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Site Sensitivity Verification and Soil, Land Use, and Agricultural Compliance Statement: For the Proposed Powerline Deviation for the Pluto-Mahikeng 400 kV Powerline within the JB Marks and Mahikeng Local Municipalities within the North West Province.

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DOCUMENT CONTROL

Report Name	Site Sensitivity Verification and Soil, Land Use, and Agricultural Compliance Statement: For the Proposed Powerline Deviation for the Pluto-Mahikeng 400 Kv Powerline within the JB Marks and Mahikeng Local Municipalities within the North West Province.
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EXECUTIVE SUMMARY

An Environmental Authorisation (EA) for the 400 kV Pluto-Mahikeng powerline was received by the National Transmission Company South Africa (NTCSA) for this project on 4 February 2019, valid for 5 years. During servitude acquisition, 14km of the powerline route was negotiated outside the approved 2km Environmental Impact Assessment (EIA) corridor, and as such, a Basic Assessment (BA) process must be undertaken to obtain an EA for this deviation.

Enviro-Solum Consulting was appointed by Vhubvo Consultancy CC to conduct a soil, land use, and land capability study as part of the Environmental Authorisation (EA) for the proposed deviation of the 400Kv Pluto-Mahikeng powerline within the JB Marks and Mahikeng Local Municipalities within the North West Province.

The study area falls within the Monsoon-Influenced Humid Subtropical climate, characterised by hot, humid summers, dry winters, and distinct seasonal temperature variations. The eastern side of the study area is characterised by rainfall between 601 and 800 mm, whereas the western side is characterised by rainfall between 401 and 600 mm. This rainfall range is deemed sufficient for dryland cultivation (rain-fed); a wide range of adapted crops can receive good yields if planted on time.

Based on the observations during the site assessment, the dominant soils within the study area are Mispah/ Glenrosa, Katspruit (associated with the watercourse) and Lichtenburg. The majority of the soils occurring within the study area do not meet the conditions for agricultural suitability to a certain extent, and these conditions include:

1. Adequate depth (greater than 60 cm) to accommodate root development for the majority of cultivated crops;
2. Good structure, as in water-stable aggregates, which allows for root penetration and water retention;
3. Sufficient distribution of high-quality and potential soils within the study area to constitute a viable economic management unit and
4. Good climatic conditions, such as sufficient rainfall and sunlight, increase crop variety.

The summary findings of the soils identified in the study area, along with their corresponding land capability and agricultural potential status, are illustrated in Tables A to D below.

Table A: Summary findings within the eastern portion of the study area.

Study Area (300 m assessment corridor)				
Soil Forms	Area (Ha)	Percentage (%)	Land Capability	Agricultural Potential
Lichtenburg	13.39	3.1	Arable (Class III)	High
Katspruit	1.35	0.3	Watercourse (Class V)	Low
Mispah/Glenrosa	410.91	96.5	Grazing (Class VI)	Moderately Low
Total Enclosed	**425.65**	**100**		

Table A: Summary findings within the eastern portion of the study area.

Study Area (300 m assessment corridor)

Soil Forms	Area (Ha)	Percentage (%)	Land Capability	Agricultural Potential
Mispah/Glenrosa	8.4	100	Grazing (Class VI)	Moderately Low
Total Enclosed	**8.4**	**100**		

Table C: Summary findings within the eastern portion of the study area.

Soil Form	Land Capability Groups	DAFF (2017) Classification
Lichtenburg	Arable Land	10. Moderate to High
Dundee	Watercourse	3. Very Low to Low
Mispah/Glenrosa	Grazing Land	6. Low to Moderate

Table D: Summary findings within the eastern portion of the study area.

Soil Form	Land Capability Groups	DAFF (2017) Classification
Mispah/Glenrosa	Grazing Land	6. Low to Moderate

The study area, with a 300 m assessment corridor, is proposed to serve as the locality for the proposed powerline deviation for the 400 kV Pluto-Mahikeng. The majority of the study area (96.5%) is characterised by shallow soils, which are better suited for grazing activities. Arable soils constitute 3.1% of the total study area. With that said, an agricultural impact is any alteration that influences the future capacity for agricultural production on a specific land area. This alteration often occurs when agriculture is excluded from a region undergoing development. Furthermore, agricultural production potential can be reduced by soil erosion, compaction, pollution, and soil deterioration.

The proposed overhead powerline is unlikely to significantly affect agriculture, as it will not alter the future capacity for agricultural production in the study area. All farming activities can proceed normally beneath the power line. However, there may be minor impacts, such as the placement of electric pylons within cultivated fields, which could restrict the use of certain equipment near them due to safety standards. Additionally, the construction and decommissioning of the power line may cause topsoil loss and land degradation from disturbance. The potential impact of the project can be effectively reduced through the implementation of standard, generic measures built into the project's engineering design, as well as by following best practices for construction sites, all of which are detailed in the Environmental Management Programme (EMPr) included in Part B-Section 1 and 2 of the generic EMPr, along with standards for powerline. The development of the powerline is expected to lead to only minimal loss of future agricultural potential. Therefore, the agricultural impact of the proposed powerlines is considered to be of very low significance.

The proposed development falls within the Strategic Transmission Corridors (EGI), which identified 5 strategic transmission corridors important for planning electricity transmission and distribution infrastructure in South Africa. These corridors are essential for connecting high-voltage power and aid in strengthening the country's electricity grid. The proposed project is thus deemed critical from a broader perspective of the electricity supply in the country. In addition, the proposed project will create employment opportunities during both the construction phase (short to medium term) and the maintenance phase (long term).

According to the Department of Agriculture, Land Reform and Rural Development DALRRD (2022) database, the proposed project does NOT encroach on PAAs and thus will not impact the local, regional, and provincial agricultural production as well as the food security and safety due to the presence of cultivated areas within the project footprint.

The cumulative impacts from the proposed powerline are considered low because agricultural activities can continue below the powerlines. Therefore, no net loss of future agricultural production is anticipated due to the low volume of the power lines within a 30 km radius. (See Figure 19)**.** Disruption of agricultural activities, such as grazing and cultivation, will be limited in scale and duration during the construction period; post-construction, all grazing and cultivation activities will continue under the proposed powerlines. Consequently, there is no expected net loss in future agricultural production resulting from this proposed development and the currently operating developments of a similar nature. Given this analysis, the proposed powerline development is considered for approval.

In line with the procedures for evaluating and establishing minimum standards for reporting on recognized environmental themes according to Sections 24(5)(a) and (h) and 44 of the NEMA, 1998, when seeking environmental authorization, it is necessary to verify the current land use and the environmental sensitivity of the site in question as identified by the national web-based environmental screening tool by conducting a site sensitivity verification.

The outcome of this site sensitivity verification is to:

- Confirm or dispute the current use of the land and the environmental sensitivity as identified by the screening tool; and
- Motivate and provide evidence of either the verified or different use of the land and environmental sensitivity of the site.

The screening tool analysis was conducted, which presented the findings as the impact on agricultural resources being of high sensitivity in terms of agricultural sensitivity. Based on the outcomes of the field assessment, this was found to be of a low significant impact due to the dominant soil forms, which are not high-potential agricultural soils due to various limitations, including shallower depth and requiring intensive management strategies to cultivate. The allocated sensitivities for the agricultural theme are presented on Table C below.

Table C: Summary of the screening tool vs specialist-assigned sensitivities and motivation.

Study Area	Screening Tool Assigned Sensitivity	Verified Sensitivity	Reasoning for verification outcome verification
Powerline Assessment Corridor	High Sensitivity	Low Sensitivity	Most of the study area has shallow soils that are better suited to grazing than to farming. The majority of the study area consists of shallow soils that are better suited for grazing livestock than for cultivating crops. The installation of the proposed overhead power line is anticipated to have minimal effects on agricultural practices, including in regions with more arable soil. This infrastructure will not obstruct or impede agricultural production in the area. Farmers and landowners can continue their agricultural activities as usual beneath the power line without disruption or concern.
Powerline Assessment Corridor (Western Portion)	Medium Sensitivity	Low Sensitivity	

DECLARATION OF INDEPENDENCE

- I, Tshiamo Setsipane, in my capacity as a specialist consultant, hereby declare that I:
- Act/acted as an independent specialist toVhubvo Consultancy Cc for this project.
- Do not have any personal, business, or financial interest in the project except for financial remuneration for specialist investigations completed in a professional capacity as specified by the Environmental Impact Assessment Regulations, 2014, as amended.
- Will not be affected by the outcome of the environmental process, of which this report forms part.
- Do not have any influence over the decisions made by the governing authorities.
- Do not object to or endorse the proposed developments but aim to present facts and my best scientific and professional opinion about the impacts of the development.
- Undertake to disclose to the relevant authorities any information that has or may have the potential to influence its decision or the objectivity of any report, plan, or document required in terms of the Environmental Impact Assessment Regulations, 2014, as amended.



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Tshiamo Setsipane (Pr. Sci. Nat)

07 June 2026

DOCUMENT GUIDE

This report was compiled according to the following information guidelines for a specialist report in terms of the Environmental Impact Assessment (EIA) Sections 24(5)(a) and (h) and 44 of The National Environmental Management (NEMA) Act 1998, as summarised in the Table below.

The table below provides the criteria for the specialist assessment and minimum report content requirements for impacts on agricultural resources for activities requiring environmental authorisation related to Government Notice No. 320 Protocol as published in Government Gazette 43110 dated March 20 2020.

Table A: Document guide according to Government Notice 320.

Theme-Specific Requirements as per Government Notice No. 320 Agricultural Resources Theme – Compliance Statement		
NO.	**SPECIALIST ASSESSMENT AND MINIMUM REPORT CONTENT REQUIREMENTS**	**SECTION IN REPORT/NOTES**
3	**Agricultural Compliance Statement**	
3.1	**The compliance statement must be prepared by a soil scientist or agricultural specialist registered with the SACNASP.**	Appendix B
3.2	**The compliance statement must:**	
3.2.1	be applicable to the preferred site and proposed development footprint;	Section 1
3.2.2	confirm that the site is of "low" or "medium" sensitivity for agriculture; and	Section 5.2
3.2.3	indicate whether or not the proposed development will have an unacceptable impact on the site's agricultural production capability.	Section 5.2
3.3	The compliance statement must contain, as a minimum, the following information:	
3.3.1	contact details and relevant experience as well as the SACNASP registration number of the soil scientist or agricultural specialist preparing the assessment including a curriculum vitae;	Appendix B
3.3.2	a signed statement of independence;	Declaration Section
3.3.3	a map showing the proposed development footprint (including supporting infrastructure) with a 50m buffered development envelope, overlaid on the agricultural sensitivity map generated by the screening tool;	Section 2.5
3.3.4	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 5.2.2
3.3.5	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 5.2.1
3.3.6	any conditions to which the statement is subjected;	

3.3.7	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 5.2.2 and Section 6
3.3.8	where required, proposed impact management outcomes or any monitoring requirements for inclusion in the EMPr; and	Section 6
3.3.9	A description of the assumptions made as well as any uncertainties or gaps in knowledge or data.	Section 1.6
3.4	A signed copy of the compliance statement must be appended to the Basic Assessment Report or Environmental Impact Assessment Report.	Declaration Section

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1. INTRODUCTION

An Environmental Authorisation (EA) for the 400 kV Pluto-Mahikeng powerline was received by the National Transmission Company South Africa (NTCSA) for this project on 4 February 2019, valid for 5 years. During servitude acquisition, 14km of the powerline route was negotiated outside the approved 2km Environmental Impact Assessment (EIA) corridor, and as such, a Basic Assessment (BA) process must be undertaken to obtain an EA for this deviation.

Enviro-Solum Consulting was appointed by Vhubvo Consultancy CC to conduct a soil, land use, and land capability study as part of the Environmental Authorisation (EA) for the proposed deviation of the 400kV Pluto-Mahikeng powerline within the JB Marks and Mahikeng Local Municipalities within the North West Province.

The proposed powerline deviation route was afforded a 300 m zone of influence to account for edge effects and will henceforth be referred to as the 'study area'. The study area for the proposed powerline deviation route is located approximately 33 km north of the town of Carletonville. Figure 1 below depicts the study area in relation to the surrounding areas.

1.1 PROJECT DESCRIPTION

The NTCSA received an Environmental Authorisation (EA) for this project on 4 February 2019, valid for 5 years. This EA was extended for 5 more years and is now valid until 4 February 2029. The EMPr must be amended to show final tower positions and submitted to the Department of Forestry, Fisheries and Environment (DFFE) for approval before construction can commence. During servitude acquisition, 14km of the powerline route was negotiated outside the approved 2km Environmental Impact Assessment (EIA) corridor, and as such, a Basic Assessment (BA) process must be undertaken to obtain an EA for this deviation.

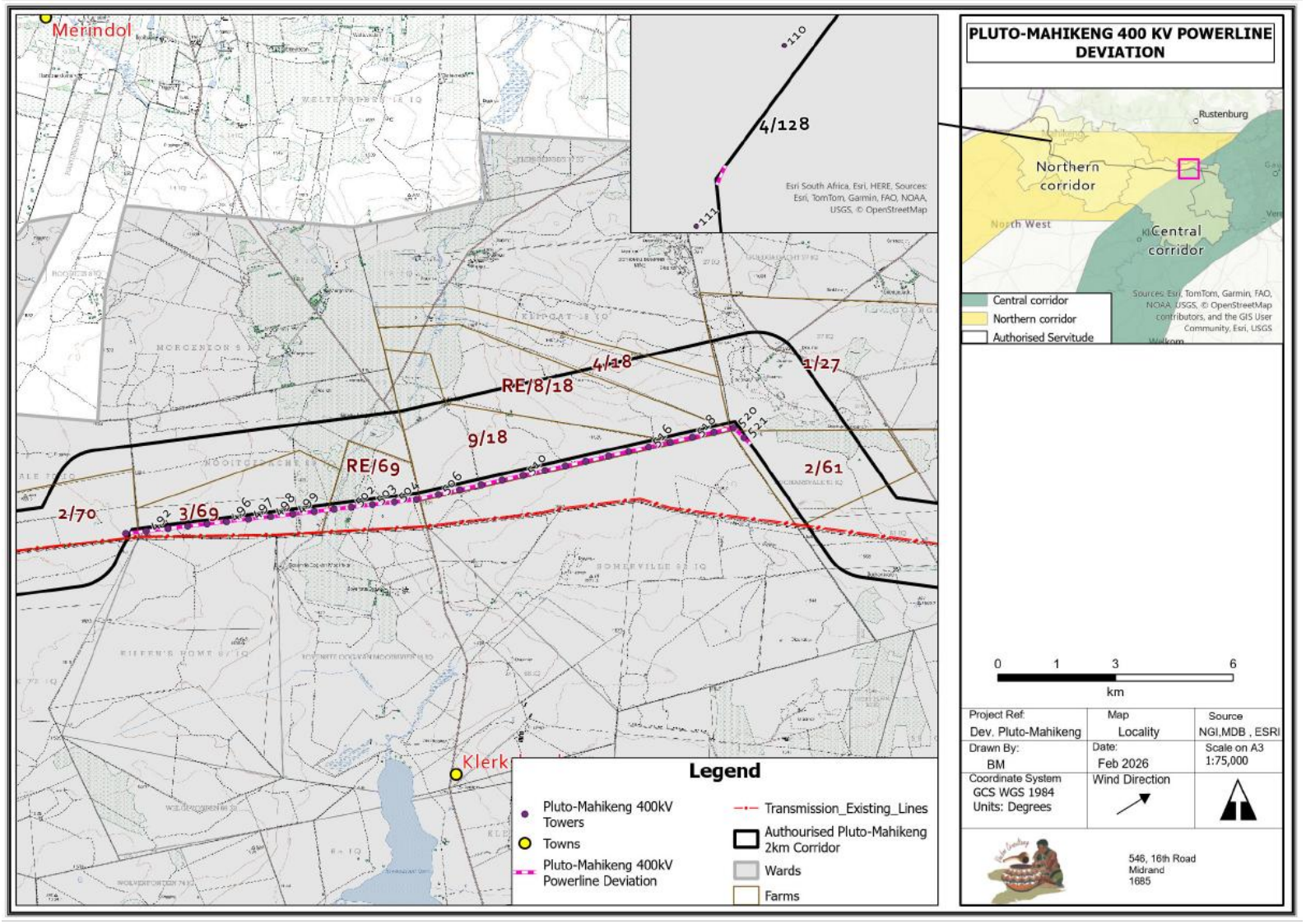


Figure 1: Locality of the study area in relation to the surrounding areas.

1.2 AIMS AND OBJECTIVES OF THE STUDY

The objective of the Soil, Land Use, and Land Capability is to fulfil and align the proposed project with the requirements of the Conservation of Agricultural Resources Act (CARA), 1983 (Act No. 43 of 1983) of South Africa. This act aims to promote the conservation of soil, water sources, and vegetation, as well as the control of weeds and invader plants by managing natural agricultural resources. Thus, the proposed study aims to determine the possible impacts of the proposed development on the soil, land use, land capability, and agricultural potential and identify areas of high sensitivity within the study area. This will be achieved by considering parameters such as soil quality, drainage, topography, climate, and water availability and providing sound input to ensure that land is used sustainably and responsibly. As such, this specialist report has assessed and considered the following:

- The soil forms occurring within the study area;
- The associated land capability and agricultural sensitivity of the soils occurring within the study area;
- Discussion of the land capability and sensitivity in terms of the soils, water availability, surrounding development, and current status of land;
- Discussion of potential and actual impacts as a result of the proposed development; and
- Provide mitigation for the impacts as part of the Environmental Management Programme (EMPr).

1.3 SUITABILITY OF SOILS FOR AGRICULTURAL CULTIVATION

Assessing soil suitability for agricultural cultivation rests primarily on identifying soils suited to crop production. For soils to be classified as being suitable for crop cultivation, they must have the following properties:

- Adequate depth (greater than 60 cm) to accommodate root development for the majority of cultivated crops;
- Good structure, as in water-stable aggregates, which allows for root penetration and water retention;
- Sufficient clay and organic matter to provide nutrients for growing crops;
- Sufficient distribution of high-quality and potential soils within the study area to constitute a viable economic management unit;
- Adequate clay content and deep enough water table to allow for water storage; and
- Good climatic conditions, such as sufficient rainfall and sunlight, increase crop choice variety.

1.4 APPLICABLE LEGISLATION

The most recent South African Environmental Legislation that needs to be considered for any new or expanding development with reference to assessment and management of soil and land use includes:

- The National Environmental Management Act. 1998 (Act 107 of 1998), requires that pollution and degradation of the environment be avoided, or, where it cannot be avoided, be minimised and remedied.
- The Conservation of Agricultural Resources (Act 43 of 1983) states that the degradation of the agricultural potential of soil is illegal.
- The Conservation of Agriculture Resources (Act 43 of 1983) requires the protection of land against soil erosion and the prevention of water logging and salinisation of soils employing suitable soil conservation works to be constructed and maintained. The utilisation of marshes, water sponges, and watercourses is also addressed.

1.5 Terms of Reference

The terms of reference for this study are to fulfil 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 study area encompasses land classified by the national web-based environmental screening tool as having high sensitivity to impacts on agricultural resources, as illustrated in Figure 3 below for the powerline deviation route. The level of agricultural assessment required in terms of the protocol (and hence in terms of NEMA) is, therefore, an Agricultural Agro-Ecosystem Specialist Assessment. The terms of reference for such an assessment, as stipulated in the protocol, are listed in the **Document Guide**, along with the relevant section numbers of this report, which also fulfils each stipulation. **The protocol also requires that a Site Sensitivity Verification be done.**

The summarised terms of reference applicable to the Soils, Land Capability, and Land Use Study include the following:

- A review of available desktop information about the study area site and compile various maps illustrating the desktop data;
- Discussion of the relevant desktop literature;
- Conduct a soil classification survey covering the study area according to the South African Soil Classification System: A Natural and Anthropogenic System for South Africa (Soil Classification Working Group, 2018);
- Determination of the current (baseline) soil physical, climatic conditions, and land uses, as well as the current land capabilities and agricultural sensitivity associated with the identified soil forms present in the study area;
- Identification and assessment of the potential impacts of the different project phases on the baseline soil, land use, and land capability properties as a result of the proposed development;

- Development of mitigation and management measures to minimise the negative impacts anticipated from the proposed development and
- Compile soil, land use, and land capability reports based on the field-finding data under on-site conditions.

1.6 ASSUMPTIONS, ASSUMPTIONS UNCERTAINTIES, LIMITATIONS, AND GAPS

The following assumptions, uncertainties, limitations, and gaps were applicable for the soil, land use, and land capability assessment:

- It is assumed that the infrastructure components will remain as indicated on the layout and that the activities for the construction and operation of the infrastructure are limited to that typical for a project of this nature;
- The soil survey was confined to the study area outline with consideration of various land uses outside the study area;
- During the site assessment and compilation of the report, employment figures pertaining to the study area could not be sourced, and
- Soil profiles were observed using a 1.5m hand-held soil auger; thus, a description of the soil characteristics deeper than 1.5m cannot be given.

2. METHODOLOGY

The assessment of the Study Area's agricultural potential was based on a combination of desktop studies to gather general information, site visits for status quo assessment, soil classification and characterisation, and validation of the information generated from the desktop studies.

2.1 Desktop Study and Literature Review

Before beginning the field assessment, a literature review and background study were conducted to gather the study area's predetermined soil, land use, and land capability data. The data was sourced from the Soil and Terrain (SOTER) database and the Natural Agricultural Atlas of South Africa Version 3: (https://ndagis.nda.agric.za/portal/apps/webappviewer/index.html?id=8b72eb2a25c04660a1ab2b562f6ec0bf)

2.2 Site Survey and Sensitivity Verification

A desktop assessment was followed by a field investigation to validate the predetermined soil results obtained at the desktop level. The field survey was conducted during the walkdown in March 2026. During that time, soil auger tests were conducted, and soils were classified into soil forms according to the Soil Classification System: A Natural and Anthropogenic System for South Africa Soil Classification System (2018). It must be noted that the season has no bearing on the soil's morphological properties over a short-term period.

The aim of the on-site Site Sensitivity Verification was to:

- Ground truth if there are any cultivation activities and consequent agricultural sensitivity;
- Gain an understanding of the agricultural potential of the study through the identified soils on site as well as infrastructure and
- Confirm or dispute the current land use and the environmental sensitivity as indicated by the National Environmental Screening Tool.

2.3 Land Capability Classification

A land capability class is an interpretive grouping of land units with similar potential and containing limitations or hazards for long-term intensive use of land for rainfed farming determined by the interaction of climate, soil, and terrain. It is a more general term than land suitability and is more conservation-oriented (See Table 1 below). It involves consideration of:

- Varying limitations to land use pertaining to rainfed cultivation and soil properties; and
- The risks of land damage from erosion and other causes.

Eight land capability classes were employed with potential decreases, limitations, and hazards increasing from class 1 to class 8. Classes 1 to 4 are considered arable, whereas Class 5 is considered wet-based soils or watercourses and Classes 6 to 8 are classified as grazing, forestry, or wildlife. This system is based on the Land Capability Classification system of the United States Department of Agriculture (USDA) Soil Conservation Service by Klingelbiel and Montgomery (1961) as well as by Scotney *et.al* (1987).

Table 1: Soil Capability Classification (after Scontey *et al.*, 1987).

Land Capability Group	Land Capability Class	Intensity of Land Use									
		wildlife	Forestry	Light grazing	Moderate grazing	Intensive grazing	Light cultivation	Moderate cultivation	Intensive cultivation	Very intensive cultivation	Limitations
Arable	I										There are no or few limitations. Very high arable potential. Very low erosion hazard
	II										Slight limitations. High arable potential. Low erosion hazard
	III										Moderate limitations. Some erosion hazards
	IV										Severe limitations. Low arable potential. High erosion hazard.
Grazing	V										Water course and land with wetness limitations
	VI										Limitations preclude cultivation. Suitable for perennial vegetation
	VII										Very severe limitations. Suitable only for natural vegetation
Wildlife	VIII										Extremely severe limitations. Not suitable for grazing or afforestation.

The updated and refined land capability ratings and database for the whole of South Africa were released by the Department of Fishery and Forestry (DAFF) in 2017. These land capability ratings were derived through a spatial evaluation modelling approach and a raster spatial data layer comprising fifteen (15) land capability evaluation values 9 (see Table 2 below). The new land capability describes the categories as 1 being the lowest and 15 being the highest. Values of below 8 are generally not suitable for producing cultivated crops. (DAFF, 2017). Soil agricultural potential is impacted by several factors (see Table 3 below). The soil agricultural potential was evaluated based on the factors mentioned and described in Table 3 by assigning qualitative criteria ratings such as High, Moderate, or Marginal too low to the updated land capability ratings.

Table 2: National Land Capability Values (DAFF, 2017).

Land Capability evaluation value	Land Capability Description
1	Very Low
2	
3	Very Low to Low
4	
5	Low
6	Low to Moderate
7	
8	Moderate
9	Moderate to High
10	
11	High
12	High to Very High
13	
14	Very High
15	

Table 3: Soil Agricultural Potential Criteria

Criteria	Description
Rock Complex	If a soil type has prevalent rocks in the upper sections of the soil, it is a limitingfactor to the soil's agricultural potential.
Flooding Risk	The risk of flooding is determined by the closeness of the soil to water sources.
Erosion Risk	The soil erosion risk is determined by combining the wind and watererosion potentials.
Slope	The slope of the site could potentially limit the agricultural use thereof.
Texture	The texture of the soil can limit its use by being too sandy or too clayey.
Depth	The effective depth of soil is critical for the rooting zone for crops.
Drainage	The capability of soil to drain water is important as most grain crops do nottolerate submergence in water.
Mechanical Limitations	Mechanical limitations are any factors that could prevent the soil from beingtilled or ploughed.
pH	The pH of the soil is important when considering soil nutrients and fertility.
Soil Capability	This section highlights the soil type's capability to sustain agriculture.
Climate Class	The climate class highlights the prevalent climatic conditions that couldinfluence the agricultural use of a site.
Land Capability / Agricultural Potential	The land capability or agricultural potential rating for a site combines the soil capability and the climate class to arrive at the potential of the site to support agriculture.

2.4 DFFE Screening Tool

The Agricultural Agro-Ecosystem Assessment protocol provides the criteria for assessing and reporting impacts on agricultural resources for activities requiring Environmental Authorisation (EA). The assessment requirements of this protocol are associated with a level of environmental sensitivity determined by the national web-based environmental screening tool, which, for agricultural resources, is based on the most recent land capability evaluation values provided by the Department of Forestry, Fisheries, and the Environment (DFFE). The national web-based environmental screening tool can be accessed at: https://screening.environment.gov.za/screeningtool.

The primary purpose of the Agricultural Agro-Ecosystem Assessment is to determine the site's sensitivity considering the proposed land use change (from potential agricultural land to the proposed development is sufficiently considered). The information in this report aims to enable the Competent Authority (CA) to draw sound conclusions and recommendations on the proposed project and its potential impacts with a specific focus on food security.

To meet this objective, the protocol requires that site sensitivity verification be conducted, and subsequent outcomes must meet the following objectives:

- It must confirm or dispute the current land use and the environmental sensitivity as indicated by the National Environmental Screening Tool;
- It must contain proof (e.g., photographs) of the current land use and environmental sensitivity pertaining to the study area;
- All data and conclusions must be submitted together with the main report for the proposed development;
- It must indicate whether the proposed development will have an unacceptable impact on the agricultural production capability of the site, and if it does, whether such a negative impact is outweighed by the positive impact of the proposed development on agricultural resources and
- The report is prepared in accordance with the requirements of the Agricultural specialist protocols

Thus, the report is compiled to meet the minimum report content requirements for the impacts on agricultural resources resulting from the proposed development.

2.5 DFFE Screening Tool

The Screening tool for the powerline deviation is presented in Figure 2 below.

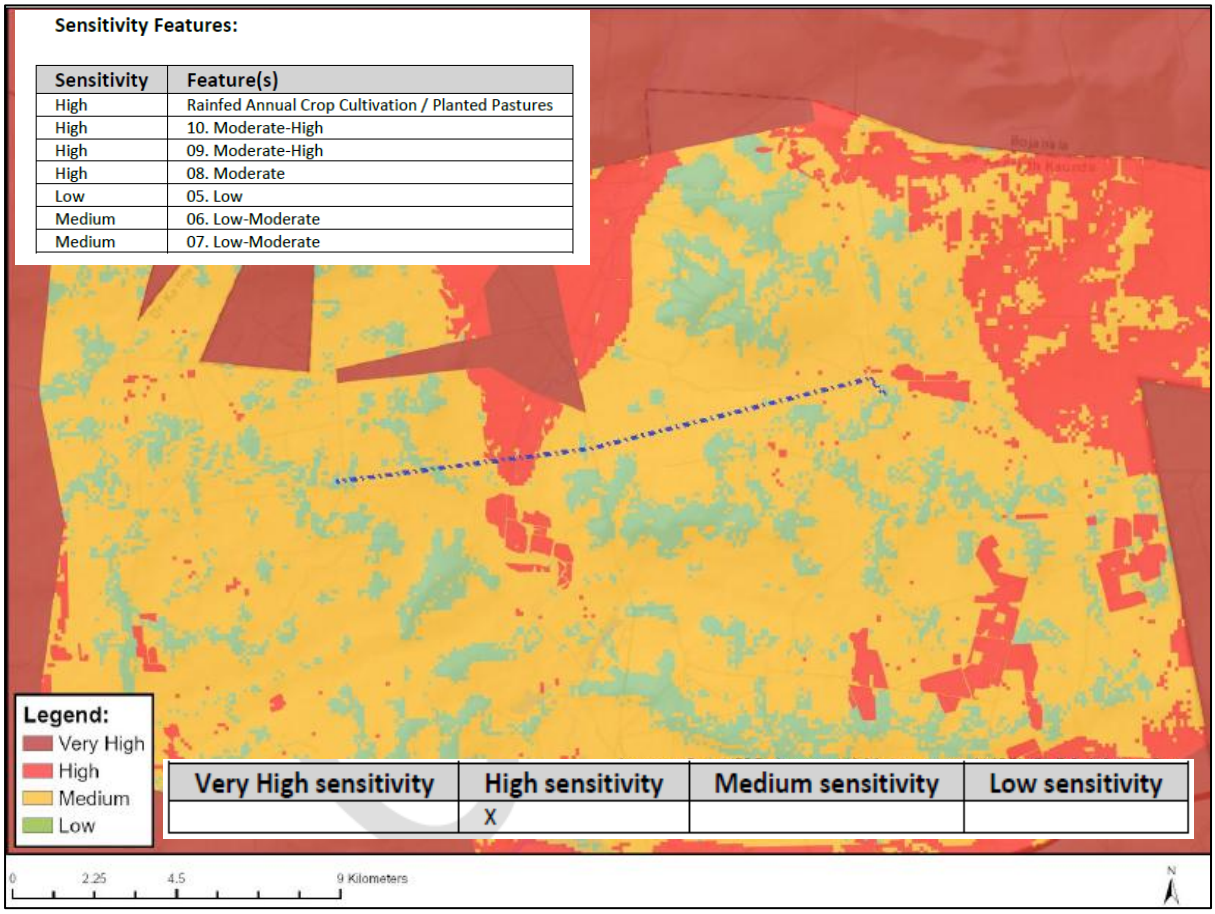


Figure 2: Screening tool sensitivity for the study area.

3. DESKTOP RESULTS AND DISCUSSIONS

3.1 CLIMATIC DATA

The study area falls within the Monsoon-Influenced Humid Subtropical climate, characterised by hot, humid summers, dry winters, and distinct seasonal temperature variations. The eastern side of the study area is characterised by rainfall between 601 and 800 mm, whereas the western side is characterised by rainfall between 401 and 600 mm. This rainfall range is deemed sufficient for dryland cultivation (rain-fed); a wide range of adapted crops can receive good yields if planted on time. Figures 3 and 4 show the mean annual rainfall associated with the study area.

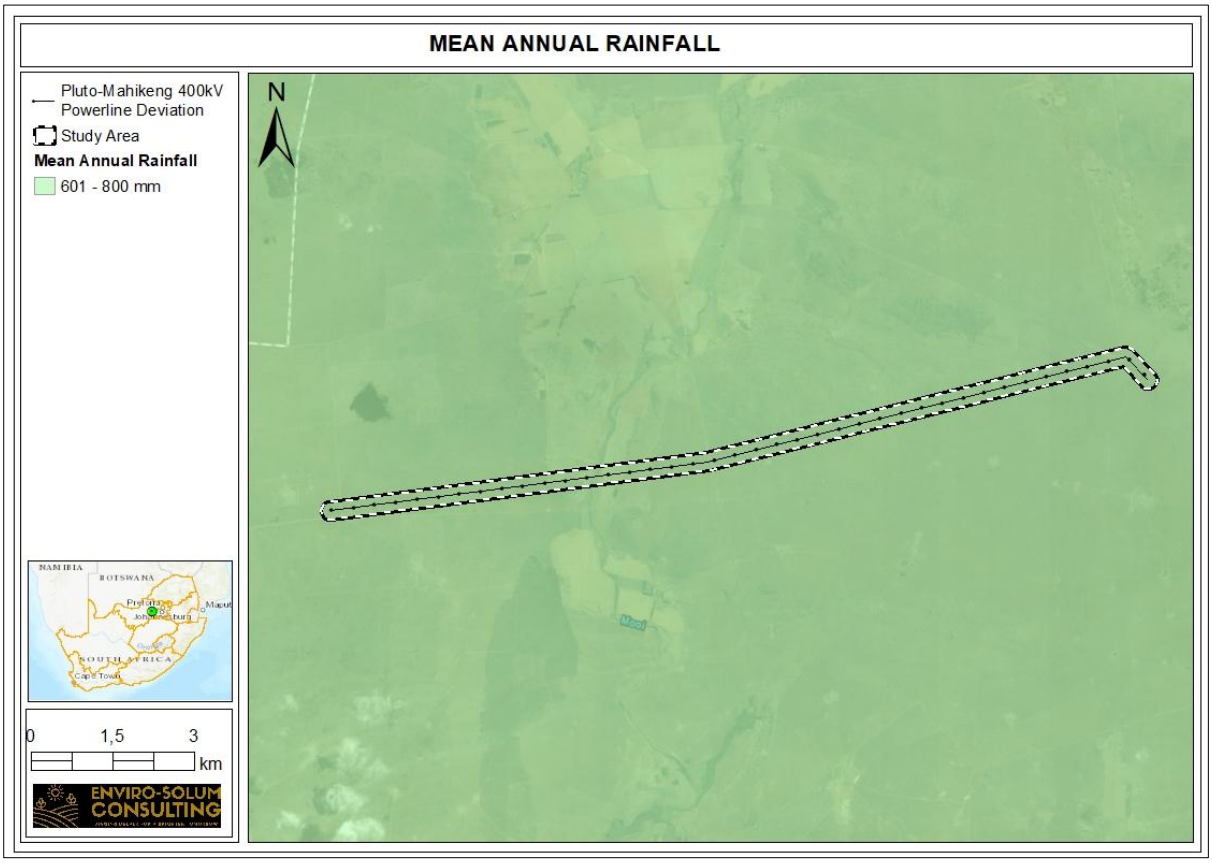


Figure 3: Mean Annual Rainfall associated with the eastern side of the study area.

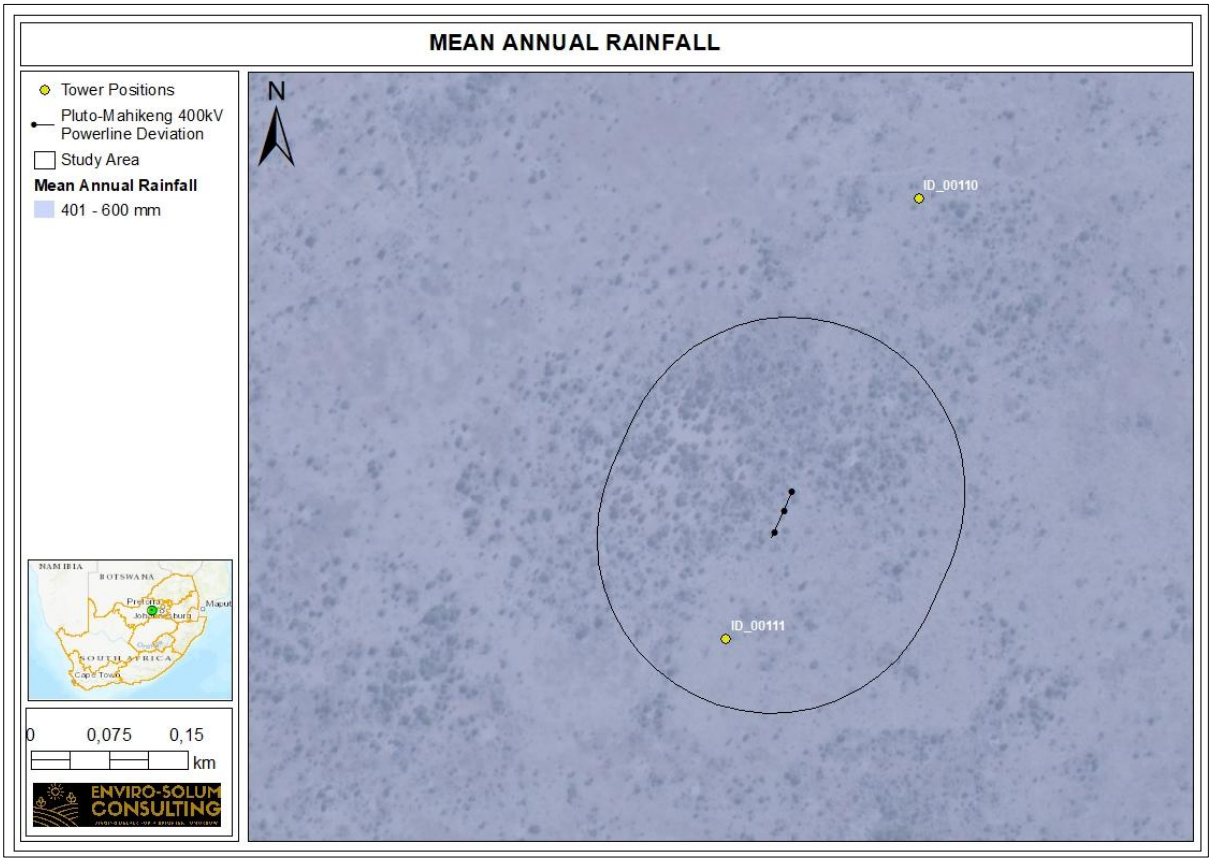


Figure 4: Mean Annual Rainfall associated with the western side of the study area.

3.2 Soil pH

The soil pH in the study area ranges from 5.5 to 6.4 and 6.5 to 7.4. Table 4 describes the soil pH associated with the study area, whereas Figures 5 and 6 below depicts the soil pH associated with soils occurring within the study area.

Table 4: Soil pH associated with the study area.

Soil pH	Implications
5.5 – 6.4	The pH range identified here is classified as acidic. In this state, the soil may require liming to neutralise the acidity, as certain essential nutrients, particularly nitrogen, can become inaccessible to plants. This unavailability can hinder plant growth and overall health, making it crucial to address soil pH for optimal nutrient uptake.
6.5 to 7.4	The pH range identified here is classified as slightly acidic to slightly alkaline. This soil pH range is considered ideal. In this range, essential plant nutrients are at their maximum availability, enabling most crops and vegetables.

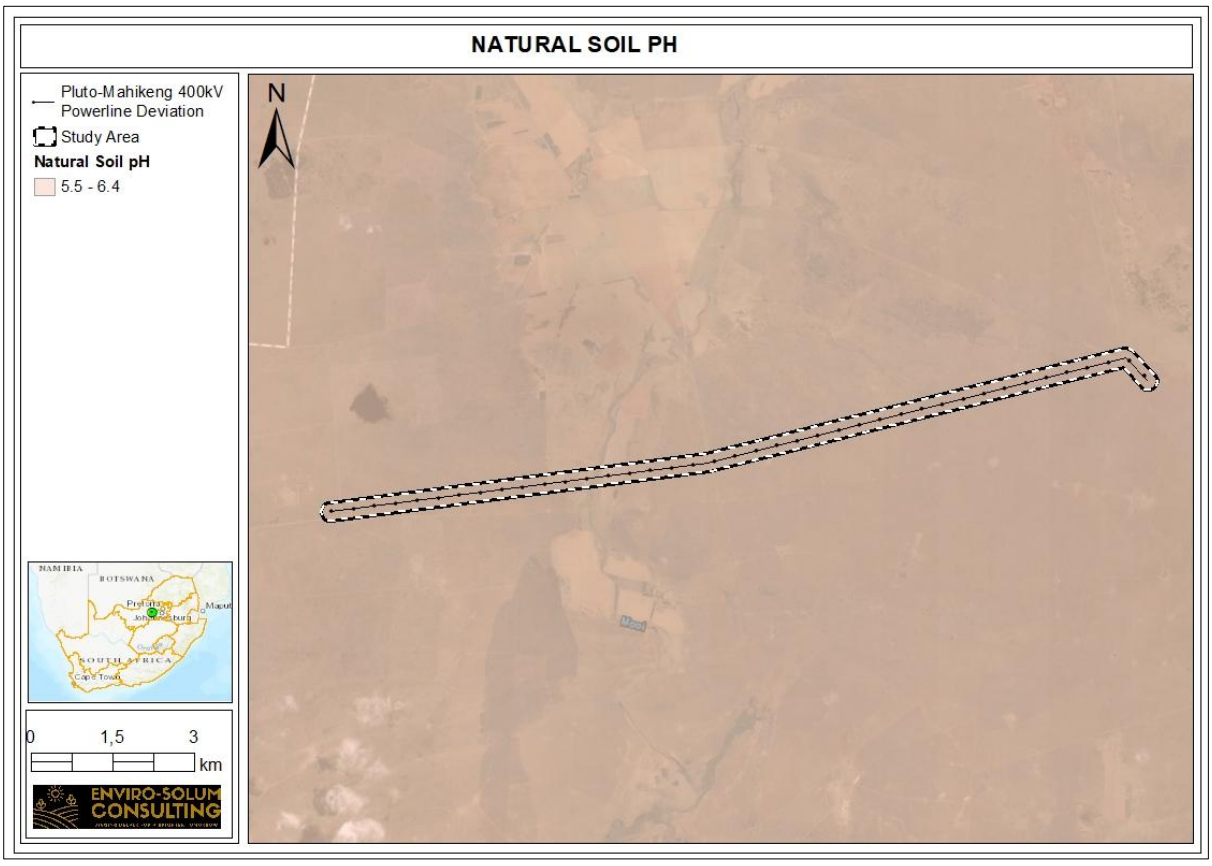


Figure 5: Soil pH associated with the eastern side of the study area.

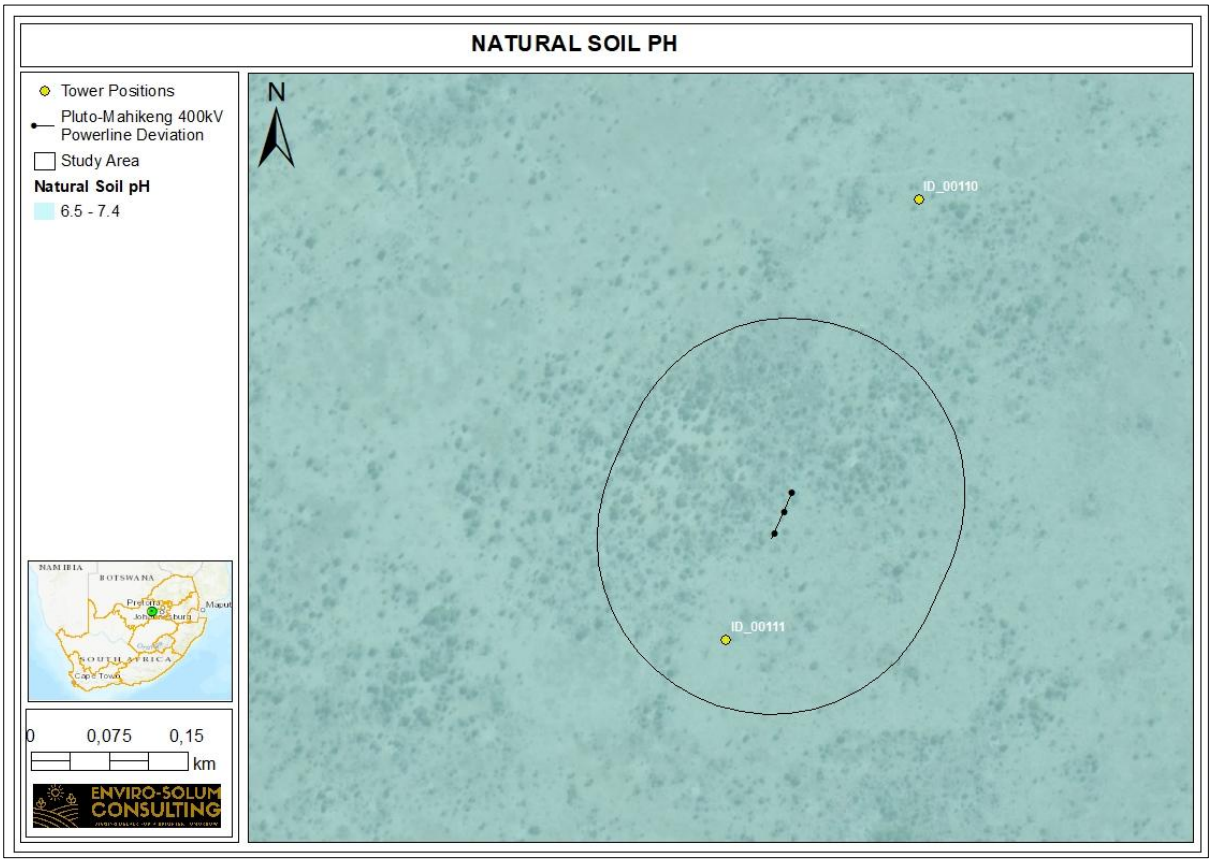


Figure 6: Soil pH associated with the western side of the study area.

3.3 Soil and Terrain (SOTER) Dominant Soils

The majority of the eastern portion of the study area is characterised by the Eutric Leptosols, followed by the Haplic Lixisols. The eutric leptosols are severely limited to agricultural use, with plant roots confined to a small volume of soil that cannot provide adequate anchorage, water and nutrients. These soils with root-restrictive layers can be profitably used for cropping under sustainable and/or intensive management or left for extensive grazing and wood chopping. The haplic lixisols are strongly weathered, clay-enriched soils with moderate to high base saturation, due to clays being washed down the soil profile. Agricultural suitability depends heavily on preventing topsoil degradation. When managed with organic matter incorporation and targeted fertilisation (such as phosphorus for legumes), they can successfully support crops. The western portion of the study area is dominated by petric calcisols. These soils are characterised by a cemented, hardpan layer of secondary calcium carbonate (petrocalcic horizon) within 100 cm of the surface. These base-rich soils are highly calcareous, heavily restricting root depth, and are most common in arid climates. Figures 7 and 8 below illustrate the SOTER-dominant soils associated with the study area.

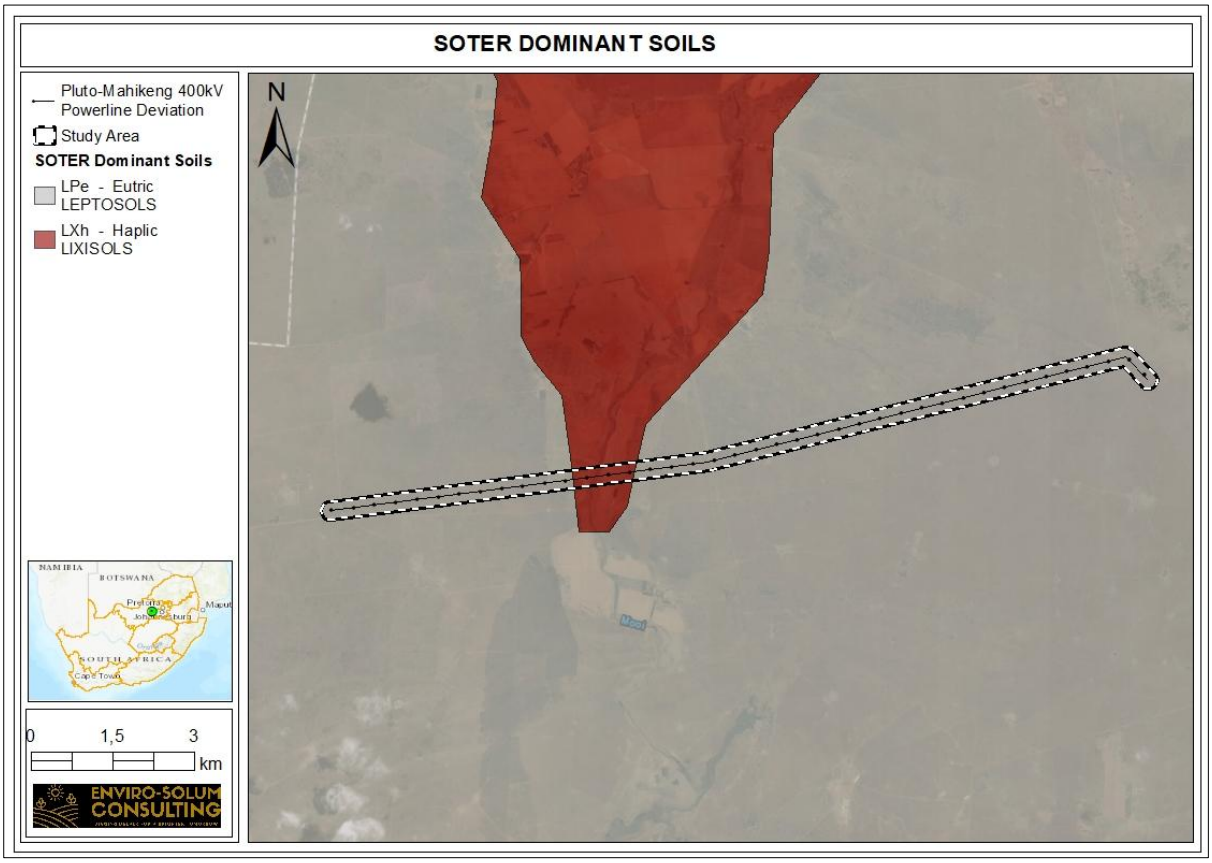


Figure 7: SOTER dominant soils associated with the eastern side of the study area.

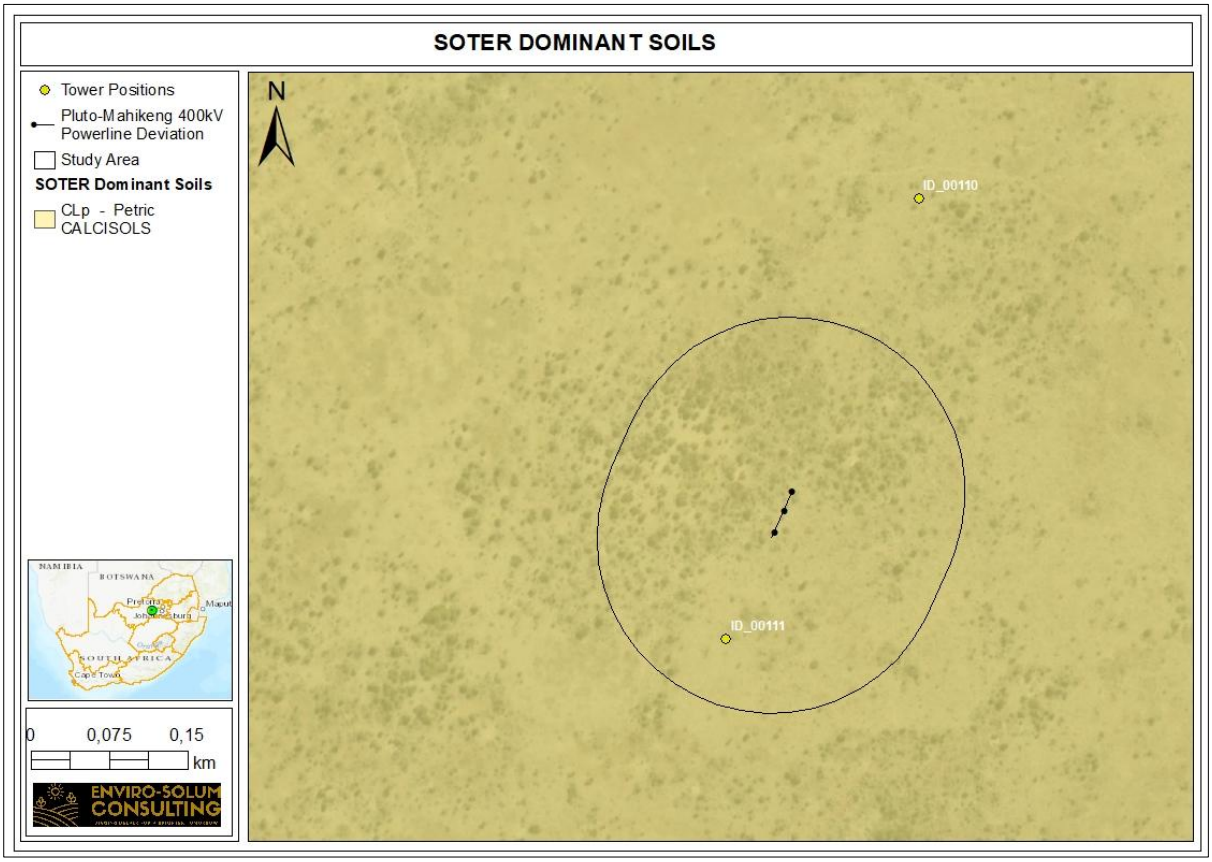


Figure 8: SOTER dominant soils associated with the western side study area.

3.4 Landtype Classes

The majority of the eastern portion of the study area is dominated by the Fa17 landtype, followed by the Ba43 landtype. The Fa landtype is characterised by pedologically young, shallow/rocky soils, with lime rare or absent throughout the landscape. The Ba landtype is characterised by Plinthic landscapes with almost no upland duplex or margalitic soils, and by widespread red soils. The western portion of the study area is characterised by the Fb4 landtype, which is also shallow, young soils. Figures 9 and 10 below depict the landtype classes associated with the study area.



Figure 9: Landtype classes associated with the eastern side of the study area.

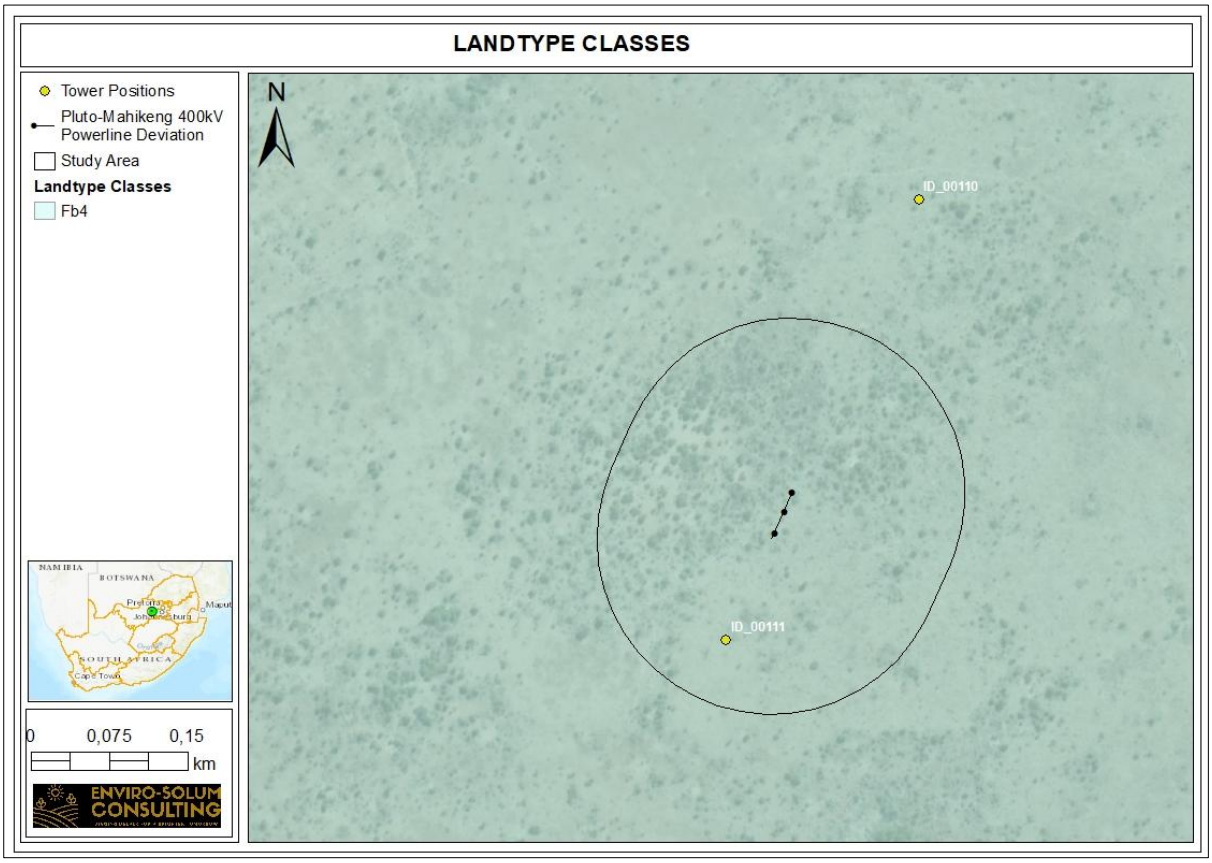


Figure 10: Landtype classes associated with the western side of the study areastudy area.

3.5 Desktop Land Capability

The desktop land capability associated with the soils within the western portion of the study area is largely non-arable, with grazing or wildlife land of Class VII capability, and includes moderate potential arable land of Class III capability. The western portion is characterised by the marginal potential arable land of class VI capability. Figures 11 and 12 below shows this capability.

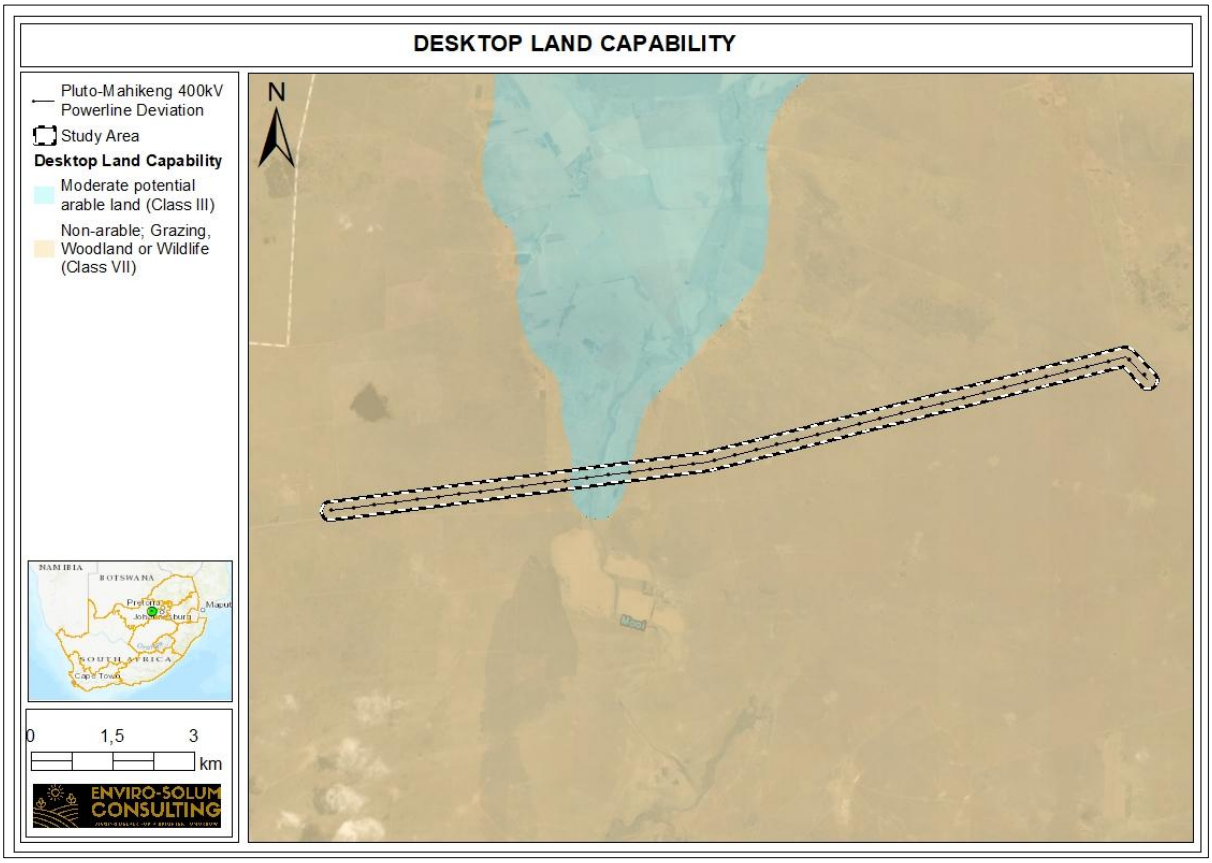


Figure 11: Desktop land capability associated with the eastern portion of the study area.

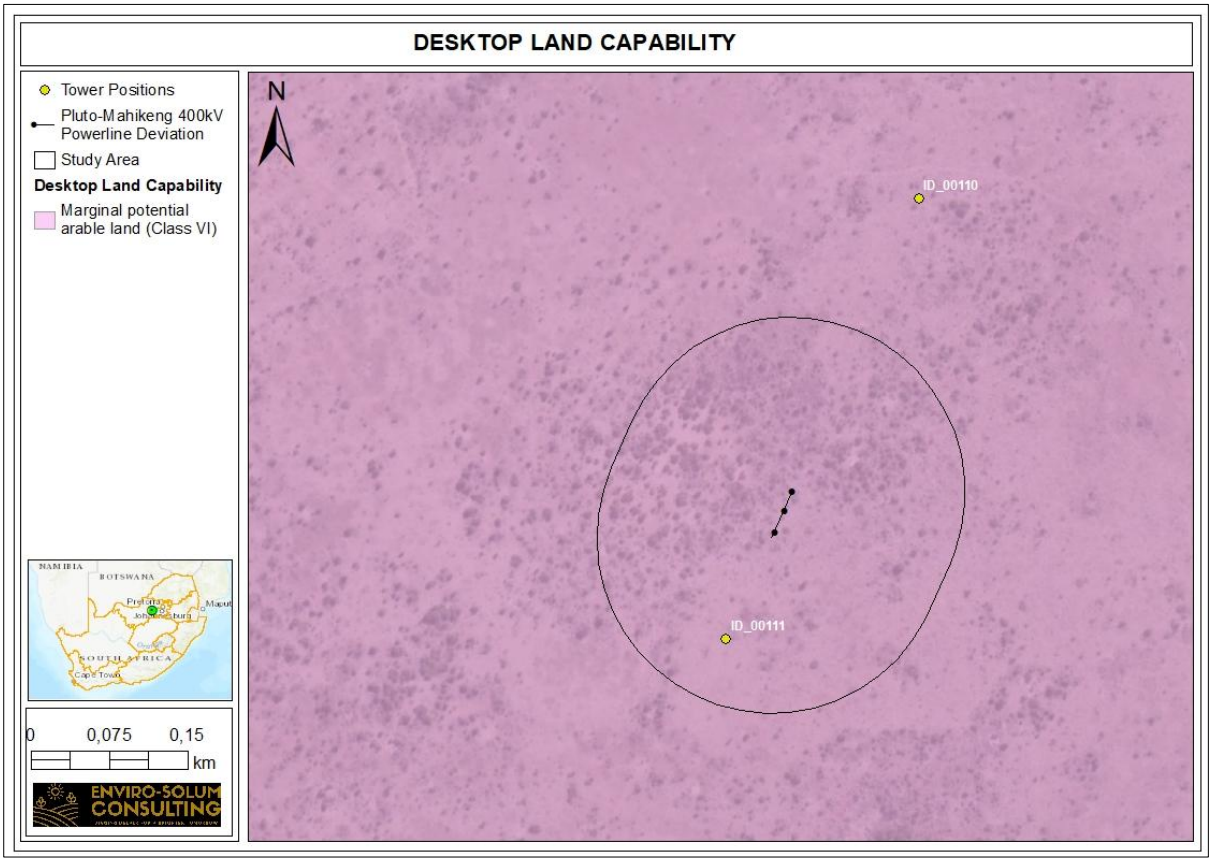


Figure 12: Desktop land capability associated with the western portion of the study area.

4. FIELD VERIFIED RESULTS AND DISCUSSIONS

4.1 Land Uses within the Study Area

The study area was primarily grassland, with a mixture of woody plants. The land uses primarily include livestock farming and cultivation practices. Signs of soil degradation were observed within the study area. Figure 13 depicts the different land uses identified within the study area.



Figure 13: Land uses associated with the study area.

4.2 Soil Forms in the Study Area

The section below focuses on the identified soil forms in the study area described. Figures 17 and 18 present the spatial distribution of the identified soil forms within each study area. Tables 4 and 5 present a summary table that depicts the area of coverage for each identified soil form.

4.2.1 Mispah/Glenrosa

These soils are typically shallow. The shallow depth can be attributed to limited rock weathering and convex topographical conditions at the crest or scarp of the landscape, resulting in soil removal and, in some instances, leaving rocky outcrops behind (Figure 14). These types of soils are usually avoided for intensive use and are thus left for grazing, forestry, and wildlife land uses, unless intense management strategies are employed, such as breaking the lithic/saprolite layer. The Mispah/Glenrosa soil forms are classified under the Grazing (Class VI) land capability class as they are primarily suited for perennial vegetation and have limitations that preclude cultivation.



Figure 14: View of the identified shallow Mispah/Glenrosa soil form.

4.2.2 Katspruit

These soils are characterised by long periods of saturation, leading to the formation of Gley properties in the subsoil. These conditions are often influenced by the slope conditions and the high clay content of the gleyed horizon. The gleyed horizon is characterised by a high clay content, which may impede root penetration and thus create anaerobic conditions not suitable for most cultivated crops. Consequently, these soils are classified as having low agricultural value and as Watercourse (Class V) land capability. Figure 15 depicts the identified soil types



Figure 15: View of the identified Katspruit soil forms.

4.2.3 Lichtenburg

The Glencoe soil form is characterised by the presence of the uniformly coloured red oxides of iron (hematite) in the subsoil. It has a structure weaker than moderate in a moist state (as depicted in Figure 16). The presence of hematite in soils is usually associated with environmental conditions such as relatively high rainfall, high temperatures with high evaporation, and midlying topographical conditions in the landscape. The occurrence of the hard plinthic horizon below the red apedal horizon at a somewhat shallower depth acts as a water table to facilitate the storage and build-up of water in the soil profile. This renders the Lichtenburg soil form ideal for crop cultivation, although it has some limitations due to well-drained conditions, good aeration, and a weakly apedal structure that favours root penetration. The Lichtenburg soil forms are classified under the Arable (Class III) land capability.



Figure 16: View of the identified red apedal horizons associated with the Lichtenburg/Clovelly soil formation.

Table 5: Soil forms in hectares (ha) occurring within the study area.

Western Portion of the Study Area (300 m assessment corridor)				
Soil Forms	**Area (Ha)**	**Percentage (%)**	**Land Capability**	**Agricultural Potential**
Lichtenburg	13.39	3.1	Arable (Class III)	High
Katspruit	1.35	0.3	Watercourse (Class V)	Low
Mispah/Glenrosa	4.10.91	96.5	Grazing (Class VI)	Moderately Low
Total Enclosed	**425.65**	**100**		

Table 6: Soil forms in hectares (ha) occurring within the western portion of the study area.

Eastern Portion of the Study Area (300 m assessment corridor)				
Soil Forms	Area (Ha)	Percentage (%)	Land Capability	Agricultural Potential
Mispah/Glenrosa	8.4	100	Grazing (Class VI)	Moderately Low
Total Enclosed	**8.4**	**100**		

Table 7: Land capability (DFFE, 2017) associated with the soils occurring within the eastern portion of the study area.

Soil Form	Land Capability Groups	DAFF (2017) Classification
Lichtenburg	Arable Land	10. Moderate to High
Dundee	Watercourse	3. Very Low to Low
Mispah/Glenrosa	Grazing Land	6. Low to Moderate

Table 8: Land capability (DFFE, 2017) associated with the soils occurring within the western portion of the study area.

Soil Form	Land Capability Groups	DAFF (2017) Classification
Mispah/Glenrosa	Grazing Land	6. Low to Moderate

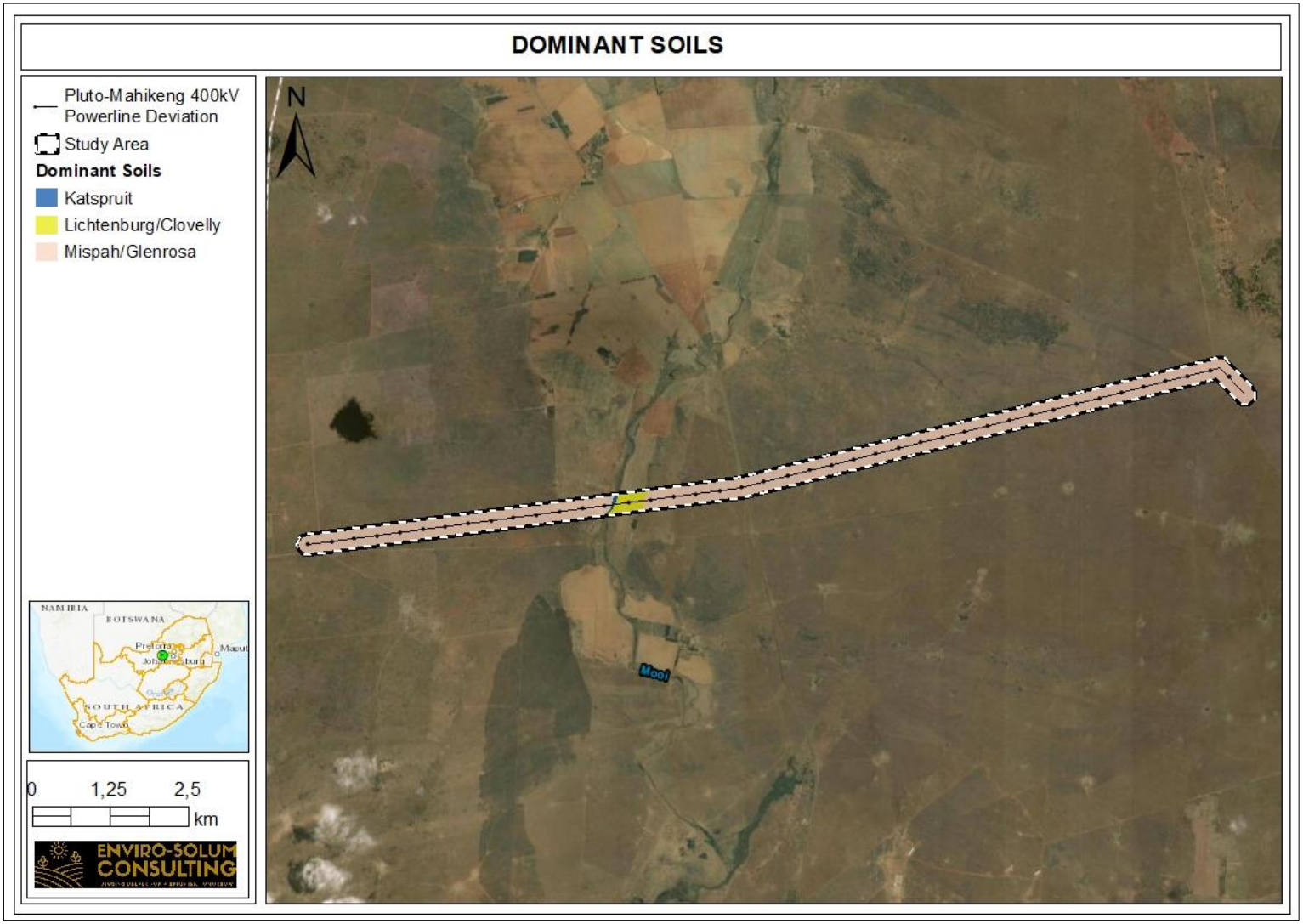


Figure 17: Dominant soils form within the western portion of the study area.

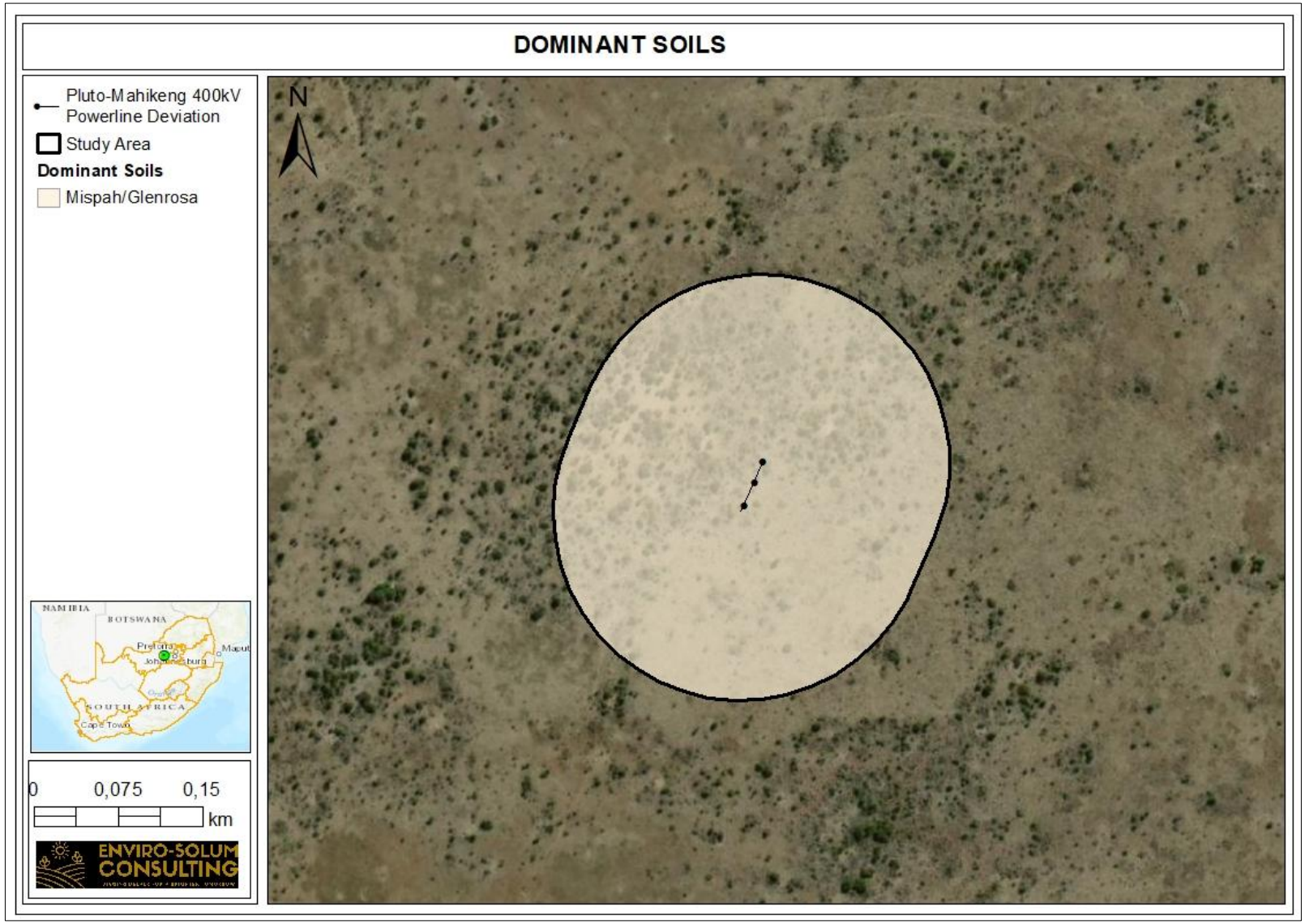


Figure 18: Dominant soils form within the eastern portion of the study area.

4.3 Land Capability and Agricultural Potential

Land Capability is defined as the most intensive long-term use of land for rainfed farming, determined by the interaction of climate, soil, and terrain. The soil physical properties with which the agricultural potential for this assessment, agricultural sensitivity, were inferred were in consideration of observed limitations to land use due to physical soil properties and prevailing climatic conditions. Figures 19 to 22 below depict the land capability associated with the study area, while Figures 23 and 24 depicts the agricultural potential.

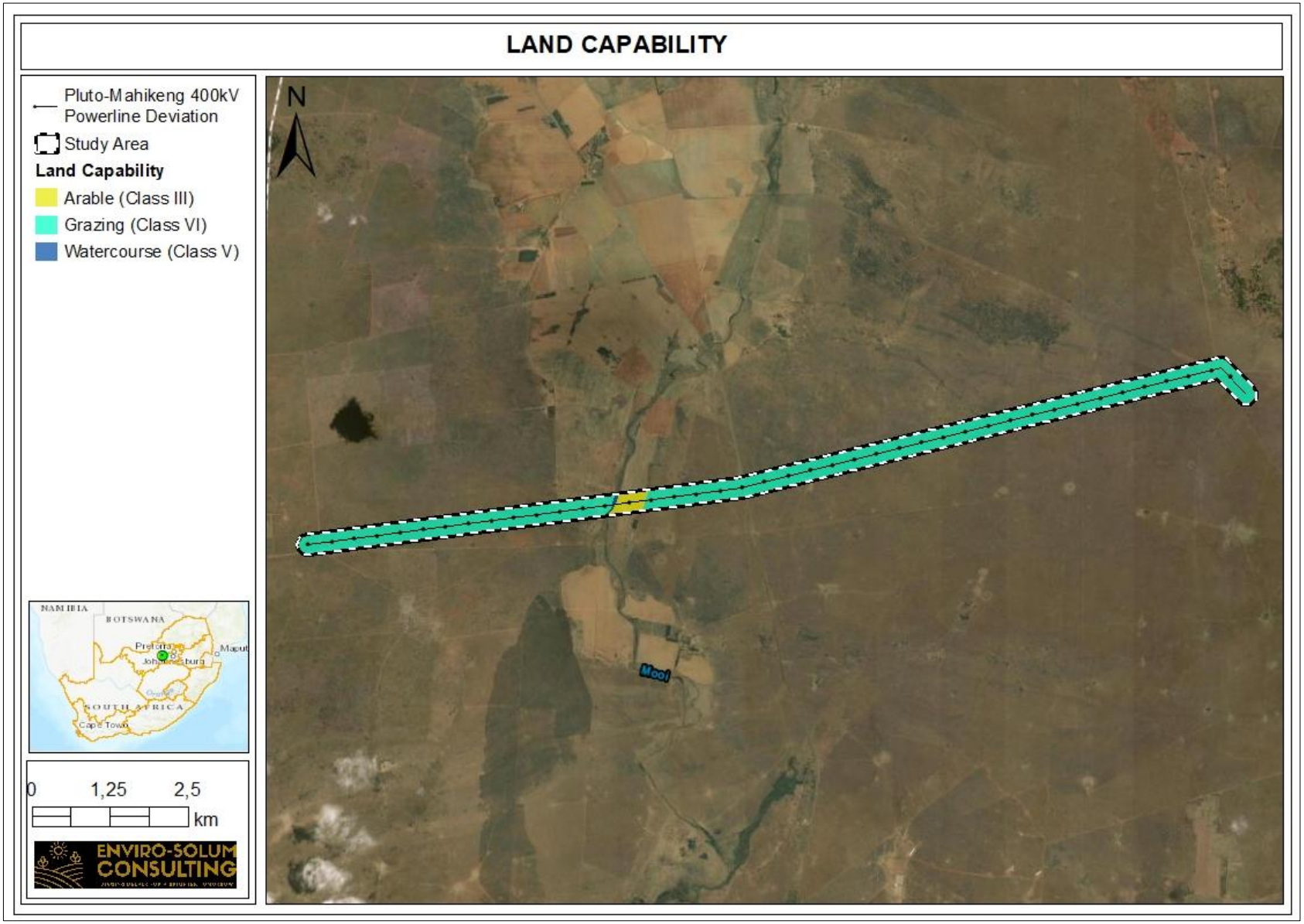


Figure 19: Map depicting the land capability of soils within the western portion of the study area.

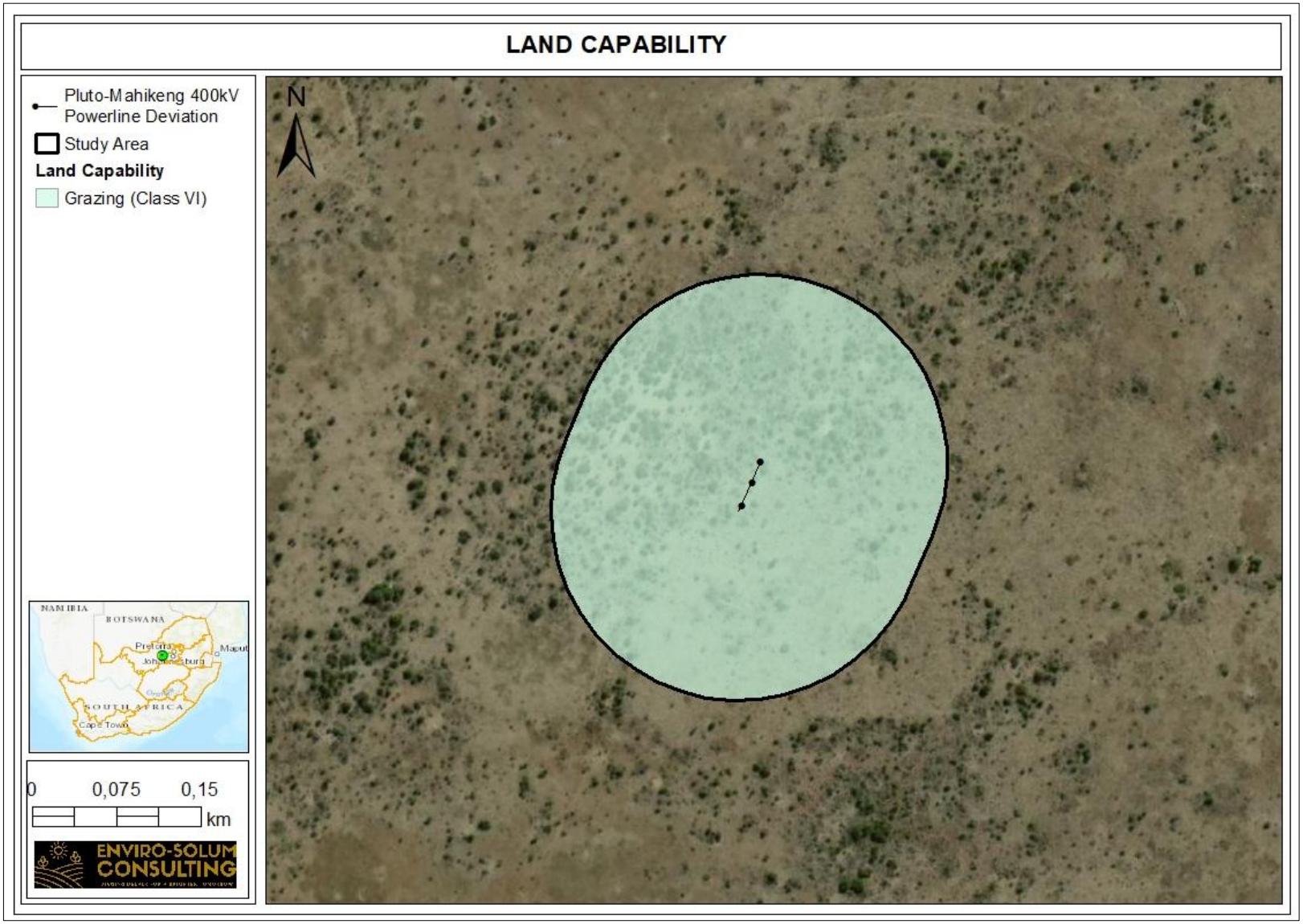


Figure 20: Map depicting the land capability of soils within the eastern portion of the study area.

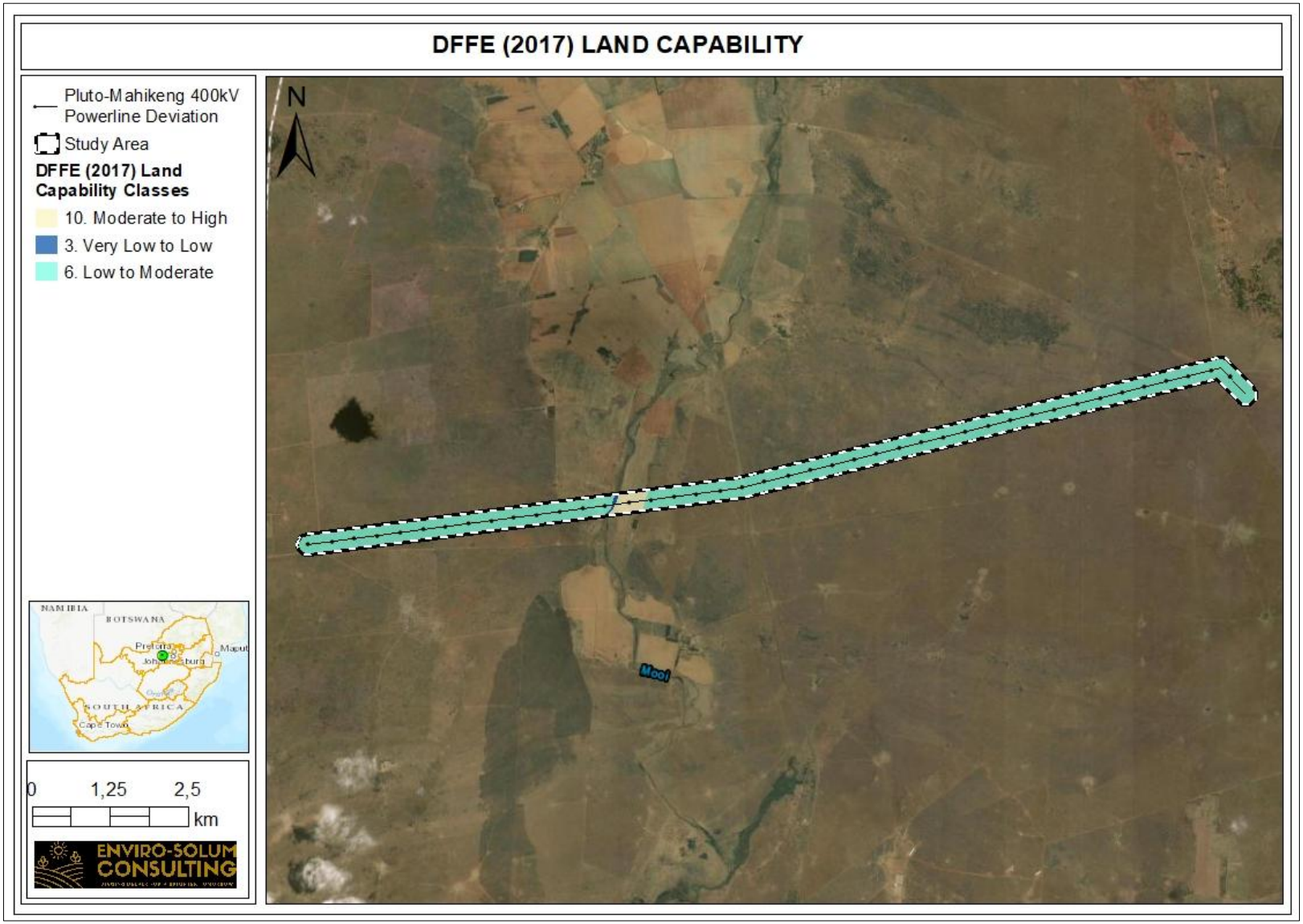


Figure 21: DFFE (2017) land capability classes associated with the western portion of the study area.

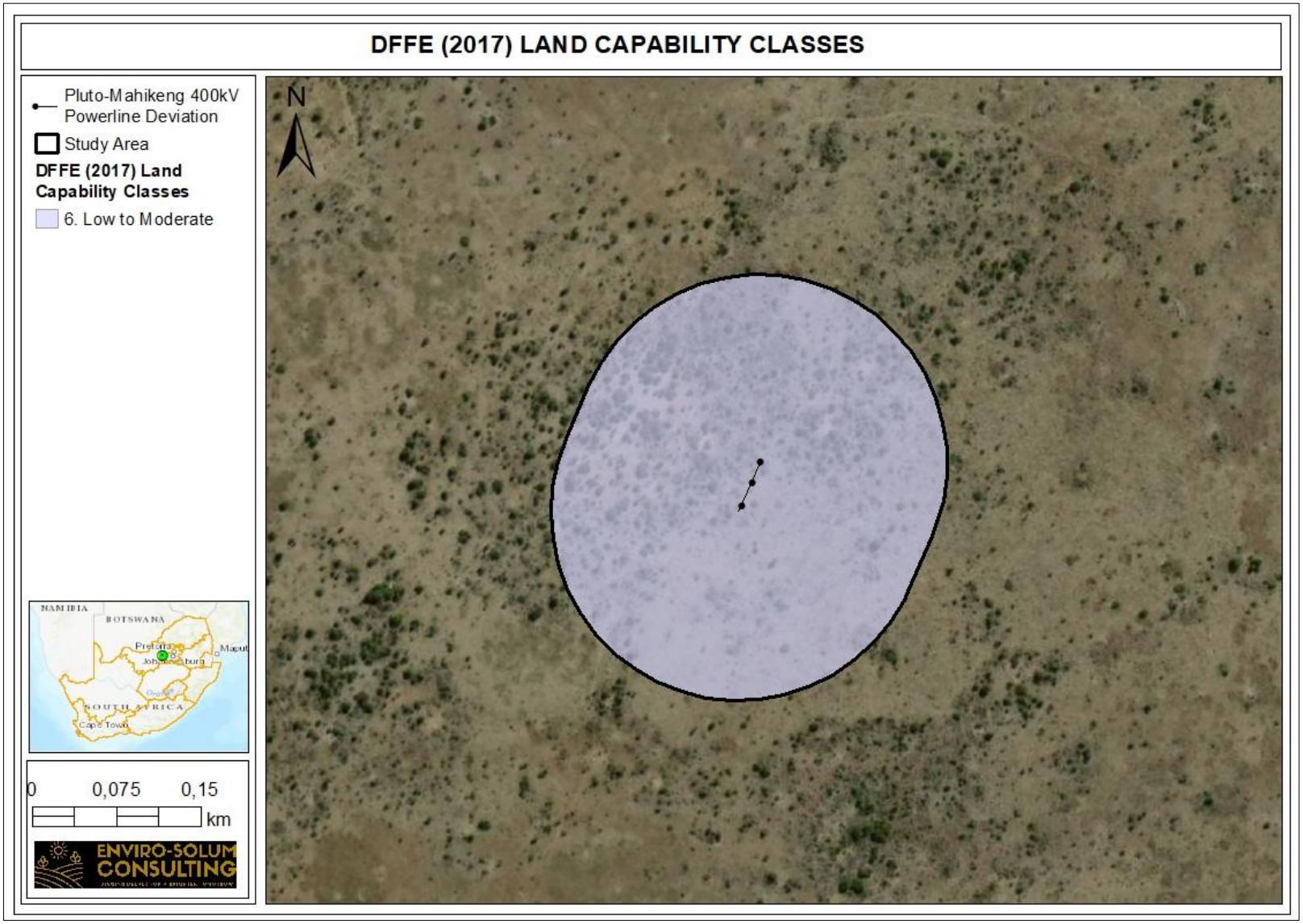


Figure 22: DFFE (2017) land capability classes associated with the eastern portion of the study area.

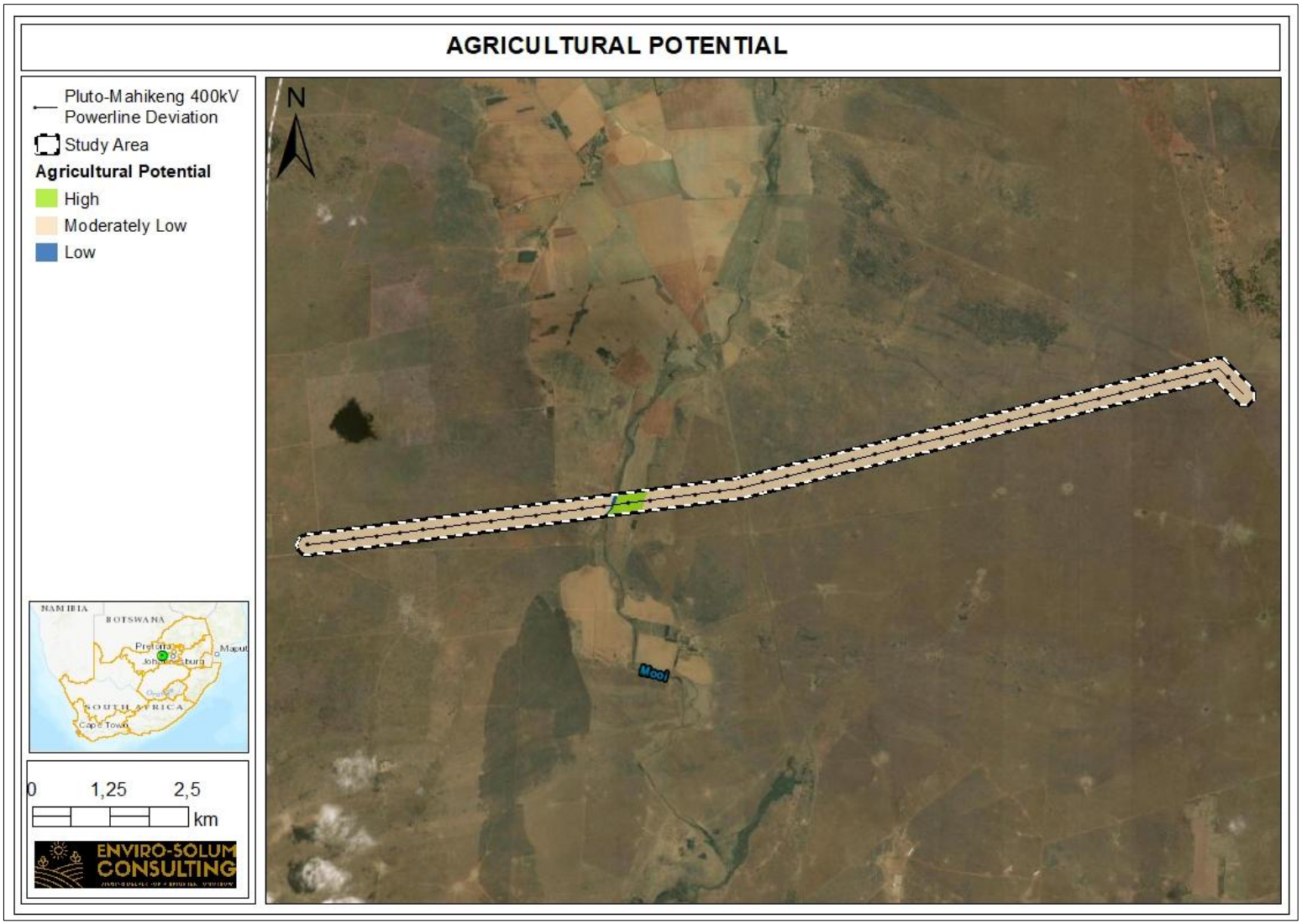


Figure 23: Agricultural potential for soils associated with the western portion of the study area.

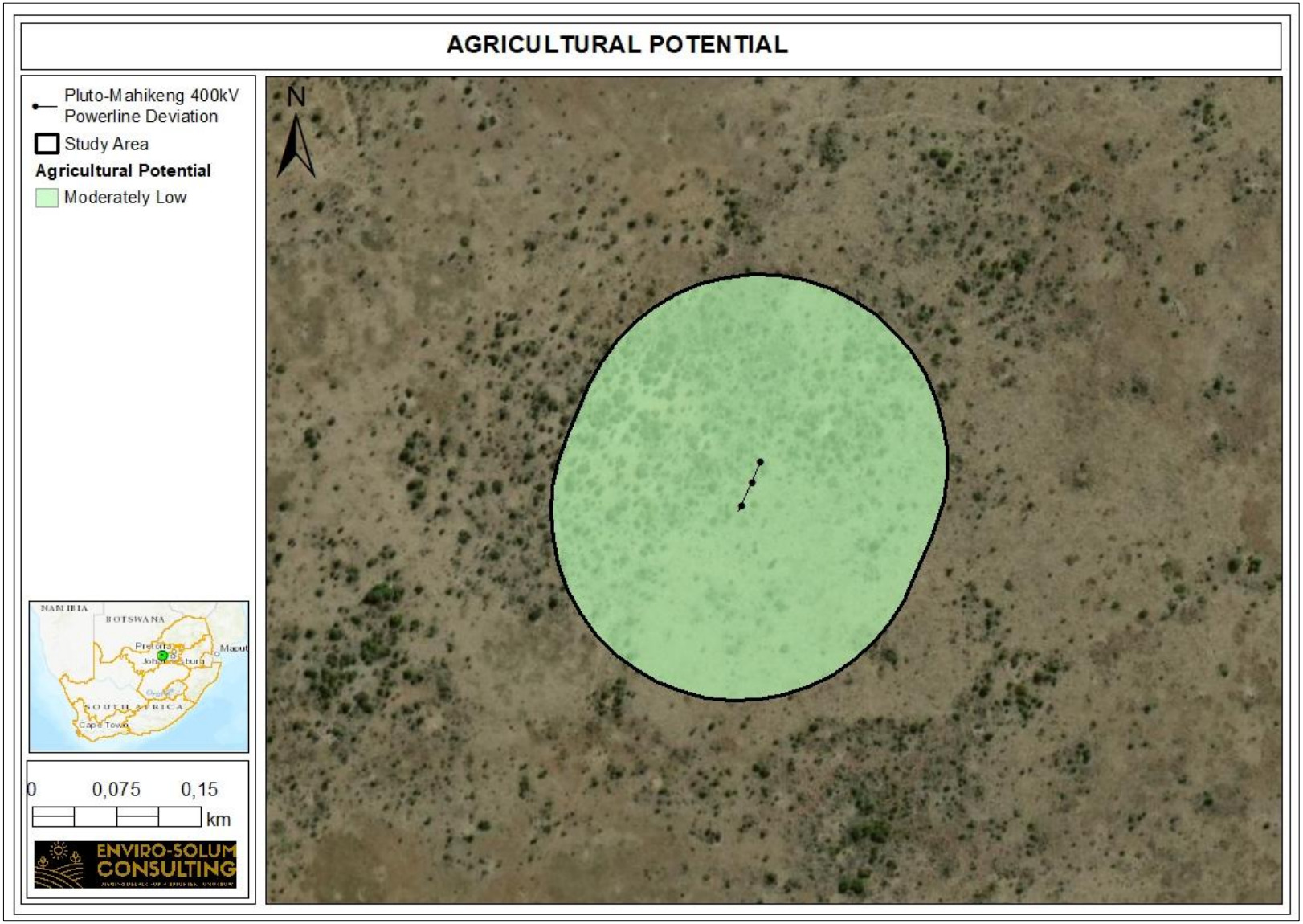


Figure 24: Agricultural potential for soils associated with the western portion of the study area.

5. IMPACT ASSESSMENT

It should be noted that an Agricultural Compliance Statement is not required to formally rate agricultural impacts using impact assessment tables.

Section 5.1 below presents the significance of the impacts that may occur due to the proposed activities and describes the mitigation required to limit the identified adverse impacts on the identified soils and the agroecosystem on site.

5.1 IMPACT ASSESSMENT PER PROJECT PHASE

5.1.1 Construction Phase

During the construction phase of the proposed powerline the soils are anticipated to be exposed to erosion, dust emission, potential soil contamination and loss of land capability impacts. The main envisaged activities include the following:

- Earthworks will include clearing vegetation from the surface and stripping topsoil (soil excavation) for foundation preparation where the proposed infrastructure is to be placed. These activities are the most disruptive to natural soil horizon distribution and will impact the current soil hydrological properties and functionality of soil if not appropriately mitigated;
- Frequent movement of heavy machinery increases the likelihood of soil contamination from petroleum, oil, and grease substances;
- Other activities in this phase that will impact soil are handling and storing building materials and different kinds of waste. When not managed properly, these activities have the potential to result in soil pollution.

The disturbance of original soil profiles and horizon sequences during earthworks is a measurable erosion deterioration. This impact is considered to be localised within the development footprint. If not managed, this impact will be localised within the site boundary and have medium significance on the soil resource.

Soil chemical pollution caused by potential oil and fuel spillages from vehicles is considered a moderate deterioration of the soil resource. If not managed, this impact will be localised within the site boundary and have medium significance on the soil resource.

Soil compaction will occur due to the movement of heavy vehicles on existing roads and newly constructed access roads, which aim to increase access to pylon positions. Without mitigation measures, the impacts will be localised within the site boundary with medium consequence and significance.

5.1.2 Operational Phase

The operational phase includes the completion and operation of the proposed development, and the perceived impacts include possible runoff, resulting in the risk of erosion, constant disturbances of soils by maintenance vehicles and machinery, increasing the risk of soil compaction and poor waste management, resulting in waste materials being improperly stored increasing the risk of soil compaction.

The main envisaged operational activities that will impact on soil, land use and land capability include the following:

- General activities, including transport on access roads, will result in soil compaction or generation of runoff, respectively.
- Waste generation (non-mineral waste) and accidental spills and leaks may result in soil chemical pollution if not managed.

The disturbance of original soil profiles and horizon sequences of these profiles is considered a measurable deterioration, leading to soil erosion. This impact is reversible over time but will be localised within the site boundary. This impact is possible and will have medium significance if not managed.

Soil chemical pollution, caused by pollutants leaching into subsurface soil horizons where waste is stored or from leaking maintenance vehicles, is considered a moderate deterioration of the soil resource if not mitigated. If appropriately mitigated, this impact will be localised within the site boundary and have a low significance on the soil resource.

Soil compaction will be a measurable deterioration that will occur due to the movement of vehicles on the soil surfaces (including access roads). This reversible impact over time will be localised within the site boundary and immediate surroundings, with medium consequences and significance if not properly mitigated. If mitigated, the significance of the impact can be regarded as low.

5.1.3 Closure and Decommissioning Phase

Decommissioning can be considered the reverse of the construction phase, with the demolition and removal of the majority of infrastructure and activities very similar to those described in the construction phase.

The main envisaged decommissioning activities that will impact on soil, land use and land capability include the following:

- Transport of materials away from the site. This will compact the soil of the existing roads and fuel and oil spills from vehicles may result in soil chemical pollution.
- Earthworks will include the redistribution of inert waste materials to fill the ponds and ditches and topsoil to increase the soil surface. These activities will not further impact land use and capability but may increase soil compaction.
- Other activities in this phase that will impact soil are handling and storing materials and different kinds of waste generated, as well as accidental spills and leaks with decommissioning activities. When not managed properly, these activities can potentially result in soil pollution.

5.2 Impact Statement and Screening Tool Sensitivity Verification

The study area, with a 300 m assessment corridor, is proposed to serve as the locality for the proposed powerline deviation for the 400 kV Pluto-Mahikeng. The majority of the study area (96.5%) is characterised by shallow soils, which are better suited for grazing activities. Arable soils constitute 3.1% of the total study area. With that said, an agricultural impact is any alteration that influences the future capacity for agricultural production on a specific land area. This alteration often occurs when agriculture is excluded from a region undergoing development. Furthermore, agricultural production potential can be reduced by soil erosion, compaction, pollution, and soil deterioration.

The proposed overhead powerline is unlikely to significantly affect agriculture, as it will not alter the future capacity for agricultural production in the study area. All farming activities can proceed normally beneath the power line. However, there may be minor impacts, such as the placement of electric pylons within cultivated fields, which could restrict the use of certain equipment near them due to safety standards. Additionally, the construction and decommissioning of the power line may cause topsoil loss and land degradation from disturbance. The potential impact of the project can be effectively reduced through the implementation of standard, generic measures built into the project's engineering design, as well as by following best practices for construction sites, all of which are detailed in the Environmental Management Programme (EMPr) included in Part B-Section 1 and 2 of the generic EMPr, along with standards for powerline. The development of the powerline is expected to result in only a minimal loss of future agricultural potential. Therefore, the agricultural impact of the proposed powerlines is considered to be of very low significance.

The proposed development falls within the Strategic Transmission Corridors (EGI) (see Figure 16), which identified 5 strategic transmission corridors important for planning electricity transmission and distribution infrastructure in South Africa. These corridors are essential for connecting high-voltage power and aid in strengthening the country's electricity grid. The proposed project is thus deemed critical from a broader perspective of the electricity supply in the country. In addition, the proposed project will create employment opportunities during both the construction phase (short to medium term) and the maintenance phase (long term).

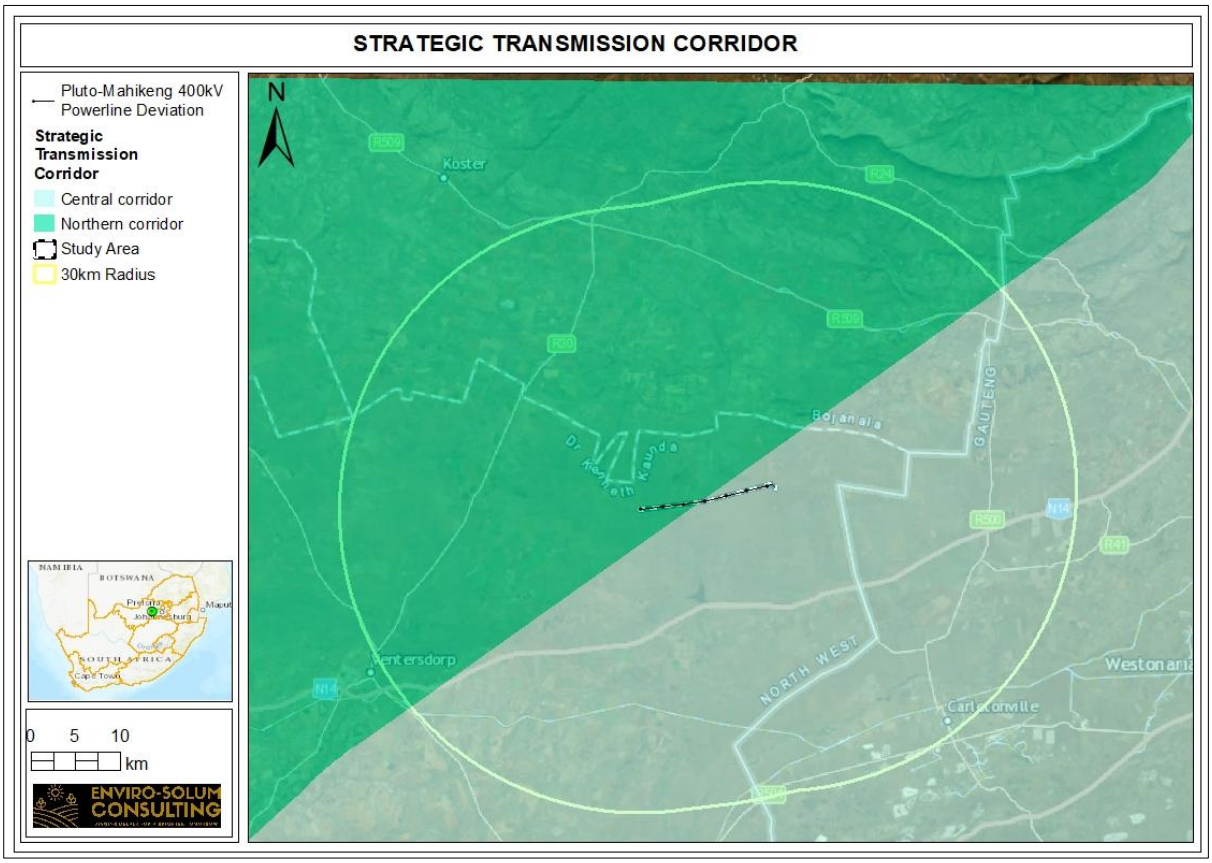


Figure 25: Strategic Transmission Corridor associated with the eastern side of the study area.

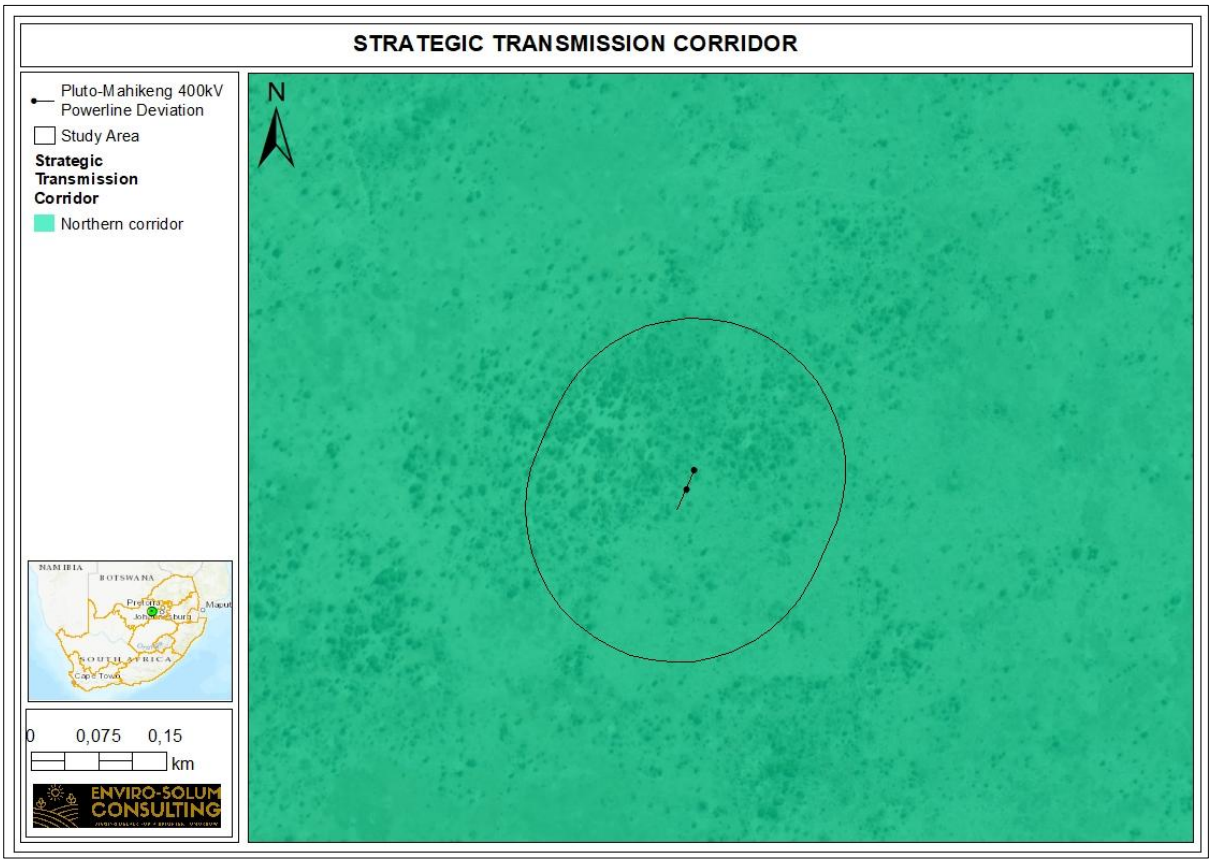


Figure 26: Strategic Transmission Corridor associated with the western side of the study area.

In accordance with the procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of Sections 24(5)(a) and (h) and 44 of the NEMA, 1998, when applying for environmental authorisation the current use of the land and the environmental sensitivity of the site under consideration as identified by the national web-based environmental screening tool, must be confirmed by undertaking a site sensitivity verification.

The outcome of this site sensitivity verification is to:

- Confirm or dispute the current use of the land and the environmental sensitivity as identified by the screening tool; and
- Motivate and provide evidence of either the verified or different use of the land and environmental sensitivity of the site.

The allocated sensitivities for the agricultural theme are presented on Table 8 below.

Table 9: Summary of the screening tool vs specialist-assigned sensitivities.

Study Area	Screening Tool Assigned Sensitivity	Verified Sensitivity	Reasoning for verification outcome verification
Powerline Assessment Corridor (Eastern Portion)	High Sensitivity	Low Sensitivity	Most of the study area has shallow soils that are better suited to grazing than to farming. The majority of the study area consists of shallow soils that are better suited for grazing livestock than for cultivating crops. The installation of the proposed overhead power line is anticipated to have minimal effects on agricultural practices, including in regions with more arable soil. This infrastructure will not obstruct or impede agricultural production in the area. Farmers and landowners can continue their agricultural activities as usual beneath the power line without disruption or concern.
Powerline Assessment Corridor (Western Portion)	Medium Sensitivity	Low Sensitivity	

5.2.1 Protected Agricultural Areas (PAAs)

The Protected Agricultural Areas (PAAs) have been mapped based on their agricultural potential within the North West Province (Department of Agriculture, Land Reform and Rural Development, 2022). These protected agricultural areas are classified into two categories: irrigated (IR) and rainfed (RF) production systems.

It is important to identify and demarcate agricultural land based on its inherent capability and suitability (agricultural potential) to preserve it for exclusive agricultural use. Preservation and Development of Agricultural Land Bill (PDALB) defined the "Protected Agricultural Areas" as a:

"Cartographic delineated area of agricultural land –

- preserved for purposes of ensuring high value agricultural land is protected against non- agricultural land uses to promote long-term agricultural production and food security;
- includes all areas demarcated as such."

According to the Department of Agriculture, Land Reform and Rural Development DALRRD (2022) database, the proposed project does NOT encroach on PAAs and thus will not impact the local, regional, and provincial agricultural production as well as the food security and safety due to the presence of cultivated areas within the project footprint.

Figure 17 below presents these major classes to provide a high-level overview of available PAAs for planning purposes. This is in line with the Preservation and Development of Agricultural Land Act (PDALA), Act. No 39 of 2024, as well as the Conservation of Agricultural Resources Act (CARA) 1983 (Act No. 43 of 1983), which advocates for the protection of scarce agricultural resources of the Republic of South Africa.

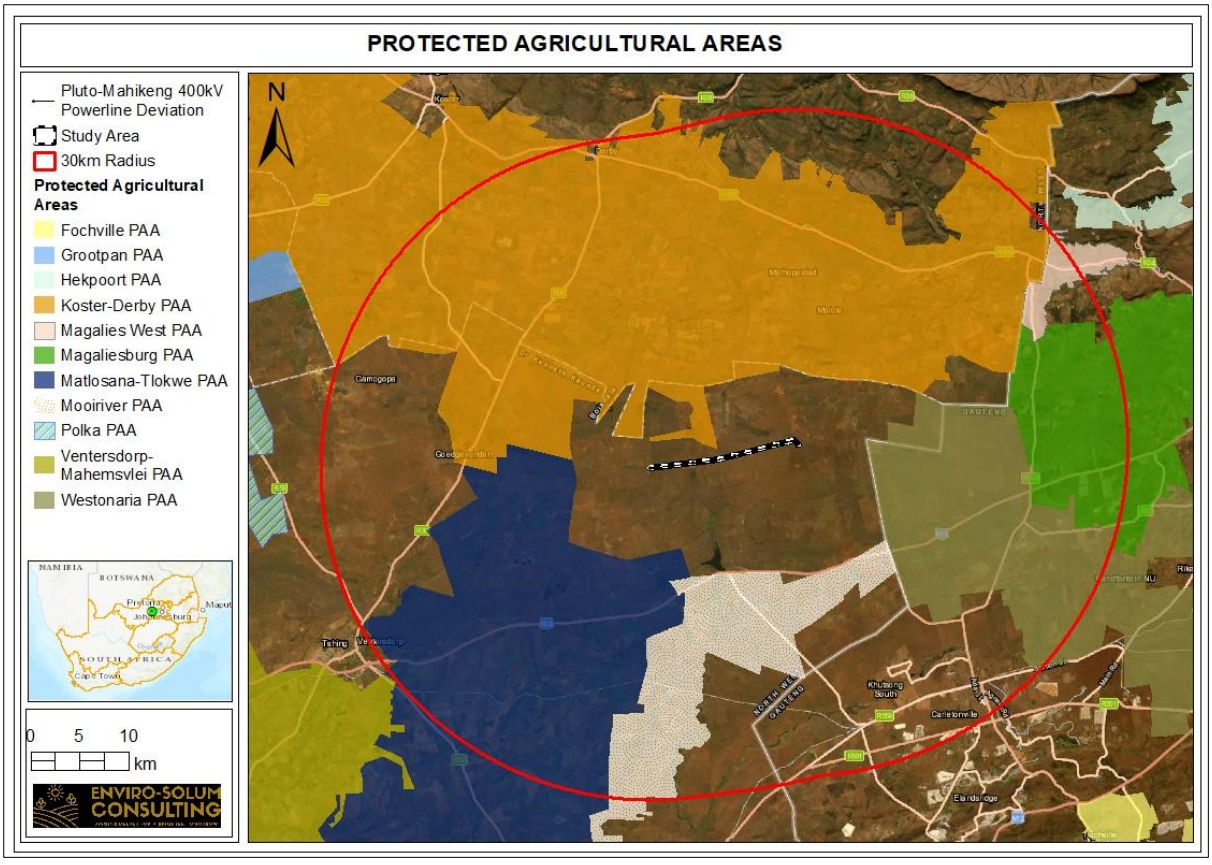


Figure 27: Protected Agricultural Areas associated with the eastern side of the study area.

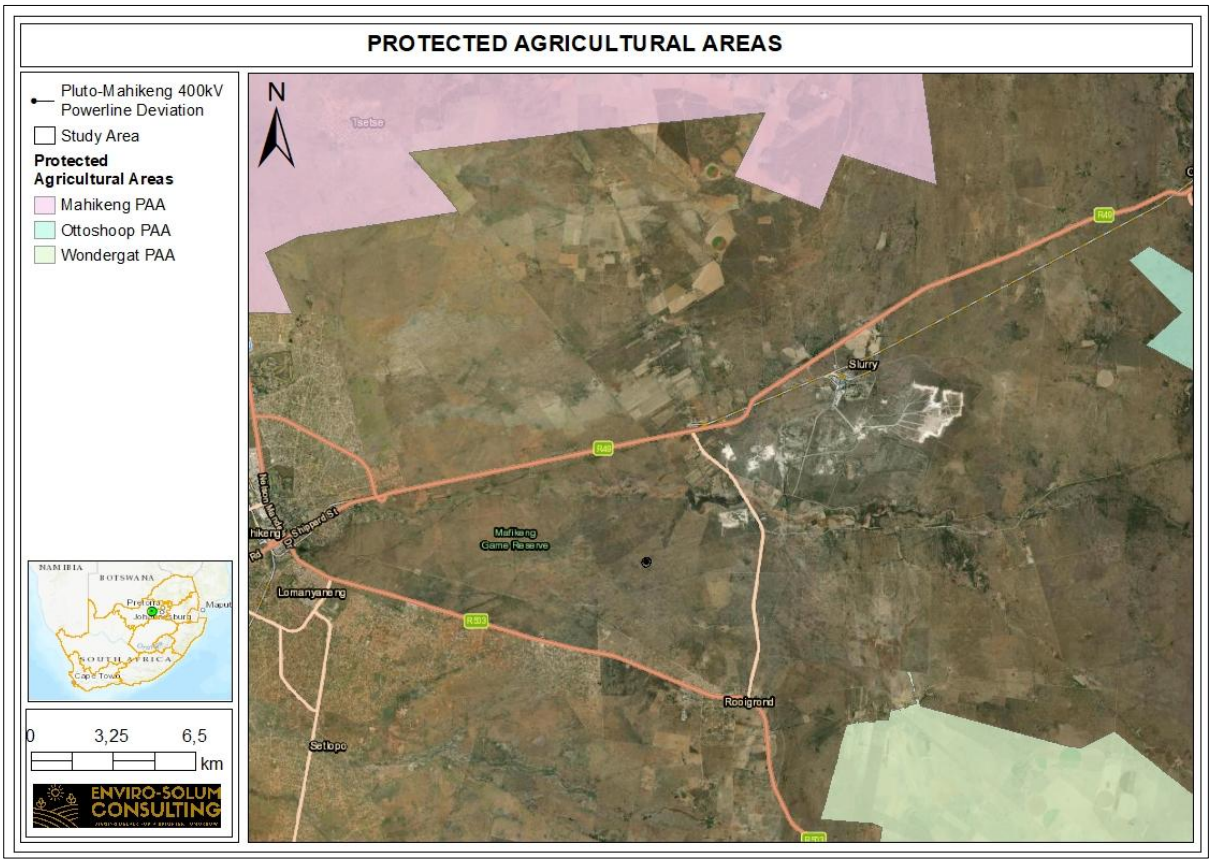


Figure 28: Protected Agricultural Areas associated with the western side of the study area.

5.2.2 Cumulative Impacts

Agricultural protocols require specific evaluations for environmental approval to assess cumulative effects. The cumulative impact of a project is the overall consequence it will have when its effects are combined with the gradual impacts of previous, current, or anticipated future activities that influence the same environment.

The cumulative impacts from the proposed powerline are considered low because agricultural activities can continue below the powerlines. Therefore, no net loss of future agricultural production is anticipated due to the low power line density within a 30 km radius. (See Figure 18). Disruption of agricultural activities, such as grazing and cultivation, will be limited in scale and duration during the construction period; post-construction, all grazing and cultivation activities will continue under the proposed powerlines. Consequently, there is no expected net loss in future agricultural production resulting from this proposed development and the currently operating developments of a similar nature. Given this analysis, the proposed powerline development is considered for approval.

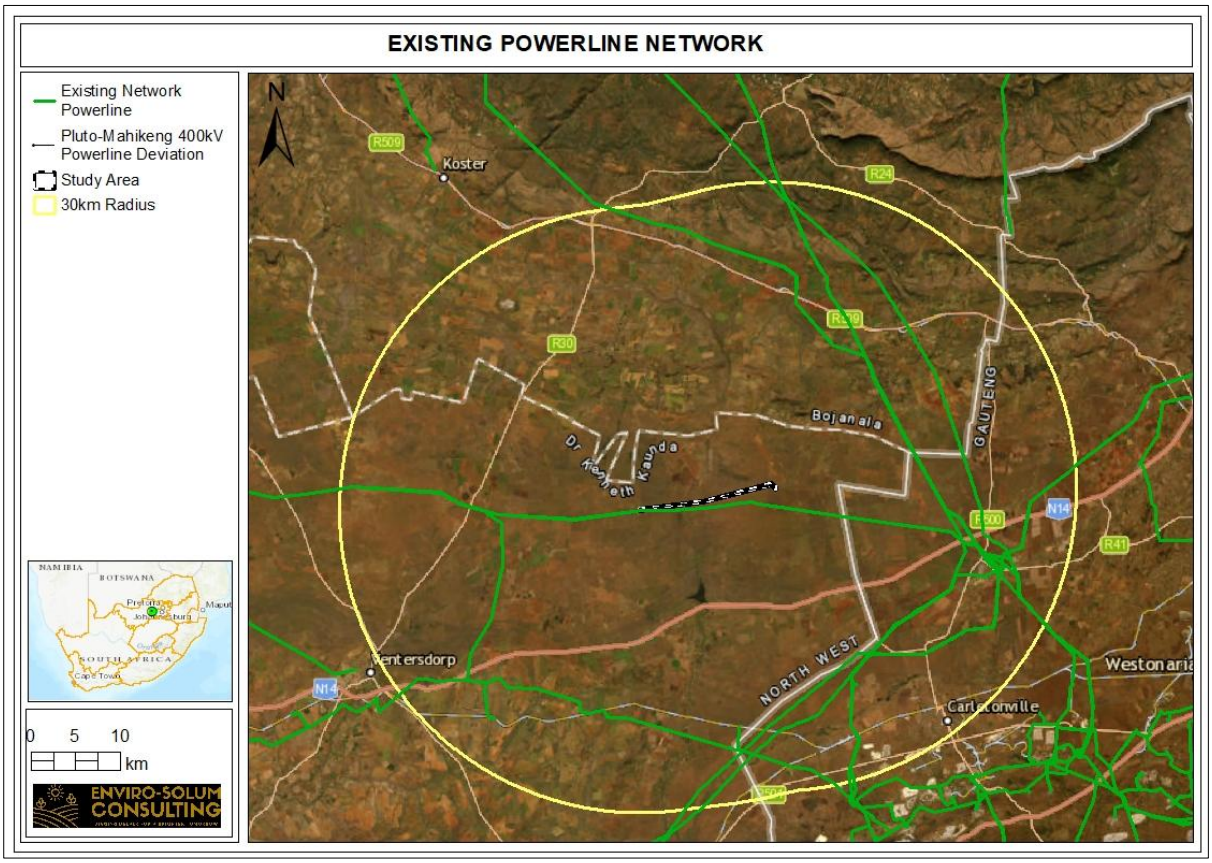


Figure 29: Existing powerline networks within a 30 km radius.

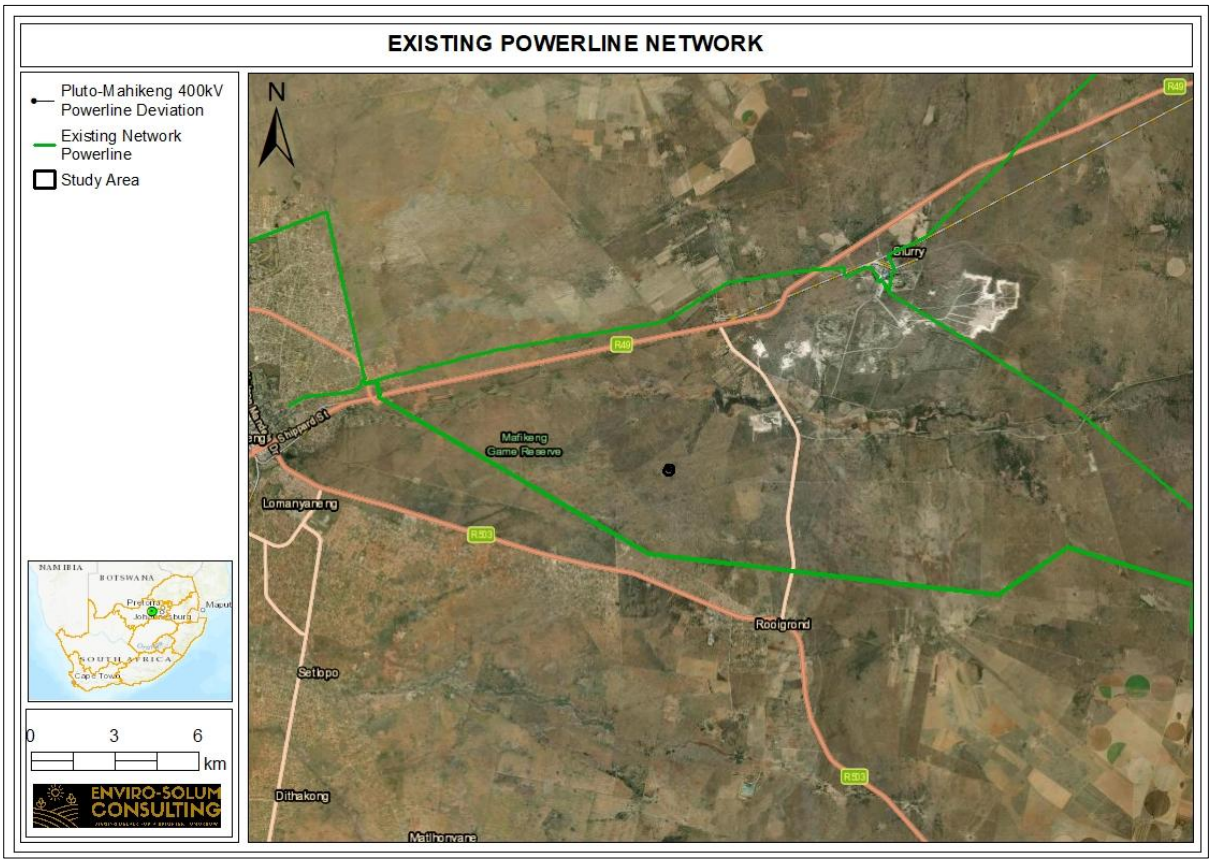


Figure 30: Existing powerline networks within a 30 km radius.

5.2.3 Micro Siting and Confirmation of Linear Activity

The agricultural protocol necessitates the verification of the implementation of all practical measures through micro-siting to reduce the fragmentation and disturbance of agricultural activities. This involves carefully planning the location and layout of agricultural infrastructure and operations to minimise any negative impact on the surrounding agricultural activities. Micro-siting within the powerline development footprint will not significantly impact agriculture and disturbance, as previously discussed. However, it is recommended that the pylon infrastructure be sited away from irrigated agricultural land as far as practically possible.

The agricultural protocol also mandates that, for activities carried out in a linear fashion, it must be ensured that the land can be restored to its original state within two years of the construction phase being completed. This requirement only applies to the overhead power line within the project. It has been verified that the land under the overhead power line, not occupied by other infrastructure, can be returned to its original agricultural productivity within two years of construction. However, it should be noted that the pylons will remain in place throughout the operational lifetime of the powerline.

6 INTEGRATED MITIGATION MEASURES

The Environmental Impact Assessment (EIA) plays a crucial role in evaluating the potential environmental impacts of the proposed project. It is essential that the EIA thoroughly examines the environmental implications, taking into account both the impacts with and without mitigation measures. This comprehensive assessment is vital to effectively minimise any adverse effects on the soil resources in the area. Furthermore, it is imperative to adhere to the mitigation hierarchy, as illustrated in Figure 31, to ensure that the principles of the National Environmental Management Act (NEMA) are effectively applied.

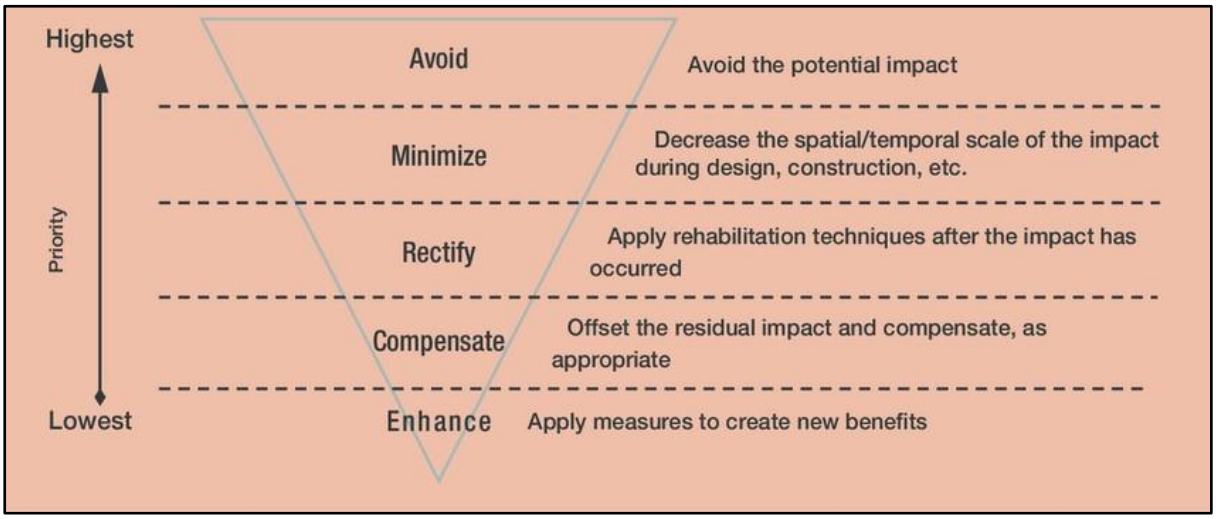


Figure 31: Mitigation hierarchy.

The principles of NEMA are critical for attaining sustainable development as they recognise the need to incorporate social, economic, and ecological factors into environmental decision-making processes. These principles are relevant to all decisions concerning the understanding and application of NEMA and other environmental management and protection regulations. Hence, the EIA needs to consider the NEMA principles.

6.1 Management of Loss of Land Capability

- Direct surface disturbance of the identified arable soils can be avoided where possible to minimise loss of arable soils;
- Avoid construction on the active agricultural soils where feasible;
- Minimise the development footprint within the actively cultivated soils;
- The footprint areas should be lightly ripped to alleviate compaction;
- Limit removal of vegetation to demarcated areas only;
- Limit earthworks and vehicle movement to demarcated paths and areas.

6.2 Soil Compaction Management

- Soil Compaction is usually greatest when soils are moist, so soils should be stripped when moisture content is as low as possible;
- Heavy equipment movement over replaced soils must be minimised;
- Minimise compaction during smoothing of replaced soils by using dozers rather than graders; and
- Following placement, compacted soils must be ripped to full rooting depth (30cm as the bare minimum seedbed) to allow penetration of plant root.

6.3 Soil Contamination Management

- Contamination prevention measures must be addressed in the Environmental Management Programme (EMPr) for the proposed development, and this must be always implemented and made available and accessible to the contractors and construction crew conducting the works on site for reference;
- A spill prevention and emergency spill response plan, as well as dust suppression, and fire prevention plans must also be compiled to guide the construction works;
- An emergency response contingency plan must be put in place to address clean-up measures must a spill and/or a leak occur, as well as preventative measures to prevent contamination; and

- Burying of any waste including rubble, domestic waste, empty containers on the site must be strictly prohibited and all construction rubble waste must be removed to an approved disposal site.

6.4 Soil Erosion and Dust Management

- Removal of vegetation must be avoided until such time as soil stripping is required and similarly exposed surfaces, must be re-vegetated or stabilised as soon as is practically possible;
- All excavation/construction vehicles must be in good condition and inspected regularly to ensure there are no chemical spills (diesel/oil) which will negatively impact the receiving environment;
- After the powerline installation, the ground must be seeded with an indigenous grass or other native cover;
- Vegetation clearance and commencement of construction activities can be scheduled to coincide with low rainfall conditions when the erosive stormwater and wind are anticipated to be low whenever possible;
- Avoid vegetation clearance prior to periods of prolonged inactivity;
- All disturbed areas adjacent to the proposed development areas must be re-vegetated with an indigenous grass mix or vegetation mix, if necessary, to re-establish a protective cover, to minimise soil erosion;
- Temporary erosion control measures must be used to protect the disturbed soils during the construction phase until adequate vegetation has established.

7 CONCLUSION

An Environmental Authorisation (EA) for the 400 kV Pluto-Mahikeng powerline was received by the National Transmission Company South Africa (NTCSA) for this project on 4 February 2019, valid for 5 years. During servitude acquisition, 14km of the powerline route was negotiated outside the approved 2km Environmental Impact Assessment (EIA) corridor, and as such, a Basic Assessment (BA) process must be undertaken to obtain an EA for this deviation. Enviro-Solum Consulting was appointed by Vhubo Consultancy CC to conduct a soil, land use, and land capability study as part of the Environmental Authorisation (EA) for the proposed deviation of the 400Kv Pluto-Mahikeng powerline within the JB Marks and Mahikeng Local Municipalities within the North West Province.

The study area, with a 300 m assessment corridor, is proposed to serve as the locality for the proposed powerline deviation for the 400 kV Pluto-Mahikeng. The majority of the study area (96.5%) is characterised by shallow soils, which are better suited for grazing activities. Arable soils constitute 3.1% of the total study area. With that said, an agricultural impact is any alteration that influences the future capacity for agricultural production on a specific land area. This alteration often occurs when agriculture is excluded from a region undergoing development. Furthermore, agricultural production potential can be reduced by soil erosion, compaction, pollution, and soil deterioration.

The proposed overhead powerline is unlikely to significantly affect agriculture, as it will not alter the future capacity for agricultural production in the study area. All farming activities can proceed normally beneath the power line. However, there may be minor impacts, such as the placement of electric pylons within cultivated fields, which could restrict the use of certain equipment near them due to safety standards. Additionally, the construction and decommissioning of the power line may cause topsoil loss and land degradation from disturbance. The potential impact of the project can be effectively reduced through the implementation of standard, generic measures built into the project's engineering design, as well as by following best practices for construction sites, all of which are detailed in the Environmental Management Programme (EMPr) included in Part B-Section 1 and 2 of the generic EMPr, along with standards for powerlines. The development of the powerline is expected to result in only a minimal loss of future agricultural potential. Therefore, the agricultural impact of the proposed powerlines is considered to be of very low significance.

The cumulative impacts from the proposed powerline are considered low because agricultural activities can continue below the powerlines. Therefore, no net loss of future agricultural production is anticipated due to the low power line density within a 30 km radius. Disruption of agricultural activities, such as grazing and cultivation, will be limited in scale and duration during the construction period; post-construction, all grazing and cultivation activities will continue under the proposed powerlines. Consequently, there is no expected net loss in future agricultural production resulting from this proposed development and the currently operating developments of a similar nature. Given this analysis, the proposed powerline development is considered for approval.

8 REFERENCES

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APPENDIX A: INDEMNITY

- This report is based on survey and assessment techniques limited by time and budgetary constraints relevant to the type and level of investigation undertaken.
- This report is based on a desktop investigation using available information and data related to the site to be affected, *in situ* fieldwork, surveys, and assessments, and the specialist's best scientific and professional knowledge.
- The Precautionary Principle has been applied throughout this investigation.
- The findings, results, observations, conclusions, and recommendations given in this report are based on the specialist's best scientific and professional knowledge as well as information available at the time of the study.
- Additional information may become known or available later in the process for which no allowance could have been made at the time of this report.
- The specialist reserves the right to modify this report, recommendations, and conclusions at any stage must additional information become available.
- Information and recommendations in this report cannot be applied to any other area without proper investigation.
- This report, in its entirety or any portion thereof, may not be altered in any manner or form or for any purpose without the specific and written consent of the specialist as specified above.
- Acceptance of this report, in any physical or digital form, serves to confirm acknowledgment of these terms and liabilities.



Tshiamo Setsipane

07 June 2026

APPENDIX B: CURRICULUM VITAE OF SPECIALISTS

CURRICULUM VITAE OF TSHIAMO SETSIPANE

PROFESSIONAL EXPERIENCE

Soil Science Consultant

- Conducting Soil, Land Use and Land Capability Assessments:
  - Assess existing information for rainfall data and current land uses.
  - Conduct a desktop assessment within the study area using the digital satellite imagery and other suitable digital aids.
  - A soil classification survey and agricultural potential will be conducted within the proposed development area.
  - A soil classification survey and agricultural potential will be conducted within the proposed development area.
  - Provide recommended mitigation measures to implement to manage the anticipated impacts and to comply with the applicable legislations.
  - Compile a report on the findings of the assessment and presented in an electronic format.
- Conducting Hydropedological Impact Surveys:
  - Identify dominant hillslopes (from crest to stream) of the project area using terrain analysis.
  - Conduct a transect soil survey on each of the identified hillslope.
  - Hydrological behaviour of the identified hillslope described according to the identified hydropedological groups;
  - Graphical representation of the dominant and sub-dominant flowpaths at hillslope scale prior to development and post development.
  - The impact of the proposed development on the hydropedological behaviour described in a report format.
  - Quantification of hydropedological fluxes using the Soil and Water Analysis Tool (SWAT+) to determine the losses to the wetland systems though the proposed project
- Conducting Land Contamination Assessments and Soil Monitoring Assessments:
  - Assessments of historic and current storage of hazardous waste and materials on soils.
  - Topsoil stockpile quality assessment for future usage.
  - Monitoring programme to determine the dust suppression impact on soil chemical parameters.

EDUCATION

- M.Sc. (Agric): Soil Science 01/2016– 03/2019
  - Dissertation: Characterisation of hydropedological processes and properties of a sandstone and a tillite hillslope, Kwa-Zulu Natal, South Africa.
  - Graduated *Cum-Laude*.
- B.Sc. (Agric) Honours: Soil Science 01/2014 – 11/2014
  - Majored in soil fertility, soil physics, soil geography and soil chemistry.
  - Research Project: Soil as an indicator of soil water regime.
- B.Sc. (Agric): Soil Science and Agrometeorology 2010 – 11/2013
  - Majored in soil science and agrometeorology.
  - Minored in agronomy and plant pathology.

PROFESSIONAL MEMBERSHIP AND AFFILIATION

- Professional Natural Scientist with South African Council for Natural Scientific Professions (SACNASP) Registered, 11/2015 – Current
- Member of the Soil Science Society of South Africa (SSSSA)
- Member, South African Soil Surveyors Organization (SASSO)
- Member of the South African Wetland Society (SAWS