SOIL AND AGRICULTURAL COMPLIANCE STATEMENT FOR THE PROPOSED GLENCORE KROONDAL MINE INFRASTRUCTURE ON PORTION 11 OF THE FARM RIETFONTEIN 338 JQ (WESTERN CHROME MINES)

Rustenburg Municipality, Bojanala Platinum District Municipality, North West Province, South Africa

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Report Name	**SOIL AND AGRICULTURAL COMPLIANCE STATEMENT FOR THE PROPOSED GLENCORE KROONDAL MINE INFRASTRUCTURE ON PORTION 11 OF THE FARM RIETFONTEIN 338 JQ (WESTERN CHROME MINES)**
Specialist Theme	Soil and Agricultural Theme
Project Reference	Glencore Kroondal Mine Infrastructure
Report Version	Draft 3 / 18 June 2025
Environmental Assessment Practitioner	EIMS ENVIRONMENTAL IMPACT MANAGEMENT SERVICES
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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, 2017 (as amended). We have no conflicting interests in the undertaking of this activity and have no interests in secondary developments resulting from the authorisation of this project. We have no vested interest in the project, other than to provide a professional service within the constraints of the project (timing, time and budget) based on the principals of science.

Table of Contents

List of Tables

List of Figures

1 Introduction

1.1 Background

The Biodiversity Company was appointed to conduct a soil and agricultural potential assessment for the proposed Glencore Kroondal Mine Infrastructure on Portion 11 of the Farm Rietfontein 338 JQ (Western Chrome Mines) near Rustenburg, North West Province. The project site is located approximately 10 km east of Rustenburg in the North West Province. The site is located within the Rustenburg Local Municipality and the Bojanala Platinum District Municipality. A map presenting the regional context of the Project Area can be seen in Figure 1-1 below.

The approach adopted for this assessment has taken cognisance of Government Notice 320 in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) dated 20 March 2020: “Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the NEMA, 1998, when applying for Environmental Authorisation”. The National Web based Environmental Screening Tool (DFFE, 2024) has characterised the agricultural theme sensitivity of the project area as predominantly “Medium” with marginal “High”, with a key consideration of this assessment being the determination of agricultural theme sensitivities for the project. Based on the verified baseline findings, the proposed project area was found to have a predominate “Low” with marginal “Medium” sensitivity. The GNR 320 requirements of an Agricultural Compliance Statement stipulate that a 50 m buffered development envelope be considered.

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

This report should be interpreted after taking into consideration the findings and recommendations provided by the specialist (Section 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.

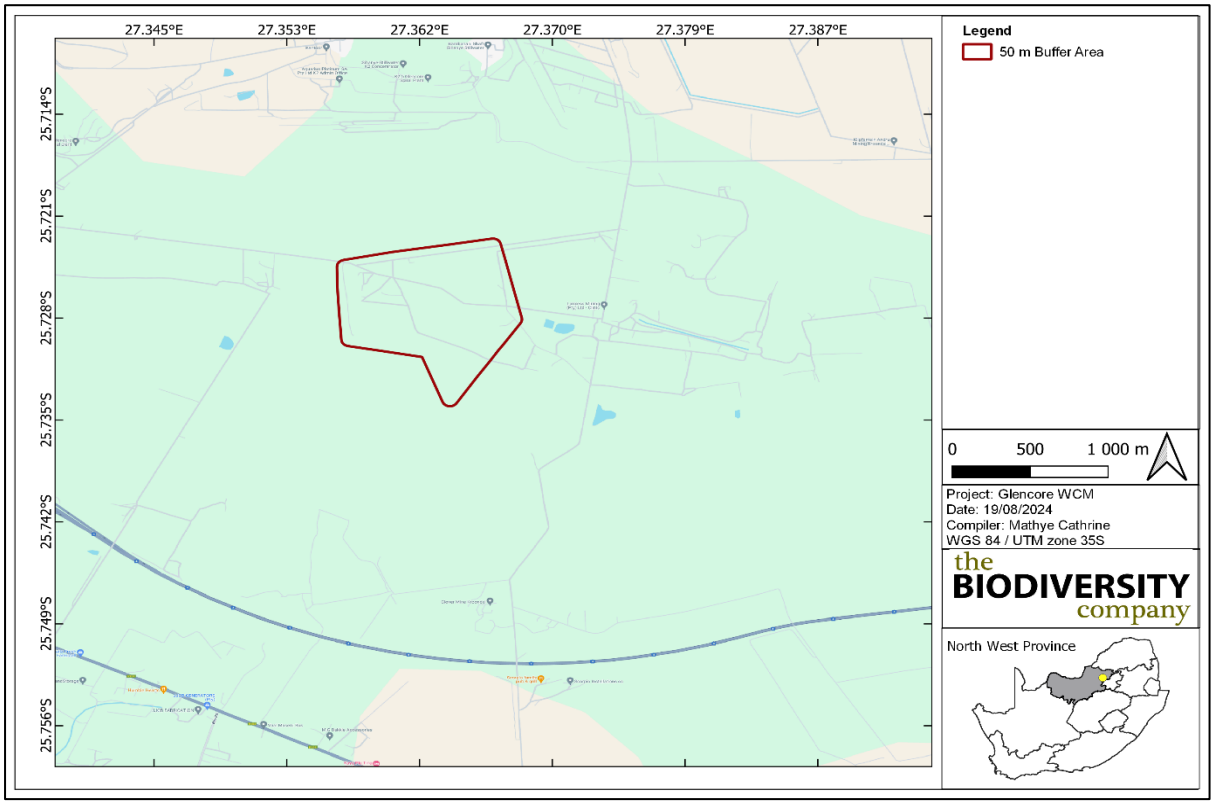

Figure 1-1 Spatial regional context of the proposed development

1.2 Project Description

The following information pertaining to the overview and description of the project has been extracted from the Background Information Document (BID) for the Glencore WCM Kroondal Mine Infrastructure.

Location

The proposed project and related activities will be undertaken at the following location:

- Property Description - Portion 11 of the farm Rietfontein 338 JQ;
- Central Co-ordinates - approximately 25°43'33.74"S, 27°21'41.65"E;
- Regional Description:
  - District Municipality: Bojanala Platinum District Municipality;
  - Local Municipality: Rustenburg Local Municipality;
  - Province: North West Province; and
- Closest town or point of interest: the site is located approximately 5.3 km east of Kroondal.

Glencore Western Chrome Mines (WCM) is in the process of acquiring a portion of the mining and surface rights from the Clover Alloys Rustenburg Chrome Mine (RCM) to reduce the time taken to travel to the face at its Kroondal Mine and increase the mining facetime which will in turn increase productivity. In addition to utilizing the existing infrastructure at Clover Alloys RCM, the applicant wishes to develop additional facilities to use in the life of mine. The proposed new developments as well as existing infrastructure include (but are not limited to):

- A parking area for permanent employees;
- A parking area for visitors and contractors;
- Employee drop-off/pick-up zone;
- Salvage yard;
- Sewage plant;
- Shaft Laydown Area / Explosives Delivery Bay;
- Surface laydown area;
- Meeting venue hall (Lekgotla Hall);
- Access and escape roads;
- Two water storage dams;
- Compressor house;
- One 11kV Powerline;
- Administration Offices;
- Change houses;
- Engineering workshop;
- Stores; and
- Temporary laydown area (historic LanXess Chrome Mining village area).

Kroondal mining operations is situated approximately 10 km east of Rustenburg, North-West Province. Mining at Kroondal has historically consisted of both opencast and underground mining. Currently only underground mining is undertaken, and the old opencast areas have been closed and rehabilitated. The current underground mining is taking place in close proximity to the Clover Alloys RCM mining rights areas. Miners' underground travel time will be reduced by approximately 50% through Glencore WCM acquiring the surface rights on Portion 11 of the farm Rietfontein 338 JQ and mining right (MR336), which will in turn increase production and ensure the long-term survival of the business.

A detailed layout for the proposed project is provided in Figure 1-2 and a simplified layout with the PAOI is provided in Figure 1-3.

Figure 1-2 Detailed layout for the proposed project (EIMS BID, 2024)

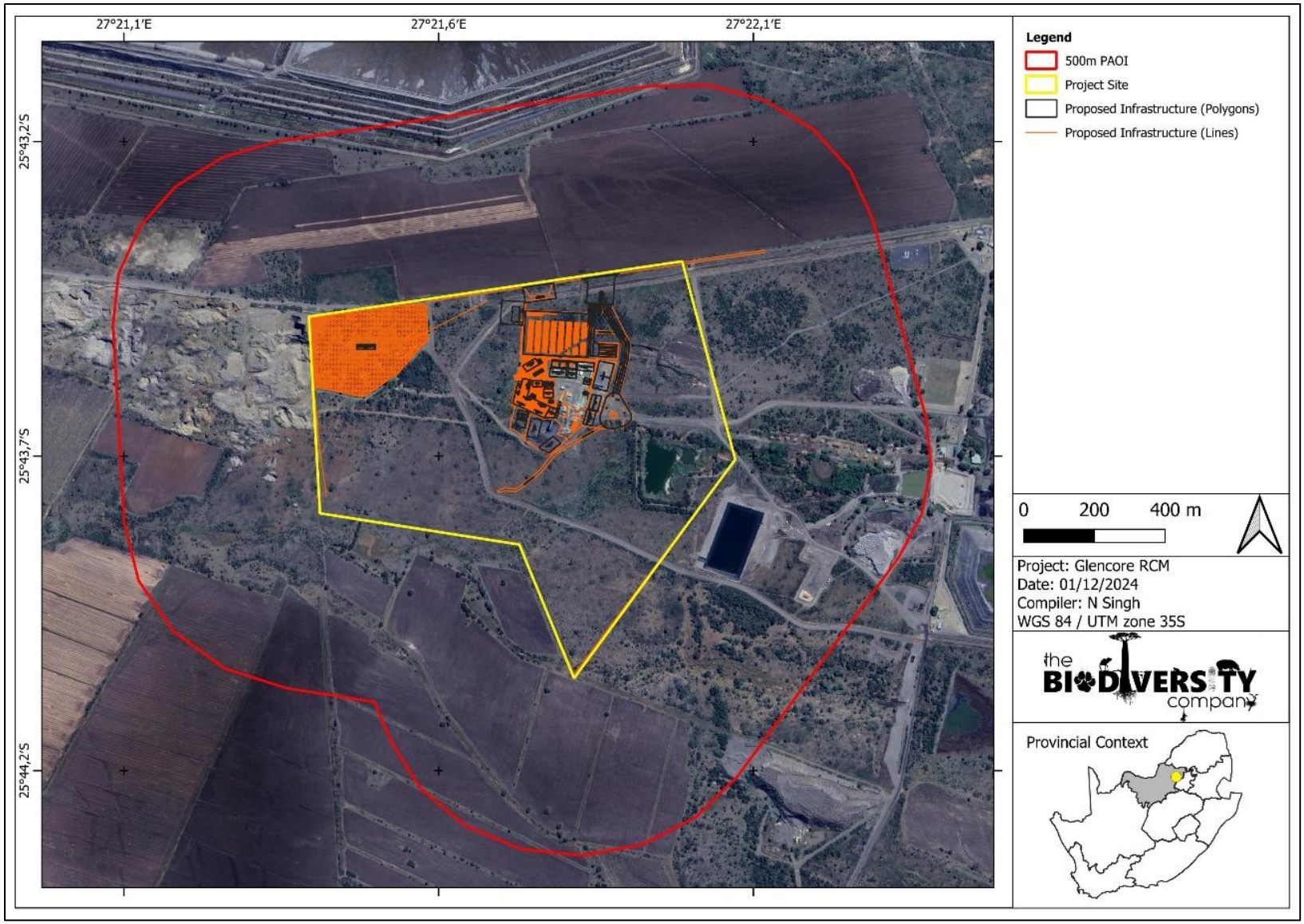

Figure 1-3 Map illustrating a simplified layout of the project and the Project Area of Influence

1.3 Scope of Work

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

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

1.4 Assumptions and Limitations

The following aspects were considered as limitations;

- Only the slopes affected by the proposed development have been assessed;
- It has been assumed that the extent of the development area provided by the responsible party is accurate;
- The GPS used for ground truthing is accurate to within five meters. Therefore, the soil and the observation site's delineation plotted digitally may be offset by up to five meters to either side; and
- No heavy metals have been assessed nor fertility been analysed for the relevant classified soils.

1.5 Key Legislative Requirements

The report follows the protocols as stipulated for agricultural assessment in Government Notice 320 of 2020 (GNR 320). This Notice provides the procedures and minimum criteria for reporting in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act (No. 107 of 1998) (NEMA).

The above mentioned are supported by additional legislation that aims to manage the impact of development on the environment and the natural resource base of the country. Related legislation to this effect includes:

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

1.6 Legislative Framework

In line with the protocol for the specialist assessment and minimum report content requirements for environmental impacts on soil and agricultural assessment as per the Government Notice 320 published in terms of NEMA, dated 20 March 2020: "Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation" – the following has been assumed:

- An applicant intending to undertake an activity identified in the scope of this protocol on a site identified on the screening tool as being of:
    - "Low & Medium sensitivity" for agriculture, must submit an Agricultural Compliance Statement.

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

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

Information to be Included (as per GN 320, 20 March 2020)	Report Section
Details and relevant expertise as well as the SACNASP registration number of the soil scientist or agricultural specialist preparing the statement including a curriculum vitae	Page i, Appendix D
A signed statement of independence by the specialist	Appendix C
A map showing the proposed development footprint (including supporting infrastructure) with a 50 m buffered development envelope, overlaid on the agricultural sensitivity map generated by the screening tool	Figure 3-8
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 4
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
Any conditions to which this statement is subjected	Section .3
Where required, proposed impact management outcomes or any monitoring requirements for inclusion in the EMPr	Section 4.1
A description of the assumptions made and any uncertainties or gaps in knowledge or data	Section 1.4

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

2 Fieldwork

Field assessment for the proposed project area was conducted on the 2nd of August 2024 for the mine infrastructure, and second site visit was conducted on the 11th of November 2024 for the associated powerline to determine the soil forms and current land uses within the assessed area. Map illustrating the field work tracks (Figure 2-1).

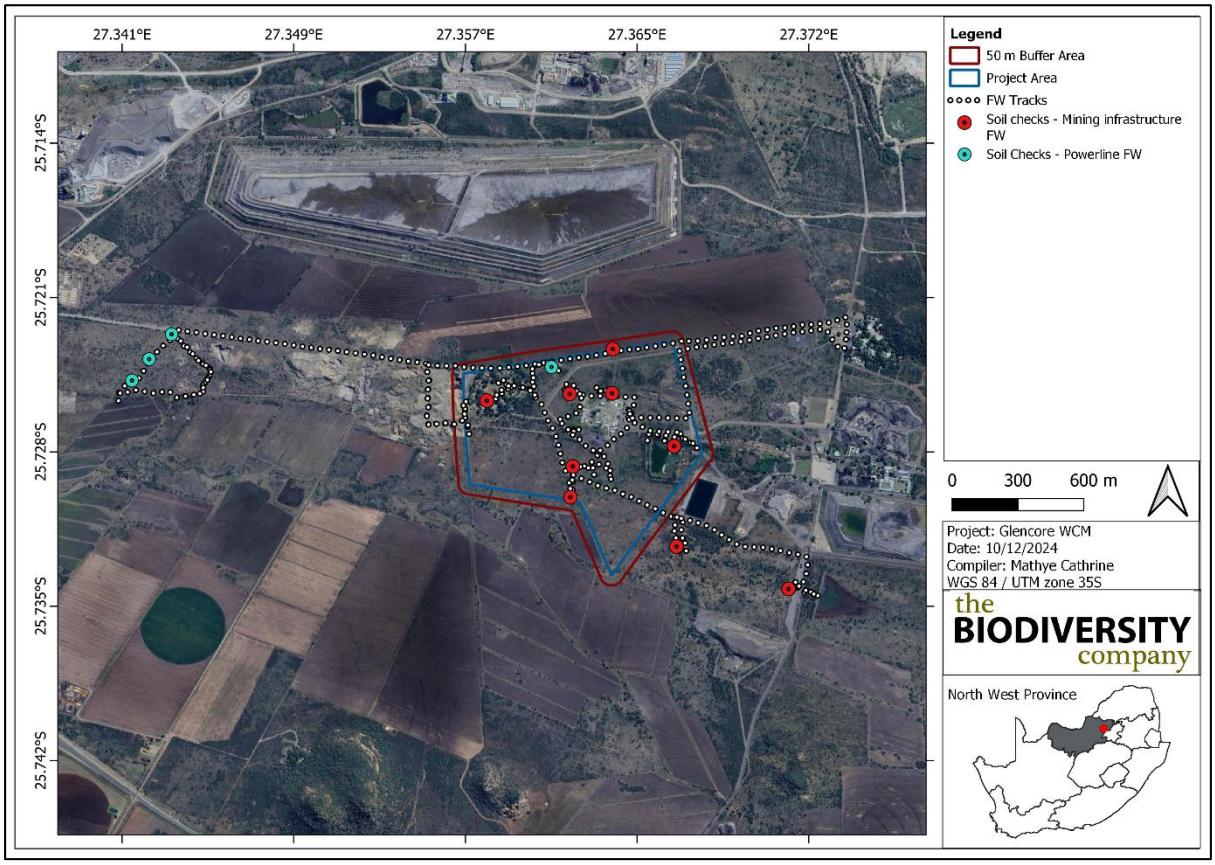

Figure 2-1 Map illustrating the check points of the field survey

3 Results and Discussion

3.1 Desktop Information

3.1.1 Climate

The project area falls within the Marikana Thornveld vegetation. The area is characterised with summer-rainfalls and dry winters. The overall mean average precipitation (MAP) of the proposed project area ranges from 600 mm to 700 mm. The monthly maximum and minimum temperature for Rustenburg are 35.3°C and -1.4°C in November and January, respectively. The area experiences frost frequent in winter (Mucina & Rutherford, 2006; Figure 3-1).

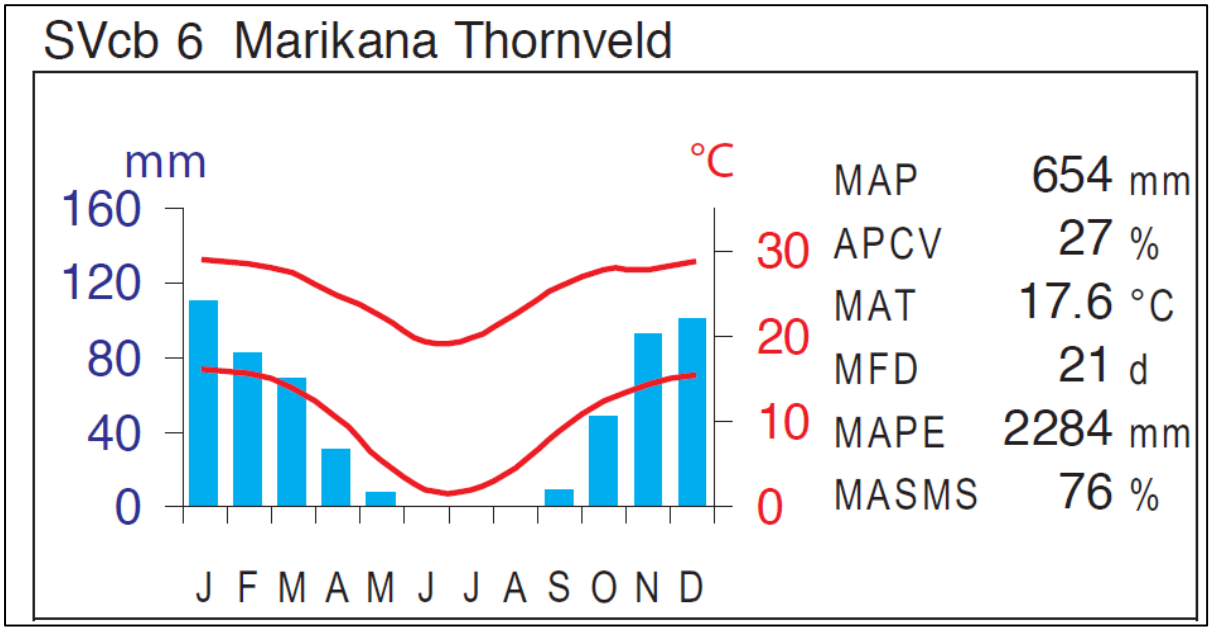

Figure 3-1 Summarised climate for the region (Mucina & Rutherford, 2006)

3.1.2 Geology & Soils

The geology of the area is mostly dominated by mafic intrusive rocks of the Rustenburg layered suite of the Bushveld Igneous Complex. The rocks found within the area include gabbro, norite, pyroxenite, anorthosite, shales and quartzites. Mainly vertic melanic clays with some dystrophic or mesotrophic plinthic catena and some freely drained, deep soils. The land types associated with this geology are Ea, Ba and Ae.

According to the land type database (Land Type Survey Staff, 1972 - 2006) the assessment area to be focused on mainly falls within the Ea 3 land type (Figure 3-2). The Ea 3 land type mainly consists of Arcadia and Oakleaf soil forms according to the Soil classification working group (1991), with the occurrence of other soils and rocky areas within the landscape. The Ea land types are also characterised by vertic, melanic, red-structured diagnostic horizons and undifferentiated soils. The land terrain units for the featured Ea 3 land type are illustrated in Figure 3-3 with the expected soils listed in Table 3-1.

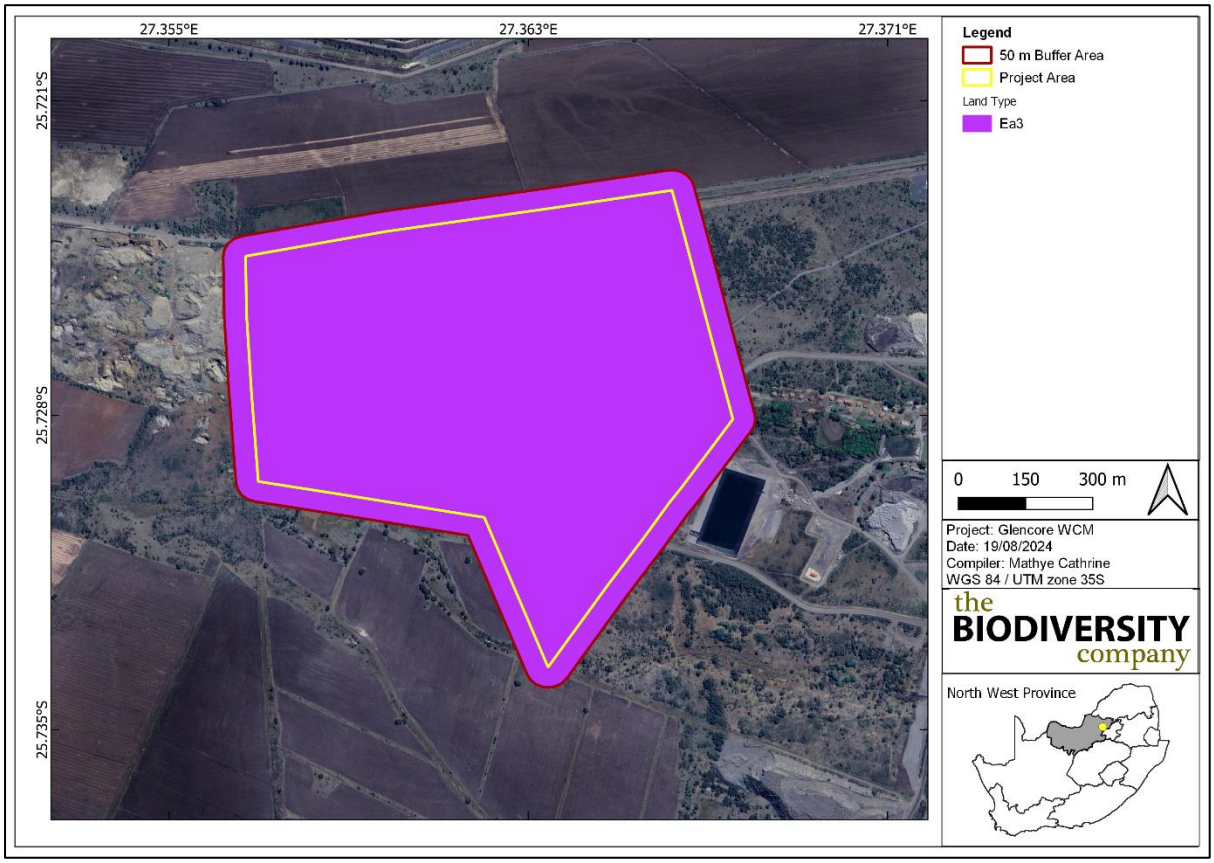

Figure 3-2 Land type associated with the proposed project area

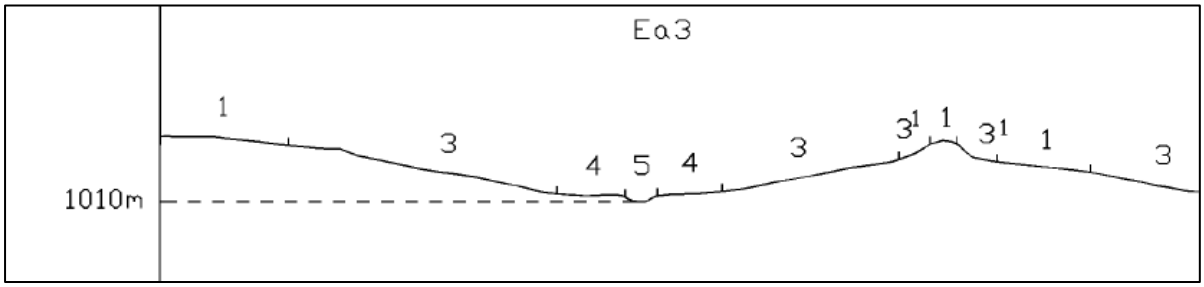

Figure 3-3 Illustration of land type Ea 3 terrain units (Land Type Survey Staff, 1972 – 2006)

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

Terrain Units											
1 (30%)		**1(0.5)**		**3 (44.5%)**		**3(1) (1%)**		**4(15%)**		**5(9%)**	
Arcadia	70%	Bare Rocks	80%	Arcadia	76%	Bare Rocks	70%	Arcadia	89%	Oakleaf	67%
Bare rock	14%	Mispah	20%	Bare Rocks	10%	Mispah	30%	Hutton	3%	Arcadia	22%
Mispah	9%			Mispah	6%			Shortlands	3%	Shortlands	6%
Hutton	4%			Hutton	4%			Swartland	3%	Hutton	5%
Shortlands	3%			Shortlands	3%			Bare Rocks	2%		
				Swartland	1%						

3.2 Baseline Findings

Four representative soil forms were identified in the proposed project area namely, Arcadia, Rustenburg, Rensburg and Mispah soil forms (Figure 3-4). The Arcadia soil form consists of a vertic topsoil horizon on top of a lithic subsoil horizon. The Rustenburg soil form consists of a vertic topsoil horizon on top of a hard rock substratum horizon. The Rensburg soil form consists of a vertic topsoil horizon on top of a gley subsoil horizon. The Mispah soil form consists of an orthic topsoil horizon on top of a hard rock substratum horizon.

The vertic soils including Arcadia, Rensburg and Rustenburg soil forms are characterized by their homogenous dark colours, strong structure and high clay content. These soils have the shrinking and swelling clay properties promoting cracks on the surface and exhibit slickenside. The vertic soils are generally poorly drained when wet which leads to waterlogging conditions. These soil forms have limiting morphological soil properties for crop production such high clay contents which restrict root penetration. It should be noted that farming activities were found on the Rustenburg soil form (Figure 3-6).

Furthermore, the Mispah soil form is characterised by weak and structureless soils with shallow depth. They usually have low organic matter. They have shallow effective rooting depth that hinders penetration of deep-rooted crops. The Mispah soil form has a restrictive subsoil horizon which makes the soils to be considered less productive for agricultural purposes (crop farming). All the identified soil horizons within the proposed project area, as well as the current land uses are illustrated in Figure 3-5 and Figure 3-6, respectively.

The land capability classes of the above-mentioned soils have been determined to be class “III,” “V” and “VI,” according to Smith (2006). The land capability class “III” is characterised by moderate limitations and some erosion hazards and is suitable for rotation of crops and ley (50%). The land capability “V” is characterised by water course, land with wetness limitations and is suitable for improved pastures and wildlife practices. The land capability class “VI” is characterised by very severe limitations that are mostly suitable for natural vegetation. A climate capability level 8 has been assigned to the area given the low Mean Annual Precipitation (MAP) and the high Mean Annual Potential Evapotranspiration (MAPE) rates. By using the determined land capability classes and the determined climate capability, land potential “Vlei,” “L6” and “L7” were calculated. According to Smith (2006), the proposed project area is found to be non-arable.

The following land potential levels have been determined;

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

Land potential levels of the proposed area are illustrated in Figure 3-7.

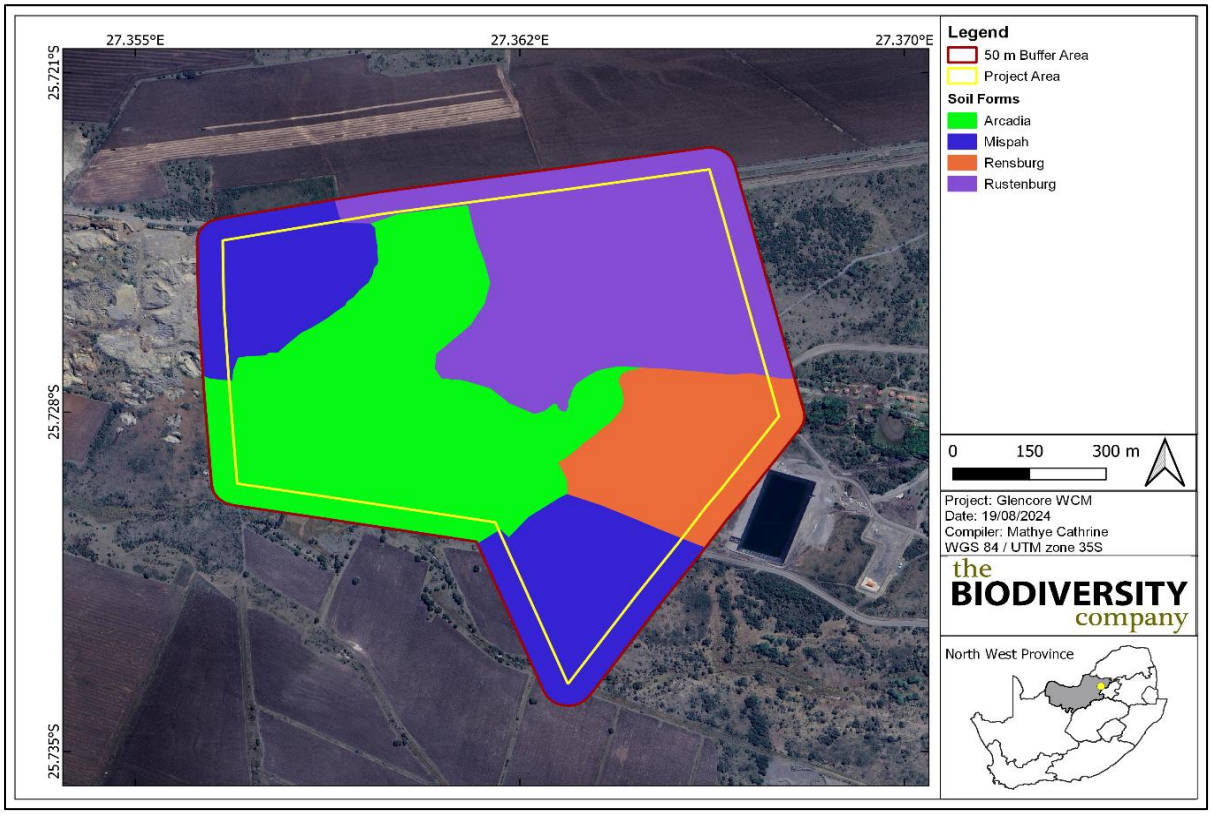

Figure 3-4 Soil forms found within the proposed project area

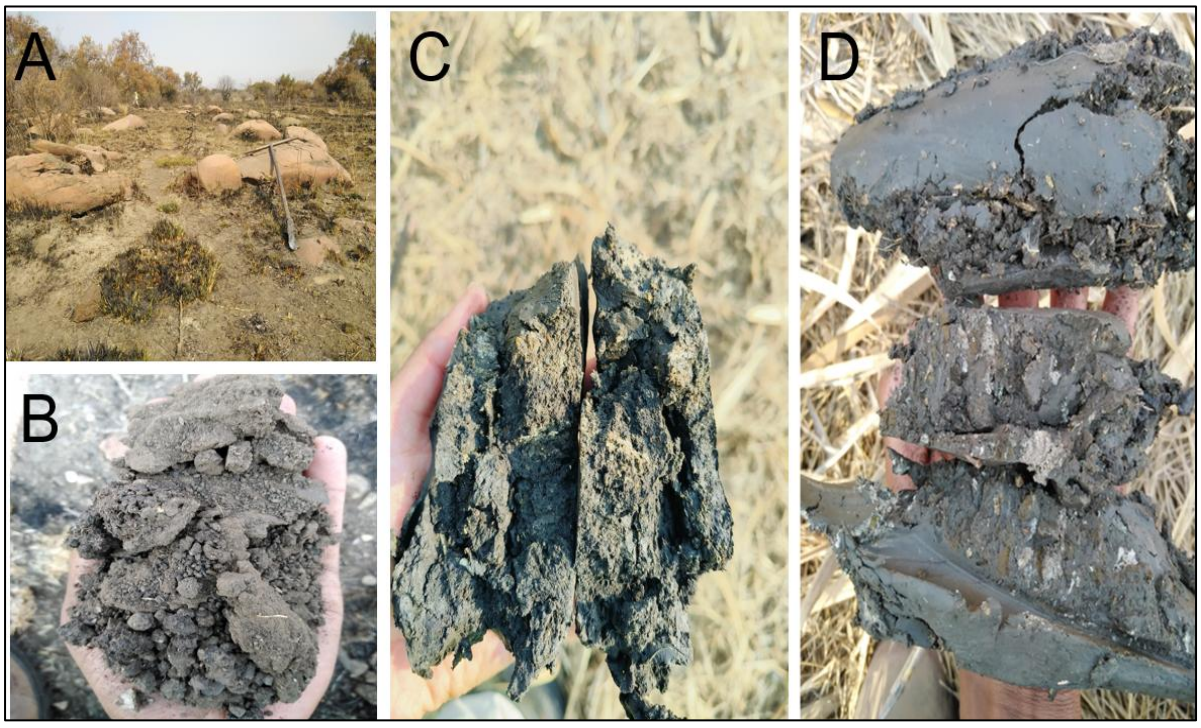

Figure 3-5 Diagnostic soil horizons identified on-site: A) Mispah soil form (Hard rock); B) Rustenburg soil form; C) Rensburg soil form (Gley horizon) and D) Arcadia soil form.

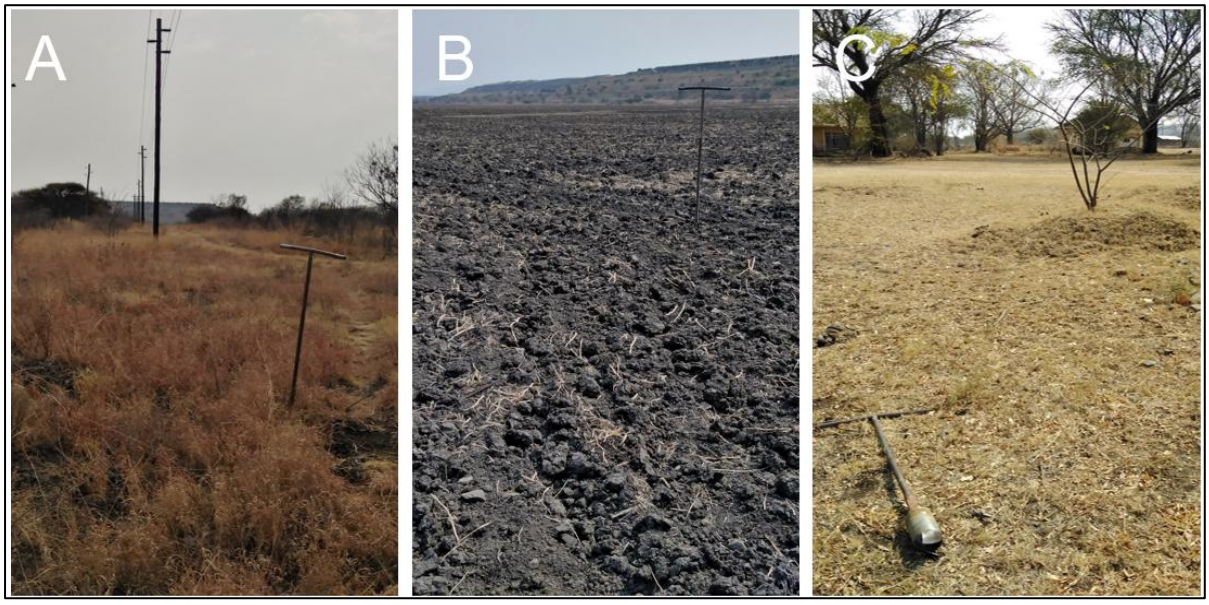

Figure 3-6 Different land uses found within the 50 m buffer of the proposed project area; A) Natural Veld; B) Crop fields and C) Old residential houses for miners.

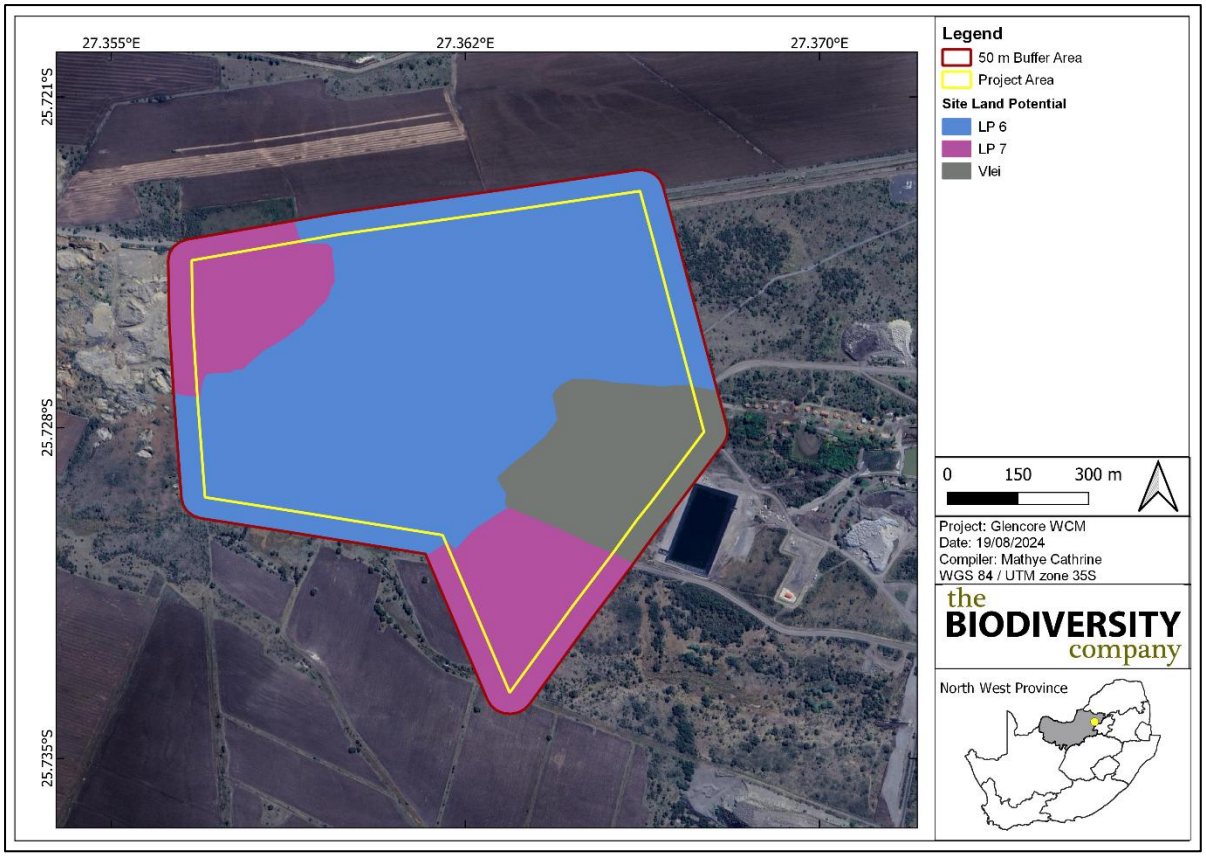

Figure 3-7 Land Potential of the proposed project area

3.3 Sensitivity Verification

3.3.1 Screening Report – Glencore WCM Project

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

- Agriculture Theme Sensitivity indicates that the proposed project area falls within the 'Medium to High' agricultural sensitivity (Figure 3-8).

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Annual Crop Cultivation / Planted Pastures Rotation;Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate
Medium	Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate

Figure 3-8 Map of Relative Agricultural Theme Sensitivity for the Glencore Kroondal Mine Infrastructure generated by the Environmental Screening Tool Site Ecological Importance (SEI)

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

- Land Capability 6 to 8 (Low-Moderate to Moderate Sensitivity).

The land capability dataset (DAFF, 2017) indicates that the proposed project area falls predominately within the "Low-Moderate to Moderate" sensitivity (see Figure 3-9). Furthermore, highly sensitive field

crop boundaries were also identified within the 50 m buffer area of the proposed project area using the agricultural theme tool (DFFE, 2024; Figure 3-10).

The baseline soil findings, current land uses and the calculated land potential disputes the agricultural theme tool, in areas demarcated with “low-moderate to moderate” land capability sensitivities. They further concur with the agricultural theme tool on all areas demarcated as highly sensitive for field crop boundaries found within the 50 m buffer of the project area. The active crop fields were found on the low potential soils such as Mispah and Rustenburg.

As a result, based on the verified baseline findings, the proposed development will have a negligible impact on the soil resources. Therefore, based on the confirmed sensitivities, the overall sensitivity of the proposed project area is categorised as “Low” with isolated “Medium” sensitive areas (Figure 3-11).

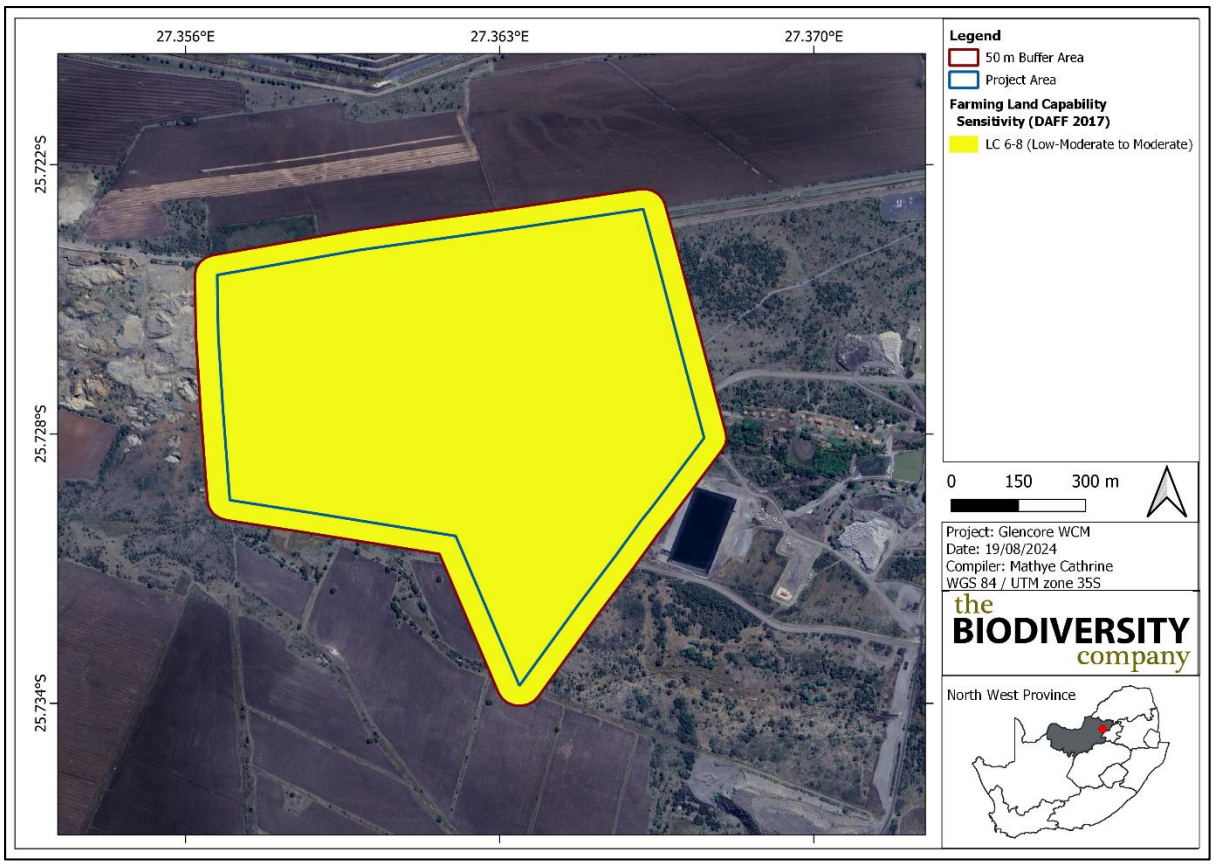

Figure 3-9 Land Capability Sensitivity (DAFF, 2017)

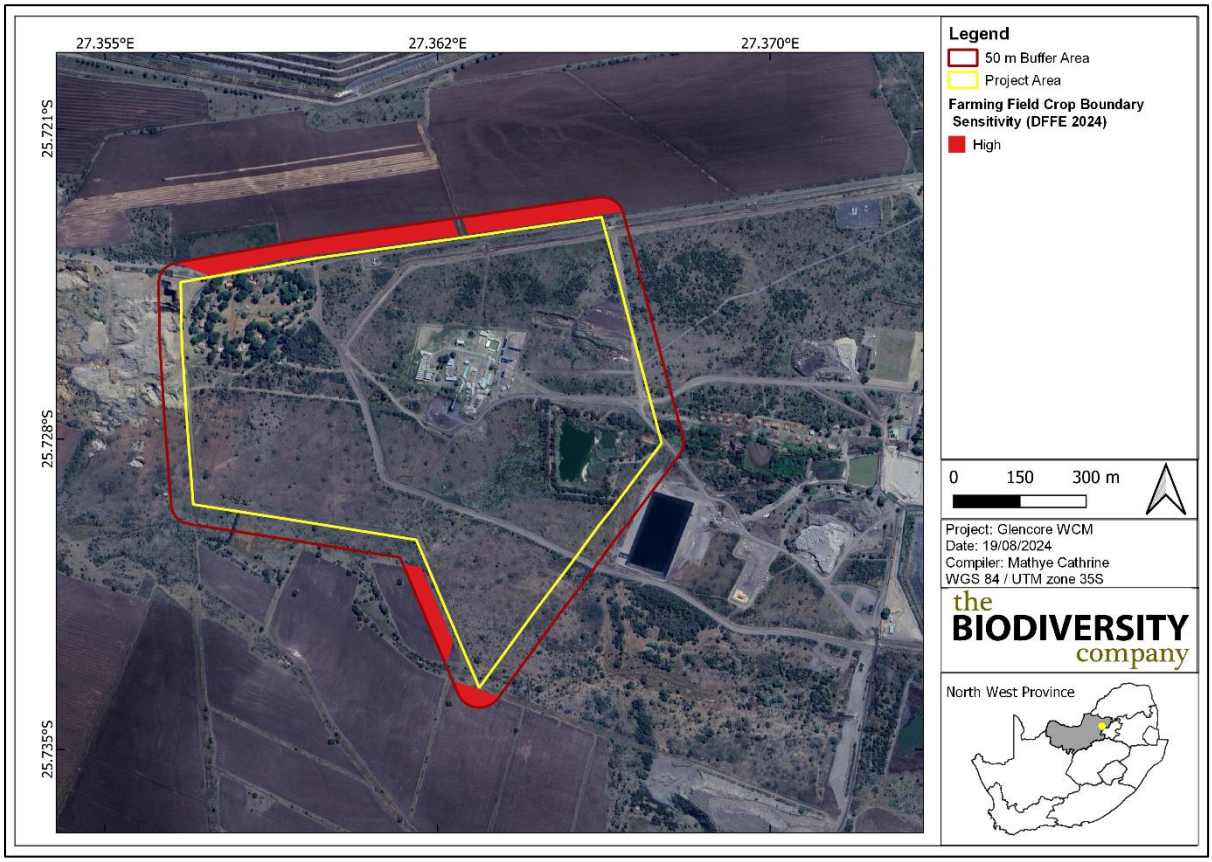

Figure 3-10 Field Crop Boundary Sensitivity (DFFE 2024)

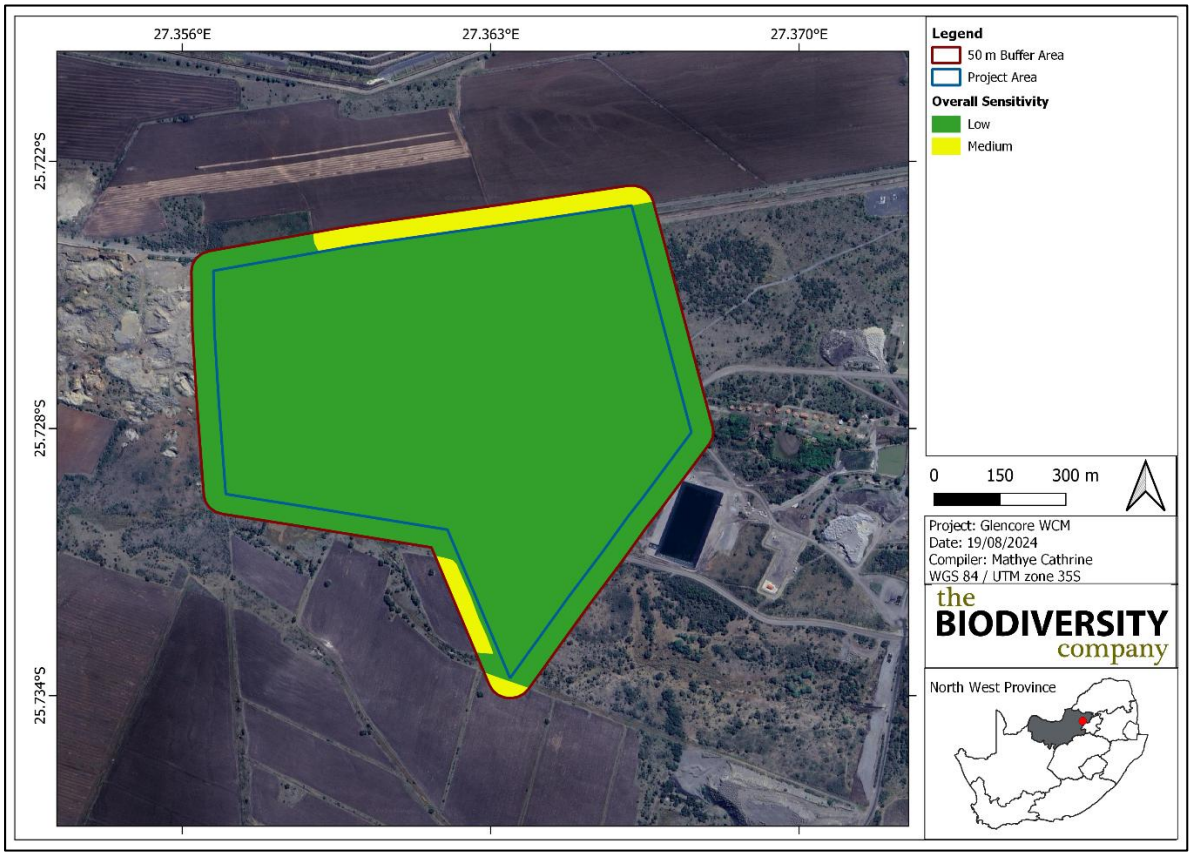

Figure 3-11 Overall site verified sensitivity of the project area

Considering the soil properties, agricultural potential as well as the current land use of the proposed development area, the area has a predominate "Low" agricultural sensitivity with marginal "Medium sensitivity around active crop fields within the 50 m regulated area (Figure 3-11). Based on the confirmed sensitivities, the overall sensitivity of the proposed project area is also categorized as "Low" with marginal "Medium" sensitive areas. The allocated sensitivities for the theme are either disputed or validated in Table 3-2 below.

Table 3-2 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	Medium	Disputed – Low Moderate to Moderate land capability. Presence of active crop fields on low potential soils including Rustenburg and Mispah. These soils have a restrictive characteristic which limits root penetration, aeration, and drainage due to their high clay content and the impermeable layer in the sub-horizons. No irrigation infrastructure.
	Medium	Low	Disputed – Very Low to Low land capability. Presence of low potential soils including Rustenburg, Arcadia, Rensburg and Mispah. These soils have a restrictive characteristic which limits root penetration, aeration, and drainage due to their high clay content and the impermeable layer in the sub-horizons

4 Impact and Management Measures

4.1 Anticipated Impact Framework

An impact framework was considered for the impact assessment. The following list provides a framework for the identified major impacts associated with the project (Table 4-1).

Table 4-1 Anticipated impacts for the proposed Support infrastructure on agricultural resources

Main Impact	Project activities that can cause loss/impacts to Soils (especially regarding the proposed infrastructure areas)	Secondary impacts anticipated
Loss of land capability	• Construction, operation and decommissioning of roads; • Construction, operation and decommissioning of construction camps, layout areas and office space; • Potential waste water treatment leaks or spillage (i.e. hydrocarbons or untreated waste); • Mixing of soil; • Soil dust precipitation in surface or gravel access roads; • Dust precipitation; and • Removal of vegetation for the proposed support infrastructure	• Erosion; • Soil degradation; • Compaction; • Increase in salinity; • Land contamination; and • Loss of soil via aeolian processes.

4.2 Management Measures

The assessment of impact significance considers pre-mitigation as well as implemented post-mitigation scenarios. The aim of the management outcomes (below) is to present the mitigation measures in such a way that they can be incorporated into the Environmental Management Programme (EMPr) for the project, allowing for more successful implementation and auditing of the mitigations and monitoring guidelines. The project management t measures for the soils and agriculture resources during the construction phase presents the prescribed mitigation measures for construction phase for the assessment are presented in Table 4-2. Table 4-3 presents the prescribed mitigation for operational phase for the assessment. Table 4-4 presents the prescribed mitigation measures for the decommissioning, rehabilitation and closure phases for the assessment.

Table 4-2 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 authorized 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. Any selected "new" route must be authorized, minimizing disturbances to the wetland areas.	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
Keep excavation and soil heaps clear of potential contaminates or waste	Contractor	Separate topsoil and sub-soil	Construction Phase	Environmental Officer	Throughout phase	Soil heaps are managed
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
Minimize 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 and entering wetlands or buffer areas	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
A stormwater management plan must be development and implement for the purpose of this project to control runoff from the development site	Contractor	Implement stormwater management plan	Construction Phase	Environmental Officer	Throughout all the phases	Plan is implemented

Table 4-3 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.	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 stabilized 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

Table 4-4 The project management measures for the soils and agriculture resources during the decommissioning, rehabilitation and closure phase

Environmental Theme: Agriculture

Impact Management Outcome: Protection of soil resources
Phase: Decommissioning, Rehabilitation and Closure

Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Rehabilitation of the Project area will be undertaken, includes the ripping of the compacted soil surfaces and establishment of vegetation.	Contractor/Environmental Officer	Implement soil compaction rehabilitation	Rehabilitation and closure Phase	Environmental Officer	Throughout phases	Implement erosion control, revegetation and alien vegetation management plan on disturbed areas
Ensure successful rehabilitation of areas disturbed during construction to decommissioning and these areas are stabilized to avoid impacts to adjacent areas	Contractor/ Environmental Officer	Implement soil re-vegetation, spillage or residual waste contamination rehabilitation plan	Rehabilitation and closure Phase	Environmental Officer	Should be assessed once a year for soil compaction, fertility, and erosion.	Plan is implemented
Ensure rehabilitation of contaminated soil by removal of pollutants by implementing methods such as bioremediation and phytoremediation	Contractor/ Environmental Officer	Implement soil spillage or residual waste contamination rehabilitation plan	Rehabilitation and closure Phase	Environmental Officer	Should be assessed once a year for possible contaminants	Plan is implemented

4.3 Cumulative Impacts

The quantitative impact of the proposed project in isolation on agriculture is anticipated to be “Low” due to the presences of low agricultural potential soils. The cumulative impact of the proposed project is anticipated to be “Medium”. The project area has undergone historic and current modification, like the developmental disturbances associated to the mining activities that the local area has currently.

After implementation of the mitigation measures such as implementation of erosion control methods, preventing soil contamination and rehabilitating disturbed and bare surfaces 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.

Table 4-5 Cumulative Impacts associated with the proposed project

Status	Cumulative Effect	Priority Factor	Post mitigation ER	Can impact be mitigated?	Is the impact acceptable?
Impact in isolation	1	1.0	Low	Yes	Yes
Cumulative impact	2	1.7	Medium		

5 Conclusion

The proposed project area is dominated by low potential soils including Mispah, Rustenburg, Rensburg and Arcadia soil forms. Active crop fields were confirmed within the proposed 50 m buffer of the project area on soils characterised by low and very restricted agricultural potential with regular to severe limitations. This is due to the soil morphological properties such as high clay content of vertic soils, impermeable underlying horizons of Mispah soil and slope.

The land capability sensitivity (DAFF, 2017) is dominated by land capabilities with “Low-Moderate to Moderate” sensitivity. Furthermore, highly sensitive crop field boundaries were also identified using the DFFE Screening Tool Report - DFFE (2024). The verified baseline findings, current land uses and the calculated land potential level dispute with the agricultural theme in areas associated with Low-Moderate to Moderate land capability sensitivity and further confirms marginal active cropping on low potential soils within the 50 m regulated area

It is the specialist’s opinion that the proposed Glencore WCM mine infrastructure project and the associated powerline connection will have an overall low residual impact on the agricultural production ability of the land. The proposed project and associate infrastructure may be favourably considered for development, provided mitigation measures are implemented.

5.1 Specialist Statement

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

- The site verified land capability of the proposed project area ranges from low to medium;
- The agricultural potential of the area is low;
- There was active crop farming within the 50 m buffer of the project area; and
- The overall agricultural sensitivity for the project area ranges from low to medium.

5.2 Statement Conditions

The project may be favourably considered for authorisation and is not subject to any conditions which can include obtaining consent for high sensitive areas from the respective land owners or any proposed no go areas as land segregation is expected to be minimal following the development.

5.3 Layout Approval

Following refinement and further specialist input a SWMP was developed after the completion of the specialist report and therefore this section aims to provide consideration by the specialist of the new clean water dam infrastructure in the context of the overall study. The remaining clean water dam will now incorporate a constructed wetland system, designed to enhance passive treatment, water quality improvement, and ecological function. Figure 5-1 presents the updated layout.

The siting, design, and scale of this dam have been informed by specialist findings, ecological sensitivities, and site conditions. This change does not represent a significant deviation from the original project scope; rather, it results in a net improvement in environmental outcomes introducing a multifunctional, ecologically beneficial wetland system.

These updates are detailed in the stormwater management plan drawing (Drawing No. P2501017-SW-ST2-710). Minor adjustments to infrastructure layout, are considered acceptable and do not affect the conclusions of the original specialist assessment. The revised design is supported by the specialist and is regarded as favourable for environmental authorisation.

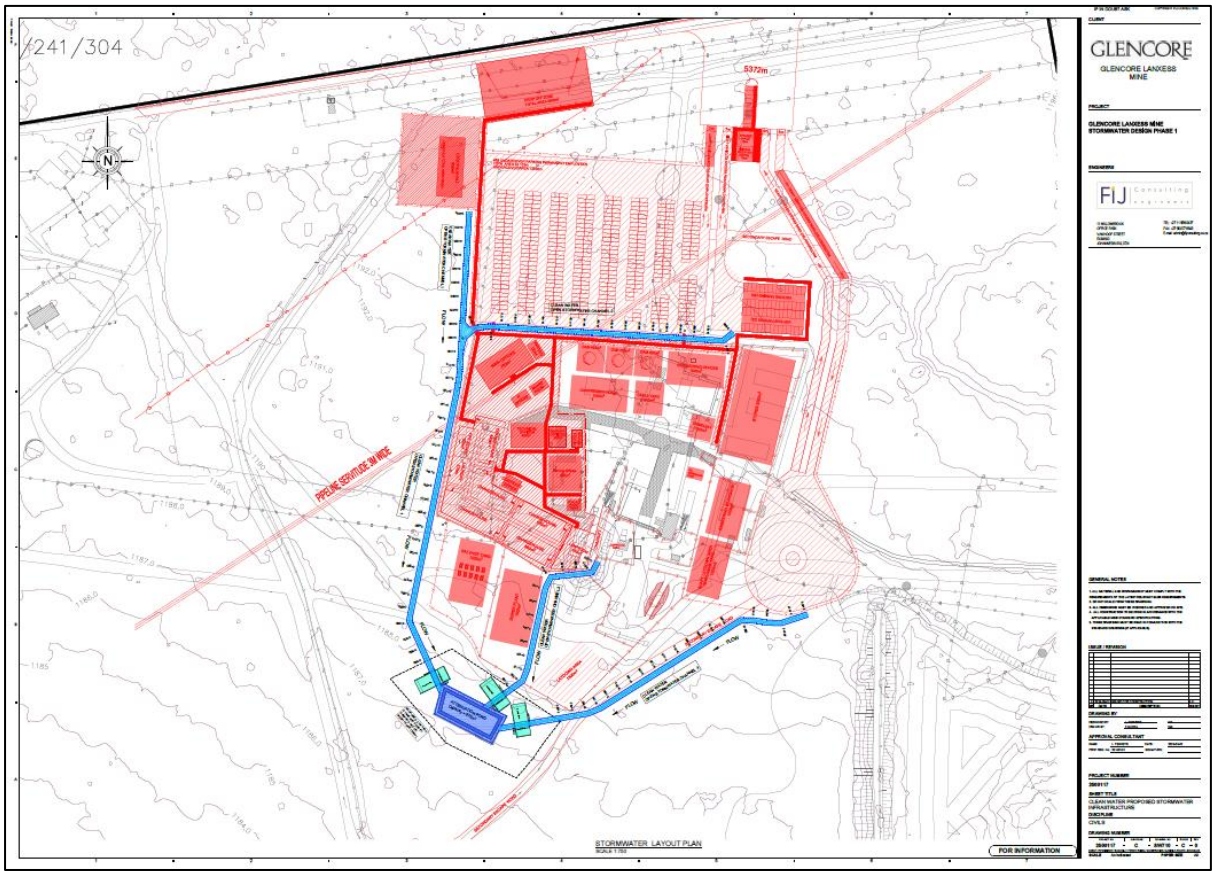

Figure 5-1 The updated layout

The proposed project and assessment footprint do not result in the loss of any high-potential agricultural soils. The changes are limited to previously disturbed areas and remain within the zones already assessed as having low to marginal sensitivity. As such, the inclusion of a clean water dam (functioning

as an artificial wetland) are considered acceptable from a soil and agricultural perspective and do not compromise land capability or long-term agricultural use potential.

6 References

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

7 Appendix Items

7.1 Appendix A: Methodology

7.1.1 Desktop Assessment

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

7.1.2 Field Survey

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

7.1.3 Land Capability

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

Land capability is divided into eight classes, and these may be divided into three capability groups. Table 7-1 shows how the land classes and groups are arranged in order of decreasing capability and ranges of use. The risk of use increases from class I to class VIII (Smith, 2006).

Table 7-1 Land capability class and intensity of use (Smith, 2006)

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

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

Table 7-2 The combination table for land potential classification

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

Table 7-3 The Land Potential Classes

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

The land capability of the proposed footprint will be compared to the National Land Capability which was refined in 2014- 2016. The National Land Capability methodology is based on a spatial evaluation modelling approach and a raster spatial data layer consisting of fifteen (15) land capability evaluation values (Table 7-4), usable on a scale of 1:50 000 – 1:100 000 (DAFF, 2017). The previous system is based on a classification approach, with 8 classes (Table 7-1). Land capability and land potential will also be determined in consideration of the screening tool to ultimately establish the accuracy of the land capability sensitivity from (DAFF, 2017).

Table 7-4 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 15	Very High

7.2 Appendix B: Impact Assessment

Table 7-5 Impact assessment related to the loss of the land capability during the construction, operation, decommissioning and rehabilitation phases.

IMPACT DESCRIPTION		PRE - MITIGATION							POST - MITIGATION								IMPACT PRIORITISATION			
	Phase	Nature	Extent	Duration	Magnitude	Reversibility	Probability	Pre-mitigation ER	Nature	Extent	Duration	Magnitude	Reversibility	Probability	Post-mitigation ER	Confidence	Cumulative	Irreplaceable loss	Priority factor	Final score
Loss of land capability; Soil degradation; soil fertility; Soil compaction; Soil contamination	Construction	-1	2	2	3	3	2	-5	-1	2	2	2	2	1	-2	Medium	2	3	1,38	-2.75
	Operation	-1	2	3	3	2	3	-7.5	-1	2	3	2	1	1	-2	Low	2	3	1,38	-2.75
	Decommissioning	-1	2	2	2	3	2	-4.5	-1	1	2	1	3	2	-3.5	Low	2	2	1,25	-4.375
	Rehab and closure	-1	1	2	2	2	2	-3.5	-1	1	1	1	2	1	-1,25	Low	1	2	1,13	-1.40625

7.3 Appendix C: 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 48 and is punishable in terms of Section 24F of the Act.

Dr Matthew Mamera

Soil Scientist

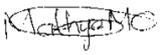
The Biodiversity Company

June 2025

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

June 2025

7.4 Appendix D: Curriculum Vitae

Matthew Mamera

PhD Soil Science (*SACNASP Reg - 116356*)

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Date of birth: 31 October 1988

Profile Summary

Working experience throughout South Africa

Specialist experience with pedology and agriculture.

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

Experience hydropedological modelling

Areas of Interest

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

Key Experience

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

Country Experience

South Africa: All Provinces

Zambia - Kitwe and Mufulira

Angola- Zenza – Cacuso; Luena – Saurimo

Namibia

Nationality

South African Permanent Residence

Languages

English – Proficient

Ndebele, Xhosa, Shona – Proficient

Qualifications

- PhD (University of the Free States)- Soil Science (Hydropedology, Sanitation and Water quality management)
- MSc (University of Fort Hare) – Soil Science (Hydropedology, Sanitation and Water quality management)
- BSc Honours *Cum laude* (University of Fort Hare) – Soil Science (Hydropedology, wetlands delineation and rehabilitation)
- BSc Agricultural Soil Science
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Profile Summary

Working experience throughout South Africa

Specialist experience with pedology and agriculture.

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

Areas of Interest

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

Key Experience

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

Country Experience

South Africa: All Provinces

Nationality

South African

Languages

English – Proficient

Sepedi, Xitsonga, Venda – Proficient

Qualifications

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