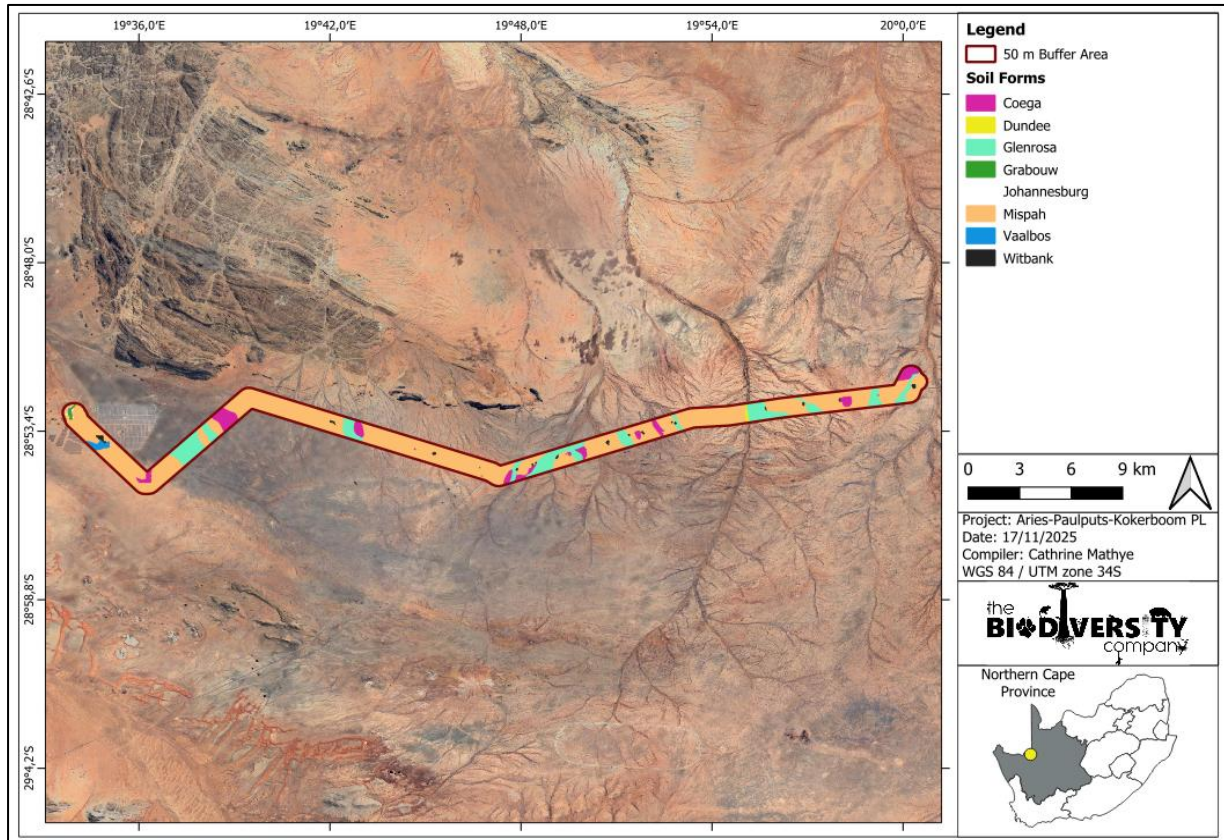


Figure 3-6 Soil forms found within the proposed project area

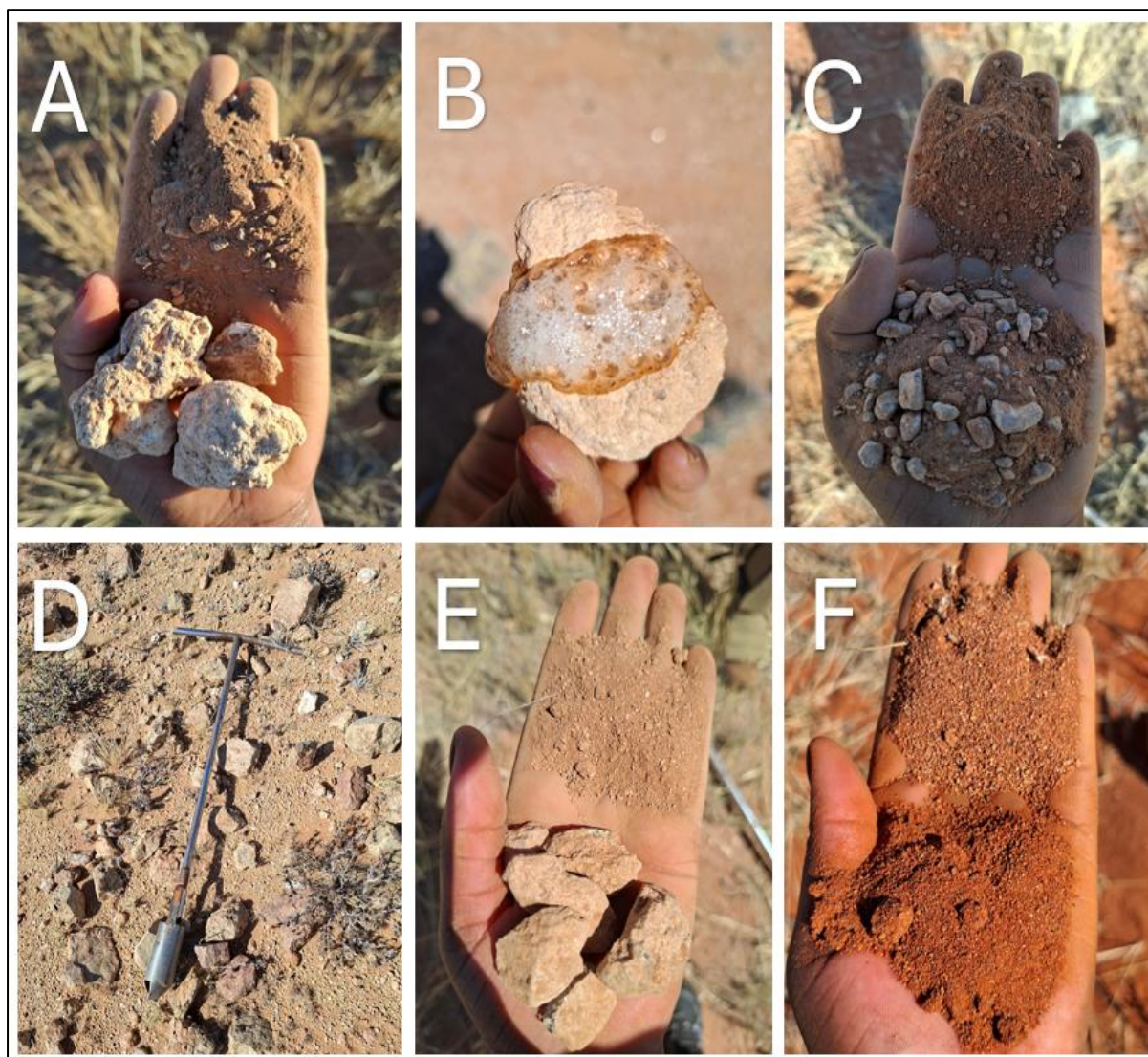


Figure 3-7 *Diagnostic soil forms and soil horizons identified on-site: A-B) Coega soil from(Orthic topsoil horizon/ hard carbonate subsoil horizon); C) Glenrosa (Orthic topsoil horizon/ lithic subsoil horizon); D-E) Mispah soil form (Orthic topsoil horizon/ hard rock); and F) Vaalbos soil form (Orthic topsoil horizon/ red apedal subsoil horizon/ hard rock).*

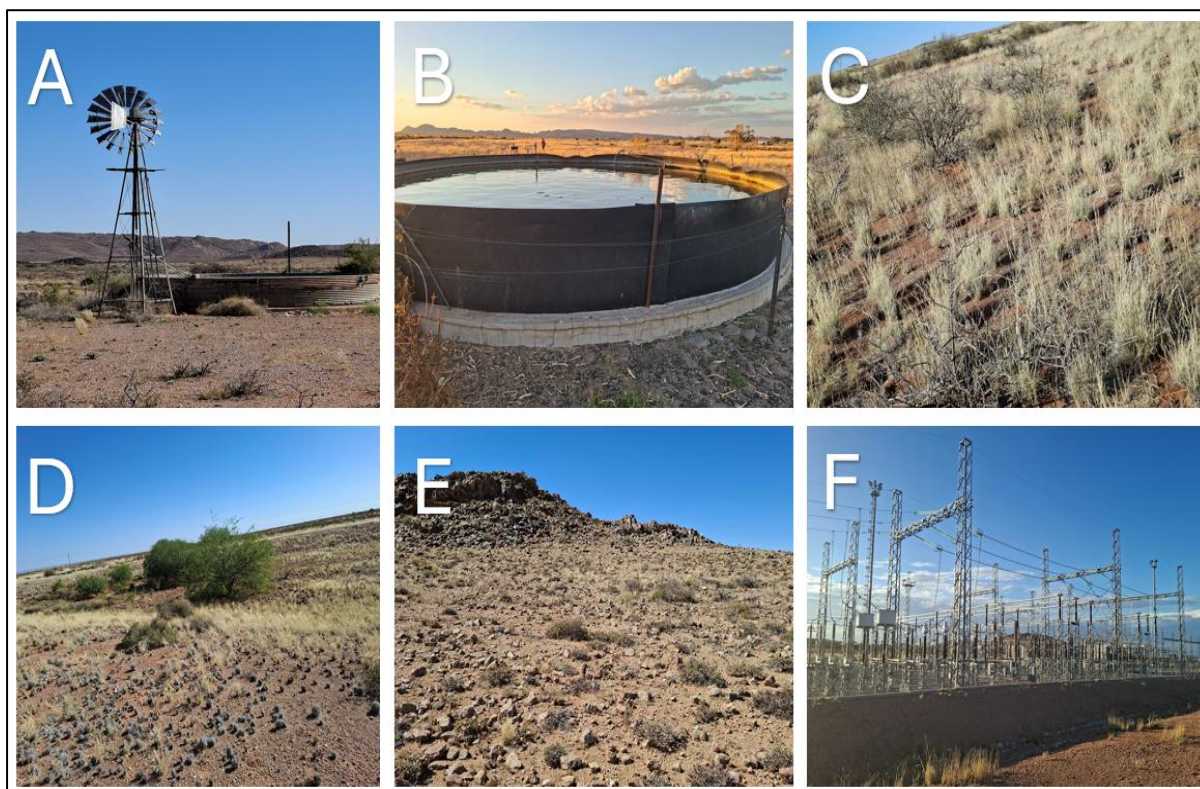


Figure 3-8 *Current land use; A-B) Windmill and artificial dam; C-D) Natural veld; E) Small hill (Koppie) and F) existing substation.*

Accordingly, following Smith, (2006) which the national DAFF, (2017) land capabilities protocols were further expanded from. The above-mentioned identified soil forms associated with the project area are restricted to land capability classes “III” and “IV” which are categorised by LC 6-7 (Low-Moderate). Land capability classes “VI” and “VIII” are categorised by LC 1-5 (Very low to Low). The baseline soil land capability was aligned and compared to the National Land Capability data (DAFF, 2017). A climate capability level 8 has been assigned to the area given the low Mean Annual Precipitation (MAP) and the high Mean Annual Potential Evapotranspiration (MAPE) rates. By using the determined land capability for the most sensitive soils and the determined climate capability, a land potential of “L6” was calculated and the land potentials “L7” and “L8” for the less sensitive soils. According to Smith (2006), the “L6” land potential level is characterised by very restrictive potential with regular and/or severe limitations due to soil, slope, temperatures, or rainfall. The “L7” land potential level is characterized by a low potential with a severe limitation due to soil, slope, temperatures, or rainfall. The “L8” land potential level is characterized by very low potential with very severe limitation due to soil, slope, temperatures, or rainfall. The areas associated with the “L6”, “L7” and “L8” land potentials are considered non-arable.

The following land potential levels have been determined;

- Land potential level 6 (this land potential is characterised by very restricted potential. Regular and/ or severe limitations due to soil, slope, temperatures or rainfall). Non-arable;
- Land potential level 7 (this land potential is characterised by low potential. Severe limitations due to soil, slope, temperatures or rainfall). Non-arable and;
- Land Potential level 8 (this land potential level is characterized by very low potential with very severe limitation due to soil, slope, temperatures, or rainfall). Non-arable.

Land potential levels of the proposed area are illustrated in Figure 3-9

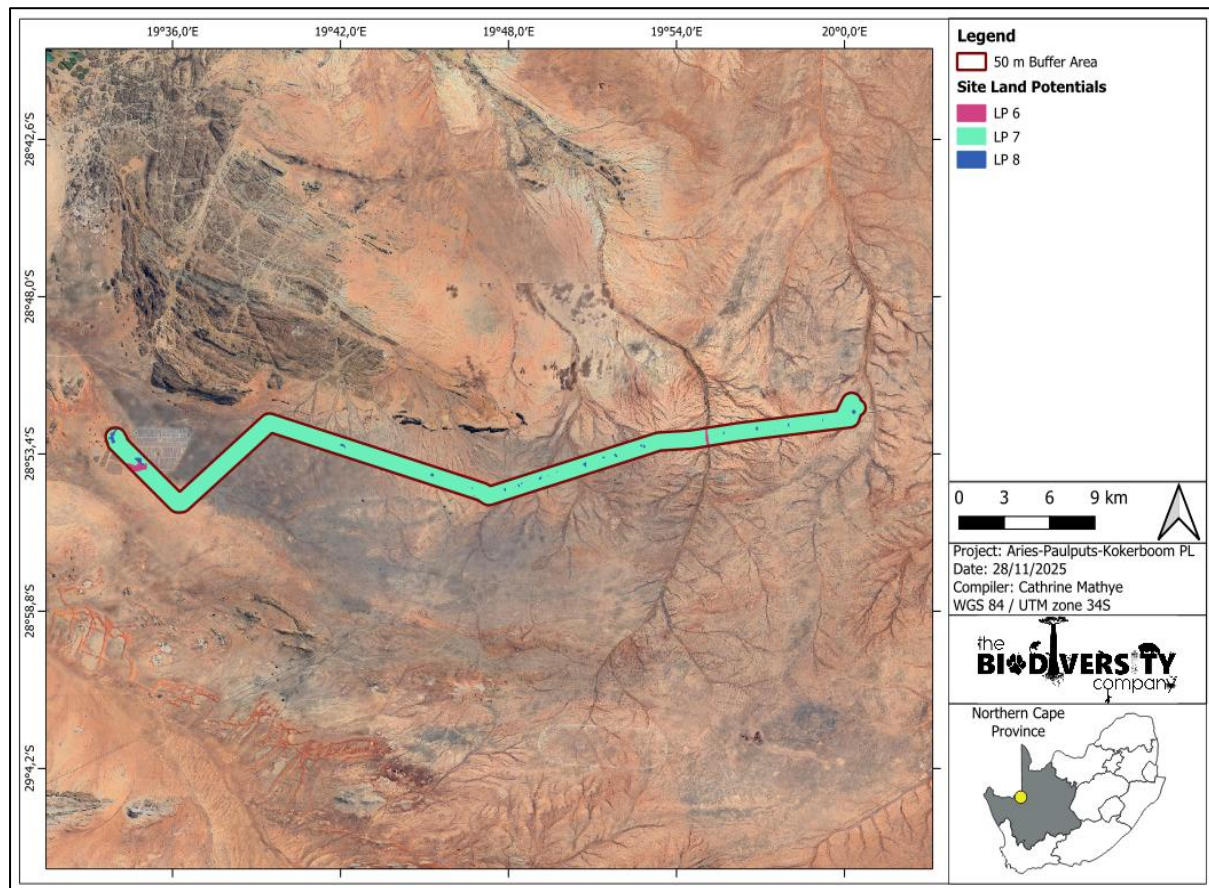


Figure 3-9 Land potentials found within the proposed project area

3.3 Sensitivity Verification

3.3.1 Screening Report – Aries-Paulputs-Kokerboom LILO Powerline Project

The following is deduced from the National Web-based Environmental Screening Tool Regulation 16(1)(v) of the Environmental Impact Assessment Regulations 2014, as amended):

- Agriculture Theme Sensitivity indicates that the proposed 50 m buffer of the project area falls within the 'Low to Medium' agricultural sensitivity (Figure 3-10).

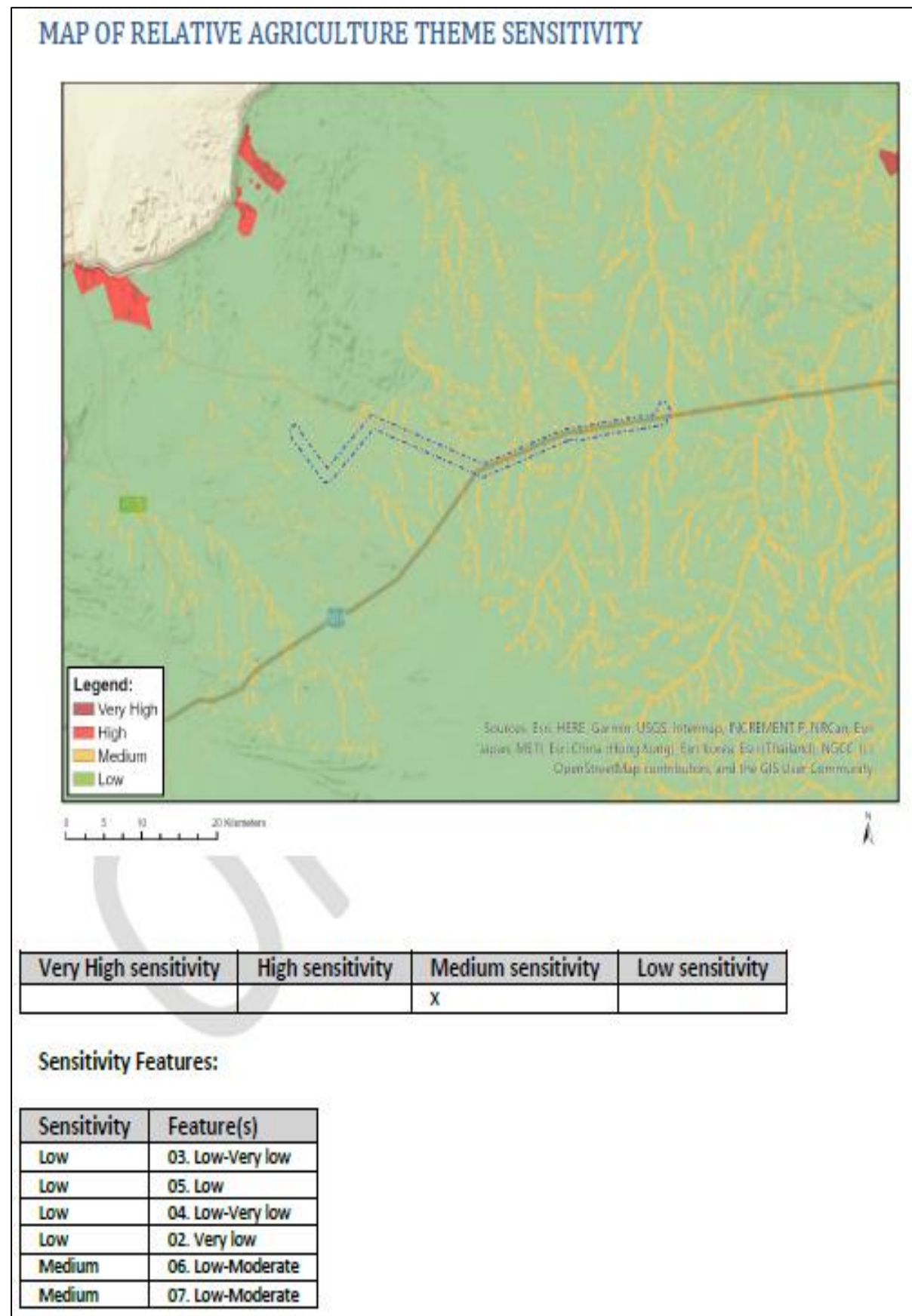


Figure 3-10 Map of Relative Agricultural Theme Sensitivity for the Aries-Paulputs: Aries Kokerboom 400kV LILO generated by the Environmental Screening Tool

Fifteen land capabilities have been digitised by (DAFF, 2017) across South Africa, of which six (6) potential land capability classes are located within the assessment area, including;

- Land Capability 2 to 5 (Very Low to Low Sensitivity); and
- Land Capability 6 to 7 (Low-Moderate Sensitivity).

The land capability dataset (DAFF, 2017) indicates that the proposed project area falls predominately within “Very Low to Low” sensitivity (see Figure 3-10 **Error! Reference source not found.**). The remaining areas have “Low-Moderate” sensitivity. Furthermore, no highly sensitive field crop boundaries or Protected Agricultural Areas (PAAs) were also identified within the 50 m buffer area of the proposed project area using the agricultural theme tool (DFFE, 2024). Therefore, there will be no segregation of high cropping areas within the proposed project.

The baseline soil findings, current land uses, and the calculated land potential correlates in areas associated with sensitivities ranging from very low to medium. The baseline soil findings the calculated land potential disputes the agricultural theme tool, in some areas demarcated with “Low-Moderate” and “Very Low to Low” land capability sensitivities. They concur with the agricultural theme tool on most areas demarcated as “Very Low to Low” sensitivity within the 50 m buffer of the project area. The construction of the powerline crosses the natural veld which are rendered unfeasible for cropping most practices due to the presence of low potential soils. However, they are suitable for livestock grazing. Linear developments, such as the proposed powerline, typically have minimal impacts on soil resources, and disturbed areas are expected to be restored within two years following rehabilitation. In areas practicing livestock grazing such activities can continue underneath the pylons and powerlines.

The current project area and associated activities related to the proposed project are expected to result in acceptable changes to soil resources. Consequently, based on the verified baseline findings, the proposed development is anticipated to have a minimal impact on soil resources.

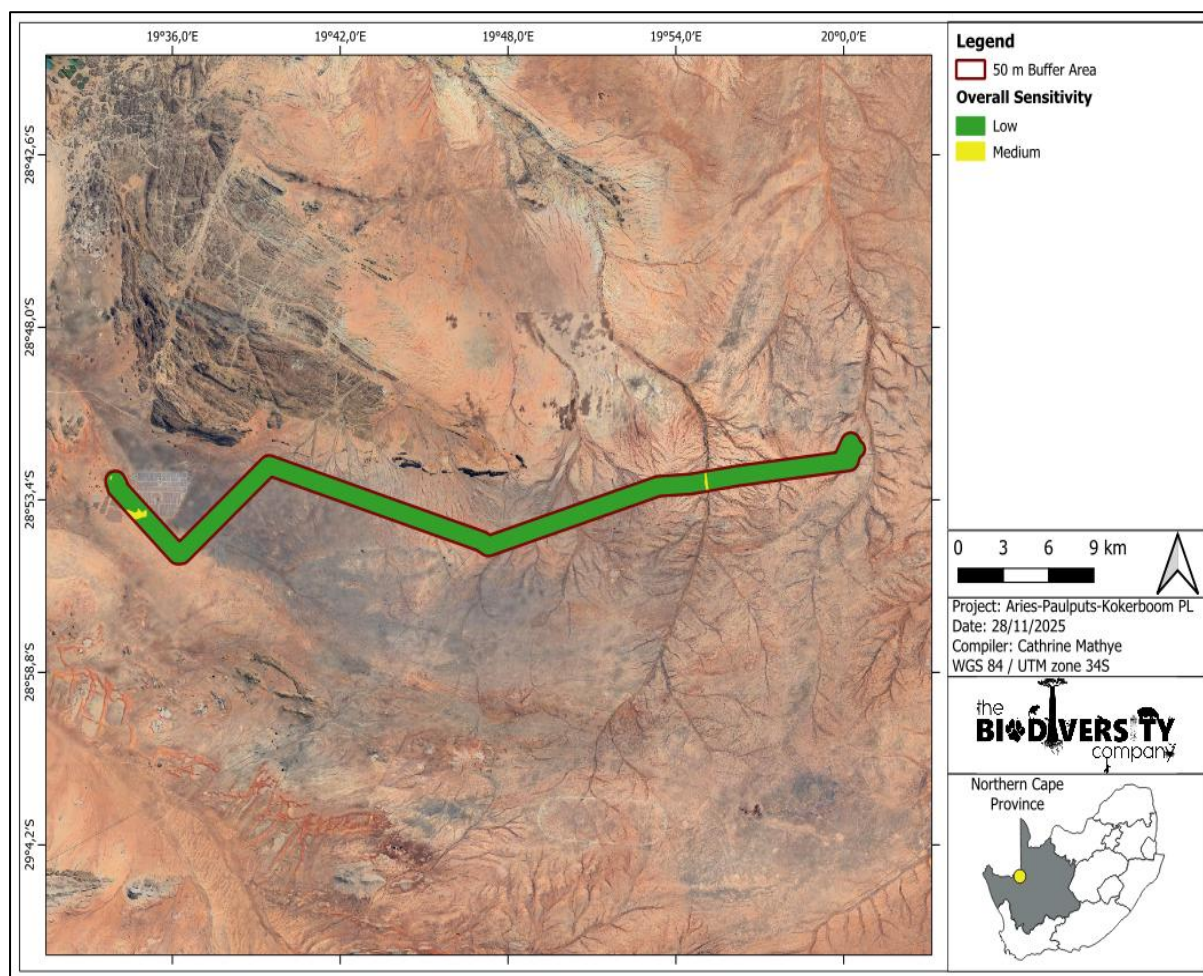


Figure 3-11 Overall site verified sensitivity of the project area.

Considering the soil properties, agricultural potential as well as the current land use of the proposed access road development area, the area has a “Low” agricultural sensitivity. Based on the confirmed sensitivities, the overall sensitivity of the proposed project area is predominately categorized as “Low” and with marginal “Medium” (Figure 3-11). The allocated sensitivities for the theme are either disputed or validated in Table 3-4 below.

Table 3-4 Summary of the screening tool vs specialist assigned sensitivities

Screening Tool Theme	Feature(s)	Screening Tool	Specialist	Tool Validated or Disputed by Specialist - Reasoning
Agricultural Theme	LC 6-7 (Low Moderate)	Medium	Medium	Validated – Land capability Low-Moderate. The presence of medium potential soils including Vaalbos and Dundee soil forms. The apedal soils are well- aerated and drained, they are suitable for agricultural production.
	LC 6-7 (Low Moderate)	Medium	Low	Disputed – Land capability Very-Low to Low. Presence of shallow, Anthrosols, and Transported Technosols soils with restrictive substratum properties such as Glenrosa, Coega, Mispah, Grabouw and Witbank soil forms. These soils have low potential and are not suitable for agricultural production
	LC 2-5 (Very Low to Low)	Low	Medium	Disputed – Land capability Low-Moderate. The presence of medium potential soils including Vaalbos and Dundee soil forms. The apedal soils are well- aerated and drained, they are suitable for agricultural production.
	LC 2-5 (Very Low to Low)	Low	Low	Validated – Land capability Very-Low to Low. Presence of shallow, Anthrosols, and Transported Technosols soils with restrictive substratum properties such as Glenrosa, Coega, Mispah, Grabouw and Witbank soil forms. These soils have low potential and are not

suitable for agricultural production.

3.4 Walkdown Site Observations

The following soil observation have been determined from the soil and agricultural walkdown shown in Table 3-5. Most of potential tower locations are associated within low potential soils, and the sensitivity towers are detailed below:

- Areas which coincide with good potential agricultural soils were confirmed with the specialist include; towers KOK/PAU 104 and ARI/ PAU 336. These areas are associated to Vaalbos soil form. In areas practising livestock grazing such practices can still occur underneath the pylons and powerlines. Soil resources associated to most linear developments like powerlines, will be restored within a period of 2 years from the on-set of the construction phase with implementation of proper mitigation measures.
- According to the revised DALRRD (2025) Protected Agricultural Areas (PAAs) database, the proposed project area does not overlap with any PAAs. Additionally, there were no crop fields within the proposed Powerline corridor and no irrigation infrastructures found within proposed project area and its associated 50m buffer area.

Table 3-5 Site specific summary (Soil form, land potential, overall sensitivity), comments and recommendations on the route associated with the Aries-Paulputs-Kokerboom 400 KV LILO Powerline and associated Substation Project

ID	Comments and recommendations
KOK/PAU 001	Soil form: Coega
	<u>Findings:</u> No specific constraints were recorded for soil and agriculture. Shallow soil profiles.
	Field Crop Boundaries or High potential soils: None
	<u>Land Potential:</u> L7
	<u>Sensitivity:</u> Low
KOK/PAU 002 – 003 ARI/PAU 230-235	<u>Recommendations:</u> No changes to site selection are required
	Soil form: Mispah
	<u>Findings:</u> No specific constraints were recorded for soil and agriculture. Shallow soil profiles.
	Field Crop Boundaries or High potential soils: None
	<u>Land Potential:</u> L7
KOK/PAU 004 ARI/PAU 236	<u>Sensitivity:</u> Low
	<u>Recommendations:</u> No changes to site selection are required.
	Soil form: Glenrosa
	<u>Findings:</u> No specific constraints were recorded for soil and agriculture. Shallow soil profiles.
	Field Crop Boundaries or High potential soils: None
KOK/PAU 005 -006 ARI/PAU 237-238	<u>Land Potential:</u> L7
	<u>Sensitivity:</u> Low
	<u>Recommendations:</u> No changes to site selection are required.
	Soil form: Mispah
	<u>Findings:</u> No specific constraints were recorded for soil and agriculture. Shallow soil profiles.
KOK/PAU 005 -006 ARI/PAU 237-238	Field Crop Boundaries or High potential soils: None
	<u>Land Potential:</u> L7
	<u>Sensitivity:</u> Low
	<u>Recommendations:</u> No changes to site selection are required.

KOK/PAU 007 ARI/PAU 239	<u>Soil form:</u> Glenrosa <u>Findings:</u> No specific constraints were recorded for soil and agriculture. Shallow soil profiles. <u>Field Crop Boundaries or High potential soils:</u> None <u>Land Potential:</u> L7 <u>Sensitivity:</u> Low <u>Recommendations:</u> No changes to site selection are required.
KOK/PAU 008 -009 ARI/PAU 239-241	<u>Soil form:</u> Mispah <u>Findings:</u> No specific constraints were recorded for soil and agriculture. Shallow soil profiles. <u>Field Crop Boundaries or High potential soils:</u> None <u>Land Potential:</u> L7 <u>Sensitivity:</u> Low <u>Recommendations:</u> No changes to site selection are required.
KOK/PAU 010 ARI/PAU 242	<u>Soil form:</u> Coega <u>Findings:</u> Presences of Hard carbonate was the recorded constraints for soil and agriculture. Shallow soil profiles. <u>Field Crop Boundaries or High potential soils:</u> None <u>Land Potential:</u> L7 <u>Sensitivity:</u> Low <u>Recommendations:</u> No changes to site selection are required.
KOK/PAU 011 -013 ARI/PAU 242-245	<u>Soil form:</u> Mispah <u>Findings:</u> No specific constraints were recorded for soil and agriculture. Shallow soil profiles. <u>Field Crop Boundaries or High potential soils:</u> None <u>Land Potential:</u> L7 <u>Sensitivity:</u> Low <u>Recommendations:</u> No changes to site selection are required.
KOK/PAU 014 ARI/PAU 246	<u>Soil form:</u> Glenrosa <u>Findings:</u> No specific constraints were recorded for soil and agriculture. Shallow soil profiles. <u>Field Crop Boundaries or High potential soils:</u> None <u>Land Potential:</u> L7 <u>Sensitivity:</u> Low <u>Recommendations:</u> No changes to site selection are required.
KOK/PAU 015 -018 ARI/PAU 247-250	<u>Soil form:</u> Mispah <u>Findings:</u> No specific constraints were recorded for soil and agriculture. Shallow soil profiles. <u>Field Crop Boundaries or High potential soils:</u> None <u>Land Potential:</u> L7 <u>Sensitivity:</u> Low <u>Recommendations:</u> No changes to site selection are required.
KOK/PAU 019 -020 ARI/PAU 251-252	<u>Soil form:</u> Glenrosa <u>Findings:</u> No specific constraints were recorded for soil and agriculture. Shallow soil profiles. <u>Field Crop Boundaries or High potential soils:</u> None <u>Land Potential:</u> L7 <u>Sensitivity:</u> Low <u>Recommendations:</u> No changes to site selection are required.
KOK/PAU 021 -029	<u>Soil form:</u> Mispah

ARI/PAU 253-261	<u>Findings:</u> No specific constraints were recorded for soil and agriculture. Shallow soil profiles. Field Crop Boundaries or High potential soils: None <u>Land Potential:</u> L7 <u>Sensitivity:</u> Low <u>Recommendations:</u> No changes to site selection are required.
KOK/PAU 030 ARI/PAU 262	Soil form: Glenrosa <u>Findings:</u> No specific constraints were recorded for soil and agriculture. Shallow soil profiles. Field Crop Boundaries or High potential soils: None <u>Land Potential:</u> L7 <u>Sensitivity:</u> Low <u>Recommendations:</u> No changes to site selection are required.
KOK/PAU 031 ARI/PAU 263	Soil form: Mispah <u>Findings:</u> No specific constraints were recorded for soil and agriculture. Shallow soil profiles. Field Crop Boundaries or High potential soils: None <u>Land Potential:</u> L7 <u>Sensitivity:</u> Low <u>Recommendations:</u> No changes to site selection are required.
KOK/PAU 032 ARI/PAU 264	Soil form: Coega <u>Findings:</u> Presences of Hard carbonate was the recorded constraints for soil and agriculture. Shallow soil profiles. Field Crop Boundaries or High potential soils: None <u>Land Potential:</u> L7 <u>Sensitivity:</u> Low <u>Recommendations:</u> No changes to site selection are required.
KOK/PAU 033 -034 ARI/PAU 265-266	Soil form: Mispah <u>Findings:</u> No specific constraints were recorded for soil and agriculture. Shallow soil profiles. Field Crop Boundaries or High potential soils: None <u>Land Potential:</u> L7 <u>Sensitivity:</u> Low <u>Recommendations:</u> No changes to site selection are required.
KOK/PAU 035 ARI/PAU 267	Soil form: Mispah <u>Findings:</u> No specific constraints were recorded for soil and agriculture. Shallow soil profiles. Field Crop Boundaries or High potential soils: None <u>Land Potential:</u> L7 <u>Sensitivity:</u> Low <u>Recommendations:</u> No changes to site selection are required.
KOK/PAU 036 ARI/PAU 268	Soil form: Glenrosa <u>Findings:</u> No specific constraints were recorded for soil and agriculture. Shallow soil profiles. Field Crop Boundaries or High potential soils: None <u>Land Potential:</u> L7 <u>Sensitivity:</u> Low <u>Recommendations:</u> No changes to site selection are required.
KOK/PAU 037 -040 ARI/PAU 269-272	Soil form: Mispah <u>Findings:</u> No specific constraints were recorded for soil and agriculture. Shallow soil profiles.

	<p>Field Crop Boundaries or High potential soils: None</p> <p><u>Land Potential: L7</u></p> <p><u>Sensitivity: Low</u></p> <p><u>Recommendations: No changes to site selection are required.</u></p>
<p>KOK/PAU 041 ARI/PAU 273</p>	<p>Soil form: Coega</p> <p><u>Findings: No specific constraints were recorded for soil and agriculture. Shallow soil profiles.</u></p> <p>Field Crop Boundaries or High potential soils: None</p> <p><u>Land Potential: L7</u></p> <p><u>Sensitivity: Low</u></p> <p><u>Recommendations: No changes to site selection are required.</u></p>
<p>KOK/PAU 042 ARI/PAU 274-275</p>	<p>Soil form: Mispah</p> <p><u>Findings: No specific constraints were recorded for soil and agriculture. Shallow soil profiles.</u></p> <p>Field Crop Boundaries or High potential soils: None</p> <p><u>Land Potential: L7</u></p> <p><u>Sensitivity: Low</u></p> <p><u>Recommendations: No changes to site selection are required.</u></p>
<p>KOK/PAU 043</p>	<p>Soil form: Coega</p> <p><u>Findings: No specific constraints were recorded for soil and agriculture. Shallow soil profiles.</u></p> <p>Field Crop Boundaries or High potential soils: None</p> <p><u>Land Potential: L7</u></p> <p><u>Sensitivity: Low</u></p> <p><u>Recommendations: No changes to site selection are required.</u></p>
<p>KOK/PAU 044 ARI/PAU 276</p>	<p>Soil form: Mispah</p> <p><u>Findings: No specific constraints were recorded for soil and agriculture. Shallow soil profiles.</u></p> <p>Field Crop Boundaries or High potential soils: None</p> <p><u>Land Potential: L7</u></p> <p><u>Sensitivity: Low</u></p> <p><u>Recommendations: No changes to site selection are required.</u></p>
<p>KOK/PAU 045 -046 ARI/PAU 277-278</p>	<p>Soil form: Glenrosa</p> <p><u>Findings: No specific constraints were recorded for soil and agriculture. Shallow soil profiles.</u></p> <p>Field Crop Boundaries or High potential soils: None</p> <p><u>Land Potential: L7</u></p> <p><u>Sensitivity: Low</u></p> <p><u>Recommendations: No changes to site selection are required.</u></p>
<p>KOK/PAU 047 ARI/PAU 279</p>	<p>Soil form: Coega</p> <p><u>Findings: No specific constraints were recorded for soil and agriculture. Shallow soil profiles.</u></p> <p>Field Crop Boundaries or High potential soils: None</p> <p><u>Land Potential: L7</u></p> <p><u>Sensitivity: Low</u></p> <p><u>Recommendations: No changes to site selection are required.</u></p>
<p>KOK/PAU 048 ARI/PAU 280</p>	<p>Soil form: Mispah</p> <p><u>Findings: No specific constraints were recorded for soil and agriculture. Shallow soil profiles.</u></p> <p>Field Crop Boundaries or High potential soils: None</p> <p><u>Land Potential: L7</u></p>

	<u>Sensitivity: Low</u> <u>Recommendations: No changes to site selection are required.</u>
KOK/PAU 049 ARI/PAU 281	<u>Soil form: Glenrosa</u> <u>Findings: No specific constraints were recorded for soil and agriculture. Shallow soil profiles.</u> <u>Field Crop Boundaries or High potential soils: None</u> <u>Land Potential: L7</u> <u>Sensitivity: Low</u> <u>Recommendations: No changes to site selection are required.</u>
KOK/PAU 050 -066 ARI/PAU 282-298	<u>Soil form: Mispah</u> <u>Findings: No specific constraints were recorded for soil and agriculture. Shallow soil profiles.</u> <u>Field Crop Boundaries or High potential soils: None</u> <u>Land Potential: L7</u> <u>Sensitivity: Low</u> <u>Recommendations: No changes to site selection are required.</u>
KOK/PAU 067 ARI/PAU 299	<u>Soil form: Coega</u> <u>Findings: No specific constraints were recorded for soil and agriculture. Shallow soil profiles.</u> <u>Field Crop Boundaries or High potential soils: None</u> <u>Land Potential: L7</u> <u>Sensitivity: Low</u> <u>Recommendations: No changes to site selection are required.</u>
KOK/PAU 068 ARI/PAU 300	<u>Soil form: Glenrosa</u> <u>Findings: No specific constraints were recorded for soil and agriculture. Shallow soil profiles.</u> <u>Field Crop Boundaries or High potential soils: None</u> <u>Land Potential: L7</u> <u>Sensitivity: Low</u> <u>Recommendations: No changes to site selection are required.</u>
KOK/PAU 069 -082 ARI/PAU 301-314	<u>Soil form: Mispah</u> <u>Findings: No specific constraints were recorded for soil and agriculture. Shallow soil profiles.</u> <u>Field Crop Boundaries or High potential soils: None</u> <u>Land Potential: L7</u> <u>Sensitivity: Low</u> <u>Recommendations: No changes to site selection are required.</u>
KOK/PAU 083-084 ARI/PAU 315-316	<u>Soil form: Coega</u> <u>Findings: No specific constraints were recorded for soil and agriculture. Shallow soil profiles.</u> <u>Field Crop Boundaries or High potential soils: None</u> <u>Land Potential: L7</u> <u>Sensitivity: Low</u> <u>Recommendations: No changes to site selection are required.</u>
KOK/PAU 085 ARI/PAU 317	<u>Soil form: Mispah</u> <u>Findings: No specific constraints were recorded for soil and agriculture. Shallow soil profiles.</u> <u>Field Crop Boundaries or High potential soils: None</u> <u>Land Potential: L7</u> <u>Sensitivity: Low</u> <u>Recommendations: No changes to site selection are required.</u>

KOK/PAU 086 ARI/PAU 318	<u>Soil form: Glenrosa</u> <u>Findings: No specific constraints were recorded for soil and agriculture. Shallow soil profiles.</u> <u>Field Crop Boundaries or High potential soils: None</u> <u>Land Potential: L7</u> <u>Sensitivity: Low</u> <u>Recommendations: No changes to site selection are required.</u>
KOK/PAU 087 ARI/PAU 319	<u>Soil form: Mispah</u> <u>Findings: No specific constraints were recorded for soil and agriculture. Shallow soil profiles.</u> <u>Field Crop Boundaries or High potential soils: None</u> <u>Land Potential: L7</u> <u>Sensitivity: Low</u> <u>Recommendations: No changes to site selection are required.</u>
KOK/PAU 088-090 ARI/PAU 320-322	<u>Soil form: Glenrosa</u> <u>Findings: No specific constraints were recorded for soil and agriculture. Shallow soil profiles.</u> <u>Field Crop Boundaries or High potential soils: None</u> <u>Land Potential: L7</u> <u>Sensitivity: Low</u> <u>Recommendations: No changes to site selection are required.</u>
KOK/PAU 091-097 ARI/PAU 323-329	<u>Soil form: Mispah</u> <u>Findings: No specific constraints were recorded for soil and agriculture. Shallow soil profiles.</u> <u>Field Crop Boundaries or High potential soils: None</u> <u>Land Potential: L7</u> <u>Sensitivity: Low</u> <u>Recommendations: No changes to site selection are required.</u>
KOK/PAU 095 ARI/PAU 327	<u>Soil form: Coega</u> <u>Findings: No specific constraints were recorded for soil and agriculture. Shallow soil profiles.</u> <u>Field Crop Boundaries or High potential soils: None</u> <u>Land Potential: L7</u> <u>Sensitivity: Low</u> <u>Recommendations: No changes to site selection are required.</u>
KOK/PAU 098-103 ARI/PAU 331-335	<u>Soil form: Mispah</u> <u>Findings: No specific constraints were recorded for soil and agriculture. Shallow soil profiles.</u> <u>Field Crop Boundaries or High potential soils: None</u> <u>Land Potential: L7</u> <u>Sensitivity: Low</u> <u>Recommendations: No changes to site selection are required.</u>
KOK/PAU 104 ARI/PAU 336	<u>Soil form: Vaalbos</u> <u>Findings: Medium potential soil for agriculture. No active cropping.</u> <u>Field Crop Boundaries or High potential soils: None</u> <u>Land Potential: L6</u> <u>Sensitivity: Medium</u> <u>Recommendations: No changes to site selection are required.</u>
KOK/PAU 105-111 ARI/PAU 337-343	<u>Soil form: Mispah</u> <u>Findings: No specific constraints were recorded for soil and agriculture. Shallow soil profiles.</u>

Field Crop Boundaries or High potential soils: None

Land Potential: L7

Sensitivity: Low

Recommendations: No changes to site selection are required.

4 CARA Requirements

Under Conservation of Agricultural Resources Act (no. 43 of 1983, CARA), approvals are necessary for various activities, such as cultivating virgin land, veld burning, cultivating localized alien plants for commercial purposes and the draining of wetland systems.

For the cultivation of virgin land, CARA specifies that only arable land should be cultivated. However, disturbances to topsoil resulting from the construction of the laydown camps and its infrastructure do not fall under this category of cultivation as defined by CARA but rather soil disturbance. Therefore, the construction and operation of the camps do not require consent under CARA. Additionally, since the proposed development does not involve veld burning or the commercial cultivation of localized alien plants, it does not require consents under those provisions of CARA.

Similarly, a specialist aquatic assessment was undertaken for the required authorisations for the Aries-Paulputs-Kokerboom 400KV Powerline Project the associated infrastructures has adhered to the recommendations to avoid most watercourses, and to also adhere to the prescribed buffer width. It is anticipated that the construction and operation phases of the project poses "Moderate" pre-mitigation risks to the freshwater ecosystems, which can change to "Low" post-mitigation risks for all impacts. Therefore, the overall residual impact to the freshwater systems was determined to be low. The project is compliant and will not require consent under CARA for any activities.

5 Impact and Management Measures

The following list provides impacts which contributed to the loss of land capability:

- Soil erosion: Removal of vegetation for the proposed towers will leave bare soil surfaces within the proposed project area contributed to increased susceptibility to wind and water erosion, leading to loss of topsoil;
- Soil compaction from vehicle traffic: The movement and operation of vehicles within the project footprint resulted in increased soil compaction, which negatively affected soil structure and permeability;

The following table provides the framework for the prospective impacts, albeit limited, for the proposed project (Table 4 1).

Table 4-1 *Summative results of the Impact Assessment conducted for the proposed project*

Impact	Phase	Pre-Mitigation Impact	Post-mitigation Impact	Final Significance
Soil compaction, Soil erosion, Land degradation and Soil contamination	Construction	Medium to low -	Low -	Medium to low -
Mitigation Measures				
<ul style="list-style-type: none"> Minimise project footprint as far as possible. Manage location of topsoil stripping stockpiling, demarcation of topsoil stockpiles and prevention of stockpile erosion and contamination. This can protect the topsoil stockpiles to keep it viable for rehabilitation purposes. Make use of existing roads or upgrades tracks before new roads are constructed. The number and width of internal access routes must be kept to a minimum; Implementation of embedded controls such as geotextiles, gabion baskets can effectively control soil erosion on-site; Associated infrastructure foundations must be (preferably) located in already disturbed areas where possible; Dust-reducing mitigation measures must be put in place and must be strictly adhered to, for all roads and bare (unvegetated) areas. Dust suppressions methods should be implemented to reduce wind erosion during this phase; A stormwater management plan must be implemented for the development; and Rehabilitation of the area must be initiated from the onset of the project. Soil stripped from tower placement can be used for rehabilitation efforts. 				
Soil compaction, Soil erosion, Land degradation and Soil contamination	Operation	Low -	Low -	Low -
Mitigation Measures				
<ul style="list-style-type: none"> Dust-reducing mitigation measures must be put in place and must be strictly adhered to, for all roads and bare (unvegetated) areas. A stormwater management plan must be implemented for the development. Rehabilitation of the area must be initiated from the onset of the project. Rehabilitate disturbed areas promptly by re-spreading stripped topsoil and re-vegetating with indigenous species; and An alien invasive plant species and control programme must be implemented from the onset of the project. 				

Soil compaction, Soil erosion, Land degradation and Soil contamination	Decommissioning	Low -	Low -	Low --
Mitigation Measures				
<ul style="list-style-type: none"> • Install erosion and sediment control measures; • Complete removal of infrastructures such as racking, inverters, and electrical infrastructure is the standard best practice to restore the site and prevent future hazards. Remove all above-ground and below-ground cabling, foundations, and concrete pads. • Remove hazardous materials (batteries, oils, chemicals) for proper disposal to prevent soil contamination. • Remove all construction debris and waste from the site to prevent pollution. • Decompact soils in areas affected by heavy machinery (use subsoiling or deep ripping). • Reseed or replant with native or pre-existing vegetation suited to the soil capability. • Maintain erosion and sediment controls until vegetation is re-established • Conduct post-restoration soil assessments (compaction, fertility, structure). • Document and report restoration outcomes to relevant authorities. 				
Soil compaction, Soil erosion, Land degradation and Soil contamination	Rehab and closure	Low -	Low -	Low -
Mitigation Measure				
<ul style="list-style-type: none"> • Install erosion and sediment control measures • Remove all construction waste from the site. • Reseed or replant with native or pre-existing vegetation suited to the soil capability. • Maintain erosion and sediment controls until vegetation is re-established • Conduct post-restoration soil assessments (compaction, fertility, structure). • Document and report restoration outcomes to relevant authorities. • Conduct a final site inspection with stakeholders and authorities. 				

5.1 Anticipated Impact Framework

An impact framework was considered for the impact assessment (see Appendix B: Impact Assessment). The following list provides a framework for the identified major impacts associated with the proposed project area (Table 5-1).

Table 5-1 ***Anticipated impacts for the proposed Powerline, substation expansion and access roads on the agricultural resources***

Main Impact	Project activities that can cause loss/impacts to Soils (especially regarding the proposed infrastructure areas)	Secondary impacts anticipated
Loss of land capability	<ul style="list-style-type: none"> • Construction, operation and decommissioning of LILO powerline, substation and access roads; • Construction, operation and decommissioning of construction camps and layout areas; • Potential leaks or spillage (i.e. hydrocarbons); • Mixing of soil; • Soil dust precipitation in bare surface or gravel access roads; • Dust precipitation; and • Removal of vegetation for the proposed support infrastructure 	<ul style="list-style-type: none"> • Erosion; • Soil degradation; • Compaction; • Increase in salinity; • Land contamination; and • Loss of soil via aeolian processes.

5.2 Mitigations

The placement of the proposed towers is acceptable within the proposed project area. The following measures are provided:

- Vegetation clearance must be restricted to areas authorised for development;
- Land clearing and preparation may only be undertaken immediately prior to construction activities and within authorised areas;
- Minimise project footprint as far as possible. Manage location of topsoil stripping stockpiling, demarcation of topsoil stockpiles and prevention of stockpile erosion and contamination. This can protect the topsoil stockpiles to keep it viable for rehabilitation purposes;
- Make use of existing roads or upgrades tracks before new roads are constructed. The number and width of internal access routes must be kept to a minimum. Usually, areas with sandy soils and sand dunes should be avoided as far as possible for heavy vehicles, dust suppressions methods should be implemented to reduce wind erosion during this phase;
- Implementation of embedded controls such as geotextiles, gabion baskets can effectively control soil erosion on-site;
- A stormwater management plan must be implemented for the development. Using drainage control measures and culverts to manage surface runoff. The plan must provide input into the road network and management measures;
- Losses of fuel and lubricants from vehicles to be contained during construction and the powerline maintenance processes, use of biodegradable fluids where possible, avoid waste disposal on undesigned areas which are not contained.
- Associated infrastructure foundations for the pylons or towers must be (preferably) located in already disturbed areas where possible; and
- Rehabilitation of the area must be initiated from the onset of the project. Soil stripped from infrastructure placement can be used for rehabilitation efforts.

5.3 Management Measures

- The assessment of impact significance considers pre-mitigation as well as implemented post-mitigation scenarios. The aim of the management outcomes (below) is to present the mitigation measures in such a way that they can be incorporated into the Environmental Management Programme (EMPr) for the project, allowing for more successful implementation and auditing of the mitigations and monitoring guidelines. The project mitigation measures and management outcomes for the soils and agriculture resources during the construction, operational, decommissioning, rehabilitation and closure phases for the assessment are presented in Table 5-2 Mitigation Measures and Management Outcomes for the construction, operation, decommissioning and rehabilitation phases.

Table 5-2 Mitigation Measures and Management Outcomes for the construction, operation, decommissioning and rehabilitation phases.

No	Mitigation Measures	Phase	Timeframe	Responsible Party for Implementation	Monitoring (Frequency)	Party	Target	Performance Indicators (Monitoring Tool)
Soi1	Cleared areas must be rehabilitated and stabilised to avoid impacts to adjacent areas	Construction	Prior to construction and ongoing throughout lifespan of mine	Contractor/ Environmental Officer	Throughout phase		Rehabilitation implemented	Implement a rehabilitation plan
Soi2	Make use of existing access routes as much as possible before new routes are considered. Any selected "new" route must be authorized, minimizing disturbances to the wetland areas.	Construction	Prior to construction and ongoing throughout lifespan of mine	Contractor/ Environmental Officer	Throughout phase		All routes authorised	Design engineer to consider this for final layout
Soi3	Keep excavation and soil heaps clear of potential contaminates or waste	Construction	Prior to construction and ongoing throughout lifespan of mine	Contractor/ Environmental Officer	Throughout phase		Soil heaps are managed	Separate topsoil and sub-soil
Soi4	Lightly till any disturbed soil around the development footprint to avoid compaction	Construction	Prior to construction and ongoing throughout lifespan of mine	Contractor/ Environmental Officer	Throughout phase		Plan is implemented	Implement a rehabilitation plan
Soi5	Ensure soil stockpiles areas are sufficiently safeguarded against rain wash	Construction	Prior to construction and ongoing throughout lifespan of mine	Contractor/ Environmental Officer	Throughout phase		Plan is implemented	Implement soil management plan
Soi6	The use of herbicides is not recommended (opt for mechanical removal).	Construction	Prior to construction and ongoing throughout lifespan of mine	Contractor/ Environmental Officer	Throughout phase		Avoided buffer area	Demarcate buffer area
Soi7	Make sure all excess consumables are removed from site and deposited at an appropriate waste facility	Construction	Prior to construction and ongoing throughout lifespan of mine	Contractor/ Environmental Officer	Throughout phase		Restricted demarcated area to	Restrict designated working/storage/service areas
Soi8	Appropriately contain any generator diesel storage tanks, machinery spills (e.g., accidental spills of hydrocarbons oils, diesel etc.) or construction materials on site (e.g., concrete) in such a way as to prevent them leaking and entering wetlands or buffer areas	Construction	Prior to construction and ongoing throughout lifespan of mine	Contractor/ Environmental Officer	Throughout phase		Restricted demarcated area to	Restrict designated working/storage/service areas
Soi9	Provide appropriate sanitation facilities for workers during construction and service them regularly	Construction	Prior to construction and ongoing throughout lifespan of mine	Contractor/ Environmental Officer	Throughout phase		Ablution facilities provided and serviced	Provide service ablation for contractors/labour

Aries-Paulputs: Aries Kokerboom 400kV LILO

Soi10	The Contractor should supply sealable and properly marked domestic waste collection bins and all solid waste collected must be disposed of at a licensed disposal facility	Construction	Prior to construction and ongoing throughout lifespan of mine	Contractor/ Environmental Officer	Throughout phase	Plan is implemented	Implement waste management plan
Soi11	The Contractor must be in possession of an emergency spill kit that must always be complete and available on site	Construction	Prior to construction and ongoing throughout lifespan of mine	Contractor/ Environmental Officer	Throughout phase	Plan is implemented	Implement spill response plan
Soi12	Any contamination of topsoil by hydrocarbons must be avoided. Any contaminated soil must be treated in situ or be placed in containers and removed from the site for disposal in a licensed facility	Construction	Prior to construction and ongoing throughout lifespan of mine	Contractor/ Environmental Officer	Throughout phase	Plan is implemented	Implement spill response plan
Soi13	Implement dust suppression on stockpiles like the gravel roads.	Construction Operational	Prior to construction and ongoing throughout lifespan of mine	Contractor/ Environmental Officer	Throughout phase	Plan is implemented	Implement scheduled dust suppression plan
Soi14	Implement erosion control methods like mulching, geotextile sheets, reduce soil compaction, chemical spills which can affect soil fertility.	Operational	From operational and ongoing throughout lifespan of mine	Environmental Officer	Throughout phase	Implement an alien vegetation management plan	Implement an alien vegetation management plan
Soi15	Ensure successful rehabilitation of areas disturbed during construction and these areas are stabilized to avoid impacts to adjacent areas	Operational Decommissioning and rehab	From operational and ongoing throughout lifespan of mine including Rehabilitation and closure Phase	Contractor/ Environmental Officer	Throughout phase	Implement soil re-vegetation, spillage, or residual waste contamination rehabilitation plan	It should be assessed once a year for soil compaction, fertility, and erosion.
Soi16	Rehabilitation of the Project area will be undertaken, including the ripping of the compacted soil surfaces and establishment of vegetation.	Decommissioning and rehab	Rehabilitation and closure Phase	Contractor/ Environmental Officer	Throughout phase	Implement soil compaction rehabilitation	Implement erosion control, revegetation, and alien vegetation management plan on disturbed areas
Soi17	Ensure rehabilitation of contaminated soil by removal of pollutants by implementing methods such as bioremediation and phytoremediation	Decommissioning and rehab	Rehabilitation and closure Phase	Contractor/ Environmental Officer	Throughout phase	Implement soil spillage or residual waste contamination rehabilitation plan	It should be assessed once a year for soil compaction, fertility, and erosion.

6 Conclusion

Eight (8) representative soil forms were identified during the walkdown, which include the Vaalbos, Dundee, Coega, Glenrosa, Mispah, Grabouw, Witbank and Johannesburg soil forms. These soil forms were found along the natural veld, drainage lines and rocky mountainous areas. Their agricultural potential was concluded to range from low to medium.

Areas which coincide with good potential agricultural soils confirmed with the specialist include; towers, towers KOK/PAU 104 and ARI/ PAU 336. These areas are associated with Vaalbos soil form under natural veld practising livestock grazing and this practice can still occur underneath the pylons and powerlines. Soil resources associated to most linear developments like powerlines, will be restored within a period of 2 years from the on-set of the construction phase with implementation of proper mitigation measures.

The proposed Aries-Paulputs-Kokerboom 400kV Powerline project coincide with areas with very low to medium sensitivity. The proposed project will not result in possible land fragmentation of the available soils under natural veld.

It is the specialist's opinion that the proposed Aries-Paulputs-Kokerboom 400kV LILO Powerline project and the associated infrastructure will have an overall low residual impact on the agricultural production ability of the land. The proposed project and associate infrastructure may be favourably considered for development, provided all the mitigation measures are implemented.

Furthermore, according to the Government Gazette 43110, Government Notice No. 320, a site found to be of a "medium" or "low" sensitivity if the application is for a linear activity, impacts on the agricultural resource are temporary and the land in the opinion of the soil scientist or agricultural specialist, based on the mitigation and remedial measures, can be returned to the current land capability within two years of the completion of the construction phase. This aligns with the current the proposed project area which also has a low and medium sensitivity following the soil walkdown confirmation.

6.1 Specialist Statement

The proposed development area will have an overall low residual impact on the agricultural production capability of the area. The proposed development can be favourably considered for authorisation. The following serves to substantiate this statement:

- The site verified land capability of the proposed project area ranges from low to medium;
- The agricultural potential of the area ranges from low to medium;
- No active crop farming was identified within the 50 m buffer of the project area; and
- The overall agricultural sensitivity for the project area is categorised as low and medium.

6.2 Statement Conditions

The project may be favourably considered for authorisation and is not subject to any conditions. Possible land fragmentation can occur with the proposed powerline from pylon placements; careful placement should be considered only where feasible.

7 References

Department of Agriculture, Forestry and Fisheries, 2017. *National land capability evaluation raster data: Land capability data layer*, 2017. Pretoria.

National Environmental Screening Tool. 2024. National Environmental Screening Tool, 2024. Available from the Department of Forestry, Fisheries and the Environmental website: <https://screening.environment.gov.za/screeningtool/index.html#/pages/welcome>.

Land Type Survey Staff. 1972 - 2006. Land Types of South Africa: Digital Map (1:250 000 Scale) and Soil Inventory Databases. Pretoria: ARC-Institute for Soil, Climate, and Water.

Mucina, L., & Rutherford, M. C. 2006. The Vegetation of South Africa, Lesotho, and Swaziland. Strelitzia 19. Pretoria: National Biodiversity Institute.

Smith, B. 2006. The Farming Handbook. Netherlands & South Africa: University of KwaZulu-Natal Press & CTA.

Soil Classification Working Group. 1991. Soil Classification A Taxonomic system for South Africa. Pretoria: The Department of Agricultural Development.

Soil Classification Working Group. 2018. Soil Classification a Taxonomic system for South Africa. Pretoria: The Department of Agricultural Development.

South African National Biodiversity institute. (2006-2024). The National Vegetation Map 2024. Citation Online, <https://bgis.sanbi.org/vegmap>, version 2024.

8 Appendix Items

8.1 Appendix A: Methodology

8.1.1 Desktop Assessment

As part of the desktop assessment, baseline soil information was obtained using published South African Land Type Data. Land type data for the site was obtained from the Institute for Soil Climate and Water (ISCW) of the Agricultural Research Council (ARC) (Land Type Survey Staff, 1972 - 2006). The land type data is presented at a scale of 1:250 000 and comprises of the division of land into land types.

8.1.2 Field Survey

The site was traversed on foot. A soil auger was used to determine the soil form/family and depth. The soil was hand augured to the first restricting layer or 1.2 m. Soil survey positions were recorded as waypoints using a handheld GPS. Soils were identified to the soil family level as per the "Soil Classification: A Taxonomic System for South Africa" (Soil Classification Working Group, 2018). Landscape features such as existing open trenches were also helpful in determining soil types and depth.

8.1.3 Land Capability

Land capability and agricultural potential will be determined by a combination of soil, terrain, and climate features. Land capability is defined by the most intensive long-term sustainable use of land under rain-fed conditions. At the same time an indication is given about the permanent limitations associated with the different land use classes.

Land capability is divided into eight classes, and these may be divided into three capability groups. Table 8-1 shows how the land classes and groups are arranged in order of decreasing capability and ranges of use. The risk of use increases from class I to class VIII (Smith, 2006).

Table 8-1 Land capability class and intensity of use (Smith, 2006)

Land Capability Class	Increased Intensity of Use									Land Capability Groups
I	W	F	LG	MG	IG	LC	MC	IC	VIC	Arable Land
II	W	F	LG	MG	IG	LC	MC	IC		
III	W	F	LG	MG	IG	LC	MC			
IV	W	F	LG	MG	IG	LC				
V	W	F	LG	MG						Grazing Land
VI	W	F	LG	MG						
VII	W	F	LG							
VIII	W									Wildlife
W - Wildlife		MG - Moderate Grazing			MC - Moderate Cultivation					
F - Forestry		IG - Intensive Grazing			IC - Intensive Cultivation					
LG - Light Grazing		LC - Light Cultivation			VIC - Very Intensive Cultivation					

The land potential classes are determined by combining the land capability results and the climate capability of a region as shown in the table below. The final land potential results are then described in the subsequent table.

Table 8-2 The combination table for land potential classification

Land capability class	Climate capability class							
	C1	C2	C3	C4	C5	C6	C7	C8
I	L1	L1	L2	L2	L3	L3	L4	L4
II	L1	L2	L2	L3	L3	L4	L4	L5
III	L2	L2	L3	L3	L4	L4	L5	L6
IV	L2	L3	L3	L4	L4	L5	L5	L6
V	Vlei	Vlei	Vlei	Vlei	Vlei	Vlei	Vlei	Vlei
VI	L4	L4	L5	L5	L5	L6	L6	L7
VII	L5	L5	L6	L6	L7	L7	L7	L8
VIII	L6	L6	L7	L7	L8	L8	L8	L8

Table 8-3 The Land Potential Classes

Land potential	Description of land potential class
L1	Very high potential: No limitations. Appropriate contour protection must be implemented and inspected.
L2	High potential: Very infrequent and/or minor limitations due to soil, slope, temperatures, or rainfall. Appropriate contour protection must be implemented and inspected.
L3	Good potential: Infrequent and/or moderate limitations due to soil, slope, temperatures, or rainfall. Appropriate contour protection must be implemented and inspected.
L4	Moderate potential: Moderately regular and/or severe to moderate limitations due to soil, slope, temperatures, or rainfall. Appropriate permission is required before ploughing virgin land.
L5	Restricted potential: Regular and/or severe to moderate limitations due to soil, slope, temperatures, or rainfall.
L6	Very restricted potential: Regular and/or severe limitations due to soil, slope, temperatures, or rainfall. Non-arable
L7	Low potential: Severe limitations due to soil, slope, temperatures, or rainfall. Non-arable
L8	Very low potential: Very severe limitations due to soil, slope, temperatures, or rainfall. Non-arable

The land capability of the proposed footprint will be compared to the National Land Capability which was refined in 2014- 2016. The National Land Capability methodology is based on a spatial evaluation modelling approach and a raster spatial data layer consisting of fifteen (15) land capability evaluation values (Table 8-4), usable on a scale of 1:50 000 – 1:100 000 (DAFF, 2017). The previous system is based on a classification approach, with 8 classes (Table 8-1). Land capability and land potential will also be determined in consideration of the screening tool to ultimately establish the accuracy of the land capability sensitivity from (DAFF, 2017).

Table 8-4 National Land Capability Values (DAFF,2017)

Land Capability Evaluation Value	Land Capability Description
1	Very low
2	
3	
4	Very Low to Low
5	
6	Low
7	
8	Low to Moderate
9	
10	Moderate
11	
	Moderate to High
	High

12	High to Very High
13	
14	Very High
15	

8.2 Appendix B: Impact Assessment

Table 8-5 *Impact assessment related to the loss of the land capability during the planning, construction, operation, decommissioning and rehabilitation phases for the proposed LILO Powerline and associated infrastructure*

Aspect	Impact	Phase	Pre-Nature	Pre-Extent	Pre-Duration	Pre-Magnitude	Pre-Reversibility	Consequence	Pre-Probability	Pre-Mitigation Significance Score	Pre-Mitigation Significance	Post-Nature	Post-Extent	Post-Duration	Post-Magnitude	Post-Reversibility	Consequence2	Post-Probability	Post-mitigation Significance Score	Post-Mitigation Significance	Confidence	Cumulative Impact	Irreplaceable loss	Priority Factor	Final score	Final Significance
Loss of Land Capability	Soil compaction , Soil erosion, Land degradation and Soil contamination	Construction	-1	3	2	2	3	-2,5	3	-7,5	Medium to low-	-1	2	2	2	2	-2	2	-4	Low -	Low	2	1	1,13	-4,50	Medium to low
Loss of Land Capability	Soil compaction , Soil erosion, Land degradation and Soil contamination	Operation	-1	2	2	2	2	-2	2	-4	Low -	-1	2	2	2	1	-1,75	1	-1,75	Low -	Low	1	1	1,00	-1,75	Low
Loss of Land Capability	Soil compaction , Soil erosion, Land degradation and Soil	Decommissioning	-1	1	2	2	2	-1,75	2	-3,5	Low -	-1	1	2	1	2	-1,5	1	-1,5	Low -	Low	2	1	1,13	-1,69	Low

Aries-Paulputs: Aries Kokerboom 400kV LIL0

8.3 Appendix C: Specialist Declarations

DECLARATION

I, Cathrine Mathye, 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.



Cathrine Mathye

Soil Scientist

The Biodiversity Company

November 2025

DECLARATION

I, Matthew Mamera, 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.



Dr Matthew Mamera

Soil Scientist

The Biodiversity Company

November 2025

8.4 Appendix D: Curriculum Vitae

Masesabona Cathrine Mathye

MSc Soil Science (*Cand Nat Sci*)

Cell: +27 818 039 974

Email: Cathrine@thebiodiversitycompany.com

Identity Number: 9603110508084

Date of birth: 11 March 1996



Profile Summary

Working experience throughout South Africa

Specialist experience with pedology and agriculture.

Specialist expertise include pedology, agricultural potential, irrigation water management.

Areas of Interest

Mining, Farming, Soil and Water quality contamination, Soil management, Soil Carbon, Sustainability and Conservation.

Key Experience

- Soil taxonomic classification (SA forms and WRB groups)
- Crop management
- Agriculture potential assessments
- Water use management (Irrigation)

Country Experience

South Africa: All Provinces

Nationality

South African

Languages

English – Proficient

Sepedi, Xitsonga, Venda – Proficient

Qualifications

- MSc (University of Free State) – Soil Science (Soil carbon, Carbon sequestration and sustainable agriculture)
- BSc Honours (University of Limpopo) – Soil Science (Soil classification and Soil survey)
- Cand Nat Sci 127950
- SSSSA

Matthew Mamera

PhD Soil Science (*Pri Nat Sci*)

Cell: +27 785 772 668

Email: matthew@thebiodiversitycompany.com

Identity Number: 8810315983183

Date of birth: 31 October 1988



Profile Summary

Working experience throughout South Africa

Specialist experience with pedology and agriculture.

Specialist expertise include hydropedology, pedology, land contamination, agricultural potential, land rehabilitation, rehabilitation management and wetlands resources.

Experience hydropedological modelling

Areas of Interest

Mining, Farming, Soil and Water quality contamination, Soil Sanitation management, Soil Carbon, Sustainability and Conservation.

Key Experience

- Environmental Impact Assessments (EIA)
- Environmental Management Programmes (EMP)
- Wetland delineations
- Rehabilitation Plans
- Soil taxonomic classification (SA forms and WRB groups)
- Soil Hydropedology assessments
- Agriculture potential assessments
- Land contamination assessments

Country Experience

South Africa: All Provinces
Zambia - Kitwe and Mufulira
Angola- Zenza – Cacuso;
Luena – Saurimo
Namibia

Nationality

South African Permanent Residence

Languages

English – Proficient

Ndebele, Xhosa, Shona – Proficient

Qualifications

- PhD (University of the Free States)- Soil Science (Hydropedology, Sanitation and Water quality management)
- MSc (University of Fort Hare) – Soil Science (Hydropedology, Sanitation and Water quality management)
- BSc Honours *Cum laude* (University of Fort Hare) – Soil Science (Hydropedology, wetlands delineation and rehabilitation)
- BSc Agricultural Soil Science
- Pri Nat Sci 116356
- SSSSA- SSSSA 201