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T 011 789 7170 E info@eims.co.za W www.eims.co.za

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

PROPOSED GLENCORE RHOVAN SOLAR PHOTOVOLTAIC FACILITY AT RHOVAN VANADIUM MINE, NORTH WEST PROVINCE

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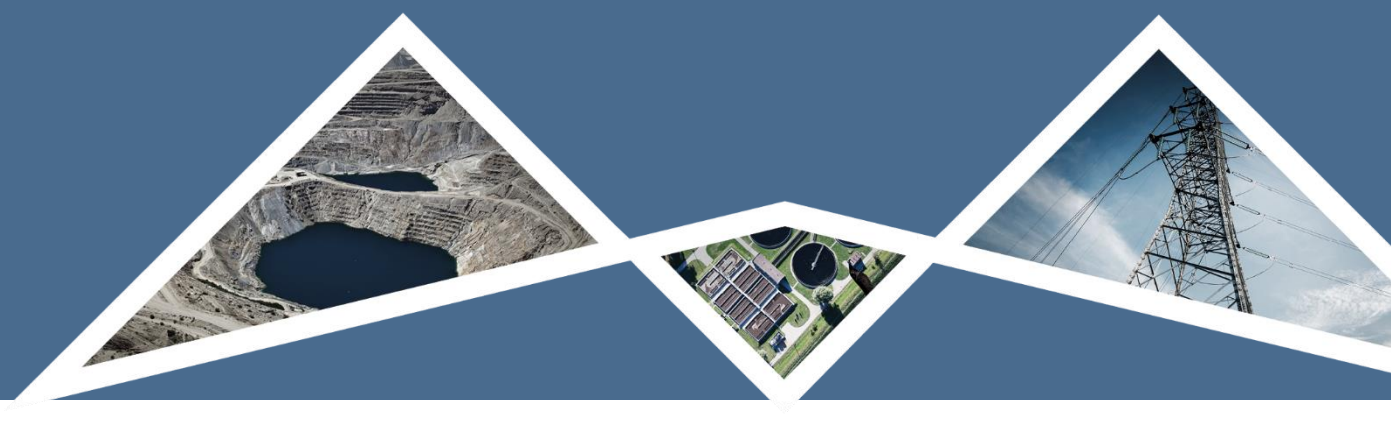

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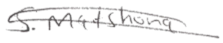
COMPILED:	John von Mayer/ Sinalo Matshona		2022/12/13
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2022/10/04	**ORIGINAL DOCUMENT**	**EIA Report for Public Review**

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List of Abbreviations

AEL: Air Emissions License

BA: Basic Assessment

BPG: Best Practice Guideline

CA: Competent Authority

DEA: Department of Environmental Affairs

DEAT: Department of Environmental Affairs and Tourism

DFFE: Department of Forestry, Fisheries and Environment

DWS: Department of Water and Sanitation

DMRE: Department of Mineral Resources and Energy

DWAF: Department of Water Affairs and Forestry

EAP: Environmental Assessment Practitioner

ECA: Environment Conservation Act

EIA: Environmental Impact Assessment

EIMS: Environmental Impact Management Service (Pty) Ltd

RLM: Rustenburg Local Municipality

EMPr: Environmental Management Programme Report

GHG: Greenhouse Gas

GIS: Geographical Information System

I&APs: Interested and Affected Parties

IBA: Important Bird Area

IDP: Integrated Development Plan

IEM: Integrated Environmental Management

KPI: Key Performance Indicator

LED: Local Economic Development

MR: Mining Right

MPRDA: Mineral and Petroleum Resources Development Act

NDP: National Development Plan

NEMA: National Environmental Management Act

NEMAQA: National Environmental Management: Air Quality Act

NFA: National Forests Act

NFEPA: National Freshwater Ecosystem Priority Areas

NHRA: National Heritage Resources Act

NPAES: National Protected Areas Expansion Strategy

NWA: National Water Act

NW DEDECT: North West Department of Economic Development, Environment, Conservation and Tourism

PDP: Provincial Development Plan

PPP: Public Participation Process

PV: Photovoltaic

RE: Renewable Energy

REDZ: Renewable Energy Development Zones

RLM: Rustenburg Local Municipality

SAHRA: South African Heritage Resources Agency

SAHRIS: South African Heritage Resources Information System

SAWS: South African Weather Service

SDF: Spatial Development Framework

SEMA: Specific Environmental Management Act

SPLUMA: Spatial Planning and Land Use Management Act

SWMP: Stormwater Management Plan

TSF: Tailings Storage Facility

UIF: Unemployment Insurance Fund

1 EXECUTIVE SUMMARY

Glencore is one of the world's largest globally diversified natural resource companies and one of its largest traders. Rhovan Mine, an operation of the Rhovan PSV managed by Glencore (Pty) Ltd (the applicant) wishes to develop a Solar Photovoltaic (PV) Energy Generation Facility at the Rhovan Vanadium Mine (within the Mining Right boundary). The generation capacity will be 25 megawatts (MW). All power generated from the facility will be used at the Rhovan Vanadium Mine. Other possible infrastructure will include an on-site substation / switching station, access roads and an 11kV power line. It was determined that an Environmental Authorization (EA) is required for the proposed activities at the PV facility. A full Environmental Impact Assessment (EIA) process is being undertaken in support of the application for EA. This report aims to comply with the requirements of Appendix 3 of the Environmental Impact Assessment Regulations, 2014, promulgated under the National Environmental Management Act (NEMA- Act 107 of 1998) and fulfils the requirements of an EIA Phase Report.

PURPOSE OF THE EIA REPORT

The purpose of the Scoping process is to:

- Determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;
- Describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the development footprint on the approved site as contemplated in the accepted Scoping report;
- Identify the location of the development footprint within the approved site as contemplated in the accepted Scoping report based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment;
- Determine nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives and the degree to which these impacts can be reserved, may cause irreplaceable loss of resources and can be avoided, managed or mitigated;
- identify the most ideal location for the activity within the development footprint of the approved site as contemplated in the accepted Scoping report based on the lowest level of environmental sensitivity identified during the assessment;
- identify, assess, and rank the impacts the activity will impose on the development footprint on the approved site as contemplated in the accepted Scoping report through the life of the activity;
- identify suitable measures to avoid, manage or mitigate identified impacts; and
- identify residual risks that need to be managed and monitored.

PUBLIC PARTICIPATION PROCESS

A Public Participation Plan (PP Plan) has been prepared in accordance with the requirements of the NEMA, and the Directions issued by the department of Forestry, Fisheries and the Environment (DFFE) in GN 650 of 5 June 2020) in terms of the Disaster Management Act (Act 57 of 2002). The purpose of this PP Plan is to obtain agreement from the relevant Competent Authority on the public engagement and participation for the abovementioned project. A copy of the plan can be made available upon request.

The Public Participation Process (PPP) for the proposed project has been undertaken in accordance with the requirements the NEMA in line with the principles of Integrated Environmental Management. The PPP commenced on the 30 March 2022 with an initial notification and call to register to Interested and Affected Parties (I&APs). The comments received from I&APs during the initial call to register and commenting period to

date have been captured in the Public Participation Report in Appendix C, and a summary of the issues raised and sections addressing the issues is presented in Table 8 (Section 8.6).

The Scoping Report was made available for public review and comment for a period of 30 days from the 30th June 2022 to the 29th July 2022. Comments received during the Scoping Report review period were collated and added to the Public Participation Report and the summary in Table 8 (Section 8.6).

Comments received during this EIA Report review period will also be collated and added to the Public Participation Report and the summary in Table 8 will be updated accordingly for inclusion in the finalised EIA Report to be submitted to the CA.

This EIA Report has been made available for public review and comment for a period of 30 days from the 07 January 2023 until the 06 February 2023

PROJECT ALTERNATIVES AND ENVIRONMENTAL IMPACT ASSESSMENT

A Scoping assessment was undertaken to identify all the potential risks and impacts associated with each phase of the proposed PV project as well as potentially feasible alternatives. Each of the identified risks and impacts at the various project phases were assessed. The assessment criteria (see Section 10.1 for the EIMS Impact Assessment Methodology) include the nature, extent, duration, magnitude / intensity, reversibility, probability, cumulative impact, and irreplaceable loss of resources.

After considering the broad range of alternative types that exist (i.e. location, process, technology, and activity options), layout alternatives were the only reasonable options identified. No specific feasible layout alternatives were identified. There is currently no need for avoidance of environmental sensitivities in both of the site locations. The identified three archaeological sites on Alternative S1 can be destroyed once the required permit for destruction has been obtained from SAHRA.

Various impacts have been identified in relation to the proposed project and these have been subjected to a Scoping level impact assessment. No impacts were determined to have a high final significance. The following impacts were determined to have a potentially moderate positive / negative final significance (see Section 10.2 for full list of identified impacts and the significance of each):

- Negative Impacts:
    - Impact on terrestrial biodiversity;
    - Impacts on avifauna;
    - Job Losses (Decommissioning Phase).
- Positive Impacts:
    - Employment Creation (Construction and Operational Phases).
    - Rehabilitation after decommissioning of the facility.

The identified potential impacts of moderate to high significance will be further assessed during the EIA phase of the project. Potential mitigation measures have been identified and will be refined based on input from the Environmental Assessment Practitioner (EAP), public consultation, and specialist assessments during the EIA phase of the project. The associated EMPr will identify appropriate mitigation mechanisms for avoidance, minimisation and / or management of the negative impacts and enhancement of the positive impacts.

Mitigation measures have been identified and based on input from the Environmental Assessment Practitioner (EAP), public consultation, and specialist assessments during the EIA phase of the project. The associated EMPr (Appendix E) identifies appropriate mitigation mechanisms for avoidance, minimisation and / or management of the negative impacts and enhancement of the positive impacts thereof.

2 INTRODUCTION

Rhovan Mine, an operation of the Rhovan PSV managed by Glencore (Pty) Ltd, (i.e. the applicant) has appointed Environmental Impact Management Services (Pty) Ltd (EIMS) as the Environmental Assessment Practitioner (EAP) to assist with undertaking the required authorisation processes (including the statutory public participation), and to compile and submit the required documentation in support of application for Environmental Authorisation (EA) in accordance with the NEMA- Listed activity/ies in Table 1. The proposed project involves the development of a 25 megawatt Photo Voltaic (PV) facility to provide power to the mining operation. The proposed project is located at the Rhovan Vanadium mine and the potentially affected farm portions include Portion 0 of the Farm Leeuwpen 403 JQ, portion 0 of the Farm Beestkraal 397 JQ and RE of portion 2 of Farm Losperfontein 405 JQ within the Rustenburg Local Municipality, Bojanala Platinum District, North West Province. All power generated from the facility will be used at the Rhovan Vanadium Mine.

Table 1: NEMA Listed Activities Relevant to Project

Listing Notice	Activity	Description
GN.R. 984, Activity 1	The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more, excluding where such development of facilities or infrastructure is for photovoltaic installations and occurs- (a) within an urban area; or (b) on existing infrastructure	The PV facility will generate up to 25 MW of electricity for use at the mine.
GN.R. 984, Activity 15	The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for- (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	Vegetation will need to be cleared at the footprint for the PV panels and associated infrastructure.
GN.R. 985, Activity 12	The clearance of an area of 300 square meters or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan in: h. Northwest Province iv. In Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority;	Vegetation will need to be cleared at the footprint for the PV panels and associated infrastructure.

Listing Notice	Activity	Description
GN.R. 985, Activity 18	The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre h. North West v. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority	Existing roads within the mine may be extended or widened to serve as access roads for the PV facility. The proposed facility is located within a CBA 2 area.

2.1 REPORT STRUCTURE

This report has been compiled in accordance with the 2014 NEMA EIA Regulations, as amended. A summary of the report structure, and the specific sections that correspond to the applicable regulations, is provided in Table 2 below.

Table 2: Report Structure

Environmental Regulation	Description – NEMA Regulation 982 (2014) as amended	Section in Report
Appendix 3(a):	Details of – i. The Environmental Assessment Practitioner (EAP) who prepared the report; and ii. The expertise of the EAP, including a curriculum vitae;	Section 2.2 Section 2.3
Appendix 3(b):	The location of the activity. Including – i. The 21-digit Surveyor General code of each cadastral land parcel; ii. Where available, the physical address and farm name; iii. Where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	Section 3
Appendix 3(c):	A plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is – i. A linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or ii. On a land where the property has not been defined, the coordinates within which the activity is to be undertaken;	Section 3
Appendix 3(d):	A description of the scope of the proposed activity, including – i. All listed and specified activities triggered; ii. A description of the activities to be undertaken, including associated structures and infrastructure;	Section 4 Section 5
Appendix 3(e):	A description of the policy and legislative context within which the development is located and an explanation of how the proposed development complies with and responds to the legislation and policy context;	Section 5
Appendix 3(f):	A motivation for the need and desirability for the proposed development, including the need and desirability of the activity in the context of the preferred development footprint within the approved site as contemplated in the accepted Scoping report;	Section 6

Environmental Regulation	Description – NEMA Regulation 982 (2014) as amended	Section in Report
Appendix 3(g):	A motivation for the preferred development footprint within the approved site as contemplated in the accepted Scoping report;	Section 7
Appendix 3(h):	A full description of the process followed to reach the proposed development footprint within the approved site as contemplated in the accepted Scoping report, including: – (i) details of the development footprint alternatives considered; (ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs; (iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them; (iv) the environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; (v) the impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts- • (aa) can be reversed; • (bb) may cause irreplaceable loss of resources; and • (cc) can be avoided, managed or mitigated; (vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks; (vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; (viii) the possible mitigation measures that could be applied and level of residual risk; (ix) if no alternative development footprints for the activity were investigated, the motivation for not considering such; and (x) a concluding statement indicating the location of the preferred alternative development footprint within the approved site as contemplated in the accepted Scoping report;	Section 7, Section 8 Section 8.6 Section 10,

Environmental Regulation	Description – NEMA Regulation 982 (2014) as amended	Section in Report
Appendix 3(i)	A full description of the process undertaken to identify, assess and rank the impacts the activity and associated structures and infrastructure will impose on the preferred development footprint on the approved site as contemplated in the accepted Scoping report through the life of the activity, including- (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;	Section 10.1 Section 10.2
Appendix 3(j)	An assessment of each identified potentially significant impact and risk, including- (i) cumulative impacts; (ii) the nature, significance and consequences of the impact and risk; (iii) the extent and duration of the impact and risk; (iv) the probability of the impact and risk occurring; (v) the degree to which the impact and risk can be reversed; (vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and (vii) the degree to which the impact and risk can be mitigated;	Section 10.2
Appendix 3(k):	Where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report;	Section 12
Appendix 3(l):	An environmental impact statement which contains- (i) a summary of the key findings of the environmental impact assessment: (ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred development footprint on the approved site as contemplated in the accepted Scoping report indicating any areas that should be avoided, including buffers; and (iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives	Section 12.2 Section 11 Section 7

Environmental Regulation	Description – NEMA Regulation 982 (2014) as amended	Section in Report
Appendix 3(m)	Based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation;	Section 12.3
Appendix 3(n)	The final proposed alternatives which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment;	Section 7
Appendix 3(o)	Any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation;	Section 12.3
Appendix 3(p)	A description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed;	Section 13
Appendix 3(q)	A reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;	Section 12
Appendix 3(r)	Where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded, and the post construction monitoring requirements finalised;	N/A
Appendix 3(s)	An undertaking under oath or affirmation by the EAP in relation to- (i) the correctness of the information provided in the reports; (ii) the inclusion of comments and inputs from stakeholders and I&APs; (iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and (iv) any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties;	Section 0
Appendix 3(t)	Where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;	N/A
Appendix 3(u)	An indication of any deviation from the approved Scoping report, including the plan of study, including-	N/A

Environmental Regulation	Description – NEMA Regulation 982 (2014) as amended	Section in Report
	(i) any deviation from the methodology used in determining the significance of potential environmental impacts and risks; and (ii) a motivation for the deviation;	
Appendix 3(v)	Any specific information that may be required by the competent authority; and	N/A
Appendix 3(w)	Any other matters required in terms of section 24(4)(a) and (b) of the Act.	N/A

2.2 DETAILS OF THE EAP

EIMS has been appointed by Glencore (Pty) Ltd as the Independent EAP and to assist in preparing and submitting the EA application, Scoping and EIA Reports and undertaking a Public Participation Process (PPP) in support of the proposed PV Facility. The contact details of the EIMS consultant who compiled this EIA Report are as follows:

- Name of the consultant: John von Mayer
- Tel No.: 011 789 7170
- Fax No.: 086 571 9047
- E-mail address: rhovanpv@eims.co.za

2.3 EXPERTISE OF THE EAP

2.3.1 EAP QUALIFICATIONS

In terms of Regulation 13 of the EIA Regulations (GN R. 982) as amended, an independent EAP, must be appointed by the applicant to manage the application. EIMS has been appointed by the Applicant as the EAP to assist with compiling the necessary reports and undertaking the statutory consultation processes, in support of the proposed project. EIMS is compliant with the definition of an EAP as defined in Regulations 1 and 13 of the EIA Regulations, as well as Section 1 of the NEMA. This includes, *inter alia*, the requirement that EIMS is:

- Objective and independent;
- Has expertise in conducting EIAs;
- Comply with the NEMA, the environmental regulations and all other applicable legislation;
- Considers all relevant factors relating to the application; and
- Provides full disclosure to the applicant and the relevant environmental authority.

The Curriculum Vitae (indicating the experience with environmental impact assessment and relevant application processes) of the consultant that is involved in the EIA process and the compilation of this EIA Report is presented in Appendix A.

2.3.2 SUMMARY OF THE EAP'S PAST EXPERIENCE

EIMS is a private and independent environmental management-consulting firm that was founded in 1993. EIMS has in excess of 28 years' experience in conducting EIAs, including many EIAs for mines and mining related projects. Please refer to the EIMS website (www.eims.co.za) for examples of EIA documentation currently available.

John von Mayer is a senior consultant at EIMS and has been involved in numerous significant projects the past 14 years. He has experience in Project Management, small to large scale Environmental Impact Assessments, Environmental Auditing, Water Use Licensing, and Public Participation with a particular focus on renewable energy and mining projects.

2.3.3 SPECIALIST CONSULTANTS

Terrestrial biodiversity as well as heritage and avifauna were the pre-identified specialist studies deemed essential by the EAP and conducted during the Scoping phase of this project. No additional specialist studies were identified through use of the Department of Environmental Affairs' Screening Tool.

Preliminary impacts were assessed according to the EIMS pre-defined impact significance rating methodology (Section 10).

3 DESCRIPTION OF THE PROPERTY

Table 3 provides a description of the property details and size of the proposed PV facility footprint as well as the distance to the nearest towns. The proposed project will be located within the mine area. See Figure 1 for the locality of the proposed PV facility.

Table 3: Locality details

Property	The potentially affected properties include Portion 0 of the Farm Leeuwpen 403 JQ, portion 0 of the Farm Beestkraal 397 JQ and RE of portion 2 of Farm Losperfontein 405
Property ownership	National Government of the Republic of South Africa (Land ownership for affected properties is held in a trust for the Bakwena Ba-Mogopa tribe and leased by Rhovan. Mineral Lease K18/1992).
21-digit Surveyor General Code	T0JQ00000000040300000 T0JQ00000000039700000 T0JQ00000000040500002
Application Area (Ha)	The directly affected properties comprise an area of 83 ha for Site Alternative S1 and 39 ha for Site Alternative S2. The footprint of the PV facility infrastructure will remain within one of the site alternatives S1 or S2, whichever becomes authorised.
Magisterial District	Rustenburg Local Municipality (Ward 29), Bojanala Platinum District, North West Province.
Distance and direction from nearest towns	The geographic coordinates at the centre of the Site Alternative S1 are approximately: 25°34’29.33” S and 27°’34’9.75” E. The geographic coordinates at the centre of the Site Alternative S2 are approximately: 25°34'5.57"S and 27°34'31.81"E. The town of Bethanie is located approximately 1km to the northeast of the project area. Barseba town and Modikwe towns are located approximately 4km to the west of the project area.
Surrounding land uses	The area immediately surrounding the proposed PV development footprint is all part of the Rhovan Vanadium mine and can be described as heavily disturbed due to existing mining activities. See Figure 2 for a map of the landcover in and around the proposed development sites.

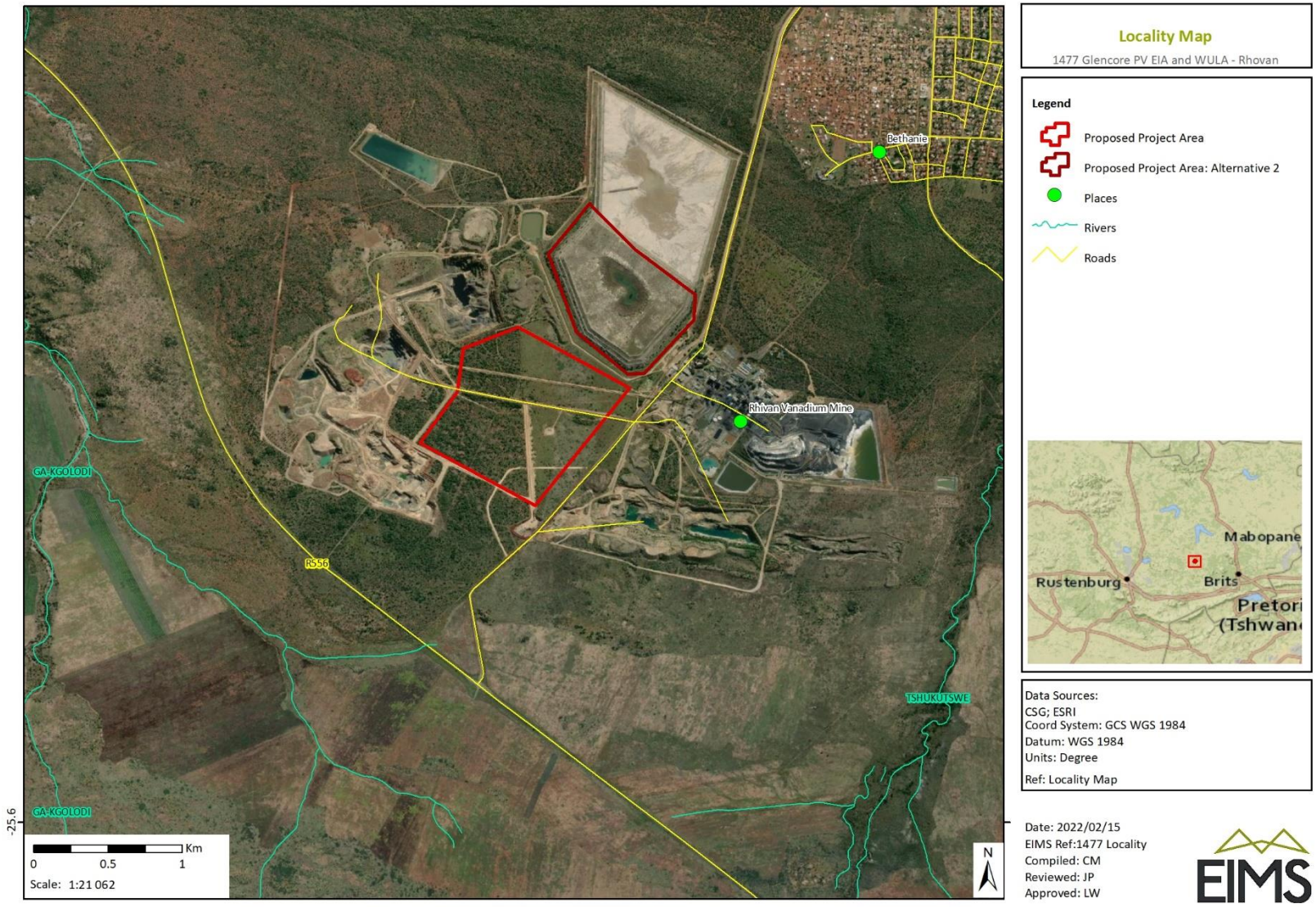


Figure 1: Aerial imagery indicating the proposed PV facility location

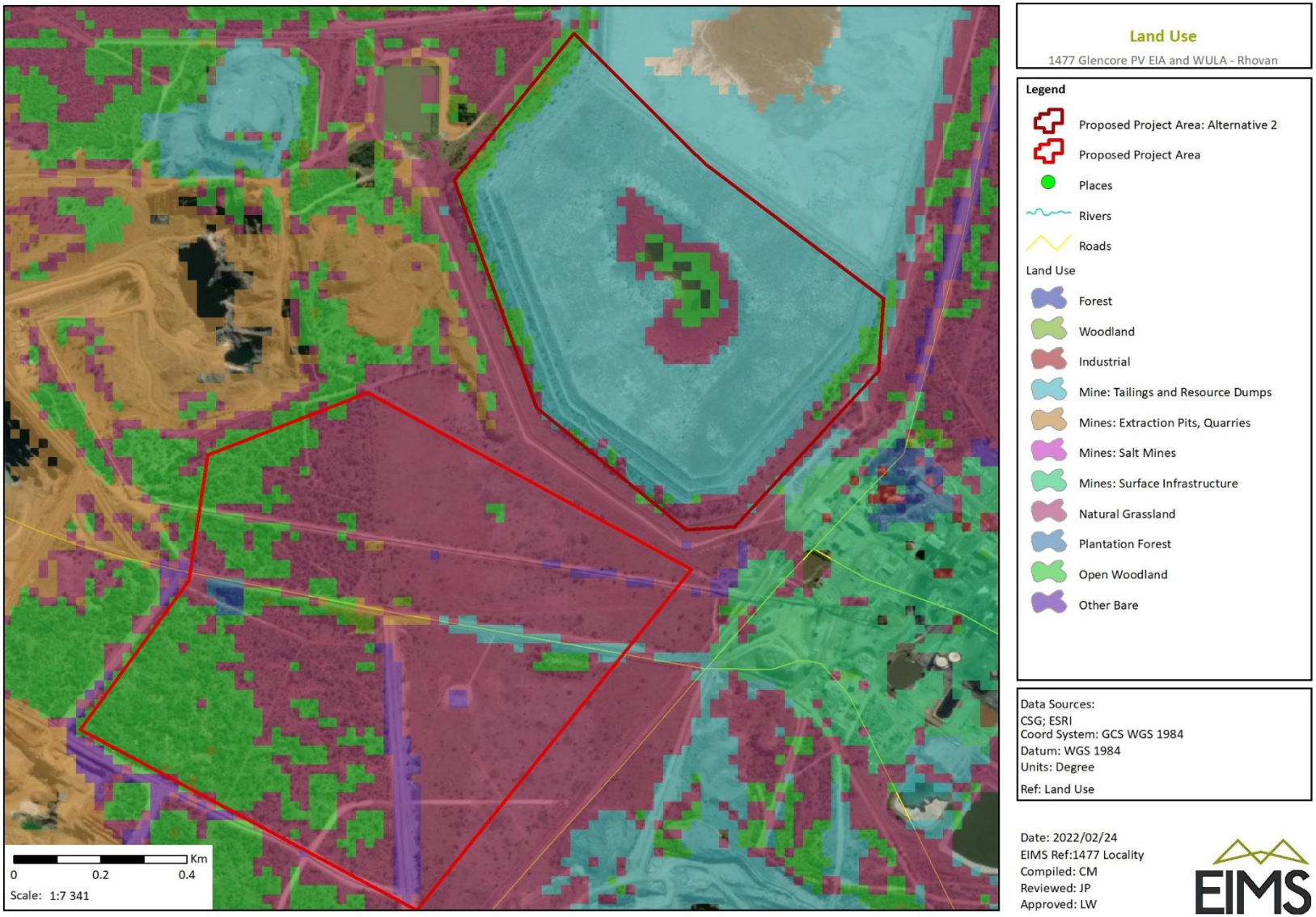


Figure 2: Land cover in and around the proposed PV sites (based on 2020 DFFE EGIS landcover data).

4 DESCRIPTION AND SCOPE OF THE PROPOSED PROJECT

The section below provides a detailed description for the proposed project. Most of the key information presented in this chapter was obtained from the applicant. The aim of the project description is to describe the proposed activities planned to take place at the PV facility project area. Furthermore, the project description is designed to facilitate the understanding of the proposed project related activities which are anticipated to lead to the environmental impacts assessed in this EIA Report, and for which management measures have been, or will be designed.

4.1 PROJECT DESCRIPTION

The applicant proposes the development of a PV Energy Generation Facility. The generation capacity will be up to 25MW and cover an area of up to 83ha. Two sites are being considered. Site alternative S1 is located at the centre of the mine area and is currently undeveloped and is not being utilized. Site alternative S2 is located on top of the existing tailings storage facility at the mine. The proposed facility will include the following infrastructure:

- PV Panels;
- Power line connection (11kV);
- Access roads;
- On-site substation / switching station; and
- Possibly an on-site battery storage facility.

Further detail as to the exact infrastructure proposed will be described in the EIA report once this information becomes available. At the EIA stage more detailed infrastructure layouts should be available and potential alternative layout options may be assessed.

A PV system consists of PV panels (Figure 3) that encase the solar cells. Solar cells are solid-state semiconductor devices that convert light into direct-current electricity. The top layer of the panels is made from a mixture of silicon and phosphorous mixture, which gives it a negative charge. The inner layer, which constitutes the majority of the panel, is a mix of silicon and boron, giving it a positive charge. Where these negative and positively charged layers meet, an electric field (called a junction) is created. A top protective and anti-reflective layer of glass is applied to the surface of the PV panels, to protect the sensitive PV layers below and to prevent photons from reflecting off the panel resulting in lost energy. As the sun's light (photons) hits the solar cell, they are absorbed into the junction, which "pushes" electrons in the silicon out of the way. When sufficient photons are absorbed, the electrons are pushed past the junction and flow freely to an external circuit.

The panels will be mounted on metal frames with a height of approximately 3-5 m above the ground, supported by rammed, concrete or screw pile foundations of 0.5 m in depth. The facility will either be a fixed PV facility where the solar panels are stationary; or a tracking PV facility where the solar panels rotate to track the sun's movement.

In photovoltaic technology the power conversion source is via photovoltaic modules that convert light directly to electricity. This differs from the other large-scale solar generation technology, concentrated solar power, which uses heat to drive a variety of conventional generator systems. Solar panels produce direct current (DC) electricity, so solar parks need conversion equipment to convert this to alternating current (AC), which is the form transmitted by the electricity grid. This conversion is done by inverters. To maximise their efficiency, solar power plants also incorporate maximum power point trackers, either within the inverters or as separate units. These devices keep each solar array string close to its peak power point.

A fundamental characteristic of a photovoltaic system is that power is produced only while sunlight is available. For systems in which the photovoltaics is the sole generation source, storage is typically needed since an exact match between available sunlight and the load is limited to a few types of systems. By far the most common

type of storage is chemical storage, in the form of a battery. Batteries store and produce energy as needed. In PV systems, they capture surplus energy generated by PV systems to allow the storage of energy for use later in the day. The proposed PV facility may also include a battery storage component.

Figure 3: Representative example of a stationary photovoltaic array (MIT, 2020)

It is important to note that this project is not planned to form part of the Renewable Energy Independent Power Producer Procurement (REIPPP) programme. The electricity generated by this facility will serve to provide electricity to Rhovan Vanadium Mine and will not service any other local users in the surrounding area. A minimal amount of water (up to 225 000 l/month) will be used for the washing of panels.

5 POLICY AND LEGISLATIVE CONTEXT

This section provides an overview of the governing legislation identified which may relate to the proposed project. A summary of the applicable legislation is provided in Table 4 below. The primary legal requirement for this project stems from the need for an EA to be granted by the competent authority, in accordance with the requirements of the NEMA. In addition, there are numerous other pieces of legislation governed by many acts, regulations, standards, guidelines and treaties on an international, national, provincial and local level, which should be considered in order to assess the potential applicability of these for the proposed project. More detail on the legislative framework is presented below.

Table 4: Applicable legislation and guidelines overview

Applicable Legislation, Policies and Guidelines	Description of Legislation, Policy or Guideline	Relevance to the Proposed Project
Constitution of the Republic of South Africa (Act 108 of 1996)	The constitution of any country is the supreme law of that country. The Bill of Rights in chapter 2 section 24 of the Constitution of South Africa Act (Act 108 of 1996) makes provisions for environmental issues and declares that: "Everyone has the right - a) to an environment that is not harmful to their health or well-being; and b) to have the environment protected, for the benefit of present and future c) generations, through reasonable legislative and other measures that: i. prevent pollution and ecological degradation; ii. promote conservation; and iii. secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development".	This EIA is conducted to fulfil the requirement of the Bill of Rights.
National Environmental Management Act (Act 107 of 1998 – NEMA); and the EIA Regulations (2014, as amended)	The NEMA (1998) requires that a project of this nature must undergo a Scoping and Environmental Impact Assessment (EIA); an Environmental Management Programme (EMPr) must also be compiled. Regulations applicable to this project include the following:	Activities that triggered the need for an EIA process to be followed are: • GN.R. 983, Activity 15 • GN.R. 984, Activity 1 • GN.R. 985, Activity 12 • GN.R. 985, Activity 18

Applicable Legislation, Policies and Guidelines	Description of Legislation, Policy or Guideline	Relevance to the Proposed Project
	• EIA Regulations GN R. 982 (2014, as amended) in terms of the NEMA; • EIA Regulations GN R. 983 (2014, as amended) in terms of the NEMA; • EIA Regulations GN R. 984 (2014, as amended) in terms of the NEMA; and	
National Water Act (Act 36 of 1998)	The NWA recognises that water is a scarce and unevenly distributed national resource which must be managed encompassing all aspects of water resources.	If any water use authorisation is required an application will be lodged with the Department Water and Sanitation (DWS). No WUL is expected to be required.
Mineral and Petroleum Resources Development Act (Act 28 of 2002)	Section 53(1) provides that: *Subject to subsection (2), any person who intends to use the surface of any land in any way which may be contrary to any object of [the MPRD Act] or which is likely to impede any such object must apply to the for approval in the prescribed manner.*	Section 53 approval may be required for sterilization of mineral resources in the areas proposed for the PV facility.
Specific Environmental Management Acts (SEMAs)	The SEMAs refer to specific portions of the environment where additional legislation over and above the NEMA (1998) as amended, is applicable.	Specialist studies, baseline description for the environmental Scoping and Impact Assessment process, as well as the EMPr will take into account any applicable SEMAs.
National Heritage Resources Act (Act 25 of 1999)	The NHRA aims to promote good management of cultural heritage resources and encourages the nurturing and conservation of cultural legacy so that it may be bestowed to future generations.	A heritage impact assessment completed in 2013 found no heritage resources at the site proposed for the solar facility.
Environment Conservation Act (No. 73 of 1989) (ECA)	The Noise Control Regulations in terms of Section 25 of the ECA contain regulations applicable for the control of noise in the Provinces of Limpopo,	Noise impacts are expected to be associated with the construction and decommissioning phases of the project. Considering the location of the development area in relation to

Applicable Legislation, Policies and Guidelines	Description of Legislation, Policy or Guideline	Relevance to the Proposed Project
	North West, Mpumalanga, Northern Cape, Eastern Cape, and KwaZulu-Natal. The National Dust Control Regulations prescribe monitoring procedures and reporting requirements. Dust will be generated during construction and will be managed in accordance with these Regulations.	residential areas and provided that appropriate mitigation measures are implemented, construction noise is unlikely to present a significant intrusion to the local community. There is therefore no requirement for a noise permit in terms of the legislation.
The Electricity Regulation Act (2006)	Establishes a national regulatory framework for the electricity supply industries.	The Act also provides for licenses and registration with respect to electricity generation and transmission.
National Forests Act (No. 84 of 1998) (NFA)	According to this Act, the Minister may declare a tree, group of trees, woodland or a species of trees as protected. Notice of the List of Protected Tree Species under the National Forests Act (No. 84 of 1998) was published in GNR 734.	A licence is required for the removal of protected trees. It is therefore necessary to conduct a survey that will determine the number and relevant details pertaining to protected tree species present in the development footprint for the submission of relevant permit applications to the authorities prior to the disturbance of any protected tree species.
National Veld and Forest Fires Act (Act 101 of 1998)	Chapter 4 of the NVFFA places a duty on owners to prepare and maintain firebreaks. Chapter 5 of the Act places a duty on all owners to acquire equipment and have available personnel to fight fires.	This Act will be applicable during the construction and operation of the facility, in terms of the preparation and maintenance of firebreaks, and the need to provide appropriate equipment and trained personnel for firefighting purposes.
Mineral and Petroleum Resources Development Act (Act 28 of 2002)	Section 53 of the MPRDA provides a mechanism for ensuring that, inter alia, the mining of mineral resources is not detrimentally affected through the use of the surface of land and which may,	A S53 application may be required if the project results in sterilization of a mineral resource.

Applicable Legislation, Policies and Guidelines	Description of Legislation, Policy or Guideline	Relevance to the Proposed Project
	for example, result in the sterilisation of a mineral resource.	
The National Development Plan 2030 (2012)	The National Development Plan (NDP) 2030 is a plan prepared by the National Planning Commission in consultation with the South African public which is aimed at eliminating poverty and reducing inequality by 2030.	The NDP aims to provide a supportive environment for growth and development, while promoting a more labour-absorbing economy. The development of the PV facility supports the NDP through the development of energy-generating infrastructure which will not lead to the generation of GHGs and will result in economic development and growth of the area surrounding the development area
The Spatial Planning and Land Use Management Act (SPLUMA)	The Spatial Planning and Land Use Management (Act 16 of 2013 – SPLUMA) is set to aid effective and efficient planning and land use management, as well as to promote optimal exploitation of minerals and mineral resources. The SPLUMA was developed to legislate for a single, integrated planning system for the entire country.	If any rezoning application is required this will be handled through a separate rezoning application which does not form part of this EIA process.
White Paper on the Renewable Energy Policy of the Republic of South Africa (2003)	The White Paper on Renewable Energy Policy supplements Government's predominant policy on energy as set out in the White Paper on the Energy Policy of the Republic of South Africa (DME, 1998). The policy recognises the potential of RE and aims to create the necessary conditions for the development and commercial implementation of renewable energy technologies.	The country relies heavily on coal to meet its energy needs due to its abundant, and fairly accessible and affordable coal resources. Renewable energy resources can be sustainable alternatives to fossil fuels.

Applicable Legislation, Policies and Guidelines	Description of Legislation, Policy or Guideline	Relevance to the Proposed Project
Integrated Environmental Management Information Guidelines Series:	This series of guidelines was published by the DEA and refers to various environmental aspects. Applicable guidelines in the series for the proposed project include: • Guideline 5: Companion to NEMA EIA Regulations, 2010; • Guideline 7: Public participation; and • Guideline 9: Need and desirability. Additional guidelines published in terms of the NEMA EIA Regulations, 2014 (as amended), in particular: • Guideline 3: General Guide to EIA Regulations, 2006; • Guideline 4: Public Participation in support of the EIA Regulations, 2006; and • Guideline 5: Assessment of alternatives and impacts in support of the EIA Regulations, 2006.	The guidelines will be used throughout the environmental Scoping and Impact Assessment process.
Best Practise Guidelines (BPGs)	The BPG series refers to publications by the then Department of Water Affairs and Forestry (DWAF), now the DWS, providing best practice principles and guidelines relevant to certain aspects of water management.	Best practice guidelines relevant to the proposed facility include the following: • BPG H2: Pollution Prevention and Minimisation of Impacts; • BPG G1: Storm Water Management; • BPG G4: Impact Prediction.
Best Practice Guidelines Birds & Solar Energy (2017)	The guidelines recognise the impact that solar energy may have on birds, through for example the alteration of habitat, the displacement of populations from preferred habitat, and collision and burn mortality associated	The guidelines will be used throughout the environmental Scoping and Impact Assessment process.

Applicable Legislation, Policies and Guidelines	Description of Legislation, Policy or Guideline	Relevance to the Proposed Project
	with elements of solar hardware and ancillary infrastructure; and the fact that the nature and implications of these effects are poorly understood.	

5.1 APPLICABLE NATIONAL LEGISLATION

The legal framework within which the proposed PV facility operates is governed by many Acts, Regulations, Standards and Guidelines on an international, national, provincial and local level. Legislation applicable to the project includes (but is not limited to) those discussed below.

5.1.1 THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT (NEMA)

The main aim of the National Environmental Management Act, 1998 (Act 107 of 1998 – NEMA) is to provide for co-operative governance by establishing decision-making principles on matters affecting the environment. In terms of the NEMA EIA Regulations, the applicant is required to appoint an EAP to undertake the EIA process, as well as conduct the public participation process towards an application for EA. In South Africa, EIAs became a legal requirement in 1997 with the promulgation of regulations under the Environment Conservation Act (ECA). Subsequently, NEMA was passed in 1998. Section 24(2) of NEMA empowers the Minister and any MEC, with the concurrence of the Minister, to identify activities which must be considered, investigated, assessed and reported on to the competent authority responsible for granting the relevant EA. On 21 April 2006, the Minister of Environmental Affairs and Tourism (now DFFE) promulgated regulations in terms of Chapter 5 of the NEMA. These regulations, in terms of the NEMA, were amended in June 2010 and again in December 2014 as well as April 2017 and June 2021. The 2014 NEMA EIA Regulations (as amended) are applicable to this project.

The objective of the EIA Regulations is to establish the procedures that must be followed in the consideration, investigation, assessment and reporting of the listed activities that have been identified to be triggered by the proposed development. The purpose of these procedures is to provide the competent authority with adequate information to make decisions which ensure that activities which may impact negatively on the environment to an unacceptable degree are not authorised, and that activities which are authorised are undertaken in such a manner that the environmental impacts are managed to acceptable levels.

In accordance with the provisions of Sections 24(5) and Section 44 of the NEMA the Minister has published Regulations (GN R. 982) pertaining to the required process for conducting EIAs in order to apply for, and be considered for, the issuing of an EA. These EIA Regulations provide a detailed description of the EIA process to be followed when applying for EA for any listed activity. The Regulations differentiate between a simpler Basic Assessment (BA) Process (required for activities listed in GN R. 983 and GN R. 985) and a more complete EIA process (activities listed in GN R. 984). In the case of the proposed PV facility, there are activities triggered under GN R. 984 and as such a full EIA process is necessary. Table 5 presents all the anticipated listed activities under the NEMA 2014 EIA Regulations (as amended) that are applicable to this project.

Table 5: Listed activities in terms of the NEMA EIA Regulations (2014) as amended

Notice	Activity Number and Activity Description	Description
Listing Notice 2 (GN327): Activity 15	The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for- (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	Vegetation will need to be cleared at the footprint for the PV panels and associated infrastructure. Over 20ha of indigenous vegetation may need to be cleared.

Notice	Activity Number and Activity Description	Description
Listing Notice 2 (GN327): Activity 1	The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more, excluding where such development of facilities or infrastructure is for photovoltaic installations and occurs- (a) within an urban area; or (b) on existing infrastructure	The PV facility will generate up to 25 MW of electricity for use at the mine. The PV facility is not located in an urban area or on existing infrastructure.
Listing Notice 3 (GN324): Activity 12	The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan in: h. Northwest iv. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority.	Vegetation will need to be cleared at the footprint for the PV panels and associated infrastructure. The proposed facility is located within a CBA 2 area.
Listing Notice 3 (GN985): Activity 18	The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre. h. North West v. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority.	Existing roads within the mine may be extended or widened to serve as access roads for the PV facility. The proposed facility is located within a CBA 2 area.

An environmental Scoping and Impact Assessment process is reserved for activities which have the potential to result in significant impacts which are complex to assess. Scoping and Impact Assessment studies accordingly provide a mechanism for the comprehensive assessment of activities that are likely to have more significant environmental impacts. Figure 4 below provides a graphic representation of all the components of a full EIA process.

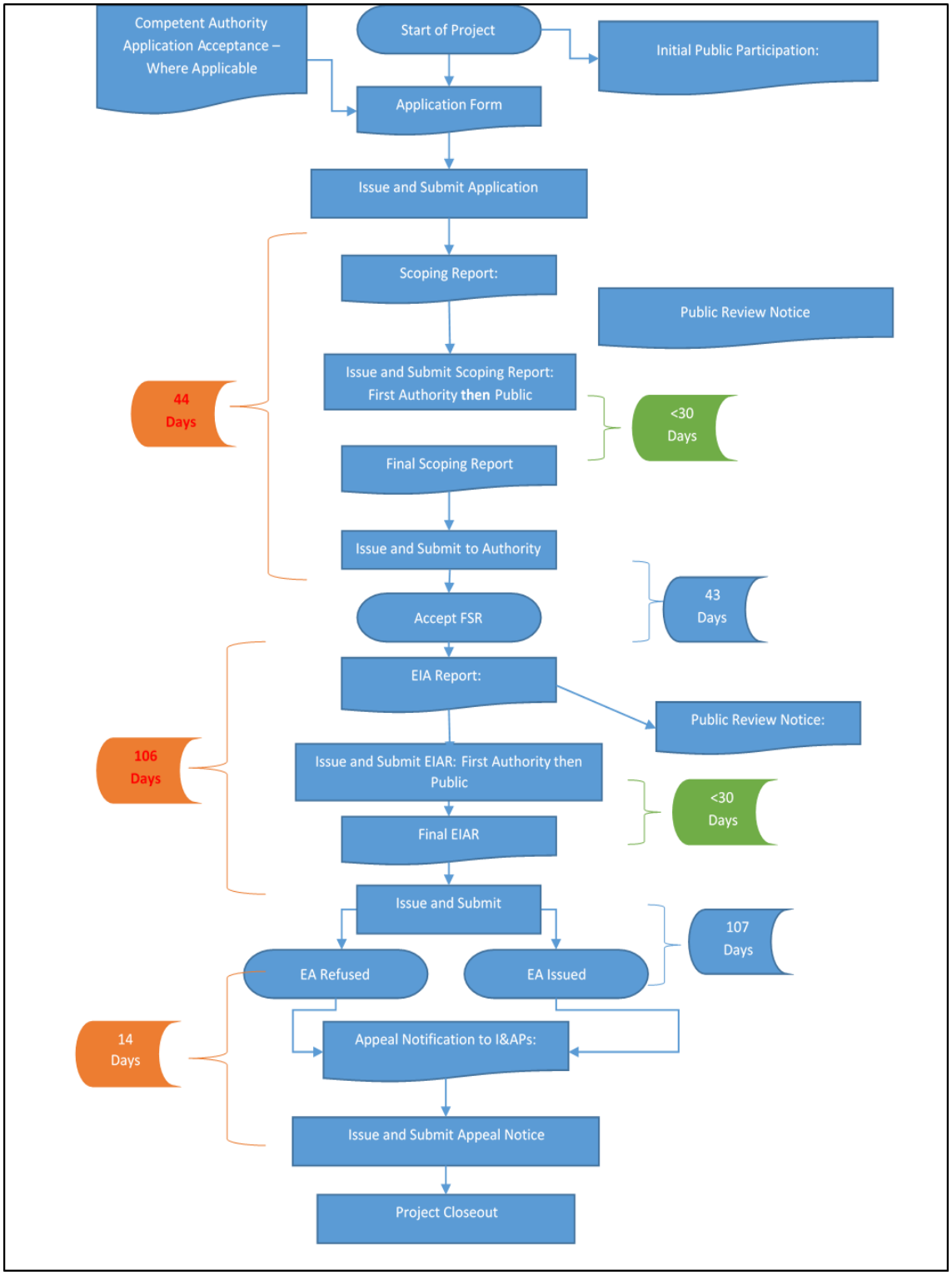


Figure 4: EIA process diagram

5.1.2 THE NATIONAL WATER ACT (NWA)

The National Water Act, 1998 (Act 36 of 1998 – NWA) makes provision for two types of applications for water use licences, namely individual applications and compulsory applications. The NWA also provides that the responsible authority may require an assessment by the applicant of the likely effect of the proposed licence on the resource quality, and that such assessment be subject to the NEMA EIA Regulations. A person may use water if the use is:

- Permissible as a continuation of an existing lawful water use (ELWU);
- Permissible in terms of a general authorisation (GA);
- Permissible under Schedule 1; or
- Authorised by a licence.

These water use processes are described in Figure 5 below.

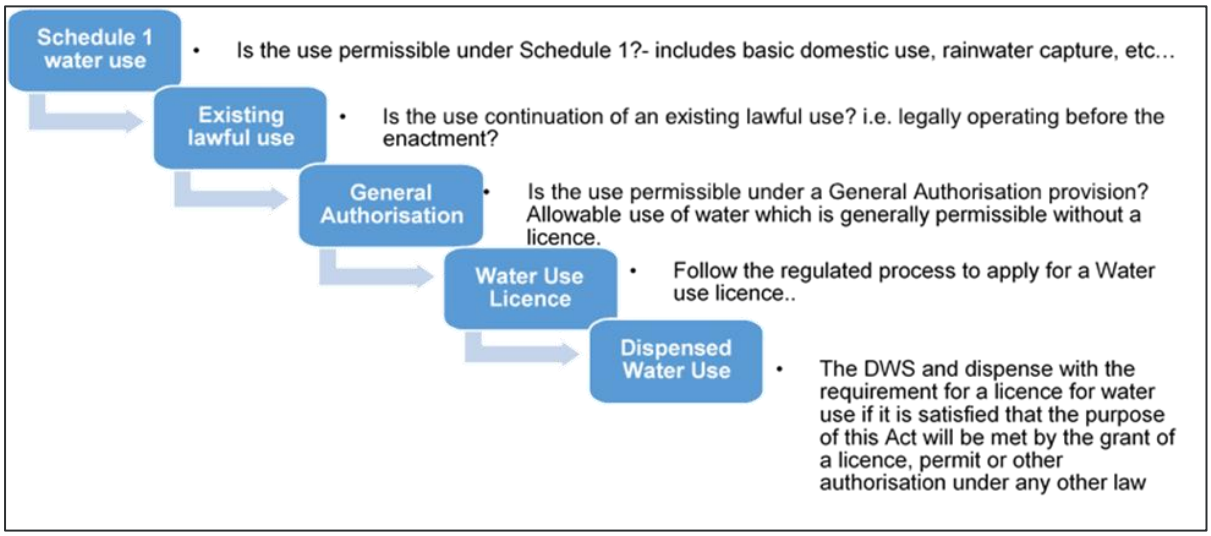


Figure 5: Authorisation processes for new water uses

The NWA defines 11 water uses. A water use may only be undertaken if authorised by the DWS. Water users are required to register certain water uses that took place on the date of registration, irrespective of whether the use was lawful or not. The water uses for which an authorisation or licence can be issued include:

a) Taking water from a water resource;

b) Storing water;

c) Impeding or diverting the flow of water in a watercourse;

d) Engaging in a stream flow reduction activity contemplated in section 36;

e) Engaging in a controlled activity identified as such in section 37(1) or declared under section 38(1);

f) Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduits;

g) Disposing of waste in a manner which may detrimentally impact on a water resource;

h) Disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process;

i) Altering the bed, banks, course or characteristics of a watercourse;

j) Removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and

k) Using water for recreational purposes.

At this stage no water use authorisation is expected to be required based on the distance of the project sites from watercourses and wetlands.

5.1.3 THE NATIONAL ENVIRONMENTAL MANAGEMENT WASTE ACT (NEMWA)

The applicable waste act is no. 59 of 2008: National Environmental Management: Waste Act, 2008 (NEM:WA). On 2 June 2014, the National Environmental Management: Waste Amendment Act came into force.

Section 16 of the NEMWA must be considered which states as follows:

1. A holder of waste must, within the holder's power, take all reasonable measures to-

    a) "*Avoid the generation of waste and where such generation cannot be avoided, to minimise the toxicity and amounts of waste that are generated;*

    b) Reduce, re-use, recycle and recover waste;

    c) Where waste must be disposed of, ensure that the waste is treated and disposed of in an environmentally sound manner;

    d) Manage the waste in such a manner that it does not endanger health or the environment or cause a nuisance through noise, odour, or visual impacts;

    e) Prevent any employee or any person under his or her supervision from contravening the Act; and

    f) *Prevent the waste from being used for unauthorised purposes.*"

Waste can be defined as either hazardous or general in accordance with Schedule 3 of the NEMWA (2014) as amended. "Schedule 3: Defined Wastes" has been broken down into two categories – Category A being hazardous waste; and Category B being general waste. Furthermore, the NEMWA provides for specific waste management measures to be implemented, as well as providing for the licensing and control of waste management activities. For this project based on the current proposed infrastructure, no Waste Management License is expected to be required. General waste handling, storage and disposal will be required during construction and operation. The National Norms and Standards for the Storage of Waste (GNR 926) published under Section 7(1)(c) of NEM:WA will need to be considered in this regard. The general principles of responsible waste management listed above will be incorporated into the requirements in the EMPr to be implemented for this project.

5.1.4 NATIONAL ENVIRONMENTAL MANAGEMENT BIODIVERSITY ACT (NEMBA)

The National Environmental Management Biodiversity Act (Act No. 10 of 2004 – NEMBA) provides for the management and conservation of South Africa's biodiversity within the framework of the NEMA as well as the protection of species and ecosystems that warrant national protection. Within the framework of this act, various regulations are promulgated which provide specific requirements and management measures relating to protecting threatened ecosystems, threatened or protected species as well as the control of alien and invasive species. A summary of these regulations is presented below.

5.1.4.1 NATIONAL LIST OF ECOSYSTEMS THAT ARE THREATENED AND NEED OF PROTECTION (GN 1002 OF 2011)

The NEMBA provides for listing of threatened or protected ecosystems in one of the following categories:

- Critically Endangered (CR) ecosystems, being ecosystems that have undergone severe degradation of ecological structure, function or composition as a result of human intervention and are subject to an extremely high risk of irreversible transformation;

- Endangered (EN) ecosystems, being ecosystems that have undergone degradation of ecological structure, function or composition as a result of human intervention, although they are not critically endangered ecosystems;

- Vulnerable (VU) ecosystems, being ecosystems that have a high risk of undergoing significant degradation of ecological structure, function or composition as a result of human intervention, although they are not critically endangered ecosystems or endangered ecosystems; and
- Protected ecosystems, being ecosystems that are of high conservation value or of high national or provincial importance, although they are not listed as critically endangered, endangered or vulnerable.

The Biodiversity Specialist will assess whether any of these threatened or protected ecosystems occur within the study area and provided recommendations on how the development should or should not proceed based on the findings of the assessment in the EIA phase. Permits for protected species under the NEMBA may also be required.

5.1.4.2 THREATENED OR PROTECTED SPECIES REGULATIONS (GN R 152 OF 2007)

The purpose of these regulations is to -

(a) further regulate the permit system set out in Chapter 7 of the Biodiversity Act insofar as that system applies to restricted activities involving specimens of listed threatened or protected species;

(b) provide for the registration of captive breeding operations, commercial exhibition facilities, game farms, nurseries, scientific institutions, sanctuaries and rehabilitation facilities and wildlife traders;

(c) provide for the regulation of the carrying out of a specific restricted activity, namely hunting;

(d) provide for the prohibition of specific restricted activities involving specific listed threatened or protected species;

(e) provide for the protection of wild populations of listed threatened species; and

(f) provide for the composition and operating procedure of the Scientific Authority.

5.1.4.3 ALIEN AND INVASIVE SPECIES LIST

This Act is applicable since it protects the quality and quantity of arable land in South Africa. Loss of arable land should be avoided and declared Weeds and Invaders in South Africa are categorised according to one of the following categories, and require control or removal:

- Category 1a Listed Invasive Species: Category 1a Listed Invasive Species are those species listed as such by notice in terms of section 70(1)(a) of the Act as species which must be combated or eradicated;
- Category 1b Listed Invasive Species: Category 1b Listed Invasive Species are those species listed as such by notice in terms of section 70(1)(a) of the Act as species which must be controlled;
- Category 2 Listed Invasive Species: Category 2 Listed Invasive Species are those species listed by notice in terms of section 70(1)(a) of the Act as species which require a permit to carry out a restricted activity within an area specified in the Notice or an area specified in the permit, as the case may be; and
- Category 3 Listed Invasive Species: Category 3 Listed Invasive Species are species that are listed by notice in terms of section 70(1)(a) of the Act, as species which are subject to exemptions in terms of section 71(3) and prohibitions in terms of section 71A of Act, as specified in the Notice.

The provisions of this Act will be considered and where relevant incorporated into the proposed mitigation measures and requirements of the EMPr.

5.1.5 THE NATIONAL ENVIRONMENTAL MANAGEMENT AIR QUALITY ACT (NEMAQA)

The National Environmental Management: Air Quality Act (Act No. 39 of 2004 as amended – NEMAQA) is the main legislative tool for the management of air pollution and related activities. The Object of the Act is:

- To protect the environment by providing reasonable measures for –
    i. the protection and enhancement of the quality of air in the republic;

ii. the prevention of air pollution and ecological degradation; and

iii. securing ecologically sustainable development while promoting justifiable economic and social development; and

iv. Generally, to give effect to Section 24(b) of the constitution in order to enhance the quality of ambient air for the sake of securing an environment that is not harmful to the health and well-being of people.

The NEMAQA mandates the Minister of Environment to publish a list of activities which result in atmospheric emissions and consequently cause significant detrimental effects on the environment, human health and social welfare. All scheduled processes as previously stipulated under the Air Pollution Prevention Act (APPA) are included as listed activities with additional activities being added to the list. The updated Listed Activities and Minimum National Emission Standards were published on the 22nd November 2013 (Government Gazette No. 37054). The activities at the proposed PV facility are not expected to trigger the requirement for an Air Emissions License (AEL) in terms of NEMAQA.

5.1.6 NATIONAL DUST CONTROL REGULATIONS

Dustfall is assessed for nuisance impact and not for inhalation health impact. The National Dust Control Regulations (Department of Environmental Affairs, 2013) prescribes measures for the control of dust in residential and non-residential areas. Acceptable dustfall rates are measured (using American Standard Testing Methodology (ASTM) D1739:1970 or equivalent) at and beyond the boundary of the premises where dust originates. In addition to the dustfall limits, the National Dust Control Regulations prescribe monitoring procedures and reporting requirements. Dust will be generated during construction and will be managed in accordance with these Regulations.

5.1.7 NOISE CONTROL REGULATIONS

In terms of section 25 of the ECA, the National Noise Control Regulations (GN R. 154 – NCRs) published in Government Gazette No. 13717 dated 10 January 1992, were promulgated. The NCRs were revised under GN R. 55 of 14 January 1994 to make it obligatory for all authorities to apply the regulations.

The NCRs will need to be considered in relation to the potential noise that may be generated mainly during the construction and decommissioning phases of the proposed project. The two key aspects of the NCRs relate to disturbing noise and noise nuisance.

Section 4 of the Regulations prohibits a person from making, producing or causing a disturbing noise, or allowing it to be made produced or caused by any person, machine, device or apparatus or any combination thereof. A disturbing noise is defined in the Regulations as "*a noise level which exceeds the zone sound level or if no zone sound level has been designated, a noise level which exceeds the ambient sound level at the same measuring point by 7 dBA or more*."

Section 5 of the NCRs in essence prohibits the creation of a noise nuisance. A noise nuisance is defined as "*any sound which disturbs or impairs or may disturb or impair the convenience or peace of any person.*" Noise nuisance is not anticipated as the proposed PV facility will not generate noise apart from some limited noise during construction activities.

5.1.8 ENVIRONMENT CONSERVATION ACT (ECA)

The Environment Conservation Act (Act 73 of 1989 – ECA) was, prior to the promulgation of the NEMA, the backbone of environmental legislation in South Africa. To date the majority of the ECA has been repealed by various other Acts, however Section 25 of the Act and the Noise Regulations (GN R. 154 of 1992) promulgated under this section are still in effect. These Regulations serve to control noise and general prohibitions relating to noise impact and nuisance. Section 05 of CARA provides for the prohibition of the spreading of weeds. Regulation 15 of GN R1048 published under CARA provides for the classification of categories of weeds and invader plants, and restrictions in terms of where these species may occur. Regulation 15E of GN R1048

published under CARA provides requirement and methods to implement control measures for different categories of alien and invasive plant species.

5.1.9 NATIONAL HERITAGE RESOURCES ACT (NHRA)

The NHRA aims to promote good management of cultural heritage resources and encourages the nurturing and conservation of cultural legacy so that it may be bestowed to future generations.

5.1.10 NATIONAL VELD AND FOREST FIRE ACT

While no permitting or licensing requirements arise from this legislation, this Act will be applicable during the construction and operation of the Solar PV Facility, in terms of the preparation and maintenance of firebreaks, and the need to provide appropriate equipment and trained personnel for firefighting purposes.

5.1.11 NATIONAL FORESTS ACT (NFA)

A licence is required for the removal of protected trees in terms of the NFA, (Act 84 of 1998). It is therefore necessary to conduct a survey that will determine the number and relevant details pertaining to protected tree species present in the development footprint for the submission of relevant permits to authorities prior to the disturbance of these individuals.

5.1.12 THE ELECTRICITY REGULATION ACT

The Electricity Regulation Act (Act 4 of 2006) establishes a national regulatory framework for the electricity supply industries and introduces the National Energy Regulator as the custodian and enforcer of the National Electricity Regulation Framework. The Act also provides for licenses and registration in this regard.

5.1.13 OTHER POTENTIALLY APPLICABLE NATIONAL ACTS, PLANS AND GUIDELINES

The purpose of the National Energy Act (No. 34 of 2008) is to ensure that diverse energy resources are available, in sustainable quantities and at affordable prices, to the South African economy in support of economic growth and poverty alleviation, while taking environmental management requirements into account. The National Energy Act will not find significant application during the course of the EIA for the PV facility since all the electricity generated from the facility will be used at the mine the project will be excluded from energy planning in the country.

Similarly the Integrated Resource Plan for Electricity (IRP) 2010-2030 (2019) is not considered applicable to this project as the electricity generated will not go into the national grid but will be used at the mine.

The White Paper on Renewable Energy Policy supplements Government's predominant policy on energy as set out in the White Paper on the Energy Policy of the Republic of South Africa (DME, 1998). The policy recognises the potential of renewable energy and aims to create the necessary conditions for the development and commercial implementation of RE technologies.

5.2 RENEWABLE ENERGY DEVELOPMENT ZONES (REDZ)

Government Notice No. 114 in Government Gazette No. 41445 of 2018 identified 8 renewable energy development zones important for the development of large-scale wind and solar photovoltaic facilities. The Government Notice included procedure to be followed when applying for environmental authorisation for large scale wind and solar photovoltaic energy facilities when occurring in these REDZs. The sites proposed for the Rhovan PV facility fall outside of the REDZ zones and therefore the REDZ will not be applicable for the PV facility project.

5.3 CLIMATE CHANGE BILL, 2018

On 08 June 2018, the Minister of Environmental Affairs published the Climate Change Bill ("the Bill") for public comment. The Bill provides a framework for climate change regulation in South Africa aimed at governing South Africa's sustainable transition to a climate resilient, low carbon economy and society. The Bill provides a procedural outline that will be developed through the creation of frameworks and plans. The PV facility

proposed consists of a renewable energy generation facility and would not result in the generation or release of emissions during its operation.

5.4 BEST PRACTICE GUIDELINES BIRDS & SOLAR ENERGY, 2017

The Best Practice Guidelines Birds & Solar Energy (2017) proposed by the Birds and Renewable Energy Specialist Group contain guidelines for assessing and monitoring the impact of solar generation facilities on birds in Southern Africa. The guidelines recognise the impact that solar energy may have on birds, through for example the alteration of habitat, the displacement of populations from preferred habitat, and collision and burn mortality associated with elements of solar hardware and ancillary infrastructure; and the fact that the nature and implications of these effects are poorly understood.

The guidelines are aimed at Environmental Assessment Practitioners (EAPs), avifaunal specialists, developers and regulators and propose a tiered assessment process, including:

- Preliminary avifaunal assessment – an initial assessment of the likely avifauna in the area and possible impacts, preferably informed by a brief site visit and by collation of available data; also including the design of a site-specific survey and monitoring project should this be deemed necessary.
- Data collection – further accumulation and consolidation of the relevant avian data, possibly including the execution of baseline data collection work (as specified by the preliminary assessment), intended to inform the avian impact study.
- Impact assessment – a full assessment of the likely impacts and available mitigation options, based on the results of systematic and quantified monitoring if this was deemed a requisite at preliminary assessment.
- Monitoring – repetition of baseline data collection, plus the collection of mortality data. This helps to develop a complete before and after picture of impacts, and to determine if proposed mitigation measures are implemented and are effective or require further refinement. Monitoring may only be necessary for projects with the potential for significant negative impacts on birds (i.e. large area affected and / or vulnerable species present).

In terms of the guidelines the quantity and quality of baseline data required to inform the assessment process at each site should be set in terms of the size of the site and the predicted impacts of the solar technology in question, the anticipated sensitivity of the local avifauna (for example, the diversity and relative abundance of priority species present, proximity to important flyways, wetlands or other focal sites) and the amount of existing data available for the area.

5.5 LOCAL AND PROVINCIAL PLANNING TOOLS

According to Section 3.4.2 of the 2021 - 2022 IDP for the Rustenburg Local Municipality, Local Economic Development (LED) promotes and facilitates industrial development, enterprise development, skills development, economic transformation and poverty alleviation directed at five (5) focus areas:

- Enterprise Development;
- Rural Development;
- Economic Skills and Capacity Development;
- Industrial Development and Investment Facilitation; and
- Knowledge Management.

The municipality has identified renewable energy generation (particularly solar technologies) as potential opportunities in the utilities sector for the LED. Therefore solar development is supported in terms of the municipality's current local planning tools.

According to the latest Spatial Development Framework for the RLM (Rustenburg Local Municipality Spatial Development Framework (SDF) and Human Settlement Housing Sector Plan project, 2018 prepared by SMEC)

the safeguarding of existing resources and creating opportunities for renewable energy development have been identified as strategies to achieve high growth.

In addition, the generation of renewable energy is supported at a provincial level. The North West Provincial Development Plan (PDP) is predominantly based on the National Development Plan (NDP) and attempts to align with the vision, objectives and priorities of a united South Africa by 2030. Provincial Priority Area 2 (economic infrastructure) aims to expand renewable energy with special reference to solar power (solar power heaters and solar photovoltaic technologies) This is in line with the NDP which aims to increase employment and growth through the use of renewable electricity.

5.6 PERIOD FOR WHICH AUTHORIZATION IS REQUIRED

The authorisation will be required for the duration of the activities on-site. Construction is expected to commence within 5 years of the EA being granted.

6 NEED AND DESIRABILITY OF THE PROPOSED PROJECT

This section will examine the need and desirability of the proposed PV facility project.

6.1 PV FACILITY PROJECT BENEFITS

The proposed PV facility will allow for favourable economic impacts on the local economy. 35 job opportunities will be created during construction (excluding indirect opportunities). Around 15 unskilled opportunities will be created in the operational phase with 5 skilled employees to be recruited.

The main aim of the proposed PV facility is to enable the applicant to provide electricity for their own use at the mine as well as allowing them to reduce their relative carbon footprint. Based on the analysis provided, it can be concluded that the proposed PV facility is in accordance with national energy planning policy with respect to renewable energy which has links to climate change, environmental impact and energy security/flexibility considerations. Moreover the concept of a solar energy project is broadly supported in local economic planning documents. Considered as a whole, the IDP and SDF recognise the importance of integrated and diversified development. The concept of a solar energy project is thus broadly supported.

Current energy supply in South Africa is primarily coal-based and, although these resources will last for more than a century if used at current rates, large power plants will need to be replaced over the next 30 years. Coal and other fossil fuels, including oil, produce Carbon Dioxide when burned to produce energy. It is now widely accepted that climate change, partially caused by human-generated Carbon Dioxide, is to blame for the higher-than-usual incidence of extremely damaging weather experiences (e.g. storms, droughts, melting polar ice-caps). Local air pollution is strongly related to energy supply options, with coal and oil products being major contributors to urban and rural air pollution. One of the primary reasons for promoting renewable energy developments is the desire to make South Africa compliant with international treaties regarding climate-change effects. Renewable energy options are a sustainable energy supply option that can significantly reduce reliance on fossil fuels. Other advantages include employment creation, proximity to point-of-use, minimal demand for water and less reliance on concentrated sources of energy. Greater use of renewable energy would also reduce South Africa's economic vulnerability to the variable costs of imported fuels. International and local communities are increasingly trying to find ways to shift economies towards greater reliance on renewable energy. Greater uptake of renewable energy would furthermore reduce the global risk of climate change, one of the factors taken into account in designing the conservation network in South Africa.

6.2 NEED AND DESIRABILITY ANALYSIS

The needs and desirability analysis component of the "*Guideline on need and desirability in terms of the Environmental Impact EIA Regulations (Notice 819 of 2014*)" includes, but is not limited to, describing the linkages and dependencies between human well-being, livelihoods and ecosystem services applicable to the area in question, and how the proposed development's ecological impacts will result in socio-economic impacts (e.g. on livelihoods, loss of heritage sites, opportunity costs, etc.). Table 6 below presents the needs and desirability analysis undertaken for the proposed project.

Table 6: Needs and desirability analysis for the proposed PV Facility

Ref No.	Question	Answer
1	**Securing ecological sustainable development and use of natural resources**	
1.1	How were the ecological integrity considerations taken into account in terms of: Threatened Ecosystems, Sensitive and vulnerable ecosystems, Critical Biodiversity Areas, Ecological Support Systems, Conservation Targets, Ecological drivers of the ecosystem, Environmental Management Framework, Spatial Development Framework (SDF) and global and international responsibilities.	After running the DFFE screening tool, specialist studies that were identified included: • Terrestrial Biodiversity Impact Assessment After further desktop analysis of the proposed project area, as well

Ref No.	Question	Answer
		as a site visit, a terrestrial and a biodiversity assessment as well as an avifaunal and heritage assessment were considered necessary. The proposed development aligns with the Rustenburg Local Municipality (RLM) Spatial Development Framework (SDF) and Integrated Development Plan (IDP) which both aim to build growth within the municipality through renewable infrastructure and projects. The project impacts were assessed according to the EIMS pre-defined impact significance rating methodology (Section 10). Detailed specialist studies (terrestrial and a biodiversity assessment as well as an avifaunal and heritage assessment) have been undertaken in the EIA phase. The conclusions of these studies, the identified impacts and associated mitigation measures have been further assessed in the EIA phase and the results thereof included in this EIA Report and accompanying EMPr. Any potential benefits and motivation for the proposed project is presented in this section.
1.2	How will this project disturb or enhance ecosystems and / or result in the loss or protection of biological diversity? What measures were explored to avoid these negative impacts, and where these negative impacts could not be avoided altogether, what measures were explored to minimise and remedy the impacts? What measures were explored to enhance positive impacts?	Refer to baseline ecological information in Section 9, and the impact assessment and mitigation measures in Section 10 of this EIA Report. Efforts will be made to avoid the identified impacts/ disturbance to sensitive environmental constraints where possible. In summary, this development will take place in a previously area disturbed and largely characterised by mining activities, providing supporting infrastructure to the mining environment in the form of renewable energy, influencing the

Ref No.	Question	Answer
		overall carbon footprint of the activities positively. The implementation of the EMPr will ensure that negative impacts are avoided, managed, and mitigated as far as possible, as well as ensure that the positive impacts are enhanced as far as possible.
1.3	How will this development pollute and / or degrade the biophysical environment? What measures were explored to either avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy the impacts? What measures were explored to enhance positive impacts?	Refer to the alternatives considered for this project in Section 7, the baseline ecological information in Section 9, and the impact assessment and mitigation measures in Section 10 of this EIA Report. The implementation of the EMPr will ensure that negative impacts are avoided, managed, and mitigated as far as possible, as well as ensure that the positive impacts are enhanced as far as possible.
1.4	What waste will be generated by this development? What measures were explored to avoid waste, and where waste could not be avoided altogether, what measures were explored to minimise, reuse and / or recycle the waste? What measures have been explored to safely treat and/or dispose of unavoidable waste?	See Section 7 for alternatives considered. No significant amount of waste will be generated from the construction and operation of the PV facility. It is anticipated that waste generated during the construction phase will be mainly packaging, general construction rubble and domestic waste; however, the waste generated during operational phase will mainly be in the form of domestic waste. Detailed mitigation measures in relation to waste management have been included in the EMPr.
1.5	How will this project disturb or enhance landscapes and / or sites that constitute the nation's cultural heritage? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy the impacts? What measures were explored to enhance positive impacts?	According to the PalaeoMap of SAHRIS the Palaeontological Sensitivity of the proposed area of the project footprint occurs in an area with insignificant palaeo-sensitivity. In addition no deep drilling or excavations will be required for construction of the PV facility. Should any paleontological resources or possible burials be identified during the course of construction activities, work must cease in the immediate vicinity of the find, and SAHRA must be

Ref No.	Question	Answer
		contacted regarding an appropriate way forward. An updated HIA was undertaken for the proposed PV facility sites and three sites (RPVF-01 – 03) containing archaeological resources were identified during the fieldwork. Due to other similar structures in the Rhovan mine area, these three sites have medium heritage significance and are provisionally graded as 3B. The three sites are situated within the footprint area of site alternative 1. Mitigation measures for managing the impacts on these heritage resources have been included in the EMPr as suggested by the Heritage Specialist. The implementation of these EMPr mitigation measures will ensure the effective management of the impacts on the heritage resources.
1.6	How will this project use and / or impact on non-renewable natural resources? What measures were explored to ensure responsible and equitable use of the resources? How have the consequences of the depletion of the non-renewable natural resources been considered? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy the impacts? What measures were explored to enhance positive impacts?	It is noted that due to the nature of this project, no non-renewable resources will be depleted, apart from a small amount of water to be used for the cleaning of the panels. The proposed project will contribute to the local economy in a way that satisfies the need for employment creation. The project will also contribute to the environment by providing energy to the mine through alternative cleaner power generation methods utilising renewable resources.
1.7	How will this project use and / or impact on renewable natural resources and the ecosystem of which they are part? Will the use of the resources and / or impacts on the ecosystem jeopardise the integrity of the resource and / or system considering carrying capacity restrictions, limits of acceptable change, and thresholds? What measures were explored to firstly avoid the use of resources, or if avoidance is not possible, to minimise the use of resources? What measures were taken to ensure responsible and equitable use of the resources? What measures were explored to enhance positive impacts?	The project area has been transformed/disturbed from its original state by the surrounding mining land-use and the subsequent disturbance since. The project area has an overall low environmental sensitivity as confirmed by the specialist investigations which have been conducted. Where medium environmental sensitivities were identified, these can be reduced to acceptably low rating through the implementation of the mitigation measures outlined in the EMPr.

Ref No.	Question	Answer
		The main positive impacts are the impacts on related to employment during the construction and operation phases as well as the generation of clean renewable energy.
1.7.1	Does the proposed project exacerbate the increased dependency on increased use of resources to maintain economic growth or does it reduce resource dependency (i.e. de-materialised growth)?	The PV facility will reduce dependency on resources as the electricity generated will be used at the mine. This will lower the dependency on the Eskom grid for the mine.
1.7.2	Does the proposed use of natural resources constitute the best use thereof? Is the use justifiable when considering intra- and intergenerational equity, and are there more important priorities for which the resources should be used?	PV panels are used to replace other sources of electricity that usually have a much greater environmental impact. The main component of most PV modules is silicon. This isn't intrinsically harmful, but the manufacturing process does involve toxic chemicals that need to be carefully controlled and regulated to prevent environmental damage. Solar PV panels have a roughly 30-year lifetime. A large stock of raw materials and other valuable components are projected as PV panel wastes on end of life. These wastes may be recycled or used for repurposing solar PV panels.
1.7.3	Do the proposed location, type and scale of development promote a reduced dependency on resources?	PV panels are used to replace other sources of electricity that usually have a much greater environmental impact. It will reduce dependency on the Eskom grid and serve to provide the mine with electricity.
1.8	**How were a risk-averse and cautious approach applied in terms of ecological impacts**	
1.8.1	What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?	Detailed terrestrial, avifauna and heritage assessment were undertaken during the EIA phase of this project. Refer to Section 13 for the discussion of assumptions, limitation and uncertainties. It is unlikely that any gaps/limitations/assumptions will result in a large increase in the risk.

Ref No.	Question	Answer
1.8.2	What is the level of risk associated with the limits of current knowledge?	The level of risk is low due to the location of the proposed project, within the mine.
1.8.3	Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?	Sufficient information was gathered prior to the onset of this process to indicate that positive impacts will outweigh low risk for the proposed project. The proposed project will positively influence the local economy through job creation.
1.9	**How will the ecological impacts resulting from this development impact on people's environmental right in terms following?**	
1.9.1	Negative impacts: e.g. access to resources, opportunity costs, loss of amenity (e.g. open space), air and water quality impacts, nuisance (noise, odour, etc.), health impacts, visual impacts, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?	Refer to the identified impacts, their assessment and recommended mitigation measures in Section 10 of this EIA Report. Detailed specialist studies were undertaken to investigate the impacts of the Solar PV plant on the environmental rights of the community. In summary, due to the nature of the proposed project it should not negatively affect amenity, water quality, cause nuisance or have significant negative environmental impacts as per Section 10 of this report. The implementation of the EMPr will assist in minimising or managing any impacts as far as possible. The development of a renewable (solar) energy plant will also contribute to energy generation through clean renewable energy source and thus reduction of dependency on the Eskom grid.
1.9.2	Positive impacts: e.g. improved access to resources, improved amenity, improved air or water quality, etc. What measures were taken to enhance positive impacts?	Refer to the identified impacts, their assessment and recommended mitigation measures in Section 10 of this EIA Report. The main positive impacts will be to the local economy as a result of job creation as well as the generation of clean renewable energy. The implementation of the EMPr will

Ref No.	Question	Answer
		assist in enhancing the positive impacts of the proposed project.
1.10	Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts (e.g. on livelihoods, loss of heritage site, opportunity costs, etc.)?	Refer to baseline ecological information in Section 9, and the impact assessment and mitigation measures in Section 10 of this EIA Report. The proposed project is expected to have a minimal negative effect on human wellbeing and livelihoods. No eco-system services or ecological services are to be significantly impacted on in the area surrounding the proposed facility based on the terrestrial biodiversity assessment conducted for the project.
1.11	Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives / targets / considerations of the area?	Refer to the identified impacts, their assessment and recommended mitigation measures in Section 10 of this EIA Report. Due to its nature, is anticipated that the proposed project will have limited negative as well as some positive impacts on the environment as a whole. Limited negative impacts on the ecological integrity is expected as a result of the establishment of the solar PV plant specifically on site alternative 1. Positive impacts will result from the development's potential contribution to job creation and energy generation through clean renewable energy source and thus reduction of dependency on the Eskom grid.
1.12	Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the "best practicable environmental option" in terms of ecological considerations?	Refer to Section 7 for details of the alternatives considered, as well as this section of the EIA Report for the advantages and disadvantages of the proposed activity.
1.13	Describe the positive and negative cumulative ecological / biophysical impacts bearing in mind the size, scale,	Refer to the identified impacts, their assessment and recommended mitigation

Ref No.	Question	Answer
	scope and nature of the project in relation to its location and existing and other planned developments in the area?	measures in Section 10 of this EIA Report. Positive impacts identified include: • Limited potential contribution to renewable energy goals and GHG reduction; • Limited job creation potential; and • Increase in energy generation from clean renewable sources and reduction in dependency on the Eskom grid. Negative impacts identified include: • Loss of indigenous vegetation from the site alternative 1 area; • Proliferation of alien invasive vegetation; and • The project may result in a disruption of the current open space corridor used by the species that occur on the site as well as the surrounding properties.
2	**Promoting justifiable economic and social development**	
2.1	**What is the socio-economic context of the area, based on, amongst other considerations, the following?**	
2.1.1	The IDP (and its sector plans' vision, objectives, strategies, indicators and targets) and any other strategic plans, frameworks or policies applicable to the area.	The municipality has identified renewable energy generation (particularly solar technologies) as potential opportunities in the utilities sector for the LED in the 2021-2022 IDP. Therefore solar development is supported in terms of the municipality's current local planning tools.
2.1.2	Spatial priorities and desired spatial patterns (e.g. need for integrated of segregated communities, need to upgrade informal settlements, need for densification, etc.),	According to the latest Spatial Development Framework for the RLM the safeguarding of existing resources and creating opportunities for renewable energy development have been identified as strategies to achieve high growth in the municipality.
2.1.3	Spatial characteristics (e.g. existing land uses, planned land uses, cultural landscapes, etc.), and	The preferred location for the facility is within the mine area and is surrounded by existing mine

Ref No.	Question	Answer
		infrastructure. The proposed project aligns with the surrounding land uses as it falls within the mine area and the electricity generated will be used at the mine.
2.1.4	Municipal Economic Development Strategy ("LED Strategy").	The municipality has identified renewable energy generation (particularly solar technologies) as potential opportunities in the utilities sector for the LED in the 2021-2022 IDP. The proposed PV facility will create job opportunities for the local community as far as reasonably possible.
2.2	Considering the socio-economic context, what will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area?	Job creation for local residents as far as reasonably possible. Most of the unskilled job opportunities will be during the construction phase of the project. Refer to the identified impacts, their assessment and recommended mitigation measures in Section 10 of this EIA Report.
2.2.1	Will the development complement the local socio-economic initiatives (such as local economic development (LED) initiatives), or skills development programs?	The proposed development aligns and compliments the LM KPI4: local economic to help create job opportunities for local contractors and SMMEs.
2.3	How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?	Refer to the public participation process undertaken to date in Section 8 of this EIA Report Public participation and consultation will continue during the EIA phase as previously described in the accepted Scoping Report. Furthermore, refer to the identified impacts, their assessment and recommended mitigation measures in Section 10 of this EIA Report. The EIA phase included a suite of detailed specialist assessments. These were undertaken to assist in quantifying the impact of the project on the environment surrounding the development. It has been concluded that, due to the scale and nature of the

Ref No.	Question	Answer
		proposed development, the contribution towards addressing specific needs and interests of the local communities will be limited and temporary.
2.4	Will the development result in equitable (intra- and inter-generational) impact distribution, in the short- and long-term? Will the impact be socially and economically sustainable in the short- and long-term?	The proposed facility will create some job opportunities. The facility will be required as long as mining continues as is therefore considered sustainable.
2.5	**In terms of location, describe how the placement of the proposed development will:**	
2.5.1	Result in the creation of residential and employment opportunities in close proximity to or integrated with each other.	The proposed project location is close to several towns and residential areas and will prioritise job opportunities for the local community as far as reasonably possible.
2.5.2	Reduce the need for transport of people and goods.	The close proximity of the preferred development location to residential areas will reduce the need for transportation of potential local employees. It is expected that transport of goods will mostly be kept locally.
2.5.3	Result in access to public transport or enable non-motorised and pedestrian transport (e.g. will the development result in densification and the achievement of thresholds in terms public transport),	The proposed project will have no significant effect on public transport.
2.5.4	Compliment other uses in the area,	The PV facility is located within the mining area and is expected to compliment the mining land use as the power generated will be used at the mine.
2.5.5	Be in line with the planning for the area.	Refer to item 2.1.2 of this table (above).
2.5.6	For urban related development, make use of underutilised land available with the urban edge.	Not applicable. The proposed PV facility will be situated outside an urban area.
2.5.7	Optimise the use of existing resources and infrastructure.	Site Alternative S2 is located on top of an existing TSF. At site S1, no existing infrastructure exists on the proposed site location which can be used for the PV facility.
2.5.8	Opportunity costs in terms of bulk infrastructure expansions in non-priority areas (e.g. not aligned with the bulk infrastructure planning for the settlement that	Refer to Section 4 of this EIA Report.

Ref No.	Question	Answer
	reflects the spatial reconstruction priorities of the settlement).	
2.5.9	Discourage "urban sprawl" and contribute to compaction / densification.	The size of the proposed development is small in scale and as such urban sprawl is not expected because of the development. The town of Bethanie is located in close proximity to the site for the PV facility and employment from these surrounding communities is recommended where possible.
2.5.10	Contribute to the correction of the historically distorted spatial patterns of settlements and to the optimum use of existing infrastructure in excess of current needs.	Refer to items 2.5.7 to 2.5.9 of this table (above).
2.5.11	Encourage environmentally sustainable land development practices and processes.	Effort will be made towards being environmentally sustainable in the long term.
2.5.12	Consider special locational factors that might favour the specific location (e.g. the location of a strategic mineral resource, access to the port, access to rail, etc.).	See item 1.7.3 of this table (above).
2.5.13	The investment in the settlement or area in question will generate the highest socio-economic returns (i.e. an area with high economic potential).	The proposed project will allow for contribution to the local, regional and national Gross Domestic Product (GDPs), and also to the local communities through employment of workers and local contractors.
2.5.14	Impact on the sense of history, sense of place and heritage of the area and the socio-cultural and cultural-historic characteristics and sensitivities of the area.	An HIA was conducted in 2013. No heritage resources were identified on site.
2.5.15	In terms of the nature, scale and location of the development promote or act as a catalyst to create a more integrated settlement?	The proposed project will contribute to other infrastructure projects in the area, specifically other infrastructure at the mine itself.
2.6	**How was a risk-averse and cautious approach applied in terms of socio-economic impacts**	
2.6.1	What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?	Refer to Section 13 of this report.
2.6.2	What is the level of risk (note: related to inequality, social fabric, livelihoods, vulnerable communities, critical resources, economic vulnerability and sustainability) associated with the limits of current knowledge?	The level of risk is low as the project is not expected to have far reaching negative impacts on socio-economic conditions should the recommended mitigation and management measures be implemented and adhered to.

Ref No.	Question	Answer
2.6.3	Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?	As the proposed project is a new development a cautious approach has been applied. An extensive public participation process was undertaken in the Scoping phase and continues during the EIA phase to ensure that the local community and relevant authorities were notified of the proposed project.
2.7	**How will the socio-economic impacts resulting from this development, impact on people's environmental right in terms following:**	
2.7.1	Negative impacts: e.g. health (e.g. HIV-Aids), safety, social ills, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?	Refer to the identified impacts, their assessment and recommended mitigation measures in Section 10 of this EIA Report. The proposed project will have minimal positive socio-economic impacts due to the scale and nature of the project. The project will lead to limited job opportunities for the local communities. The negative impacts may include dust and noise generation which may lead to nuisance for the surrounding communities. However, these negative impacts will be minimal and limited to the construction phase. The implementation of the EMPr will however ensure that negative impacts are avoided, managed and mitigated as far as possible.
2.7.2	Positive impacts. What measures were taken to enhance positive impacts?	Refer to the identified impacts, their assessment and recommended mitigation measures in Section 10 of this EIA Report.
2.8	Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socioeconomic impacts will result in ecological impacts (e.g. over utilisation of natural resources, etc.)?	Refer to the identified impacts, their assessment and recommended mitigation measures in Section 10 of this EIA Report. The proposed development will have a minimal impact on human-wellbeing and ecosystem services due to the location. Human livelihoods will however be positively impacted because of

Ref No.	Question	Answer
		employment opportunities. No indirect ecological impacts are expected as a result of socio-economic impacts, there will be some direct ecological impacts. These impacts will be lowered if the proposed mitigation measures are carried out.
2.9	What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?	Refer to the identified impacts, their assessment and recommended mitigation measures in Section 10 of this EIA Report. Additionally, see item 2.8 of this table (above).
2.10	What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons (who are the beneficiaries and is the development located appropriately)? Considering the need for social equity and justice, do the alternatives identified, allow the "best practicable environmental option" to be selected, or is there a need for other alternatives to be considered?	Refer to the identified impacts, their assessment and recommended mitigation measures in Section 10 of this EIA Report.. The preferred alternative is considered the best practicable environmental option as it is located within the mine area.
2.11	What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination?	By conducting a Scoping and EIA process, with an adequate public participation process, the applicant ensures that equitable access to the environment has been considered. Refer to the identified impacts, their assessment and recommended mitigation measures in Section 10 of this EIA Report.
2.12	What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?	Refer to the identified impacts, their assessment and recommended mitigation measures in Section 10 of this EIA Report.
2.13	**What measures were taken to:**	
2.13.1	Ensure the participation of all interested and affected parties.	Refer to the public participation process undertaken to date in Section 8 of this EIA Report. Public participation and consultation will continue during the EIA phase as described in the accepted Scoping Report.
2.13.2	Provide all people with an opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation,	
2.13.3	Ensure participation by vulnerable and disadvantaged persons,	

Ref No.	Question	Answer
2.13.4	Promote community wellbeing and empowerment through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means,	Advertisements as well as site notices were distributed in and around the project area in English and Setswana to assist in understanding the project. The notices and advertisements included contact details for easy access to the public participation specialist if any additional information is required by anyone from the public. The public is encouraged to participate and provide input which will then be recorded and submitted with the relevant reports to the competent authority. The Scoping Report was made available on the at a local public place and the EIMS website after completion, and all registered I&APs were notified of the report availability. Focus group and public meetings were undertaken by EIMS during the Scoping phase and all registered I&APs were invited to the meetings. The EIA report will be made available on the at a local public place and the EIMS website after completion, and all registered I&APs will be notified of the report availability.
2.13.5	Ensure openness and transparency, and access to information in terms of the process,	
2.13.6	Ensure that the interests, needs and values of all interested and affected parties were considered, and that adequate recognition were given to all forms of knowledge, including traditional and ordinary knowledge,	
2.13.7	Ensure that the vital role of women and youth in environmental management and development were recognised and their full participation therein will be promoted?	
2.14	Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community (e.g. a mixture of low-, middle-, and high-income housing opportunities) that is consistent with the priority needs of the local area (or that is proportional to the needs of an area)?	Refer to the public participation process undertaken to date in Section 8 of this EIA Report. Public participation and consultation will continue during the EIA phase as described in the accepted Scoping Report. Furthermore, refer to the identified impacts, their assessment and recommended mitigation measures in Section 10 of this EIA Report.
2.15	What measures have been taken to ensure that current and / or future workers will be informed of work that potentially might be harmful to human health or the	Workers at the facility will be educated on a regular basis through toolbox talks on the

Ref No.	Question	Answer
	environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected?	environmental and health risks that may occur within their work environment, and adequate measures will be taken to ensure that the appropriate personal protective equipment is issued to workers based on the areas that they work in as well as the requirements of their job.
2.16	**Describe how the development will impact on job creation in terms of, amongst other aspects:**	
2.16.1	The number of temporary versus permanent jobs that will be created.	The expected travel distance for labourers is expected to be approximately 2 - 4 km. It is expected that approximately 15 people will be employed from the first year of operation at the facility.
2.16.2	Whether the labour available in the area will be able to take up the job opportunities (i.e. do the required skills match the skills available in the area).	
2.16.3	The distance from where labourers will have to travel.	
2.16.4	The location of jobs opportunities versus the location of impacts.	
2.16.5	The opportunity costs in terms of job creation.	
2.17	**What measures were taken to ensure:**	
2.17.1	That there were intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment.	The Scoping and EIA process requires governmental departments to communicate regarding any application. In addition, all relevant Departments and key stakeholders have been notified about the project by the EAP and registered as Interested and Affected Parties who will continue to be notified and engaged with regarding the project throughout the EIA process.
2.17.2	That actual or potential conflicts of interest between organs of state were resolved through conflict resolution procedures.	The Scoping and EIA process requires governmental departments to communicate regarding any application. In addition, all relevant Departments and key stakeholders have been notified about the project by the EAP and registered as Interested and Affected Parties who will continue to be notified and engaged with regarding the project throughout the EIA process.
2.18	What measures were taken to ensure that the environment will be held in public trust for the people,	Refer to the public participation process undertaken to date in

Ref No.	Question	Answer
	that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage?	Section 8 of this EIA Report. Public participation and consultation will continue during the EIA phase as described in the accepted Scoping Report. Furthermore, refer to the identified impacts, their assessment and recommended mitigation measures in Section 10 of this EIA Report.
2.19	Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?	Refer to the identified impacts, their assessment and recommended mitigation measures in Section 10 of this EIA Report.
2.20	What measures were taken to ensure that the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects will be paid for by those responsible for harming the environment?	The EMPr aims to identify measures to avoid pollution and environmental degradation wherever possible. Where it is not possible to avoid environmental degradation measures are stipulated to manage potential impacts arising from the proposed project, and measures to remedy the effects of unavoidable degradation and pollution.
2.21	Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the best practicable environmental option in terms of socio-economic considerations?	Refer to Section 7 for details of alternatives considered in this EIA Report.
2.22	Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area?	Refer to the identified impacts, their assessment and recommended mitigation measures in Section 10 of this EIA Report. The cumulative impacts identified include but are not limited to: • Limited potential contribution to renewable energy goals and GHG reduction; •Limited job creation potential; and •Increase in energy generation from clean renewable sources and

Ref No.	Question	Answer
		reduction in dependency on the Eskom grid. • Loss of indigenous vegetation from the site alternative 1 area; • Proliferation of alien invasive vegetation; and • The project may result in a disruption of the current open space corridor used by the species that occur on the site as well as the surrounding properties.

7 PROJECT ALTERNATIVES

In accordance with the principles stipulated in NEMA it is required that various alternatives be investigated when considering a development which may impact significantly on the environment, in order to implement the best practicable environmental option. This means that the options will be assessed in such a manner that the alternative which has the most benefit or causes the least environmental damage to the natural environment is chosen. This option also needs to be of such a nature that the capital and social cost incurred will be of an acceptable nature to society. Biophysical and socio-economic aspects are considered when investigating alternatives.

An alternative can be defined as an option that will meet the general purpose and requirements of the activity, which may include alternatives to:

- The property on which, or location where, it is proposed to undertake the activity;
- The type of activity to be undertaken;
- The design or layout to be used in the activity;
- The technology to be used in the activity; and
- The operational aspects of the activity.

The "No-Go" alternative must also be assessed.

For the purposes of this project, the identification of alternatives was a key aspect of the success of the environmental Scoping phase. All reasonable and feasible alternatives were identified and screened to determine the most suitable alternatives. There are, however, some significant constraints that have to be considered when identifying alternatives for a project of this scope. Such constraints include social, financial and environmental issues, which will be discussed as part of the evaluation of the alternatives for this project. Alternatives can typically be identified according to:

- Location alternatives (including design and layout);
- Process alternatives;
- Technology alternatives; and
- Activity alternatives (including the No-Go option).

For any alternative to be considered feasible such an alternative must meet the need and purpose of the development proposal without presenting significantly high associated impacts. As mentioned in Section 6 of this EIA Report, the need for the proposed project includes the following key drivers:

- The need for the mine to generate electricity for use at the mine; and
- The need for quality employment opportunities in the local municipality.

In this section the various alternatives considered are described and their advantages and disadvantages are presented where applicable. Furthermore, the feasibility of the considered alternatives, from both a technical as well as environmental perspective, is determined and the result thereof are the alternatives that have been investigated further in the EIA phase, towards the selection of preferred alternatives. Essentially, alternatives represent different means of meeting the general purpose and need of the proposed project through the identification of the most appropriate and feasible method of development, all of which are discussed below.

Alternatives can further be distinguished into discrete or incremental alternatives. Discrete alternatives are overall development options, which are typically identified during the pre-feasibility, feasibility and or Scoping phases of the EIA process (DEAT, 2004). Incremental alternatives typically arise during the EIA process and are usually suggested as a means of addressing identified impacts. These alternatives are closely linked to the identification of mitigation and management measures and are not specifically identified as distinct alternatives.

This section provides information on the PV facility location, process, technology and activity alternatives under consideration at this stage.

7.1 LOCATION AND LAYOUT ALTERNATIVES

Location alternatives can be divided into two categories:

- Development location; and
- Site layout.

Two site options have been identified:

- Site Alternative S1: PV facility located within open space at the centre of the mine area.
- Site Alternative S2: PV facility located on top of existing Tailing Storage Facility (TSF), to the north of Site Alternative S1.

Site Alternative S1 is located within open space at the centre of the mine lease area. The site has been previously disturbed, resulting in a low habitat sensitivity with the exception of the degraded bushveld habitat which has a medium sensitivity due to the habitat intactness as well as being located within an endangered ecosystem as confirmed by the Terrestrial Biodiversity Assessment undertaken for the Rhovan Solar PV Project. Site Alternative S2 located on top of the TSF to the north of Site Alternative S1 will not be ecologically sensitive as it is located on top of existing infrastructure. Both options have been assessed as separate alternatives in the EIA phase.

In determining the most appropriate sites for the establishment of the new photovoltaic plant, various options were investigated. This site selection process considered the following criteria:

- The location of the mine for which the power from the PV facility is required;
- The availability and accessibility of primary resources required for the operation of the facility, such as sun (i.e. the required Direct Normal Insolation) and water;
- Availability of land to locate the site and associated infrastructure; and
- The availability and accessibility of infrastructure for the provision of services, manpower and social structure for the construction and operation of the facility.

No additional suitable and feasible development location alternatives exist, and therefore only the two proposed site development locations are discussed further. With regard to layout alternatives, none have been identified and applied for.

7.2 PROCESS ALTERNATIVES

Process alternatives imply the investigation of alternative processes or methods to achieve the same goal for the proposed PV facility. No specific feasible process alterative were identified.

7.3 TECHNOLOGY ALTERNATIVES

The selection of the technology alternatives or techniques to be adopted for the construction and operation of the PV facility cannot be determined at this stage. Potential technology alternatives could include:

- Types of panel tracking vs fixed;
- Dry-type vs oil transformers at switching station;
- Different types of footing for the PV panels;
- Various voltage consideration in both distribution, reticulation, and generation.

The supplier of the PV panels and associated infrastructure is still being determined however the environmental impacts will be similar for all of the above technologies, so regardless of the technology the impact will probably be similar. In that regard, no technology alternatives will be applied for.

7.4 ACTIVITY ALTERNATIVES

It is not deemed reasonable or practical to assess any other type of activities. The developer has selected PV technology as being the best practicable option in terms of their own feasibility studies and their business plan.

7.5 NO-GO ALTERNATIVE

The **no-go alternative** option means 'do nothing' or the option of not undertaking the proposed PV facility project or any of its activities, consequently leading to the continuation of the current land-use, which is leaving the location as an open unutilized space. As such, the 'do nothing' alternative or keeping the current status quo of the site with no construction or operation activities occurring on-site and also provides the baseline against which the impacts of other alternatives should be compared. Leaving the area undeveloped would not have any significant environmental or social benefits and would also not create any additional negative environmental impacts.

7.6 ALTERNATIVE ASSESSMENT

Table 7 in this section describes the advantages and disadvantages of the alternatives identified above. The alternatives will be compared to each other as well as with the No-Go alternative. The significance rating of identified impacts for each alternative is listed in terms of their significance, duration, probability, reversibility and chance to cause irreplaceable loss in Section 10.2. Table 7 further details the alternatives assessed in the EIA phase.

Table 7: Alternative assessment.

Alternative Category	Alternative	Alternative Description Summary	Advantages	Disadvantages/ Risks	Carried into EIA
Location Alternatives	S1	Facility located on open space	• Access during construction will be easier as site is open space and is not located on existing TSF. • Site is larger allowing more panels and therefore more MW can be produced.	Impacts on terrestrial biodiversity expected to be slightly higher than for Alternative S2.	**Yes**
	S2	Facility located on top of existing TSF	No significant impacts on biodiversity expected due to location on top of existing TSF.	• PV panels may be visible from some distance due to location on top of TSF. • Stability / settling of TSF will need to be taken into account. • Potential dust generation during construction. • Smaller site therefore less MW could be produced.	**Yes**

Alternative Category	Alternative	Alternative Description Summary	Advantages	Disadvantages/ Risks	Carried into EIA
Layout Alternatives	No specific feasible layout alternatives were identified. There is currently no need for avoidance of environmental sensitivities in both of the site locations. The identified three archaeological sites on Alternative S1 can be destroyed once the required permit for destruction has been obtained from SAHRA.				**No**
Process Alternatives	No specific feasible process alterative were identified.				**No**
Technology Alternatives	The environmental impacts will likely be similar for all of the possible technology alternatives. Therefore, no feasible technology alternatives will be applied for going forward.				**No**
Activity Alternatives	It is not deemed reasonable or practical to assess any other type of activities. PV is identified as the only feasibly activity through the applicant's pre-feasibility assessments.				**No**
No-Go Alternative	No-Go	The proposed activities will not take place on-site and the site will remain unutilized.	No environmental impacts as a result of the PV project.	• No benefits with respect to job creation and also no indirect socio-economic benefits created. • Inefficient use of an already disturbed, unused open space.	**Yes**

8 STAKEHOLDER ENGAGEMENT

The Public Participation Process (PPP) is a requirement of several pieces of South African legislation and aims to ensure that all relevant Interested and Affected Parties (I&APs) are consulted, involved and their opinions are taken into account, and a record included in the reports submitted to relevant authorities. The process aims to ensure that all stakeholders are provided an opportunity as part of a transparent process which allows for a robust and comprehensive environmental study. The PPP for the proposed project needs to be managed sensitively and according to best practises in order to ensure and promote:

- Compliance with international best practise options;
- Compliance with national legislation;
- Establish and manage relationships with key stakeholder groups; and
- Encourage involvement and participation in the environmental study and authorisation / approval process.

As such, the purpose of the PPP and stakeholder engagement process is to:

- Provide an opportunity for I&APs to obtain clear, accurate and comprehensible information about the proposed activity, its alternatives or the decision and the environmental impacts thereof;
- Provide I&APs with an opportunity to indicate their viewpoints, issues and concerns regarding the activity, alternatives and / or the decision;
- Provide I&APs with the opportunity to suggest ways of avoiding, reducing or mitigating negative impacts of an activity and enhancing positive impacts;
- Enable the applicant to incorporate the needs, preferences and values of I&APs into the activity;
- Provide opportunities to avoid and resolve disputes and reconcile conflicting interests;
- Enhance transparency and accountability in decision-making;
- Identify all significant issues for the project; and
- Identify possible mitigation measures or environmental management plans to minimise and / or prevent environmental impacts associated with the project.

The PPP for this project has been undertaken in accordance with the requirements of the NEMA, as well as in line with the principles of Integrated Environmental Management (IEM). IEM implies an open and transparent participatory process, whereby stakeholders and other I&APs are afforded an opportunity to comment on the project.

8.1 LEGAL COMPLIANCE

The PPP must comply with several important sets of legislation that require public participation as part of an application for authorisation or approval, namely:

- The National Environmental Management Act (Act No. 107 of 1998 – NEMA);
- The National Water Act (Act No. 36 of 1998).

Adherence to the requirements of the above-mentioned Acts will allow for an Integrated PPP to be conducted, and in so doing, satisfy the requirement for public participation referenced in the Acts. The details of the Integrated PPP followed are provided below.

8.2 GENERAL APPROACH TO PUBLIC PARTICIPATION

The PPP has been undertaken in accordance with the requirements of the NEMA (and the NWA where applicable) as well as in line with the principles of Integrated Environmental Management (IEM). IEM implies an

open and transparent participatory process, whereby stakeholders and other I&APs are afforded an opportunity to comment on the project.

8.3 IDENTIFICATION OF INTERESTED AND AFFECTED PARTIES

The I&AP databases compiled for various past environmental authorisation processes in the vicinity of the proposed facility have been utilised towards compiling a pre-notification register of key I&APs to be notified of the Environmental Authorisation Application. The I&AP database includes amongst others: landowners, communities, regulatory authorities and other specialist interest groups. Additional I&APs have been registered during the initial notification and call to register period. The I&APs database will continue to be updated throughout the duration of the EIA process. A full list of I&APs is attached in Appendix C.

8.3.1 LIST OF AUTHORITIES IDENTIFIED AND NOTIFIED

The following Government Authorities were notified of the proposed project:

- Rustenburg Local Municipality;
- Bojanala District Municipality;
- North West Economic Development, Environment, Conservation and Tourism;
- Northwest Department of Water and Sanitation;
- Northwest Department of Mineral Resources and Energy;
- North West Department of Human Settlements;
- Northwest Department of Public Works, Roads and Transport;
- Northwest Department of Social Development;
- National Department of Agriculture, Land Reform and Rural Development;
- National Department of Forestry, Fisheries and Environment;
- National Department of Human Settlements, Water and Sanitation;
- National Department of Mineral Resources and Energy;
- South African Heritage Resource Agency (SAHRA); and
- South African National Roads Agency Limited (SANRAL).

8.3.2 OTHER KEY STAKEHOLDERS IDENTIFIED AND NOTIFIED

The following key stakeholders have been identified and notified of the proposed project:

- Birdlife South Africa;
- Endangered Wildlife Trust;
- Eskom SOC Ltd.;
- North West Development Corporation;
- North West Parks Board;
- North West Wetland Forum;
- South African National Biodiversity Institute.
- Council of Geoscience;
- South African Civil Authority;
- Bakwena ba Mogopa Tribal Council;
- Botanical Society;

- Conservation South Africa; and
- Transnet SOC Limited.

8.4 INITIAL NOTIFICATION OF I&APS

The PPP commenced on the 31 March 2022 with an initial notification and call to register. Initial call to register notifications were conducted as presented below.

8.4.1 REGISTERED LETTERS, FAXES AND EMAILS

Registered letters, emails and facsimiles (faxes) were prepared and distributed to the identified relevant authorities, affected and adjacent landowners and legal occupiers, ward councillors and other pre-identified key stakeholders. The notification documents included the following information:

- The purpose of the proposed project;
- Details of the NEMA and NWA Regulations that are anticipated to be applicable and must be adhered to;
- List of anticipated activities to be authorised;
- Location and extent of activities to be authorised;
- Details of the affected properties (including a locality map or an indication of where the locality map may be viewed or obtained);
- Brief but sufficient detail of the intended operation to enable I&APs to assess/ surmise what impact the project will have on them or on the use of their land (if any);
- Initial call to register duration; and
- Contact details of the EAP.

In addition, a registration form was included in the registered letters, emails and facsimiles distributed to I&APs and it included a request for the following information from I&APs:

- Provide information on how they consider that the proposed facility will impact on them or their socio-economic conditions;
- Make proposals as to how the potential impacts on identified environmental features, their infrastructure, and socio-economic concerns may be managed, avoided or mitigated;
- Details of the landowner and information on lawful occupiers;
- Details of any communities existing within the area;
- Details of any Tribal Authorities within the area;
- Details of any other I&APs that need to be notified;
- Details on any land developments proposed; and
- Any specific comments or concerns regarding the proposed application for environmental authorisation.

Proof of the registered letters, emails and facsimiles that were distributed during the initial notification and call to register period are attached in Appendix C.

8.4.2 SITE NOTICES AND POSTERS

Six (6) size A2 site notices (English and Setswana) were placed along, within and surrounding the perimeter of the proposed project area and its surroundings on 31 March 2022. The on-site notices and posters included the following information:

- Project name;
- Applicant name;
- Project location;
- Description of the environmental authorisation application process;
- Legislative requirements; and
- Relevant EAP contact person details for the project.

Please refer Appendix C for proof of site notice and poster placement.

8.4.3 NEWSPAPER ADVERTISEMENTS

One advertisement (English and Setswana) was placed on the 17 June 2022 in the Rustenburg Herald newspaper with circulation in the vicinity of the project area. The details of the advertisements are presented below.

The newspaper advertisement included the following information:

- Project name;
- Applicant name;
- Project location;
- Description of the environmental authorisation application process;
- Legislative requirements; and
- Relevant EAP contact person details for the project.

8.5 NOTIFICATION OF AVAILABILITY OF SCOPING REPORT

Notification regarding the availability of the Scoping Report for public review was given in the following manner:

- Registered letters with details on where the Scoping Report is available from, as well as the duration of the public review comment period, were distributed to all registered I&APs (which includes key stakeholders, affected and surrounding landowners, and registered occupiers);
- Facsimile notifications with information similar to that in the registered letter described above, were distributed to all registered I&APs; and
- Email notifications with a letter attachment containing the information described above were also distributed to all registered I&APs.

The Scoping Report was made available for public review from the 30th of June 2022 until the 29th of July 2022, for a period of 30 days at the following venues:

- Bethanie Business Hub; and
- Various Tribal Authority Offices in the area;
- Electronic copies were available on the EIMS website (www.eims.co.za/public-participation/).

8.6 ISSUES AND REPONSES

Issues raised to date have been addressed in a transparent manner and the full details (such as the comment received, the name of the I&AP who commented, the issue raised and the main aspect of the raised issue, as well as the response provided to the I&AP) included in the Public Participation Report (Appendix C).Refer to Table 8 for a summary.

Table 8: Summary of issues raised by I&APs

Issue/ Comment Raised	Aspect Affected	Summary of EAP Response
Eskom requested Google Earth files showing project area.	Impacts on existing services and infrastructure.	KMZ sent to Eskom.
DFFE requested that their biodiversity directorate be included on the database.	Biodiversity and stakeholder engagement.	Biodiversity directorate added to database.
Several job applications and CVs were received.	Employment and job opportunities.	CVs received are forwarded to the applicant for consideration if the project is approved.
Comments were received from a Business Advisor & Health & Safety Consultant requesting details on the site notice placements and indicating that the community trust is expected to object to all processes done by Glencore on behalf of Rhovan.	Public participation / various .	Initial public participation documentation was forwarded as well as details regarding the site notice placement. It was noted that the site notices are only one part of the initial notification, and that public participation will be ongoing throughout the EIA process for the PV facility, including but not limited to opportunities to comment on both the Scoping and EIA reports which will both be made available for 30-day public comment periods.
Comments received from biodiversity directorate of DFFE on Draft Scoping Report, with the following recommendations: • The detailed Biodiversity Specialist studies must be conducted, updated and submitted with the final report. • The final sensitivity Layout map overlaid with sensitivities and indicating the final footprint for the proposed development must avoid environmentally sensitive areas and be included in the Final Scoping report. • The Final Scoping report should indicate the preferred site alternative, as a result of the	Biodiversity	The comments from the National Department of Forestry, Fisheries and the Environment-Directorate :Biodiversity Conservation were noted by the project team and will be addressed.

Issue/ Comment Raised	Aspect Affected	Summary of EAP Response
• sensitivity map excise. All the environmental impacts as well as the cumulative impacts of the proposed development must be identified and evaluated in terms of its significance ratings		
The Bakwena Ba Mogopa Tradition community ave through Council submitted conditional agreement in the form of resolution and the arrangements should be placed on record • The community has the capacity and resources to build and or construct the solar plant through the modules to be put in place, thus the solar plant should be build and owned by the Bakwena ba Mogopa Traditional Community and; • The Power Selling Agreement should be concluded before the solar plant is build. • Alternatively Glencore Rhovan should only implement the Solar Plant construction through the Management Committee in place where the Bakwena Ba Mogopa Community is represented as envisaged and guided by the shareholders agreement between Glencore and Bakwena ba Mogopa Community, failing which Glencore is denied permission to execute the construction of the solar plant in the Joint Venture area and or in the Bakwena ba Mogopa Community's Properties.	Social	The Applicant has indicated that Rhovan has not decided on the financial model that will be used for the financing of Rhovan Solar plant. The current objective is to get the regulatory approvals and prepare a cost-based estimate so a decision can be made on the way forward.

Issue/ Comment Raised	Aspect Affected	Summary of EAP Response
The Bakwena Ba Mogopa Tradition community through the council requested for a copy of the final Scoping report from the EAP.	Reports	The EAP provided a hardcopy and electronic copy of the final Scoping report to the Tribal Council Representative that requested for it.
Interim comments received from the South African Heritage Resources Agency (SAHRA) requesting for updated heritage studies to be undertaken and submitted to the SAHRIS platform, the heritage studies should specifically address the proposed Rhovan Solar Project and the site alternatives proposed. SAHRA has requested the EAP to submit the DEIR as well as the updated heritage studies to SAHRIS for review once they become available.	Specialist studies	The requested Phase I heritage impact assessment has since been undertaken specifically for the proposed project and the report was updated to SAHRIS as requested. The DEIR will be made available to SAHRIS once it is available for review.

9 ENVIRONMENTAL ATTRIBUTES AND BASELINE

This section of the EIA Report provides a description of the environment that may be affected by the proposed PV facility. Aspects of the biophysical, social and economic environment that could be directly or indirectly affected by, or could affect, the proposed project have been described. Baseline information sourced from various spatial datasets utilised to prepare the environmental attributes baseline below.

9.1 CLIMATE AND TEMPERATURE

Bethanie has the semi-arid climate prevailing. Weather data was available for Bethanie. At an average temperature of 23.5 °C, January is the hottest month of the year for this area. The lowest average temperatures in the year occur in July, when it is around 12.6 °C (Figure 6). Monthly average temperatures for Bethanie are show below (source: www.worldweatheronline.com).

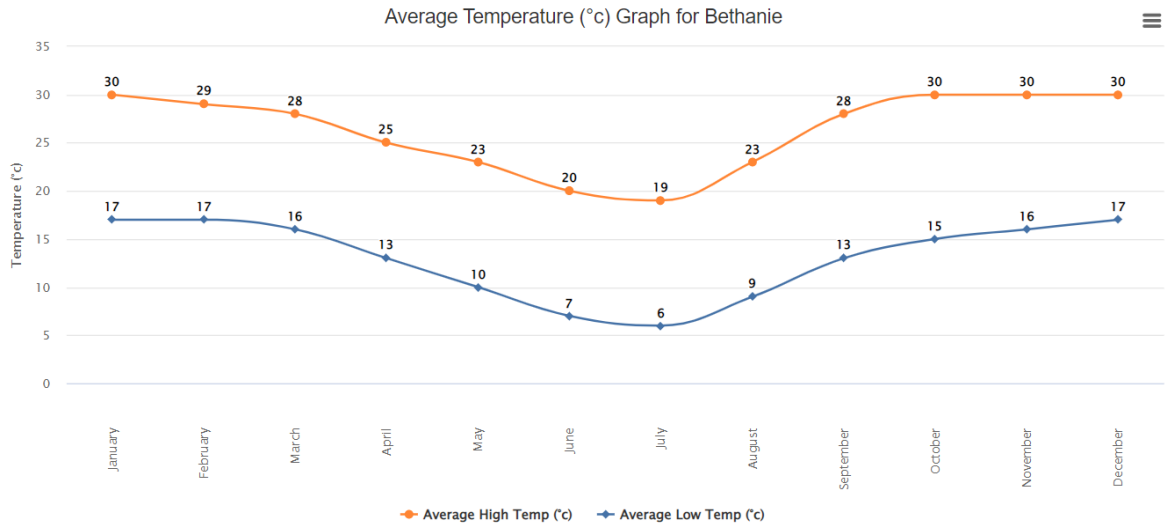


Figure 6: Average annual temperatures for Bethanie

9.2 RAINFALL AND EVAPORATION

Rainfall data is presented in Figure 7. Average monthly precipitation values for Bethanie are presented in Table 9 below. Most rainfall occurs in summer during the period of November to February (source: www.worldweatheronline.com).

Table 9: Average monthly precipitation for Bethanie

Average Monthly Precipitation (mm)												
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
76	49	39	19	6	3	1	1	4	32	44	77	351

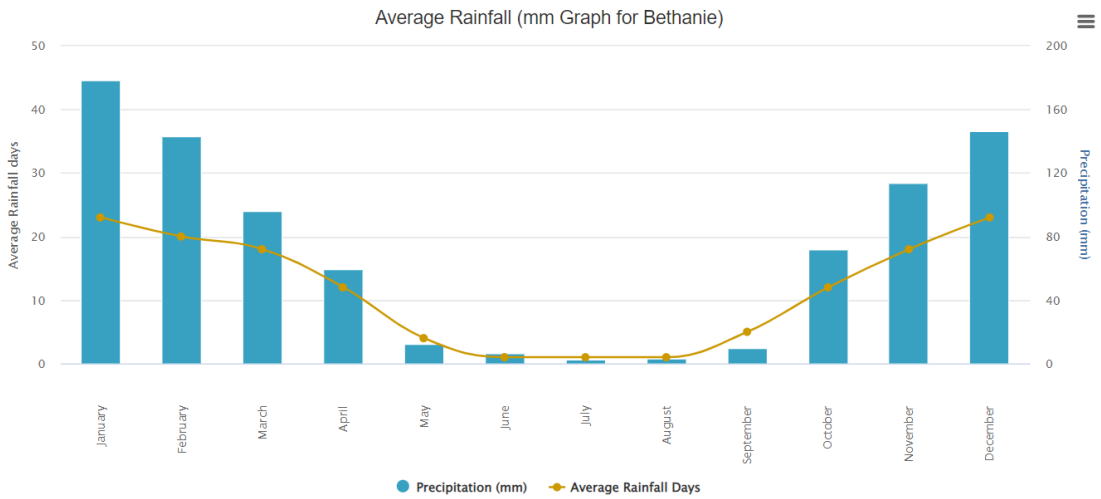


Figure 7: Average rainfall for Bethanie.

9.3 TOPOGRAPHY

On a regional scale (50 km radius) the elevation ranges between 1065 and 1100 mamsl (Figure 8). The topography within the local study area can be described as fairly flat (less than 10 % slope) and undulating hills with an average elevation of 1140 mamsl. No major topographical features can be found anywhere in close proximity to the sites for the PV facility.

9.4 GEOLOGY AND PALAEONTOLOGY

According to spatial data from the Council of Geoscience, the proposed project area is primarily underlain by the Bierkraal Magnetite Gabbros, part of the Bushveld Complex (Figure 9). This formation is rated as having zero or insignificant palaeontological sensitivity (see Figure 10) according to the South African Heritage Resources Information System (SAHRIS) 'PalaeoSensitivity Map' as the site falls within a grey colour zone. In addition, no deep excavations (>2m) will be required during construction, and thus it is not anticipated that any palaeontological resources will be negatively impacted by the proposed activity.

9.5 SOIL AND LAND CAPABILITY

The proposed project area is underlain by Calcic Vertisols and Feric Luvisols according to the International Soil Reference and Information System (ISRIC) reports and spatial data. A vertisol is a soil type in which there is a high content of expansive clay minerals. Luvisols are a widespread group of soils, comprising one of the 32 Reference Soil Groups in the international system of soil classification. Feric luvisols are not considered especially fertile soils. See Figure 11 for a soil map of the project area. The DFFE Screening Tool spatial data identified the proposed project as having a medium agricultural sensitivity. Based on the site visit conducted, the soil types present and the fact that the project area is located within an existing mine area no agricultural impact assessment is deemed necessary.

9.6 HERITAGE

Rhovan mine is located to the north of the Magaliesberg which is known for its rich and diverse range of heritage resources (De Beer 1975). Stone Age sites are scattered along the Magaliesberg and are also found in caves and rock shelters in the mountain. Rock engraving sites are located further towards Maanhaarrand and Rustenburg in the west. Blockhouses along the Magaliesberg and colonial farm homesteads are still common in Marikana and on the outskirts of Brits (Madibeng). The most abundant heritage, however, are those that date from the Late Iron Age and which are associated with the numerous Tswana chiefdoms who occupied this region during the last four centuries.

A Phase I Heritage assessment was undertaken for the proposed Rhovan that covered the area for the PV facility. The Phase I HIA study for Rhovan revealed the following types and ranges of heritage resources within the proposed project area:

- Three sites (RPVF-01 – 03) containing archaeological resources were identified during the fieldwork. All three were overgrown, with only sections of stone walling. It is possible that the identified stone structures and stonewalling are part of an extensive settlement or settlement. Due to other similar structures in the Rhovan mine area, these three sites have medium heritage significance and are provisionally graded as 3B.

The three sites are situated within the footprint area of site alternative 1. Due to the vegetation cover, it was impossible to delineate the extent of the stonewalling. Due to the vegetation cover, it was impossible to delineate the extent of the stonewalling. No heritage resources have been identified within the footprint of site alternative 2 as this will be on top of an existing TSF.

9.7 SURFACE WATER

The National Freshwater Ecosystem Priority Areas (NFEPA) wetlands (SANBI, 2011) were inspected to identify surface water features within the proposed study area, see Figure 13 for a surface water features map of the study area. From a desktop level review the proposed project area falls outside of the regulated areas for wetlands or watercourses, and therefore no impacts are expected on water resources as a result of the proposed project. Two small NFEPA wetlands were identified to the east of the project site however these are located well outside of the 500m regulated area for both potential PV sites. Two small rivers are located on either side of the project area. The Tshukutswe river is located approximately 3,5 km to the east of the project area and the Gwatlhe river is located approximately 3km to the west of the project area. The site falls within quaternary catchment A21k.

9.8 VEGETATION AND TERRESTRIAL BIODIVERSITY

According to spatial data from Mucina and Rutherford, 2006, the project area falls within Marikana Thornveld (Figure 12). According to the National Biodiversity Assessment (SANBI, 2018) this vegetation type is poorly protected and is listed as vulnerable and hardly protected. After investigation of google imagery and a site visit, the area can be described as mostly natural veld with scattered alien vegetation. The project area is also located within a CBA 2 area identified by the bioregional planning.

A detailed vegetation assessment was conducted throughout the extent of the project area. A total of 58 trees, shrubs, herbaceous and graminoid plant species were recorded in the project area during the field assessment. A full list of the identified plant species can be seen on the Terrestrial and Freshwater Assessment for the Rhovan PV Project (Appendix D).

Invasive Alien Plants (IAPs) tend to dominate or replace indigenous flora, thereby transforming the structure, composition and functioning of ecosystems. Therefore, these plants must be controlled by means of an eradication and monitoring programme. Some invader plants may also degrade ecosystems through superior competitive capabilities to exclude native plant species.

NEMBA is the most recent legislation pertaining to alien invasive plant species. In August 2014, the list of Alien Invasive Species was published in terms of the NEMBA. The Alien and Invasive Species Regulations were published in the Government Gazette No. 44182 on, 24th of February 2021. The legislation calls for the removal and/or control of AIP species (Category 1 species). In addition, unless authorised thereto in terms of the NWA, no land user shall allow Category 2 plants to occur within 30 meters of the 1:50 year flood line of a river, stream, spring, natural channel in which water flows regularly or intermittently, lake, dam or wetland. Category 3 plants are also prohibited from occurring within proximity to a watercourse. Below is a brief explanation of the three categories in terms of the NEMBA:

- Category 1a: Invasive species requiring compulsory control. Remove and destroy. Any specimens of Category 1a listed species need, by law, to be eradicated from the environment. No permits will be issued.

- Category 1b: Invasive species requiring compulsory control as part of an invasive species control programme. Remove and destroy. These plants are deemed to have such a high invasive potential that infestations can qualify to be placed under a government-sponsored invasive species management programme. No permits will be issued.
- Category 2: Invasive species regulated by area. A demarcation permit is required to import, possess, grow, breed, move, sell, buy or accept as a gift any plants listed as Category 2 plants. No permits will be issued for Category 2 plants to exist in riparian zones.
- Category 3: Invasive species regulated by activity. An individual plant permit is required to undertake any of the following restricted activities (import, possess, grow, breed, move, sell, buy or accept as a gift) involving a Category 3 species. No permits will be issued for Category 3 plants to exist in riparian zones.

Note that according to the Alien and Invasive Species Regulations, a person who has under his or her control a category 1b listed invasive species must immediately:

- Notify the competent authority in writing
- Take steps to manage the listed invasive species in compliance with:
    - Section 75 of the NEMBA;
    - The relevant invasive species management programme developed in terms of regulation 4; and
    - Any directive issued in terms of section 73(3) of the NEMBA.

Nine (9) IAP species were recorded within the project area. These species are listed under the Alien and Invasive Species List 2021, Government Gazette No. 44182 as Category 1b. Category 1b species must be controlled by implementing an IAP Management Programme, in compliance of section 75 of the NEMBA, as stated above.

9.9 AVIFAUNA

According to SANBI's latest dataset the project falls outside of any identified Important Bird Areas (IBAs). The following species of conservation concern may potentially occur at the sites for the proposed PV facility: African Finfoot, African Marsh Harrier, African Skimmer, Black Harrier, Black Stork, Blackwinged Pratincole, Blue Crane, Cape Vulture, Chestnutbanded Plover, Greater Flamingo, Halfcollared Kingfisher, Lanner Falcon, Lappetfaced Vulture, Lesser Flamingo, Lesser Kestrel, Marabou Stork, Martial Eagle, Melodious Lark, Pallid Harrier, Peregrine Falcon, Redbilled Oxpecker, Secretarybird, Whitebacked Night Heron, Whitebacked Vulture, Yellowbilled Stork and Yellowthroated Sandgrouse.

During a site visit undertaken by the specialist on the project area twenty-seven (27) species were recorded across three habitats covering both the project area and to a limited extent, the surrounding area. All observations were of small passerine and game bird species that are common to the area and these species persisted despite the existing disturbance within the project area. This resilience, coupled with the fact that similar avifaunal habitats are available throughout the broader area suggests that displacement impacts might not be of a regional or national significance. In addition to this, no raptor nests or other possible Red Listed breeding sites were recorded during the infield assessment. Approximately 48 % of the species recorded on site were found to be insectivorous species that catch their prey in the air during the day (IAD), 33 % of the species omnivorous species that feed during the day (OMD), whilst granivorous ground dwelling diurnal species (GGD) make up 18 % of the total species composition. No nests of SCC species were recorded and the only collision risk species recorded was the Pied crows which does not pose a risk to the approval of the development.

9.10 CONSERVATION AREAS

The Department of Environmental Affairs maintains a spatial database on Protected Areas and Conservation Areas. Protected Areas and Conservation Areas (PACA) Database scheme that is used for classifying protected

areas (South Africa Protected Areas Database-SAPAD) and conservation areas (South Africa Conservation Areas Database-SACAD) into types and sub-types in South Africa.

According to these databases, the project area does not overlap with any Protected Area. No nature reserves or other conservation areas were identified in close proximity to the proposed development. Figure 14 shows the details of important areas surrounding the proposed project site. As noted above, the project area is also located within a CBA 2 area identified by the bioregional planning. Aside from the CBA2 area the proposed facility is far enough from any other important areas for it to have negligible impact on any identified important areas.

The project area was superimposed on the ecosystem protection level map to assess the protection status of terrestrial ecosystems associated with the development. The terrestrial ecosystem associated with the project area is rated as Poorly Protected for the entire project area. This means that these ecosystems are considered not to be adequately protected in areas such as national parks or other formally protected areas.

According to the National Protected Area Expansion Strategy 2016 (NPAES) were identified through a systematic biodiversity planning process. They present the best opportunities for meeting the ecosystem-specific protected area targets set in the NPAES and were designed with a strong emphasis on climate change resilience and requirements for protecting freshwater ecosystems. These areas should not be seen as future boundaries of protected areas, as in many cases only a portion of a particular focus area would be required to meet the protected area targets set in the NPAES. They are also not a replacement for fine-scale planning which may identify a range of different priority sites based on local requirements, constraints, and opportunities (NPAES, 2016). The project area majorly overlaps with a Priority Focus Area.

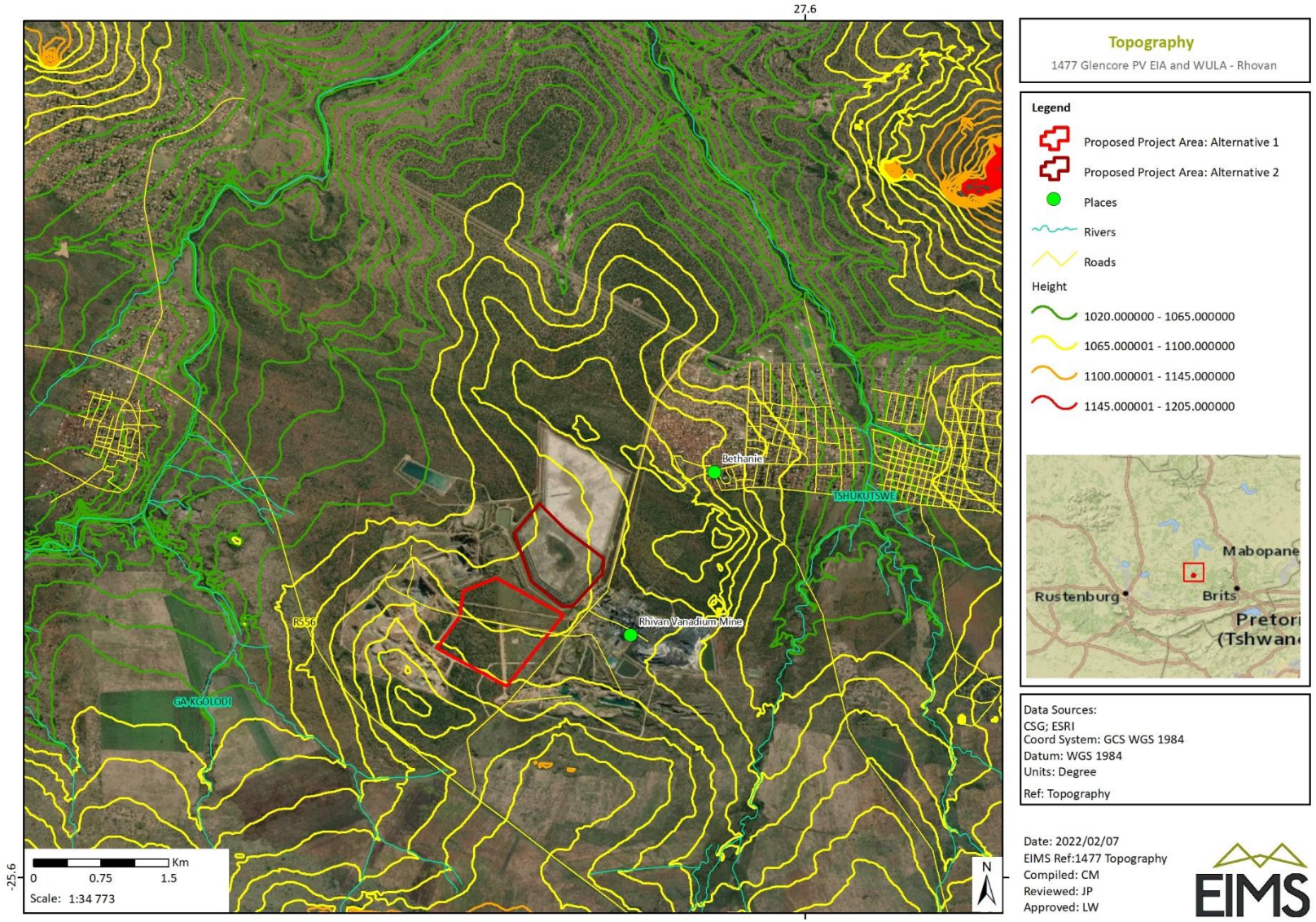


Figure 8: Regional topography.

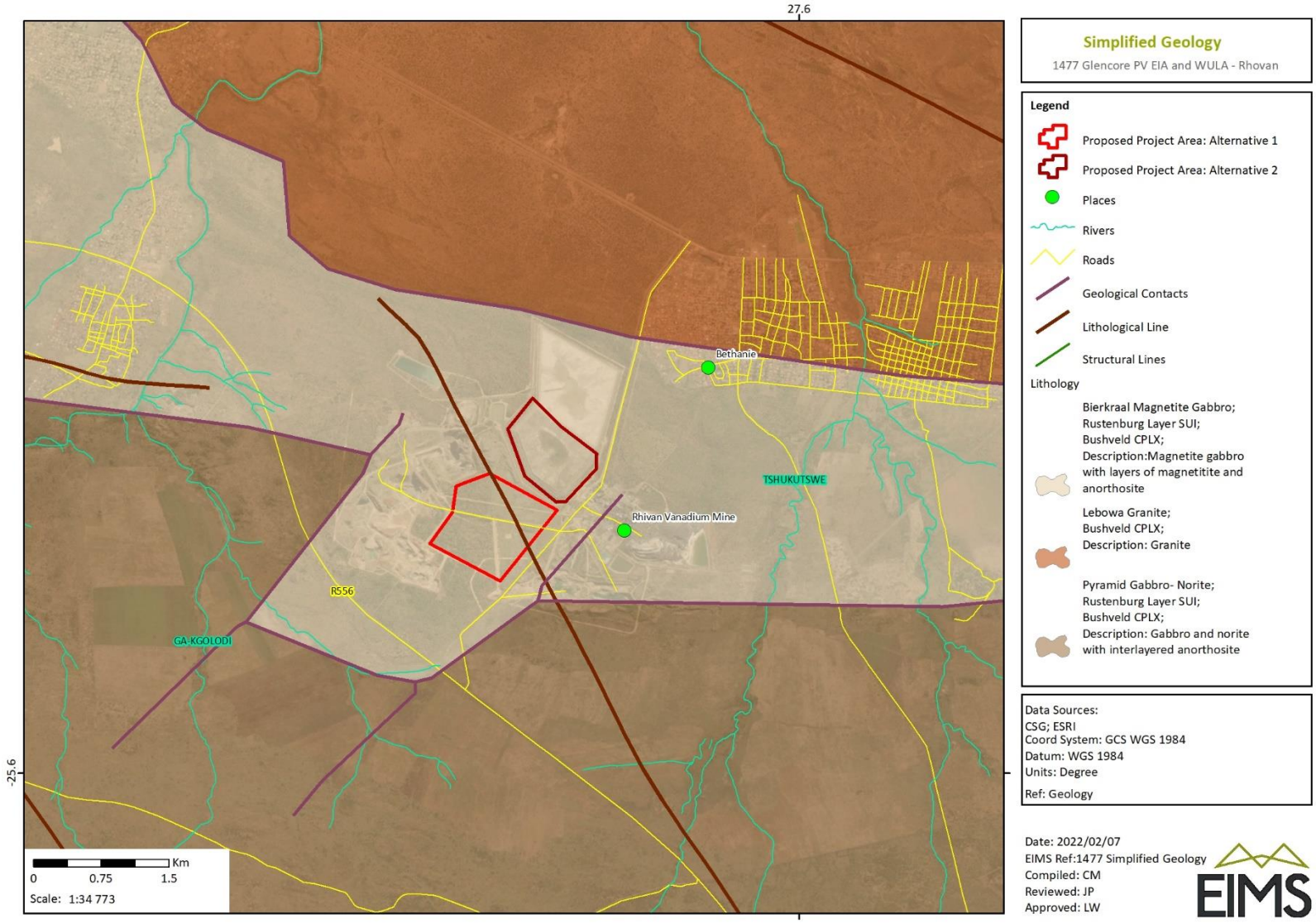


Figure 9: Project area simplified geology.

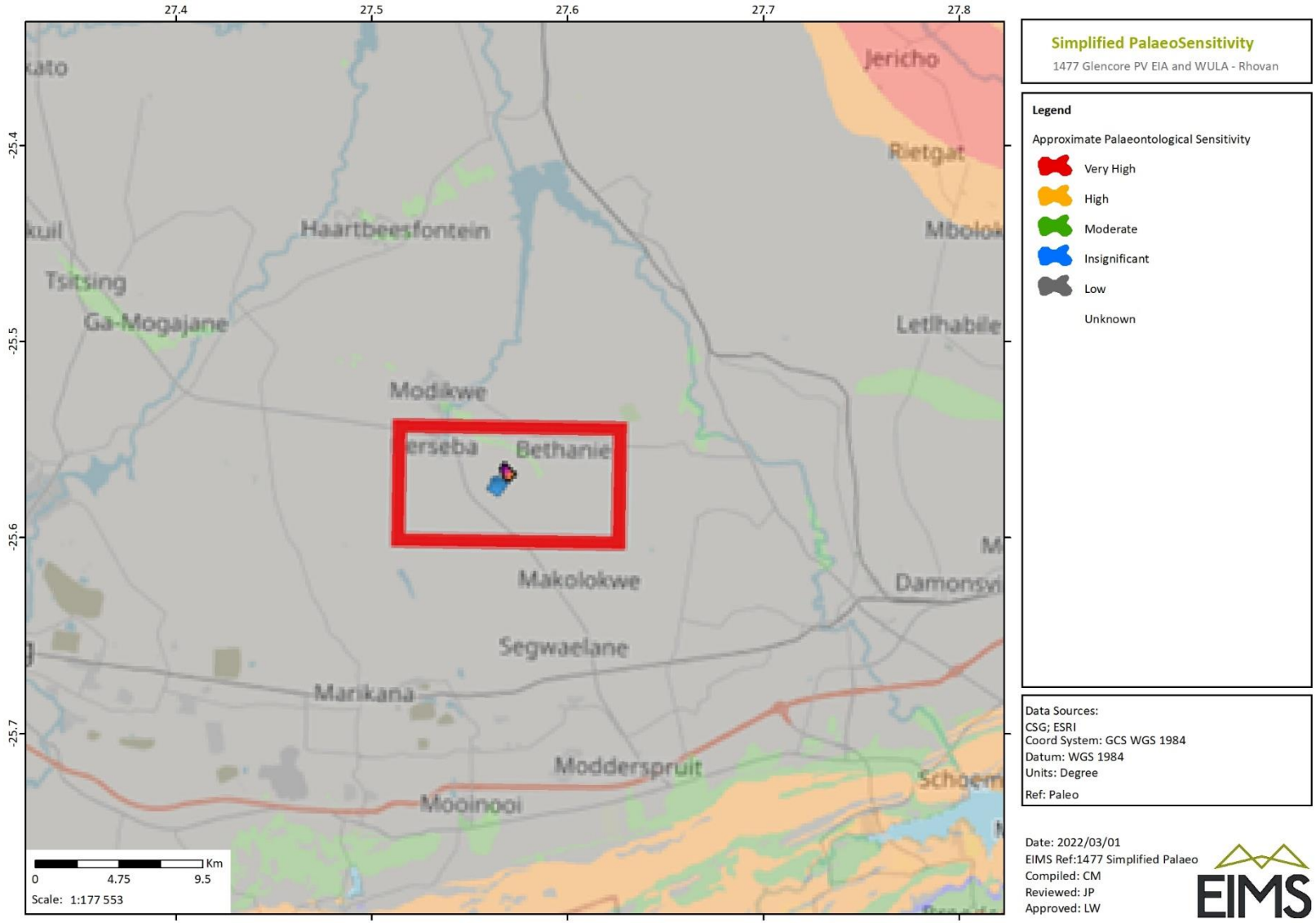


Figure 10: Palaeontology Sensitivity according to SAHRIS

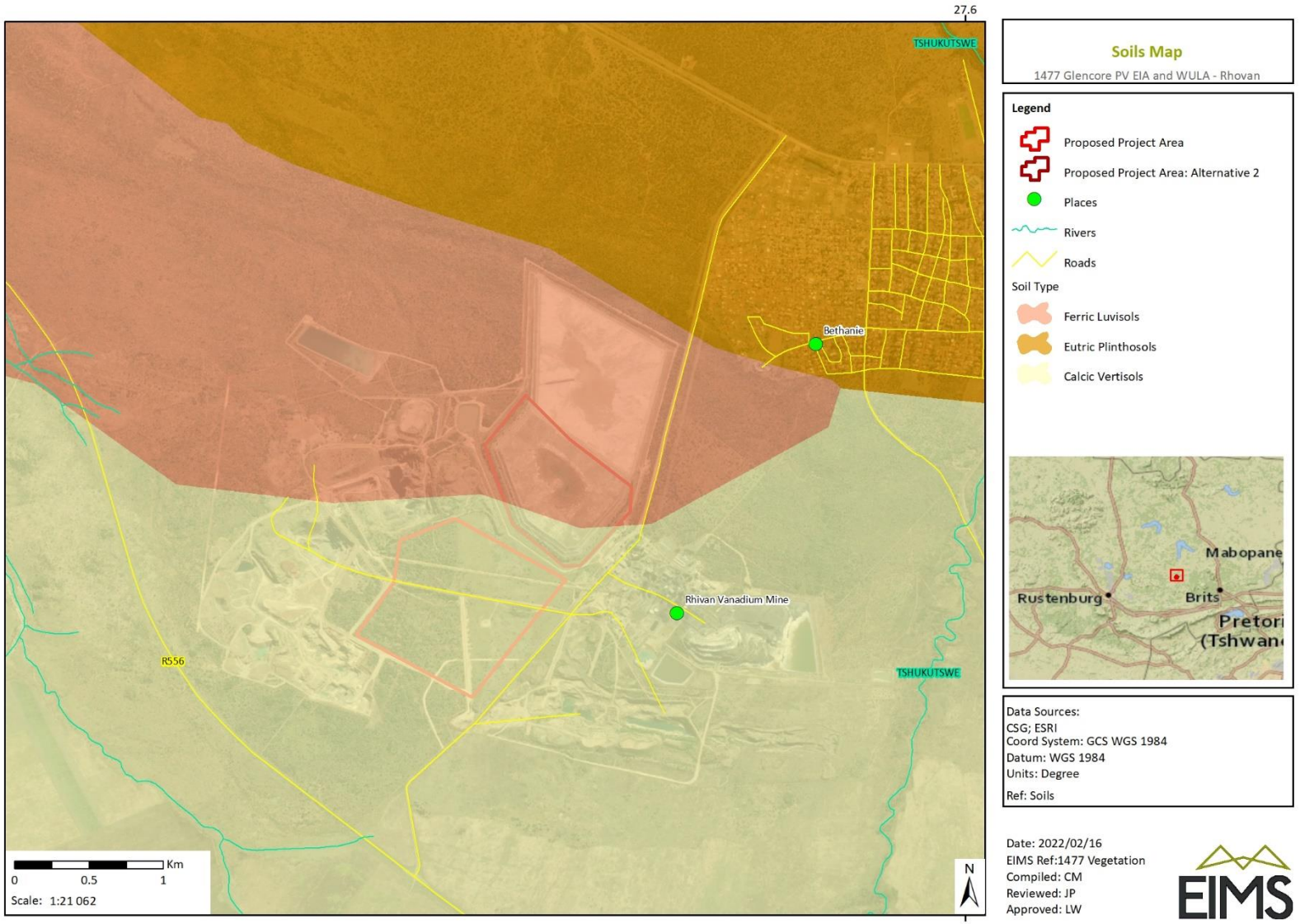


Figure 11: Soil types covering the study area.

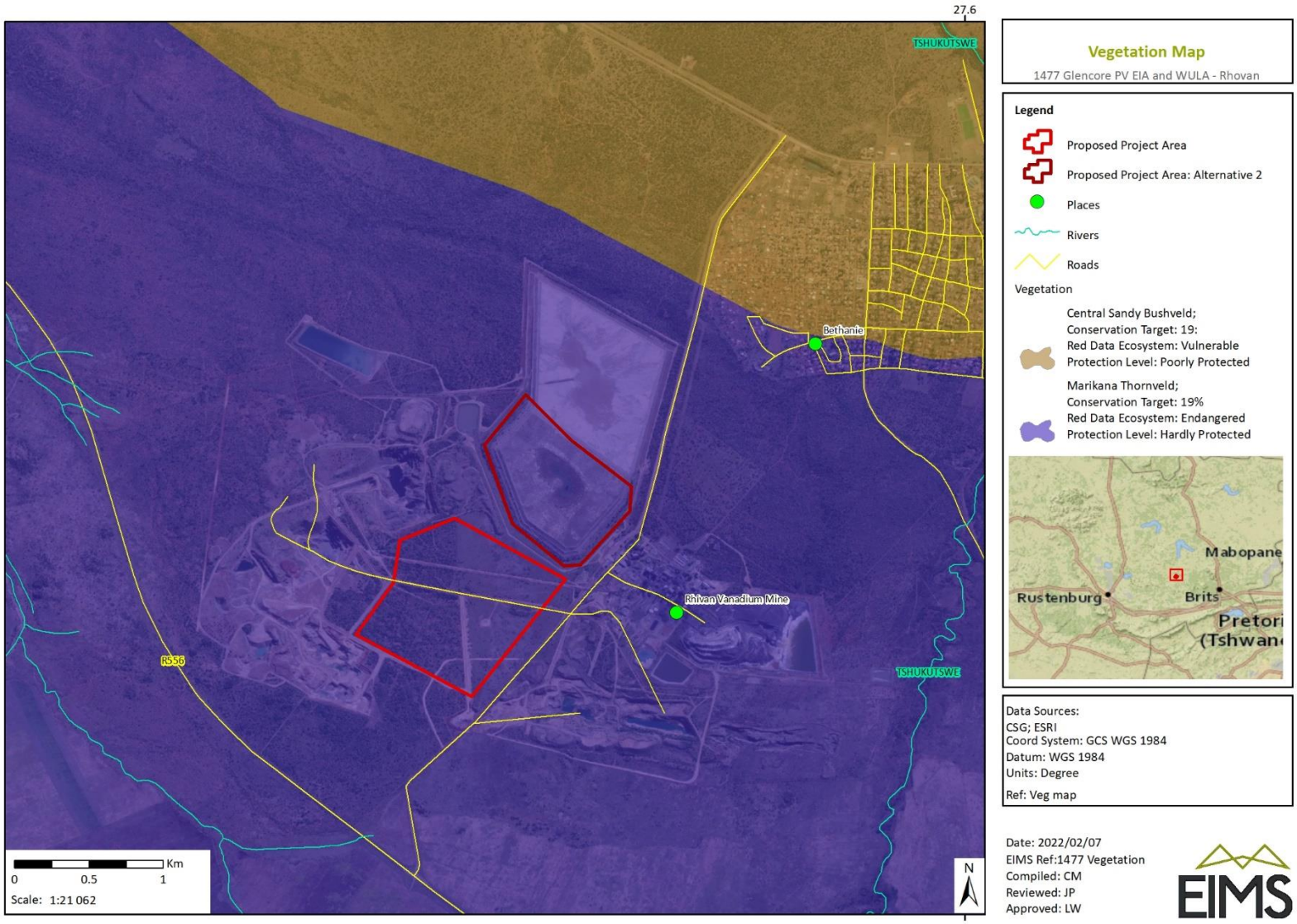


Figure 12: Study area vegetation

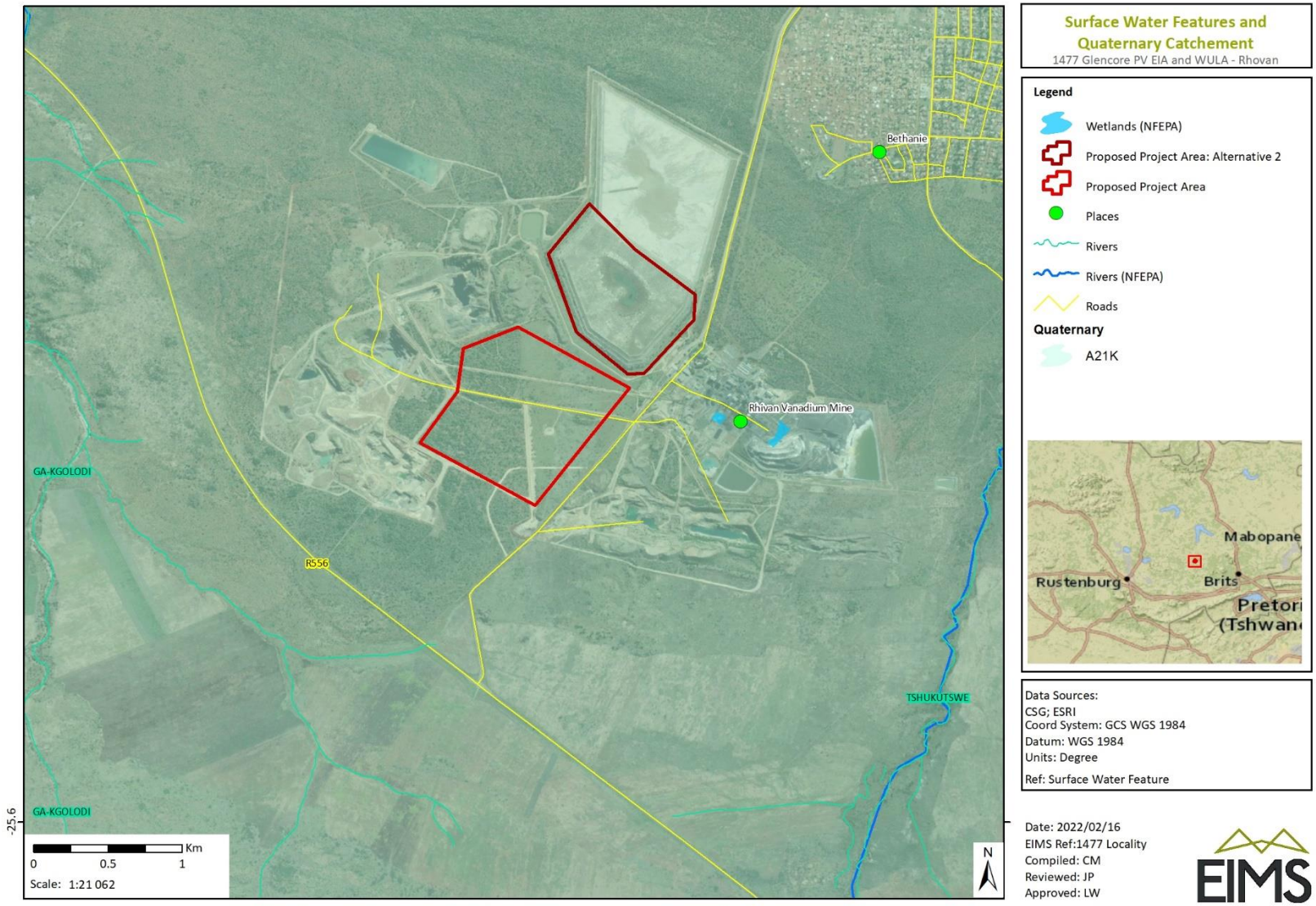


Figure 13: Surface Water Features Surrounding the proposed project area.

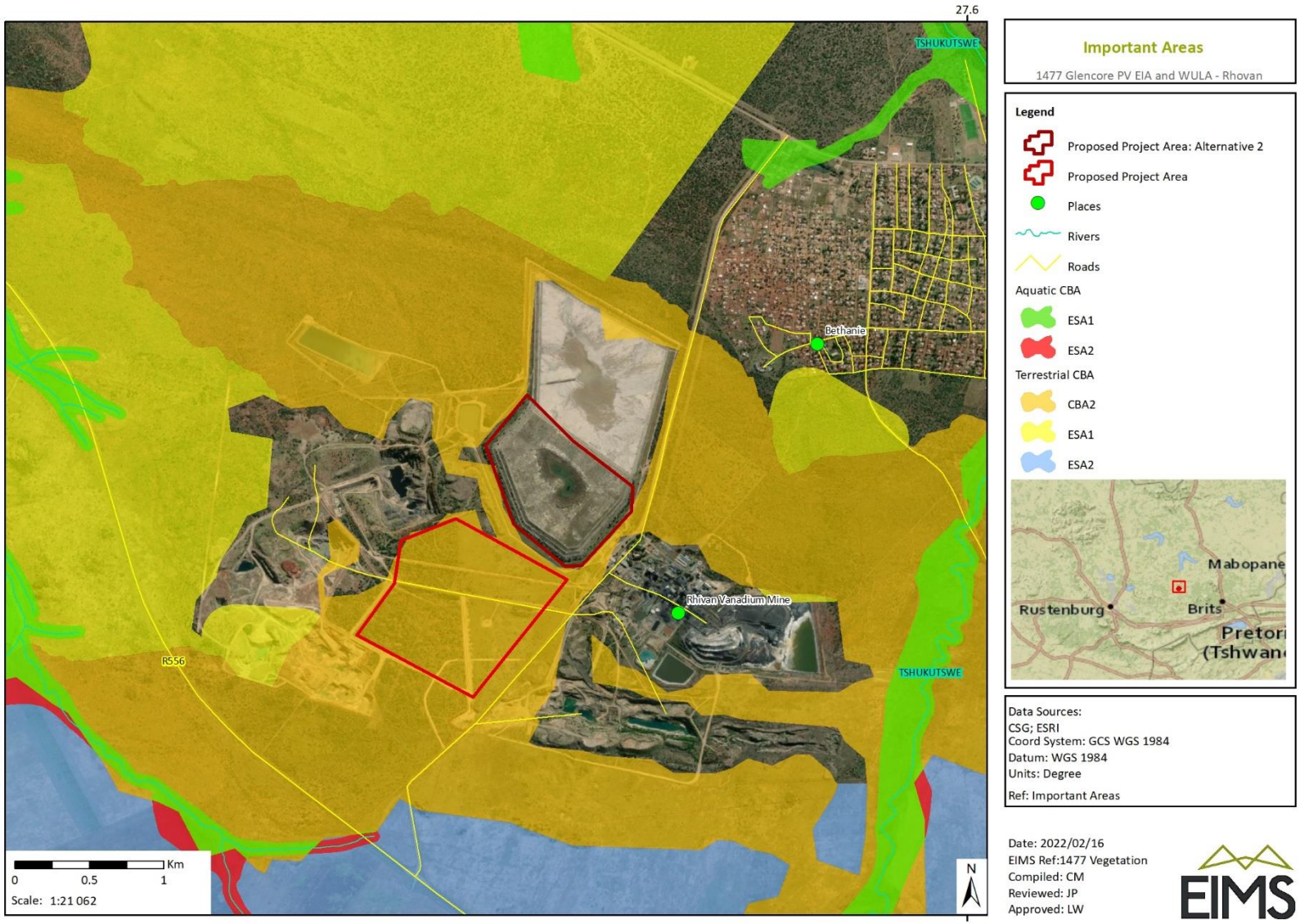


Figure 14: Important areas surrounding the proposed project site.

9.11 SURROUNDING LAND USES AND DEMOGRAPHICS

9.11.1 LAND USES

The current land use of the proposed PV facility is unused / vacant open space within the mine area. The area immediately surrounding the proposed facility footprint can be described as mining infrastructure. The proposed footprint is surrounded by a tailings storage facility to the north, the mine plant area to the east and open cast Vanadium mining operations to the south and west. The R556 road passes to the south of the project area, approximately 1km away from the southernmost point of the potential development footprint. The town of Bethanie is located 1 to the north-east. The towns of Barseba and Modikwe are located 3,5km and 5km north-west of the project area respectively. The next closest town is Makolokwe, situated 6km southeast. Agriculture is the most prominent land use in the Bojanala District Municipality. The district has a dualistic agricultural economy, which is comprised of a well-developed commercial sector and a predominantly subsistence sector in communal areas.

Rustenburg Local Municipality is located in the centre of the Bojanala Platinum District with Madibeng Local Municipality (Brits area) to the east, Moses Kotane Local Municipality (Mankwe/Madikwe area) to the north, Kgetleng River Local Municipality (Swartruggens/Koster area) to the west, and the province of Gauteng to the south. There are 48 towns and settlements situated within Rustenburg Local Municipality. The town of Rustenburg, known as the Platinum Capital, and Thlabane are the main economic centres of the municipality. Mining and agriculture are the predominant land uses within the Rustenburg Local Municipality.

9.11.2 DEMOGRAPHICS AND EMPLOYMENT STATISTICS

The Bojanala Platinum District Municipality (Bojanala) is one of four district municipalities in the Northwest Province. Bojanala takes up 18 332 square kilometres or 17% of the provinces land area. In Bojanala District, 94% of the population is black African, 5% is white and 1% is coloured. Bojanala Platinum District Municipality's male/female split in population was 111.6 males per 100 females in 2018. In 2008, the unemployment rate for Bojanala Platinum was 25% and increased overtime to 27.6% in 2018.

Mining and quarrying industry in the province and certainly in the district remains the backbone of the district's economic output. It is said 94% of the country's platinum is found in the Rustenburg and Brits areas which areas are also said to produce more platinum than any other single area in the world. Agricultural activities account for 19% of the district's land area and are mainly geared towards commercial dry-land farming, commercially irrigated farming and subsistence dry-land activities. Mixed-crop farming and in the areas of Rustenburg and Brits, maize and sunflower are in abundance in the district The manufacturing and tourism sectors make up most of the remainder of the district's economic output.

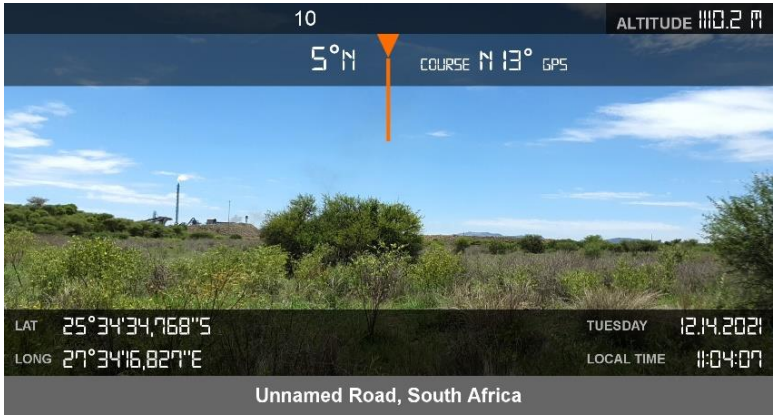
For the Rustenburg local municipal area, 266 471 people are economically active (employed or unemployed but looking for work), and of these, 26,4% are unemployed. 34,7% of the 142 219 economically active youth (15 – 34 years) in the Rustenburg Local Municipality are unemployed.

9.12 SITE SPECIFIC PHOTOGRAPHS

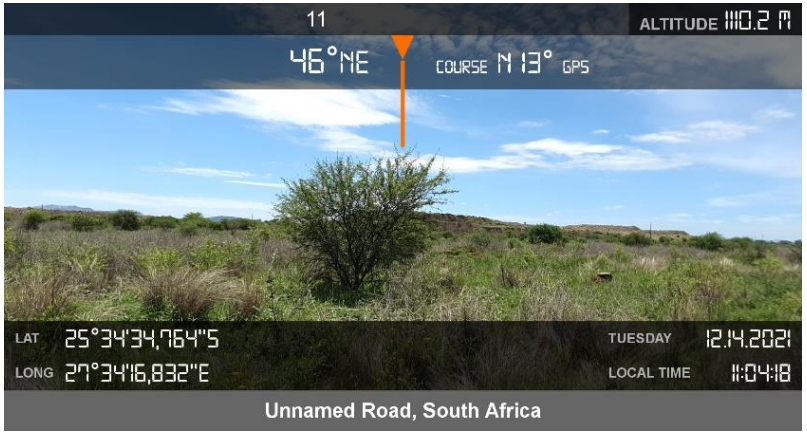
Photographs were taken in all eight major directions from approximately the middle of the proposed project area to give a visual indication of the site-specific attributes. The table of figures below, Table 10, includes all the photos in the eight major directions.

Table 10: Table of figures showing photos of the proposed project area in the eight major directions

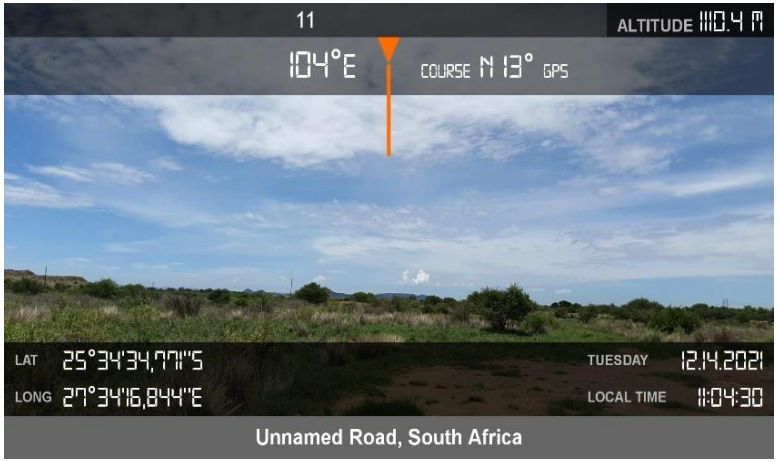
North



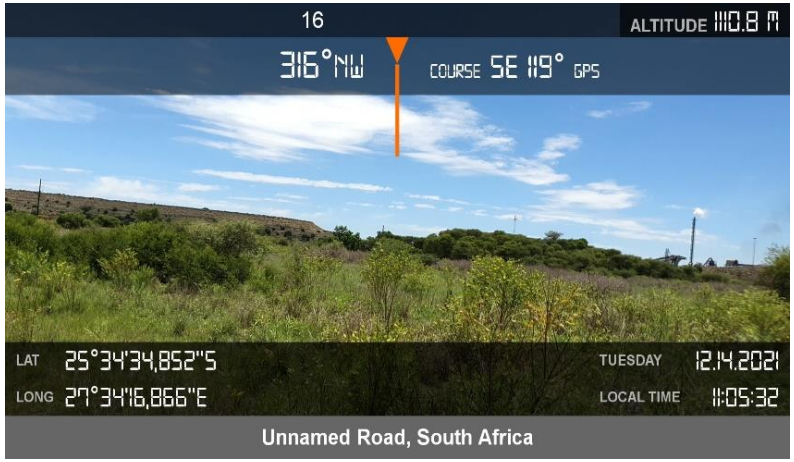
Northeast



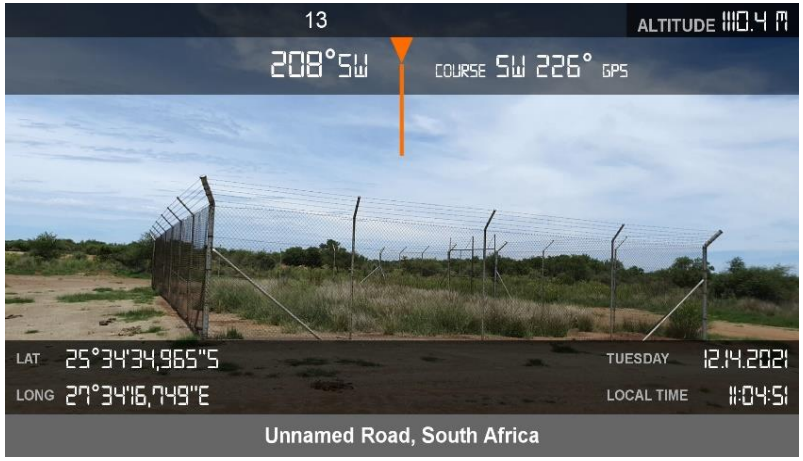
East



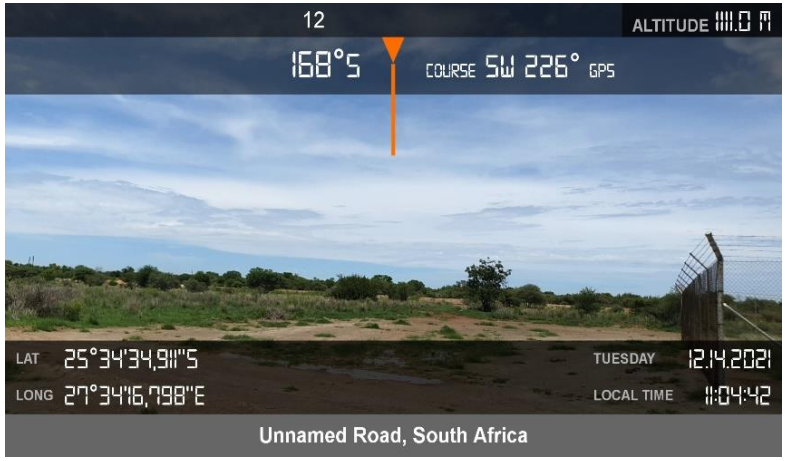
Southeast



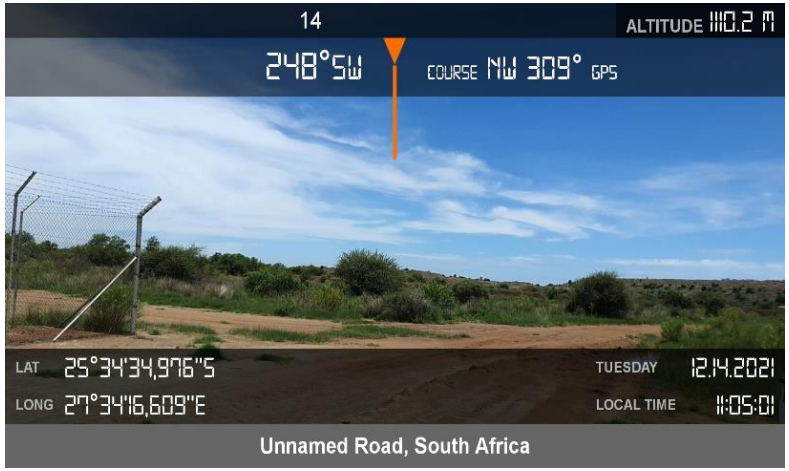
South



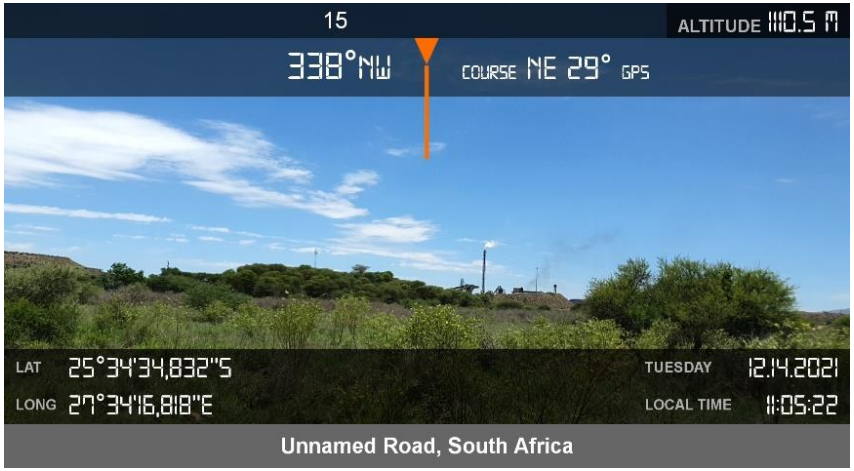
Southwest



West



Northwest



10 ENVIRONMENTAL IMPACT ASSESSMENT

This section aims to identify and do a preliminary assessment on the potential environmental impacts associated with the proposed PV facility. This impact assessment will be used to guide the identification and selection of preferred alternatives, and management and mitigation measures, applicable to the proposed activities. The preliminary assessment will also serve to focus the subsequent EIA phase on the key issues and impacts.

10.1 PROCEDURE

The impact significance rating methodology, as presented herein and utilised for all EIMS Impact Assessment Projects, is guided by the requirements of the NEMA EIA Regulations 2014 (as amended). The broad approach to the significance rating methodology is to determine the environmental risk (ER) by considering the consequence (C) of each impact (comprising Nature, Extent, Duration, Magnitude, and Reversibility) and relate this to the probability/ likelihood (P) of the impact occurring. The ER is determined for the pre- and post-mitigation scenario. In addition, other factors, including cumulative impacts and potential for irreplaceable loss of resources, are used to determine a prioritisation factor (PF) which is applied to the ER to determine the overall significance (S). The impact assessment will be applied to all identified alternatives.

10.1.1 DETERMINATION OF ENVIRONMENTAL RISK

The significance (S) of an impact is determined by applying a prioritisation factor (PF) to the environmental risk (ER). The environmental risk is dependent on the consequence (C) of the particular impact and the probability (P) of the impact occurring. Consequence is determined through the consideration of the Nature (N), Extent (E), Duration (D), Magnitude (M), and Reversibility (R) applicable to the specific impact.

For the purpose of this methodology the consequence of the impact is represented by:

$$C = \frac{(E + D + M + R) * N}{4}$$

Each individual aspect in the determination of the consequence is represented by a rating scale as defined in Table 11 below.

Table 11: Criteria for Determining Impact Consequence.

Aspect	Score	Definition
Nature	- 1	Likely to result in a negative/ detrimental impact
	+1	Likely to result in a positive/ beneficial impact
Extent	1	Activity (i.e. limited to the area applicable to the specific activity)
	2	Site (i.e. within the development property boundary)
	3	Local (i.e. the area within 5 km of the site)
	4	Regional (i.e. extends between 5 and 50 km from the site)
	5	Provincial / National (i.e. extends beyond 50 km from the site)
Duration	1	Immediate (<1 year)
	2	Short term (1-5 years)
	3	Medium term (6-15 years)

	4	Long term (15-65 years), the impact will cease after the operational life span of the project)
	5	Permanent (>65 years), no mitigation measure of natural process will reduce the impact after construction)
Magnitude/ Intensity	1	Minor (where the impact affects the environment in such a way that natural, cultural and social functions and processes are not affected)
	2	Low (where the impact affects the environment in such a way that natural, cultural and social functions and processes are slightly affected)
	3	Moderate (where the affected environment is altered but natural, cultural and social functions and processes continue albeit in a modified way, moderate improvement for +ve impacts)
	4	High (where natural, cultural or social functions or processes are altered to the extent that it will temporarily cease, high improvement for +ve impacts)
	5	Very high / don't know (where natural, cultural or social functions or processes are altered to the extent that it will permanently cease, substantial improvement for +ve impacts)
Reversibility	1	Impact is reversible without any time and cost.
	2	Impact is reversible without incurring significant time and cost.
	3	Impact is reversible only by incurring significant time and cost.
	4	Impact is reversible only by incurring prohibitively high time and cost.
	5	Irreversible Impact.

Once the C has been determined, the ER is determined in accordance with the standard risk assessment relationship by multiplying the C and the P. Probability is rated/ scored as per Table 12.

Table 12: Probability Scoring.

Probability	1	Improbable (the possibility of the impact materialising is very low as a result of design, historic experience, or implementation of adequate corrective actions; <25%),
	2	Low probability (there is a possibility that the impact will occur; >25% and <50%),
	3	Medium probability (the impact may occur; >50% and <75%),
	4	High probability (it is most likely that the impact will occur- > 75% probability), or
	5	Definite (the impact will occur),

The result is a qualitative representation of relative ER associated with the impact. ER is therefore calculated as follows:

$$\boldsymbol{ER = C \; x \; P}$$

Table 13: Determination of Environmental Risk.

Consequence	5	5	10	15	20	25
	4	4	8	12	16	20
	3	3	6	9	12	15
	2	2	4	6	8	10
	1	1	2	3	4	5
		1	2	3	4	5
		Probability				

The outcome of the environmental risk assessment will result in a range of scores, ranging from 1 through to 25. These ER scores are then grouped into respective classes as described in Table 4.

Table 14: Environmental Risk Scores.

ER Score	Description
<9	Low (i.e. where this impact is unlikely to be a significant environmental risk/ reward).
≥9 ≤17	Medium (i.e. where the impact could have a significant environmental risk/ reward),
>17	High (i.e. where the impact will have a significant environmental risk/ reward).

The impact ER will be determined for each impact without relevant management and mitigation measures (pre-mitigation), as well as post implementation of relevant management and mitigation measures (post-mitigation). This allows for a prediction in the degree to which the impact can be managed/mitigated.

10.1.2 IMPACT PRIORITISATION

Further to the assessment criteria presented in the section above, it is necessary to assess each potentially significant impact in terms of:

- Cumulative impacts; and
- The degree to which the impact may cause irreplaceable loss of resources.

To ensure that these factors are considered, an impact prioritisation factor (PF) will be applied to each impact ER (post mitigation). This prioritisation factor does not aim to detract from the risk ratings but rather to focus the attention of the decision-making authority on the higher priority/significance issues and impacts. The PF will be applied to the ER score based on the assumption that relevant suggested management/mitigation impacts are implemented.

Table 15: Criteria for Determining Prioritisation.

Cumulative Impact (CI)	Low (1)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is unlikely that the impact will result in spatial and temporal cumulative change.
	Medium (2)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is probable that the impact will result in spatial and temporal cumulative change.

	High (3)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is highly probable/ definite that the impact will result in spatial and temporal cumulative change.
Irreplaceable Loss of Resources (LR)	Low (1)	Where the impact is unlikely to result in irreplaceable loss of resources.
	Medium (2)	Where the impact may result in the irreplaceable loss (cannot be replaced or substituted) of resources but the value (services and/or functions) of these resources is limited.
	High (3)	Where the impact may result in the irreplaceable loss of resources of high value (services and/or functions).

The value for the final impact priority is represented as a single consolidated priority, determined as the sum of each individual criteria represented in Table 5. The impact priority is therefore determined as follows:

$$\boldsymbol{Priority = CI + LR}$$

The result is a priority score which ranges from 2 to 6 and a consequent PF ranging from 1 to 1.5 (Refer to Table 16).

Table 16: Determination of Prioritisation Factor.

Priority	Prioritisation Factor
2	1
3	1.125
4	1.25
5	1.375
6	1.5

In order to determine the final impact significance, the PF is multiplied by the ER of the post mitigation scoring. The ultimate aim of the PF is an attempt to increase the post mitigation environmental risk rating by a factor of 0.5, if all the priority attributes are high (i.e. if an impact comes out with a high medium environmental risk after the conventional impact rating, but there is significant cumulative impact potential and significant potential for irreplaceable loss of resources, then the net result would be to upscale the impact to a high significance).

Table 17: Final Environmental Significance Rating.

Significance Rating	Description
<-17	High negative (i.e. where the impact must have an influence on the decision process to develop in the area).
≥-17, ≤-9	Medium negative (i.e. where the impact could influence the decision to develop in the area).
>-9, < 0	Low negative (i.e. where this impact would not have a direct influence on the decision to develop in the area).
0	No impact

>0, <9	Low positive (i.e. where this impact would not have a direct influence on the decision to develop in the area).
≥9, ≤17	Medium positive (i.e. where the impact could influence the decision to develop in the area).
>17	High positive (i.e. where the impact must have an influence on the decision process to develop in the area).

The significance ratings and additional considerations applied to each impact will be used to provide a quantitative comparative assessment of the alternatives being considered. In addition, professional expertise and opinion of the specialists and the environmental consultants will be applied to provide a qualitative comparison of the alternatives under consideration. This process will identify the best alternative for the proposed project.

10.2 IDENTIFICATION AND PRELIMINARY ASSESSMENT OF IMPACTS

Potential environmental impacts were identified during the Scoping phase and assessed in the EIA phase. These impacts were identified by the EAP, the appointed specialist, as well as information received from the public. Section 10 provides the list of impacts identified during the Scoping phase and assessed during EIA phase. Moreover Table 18 presents the combined details of the impact assessment calculations undertaken towards determining the pre- and post-mitigation impact significance, as well as the final significance scores.

Without proper mitigation measures and continual environmental management, most of the identified impacts may potentially become cumulative, affecting areas outside of their originally identified zone of impact. The potential cumulative impacts have been identified, evaluated, and mitigation measures suggested which have been updated during the detailed EIA phase level of investigation. When considering cumulative impacts, it is vitally important to bear in mind the scale at which different impacts occur. There is potential for a cumulative effect at a broad scale, as well as finer scale effects occurring in the area surrounding the activity. The main impacts which have a cumulative effect on a regional scale are related to the transportation vectors that they act upon. At a finer scale, there are also impacts that have the potential to result in a cumulative effect, although due to the smaller scale at which these operate, the significance of the cumulative impact is lower in the broader context.

10.2.1 PLANNING PHASE IMPACTS

10.2.1.1 IMPACTS ON EXISTING INFRASTRUCTURE AND SERVICES

During the planning phase, existing infrastructure and services in and around the proposed location for the PV facility could be impacted on by the proposed activities. Construction could lead to the destruction of existing infrastructure. Overuse or pollution of water sources within the study area could negatively effect on surrounding land users. The significance of the impact, however, is rated as low negative before and after mitigation as the proposed activities are located within the Rhovan mining area and is surrounded by mine infrastructure only. The only infrastructure potentially affected would be the infrastructure present at the mine.

(i) Mitigation measures

- Identify all infrastructure and services within proximity of the proposed facility during the planning phase and attempt to plan around the identified infrastructure and services as far as reasonably possible.
- Communicate with surrounding land users to help identify existing infrastructure and services within the area.

(ii) Cumulative Impacts

- Destruction of existing infrastructure or obstruction of existing services during construction could impact on surrounding land users within the vicinity of the proposed PV facility.

(iii) Irreplaceable loss of Resources

- No irreplaceable loss on existing infrastructure or services are foreseen as a result of the proposed activity. If existing infrastructure is damaged or services hindered, it will incur a cost to the applicant.

10.2.1.2 IMPACTS DUE TO COMMUNICATION INEFFICIENCY

Communication is important as to notify I&APs about the proposed project and activities. It will give them clarity on how their livelihoods or businesses could possibly be impacted on by the proposed activities. Open and clear communication will allow I&APs to comment on any queries or concerns that they might have as well as to inform the EIA. Communication will also allow the local community of possible vacancies. If communication is not transparent it could lead to uninformed decisions by the applicant, uprisings by an unhappy community and an incomplete EIA which could lead to an ungranted Environmental Authorisation. The impact significance is rated as being medium negative before mitigation, but low negative if the mitigation measures are applied.

(i) Mitigation measures

- Clear and transparent communication with the authorities and all affected and surrounding I&APs about the proposed project and activities as well as possible vacancies.
- Keep a register with any complaints from stakeholders/ I&APs and address them appropriately.

(ii) Cumulative Impacts

- Non-transparent communication could lead to bad decision making which might affect livelihoods in the surrounding community.

(iii) Irreplaceable loss of Resources

- No irreplaceable loss of resources is expected as a result of communication inefficiency during the planning phase.

10.2.2 CONSTRUCTION PHASE IMPACTS

10.2.2.1 IMPACT ON TERRESTRIAL BIODIVERSITY AND AVIFAUNA

The project area has been transformed/disturbed from its original state by the current mining operations. In respect of site alternative 1, the project area appears to have an overall moderate sensitivity. In addition the project area is located within a CBA2 area although it was noted on the Terrestrial Biodiversity study that the project area is already in a degraded state and does not reflect that of a CBA2 area. Sensitive species of plants and animals could occur within in the project area. Avifaunal habitats could also be affected by the proposed construction of the facility. Vegetation in the area is still mostly in a natural state. Unmitigated, the development of this site could have a negative impact to the surrounding habitats. The sites may support a number of general avifauna species, and the development will still lead to habitat loss and fragmentation. During the specialist study undertaken for the project area, it was confirmed that a large portion of the project area has low sensitivity for the Plant Species Theme. The medium Animal Species Theme sensitivity depicted in the screening tool is disputed as no sensitive faunal species or signs of any were recorded in the project area and faunal diversity was reported to be low. The completion of the avifaunal assessment does not corroborate this High sensitivity rating. The high sensitivity terrestrial biodiversity for the entire project area also disputed. As stated above the vegetation structure and species composition of the three habitats have either been either degraded or completely altered as such, has a very low conservation value and ecological sensitivity from both a faunal and floral perspective with the exception of the Degraded Bushveld Habitat which has a medium sensitivity due to the habitat intactness as well as being located within an endangered ecosystem

Through the analysis of various database and satellite imagery as well as the infield screening assessment it was determined that although the majority of the project area is highly degraded or transformed it still possesses a number of sensitive ecological receptors. These sensitivity receptors relate to being within a EN ecosystem, traversing a threatened ecosystem (VU) and marginally overlapping with a Priority Focus Area. Other than that, the majority of the project area (Transformed area) is in a highly degraded state as the vegetation structure and

species composition has been completely altered as such, has a very low conservation value and ecological sensitivity from a floral perspective.

Three habitat units were recorded in the project area, Transformed, Secondary Grassland and Degraded Bushveld. The vegetation and ecology within the development areas have been heavily disturbed for a long time, both currently and historically. The only significant patch of intact natural vegetation that remains within the project area is the Degraded Bushveld. Overall, the terrestrial botanical diversity within the project areas is very low. The Transformed habitat unit and Secondary Grassland were assigned a very low sensitivity and low sensitivity respectively due to the impacted nature of these areas collectively. Degraded Bushveld was assigned a medium sensitivity due to being relatively intact and being located within an Endangered ecosystem. The degraded bushveld is not entirely transformed but in a constant disturbed state, as they can't recover to a more natural state due to ongoing disturbances and impacts received from AIP encroachment, active mining practices and edge effects from the adjacent mining activities. Although the habitat units are not entirely transformed, ongoing and historic disturbances have resulted in the plant community no longer being fully representative of the reference vegetation.

Based on desktop data and the infield assessment the project area is home to a total of 71 species of which one is a SCC the yellow-throated sandgrouse (Pterocles gutturalis) (EN), although this species was not recorded during the 2022 assessment. However, this species frequents open plains with short grass, often near rivers or swamps; favours recently burnt areas; also found in ploughed land and on fallow, which is a habitat that is lacking in the project area. This species is thus considered moderately likely to occur in the project area in its current state. No nests of SCC species was recorded and the only collision risk species recorded was the Pied crow which does not pose a risk to the approval of the development.

The greatest impact on the overall habitat is expected to be an increase in alien plant infestations as a result of the construction disturbances, through the implementation of an alien management plan this impact can successfully be mitigated. The greatest impact on the avifauna is envisioned to be electrocution and collisions these can be mitigated with changes in the design and the installation of bird flappers. All the impacts can be successfully mitigated, it is therefore imperative that the mitigations and recommendations be considered by the issuing authority.

Alternative 2 is the least sensitive site from an environmental perspective as impacts on the faunal habitats would be less as this option would require clearing of vegetation. The entire area is transformed, and a large number of solar panel arrays can readily be installed on the surface of a tailings dam, provided that a suitable foundation solution be devised. This is not expected to be problematic should a suitable foundation solution be available. t is thus important that the management outcomes be adhered to in order to mitigate an indirect impact that might stem from the development. This should reduce potential impacts from a medium to a low significance.

(i) Mitigation measures

- Where possible, existing access routes and walking paths must be made use of.
- All laydown, chemical toilets etc. should be restricted to low sensitivity areas. Any materials may not be stored for extended periods of time and must be removed from the project area once the construction/closure phase has been concluded. No storage of vehicles or equipment will be allowed outside of the designated project areas.
- Any materials may not be stored for extended periods of time and must be removed from the project area once the construction/closure phase has been concluded. No storage of vehicles or equipment will be allowed outside of the designated project areas.
- The areas to be developed must be specifically demarcated to prevent movement of staff or any individual into the surrounding environments and signs must be put up to enforce this.
- Noise must be kept to an absolute minimum during the evenings and at night to minimize all possible disturbances to amphibian species and nocturnal mammals.

- All areas to be developed must be walked through prior to any activity to ensure no nests or fauna species are found in the area. Should any species of conservation concern not move out of the area or their nest be found in the area a suitably qualified specialist must be consulted to advise on the correct actions to be taken.

(ii) Cumulative Impacts

- No cumulative impacts are expected on flora and fauna during the construction phase.

(iii) Irreplaceable loss of Resources

- No irreplaceable loss of resources is expected during the construction phase.

10.2.2.2 INTRODUCTION OF ALIEN VEGETATION

Alien vegetation will be introduced to site as a result of construction activities such as clearing of indigenous vegetation for site establishment and the . The impact significance is rated as medium negative before mitigation and low negative after mitigation.

(i) Mitigation measures

- The footprint area of the construction should be kept to a minimum. The footprint area must be clearly demarcated to avoid unnecessary disturbances to adjacent areas. Footprint of the roads must be kept to prescribed widths.
- An alien management plan must be implemented quarterly for 2 years after phase.

(iv) Cumulative Impacts

- No cumulative impacts are expected on flora and fauna during the construction phase.

(v) Irreplaceable loss of Resources

- No irreplaceable loss of resources is expected during the construction phase.

10.2.2.3 NOISE GENERATION

Noise will be generated during the construction phase as a result of construction vehicles and heavy machinery working on-site. Noise relating to the construction phase of this project can be described as a nuisance rather than having environmental or health implications. The impact significance is rated as low negative before and after mitigation, as the proposed activities will take place within the mine area where which is already subject to existing noises from the mining processes.

(i) Mitigation measures

- Ensure that all construction vehicles and equipment are in a good working condition as to not generate unnecessary noise.
- The provisions of the South African National Standards (SANS) 10103 (The measurement and rating of environmental noise with respect to annoyance and to speech communication), must be complied with.
- The Environment Conservation Act (Act 73 of 1989) (ECA), Section 25 of the Act and the Noise Regulations (GNR 154 of 1992) promulgated under this section, are still in effect. These regulations serve to control noise and general prohibitions relating to noise impact and nuisance. These regulations need to be complied with.

(ii) Cumulative Impacts

- No cumulative impacts are expected as a result of noise during the construction phase.

(iii) Irreplaceable loss of Resources

- No irreplaceable loss of resources is expected as a result of noise during the construction phase.

10.2.2.4 IMPACT ON SOIL

The impact on soil during construction is considered to be low negative before and after mitigation. The location of the site is within the existing mine area for the Rhovan mine and is almost entirely surrounded by mining infrastructure. Therefore it is not feasible for the site to be used for agricultural purposes while the mine is still in operation.

(i) Mitigation measures

- Bunded (surface sealed with plastic or other impermeable material) areas should be established for:
    - The storage of fuels, oils and hydraulics;
    - The storage of raw materials, such as sand, stone and cement; and
    - Vehicle maintenance.
- All servicing/ maintenance of construction vehicles that could cause harm to the environment must be done off-site. No servicing of construction vehicles is allowed on site, except for minor repairs to prevent further environmental pollution or damage.
- All working fronts must be provided with a spill containment kit to contain and collect spills.
- Any evidence of erosion, scouring, sedimentation, and/or undercutting must be rectified and rehabilitated immediately.
- Speed limits must be put in place to reduce erosion.
- Where possible, existing access routes and walking paths must be made use of.
- Areas that are denuded during construction need to be e-vegetated with indigenous vegetation to prevent the erosion during flood events and strong winds.
- Should erosion become a problem during construction, then diversion berms and drains should be constructed to divert run-off away from exposed areas.
- A detailed Stormwater Management Plan (SWMP) needs to be prepared.
- Adequate stormwater drainage and management is required to prevent soil erosion.

(ii) Cumulative Impacts

- No cumulative impacts are expected as a result of impact on soil during the construction phase.

(iii) Irreplaceable loss of Resources

- No irreplaceable loss of resources is expected as a result of impact on soil during the construction phase.

10.2.2.5 IMPACT ON HERITAGE AND PALAEONTOLOGICAL RESOURCES

The fieldwork for the updated HIA undertaken in 2022 identified three sites (RPVF-01 – 03) containing archaeological resources were identified during the fieldwork. All three were overgrown, with only sections of stone walling visible. It is possible that the identified stone structures and stone waling are part of a large settlement or settlements. Due to other similar structures in the Rhovan mine area, these three sites have medium heritage significance and are provisionally graded as 3B. The three sites are situated within the footprint area of alternative 1. Due to the vegetation cover it was not possible to delineate the extent of the stone walling.

The pre-mitigation impact on the identified heritage resources located within the footprint of alternative 1 is calculated as medium negative and only focused during the construction of the PV facility. Implementation of the recommended mitigation measures will reduce the impact to low negative.

(i) Mitigation measures

- If unearthed, under no circumstances shall any heritage, archaeological or paleontological artefact/ feature be removed, destroyed or interfered with by anyone on the site, unless such removal has been authorised by the heritage authorities. Implement a chance find procedures in case of possible heritage finds are uncovered.
- A phase II field assessment that will include vegetation clearance of the structures to determine the extent of the identified heritage site and test excavation where deposits or midden areas are identified during the vegetation clearing must be conducted. This will aim to identify the cultural affinity, temporal depth, and settlement layout.
- The Phase II study can only be conducted after a permit is issued to the competent archaeologist under Section 35 of the NHRA. Upon completion of the Phase II study, a permit for destruction can be lodged with SAHRA with the backing of the Phase II report as completed by the archaeological specialist. An application for destruction will then need to be submitted to SAHRA by the developer with the backing of the report emanating from the documentation work. Upon issuing of the destruction permit the specific site can be destroyed and bush clearing continue in those specific areas.
- Contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or paleontological artefacts as set out in the NHRA (Act No 25 of 1999) Section 51 (1).

(ii) Cumulative Impacts

- No cumulative impacts are expected as a result of impacts on heritage and palaeontological resources during construction.

(iii) Irreplaceable loss of Resources

- Although unlikely, if any palaeontological resources are unearthed and destroyed, it will be irreplaceable.

10.2.2.6 EMPLOYMENT CREATION

Employment creation was identified as having a medium positive impact significance before and after mitigation during the construction phase. Construction vehicles, industrial instrumentation and operators of these vehicles and equipment will be required during construction phase. Approximately 35 temporary job opportunities are to be created during the construction phase of the project.

(i) Mitigation measures

- Employ people from the surrounding local communities as far as reasonably possible.
- Utilise existing community structures if available, to act as a communication link between the local community and the applicant for informing the local community of job opportunities and informing the Applicant of possible contractors in the local community.

(ii) Cumulative Impacts

- No cumulative impacts are expected as a result of employment creation.

(iii) Irreplaceable loss of Resources

- No irreplaceable loss of resources is expected as a result of employment creation.

10.2.2.7 WASTE MANAGEMENT IMPACTS

Waste management impacts were rated as having a low negative significance before and after mitigation. Domestic waste, construction waste and sewage are all waste types that need to be considered during construction. One ton per month of solid waste (rubble) is expected to be generated during construction.

(i) Mitigation measures

- Waste management must be a priority and all waste must be collected and stored effectively.
- The Contractor should inform all site staff to the use of supplied ablution facilities and under no circumstances shall indiscriminate excretion and urinating be allowed other than in supplied facilities.
- No waste releases into the environment should be permitted.
- The toilets shall be of a neat construction and shall be provided with doors and locks and shall be secured to prevent them from falling over.
- The contractor shall always supply toilet paper at all toilets. Toilet paper dispensers shall be provided in all toilets.
- A dedicated waste collection and storage facility must be prepared, and this should be emptied and collected wastes disposed of on a regular basis. Wastes must be disposed of at suitably licensed waste disposal facilities.
- Contaminated water, and effluents must be prevented from entering the local environment (soil and water), adequately stored in protected and where necessary bunded areas, and disposed of at a suitably licensed disposal facility.
- Vermin / weatherproof bins must be provided in enough numbers and capacity to store domestic waste. These bins must be kept closed to reduce odour build-up and emptied regularly to avoid overfilling and other associated nuisances.
- Each active construction site must be checked daily to ensure that the site is free from litter and unnecessary wastes.
- Hazardous substances, if applicable, must be stored in a secure location, isolated from direct contact with the soils and covered where necessary.
- No waste is to be left on site whether it is biodegradable or not. Unutilised, construction materials are to be removed once construction has ended.

(ii) Cumulative Impacts

- No cumulative impacts are expected as a result of waste management impacts during construction.

(iii) Irreplaceable loss of Resources

- No irreplaceable loss of resources is expected as a result of waste management impacts during construction.

10.2.2.8 DUST GENERATION

Dust will be generated as a result of movement of heavy machinery and vehicles on-site during construction. The impact significance was rated as being low negative before and after mitigation.

(i) Mitigation measures

- Dust-suppressing mitigation measures must be put in place and must be strictly adhered to. This includes wetting of exposed soft soil surfaces. No non environmentally friendly suppressants may be used as this could result in pollution of water sources

(ii) Cumulative Impacts

- No cumulative impacts are expected as a result of dust generation during construction.

(iii) Irreplaceable loss of Resources

- No irreplaceable loss of resources is expected as a result of dust generation during construction.

10.2.2.9 WASTE MANAGEMENT IMPACTS

Waste management impacts were rated as having a low negative significance before and after mitigation. Domestic waste, construction waste and sewage are all waste types that need to be considered during construction.

(i) Mitigation measures

- Waste management must be a priority and all waste must be collected and stored effectively.
- The Contractor should inform all site staff to the use of supplied ablution facilities and under no circumstances shall indiscriminate excretion and urinating be allowed other than in supplied facilities.
- No waste releases into the environment should be permitted.
- A minimum of one toilet must be provided per 10 persons. Portable toilets must be pumped dry to ensure the system does not degrade over time and spill into the surrounding area.
- The toilets shall be of a neat construction and shall be provided with doors and locks and shall be secured to prevent them from falling over.
- The contractor shall always supply toilet paper at all toilets. Toilet paper dispensers shall be provided in all toilets.
- A dedicated waste collection and storage facility must be prepared, and this should be emptied and collected wastes disposed of on a regular basis. Wastes must be disposed of at suitably licensed waste disposal facilities.
- Contaminated water, and effluents must be prevented from entering the local environment (soil and water), adequately stored in protected and where necessary bunded areas, and disposed of at a suitably licensed disposal facility.
- Vermin / weatherproof bins must be provided in enough numbers and capacity to store domestic waste. These bins must be kept closed to reduce odour build-up and emptied regularly to avoid overfilling and other associated nuisances.
- Where a registered disposal facility is not available close to the project area, the Contractor shall provide a method statement with regard to waste management. Under no circumstances may domestic waste be burned on site.
- Refuse bins will be emptied and secured Temporary storage of domestic waste shall be in covered waste skips. Maximum domestic waste storage period will be 30 days.
- Each active site must be checked daily to ensure that the site is free from litter and unnecessary wastes.
- Hazardous substances, if applicable, must be stored in a secure location, isolated from direct contact with the soils and covered where necessary.
- No waste is to be left on site whether it is biodegradable or not. Unutilised materials are to be removed once decommissioning has ended.

(ii) Cumulative Impacts

- No cumulative impacts are expected as a result of waste management impacts during decommissioning.

(iii) Irreplaceable loss of Resources

- No irreplaceable loss of resources is expected as a result of waste management impacts during decommissioning.

10.2.3 OPERATIONAL PHASE IMPACTS

10.2.3.1 IMPACT ON TERRESTRIAL BIODIVERSITY

Operation of the PV facility could have impacts on terrestrial biodiversity. Erosion, dust, fire, alien vegetation introduction and proliferation as well as poor waste management resulting in increase in pest numbers could impact on flora and fauna. The significance of these impacts is considered to be of low significance because the area has been altered from its original state however the project can still affect species in the surrounding area

(i) Mitigation measures

- A hydrocarbon spill management plan must be put in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. Appropriately contain any generator diesel storage tanks, machinery spills (e.g. accidental spills of hydrocarbons oils, diesel etc.) in such a way as to prevent them leaking and entering the environment.
- It should be made an offence for any staff to take/ bring any plant species into/out of any portion of the project area. No plant species whether indigenous or exotic should be brought into/taken from the project area, to prevent the spread of exotic or invasive species or the illegal collection of plants.
- A fire management plan needs to be complied and implemented to restrict the impact fire might have on the surrounding areas.
- Any individual of the protected plants that was observed needs a relocation or destruction permit in order for any individual that may be removed or destroyed due to the development. Preferably, the plants can be relocated within the property without a permit or otherwise left unharmed.

(ii) Cumulative Impacts

- No cumulative impacts are expected on flora and fauna during the operations phase.

(iii) Irreplaceable loss of Resources

- No irreplaceable loss of biodiversity resources is expected during operations.

10.2.3.2 IMPACT ON AVIFAUNA

Collisions with PV panels are said to be caused by the mirage effect, this has however not been conclusively proven. It has been proven the small passerines have a high risk of collision with PVs and associated infrastructure including power lines. This is as a result of the reflective surfaces that disorientate them when feeding in large swarms. Large passerines are susceptible to electrocution by electrical infrastructure at the facility.

(i) Mitigation measures

- As far as possible power cables within the project area should be thoroughly insulated and preferably buried.
- Any exposed parts must be covered (insulated) to reduce electrocution risk.
- All the parts of the infrastructure must be nest proofed and anti-perch devices placed on areas that can lead to electrocution.
- Consider the use of bird deterrent devices to limit collision risk.

(ii) Cumulative Impacts

- Loss of habitat for species including migratory species will be cumulative.

(iii) Irreplaceable loss of Resources

- Loss of habitat of indigenous species.

10.2.3.3 VISUAL IMPACT

The facility may be visible from several existing roads in the area including the R556. The closest residential areas are several km away and the facility is not expected to be visible from these areas. The landscape is characterised by undulating rises and valleys which create significant visual screening for infrastructure with a low vertical extent. Any structures under 10m high should be easily absorbed into the landscape. In addition, the facility is located within the mine area and is surrounded by existing mining infrastructure. The overall visual impact of the proposed PV facility holds a low overall visual impact. For this reason, no mitigation measures are required.

(i) Mitigation measures

- None required.

(ii) Cumulative Impacts

- None expected as no other PV facilities are proposed for the area.

(iii) Irreplaceable loss of Resources

- None.

10.2.3.4 EMPLOYMENT CREATION

Employment creation will be a high positive impact on the local community before and after mitigation (enhancement). Approximately 15 employment opportunities will be made available during the operational phase.

(i) Mitigation measures

- Employ people from the surrounding local communities as reasonably possible.
- Utilise existing community structures if available, to act as a communication link between the local community and the applicant for informing the local community of job opportunities.

(ii) Cumulative Impacts

- The creation of employment opportunities will assist in reaching the ELM goal of reducing unemployment as well as positively contribute to certain livelihoods in the community through income generation.

(iii) Irreplaceable loss of Resources

- No irreplaceable loss of resources is anticipated as a result of employment creation.

10.2.3.5 IMPACT ON HEALTH AND SAFETY

The Impact on health and safety during the operation phase was identified as being low negative before and after mitigation. All employees need to be subject to a safe and healthy working environment and the mine already has existing health and safety protocols in place.

(i) Mitigation measures

- The speed limit on private/ unregulated roads (access roads) of haul trucks should be limited to 30km/h and all traffic rules on regulated roads should be adhered to.
- Employees must be made aware of their specific responsibilities in terms of the environmental impacts i.e. controlling noise levels, reducing dust, etc.
- Employees must be made aware that no alcohol/drugs are allowed on site and no workers under the influence are permitted on site.
- Employees must be made aware that no fires will be permitted on site.
- The required PPE shall always be worn on site.

- Access to the site should be controlled.
- No person shall be allowed to stay on the site after working hours, except for any security that might be patrolling at night.

(ii) Cumulative Impacts

- No cumulative impacts are expected as a result of health and safety impacts during production.

(iii) Irreplaceable loss of Resources

- No irreplaceable loss of resources is expected as a result of health and safety impacts during production.

10.2.3.6 WASTE MANAGEMENT IMPACTS

Waste management impacts were rated as having a low negative significance before and after mitigation. Domestic waste and sewage are waste types that need to be considered during operation.

(i) Mitigation measures

- No waste releases into the environment should be permitted.
- A dedicated waste collection and storage facility must be prepared, and this should be emptied and collected wastes disposed of on a regular basis. Wastes must be disposed of at suitably licensed waste disposal facilities.
- Contaminated water, and effluents must be prevented from entering the local environment (soil and water), adequately stored in protected and where necessary bunded areas, and disposed of at a suitably licensed disposal facility.
- Vermin / weatherproof bins must be provided in enough numbers and capacity to store domestic waste. These bins must be kept closed to reduce odour build-up and emptied regularly to avoid overfilling and other associated nuisances.
- Each active area must be checked daily to ensure that the site is free from litter and unnecessary wastes.
- Hazardous substances, if applicable, must be stored in a secure location, isolated from direct contact with the soils and covered where necessary.

(ii) Cumulative Impacts

- No cumulative impacts are expected as a result of waste management impacts during production.

(iii) Irreplaceable loss of Resources.

- No irreplaceable loss of resources is expected as a result of waste management impacts during production.

10.2.3.7 STORMWATER IMPACTS

Stormwater runoff after a rainfall event needs to be managed on site. This impacted was rated as medium negative before mitigation and low negative after mitigation.

(i) Mitigation measures

- A detailed SWMP needs to be prepared.

(ii) Cumulative Impacts

- No cumulative impacts are expected as a result of stormwater during operations.

(iii) Irreplaceable loss of Resources

- No irreplaceable loss of resources is expected as a result of stormwater during production.

10.2.3.8 IMPACT ON SOIL

The impact on soil during operation is considered to be low negative before and after mitigation. This is because the area is surrounded by mining infrastructure and is designated for mining use; thus, no potential agricultural land will be impacted on.

(i) Mitigation measures

- Raw material stockpile should be placed on a cemented or bunded surface.
- All working fronts must be provided with a spill containment kit to contain and collect spills.
- Any evidence of erosion, scouring, sedimentation, and/or undercutting must be rectified and rehabilitated immediately.
- Should erosion become a problem during operation, then diversion berms and drains should be constructed to divert run-off away from exposed areas.
- Adequate stormwater drainage and management is required to prevent soil erosion.

(ii) Cumulative Impacts

- No cumulative impacts are expected as a result of impact on soil during the construction phase.

(iii) Irreplaceable loss of Resources

- No irreplaceable loss of resources is expected as a result of impact on soil during the construction phase.

10.2.4 DECOMMISSIONING PHASE IMPACTS

Please note that the holder of the Environmental Authorisation (EA), if granted, will have to apply for a separate EA for the decommissioning phase as required under Listing Notice 1, Activity 31 of the NEMA as amended. This will necessitate the need to reassess and consider the below mentioned, and any additionally identified impacts at such time when decommissioning is considered.

10.2.4.1 IMPACT ON TERRESTRIAL BIODIVERSITY AND AVIFAUNA

Decommissioning phase impacts on terrestrial biodiversity and avifauna will be identical to the construction phase impacts listed in section 10.2.2.1 above.

(i) Mitigation measures

- As per section 10.2.2.1 above (construction phase terrestrial biodiversity and avifauna impacts).

(ii) Cumulative Impacts

- No cumulative impacts are expected on flora and fauna during the construction phase.

(iii) Irreplaceable loss of Resources

- No irreplaceable loss of resources is expected during the construction phase.

10.2.4.2 DUST GENERATION

Some dust will be generated as a result of movement of heavy machinery and vehicles on-site during decommissioning. The impact significance was rated as being low negative before and after mitigation.

(i) Mitigation measures

- As per Section 10.2.2.8 above (construction phase dust generation)

(ii) Cumulative Impacts

- No cumulative impacts are expected as a result of dust generation during construction.

(iii) Irreplaceable loss of Resources

- No irreplaceable loss of resources is expected as a result of dust generation during construction.

10.2.4.3 NOISE GENERATION

Noise will be generated during the decommissioning phase as a result of vehicles working on-site. Noise relating to the decommissioning phase of this project can be described as a nuisance rather than having environmental or health implications. The impact significance is rated as low negative before and after mitigation, as the proposed activities will take place within the mine area, which is subject to existing noises from mining activities.

(i) Mitigation measures

- As per section 10.2.2.2 above (construction phase noise generation).

(ii) Cumulative Impacts

- No cumulative impacts are expected as a result of noise during the decommissioning phase.

(iii) Irreplaceable loss of Resources

- No irreplaceable loss of resources is expected as a result of noise during the decommissioning phase.

10.2.4.4 WASTE MANAGEMENT IMPACTS

Waste management impacts were rated as having a low negative significance before and after mitigation. Domestic waste, construction waste and sewage are all waste types that need to be considered during decommissioning.

(i) Mitigation measures

- As per Section 10.2.4.4 above (construction phase waste management impacts).

(ii) Cumulative Impacts

- No cumulative impacts are expected as a result of waste management impacts during decommissioning.

(iii) Irreplaceable loss of Resources

- No irreplaceable loss of resources is expected as a result of waste management impacts during decommissioning.

10.2.4.5 JOB LOSSES

As a result of the facilities closing down and being decommissioned, employees that worked during the production phase of this project no longer be able to hold their working position at the facility. This impact was rated with a moderate negative significance before and after the mitigation.

(i) Mitigation measures

- Ensure contributions are made for employees to the Unemployment Insurance Fund (UIF).

(ii) Cumulative Impacts

- Employees that had a position at the facility will have to go without a working income until they can find another position.
- Contribution to unemployment within the local municipality due to decommissioning.

(iii) Irreplaceable loss of Resources

- No irreplaceable loss of resources is expected as a result of job losses during decommissioning.

10.2.5 REHABILITATION AND CLOSURE PHASE IMPACTS

10.2.5.1 REHABILITATION IMPACTS

The nature of the site does not require any major rehabilitation of the environment. However, the property will need to be rehabilitated to the extent of which it was before construction, including revegetation. This impact was rated as medium positive before and after mitigation.

(i) Mitigation measures

- Ensure the ground is levelled out on the site.
- No waste should be left on the site.
- The site should resemble a pre-construction state.

(ii) Cumulative Impacts

- No cumulative impacts are expected as a result of rehabilitation.

(iii) Irreplaceable loss of Resources

- No irreplaceable loss of resources is expected as a result of rehabilitation.

10.2.6 NO-GO ALTERNATIVE

The no-go alternative option means 'do nothing' or the option of not undertaking the proposed PV facility project or any of its activities, consequently leading to the continuation of the current land-use, which is leaving the location as open space within the mine area. As such, the 'do nothing' alternative or keeping the current status quo of an empty open space with no activities occurring on-site also provides the baseline against which the impacts of all other alternatives were compared.

10.2.6.1 IMPACT ON TERRESTRIAL BIODIVERSITY AND AVIFAUNA

This impact was rated as being low positive. No terrestrial biodiversity impacts will occur however the project area is located within the mine area and is in a modified state due to the presence of mining activities and alien Invasive plant species, resulting in a moderate - low habitat sensitivity.

10.2.6.2 IMPACT ON SOIL

This impact was rated as being low positive. Although the soil will not be disturbed as a result of the construction, production or decommissioning phases if the no-go alternative is considered, the impact on soil is still considered high positive, as the area within the mine will stay vacant and the land will not be used for agricultural purposes or the planting of indigenous plant species.

10.2.6.3 IMPACT ON HERITAGE AND PALAEONTOLOGICAL RESOURCES

The impact on heritage and palaeontological resources if the no-go option is considered was rated as low positive. The fieldwork for the updated HIA undertaken in 2022 identified three sites (RPVF-01 – 03) containing archaeological resources were identified during the fieldwork. Due to other similar structures in the Rhovan mine area, these three sites have medium heritage significance and are provisionally graded as 3B. The three sites are situated within the footprint area of alternative 1. The pre-mitigation impact on the identified heritage resources located within the footprint of alternative 1 is calculated as medium negative and only focused during the construction of the PV facility. Implementation of the recommended mitigation measures will reduce the impact to low negative. The construction of the PV facility will not require deep excavations, which minimises the chance of uncovering any palaeontological resources.

10.2.6.4 EMPLOYMENT CREATION

Employment creation was rated as being medium negative before any mitigation measures if the no-go option is considered. If the area remains undeveloped it will serve no purpose and will hinder the possibilities of employment for the local community. The proposed project will create approximately 15 employment

opportunities during the first year of operations. If the PV facility goes ahead the impact on employment creation will be considered high positive. The no-go alternative would mean the potential job creation associated with construction and operation would not be realized.

10.2.6.5 NOISE GENERATION

Noise generation was rated as low positive. If the no-go option is considered, there will be no noise generation other than the existing noises within the surrounding mine area.

10.2.7 OVERALL PREFERRED ALTERNATIVE

Layout and site alternatives are the only reasonable alternatives considered for the proposed project.

During the Scoping Phase two location alternatives, namely Alternative S1 and S2 were identified and pre-assessed. Alternative S1 is located within an undeveloped area whilst Alternative S2 would entail constructing the PV facility on top of the mine's existing tailings storage facilities (TSF). The current advantageous site from an environmental perspective is Alternative S2 due to the fact that no environmental sensitivities are present on the site. as the entire area is transformed and a large number of solar panel arrays can readily be installed on the surface of a tailings dam, provided that a suitable foundation solution be devised.

Though Alternative S2 is environmentally advantageous, from a technical perspective the construction of solar farm on top of the TSF is currently not feasible as the TSF requires to be rehabilitated prior to Rhovan constructing the solar PV facility on top of the TSF. This will involve reshaping the TSF to ensure that it meets the minimum factors of safety. Glencore has undertaken to comply to the Global industry standards for tailings management (GISTM). GISTM has a higher factor of safety than the South African national standard SANS 10286. Rhovan will ensure during the reshaping of the facility that the TSF complies to the closure conditions as stipulated in the GISTM. Once the reshaping is completed the facility will be capped and only then may the TSF be used for the development of a solar PV facility. The process of TSF rehabilitation would likely take longer to conclude, thus leading to time delays for the implementation of the proposed solar PV facility. Hence this option is not desired currently, though this site option may be relooked for future development purposes.

No wetlands or water courses were identified within 500 m of the proposed project area. Ecological and heritage sensitivities have been identified at Site Alternative S1 based on the specialist investigations undertaken. The ecological sensitivities identified have been ranked from least to medium sensitive for Site Alternative 1. The Alternative S1 is overall currently more preferred for the development as the identified sensitivities can be successfully mitigated and managed to acceptable levels and the site can be readily developed without incurring major time delays. The Alternative S1 is also safer to develop currently.

In terms of layout alternatives, these would mostly be applicable to Alternative S1 as environmental sensitivities have been identified on this site. The main layout alternative would be the avoidance of the sensitive areas such as the identified archaeological sites. However, based on the mitigation measures proposed by the heritage specialist, a permit for destruction of these sites can be lodged with SAHRA with the backing of the Phase II report as completed by the archaeological specialist. Upon issuing of the destruction permit the specific site can be destroyed and bush clearing continue in those specific areas so therefore the avoidance of such heritage sensitivity is not necessary in this instance.

10.3 SUMMARY OF POTENTIAL IMPACTS

A summary of all the identified preliminary impacts, their associated phase, as well as their impact calculations and significance are presented in Table 18 below.

Table 18: Significance rating of identified impacts.

IMPACT DESCRIPTION				Pre-Mitigation							Post Mitigation							Priority Factor Criteria			
Identifier	Impact	Alternative	Phase	Nature	Extent	Duration	Magnitude	Reversibility	Probability	Pre-mitigation ER	Nature	Extent	Duration	Magnitude	Reversibility	Probability	Post-mitigation ER	Confidence	Cumulative	Irreplaceable	Priority Factor	Final score
9.2.1.1	Impacts on Existing Infrastructure and Services	Alternative 1	Planning	-1	1	2	2	3	2	-4	-1	1	2	1	2	2	-3	Medium	2	1	1,13	-3,375
9.2.1.2	Impacts Due to Communication Inefficiency	Alternative 1	Planning	-1	3	4	4	3	3	-10,5	-1	3	2	2	2	2	-4,5	Medium	2	1	1,13	-5,0625
9.2.2.1	Impact on Terrestrial Biodiversity and Avifauna	Alternative 1	Construction	-1	3	2	4	3	3	-9	-1	3	2	2	3	3	-7,5	Medium	2	1	1,13	-8,4375
9.2.2.2	Noise Generation	Alternative 1	Construction	-1	2	2	2	2	4	-8	-1	2	2	1	1	3	-4,5	Medium	1	1	1,00	-4,5
9.2.2.3	Impact on Soil	Alternative 1	Construction	-1	2	2	2	2	4	-8	-1	2	2	1	1	2	-3	Medium	1	1	1,00	-3
9.2.2.4	Impact on Heritage and Palaeontological Resources	Alternative 1	Construction	-1	2	5	3	5	4	-15	-1	1	5	1	5	1	-3	High	1	2	1,13	-3,375
9.2.2.5	Employment Creation	Alternative 1	Construction	1	3	2	2	1	5	10	1	3	2	3	1	5	11,25	Medium	1	1	1,00	11,25
9.2.2.6	Dust Generation	Alternative 1	Construction	-1	2	2	2	2	3	-6	-1	2	2	1	1	2	-3	Medium	1	1	1,00	-3
9.2.2.7	Waste Management Impacts	Alternative 1	Construction	-1	2	2	3	2	3	-6,75	-1	2	2	2	1	2	-3,5	Medium	1	1	1,00	-3,5
9.2.3.1	Impact on Terrestrial Biodiversity	Alternative 1	Operation	-1	3	4	3	2	3	-9	-1	3	4	2	2	3	-8,25	Medium	2	2	1,25	-10,3125
9.2.3.2	Impact on Avifauna	Alternative 1	Operation	-1	3	4	3	2	3	-9	-1	3	4	1	2	3	-7,5	Medium	2	2	1,25	-9,375
9.2.3.3	Visual Impact	Alternative 1	Operation	-1	3	4	1	2	4	-10	-1	2	4	1	1	4	-8	Medium	1	1	1,00	-8
9.2.3.4	Noise Generation	Alternative 1	Operation	-1	2	4	2	2	3	-7,5	-1	2	4	1	1	2	-4	Medium	1	1	1,00	-4
9.2.3.5	Employment Creation	Alternative 1	Operation	1	3	4	2	5	5	17,5	1	3	4	2	5	5	17,5	Medium	2	1	1,13	19,6875
9.2.3.6	Impact on Health and Safety	Alternative 1	Operation	-1	2	4	3	2	3	-8,25	-1	2	4	2	1	2	-4,5	Medium	1	1	1,00	-4,5
9.2.3.7	Waste Management Impacts	Alternative 1	Operation	-1	2	4	3	2	3	-8,25	-1	2	4	2	1	2	-4,5	Medium	1	1	1,00	-4,5
9.2.3.8	Stormwater Impacts	Alternative 1	Operation	-1	3	4	3	2	3	-9	-1	3	4	2	1	2	-5	Medium	1	1	1,00	-5
9.2.3.9	Stormwater Impacts	Alternative 1	Operation	-1	3	4	4	3	3	-10,5	-1	3	4	3	2	2	-6	Medium	1	1	1,00	-6
9.2.3.10	Impact on Soil	Alternative 1	Operation	-1	2	2	2	2	4	-8	-1	2	2	1	1	2	-3	Medium	1	1	1,00	-3
9.2.3.11	Impacts from Storage of Hazardous Materials	Alternative 1	Operation	-1	2	3	4	4	3	-9,75	-1	2	2	2	2	2	-4	Medium	1	1	1,00	-4
9.2.4.1	Impact on Terrestrial Biodiversity and Avifauna	Alternative 1	Decommissioning	-1	3	2	3	3	3	-8,25	-1	3	2	2	3	3	-7,5	Medium	2	1	1,13	-8,4375
9.2.4.2	Dust Generation	Alternative 1	Decommissioning	-1	2	2	2	2	3	-6	-1	2	2	1	1	2	-3	Medium	1	1	1,00	-3
9.2.4.3	Noise Generation	Alternative 1	Decommissioning	-1	2	2	2	2	4	-8	-1	2	2	1	1	3	-4,5	Medium	1	1	1,00	-4,5
9.2.4.4	Employment Creation	Alternative 1	Decommissioning	1	3	1	2	1	5	8,75	1	3	1	3	1	5	10	Medium	1	1	1,00	10
9.2.4.5	Waste Management Impacts	Alternative 1	Decommissioning	-1	2	2	3	2	3	-6,75	-1	2	2	2	1	2	-3,5	Medium	1	1	1,00	-3,5
9.2.4.6	Job Losses	Alternative 1	Decommissioning	-1	2	5	1	5	5	-16,25	-1	2	5	1	4	5	-15	Medium	2	1	1,13	-16,875
9.2.5.1	Rehabilitation Impacts	Alternative 1	Rehab and closure	1	2	4	2	1	5	11,25	1	2	4	3	1	5	12,5	Medium	1	1	1,00	12,5
9.2.1.1	Impacts on Existing Infrastructure and Services	Alternative 2	Planning	-1	1	2	3	3	2	-4,5	-1	1	2	1	2	2	-3	Medium	2	1	1,13	-3,375
9.2.1.2	Impacts Due to Communication Inefficiency	Alternative 2	Planning	-1	3	4	4	3	3	-10,5	-1	3	2	2	2	2	-4,5	Medium	2	1	1,13	-5,0625
9.2.2.1	Impact on Terrestrial Biodiversity and Avifauna	Alternative 2	Construction	-1	3	2	1	3	3	-6,75	-1	3	2	2	3	3	-7,5	Medium	2	1	1,13	-8,4375
9.2.2.2	Noise Generation	Alternative 2	Construction	-1	2	2	2	2	4	-8	-1	2	2	1	1	3	-4,5	Medium	1	1	1,00	-4,5
9.2.2.3	Impact on Soil	Alternative 2	Construction	-1	2	2	1	2	4	-7	-1	2	2	1	1	2	-3	Medium	1	1	1,00	-3
9.2.2.4	Impact on Heritage and Palaeontological Resources	Alternative 2	Construction	-1	1	1	1	1	1	-1	-1	1	1	1	1	1	-1	High	1	1	1,00	-1
9.2.2.5	Employment Creation	Alternative 2	Construction	1	3	2	2	1	5	10	1	3	2	3	1	5	11,25	Medium	1	1	1,00	11,25
9.2.2.6	Dust Generation	Alternative 2	Construction	-1	3	4	4	2	5	-16,25	-1	2	2	1	1	2	-3	Medium	1	1	1,00	-3
9.2.2.7	Waste Management Impacts	Alternative 2	Construction	-1	2	2	3	2	3	-6,75	-1	2	2	2	1	2	-3,5	Medium	1	1	1,00	-3,5
9.2.3.1	Impact on Terrestrial Biodiversity	Alternative 2	Operation	-1	3	4	1	2	3	-7,5	-1	3	4	2	2	3	-8,25	Medium	2	2	1,25	-10,3125
9.2.3.2	Impact on Avifauna	Alternative 2	Operation	-1	3	4	1	2	3	-7,5	-1	3	4	1	2	3	-7,5	Medium	2	2	1,25	-9,375
9.2.3.3	Visual Impact	Alternative 2	Operation	-1	3	4	4	2	4	-13	-1	2	4	1	1	4	-8	Medium	1	1	1,00	-8
9.2.3.4	Noise Generation	Alternative 2	Operation	-1	2	4	2	2	3	-7,5	-1	2	4	1	1	2	-4	Medium	1	1	1,00	-4
9.2.3.5	Employment Creation	Alternative 2	Operation	1	3	4	2	5	5	17,5	1	3	4	2	5	5	17,5	Medium	2	1	1,13	19,6875
9.2.3.6	Impact on Health and Safety	Alternative 2	Operation	-1	2	4	3	2	3	-8,25	-1	2	4	2	1	2	-4,5	Medium	1	1	1,00	-4,5
9.2.3.7	Waste Management Impacts	Alternative 2	Operation	-1	2	4	3	2	3	-8,25	-1	2	4	2	1	2	-4,5	Medium	1	1	1,00	-4,5
9.2.3.8	Stormwater Impacts	Alternative 2	Operation	-1	3	4	3	2	3	-9	-1	3	4	2	1	2	-5	Medium	1	1	1,00	-5
9.2.3.9	Stormwater Impacts	Alternative 2	Operation	-1	3	4	4	3	3	-10,5	-1	3	4	3	2	2	-6	Medium	1	1	1,00	-6
9.2.3.10	Impact on Soil	Alternative 2	Operation	-1	2	2	1	2	4	-7	-1	2	2	1	1	2	-3	Medium	1	1	1,00	-3
9.2.3.11	Impacts from Storage of Hazardous Materials	Alternative 2	Operation	-1	2	3	4	4	3	-9,75	-1	2	2	2	2	2	-4	Medium	1	1	1,00	-4
9.2.4.1	Impact on Terrestrial Biodiversity and Avifauna	Alternative 2	Decommissioning	-1	3	2	1	3	3	-6,75	-1	3	2	2	3	3	-7,5	Medium	2	1	1,13	-8,4375
9.2.4.2	Dust Generation	Alternative 2	Decommissioning	-1	2	2	4	2	3	-7,5	-1	2	2	1	1	2	-3	Medium	1	1	1,00	-3
9.2.4.3	Noise Generation	Alternative 2	Decommissioning	-1	2	2	2	2	4	-8	-1	2	2	1	1	3	-4,5	Medium	1	1	1,00	-4,5
9.2.4.5	Waste Management Impacts	Alternative 2	Decommissioning	-1	2	2	3	2	3	-6,75	-1	2	2	2	1	2	-3,5	Medium	1	1	1,00	-3,5
9.2.4.6	Job Losses	Alternative 2	Decommissioning	-1	2	5	1	5	5	-16,25	-1	2	5	1	4	5	-15	Medium	2	1	1,13	-16,875
9.2.5.1	Rehabilitation Impacts	Alternative 2	Rehab and closure	1	2	4	2	1	5	11,25	1	2	4	3	1	5	12,5	Medium	1	1	1,00	12,5
9.2.6.1	Impact on Terrestrial Biodiversity and Avifauna	No-Go		1	4	4	2	2	1	3	1	4	4	2	2	1	3	Medium	3	3	1,50	4,5
9.2.6.2	Impact on Soil	No-Go		1	2	4	1	1	1	2	1	2	4	1	1	1	2	Medium	1	1	1,00	2
9.2.6.3	Impact on Heritage and Palaeontological Resources	No-Go		1	1	4	1	1	1	1,75	1	1	4	1	1	1	1,75	Medium	1	1	1,00	1,75
9.2.6.4	Employment Creation	No-Go		-1	3	4	2	1	5	-12,5	-1	3	4	2	1	5	-12,5	Medium	1	1	1,00	-12,5
9.2.6.5	Noise Generation	No-Go		1	2	4	1	1	1	2	1	2	4	1	1	1	2	Medium	1	1	1,00	2

11 SENSITIVITY MAPPING

Environmental sensitivity mapping provides a strategic overview of the environmental, cultural and social assets in a region. The sensitivity mapping technique integrates numerous datasets (base maps and shapefiles) into a single consolidated layer making use of Geographic Information System (GIS) software and analysis tools. Environmental sensitivity mapping is a rapid and objective method applied to identify areas which may be particularly sensitive to development based on environmental, cultural and social sensitivity weightings – which is determined by specialists' input within each respective field based on aerial or ground-surveys. Therefore, the sensitivity mapping exercise assists in the identification of sensitive areas within and surrounding the proposed PV facility area. The sensitivity map consists of information provided from specialist investigations undertaken as part of the EIA phase.

This sensitivity mapping approach allows for the proposed PV facility activities to be undertaken whilst protecting identified sensitive environmental areas/ features. Furthermore, environmental sensitivity is used to aid in decision-making during consultation processes, forming a strategic part of Environmental Assessment processes. Refer to Figure 15 for the final sensitivity map for the project.

The current advantageous site from an environmental perspective is Alternative S2 due to the fact that no environmental sensitivities are present on the site. as the entire area is transformed and a large number of solar panel arrays can readily be installed on the surface of a tailings dam, provided that a suitable foundation solution be devised.

Though Alternative S2 is environmentally advantageous, from a technical perspective the construction of solar farm on top of the TSF is currently not feasible as the TSF requires to be rehabilitated prior to Rhovan constructing the solar PV facility on top of the TSF. This will involve reshaping the TSF to ensure that it meets the minimum factors of safety. Glencore has undertaken to comply to the Global industry standards for tailings management (GISTM). GISTM has a higher factor of safety than the South African national standard SANS 10286. Rhovan will ensure during the reshaping of the facility that the TSF complies to the closure conditions as stipulated in the GISTM. Once the reshaping is completed the facility will be capped and only then may the TSF be used for the development of a solar PV facility. The process of TSF rehabilitation would likely take longer to conclude, thus leading to time delays for the implementation of the proposed solar PV facility. Hence this option is not desired currently, though this site option may be relooked for future development purposes.

No wetlands or water courses were identified within 500 m of the proposed project area. Ecological and heritage sensitivities have been identified at Site Alternative S1 based on the specialist investigations undertaken. The ecological sensitivities identified have been ranked from least to medium sensitive for Site Alternative 1. The Alternative S1 is overall currently more preferred for the development as the identified sensitivities can be successfully mitigated and managed to acceptably low levels and the site can be readily developed without incurring major time delays. The Alternative S1 is also safer to develop currently.

A final combined sensitivity map has been produced which will inform the selection of the preferred location and layout alternatives for the proposed PV Facility.

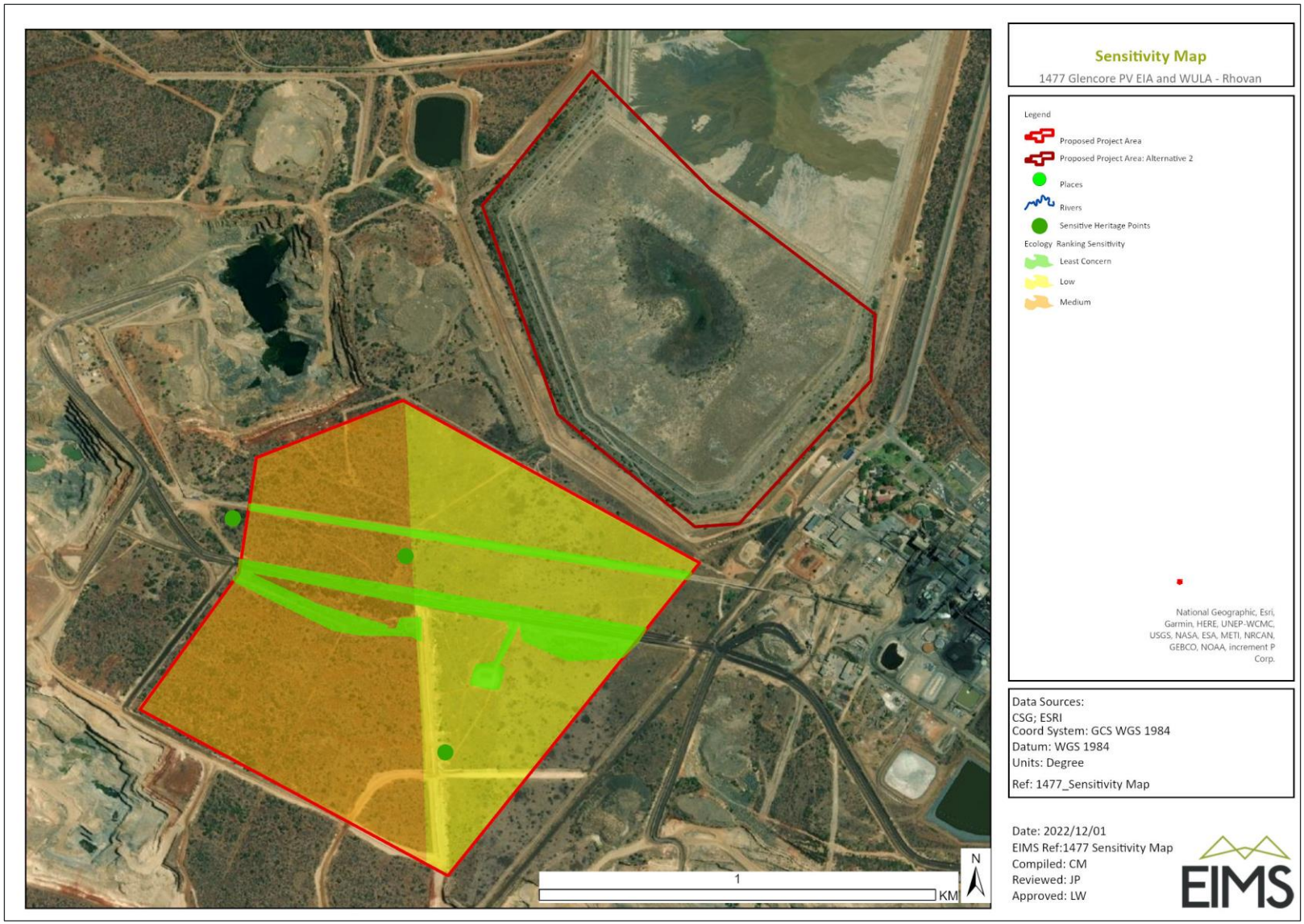


Figure 15: Sensitivity map

12 CONCLUSIONS AND RECOMMENDATIONS

It is the opinion of the ecologists that this study provides the relevant information required in order to implement an Integrated Environmental Management plan. As well as to ensure that the best long-term use of the ecological resources in the project area are made in support of the principle of sustainable development. The construction and operation of the infrastructure are not anticipated to pose significant threats to the receiving environment provided the mitigation measures are effectively applied, thus the proposed development can obtain approval.

Through the analysis of various database and satellite imagery as well as the infield screening assessment it was determined that although the majority of the project area is highly degraded or transformed it still possesses a number of sensitive ecological receptors. These sensitivity receptors relate to being within a EN ecosystem, traversing a threatened ecosystem (VU) and marginally overlapping with a Priority Focus Area. Other than that, the majority of the project area (Transformed area) is in a highly degraded state as the vegetation structure and species composition has been completely altered as such, has a very low conservation value and ecological sensitivity from a floral perspective.

Three habitat units were recorded in the project area, Transformed, Secondary Grassland and Degraded Bushveld. The vegetation and ecology within the development areas have been heavily disturbed for a long time, both currently and historically. The only significant patch of intact natural vegetation that remains within the project area is the Degraded Bushveld. Overall, the terrestrial botanical diversity within the project areas is very low. The Transformed habitat unit and Secondary Grassland were assigned a very low sensitivity and low sensitivity respectively due to the impacted nature of these areas collectively. Degraded Bushveld was assigned a medium sensitivity due to being relatively intact and being located within an Endangered ecosystem. The degraded bushveld is not entirely transformed but in a constant disturbed state, as they can't recover to a more natural state due to ongoing disturbances and impacts received from AIP encroachment, active mining practices and edge effects from the adjacent mining activities. Although the habitat units are not entirely transformed, ongoing and historic disturbances have resulted in the plant community no longer being fully representative of the reference vegetation.

Based on desktop data and the infield assessment the project area is home to a total of 71 species of which one is a SCC the yellow-throated sandgrouse (*Pterocles gutturalis)* (EN), although this species was not recorded during the 2022 assessment. However, this species frequents open plains with short grass, often near rivers or swamps; favours recently burnt areas; also found in ploughed land and on fallow, which is a habitat that is lacking in the project area. This species is thus considered moderately likely to occur in the project area in its current state. No nests of SCC species was recorded and the only collision risk species recorded was the Pied crow which does not pose a risk to the approval of the development.

The greatest impact on the overall habitat is expected to be an increase in alien plant infestations as a result of the construction disturbances, through the implementation of an alien management plan this impact can successfully be mitigated. The greatest impact on the avifauna is envisioned to be electrocution and collisions these can be mitigated with changes in the design and the installation of bird flappers. All the impacts can be successfully mitigated, it is therefore imperative that the mitigations and recommendations be considered by the issuing authority.

Alternative 2 is the least sensitive site from an environmental perspective as impacts on the faunal habitats would be less as this option would require clearing of vegetation. The entire area is transformed, and a large number of solar panel arrays can readily be installed on the surface of a tailings dam, provided that a suitable foundation solution be devised. This is not expected to be problematic should a suitable foundation solution be available.

Based on the findings of the heritage specialist, it is the combined considered opinion that the overall impact on heritage resources after the implementation of mitigation is low. Provided that the recommended mitigation measures are implemented, the impact would be acceptably low or could be mitigated to the degree that the project could be approved from a heritage perspective. Considering the type and implementation of the

mitigation measures, is concluded site alternatives 1 and 2 as both viable options from a heritage perspective. It is therefore the recommendation of the specialist that the proposed mitigation measures be implemented as these will reduce the overall impact on heritage resources to acceptable levels during the project activities.

12.1 PREFERRED ALTERNATIVES

During the Scoping Phase two location alternatives, namely Alternative S1 and S2 were identified and pre-assessed. Alternative S1 is located within an undeveloped area whilst Alternative S2 would entail constructing the PV facility on top of the mine's existing tailings storage facilities (TSF). The current advantageous site from an environmental perspective is Alternative S2 due to the fact that no environmental sensitivities are present on the site. as the entire area is transformed and a large number of solar panel arrays can readily be installed on the surface of a tailings dam, provided that a suitable foundation solution be devised.

Though Alternative S2 is environmentally advantageous, from a technical perspective the construction of solar farm on top of the TSF is currently not feasible as the TSF requires to be rehabilitated prior to Rhovan constructing the solar PV facility on top of the TSF. This will involve reshaping the TSF to ensure that it meets the minimum factors of safety. Glencore has undertaken to comply to the Global industry standards for tailings management (GISTM). GISTM has a higher factor of safety than the South African national standard SANS 10286. Rhovan will ensure during the reshaping of the facility that the TSF complies to the closure conditions as stipulated in the GISTM. Once the reshaping is completed the facility will be capped and only then may the TSF be used for the development of a solar PV facility. The process of TSF rehabilitation would likely take longer to conclude, thus leading to time delays for the implementation of the proposed solar PV facility. Hence this option is not desired currently, though this site option may be relooked for future development purposes.

No wetlands or water courses were identified within 500 m of the proposed project area. Ecological and heritage sensitivities have been identified at Site Alternative S1 based on the specialist investigations undertaken. The ecological sensitivities identified have been ranked from least to medium sensitive for Site Alternative 1. **The Alternative S1 is overall currently more preferred for the development as the identified sensitivities can be successfully mitigated and managed to acceptable levels and the site can be readily developed without incurring major time delays. The Alternative S1 is also safer to develop currently.**

In terms of layout alternatives, these would mostly be applicable to Alternative S1 as environmental sensitivities have been identified on this site. The main layout alternative would be the avoidance of the sensitive areas such as the identified archaeological sites. However, based on the mitigation measures proposed by the heritage specialist, a permit for destruction of these sites can be lodged with SAHRA with the backing of the Phase II report as completed by the archaeological specialist. Upon issuing of the destruction permit the specific site can be destroyed and bush clearing continue in those specific areas so therefore the avoidance of such heritage sensitivity is not necessary in this instance.

The no-go alternative for the proposed project involves the option of not conducting any further development on currently vacant land. Although this would mean that the potential negative environmental impacts of construction and operational phases would be avoided, but the positive impact of job creation and optimal use of land that has already been disturbed would be forgone. Thus the no social or environmental impacts would result from the no-go alternative Leaving the area undeveloped would not have any significant environmental or social benefits if identified sensitive areas are avoided.

12.2 ENVIRONMENTAL IMPACT STATEMENT

The findings of the specialist studies conclude that there are no environmental fatal flaws that should prevent the proposed project from proceeding, provided that the recommended mitigation and management measures are implemented. It is the opinion of the EIA project team that the significance levels of the majority of identified negative impacts can generally be reduced by implementing the recommended mitigation measures. Based on the nature and extent of the proposed and the predicted impacts as a result of the construction, operation and closure of the facility, the findings of the EIA, and the understanding of the mostly low - moderate post-mitigation significance level of potential environmental impacts, it is the opinion of the EIA project team that

the environmental impacts associated with the application for the proposed project can be mitigated to an acceptable level and the project should be authorized.

12.3 RECOMMENDATIONS FOR INCLUSION IN ENVIRONMENTAL AUTHORIZATION

A comprehensive list of mitigation measures from the EAP and the appointed specialists has been included in the mitigation management plan on the EMPr. However, the following key recommendations are made:

- Ensure that all construction vehicles and industrial equipment are in a good working condition as to not generate unnecessary noise.
- Construction working hours during construction to be restricted to 07h00 to 18h00 weekdays and 09h00 to 16h00 on weekends. If possible, work should not be done during public holidays and Sundays to prevent nuisance to nearby occupiers.
- A detailed Stormwater Management Plan (SWMP) needs to be prepared and implemented.
- Hazardous materials should be stored in appropriate containers to avoid any leakage/ spillages. These materials should also be stored in a suitably identified area. Bunded (surface sealed with plastic or other impermeable material) areas should be established for the storage of fuels, oils and hydraulics, raw materials (such as sand, stone and cement) and vehicle and plant maintenance.
- If unearthed, under no circumstances shall any heritage, archaeological or paleontological artefact/ feature be removed, destroyed or interfered with by anyone on the site, unless such removal has been authorised by the heritage authorities.
- A phase II field assessment that will include vegetation clearance of the structures to determine the extent of the identified heritage site and test excavation where deposits or midden areas are identified during the vegetation clearing must be conducted. This will aim to identify the cultural affinity, temporal depth, and settlement layout.
- During construction employ people from the surrounding local communities and SMMEs as far as reasonably possible.
- An alien management plan must be prepared and implemented quarterly for up to 2 years after the construction phase.
- Limit vegetation removal to the disturbance footprint only.
- Appropriate measures must be implemented to prevent excessive noise and vibration. No construction is to occur at night to avoid disturbance to amphibians.
- An Environmental Control Officer to oversee the implementation of the EMPr.
- The Contractor to provide detailed method statements for rehabilitation / re-vegetation.
- Audit reporting by the Environmental Control Officer to ensure rehabilitation.

13 ASSUMPTIONS, LIMITATIONS AND UNCERTAINTIES

Certain assumptions, limitations, and uncertainties are associated with the Scoping Phase. This report is based on information that is currently available and, as a result, the following limitations and assumptions are applicable:

- The EIA process and report is based on the technical information and process description provided by the client;
- The EIA Report is based on a project description taken from drawings and design specifications for the proposed PV facility that have not yet been finalised, and which are likely to undergo a number of iterations and refinements before they can be regarded as definitive;
- The description of the baseline environment has been obtained from desktop analysis and specialist reports. The assumptions and limitations applicable to the individual specialist studies are outlined within each of the respective specialist reports appended to this report.; and
- Findings, recommendations and conclusions provided in this report, and all specialist reports, are based on the authors' best scientific and professional knowledge and information available at the time of compilation.

UNDERTAKINGS

13.1 UNDERTAKING REGARDING CORRECTNESS OF INFORMATION

I **John von Mayer** herewith undertake that the information provided in the foregoing report is correct, and that the comments and inputs from stakeholders and Interested and Affected Parties has been correctly recorded in the report.

Signature of the EAP

Date: 05 January 2023

13.2 UNDERTAKING REGARDING LEVEL OF AGREEMENT

I **John von Mayer** herewith undertake that the information provided in the foregoing report is correct, and that the level of agreement with Interested and Affected Parties and stakeholders has been correctly recorded and reported herein.

Signature of the EAP

Date: 05 January 2023

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15 APPENDICES

Appendix A: EAP CV

Appendix B: Maps

Appendix C: Public Participation

Appendix D: Specialist Studies

Appendix E: EMPr