Site Sensitivity Verification Report

Agricultural Theme

PROPOSED KOPANYA SOLAR PHOTOVOLTAIC (PV) PROJECT AND ASSOCIATED INFRASTRUCTURE

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Project Title	**PROPOSED KOPANYA SOLAR PHOTOVOLTAIC (PV) PROJECT AND ASSOCIATED INFRASTRUCTURE**
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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, 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 principals of science.

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1 Introduction

The Biodiversity Company was appointed to conduct a Site Sensitivity Verification (SSVR) for the proposed Kopanya Solar Photovoltaic (PV) Project and associated infrastructure (the proposed project). The proposed project will be located on the Remaining Extent (Portion 0) of Farm Booysendal No. 43 JT and Portion 2 of the Der Brochen Farm No. 7 JT, within the Fetakgomo Tubatse Local Municipality, which falls under the Sekhukhune District Municipality in the Limpopo Province. The proposed project site lies approximately 35 kilometres (km) west of Mashishing and is accessed via the R577 regional road, followed by established Mine access roads (Figure 1-1).

The approach adopted for this assessment has taken cognisance of Government Notice 320 in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) dated 20 March 2020: "Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the NEMA, 1998, when applying for Environmental Authorisation". The National Web-based Environmental Screening Tool (DFFE, 2025) has characterised the agricultural theme sensitivity of the project area as predominantly "Low", and with other areas having "Medium" and "High" sensitivities, a key consideration of this assessment being the determination of agricultural theme sensitivities for the project. Based on the specialist baseline findings the site was found to be predominately "Low" sensitivity with marginal "Medium" sensitive areas.

This report aims to present and discuss the findings from the soil resources identified within the 50 metre (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 PV Project from an agricultural and soil resources management perspective.

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

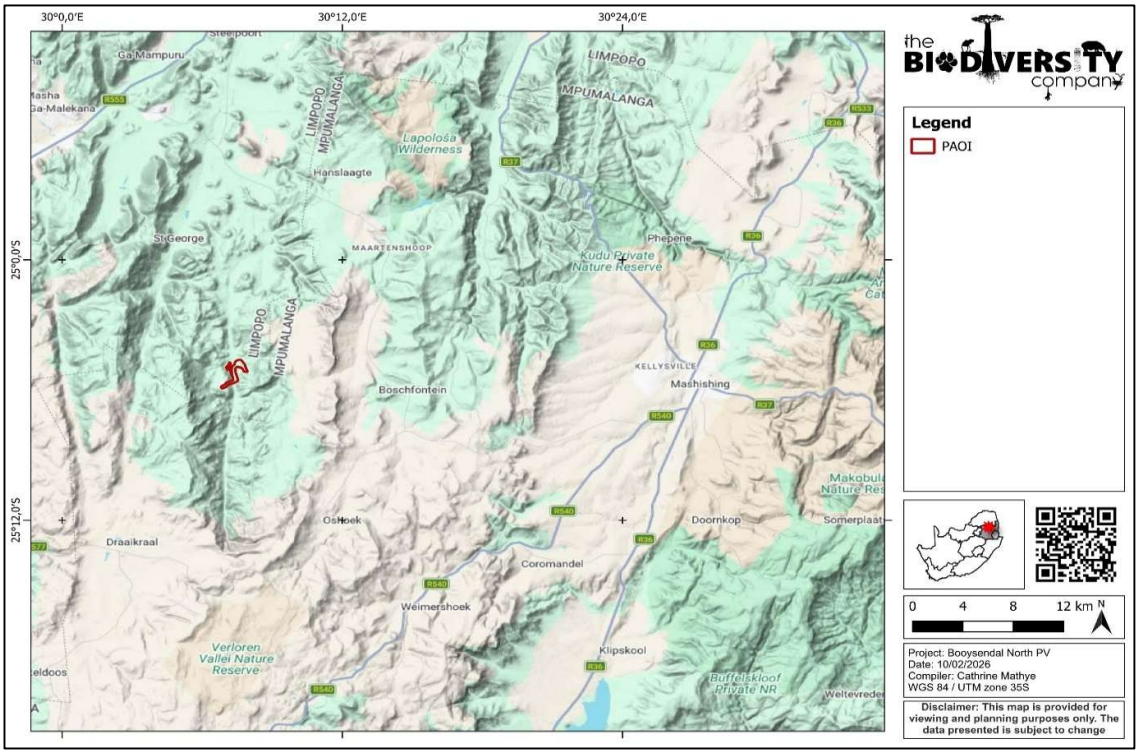


Figure 1-1 Proposed location of the proposed project area

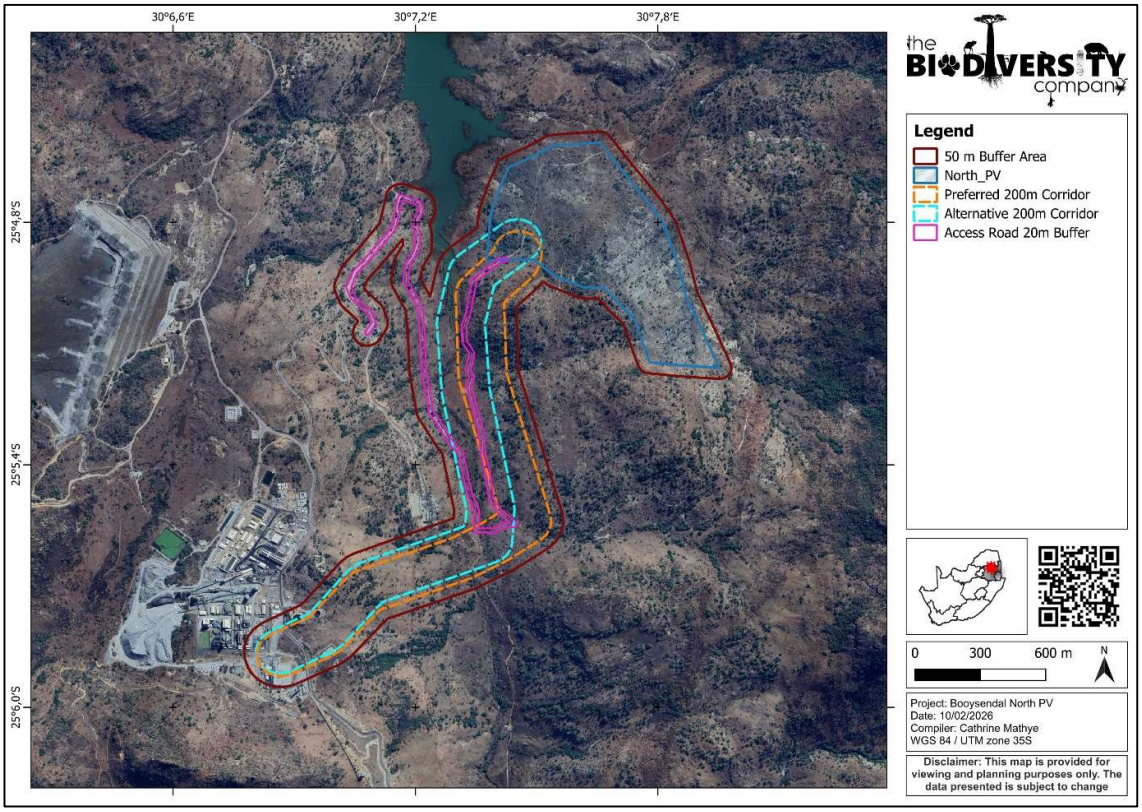


Figure 1-2 Project components for the proposed Kopanya Solar PV Project

1.1 Legal Framework

This assessment was conducted in accordance with the amendments to the Environmental Impact Assessment Regulations. 2014 (GNR 326, 7 April 2017) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), DFFE Agricultural Screening Tool, (2025). The approach has taken cognisance of the published Government Notices (GN) 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" (Reporting Criteria). The GNR 320 requirements stipulate that a 50 m buffered development envelope should be considered.

In accordance with GN 320 and GN 1150 (20 March 2020) of the NEMA EIA Regulations of 2014 (as amended), prior to commencing with a specialist assessment, a site sensitivity verification must be undertaken to confirm the current land use and environmental sensitivity of the proposed project areas as identified by the National Web-Based Environmental Screening Tool (i.e., Screening Tool). The agricultural theme sensitivity for the area is predominantly classified as 'Medium'.

The site sensitivity verification must be undertaken:

- For the footprint on which the proposed activities are proposed to take place;
- By specialists, registered in the field for which they are undertaking the site sensitivity verification and where relevant, with demonstrated experience in the taxonomic group of the soil forms being considered;
- Within the season which would be most relevant to identify the specific soil resources of interest (i.e. not applicable for soil assessments); and

- For a period of time as necessitated by the sensitivity of the proposed site and size of the proposed facility.

1.2 Project Description

Northam Platinum Limited (Northam) owns and operates the Booysendal Mine, which comprises the Booysendal North and South mining complexes (hereafter referred to as Booysendal). The Booysendal Mine includes underground mining operations, mineral processing facilities, and associated surface infrastructure. The mine is located approximately 35 km west of the town of Mashishing, along the R577 road, within the Limpopo Province.

In support of Northam's strategic objectives to enhance energy security, reduce greenhouse gas emissions, and mitigate escalating electricity costs that exceed inflation, Booysendal proposes the development of a 25 megawatt peak (MWp) solar photovoltaic (PV) facility and associated infrastructure, referred to as the Kopanya Solar PV Project. The proposed project is intended to primarily supply electricity to the Booysendal Mine through self-generation and demand management, thereby reducing reliance on grid electricity amid ongoing load reductions and increasing energy tariffs. Any surplus electricity generated by the facility will be exported to the national grid.

The proposed solar PV facility will occupy an approximate footprint of 49 hectares and will be located on the Remaining Extent (Portion 0) of the Farm Booysendal No. 43 JT. Associated grid connection infrastructure, including overhead power lines, will traverse Portion 2 of the Farm Der Brochen No. 7 JT, situated near the town of Mashishing. The proposed project area falls within the jurisdiction of the Fetakgomo Tubatse Local Municipality, which forms part of the Sekhukhune District Municipality. Access to the site will be via the existing R577.

The proposed project will comprise single axis tracking bifacial solar panels, a 132 kV overhead power line, and an on-site substation. Temporary infrastructure required during the construction phase will include a construction yard, laydown areas, and site offices. Permanent operational infrastructure will include buildings for operations, maintenance, control, and storage purposes, as well as parking areas. Additional supporting infrastructure will include water supply and sanitation systems (utilising conservancy tanks), internal and access roads, security and access control infrastructure, perimeter fencing, and telecommunications systems.

1.3 Scope of Work

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.

2 Approach

The field survey was conducted from the 26th to the 30th of January 2026. Seasonality has no bearing on the soil assessment and fieldwork is therefore deemed sufficient for the proposed development. A CV and specialist declaration are provided in the appendices. A verification report has been prepared

in accordance with the Specialist Assessment and Minimum Report Content Requirements for an Agricultural Agro-Ecosystem Specialist Assessment (Government Notice 320, dated 20 March 2020).

2.1 Assumptions and Limitations

The following is applicable:

- The information contained in this report is based on previously surveyed desktop data and verified observations on site. There may be variations in terms of the delineation of the soil forms across the area; and
- The GPS used for delineations is accurate to within five metres. Therefore, the delineation plotted digitally may be offset by at least five metres to either side.

3 Results & Discussion

3.1 Description of Soil Forms and Soil Families

During the site assessment various soil forms were identified (see table below). These soil forms are described in according to depth, clay percentage, indications of surface crusting, signs of wetness and percentage rock. The soil forms are followed by the soil family and in brackets the maximum clay percentage of the topsoil. Soil family characteristics are described in Table 3-2 below. Furthermore, different soil forms identified within the proposed project area, and field work tracks are illustrated in Figure 3-1, Figure 3-3, and Figure 3-2, respectively.

Table 3-1 Summary of soils identified within the proposed project areas

Diagnostic Horizon		Soil Forms							
		Valsrivier 1210 (15)	**Swartland 1213(15)**	**Spioenberg 1212 (0-15)**	**Kroonstad 2110 (15)**	**Mispah 2120 (0-15)**	**Stilfontein 1110**	**Witbank 2100**	**Johannesburg 2200**
Topsoil	Depth (mm)	0-300	0-200	0-200	0-200	0-50	-	-	-
	Clay (%)	0-15	0-15	0-15	0-15	0-15	-	-	-
	Signs of Wetness	None	None	None	None	None	-	-	-
	Rock (%)	-	-	-	-	-	-	-	-
	Surface crusting	None	None	None	None	None	-	-	-
Subsoil B1	Depth (mm)	300-1000	200-700	200-650	200-700	+50	-	-	-
	Clay (%)	+15	+15	+15	0-15	0-15	-	-	-
	Signs of Wetness	None	None	None	Bleaching	None	-	-	-
	Rock (%)	-	-	-	-	+50	-	-	-
Subsoil B2	Depth (mm)	-	700-1000	+650	700-800	-	-	-	-
	Clay (%)	-	0-15	0-15	+15	-	-	-	-
	Signs of Wetness	-	-	-	present	-	-	-	-
	Rock	-	+50	+30	0	-	-	-	-

Table 3-2 Description of soil family characteristics

Soil Form/Family	Topsoil Colour	Base Status	Textural Contrast
Valsrivier 1210	Chromic Topsoil	Mesotrophic	Luvic
Swartland 1213	Chromic Topsoil	Mesotrophic	Luvic
Spioenberg 1212	Chromic Topsoil	Mesotrophic	Luvic
Kroonstad 2110	Bleached Topsoil	Eutrophic	Luvic
Mispah 2120	Chromic Topsoil	Dystrophic	Aluvic
Stilfontein 1110	-	-	Aluvic
Witbank 2100	-	-	Aluvic
Johannesburg 2000	-	-	Aluvic

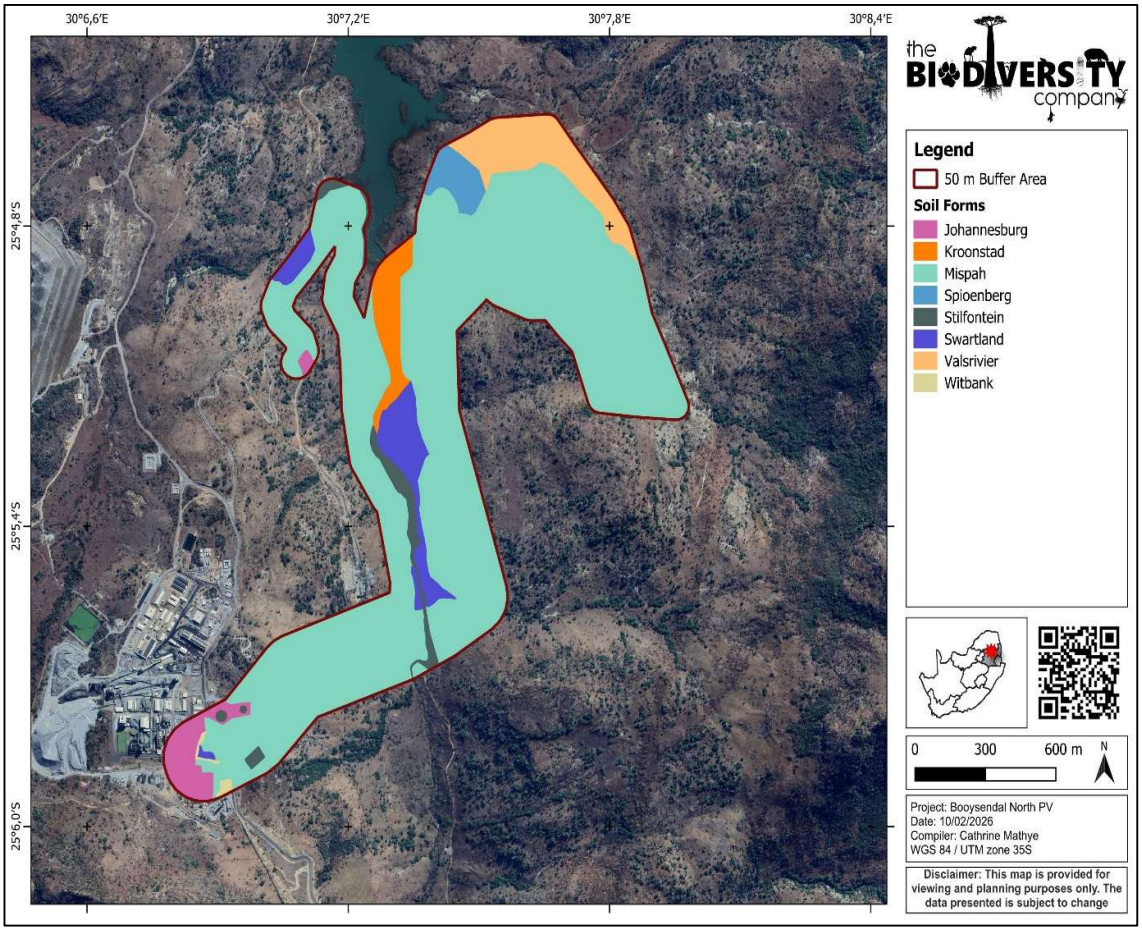


Figure 3-1 Dominant soil forms distribution identified within the proposed Kopanya Solar PV Project area

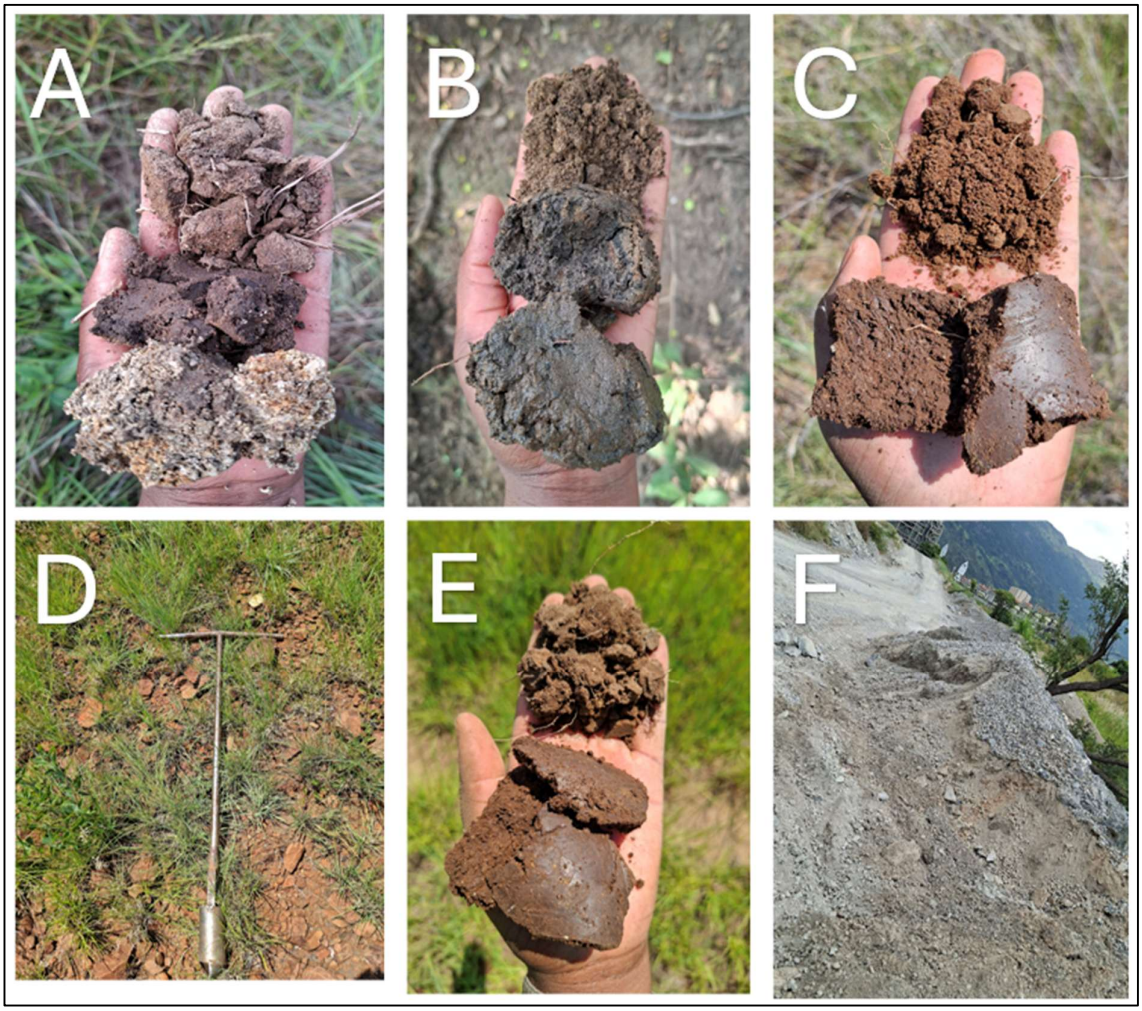


Figure 3-2 ***Soil forms and diagnostic horizons identified on-site: A) Swartland soil form; B) Kroonstad soil form; C) Spioenberg soil form; D) Mispah soil form; E) Valsrivier soil form; and F) Witbank soil form***

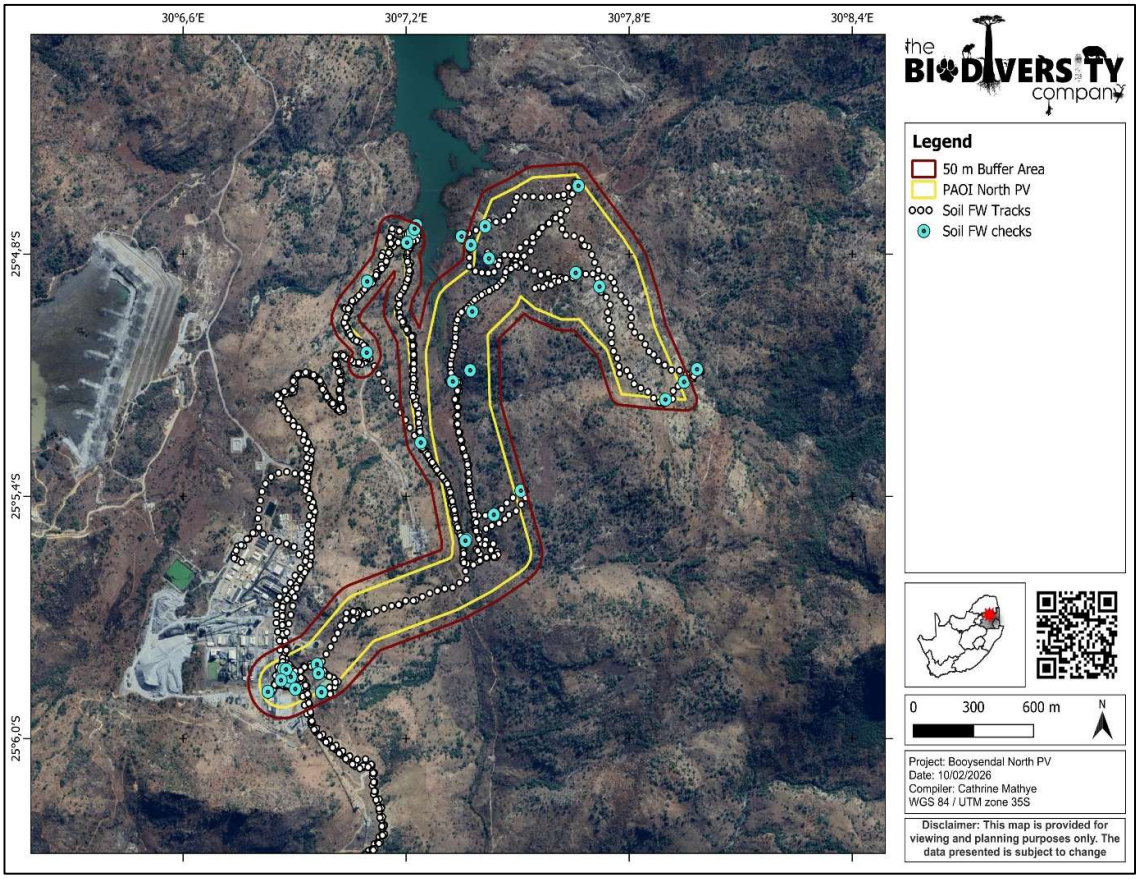


Figure 3-3 Map illustrating the field work tracks for proposed Kopanya Solar PV Project

3.2 Agricultural Potential

Agricultural potential is determined by a combination of soil, terrain, and climate features. Land capability classes reflect the most intensive long-term use of land under rain-fed conditions.

The land capability is determined by the physical features of the landscape including the soils present. The land potential or agricultural potential is determined by combining the land capability results and the climate capability for the region.

3.3 Climate Capability

The climatic capability has been determined by means of the Smith (2006) methodology, of which the first step includes determining the climate capability of the region by means of the Mean Annual Precipitation (MAP) and annual Class A pan (potential evaporation) (see Table 3-3).

Table 3-3 Climatic capability (step 1) (Scotney et al., 1987)

Carletonville Dolomite Grassland region				
Climatic Capability Class	**Limitation Rating**	**Description**	**MAP: Class A pan Class**	**Applicability to site**
C1	None to Slight	Local climate is favourable for good yields for a wide range of adapted crops throughout the year.	0.75-1.00	
C2	Slight	Local climate is favourable for a wide range of adapted crops and a year-round growing season. Moisture stress and lower	0.50-0.75	

		temperature increase risk, and decrease yields relative to C1.		
C3	Slight to Moderate	Slightly restricted growing season due to the occurrence of low temperatures and frost. Good yield potential for a moderate range of adapted crops.	0.47-0.50	
C4	Moderate	Moderately restricted growing season due to the occurrence of low temperatures and severe frost. Good yield potential for a moderate range of adapted crops but planting date options more limited than C3.	0.44-0.47	
C5	Moderate to Severe	Moderately restricted growing season due to low temperatures, frost and/or moisture stress. Suitable crops at risk of some yield loss.	0.41-0.44	
C6	Severe	Moderately restricted growing season due to low temperatures, frost and/or moisture stress. Limited suitable crops that frequently experience yield loss.	0.38-0.41	
C7	Severe to Very Severe	Severely restricted choice of crops due to heat and moisture stress.	0.34-0.38	
C8	Very Severe	Very severely restricted choice of crops due to heat and moisture stress. Suitable crops at high risk of yield loss.	0.30-0.34	✔

According to Smith (2006), the climatic capability of a region is only refined past the first step if the climatic capability is determined to be between climatic capability 1 and 6. Given the fact that the climatic capability (i.e. Sekhukhune Mountain Bushveld, MAP 609 mm, with MAPE of 2043 mm, , with a pan Class of 0.30) has been determined to be “C8” for the project area, no further steps will be taken to refine the climate capability.

3.4 Land Capability

The land capability was determined by using the guidelines described in “The farming handbook” (Smith, 2006). Accordingly, the identified soil forms associated with the project area are restricted to land capability “IV”, “V”, “VI” and “VIII” classes.

Table 3-4 Land capability for the soils within the project area

Land Capability Class	Definition of Class	Conservation Need	Use-Suitability	Land Capability Group	Sensitivity
IV	Limitations preclude cultivation and suitable for perennial vegetation.	Protection measures for establishment, e.g. sod-seeding.	Veld, pasture and afforestation.	Arable	Medium
V	Water course and land with wetness limitations.	Protection and control of water table.	Improved pastures, suitable for wildlife.	Arable	Medium
VI	Limitations preclude cultivation. Suitable for perennial vegetation.	Protection measures for establishment, e.g. sod-seeding.	Veld, pastures and afforestation.	Non-arable	Low
VIII	Extremely severe limitations. Not suitable for grazing or afforestation.	Total protection from agriculture.	Wildlife.	Non-arable	Low

3.5 Land Potential

The methodology in regard to the calculations of the relevant land potential levels are illustrated in Table 3-5 and

Table 3-6. From the two land capability classes, the land potential levels have been determined by means of the Guy and Smith (1998) methodology. Land capability class “IV” have been reduced to land potential L6, land capability class “V” has been reduced to “Vlei”, land capability class “VI” has been

reduced to land potential level L7, and land capability class “VIIII” to land potential level L8, due to climatic limitations (see Table 3-5).

Table 3-5 Land potential from climate capability vs land capability (Guy and Smith, 1998)

Land Capability Class	Climatic Capability Class							
	C1	C2	C3	C4	C5	C6	C7	C8
LC1	L1	L1	L2	L2	L3	L3	L4	L4
LC2	L1	L2	L2	L3	L3	L4	L4	L5
LC3	L2	L2	L2	L2	L4	L4	L5	L6
LC4	L2	L3	L3	L4	L4	L5	L5	**L6***
LC5	Vlei	Vlei	Vlei	Vlei	Vlei	Vlei	Vlei	**Vlei***
LC6	L4	L4	L5	L5	L5	L6	L6	**L7***
LC7	L5	L5	L6	L6	L7	L7	L7	L8
LC8	L6	L6	L7	L7	L8	L8	L8	**L8***

*Land potential level applicable to climatic and land capability

Table 3-6 Land potential for the soils within the project area (Guy and Smith, 1998)

Land Potential	Description of Land Potential Class	Sensitivity
6	**Very restricted potential**. Regular and/or severe limitations due to soil, slope and temperature or rainfall. Non-arable	Medium
7	**Low potential.** Severe limitations due to soil, slope, temperatures or rainfall. Non-arable.	Low
8	**Very low potential.** Very severe limitations due to soil, slope, temperatures or rainfall. Non-arable,	Low

The following land potential level have been determined;

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

Land potential of the proposed area is illustrated in Figure 3-4.

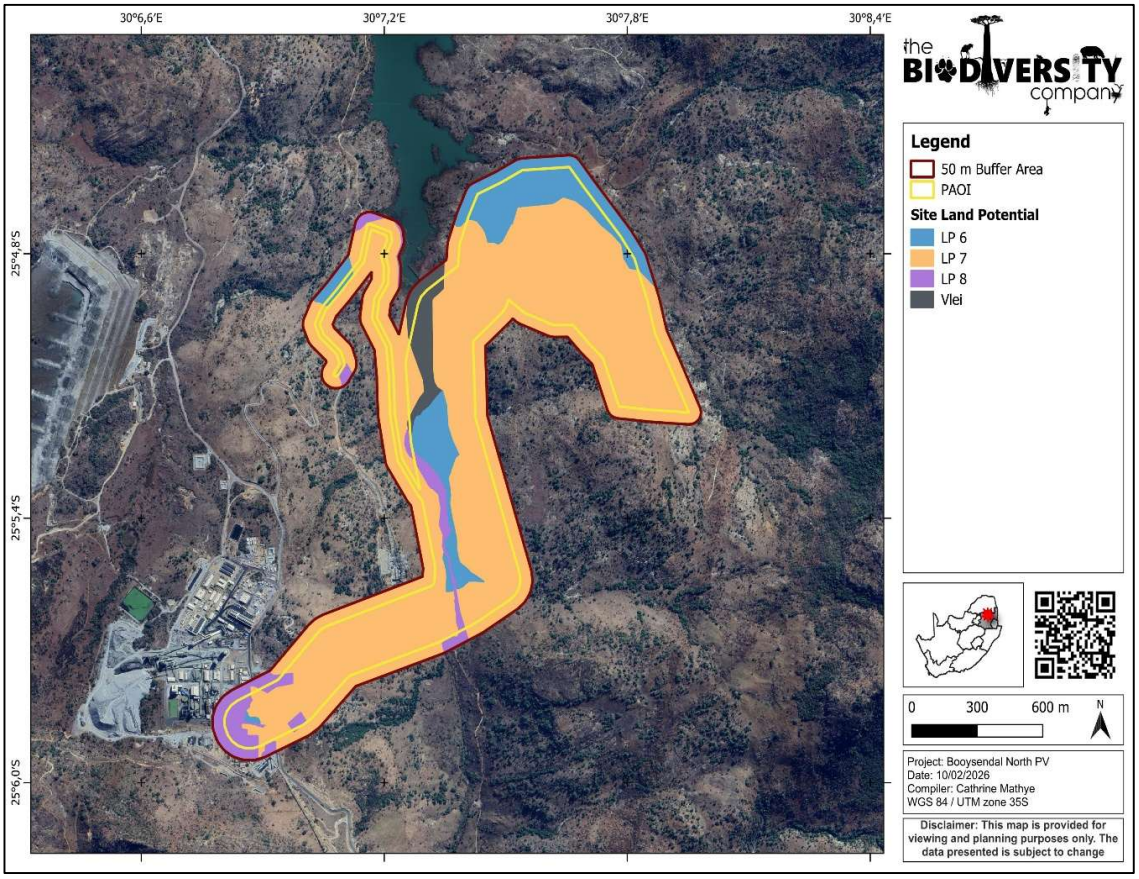


Figure 3-4 Land Potential within the 50 m Buffer area of the proposed Kopanya Solar PV Project Area

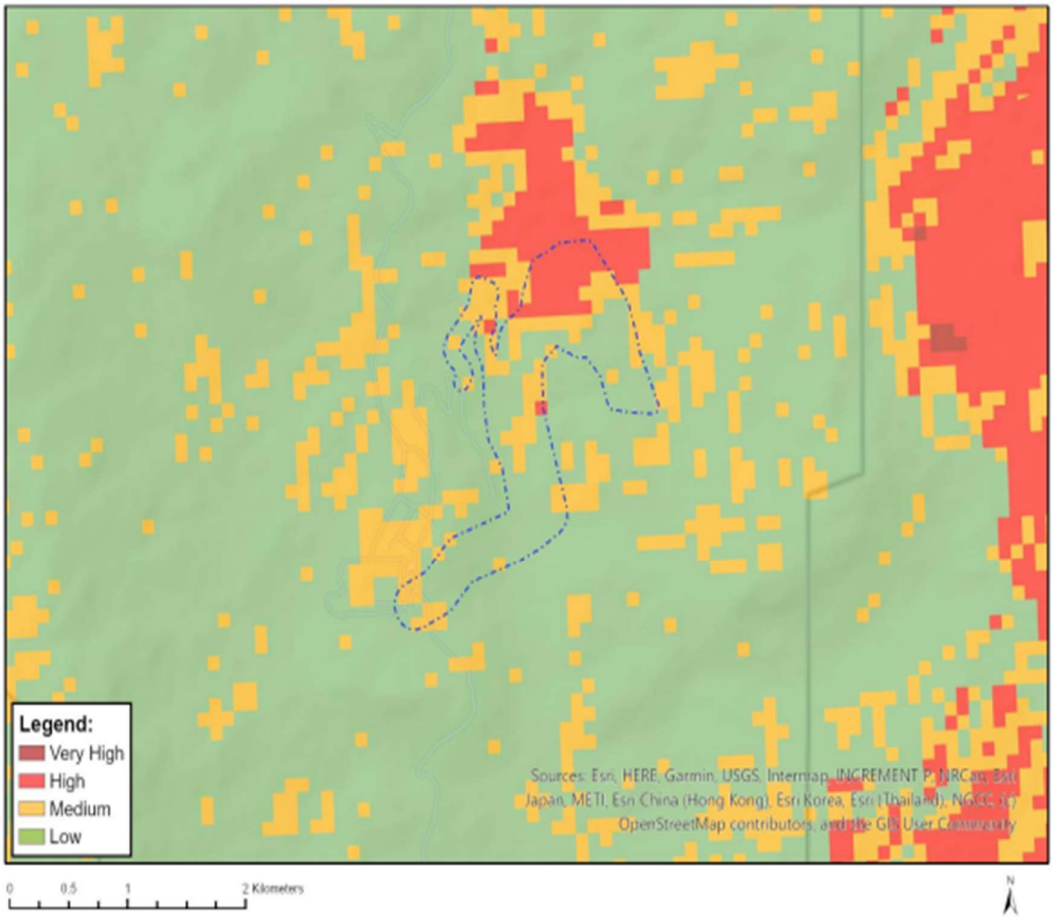
4 Screening Tool

4.1 Screening Report

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 50 m Buffer Area proposed project area falls within the "Low" to "High" agricultural sensitivity (Figure 4-1)

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	08. Moderate
High	09. Moderate-High
Low	05. Low
Low	04. Low-Very low
Low	03. Low-Very low
Low	02. Very low
Medium	07. Low-Moderate
Medium	06. Low-Moderate

Figure 4-1 Agricultural Theme Sensitivity for the proposed Kopanya Solar PV Project

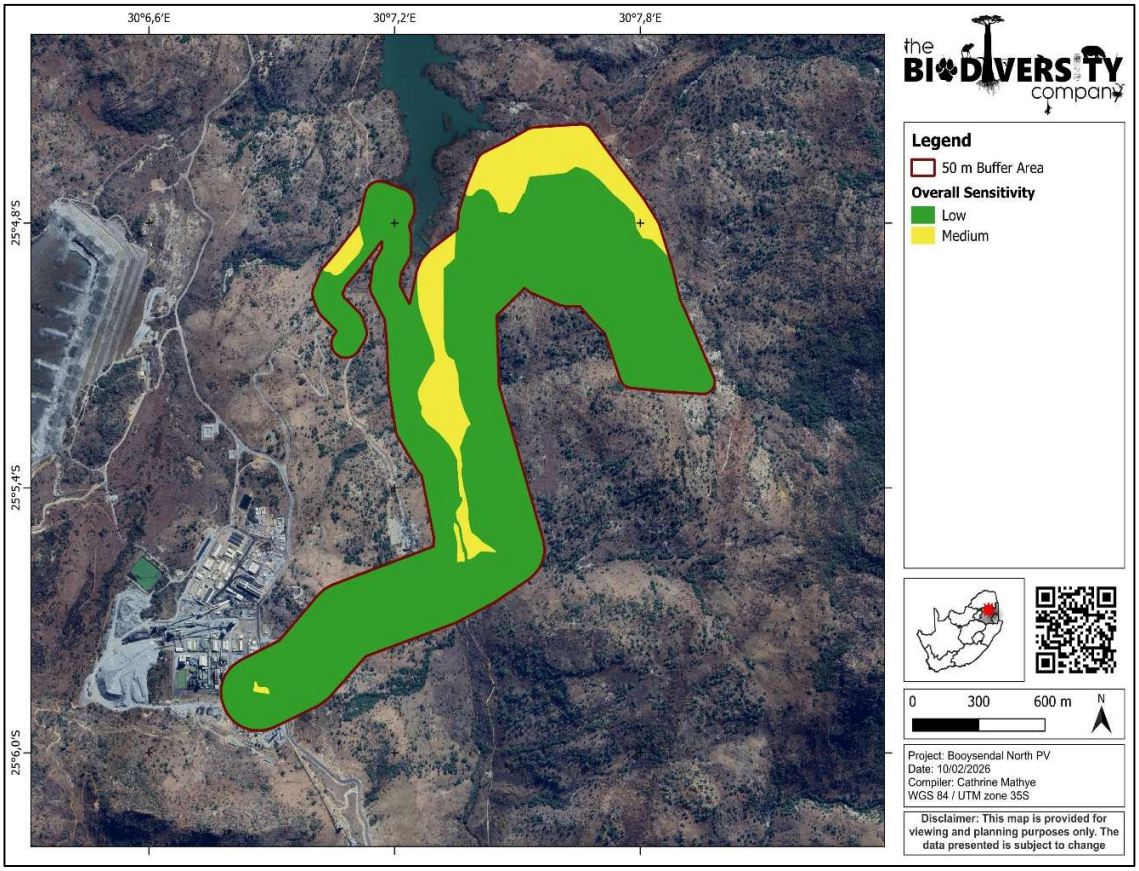


Figure 4-2 Overall sensitivity of the proposed Kopanya Solar PV Project area

4.1.1 Screening Tool Comparison

The allocated sensitivities for each of the relevant themes are either disputed or validated for the assessed areas the table below. A summative explanation for each result is provided as relevant. The specialist-assigned sensitivity ratings are based largely on the agricultural land capability and potential of land resources followed in the previous section, and consideration is given to any observed active agricultural practices. The allocated sensitivities for the theme are either disputed or validated in Table 4-1 below.

Table 4-1 Summary of the screening tool vs specialist-assigned sensitivities for proposed Kopanya Solar PV Projectarea

Screening Tool Theme	Feature	Screening Tool	Specialist	Tool Validated or Disputed by Specialist - Reasoning
Agricultural Theme	Moderate to Moderate-High (LC 8-9)	High	Medium	Disputed – Low-Moderate Land Capability. The presence of medium potential soil such as Valsrivier, and Swartland soil forms. Moreover, the presence of hydromorphic soil such as Kroonstad soil form.
	Moderate to Moderate-High (LC 8-9)	High	Low	Disputed – Very Low to Low Land Capability. The presence of low to very low potential soil such as Mispah soil form.
	Low-Moderate (LC 6-7)	Medium	Medium	Validated - Low-Moderate Land Capability. The presence of duplex and hydromorphic soils with medium potential such as Valsrivier, Swartland, and Kroonstad soil forms, respectively.
	Low-Moderate (LC 6-7)	Medium	Low	Disputed – Very Low to Low Land Capability. The presence of low and very low potential soils such as Mispah, Johannesburg, Stilfontein and Witbank soil forms, respectively.
	Very Low to Low (LC 2-5)	Low	Medium	Disputed - Low-Moderate Land Capability. The presence of medium potential soil such as Valsrivier, and Swartland soil

			forms. Moreover, the presence of hydromorphic soil such as Kroonstad soil form.
	Very Low to Low (LC 2-5)	**Low**	**Low**	Validated - Very Low to Low Land Capability. The presence of very low to low potential soil such as Mispah and Johannesburg urban technosols.

5 Impact & Management Measures

The assessment of impact significance considers pre-mitigation as well as implemented post-mitigation scenarios. Two phases were considered for the impact assessment, with the infrastructure assumed to be permanent (> 20 years) and no decommissioning phase required:

- Construction Phase; and
- Operational Phase.

The aim of the management outcomes (below) is to present the mitigation measures in such a way that the can be incorporated into the Environmental Management Programme (EMPr) for the project, allowing for more successful implementation and auditing of the mitigations and monitoring guidelines. Table 5-1 presents the prescribed mitigation measures for construction phase for the assessment.

Table 5-2 presents the prescribed mitigation measures for operational phase for the assessment.

Table 5-1 The project management measures for the soils and agriculture resources during the construction phase

Environmental Theme: Agriculture

Impact Management Outcome: Protection of soil resources
Phase: Construction

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Cleared areas must be rehabilitated and stabilised to avoid impacts to adjacent areas	Contractor/ Environmental Officer	Implement a rehabilitation plan	Construction Phase	Environmental Officer	Throughout phase	Rehabilitation implemented
Restrict the disturbance footprint and the clearing of vegetation for the authorised area only.	Engineer/Contractor/ Environmental Officer	Design engineer to consider this for final layout	Construction Phase	Environmental Officer	Throughout phase	Disturbance minimised
Make use of existing access routes as much as possible before new routes are considered.	Contractor	Design engineer to consider this for final layout	Construction Phase	Environmental Officer	Throughout phase	All routes authorised
Promptly remove all alien and invasive plant species that may emerge during construction (i.e., weedy annuals and other alien forbs) must be removed	Environmental Officer	Implement an alien vegetation management plan	Construction Phase	Environmental Officer	Throughout phases	Implement alien vegetation management plan
Limit soil disturbance	Contractor/ Environmental Officer	Clear/disturb soil on a need basis only	Construction Phase	Environmental Officer	Throughout phase	Soil disturbance is reduced
Install erosion control mats, geotextiles, silt fences, sediment barriers to limit soil and sediments runoff. Implement terracing, contour trenching to reduce runoff speed and capture sediments	Contractor/ Environmental Officer	Land prone to soil erosion	Construction Phase	Environmental Officer	Throughout phases	Soil erosion is reduced
Lightly till any disturbed soil around the development footprint to avoid compaction	Contractor/ Environmental Officer	Implement a rehabilitation plan	Construction Phase	Environmental Officer	Throughout phase	Plan is implemented
Ensure soil stockpiles sand are sufficiently safeguarded against rain wash	Contractor/ Environmental Officer	Implement soil management plan	Construction Phase	Environmental Officer	Throughout phase	Plan is implemented

Minimise unnecessary clearing of vegetation beyond the development footprints	Contractor/ Environmental Officer	Visibly demarcate authorised working areas	Construction Phase	Environmental Officer	Throughout phase	Clearance is minimised
The use of herbicides is not recommended (opt for mechanical removal).	Contractor/ Environmental Officer	Demarcate buffer area	Construction Phase	Environmental Officer	Throughout phase	Avoided buffer area
Make sure all excess consumables are removed from site and deposited at an appropriate waste facility	Contractor/ Environmental Officer	Restrict to designated working/storage/service areas	Construction Phase	Environmental Officer	Throughout phase	Restricted to demarcated area
Appropriately contain any generator diesel storage tanks, machinery spills (e.g., accidental spills of hydrocarbons oils, diesel etc.) or construction materials on site (e.g., concrete) in such a way as to prevent them leaking.	Contractor/ Environmental Officer	Restrict to designated working/storage/service areas	Construction Phase	Environmental Officer	Throughout phase	Restricted to demarcated area
Provide appropriate sanitation facilities for workers during construction and service them regularly	Contractor	Provide service ablution for contractors/labour	Construction Phase	Environmental Officer	Throughout phase	Ablution facilities provided and serviced
The Contractor should supply sealable and properly marked domestic waste collection bins and all solid waste collected must be disposed of at a licensed disposal facility	Contractor	Implement waste management plan	Construction Phase	Environmental Officer	Throughout phase	Plan is implemented
The Contractor must be in possession of an emergency spill kit that must be complete and available at all times on site	Contractor	Implement spill response plan	Construction Phase	Environmental Officer	Throughout phase	Plan is implemented
Any possible contamination of topsoil by hydrocarbons must be avoided. Any contaminated soil must be treated in situ or be placed in containers and removed from the site for disposal in a licensed facility	Contractor	Implement spill response plan	Construction Phase	Environmental Officer	Throughout phase	Plan is implemented

Table 5-2 The project management measures for the soils and agriculture resources during the operational phase

Environmental Theme: Agriculture

Impact Management Outcome: Protection of soil resources
Phase: Operational

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Implement erosion control methods like mulching, geotextile sheets, reduce soil compaction, chemical spills which can affect soil fertility. Promptly remove all alien and invasive plant species that may emerge during construction (i.e., weedy annuals and other alien forbs) must be removed	Environmental Officer	Implement an alien vegetation management plan	Operational Phase	Environmental Officer	Throughout phases	Implement alien vegetation management plan
Ensure successful rehabilitation of areas disturbed during construction and these areas are stabilised to avoid impacts to adjacent areas	Contractor/ Environmental Officer	Implement spill rehabilitation plan	Operational Phase	Environmental Officer	Quarterly during first two years of operation.	Plan is implemented

5.1 Cumulative Impacts

The term "Cumulative Effect" has for the purpose of this report been defined as: the summation of effects over time which can be attributed to the operation of the project itself, and the overall effects on the ecosystem of the site that can be attributed to the project and other existing and planned future projects.

The geographic area of evaluation is the spatial boundary in which the cumulative effects analysis was undertaken. The spatial boundary evaluated in these cumulative effects analysis generally includes the area within a 30 and 50 km radius surrounding the proposed development (Figure 5-1).

A temporal boundary is the timeframe during which the cumulative effects are reasonably expected to occur. The temporal parameters for these cumulative effects analysis is the anticipated lifespan of the proposed project, beginning in 2026 and extending out at least 20 years, which is the minimum expected project life of the proposed project. Where appropriate, particular focus is on near-term cumulative impacts of overlapping construction schedules for proposed projects in the area of evaluation.

The quantitative impact of the proposed project in isolation on agriculture is anticipated to be “Low” pre-mitigation and “Low” post-mitigation due to the absence of highly sensitive agricultural fields (Table 5-3 Cumulative Impacts associated with the proposed project

The proposed Kopanya Solar PV Project will result in loss of land capability, soil erosion and soil compaction within the footprint and surrounding areas arising from construction activities.

Component Being Impacted On	Activity Which May Cause the Impact		Pre- Mitigation							Post-Mitigation						
			Duration	Extent	Potential for impact on irreplaceable resources	Severity	Consequence	Probability	Significance	Duration	Extent	Severity	Potential for impact on irreplaceable resources	Consequence	Probability	Significance
Land capability and agricultural potential	Construction of the PV will lead to site clearing, Movement of heavy machinery, potential hydrocarbon spills and leaks from machinery	Impact in Isolation	2	2	1	-2	-10	2	-20	2	2	-1	1	-5	2	-10
		Cumulative impact	3	4	1	-2	-16	2	-32	2	3	-1	1	-6	2	-12

). The cumulative impact of the proposed project is anticipated to be “Medium” pre-mitigation and “Low” post-mitigation. The project area has undergone minimal modifications from other approved renewable projects within the 30 km and 50 km radius.

After implementation of the mitigation measures as stipulated above the agricultural productivity of the area is not expected to deteriorate further because of the proposed development and no irreplaceable loss of resources is anticipated.

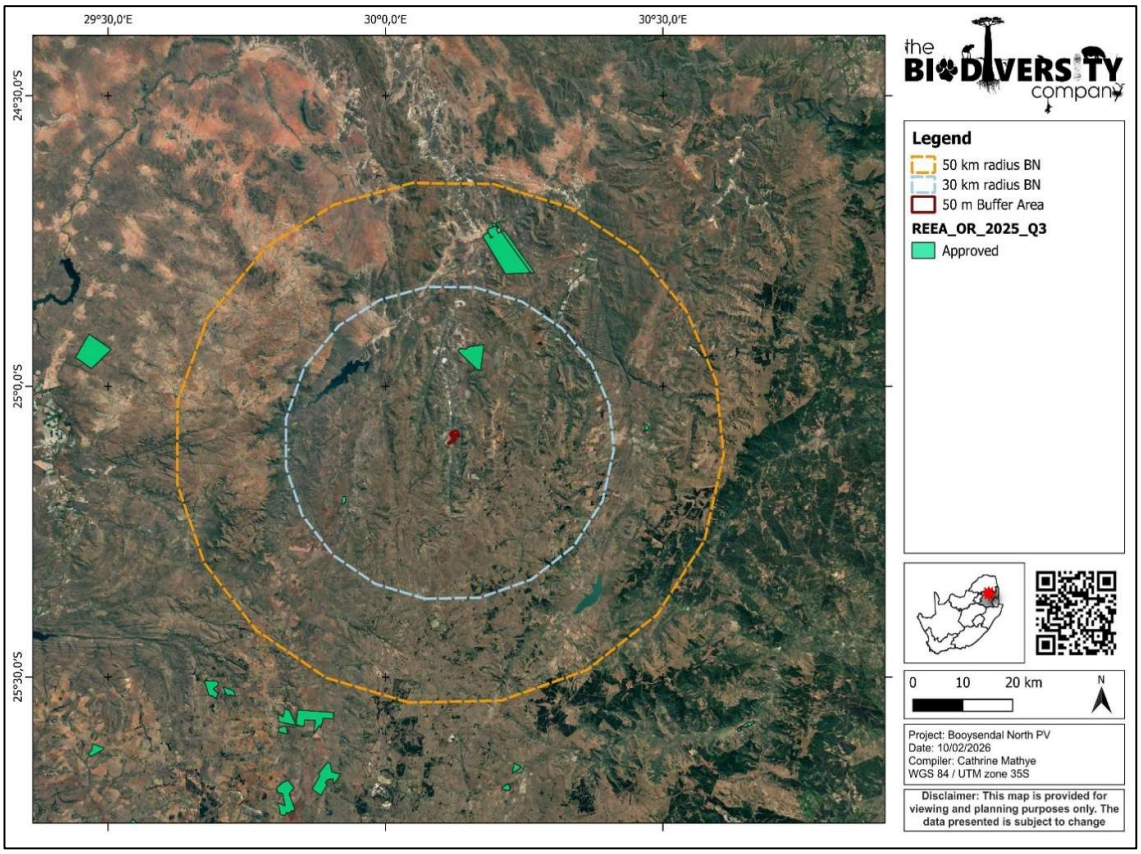


Figure 5-1 Cumulative impacts map for the proposed Kopanya Solar PV Project

Table 5-3 Cumulative Impacts associated with the proposed project

The proposed Kopanya Solar PV Project will result in loss of land capability, soil erosion and soil compaction within the footprint and surrounding areas arising from construction activities.

Component Being Impacted On	Activity Which May Cause the Impact		Pre- Mitigation							Post-Mitigation						
			Duration	Extent	Potential for impact on irreplaceable resources	Severity	Consequence	Probability	Significance	Duration	Extent	Severity	Potential for impact on irreplaceable resources	Consequence	Probability	Significance
Land capability and agricultural potential	Construction of the PV will lead to site clearing, Movement of heavy machinery, potential hydrocarbon spills and leaks from machinery	Impact in Isolation	2	2	1	-2	-10	2	-20	2	2	-1	1	-5	2	-10
		Cumulative impact	3	4	1	-2	-16	2	-32	2	3	-1	1	-6	2	-12

6 Conclusion

The results for the proposed Kopanya Solar PV Project indicate a predominately “Medium” land capability sensitivity in areas dominated with Kroonstad, Spioenberg, Swartland and Valsrivier soil forms and marginal “Low” land capability sensitivity in areas associated with the Mispah, Johannesburg, Stilfontein and Witbank soil forms.

It is the specialist’s opinion that the proposed Kopanya Solar PV Project will have an overall low residual impact on the agricultural production ability of the land. The proposed project may be favourably considered for development.

6.1 Developable Areas

The project area for the proposed Kopanya Solar PV Project can be developed overall for the proposed project layout. The sensitivities of the identified soils range from Low to Medium which will have acceptable impacts on soil resources. (Figure 6-1).

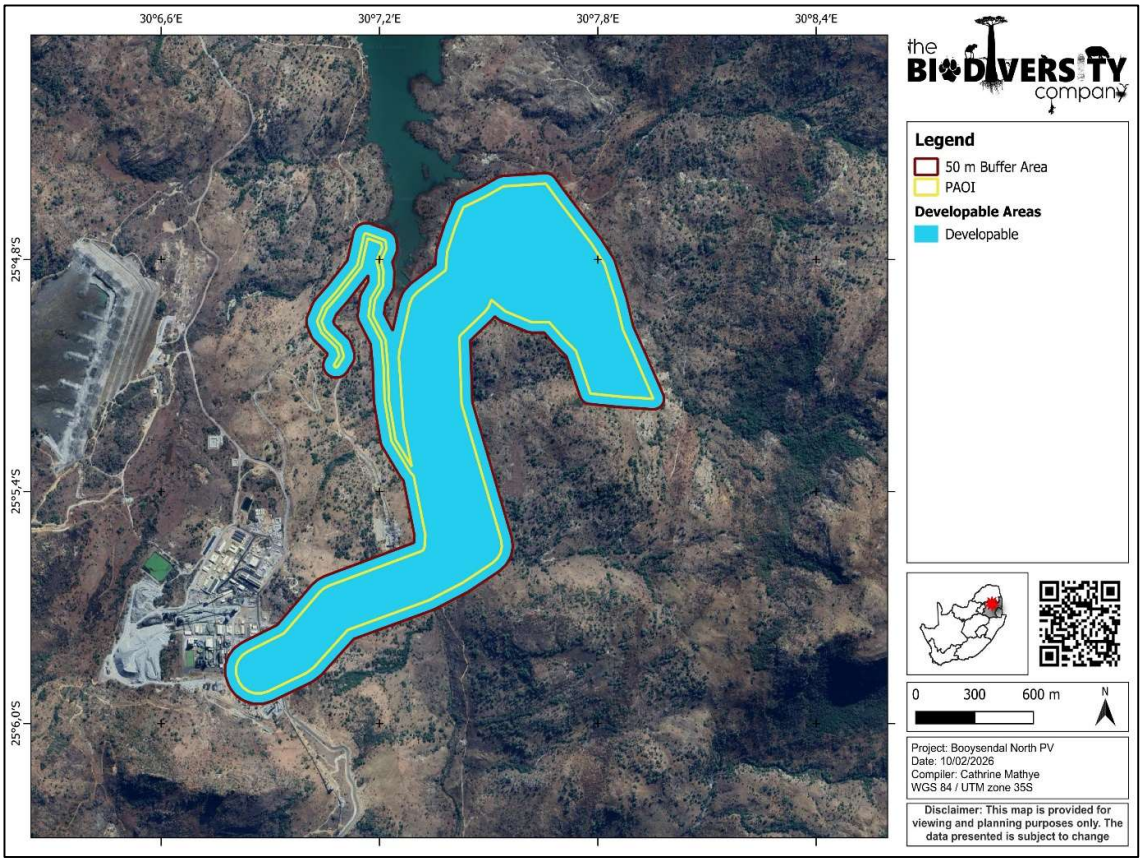


Figure 6-1 Developable areas for the proposed Kopanya Solar PV Project area

7 References

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8 Appendix Items

8.1 Appendix A – Specialist Declaration of Independence

DECLARATION

I, Matthew Mamera, declare that:

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations, and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority; and the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 48 and is punishable in terms of Section 24F of the Act.



Dr Matthew Mamera

Soil Scientist

The Biodiversity Company

February 2026

DECLARATION

I, Cathrine Mathye, declare that:

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations, and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority; and the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 48 and is punishable in terms of Section 24F of the Act.



Cathrine Mathye

Soil Scientist

The Biodiversity Company

February 2026

8.2 Appendix B – Specialist CV



Matthew Mamera

Pr Sci Nat 116356 +27 785 772 668 matthew@thebiodiversitycompany.com

PROFILE SUMMARY

Environmental and ecological specialist with 10 years' consulting experience, with international working experience. Specialist experience in project exploration, mining, engineering, hydropower, renewable energy, and private sector developments. Project management of national and international multi-disciplinary projects. Provides specialist guidance, technical support, and facilitation for compliance with in-country legislative requirements and international lender standards. Registered Pr Sci Nat with the South African Council for Natural Scientific Professions and the Soil Science Society of South Africa.

PERSONAL INFO

Nationality: South African Permanent Residence
Date of birth: 31 October 1988

EXPERIENCE

- Environmental Impact Assessments (EIA)
- Soil taxonomic classification (SA forms and WRB groups)
- Soil Hydropedology, Agricultural and Land contamination assessments
- Soil Carbon credits

SKILLS

- ✓ Soil and Soil Hydropedology Assessments
- ✓ Agricultural, soil and water contamination Assessments
- ✓ Rehabilitation
- ✓ Monitoring & Management Plans

LANGUAGES

English – Proficient
Zulu, Xhosa, Ndebele, Sotho – Conversational
Afrikaner - Basic



Signed: Dr Matthew Mamera

ACADEMIC QUALIFICATIONS

University of the Free State (2021): Doctor of Philosophy (PhD) - Soil Science:
Title: *Assessing pollution and managing faecal sludge through biochar applications in Phuthaditjhaba, South Africa.*

University of the Fort Hare (2018): Master of Science (MSc) - Soil Science:
Title: *Pollution potential of on-site dry sanitation systems associated with the Mzimvubu Water Project, Eastern Cape, South Africa.*

University of the Fort Hare (2015): Bachelor of Science Honours *Cum laude* (Hons) – Soil Science

University of the Fort Hare (2001 - 2004): Bachelor of Science Agriculture in Soil Science. Majors: Soil Science.

PROFESSIONAL EXPERIENCE

Mar 2022 – Present	**The Biodiversity Company** Soils Unit Manager / Soil & Soil Hydropedology
Feb 2018 – Dec 2020	**University of the Free State** Junior Researcher, lecturer / Soil Science
Jan 2015 – Dec 2017	**University of Fort Hare** Junior Research, Tutor / Soil Science

INTERNATIONAL EXPERIENCE

Angola, Botswana, Namibia, Zambia, South Africa

Cathrine Mathye



Cand Sci Nat 127950 +27 81 803 9947 cathrine@thebiodiversitycompany.com

PROFILE SUMMARY

Soil Science specialist with ~ 3 years' consulting experience. Specialist experience in soil classsfication mining, agriculture, engineering, renewable energy, and private sector developments. Project management of national projects. Provides specialist guidance, technical support, and facilitation for compliance with in-country legislative requirements. Registered Cand Nat Sci with the South African Council for Natural Scientific Professions (SACNASP).

PERSONAL INFO

Nationality: South African

Date of birth: 11 March 1996

EXPERIENCE

Soil taxonomic classification (SA form)

GIS and soil mapping

Environmental Impact Assessment (EIA)

Environmental Management Programmes (EMP)

Agricultural potential assessments

SKILLS

- ✓ Soil Classification
- ✓ Soil & Crop Management
- ✓ Irrigation Management
- ✓ Monitoring & Management Plans
- ✓ Project Management

LANGUAGES

English – Proficient

IsiZulu, isiXhosa & Tshivenda – Conversational

Xitsonga, Sesotho, Sepedi - Proficient

ACADEMIC QUALIFICATIONS

University of the Free State (2022): MASTER OF SCIENCE IN AGRICULTURE (MSc)– Soil Science Interdisciplinary
Title: *Impact of livestock grazing management systems on below-ground carbon fractions in the semi-arid regions of South Africa.*

University of Limpopo (2014 - 2018): Bachelor of Science (BSc) – Agriculture (Soil Science)
Title: *The effects of woody plant encroachment on soil physical properties of one soil type in the Savannah rangelands of Limpopo Province.*

PROFESSIONAL EXPERIENCE

Jun 2024– Present	**The Biodiversity Company** Soil Specialist
Jan 2023 – Jul 2023	**Department of Agriculture land reform & rural development (FS)** Assistant Agricultural Practitioner
Feb 2022 – Oct 2022	**University of the Free State** Student Assistant
Feb 2019– Jan 2021	**Department of Agriculture land reform & rural development (DWUID)** Soil and water science Intern

INTERNATIONAL EXPERIENCE

South Africa