Soil and Agricultural Compliance Statement for the proposed Glencore Lydenburg Solar Photovoltaic (PV) Project

Thaba Chweu Local Municipality, Ehlanzeni District Municipality, Mpumalanga Province, South Africa

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CLIENTS

EIMS ENVIRONMENTAL IMPACT MANAGEMENT SERVICES

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Report Name	**Soil and Agricultural Compliance Statement for the proposed Glencore Lydenburg Solar Photovoltaic (PV) Project**
Reference	**Glencore Lydenburg – Solar Photovoltaic Facility**
Submitted to	EIMS ENVIRONMENTAL IMPACT MANAGEMENT SERVICES
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Reviewer	**Andrew Husted**  Andrew Husted is Pr Sci Nat registered (400213/11) in the following fields of practice: Ecological Science, Environmental Science and Aquatic Science. Andrew is an Aquatic, Wetland and Biodiversity Specialist with more than 13 years' experience in the environmental consulting field.
Declaration	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, 2014 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 to provide a professional service within the constraints of the project (timing, time and budget) based on the principles of science.

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1 Introduction

The Biodiversity Company was commissioned to conduct a soil and agricultural potential assessment for the proposed Lydenburg Solar Photovoltaic (PV) Project located in Lydenburg, within the Thaba Chweu Local Municipality, Ehlanzeni District, Mpumalanga Province. The area that is being investigated for the proposed solar power plant is located just northeast of Lydenburg and approximately 70 km northwest of Mbombela, in Mpumalanga Province (see Figure 1-1).

The approach adopted for the assessment has taken cognisance of the recently published Government Notice 320 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 National Web based Environmental Screening Tool (DFFE, 2023) has characterised the agricultural theme sensitivity of the project area as predominantly “High”, with a key consideration of this assessment being the determination of agricultural theme sensitivities for the project.

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 solar photovoltaic project.

This report, after taking into consideration the findings and recommendations provided by the specialist herein, should inform and guide the Environmental Assessment Practitioner (EAP) and regulatory authorities, enabling informed decision making, as to the ecological viability of the proposed project.

1.1 Project Information and Technical Details

The following information was obtained from EIMS (2023) and pertains to the project information and technical details of the proposed project. No design layout has been provided for this stage of the project. The proposed development includes a; up to a 300 MW PV facility, 132kV powerlines, on site switching station, and possible battery storage facility.

1.2 Project Area

The extent of the property/development footprint is referred to as the Project Area of Influence (PAOI) and pertains to the project area. A map of the PAOI in relation to the local region is presented in Figure 1-1, and a map of the PAOI with the proposed layout is presented in Figure 1-2. The surrounding land uses include agriculture, grazing, game farming, waterbodies, natural veld and mining processing/ smelting plant.

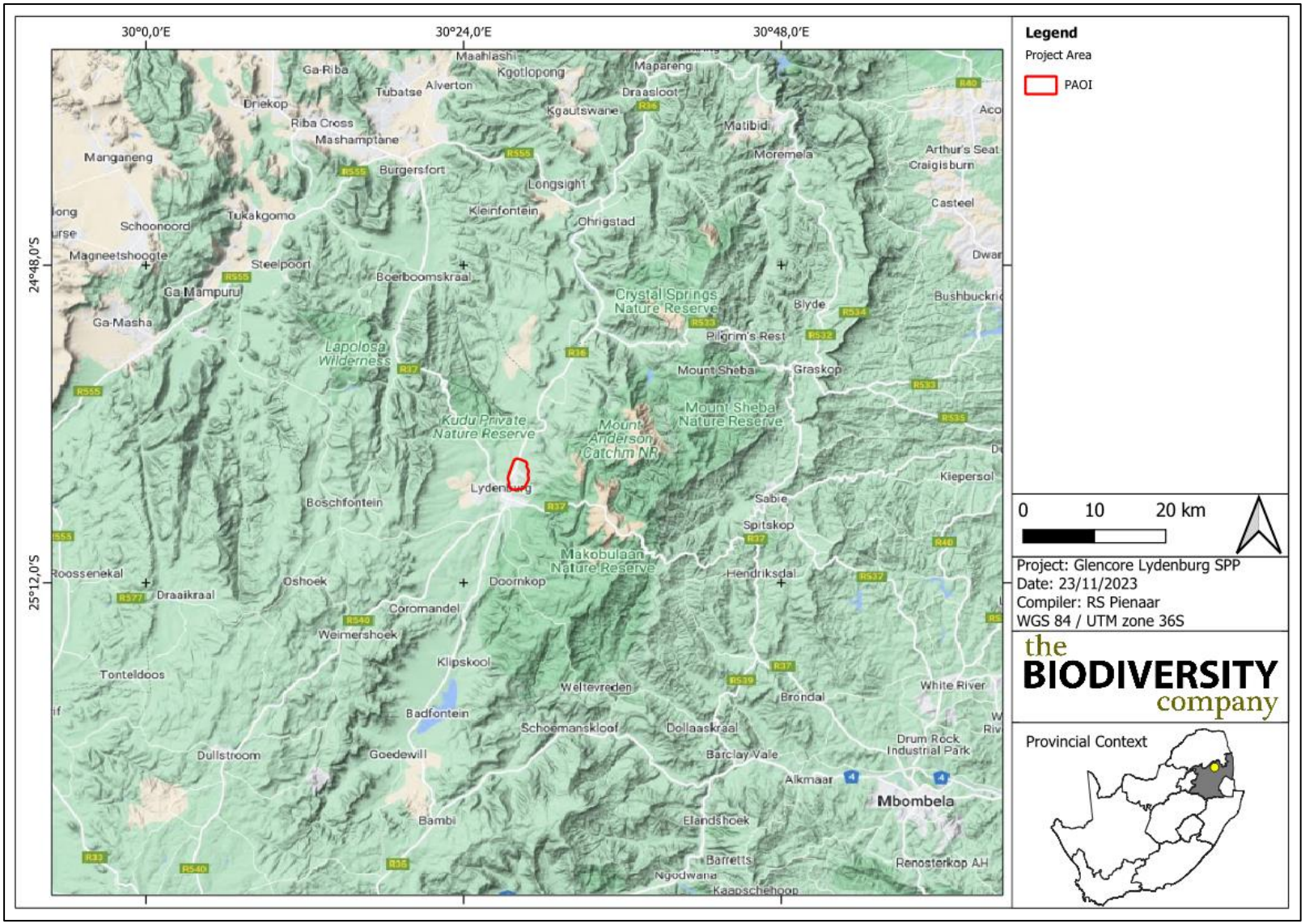


Figure 1-1 Locality map of the project area.

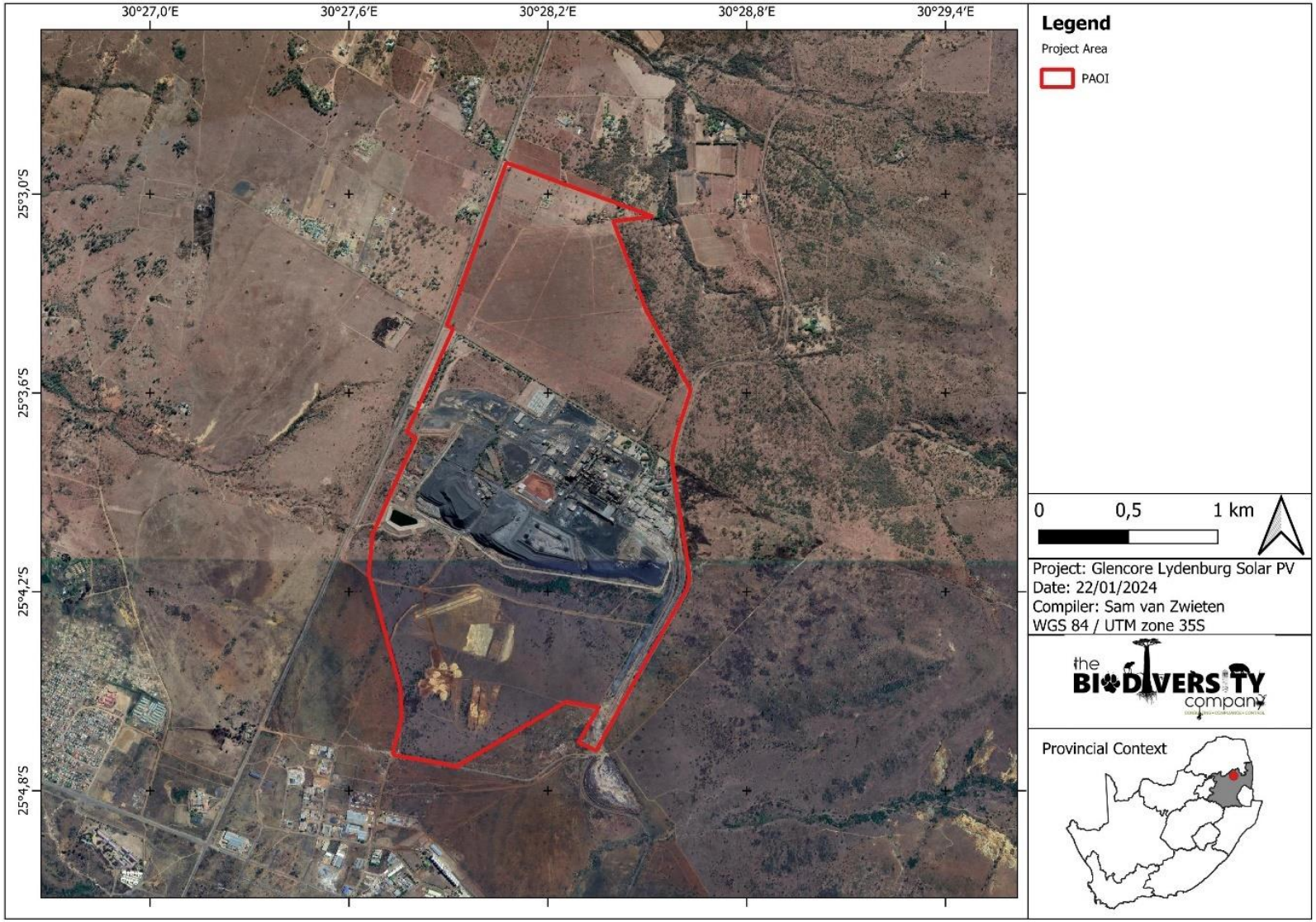


Figure 1-2 Map illustrating the local context of the PAOI.

1.3 Scope of Work

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

- Ensure a thorough assessment, that 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.

2 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);
- Environment Conservation Act (Act 73 of 1989);
- National Environmental Management Act (Act 107 of 1998); and
- National Water Act (Act 36 of 1998).

2.1 Legislative Framework

In line with the protocol for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial biodiversity, as per 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:
    - “medium sensitivity” for agriculture, must submit an Agricultural Compliance Statement.

An Agricultural Compliance Statement must contain the information as presented in Table 2-1 below.

Table 2-1 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	Pg i
a signed statement of independence by the specialist	Appendix A
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	6 / Figure 6-1
calculations of the physical development footprint area for each land parcel as well as the total physical development footprint area of the proposed development including supporting infrastructure	5.5
confirmation that the development footprint is in line with the allowable development limits…	5.5
confirmation from the specialist that all reasonable measures have been taken through micro-siting to avoid or minimise fragmentation and disturbance of agricultural activities	6
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	6.2
any conditions to which this statement is subjected	6.3
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	5.4
where required, proposed impact management outcomes or any monitoring requirements for inclusion in the EMPr	6.1
a description of the assumptions made and any uncertainties or gaps in knowledge or data	3.4

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

3 Methodology

3.1 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. In addition, a Digital Elevation Model (DEM) as well as the slope percentage of the area was calculated by means of the NASA Shuttle Radar Topography Mission Global 1 arc second digital elevation data by means of QGIS and SAGA software.

3.2 Field Survey

An assessment of the soils present within the project area was conducted during the field survey on the 16th to 17th of January 2024. 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.

3.3 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 3-2 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 3-2 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 Table 3-3. The final land potential results are then described in Table 3-4.

Table 3-3 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 3-4 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 3-5), 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 3-2). 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 3-5 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	

3.4 Limitations

The following limitations are relevant to this agricultural potential assessment:

- The handheld GPS used potentially could have inaccuracies up to 5 m. Any and all delineations therefore could be inaccurate within 5 m; and
- No heavy metals have been assessed nor fertility been analysed for the relevant classified soils.

4 Project Area

4.1 Climate

The project area falls within the Lydenburg Thornveld vegetation. The area experiences rainshadow due to escarpments, where the climate is much drier, and the winters are very cold (MAT 16 °C). The rainfall is generally lower than in surrounding areas since it falls within a rainshadow. It receives a rainfall between 580 mm to 810 mm with an annual precipitation average (MAP) of 707 mm. Frost occur fairly infrequently (Mucina & Rutherford, 2006). The mean average monthly maximum and minimum temperatures for the project area range from 27.1°C and 7.3 °C for February and July, respectively (see Figure 4-1).

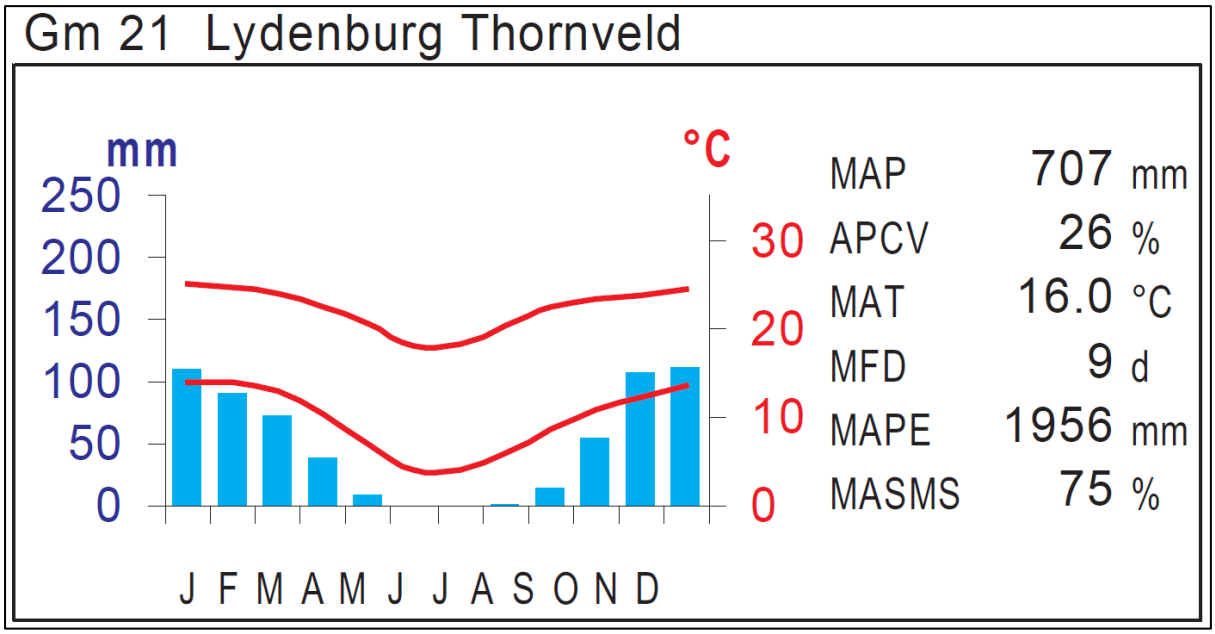


Figure 4-1 Summarised climate for the region (Mucina & Rutherford, 2006)

4.2 Soils and Geology

According to the land type database (Land Type Survey Staff, 1972 - 2006) the assessment area to be focused on mainly falls within the Ba 66 land type (Figure 4-4). The Bb land types are predominated by Avalon and Katspruit 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 soils in the Bb land types are characterized by plinthic catena, usually duplex and margalitic soils are rare in the upper terrains. The soils have a dystrophic and mesotrophic base status. Red soils are commonly widespread in the landscape. The terrain unit for the Bb 66 land type is presented in Figure 4-3 and the expected soils are illustrated in Table 4-6; respectively.

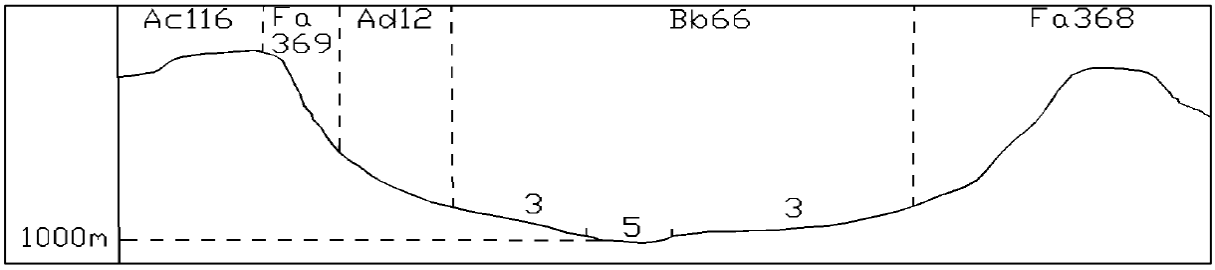


Figure 4-3 Illustration of land type Ba 66 terrain units (Land Type Survey Staff, 1972 – 2006)

Table 4-6 Soils expected at the respective terrain units within the Ba 66 land type (Land Type Survey Staff, 1972 - 2006)

Terrain Units			
3 (90%)		**5 (10%)**	
Avalon	52%	Katspruit	30%
Oakleaf	12%	Valsrivier	20%
Westleigh	10%	Rensburg	15%
Longlands	6%	Oakleaf	10%
Hutton	5%	Bonheim	10%

Mispah	4%	Streambed	10%
Glenrosa	4%	Erosion	5%
Valsrivier	3%		
Bonheim	3%		

According to Mucina & Rutherford (2006), the geology of the region is primarily composed of shales of the Pretoria group (including the Silverton and Timeball hill formations). Shales occasionally intersected with bands of quartzite or andesite. The geology is characterised with the formation of red clay soils predominated with Mispah, Glenrosa and Hutton soil forms.

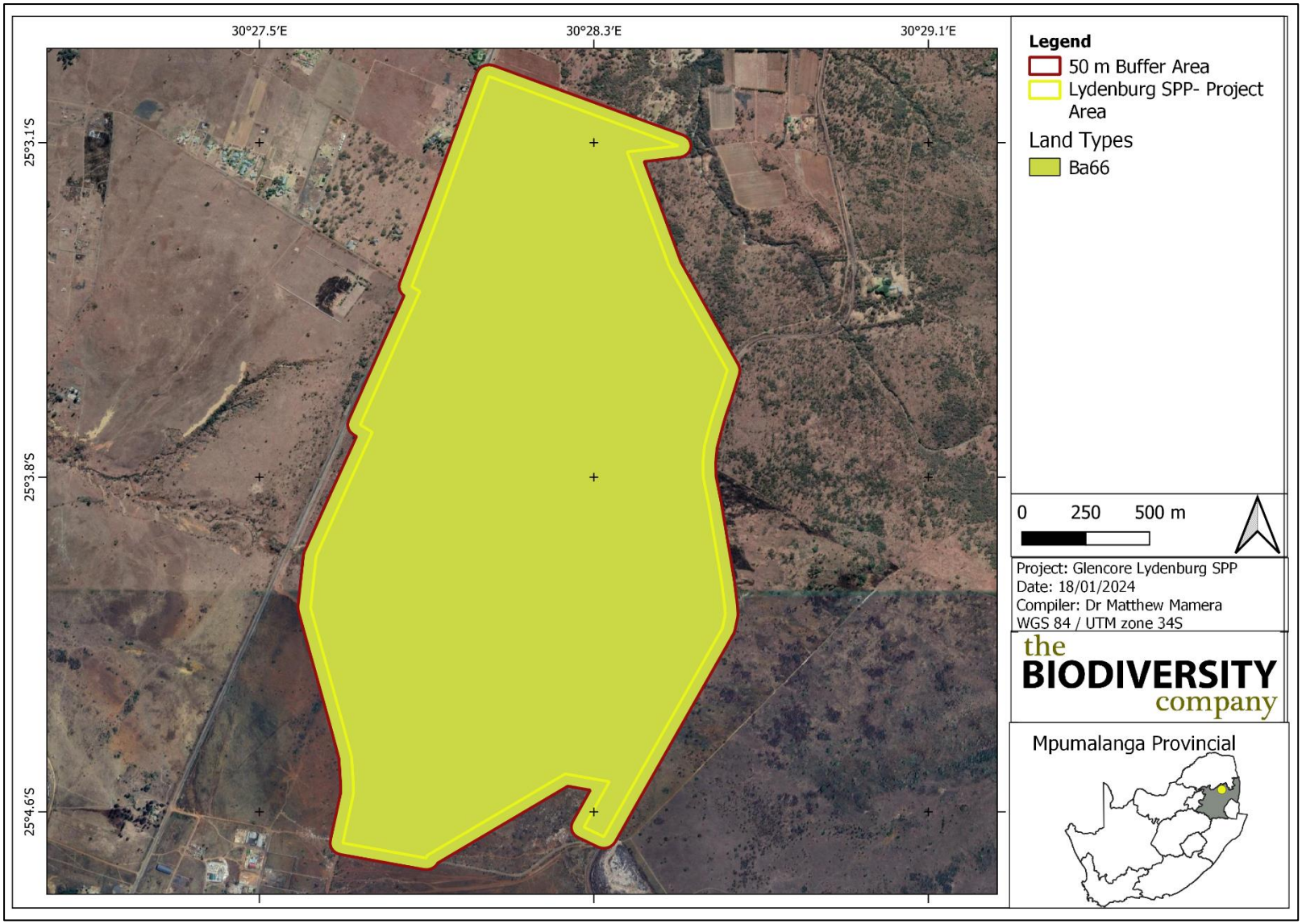


Figure 4-4 Land types associated with the proposed project area.

4.3 Terrain

The slope percentage of the project area has been calculated and is illustrated in Figure 4-5. Most of the project area is characterised by a slope percentage between 0-10% with some irregularities in areas with slopes reaching 25%. This illustration indicates a mostly non-uniform topography with occurrence of some steep sloping areas being present mostly associated to the TSF. The Digital Elevation Model (DEM) of the project area (Figure 4-6) indicates an elevation of 1 392 to 1 467 Metres Above Sea Level (MASL).

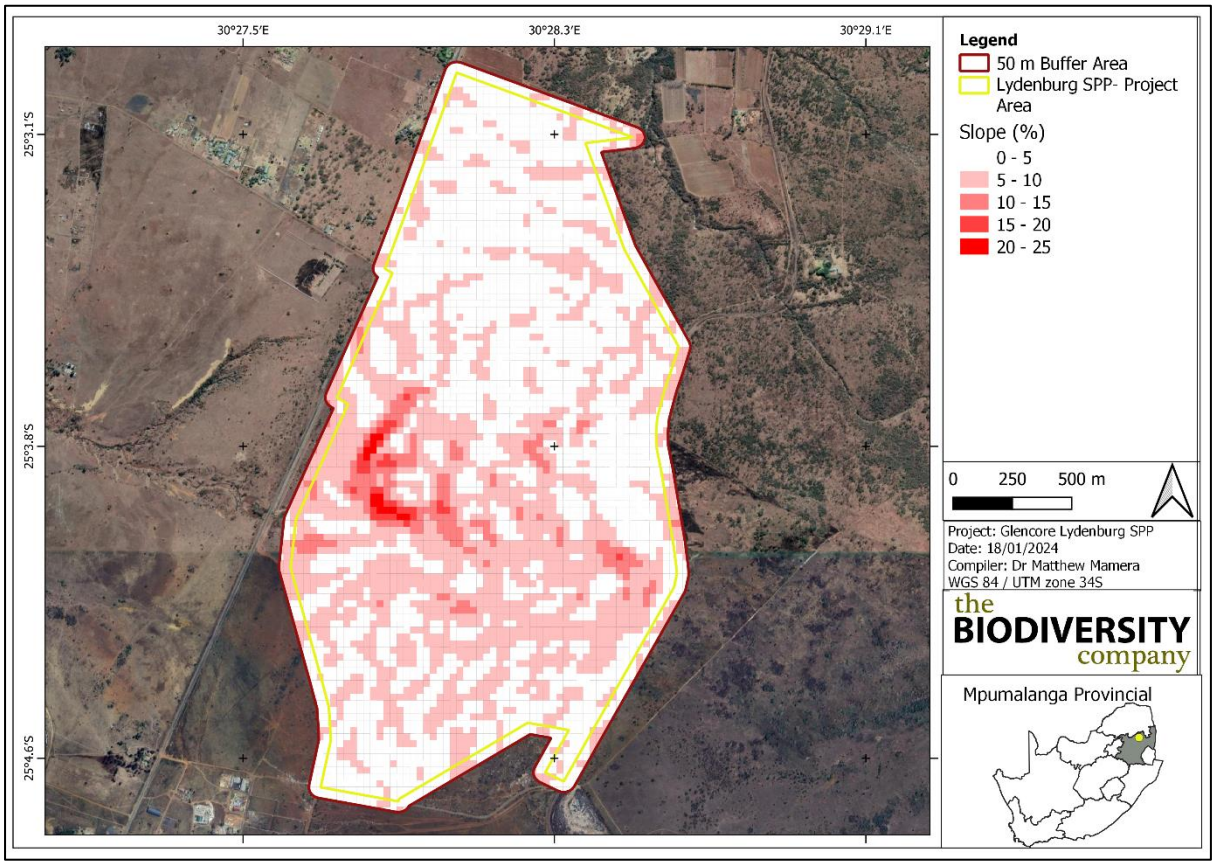


Figure 4-5 Slope percentage map for the project area.

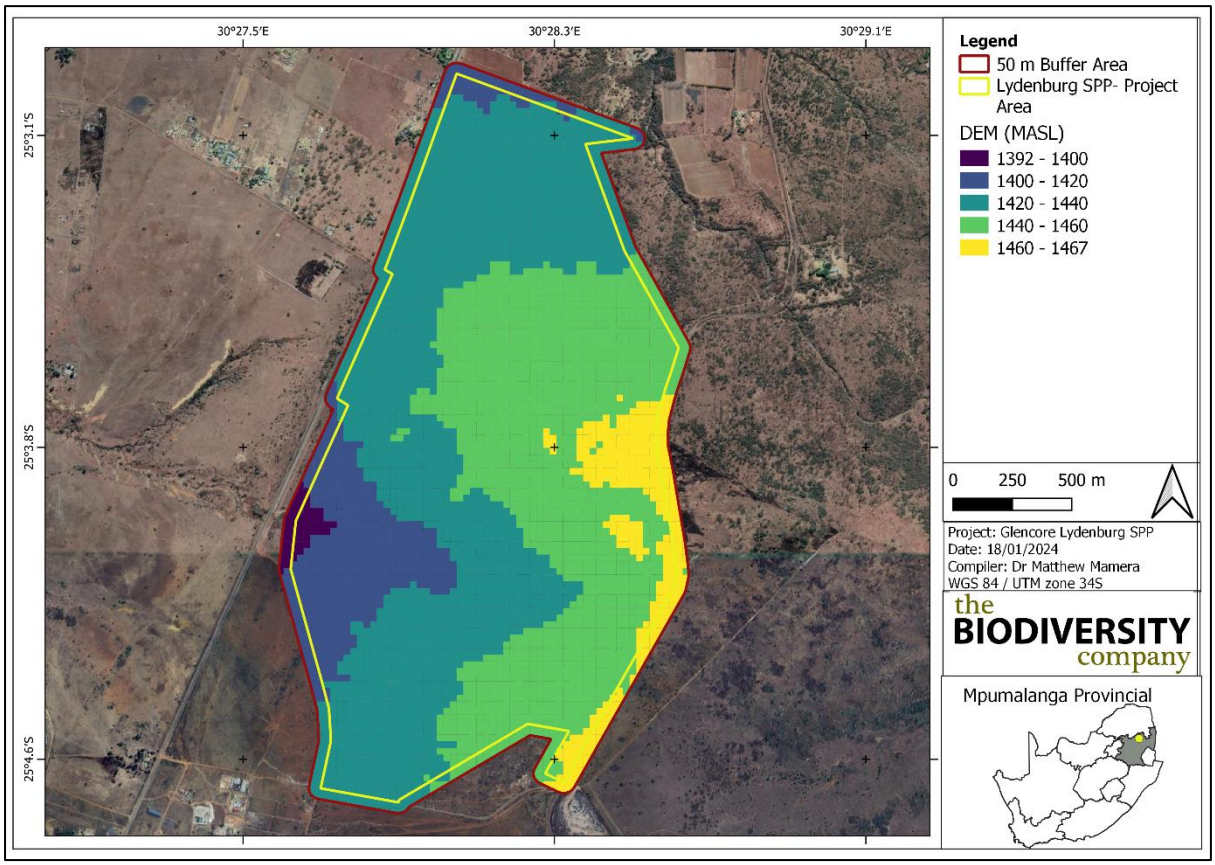


Figure 4-6 Digital Elevation Model of the project area (Metres Above Sea Level).

5 Results and Discussion

5.1 Baseline Findings

Eight soil forms were identified throughout the 50 m buffered area namely Lichtenburg, Nkonkoni, Vaalbos, Glenrosa, Grabouw, Witbank, Johannesburg and Cartref soil forms, with the Glenrosa soil form being the most dominant soil form over the area (see Figure 5-7). Hydromorphic soils were identified within the area, namely Cartref.

The Lichtenburg and Nkonkoni soil forms are regarded to be most important in the study area as they demonstrate the most sensitive land capabilities. The Lichtenburg soil form consists of an orthic topsoil horizon on top of a red apedal horizon with a hard plinthic horizon below. The Nkonkoni soil form has an orthic topsoil on top of a red apedal horizon underlain with a lithic horizon. The Vaalbos soil form has an orthic topsoil horizon with a red apedal horizon with a hard rock substratum below. The Glenrosa soil form consist of an orthic horizon with a lithic horizon below. The Cartref soil form consist of an orthic topsoil horizon with an albic horizon underlain with a lithic horizon below. The Grabouw soil forms are physically distributed Anthrosols with some original horizons still visible but in a disturbed state. The Witbank soil forms are transported technosols from the mine excavated material covering either mined areas or undisturbed natural soils, material is mixed to distinguish the individual original diagnostic horizons. The Johannesburg soil form is an urban technosols on urban waste sites uncovered or covered urban waste with ex-natural soils or liners and topsoil. The different soil horizons are illustrated in Figure 5-8 and Figure 5-9.

The most sensitive land capability of the above mentioned soil forms has been determined to be class “II” and the other identified soils to be “III”, “V”, ““VI” and “VII”. A climate capability level 7 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 soil and the determined climate capability, a land potential of “L4” was calculated for the dominant sensitive soil. According to Smith (2006), the “L4” land potential level is characterised by moderate potential. Moderately regular and/or moderate to severe to moderate limitations are expected due to soil, slope, temperatures or rainfall. Appropriate permission is required before ploughing virgin land.

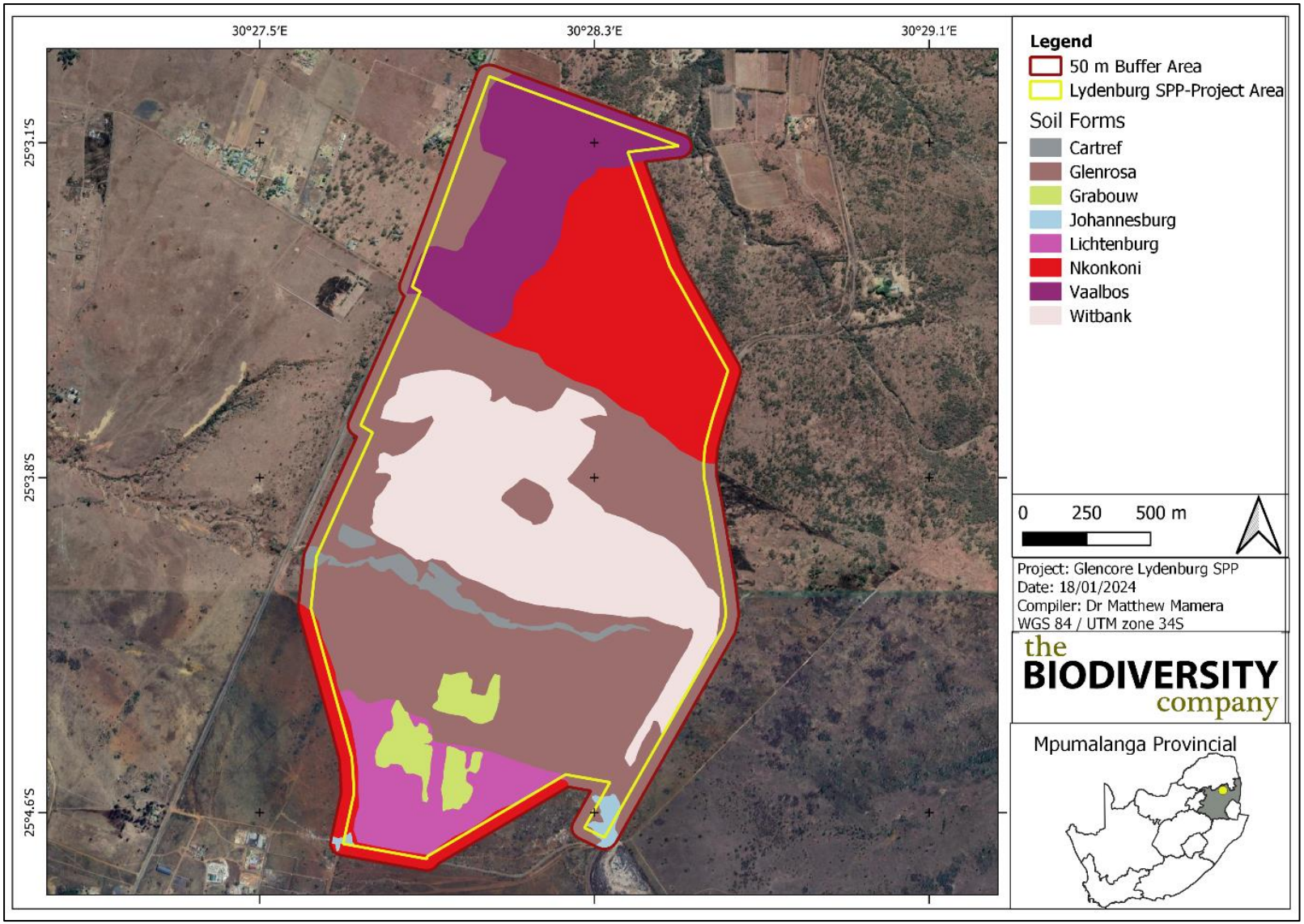


Figure 5-7 Soil forms found within the proposed project area.

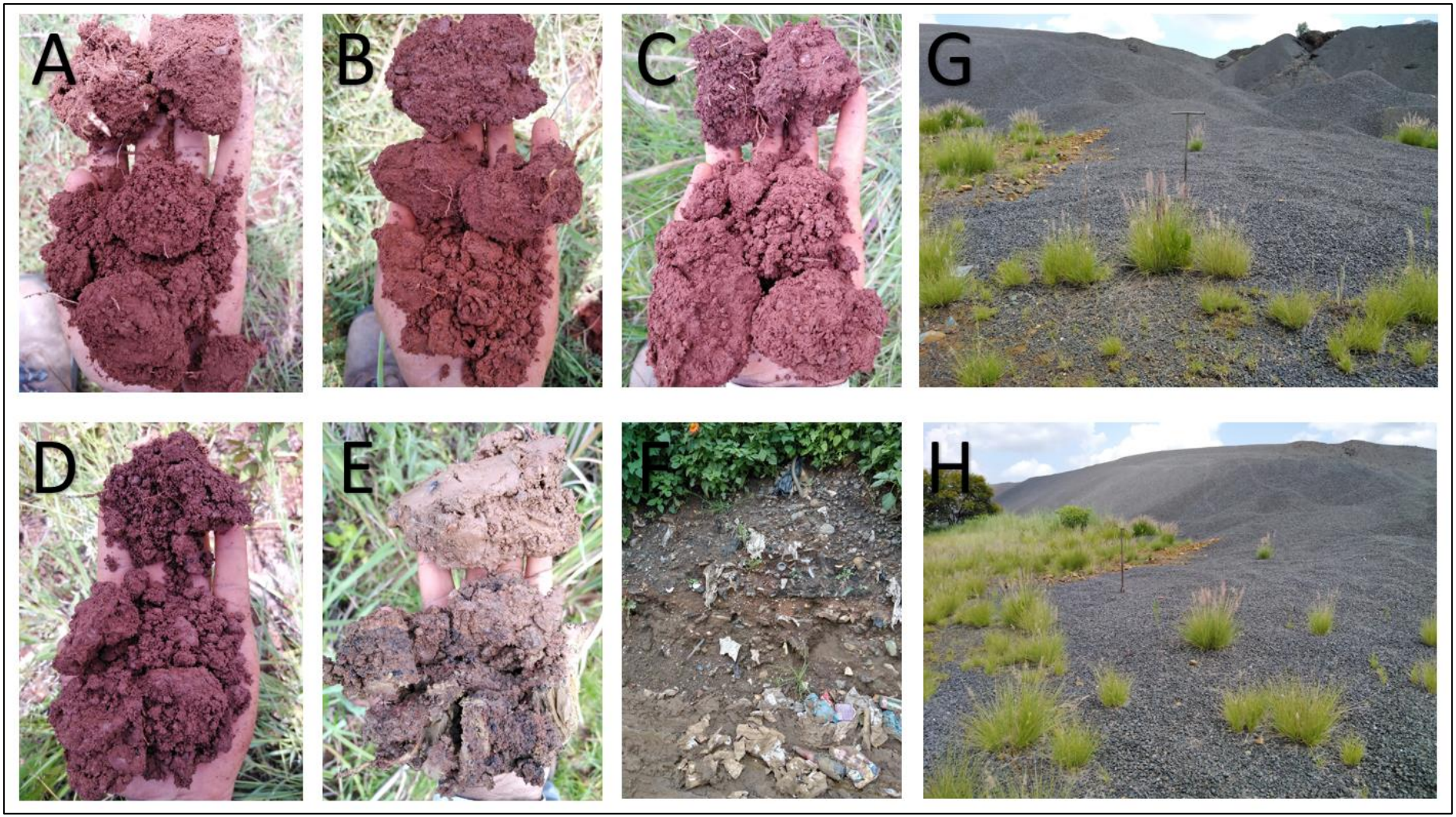


Figure 5-8 ***Dominant soil horizons found within the proposed project area; A) Orthic topsoil with a red apedal horizon with a hard rock substratum below; B) Red apedal horizon subsurface horizon with a hard plinthic horizon below; C& D) Lithic subsurface horizons; E) Orthic topsoil with an albic horizon below; F) Urban waste mixed with natural soils; G&H) Witbank soils.***

Figure 5-9 ***Dominant soil horizons found within the proposed project area; A&B) Example of hard plinthic subsurface layers cementation which promotes an impermeable substratum.***

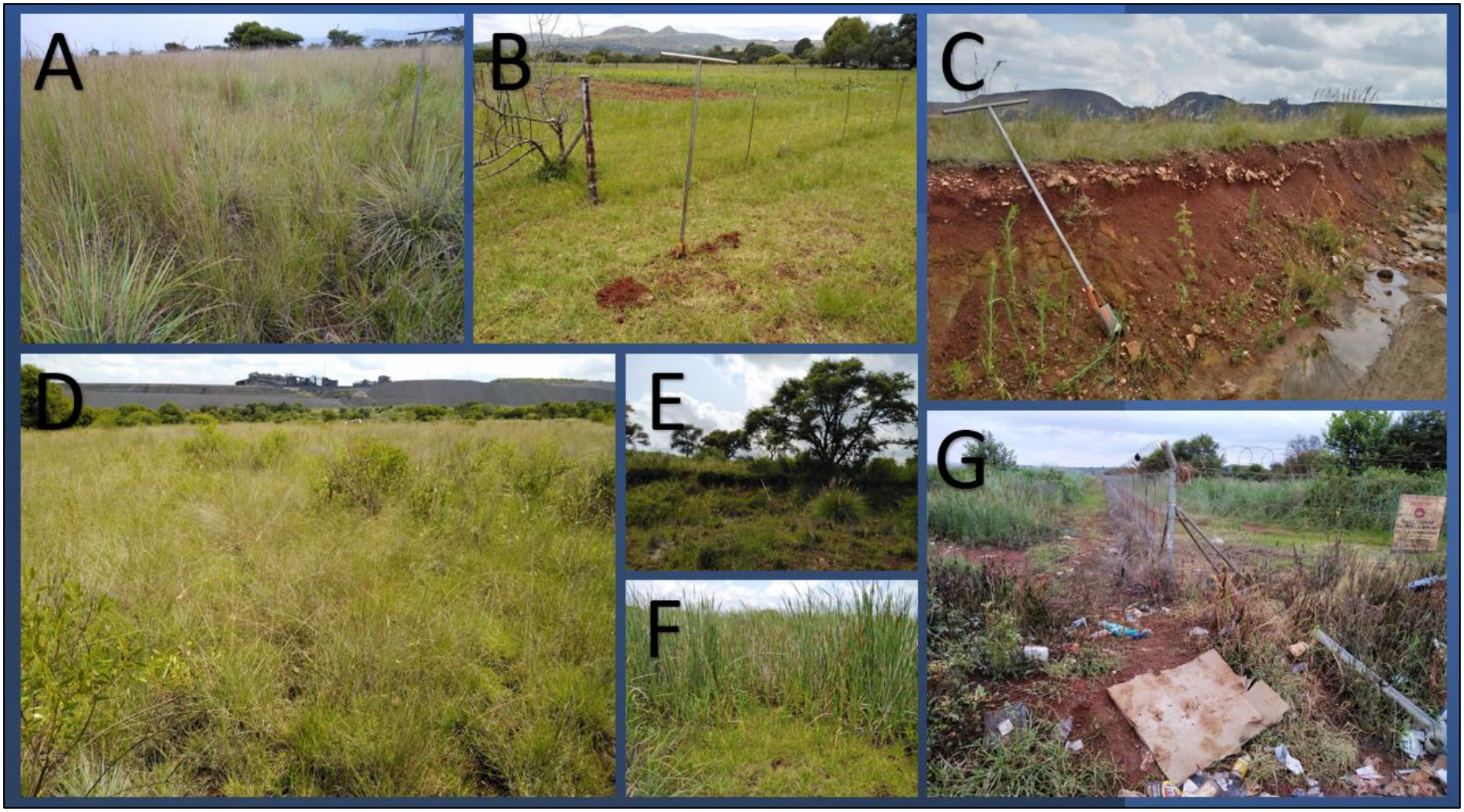


Figure 5-10 Surrounding of the identified dominant soil horizons found within the proposed project area.

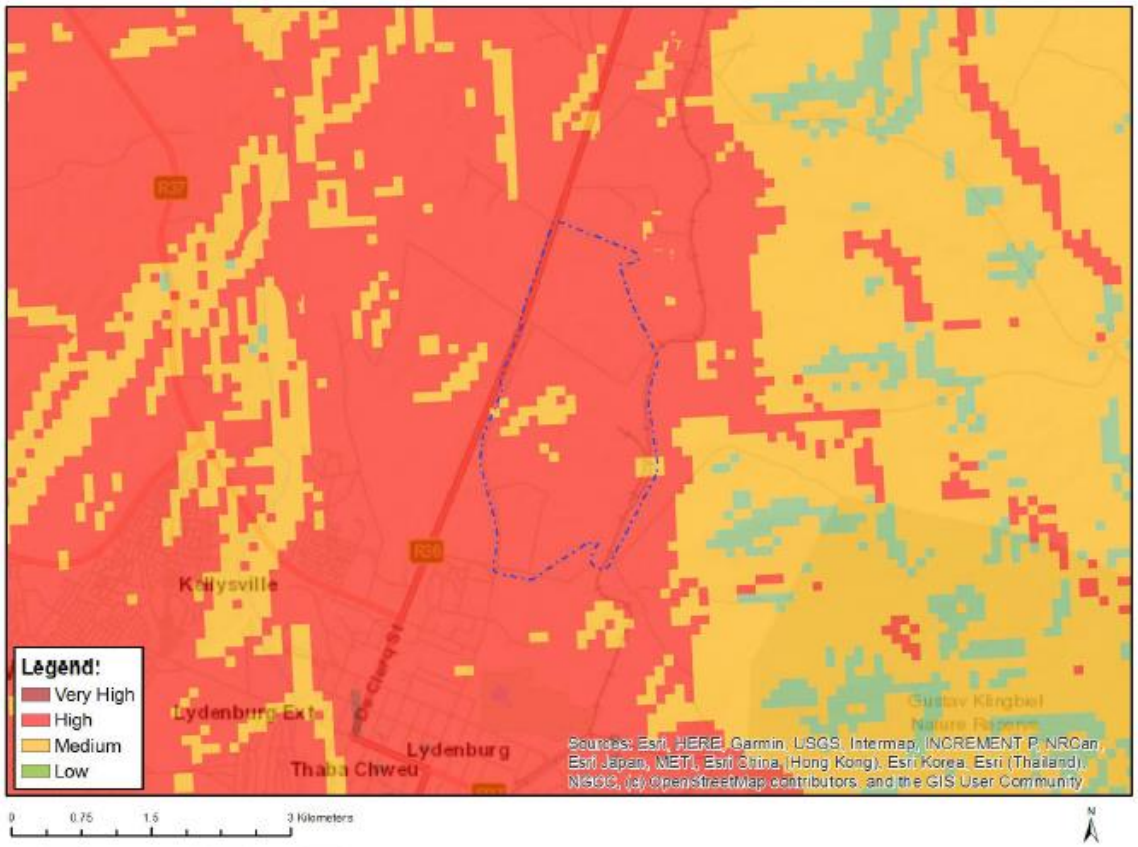
5.2 Sensitivity Verification

5.2.1 Screening Report – Glencore Lydenburg – Solar Photovoltaic Facility

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 project area falls within the 'Moderate to High' agricultural sensitivity (Figure 5-11).

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Land capability;09. Moderate-High/10. Moderate-High
High	Small Holdings;Land capability;09. Moderate-High/10. Moderate-High
Medium	Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate

Figure 5-11 Map of Relative Agricultural Theme Sensitivity for the Glencore Lydenburg – Solar Photovoltaic Facility generated by the Environmental Screening Tool Site Ecological Importance (SEI).

5.2.2 Site Ecological Importance (SEI)

The following land potential level have been determined;

- Land potential level 4 (this land potential level is characterised by the “L4” land potential level is characterised by moderate potential. Moderately regular and/or moderate to severe to moderate limitations are expected due to soil, slope, temperatures or rainfall). Appropriate permission is required before ploughing virgin land.
- Land potential level 5 (this land potential level is characterised by restricted potential. Regular and/or moderate to severe limitations due to soil, slope, temperatures or rainfall).
- Land potential level 6 (this land potential level is characterised by very restricted potential. Regular and/or moderate to severe limitations due to soil, slope, temperatures or rainfall). Non arable; and
- Land potential level 7 (this land potential level is characterised by low potential. Severe limitations due to soil, slope, temperatures or rainfall). Non arable.

Land potential of the proposed area is illustrated in Figure 5-12.

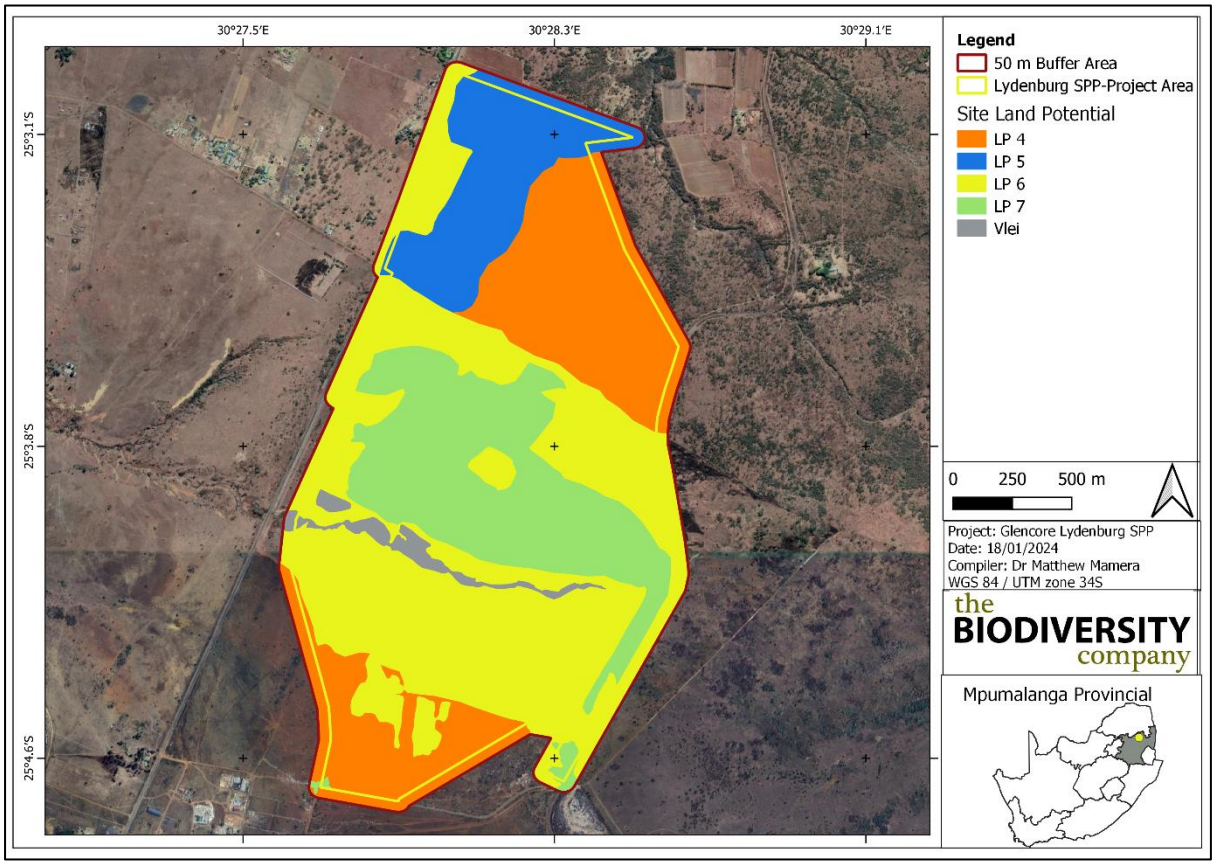


Figure 5-12 Land Potential within the 50 m Buffer area of the Project Area.

These features were used to determine the sensitivity of resources relevant to this assessment. The “L4” land potential areas were scored “High sensitivity”; “L5” land potential areas were scored “Medium sensitivity”; “L6” and “L7” land potential areas were scored “Low sensitivity” (see Figure 5-13).

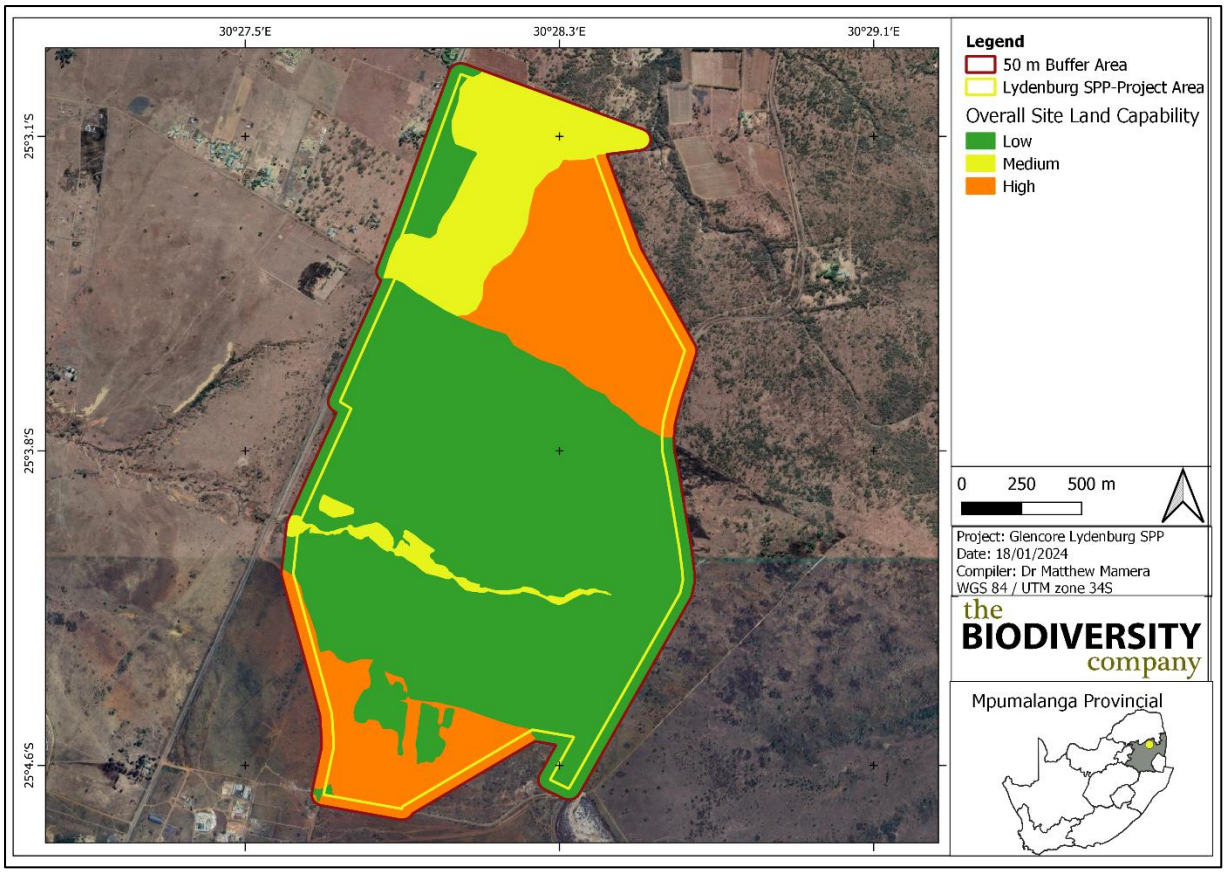


Figure 5-13 Overall sensitivity of the project area.

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

- Land Capability 6 to 8 (Moderate low Sensitivity to Moderate Sensitivity), and
- Land Capability 9 to 10 (Moderate Sensitivity to Moderate High Sensitivity).

The land capability sensitivity (DAFF, 2017) indicates a range of categories expected throughout the project focus area. The proposed project area falls evenly within the "Moderate Low to Moderate" sensitivity category and most areas have "Moderate High" sensitivity (see Figure 5-11). The land capability and land potential of the resources in the regulated area are both characterised as "Medium."

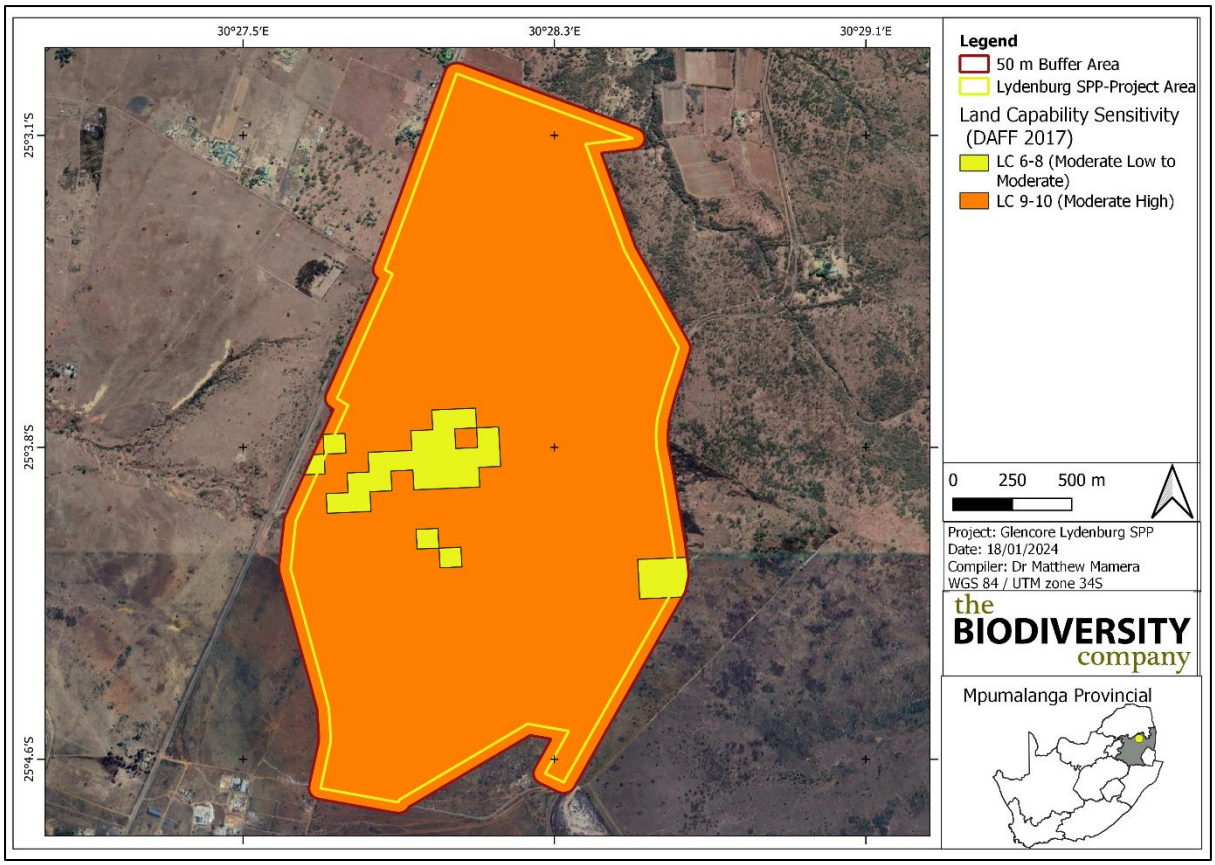


Figure 5-14 The land capability sensitivity (DAFF, 2017).

The baseline soil findings and the DFFE (2024) agricultural theme concur with one another to an extent.

In addition, there are crop boundary areas which were identified by means of the DEA Screening Tool (2024) (see Figure 5-15). There is potential segregation of areas classified as having "High" sensitivities in the proposed project area. It is worth noting that some of these areas are now associated with historical crop fields not agriculturally active. Furthermore, the confirmed crop fields are used for small scale to subsistence agriculture which should have a limited loss on livelihoods from these areas as they are not used for high cash cropping practices like vineyards or orchards. These crop fields are not under any irrigation.

By field work observation, it is evident that there is active agriculture or crops present and that some of these areas are actively cultivated for the proposed PV area. However, most of these areas are now historical crop fields used for small livestock grazing or grasslands. Further to this, no working irrigation infrastructure, such as centre pivots or drip irrigation are present within the project area and irrigated agricultural is currently not practised in the area.

Considering the soil properties, agricultural potential as well as the current land use of the proposed PV development area, the area has a "Medium" agricultural sensitivity.

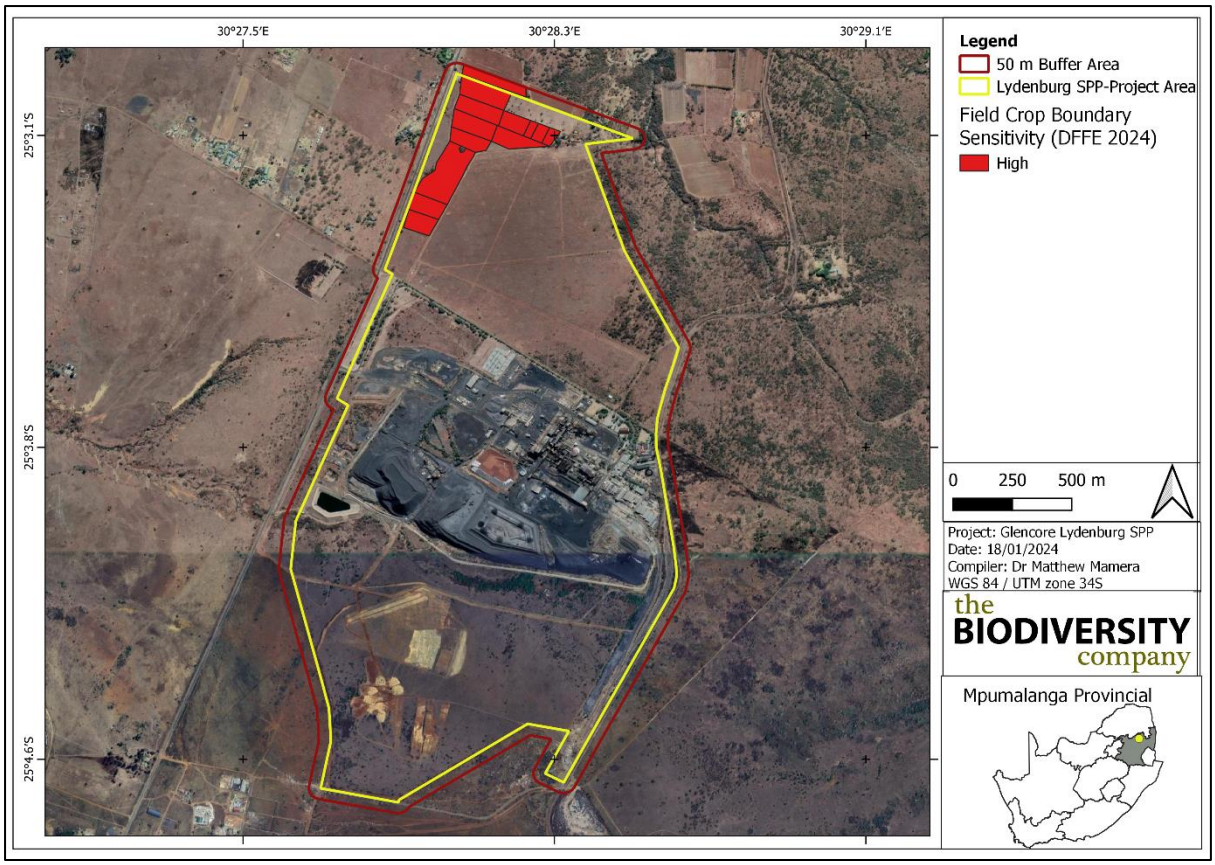


Figure 5-15 The Field Crop Boundary Sensitivity (DFFE, 2024).

Based on the confirmed sensitivities, the overall sensitivity of the proposed project area can be categorized as "Medium" (see **Error! Reference source not found.**). The allocated sensitivities for the theme are either disputed or validated in Table 5-7 below.

Table 5-7 Summary of the screening tool vs specialist assigned sensitivities.

Screening Tool Theme	Screening Tool	Specialist	Tool Validated or Disputed by Specialist - Reasoning
Agricultural Theme	High	High	Confirmed – Land capability moderate high, presence of soils with a high potential.
	High	Medium	Confirmed – Land capability moderate, there are no irrigation infrastructure available.
	High/ Medium	Low	Confirmed – Land capability very low to low due to limitations in profile depth, restricted drainage, fragmented or disturbed soil material and urban waste dumping.

5.3 Allowable Development Limit

Allowable development limits refer to the area of a particular land capability that can be directly impacted by a renewable energy development. The limits were determined for the proposed 422 ha development footprint area, with the allowable limits outside any crop field boundaries uses (Medium sensitivity). Table 5-8 presents the allowable limits. The proposed development area (422 ha) exceeds the allowable limit of 148 ha. The exceedance is considered acceptable as the most crop fields are not actively cultivated and associated with a low to restricted agricultural potential.

(Proposed development footprint – 422 ha, Lichtenburg – 31.3 ha, Nkonkoni – 78.6 ha, Vaalbos – 47 ha, Cartref – 6.4 ha, Glenrosa – 265 ha, Grabouw – 10.6 ha, Witbank – 86.8 ha, Johannesburg – 1.7 ha)

Table 5-8 Calculated allowable development limits of the PV development.

Sensitivity	Allowable limit (ha/MW)	Area that will be affected by development footprint (ha)	Area allowed for a 125MW development (ha)	Area that exceeds allowable limit (ha)
Medium	0.35 (Medium Sensitivity)	**422**	**148**	**274**

6 Conclusion

The most sensitive Lichtenburg and Nkonkoni soil forms found in the proposed project area are characterised by a land potential "4" and ultimately a "Medium" sensitivity due to the poor climate present. The Vaalbos and Cartref soil forms which were also identified within the project area consist of a "Medium" sensitivity. The Glenrosa, Grabouw, Witbank and Johannesburg soil forms which were also identified within the project area consist of a "Low" sensitivity. The land capability sensitivity (DAFF, 2017) indicates land capabilities with "Moderate Low" to "Moderate High" sensitivities, which correlate with the findings from the baseline assessment to an extent.

Furthermore, the available climate also limits crop production significantly. The climatic conditions are associated with low annual precipitation and high evapotranspiration potential demands of the area, which is not favourable for most cropping practices.

6.1 Management Measures

An Agricultural Compliance Statement is not required to complete an impact assessment, but where required, proposed impact management outcomes or any monitoring requirements for inclusion in the EMPr must be provided. 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;
- A stormwater management plan must be developed and implemented for the project; and
- If soil erosion is detected, the area must be stabilised using geo-textiles and facilitated re-vegetation.

6.2 Specialist Statement

The proposed PV development area will have an acceptable negative 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 land capability of the area ranges from Moderate low to Moderate;
- The agricultural potential of the area ranges from low to moderate;
- There are active delineated crop fields for the PV area which are cultivated not under irrigation practices, however most of these areas are now historical crop fields;
- The agricultural sensitivity for the PV area is medium.

6.3 Statement Conditions

Development of the historical crop fields is permissible. An agreement between the applicant and landowner must be completed for the development of the crop areas, despite some of these areas not being actively cultivated.

7 References

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.

Kleynhans. TE, (2023). Application for Rezoning farm 468 / 6 and 7 as part of Bluegum Grove farm 468 / 6, 7; 486 / 0, 2; Farm 471, Farm 405/0, Farm 409 and Farm 1113 Stellenbosch RD.

Mucina, L. & Rutherford, M.C. (Eds.). (2006). The vegetation of South Africa, Lesotho and Swaziland. Strelizia 19. South African National Biodiversity Institute, Pretoria South African.

Saayman. D, (2019). Reconnaissance soil survey of portions of Jacobsdal, Bluegum Grove & Uitkyk.

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.

8 Appendix A Impact Assessment

Table 8-1 Impact assessment related to the loss of the land capability during the Glencore Lydenburg – Solar Photovoltaic facility planning, construction, operation, decommissioning and rehabilitation phases.

		Pre-Mitigation							Post Mitigation								Priority Factor Criteria			
Impact	Phase	Nature	Extent	Duration	Magnitude	Reversibility	Probability	Pre-mitigation ER	Nature	Extent	Duration	Magnitude	Reversibility	Probability	Post-mitigation ER	Confidence	Cumulative Impact	Irreplaceable loss	Priority Factor	Final score
Loss of land capability, Soil compaction Soil erosion, Land degradation	Planning	-1	1	1	1	2	1	-1,25	-1	1	1	1	1	1	-1	Low	1	1	1,00	-1
	Construction	-1	3	3	4	3	4	-13	-1	2	2	2	3	3	-6,75	Medium	2	3	1,38	-9,28125
	Operation	-1	2	3	2	3	2	-5	-1	2	2	2	2	2	-4	Low	2	3	1,38	-5,5
	Decommissioning	-1	2	2	2	3	3	-6,75	-1	2	2	1	3	2	-4	Low	2	2	1,25	-5
	Rehab and closure	-1	2	2	2	2	2	-4	-1	2	2	1	2	1	-1,75	Low	1	2	1,13	-1,96875

9 Appendix B Specialist declarations

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 71 and is punishable in terms of Section 24F of the Act.

Dr Matthew Mamera

Soil Scientist

The Biodiversity Company

January 2024