SCOPING REPORT FOR THE PROPOSED ESTABLISHMENT OF A SOLAR PV PLANT AT THE MARULA PLATINUM MINE, LIMPOPO PROVINCE

Prepared for: Marula Platinum Mine

SUBMITTED FOR ENVIRONMENTAL AUTHORISATION IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (NO. 107 OF 1998), AND THE NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (NO. 59 OF 2008) IN RESPECT OF LISTED ACTIVITIES THAT HAVE BEEN TRIGGERED BY APPLICATIONS IN TERMS OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (NO. 28 OF 2002)

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EXECUTIVE SUMMARY

INTRODUCTION AND OVERVIEW OF THE PROPOSED PROJECT

Marula Platinum (Pty) Ltd (Marula), an existing platinum producer and a subsidiary of Impala Platinum Holdings Limited, owns and operates Marula Mine. The Marula Mine is situated along the R 37, approximately 30 km to the north-west of the town Burgersfort and has been operational since 2001. The mine holds the following authorisations:

- A converted Mining Right (MR) 42/2008 (Ref No.: LP 30/5/1/2/2/61 MR), issued by the Department of Mineral Resources [1](DMR) in January 2008.
- A converted Mining Right 23/2008 (/ref: LP 30/5/1/2/2/63 MR), held under Cession 32/2008, issued by the DMR in January 2008.
- An Environmental Authorisation (Ref No.: 16/1/7/2-GS29) issued by the Department of Economic Development, Environment and Tourism on 16 September 2008 and an approved amended Environmental Management Programme report (EMPr) (Ref No.: 6/2/2/649EM) issued by the Department of Minerals and Energy on 24 January 2008 for the extension of the Merensky operations.
- An amended EMPr (Ref No.: LP30/5/1/3/2/1(61) EM and LP30/5/1/3/2/1(63) EM) issued by the DMR on 10 June 2014 for the proposed tailings scavenger plant, two additional ventilation shafts and the extension of underground mining activities.
- An Integrated Water Use License (IWUL) (Ref No.: 06/B71E/GACIJ/8841) issued by the Department of Water and Sanitation on 29 March 2019.
- An Environmental Authorisation (Ref No.: LP30/5/2/3/2/1 (061 & 063) EM) issued by the Department of Minerals and Energy on 11 October 2022 for additional infrastructure at the Marula Mine.

Marula now proposes to change their approved surface infrastructure layout, through the establishment of a Solar Photovoltaic (PV) facility, with a generation capacity of up to 33 Megawatt (MW), within its existing Mining Right Area (MRA) for self-generation only (the solar PV facility is hereafter referred to as the proposed Project, or just Project). The proposed solar PV facility will be connected through the expansion of the Marula Mine's existing transmission infrastructure and substation.

PROJECT BACKGROUND

Marula is proposing to develop, construct and operate a PV facility and associated infrastructure on the farms Driekop 253 KT and Clapham 118 KT approximately 30 km to the northwest of the town Burgersfort. The proposed Project to be undertaken will have a total generation capacity of up to 33 MW.

ENVIRONMENTAL AUTHORISATION REQUIRED

The proposed Project will require an EA as the project includes activities listed under the Environmental Impact Assessment Regulations, 2014 (GN R 982 of 2014) (EIA Regulations, 2014)[2] promulgated in terms of Chapter 5

[1] Now known as the Department of Mineral Resources and Energy (DMRE).

[2] The EIA Regulations, 2014, published under Government Notice No. R. 982 in Government Gazette No. 38282 of 4 December 2014, were amended by Government Notice No. 326 in Government Gazette No. 40772 of 7 April 2017, Government Notice No. 706 in Government Gazette No. 41766 of 13 July 2018, Government Notice No. 599 in Government Gazette No. 43358 of 29 May 2020 and Government Notice No. 517 in Government Gazette No. 44701 of 11 June 2021.

of National Environmental Management Act, 1998 (No. 107 of 1998) NEMA. Listed activities are prohibited from commencing until written authorisation is obtained from the Competent Authority (CA), which in this case is the Limpopo Province office of the Department of Mineral Resources and Energy (DMRE). In terms of Section 102 of the Minerals and Petroleum Resources Development Act, 2002 (No. 28 of 2002) (MPRDA), an EMPr may not be amended or varied without the written consent of the Minister of Mineral Resources.

The MPRDA and NEMA require that an applicant submit the relevant environmental reports required in terms of NEMA. The EIA Regulations set out the assessment process and reporting requirements where authorisation is required. Prior to the commencement of the proposed Project the following is required:

- An amended EMPr in terms of Section 102 of the MPRDA from the DMRE.
- An EA is required in terms of the NEMA for listed activities in the EIA Regulations Listing Notice 1, 2014 (GN R 983 of 2014), Notice 2, 2014 (GN R 984 of 2014) and Notice 3, 2014 (GN R 985). Listed activities triggered as a result of the proposed Project are outlined in Section 3.1

In addition, the proposed Project also requires authorisation from the DWS for specific water uses listed under Section 21 of the National Water Act, 1998 (No. 36 of 1998) (NWA). This Scoping Report does not address the requirements of a water use licensing process. This will be undertaken as part of a separate process with the DWS. This Scoping and Environmental Impact Assessment process (S&EIA) process does not cover occupational health and safety legislative requirements.

SLR, an independent firm of Environmental Assessment Practitioners (EAPs), has been appointed by Marula to manage the S&EIA process required to inform the proposed Project.

PROJECT ALTERNATIVES

For the proposed Project, three site alternatives were taken into consideration, but only the “preferred” site will be further investigated as part of the Environmental Impact Report (EIR). The preferred Solar PV facility site and the two alternative sites are discussed in Table 9. In general, the site selection process of a site for the development of a solar PV facility is dependent on several aspects of which are favourable at the identified Project site for the construction and operation of proposed Project. These aspects include the solar irradiation, topography, extent of the area available for development, proximity of the site to the nearest grid connection point and access to the site.

OPPORTUNITY TO COMMENT ON THE SCOPING REPORT

This Scoping Report has been distributed for a 30-day comment period from **8 February 2023 to 10 March 2023** in order to provide Interested and Affected Parties (I&APs) with an opportunity to comment on any aspect of the proposed Project and the findings of the S&EIA process to date. Copies of the full report and Non-Technical Summary (NTS) are available on the SLR website (at https://www.slrconsulting.com/en/public-documents/Marula-Solar-PV). Electronic copies (in the form of a USB) of the report are available from SLR, at the contact details provided below. Please send your comments to SLR as per the e-mail address shown below **by no later than 10 March 2023**. The Scoping Report will be updated to include all comments received during the public review period. The updated Scoping Report will be made available to the DMRE for decision-making purposes.

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By providing your personal information to submit a comment or supply your contact details as an I&AP for this Project, you will be included in the SLR I&AP database, and you consent to SLR managing your information in accordance with the Protection of Personal Information Act, 2013 (No. 4 of 2013). It is assumed that as an I&AP for this Project you authorise SLR to retain and use your personal information as part of a contact database for this and/or other EA processes and that you confirm your acceptance for SLR to contact you regarding this and/or other EA processes. SLR will not process your personal information, other than as permitted or required by EA processes, or as required by law or public policy. SLR will use reasonable, appropriate security safeguard to protect personal information, and to reasonably prevent any damage to, loss of, or unauthorised access or disclosure of personal information, other than as required for EA processes or as required by any Law or public policy. You may request for your personal information to be deleted from the I&AP database at any time by contacting SLR.

PLAN OF STUDY FOR THE ENVIRONMENTAL IMPACT ASSESSMENT PHASE

The Plan of Study for the EIA describes the nature and extent of the assessment to be conducted and sets out the proposed approach to the EIA and EMPr Report phase. In this regard, upon acceptance of the Scoping Report by the DMRE, the EIA and EMPr Report phase of the project will commence, and the following key steps will be undertaken:

- I&APs will be informed of the DMRE's decision in respect to the Scoping Report.
- I&APs will be provided with an opportunity to comment on any aspect of the project and the findings the EIA and EMPr Report.
- An assessment of the potential biophysical, cultural/heritage, and socio-economic impacts of the project will be undertaken. The assessment will be informed by specialist and project team input and comments and concerns received from I&APs during the authorisation process. Mitigation and management measures to reduce potential negative impacts and enhance positive impacts will be included as part of the findings of the EIA and EMPr Report.
- The EIA and EMPr Report will be made available for the public, the competent authority, and other relevant stakeholders during a review period comprising 30 calendar days.
- The EIA and EMPr Report will be updated with any comments raised during the review period and will be made available to the DMRE for decision-making purposes.
- I&APs will be informed of the DMRE's decision and the appeal process.

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ACRONYMS AND ABBREVIATIONS

Acronym / Abbreviation	Definition
AIP	Alien Invasive Plant
B.Sc.	Bachelor of Science
BA	Basic Assessment
BAT	Best Available Techniques
BBBEE	Broad-Based Black Economic Empowerment
BESS	Battery Energy Storage System
BIC	Bushveld Igneous Complex
CA	Competent Authority
CARA	Conservation of Agricultural Resources Act, 1983 (No. 43 of 1983)
CBA	Critical Biodiversity Area
CHA	Critical Habitat Assessment
CITES	Convention on International Trade in Endangered Species
CMS	Convention on Migratory Species
CR	Critically Endangered
CSIR	Council for Scientific and Industrial Research
CSP	Concentrated Solar Power
DC	Direct Current
DD	Data Deficient
DEDET	Department of Economic Development, Environment and Tourism
DESTEA	Department of Economic, Small Business Development, Tourism and Environmental Affairs
DFFE	Department of Forestry, Fisheries and Environment
DMRE	Department of Mineral Resources and Energy
DMS	Dense Media Separation
DOH	Department of Health
DoT	Department of Transport
DWS	Department of Water and Sanitation
E&S	Environmental and Social
EA	Environmental Authorisation, i.t.o. NEMA
EAP	Environmental Assessment Practitioner
EAPASA	Environmental Assessment Practitioners Association of South Africa
ECA	Environment Conservation Act, 1989 (No. 73 of 1989)
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIA Regulations, 2014	Environmental Impact Assessment Regulations, 2014 (GN R 982 of 2014)

Acronym / Abbreviation	Definition
EIAR	Environmental Impact Assessment Report
EIS	Ecological Importance and Sensitivity
EMF	Environmental Management Framework
EMPr	Environmental Management Programme
EMS	Environmental Management System
EN	Endangered
EO	Environmental Officer
ESA	Ecological Support Areas
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Programme/Plan**
e-WULAAS	Electronic Water Use Licence Application and Authorisation System
FEPA	Freshwater Ecosystem Priority Area
Financial Provision Regulations, 2015	Regulations Pertaining to the Financial Provision for Prospecting, Exploration, Mining or Production Operations, 2015 (GN R 1147 of 2015)
FSA	Fish Support Area
GA	General Authorisation
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GN	Government Notice
GPS	Global Positioning System
HAS	Hazardous Substances Act (No. 15 of 1973)
HIA	Heritage Impact Assessment
HSE	Health, Safety, and Environment
I&AP	Interested and Affected Party
IAIA	International Association for Impact Assessment
IBA	Important Bird Area
IBAT	Integrated Biodiversity Assessment Tool
ICAO	International Civil Association Organisation
IDP	Integrated Development Plan
IEM	Integrated Environmental Management
IEP	Integrated Energy Plan
IFC	International Finance Corporation
IPCC	Intergovernmental Panel on Climate Change
IPP	Independent Power Producer
IRP	Integrated Resource Plan
ISO	International Standards Organization
IWUL	Integrated Water Use Licence

Acronym / Abbreviation	Definition
IWULA	Integrated Water Use Licence Application
LC	Least Concern
LCC	Land Claims Commissioner
Limpopo DEDET	Limpopo Department of Economic Development, Environment and Tourism
LN	Listing Notice
LN 1, 2017	EIA Regulation Listing Notice 1, 2014 (GN R 983 of 2014) as amended by NEMA EIA GNR 327 as per 2017 EIA Regulations Listing Notice 1
LN 2, 2017	EIA Regulation Listing Notice 2, 2014 (GN R 984 of 2014) as amended by NEMA EIA GNR 325 as per 2017 EIA Regulations Listing Notice 2
LN 3, 2017	EIA Regulation Listing Notice 3, 2014 (GN R 985 of 2014) as amended by NEMA EIA GN R324 as per 2017 EIA Regulations Listing Notice 3
LoM	Life of Mine
LWUA	Lebalelo Water User Association
MAP	Mean Annual Precipitation
MAR	Mean Annual Runoff
Mbgl	Metres below ground level
MLC	Merensky Lower Chromitite
MPG	Merensky Pegmatoid
MPRDA	Minerals and Petroleum Resources Development Act, 2002 (No. 28 of 2002)
MPU	Merensky Upper Pyroxenite
MR	Mining Right, i.t.o. MPRDA
MRA	Mining Right Area
MRC	Merensky Chromitite Marker
MW	Megawatt
NBA	National Biodiversity Assessment
NDCR	National Dust Control Regulations
NDP	National Development Plan
NEM:BA	National Environmental Management: Biodiversity Act, 2004 (No. 10 of 2004)
NEM:PAA	National Environmental Management: Protected Areas Act, 2003 (No. 57 of 2003)
NEM:WA	National Environmental Management: Waste Act, 2008 (No. 59 of 2008)
NEMA	National Environmental Management Act, 1998 (No. 107 of 1998)
NERSA	National Energy Regulator of South Africa
NFA	National Forests Act, 1998 (No. 84 of 1998)
NFEPA	National Freshwater Ecosystem Priority Areas, 2011
NGO	Non-Governmental Organization
NGP	New Growth Path
NHRA	National Heritage Resources Act, 1999 (No. 25 of 1999)

Acronym / Abbreviation	Definition
NPAES	National Protected Areas Expansion Strategy
NT	Near Threatened
NTS	Non-Technical Summary
NVFA	National Veld and Forest Fire Act (No. 15 of 1998)
NWA	National Water Act, 1998 (No. 36 of 1998)
O&M	Operations and Maintenance
OHS	Occupational Health and Safety
PES	Present Ecological State
PGE	Platinum Group Element
PHS	Provincial Heritage Site
PPP	Public Participation Process
Pr.Sci.Nat.	Registered Professional Natural Scientists
PS	Performance Standard
PSDF	Provincial Spatial Development Framework
PV	Photovoltaic
R	Regulation
RE	Remaining Extent
RE	Resident Engineer
REDZ	Renewable Energy Development Zones
Registered EAP	Registered Environmental Assessment Practitioner
Regulation, GN R, 704	Regulations on Use of Water for Mining and Related Activities Aimed at the Protection of Water Resources, 704 (GN R 704 of 1999)
REIPPP	Renewable Independent Power Producer Programme
RLS	Rustenburg Layered Suite
ROD	Record of Decision
S&EIA	Scoping and Environmental Impact Assessment
S&EIA	Scoping and Environmental Impact Assessment
SACAA	South African Civil Aviation Authority
SACAT	South African Civil Aviation Technical Standard
SACNASP	South African Council for Natural Scientific Professions
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resource Information System
SANBI	South African National Biodiversity Institute
SANS	South African National Standards
SARP	Standard and Recommended Practice
SAWS	South African Weather Services
SCC	Species of Conservation Concern

Acronym / Abbreviation	Definition
SDF	Spatial Development Framework
SEA	Strategic Environmental Assessment
SEMA	Specific environmental management Act
SHE	Safety, Health, and Environment
SIA	Social Impact Assessment
SLP	Social and Labour Plan
SLR	SLR Consulting (Africa) (Pty) Ltd
SPLUMA	Spatial Planning and Land Use Management Act, 2013 (No. 16 of 2013)
SSVR	Site Sensitivity Verification Report
TSF	Tailings Storage Facility
UNCED	United Nations Conference on Environment and Development
UNEP	United Nations Environmental Programme
UNFCCC	United Nations Framework Convention on Climate Change
VIA	Visual Impact Assessment
VOC	Volatile Organic Compound
VU	Vulnerable
WB	World Bank Group
WHO	World Health Organization
WML	Waste Management Licence, i.t.o. NEM: WA
WRD	Waste Rock Dump
WUL	Water Use Licence, i.t.o. NWA
WULA	Water Use Licence Application
WULA Regulations, 2017	Regulations Regarding the Procedural Requirements for Water Use Licence Applications and Appeals, 2017 (GN R 267 of 2017)

SCOPING REPORT FOR THE PROPOSED ESTABLISHMENT OF A SOLAR PV PLANT AT MARULA PLATINUM

INTRODUCTION

This Section provides a brief description of the project background, provides the study terms of reference, describes the structure and purpose of the report.

OVERVIEW OF PROPOSED PROJECT

Marula Platinum (Pty) Ltd (Marula), an existing platinum producer and a subsidiary of Impala Platinum Holdings Limited, owns and operates Marula Platinum Mine. The Marula Mine is situated along the R 37, approximately 30 km to the north-west of the town Burgersfort and has been operational since 2001. The mine holds the following authorisations:

- A converted Mining Right (MR) 42/2008 (Ref No.: LP 30/5/1/2/2/61 MR), issued by the Department of Mineral Resources [3](DMR) in January 2008.
- A converted Mining Right 23/2008 (/ref: LP 30/5/1/2/2/63 MR), held under Cession 32/2008, issued by the DMR in January 2008.
- An Environmental Authorisation (Ref No.: 16/1/7/2-GS29) issued by the Department of Economic Development, Environment and Tourism on 16 September 2008 and an approved amended Environmental Management Programme report (EMPr) (Ref No.: 6/2/2/649EM) issued by the Department of Minerals and Energy on 24 January 2008 for the extension of the Merensky operations.
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Marula now proposes to change their approved surface infrastructure layout, through the establishment of a Solar Photovoltaic (PV) facility, with a generation capacity of up to 33 Megawatt (MW) within its existing Mining Right Area (MRA) for self-generation only (the solar PV facility is hereafter referred to as the proposed project). The proposed solar PV facility will be connected through the expansion of the Marula Mine's existing transmission infrastructure and substation.

PROJECT BACKGROUND

Marula is proposing to develop, construct and operate a PV facility and associated infrastructure on the farms Driekop 253 KT and Clapham 118 KT approximately 30 km to the northwest of the town Burgersfort. The proposed Project will aim to generate up to 33 MW power for Marula Mine.

[3] Now known as the Department of Mineral Resources and Energy (DMRE).

ENVIRONMENTAL AUTHORISATIONS REQUIRED

The proposed Project will require EA as the Project includes activities listed under the Environmental Impact Assessment Regulations, 2014 (GN R 982 of 2014) (EIA Regulations, 2014)[4] promulgated in terms of Chapter 5 of National Environmental Management Act, 1998 (No. 107 of 1998) NEMA. Listed activities are prohibited from commencing until written authorisation is obtained from the Competent Authority (CA), which in this case is the Limpopo Province office of the DMRE. In terms of Section 102 of the Minerals and Petroleum Resources Development Act, 2002 (No. 28 of 2002) (MPRDA), an EMPr may not be amended or varied without the written consent of the Minister of Mineral Resources.

The MPRDA and NEMA require that an applicant submit the relevant environmental reports required in terms of NEMA. The EIA Regulations set out the assessment process and reporting requirements where authorisation is required. Prior to the commencement of the proposed Project the following is required:

- An amended EMPr in terms of Section 102 of the MPRDA from the DMRE.
- An EA is required in terms of the NEMA for listed activities in the EIA Regulations Listing Notice 1, 2014 (GN R 983 of 2014), Notice 2, 2014 (GN R 984 of 2014) and Notice 3, 2014 (GN R 985). Listed activities triggered as a result of the proposed Project are outlined in Section 3.1

In addition, the proposed Project also requires authorisation from the DWS for specific water uses listed under Section 21 of the National Water Act, 1998 (No. 36 of 1998) (NWA). This Scoping Report does not address the requirements of a water use licensing process. This will be undertaken as part of a separate process with the DWS. This Scoping and Environmental Impact Assessment process (S&EIA) process does not cover occupational health and safety (OHS) legislative requirements.

SLR, an independent firm of Environmental Assessment Practitioners (EAPs), has been appointed by Marula to manage the S&EIA process required to inform the proposed Project.

ENVIRONMENTAL AUTHORISATION PROCESS

An overview of the EA process necessary to inform the EA application process is provided in Figure 1.

[4] The EIA Regulations, 2014, published under Government Notice No. R. 982 in Government Gazette No. 38282 of 4 December 2014, were amended by Government Notice No. 326 in Government Gazette No. 40772 of 7 April 2017, Government Notice No. 706 in Government Gazette No. 41766 of 13 July 2018, Government Notice No. 599 in Government Gazette No. 43358 of 29 May 2020 and Government Notice No. 517 in Government Gazette No. 44701 of 11 June 2021.

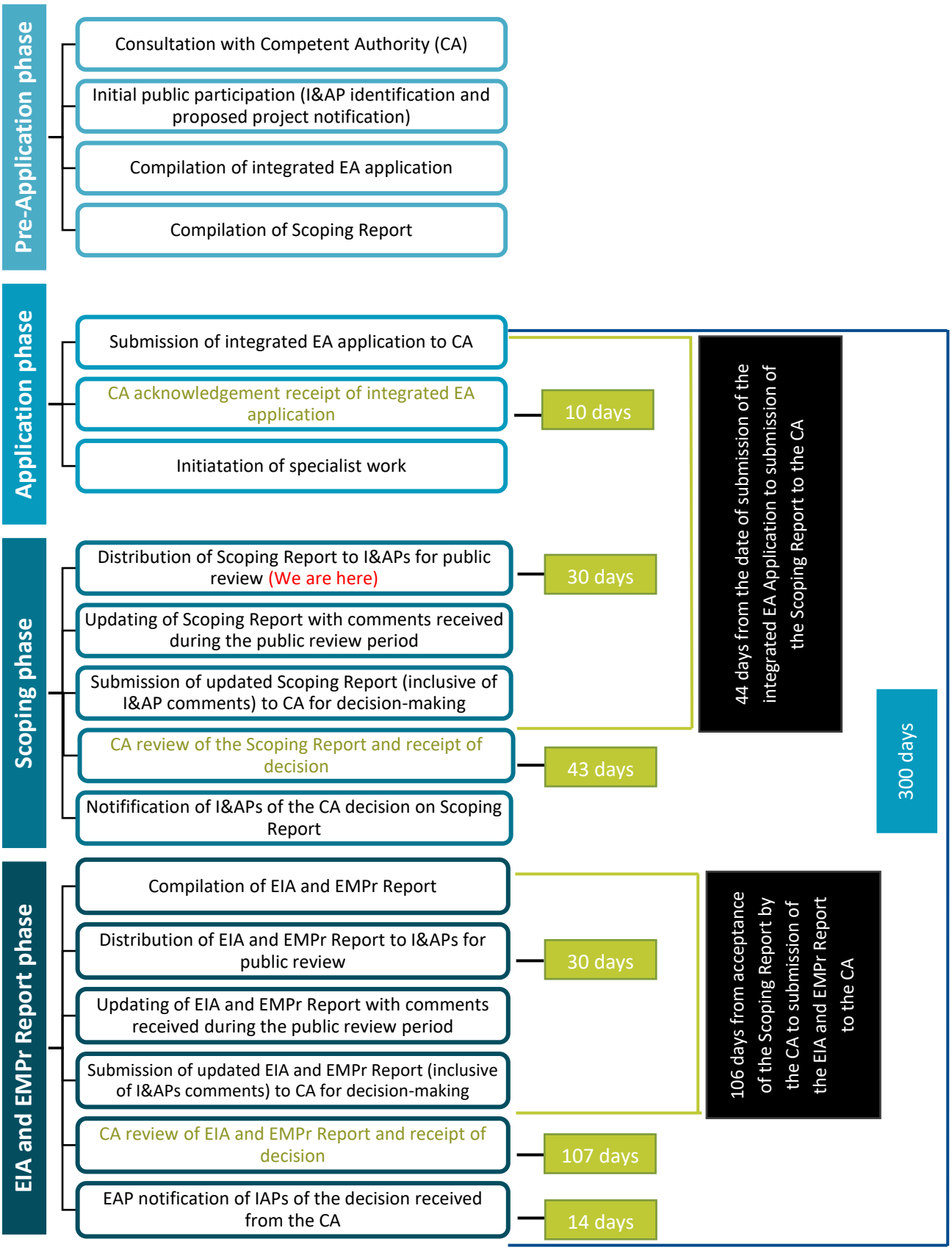

Figure 1: Scoping and Environmental Impact Assessment process

TERMS OF REFERENCE OF THE ENVIRONMENTAL AUTHORISATION PROCESS

The EA process is conducted in two phases. The first is the Scoping Phase and the second is the EIA Phase. The terms of reference for the S&EIA regulatory process are to:

- Make application for integrated EA and EMPr amendment of the project in terms of the MPRDA and NEMA.
- Ensure the S&EIA process is undertaken in accordance with the requirements of NEMA and the EIA Regulations, 2014.
- Ensure the S&EIA is undertaken in an open, participatory manner to ensure that all potential impacts are identified.
- Undertake a Public Participation Process (PPP), which includes the distribution of information to Interested and Affected Parties (I&APs) and provides the opportunity for I&APs to raise any concerns/issues, as well as an opportunity to comment on the S&EIA documentation.
- Integrate all the information, including the findings of the specialist studies and other relevant information, into S&EIA Reports to allow an informed decision to be taken on the project.

Further to this and in accordance with the reporting requirements of Appendix 2 to the EIA Regulations, 2014, the key objectives of the Scoping process are to:

- Identify the relevant policies and legislation relevant to the activity.
- Motivate the need and desirability of the activity, including the need and desirability of the activity in the context of the preferred location (if relevant).
- Identify and confirm the preferred activity, technology, and site alternatives (if relevant) through an identification of impacts and risks and ranking process of such impacts and risks.
- Identify the key issues to be addressed in the assessment phase.
- Determine the level of assessment (including specialist studies) and public participation required.
- Agree on the level of assessment to be undertaken, including the methodology to be applied, the expertise required as well as the extent of further consultation to be undertaken to determine the impacts and risks the activity will impose on the preferred site (if relevant) through the life of the activity. This also includes the nature, significance, consequence, extent, duration, and probability of the impacts to inform the location of the development footprint within the preferred site (if relevant).
- Identify suitable measures to avoid, manage or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored.

PURPOSE OF THIS REPORT

This Scoping Report has been compiled and distributed for review and comment as part of the S&EIA process that is being undertaken for the proposed Project. The S&EIA is contemplated in the EIA Regulations, 2014 in terms of NEMA. This Scoping Report:

- Documents the regulatory framework applicable to the proposed Project.
- Provides a description of the proposed Project and the affected biophysical, cultural/heritage, and socio-economic environments.
- Details the alternatives (where relevant) considered for the proposed Project.
- Provides a summary of the S&EIA process followed to date.
- Identifies potential project biophysical, cultural/heritage, and socio-economic impacts.
- Sets out the Terms of Reference (ToR) for specialist assessment of potential impacts.

- Presents a Plan of Study for the EIA and EMPr Report phase.

STRUCTURE OF THE REPORT

This document has been prepared in accordance with the DMRE Scoping Report template format. In addition, this report also complies with the requirements of the NEMA and Appendix 2 of EIA Regulations, 2014. Table 1 provides a summary of the requirements, with cross references to the report sections where these requirements have been addressed.

Table 1: Structure of the Scoping Report

Legal and regulatory requirement		Section of report
DMRE template requirement	EIA Regulations, 2014 – Appendix 2	
The EAP who prepared the report and expertise of the EAP.	Details of: • the EAP who prepared the report; and • the expertise of the EAP, including a curriculum vitae.	Section 1
Description of the property.	The location of the activity, including: • the 21-digit surveyor general code of each cadastral land parcel; • where available, the physical address and farm name; and • where the requirement information in terms (i) and (ii) is not available, the coordinates of the boundary of the property or properties.	Section 2
Locality plan.	A plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or on land where the property has not been defined, the coordinates within which the activity is to be undertaken.	Section 2
Description of the scope of the proposed overall activity, including listed and specified activities. Description of the activities to be undertaken.	A description of the scope of the proposed activity: • all listed and specified activities triggered; and • a description of the activities to be undertaken, including associated structures and infrastructure.	Section 3
Policy and legislative context.	A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning framework and instruments that are applicable to this activity and are to be considered in the assessment process.	Section 4
Need and desirability of the proposed activity.	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 location.	Section 5
Period for which the EA is required.	The EA is required for the life of the Project, which is estimated at 30 years	Section 6

Legal and regulatory requirement		Section of report
DMRE template requirement	EIA Regulations, 2014 – Appendix 2	
Description of the process followed to reach the proposed preferred site.	A full description of the process followed to reach the proposed preferred activity, site and location within the site.	Section 7
Details of the alternatives considered.	Details of all the alternatives considered.	Section 7
Details of the PPP followed.	Details of the PPP undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs.	Section 8
Summary of issues raised by I&APs.	A summary of the issues raised by I&APs, and an indication of the manner in which the issues were incorporated, or the reasons for not including them.	Section 8.1
Environmental attributes associated with the sites.	The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects.	Section 9
Impacts identified.	The impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts can be reversed; and that may cause irreplaceable loss of resources; and can be avoided, managed, or mitigated.	Section 12
Methodology used in determining the significance of environmental impacts.	The methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives.	Section 10
The positive and negative impacts that the proposed activity (in terms of the initial site layout) and alternative will have on the environment and the community that may be affected.	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.	Section 12
The possible mitigation measures that could be applied and the level of risk.	The possible mitigation measures that could be applied and level of residual risk.	Section 13.9
Motivation where no alternative sites were considered.	Alternative locations for the activity where they were investigated, If no alternatives are possible the motivation for not considering such.	Section 13.2
Statement motivating the preferred site.	A concluding statement indicating the preferred alternatives, including preferred location of the activity.	Section 7
Plan of study for the environmental impact assess process	A plan of study for undertaking the environmental impact assessment process to be undertaken.	Section 12.3
Description of alternatives to be considered including the option of not going ahead with the activity.	A description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity.	Section 7

Legal and regulatory requirement		Section of report
DMRE template requirement	EIA Regulations, 2014 – Appendix 2	
A description of the aspects to be assessed as part of the environmental impact assessment process.	A description of the aspects to be assessed as part of the environmental impact assessment process.	Section 13
Description of aspects to be assessed by specialists.	Aspects to be assessed by specialists.	Section 13.3
Proposed method of assessing the environmental aspects including the proposed method of assessing alternatives.	A description of the proposed method of assessing the environmental aspects, including a description of the proposed method of assessing the environmental aspects including aspects to be assessed by specialists.	Section 10
Proposed method of assessing duration significance.	A description of the proposed method of assessing duration and significance.	Section 13.5
The stages at which the competent authority will be consulted.	An indication of the stages at which the competent authority will be consulted.	Section 13.6
Particulars of the PPP with regard to the impact assessment process that will be conducted.	Particulars of the PPP that will be conducted during the EIA process.	Section 13.7
Description of the tasks that will be undertaken during the EIA process.	A description of the tasks that will be undertaken as part of the EIA process.	Section 13
Measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.	Identification of suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.	Section 13.9
Other information required by the CA.	Where applicable, any specific information required by the CA.	Section 16
Other matter required in terms of section 24(4)(a) and (b) of the Act.	Any other matter required in terms of section 24(4)(a) and (b) of the Act.	Section 14.1
Undertaking regarding correctness of information.	An undertaking under oath or affirmation by the EAP in relation to: • the correctness of the information provided in the report; • the inclusion of comments and inputs from stakeholders and I&APs; and • any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by I&APs.	Section 16
Undertaking regarding level of agreement.	An undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and interested and affected parties on the plan of study for undertaking the EIA.	Section 16

OPPORTUNITY TO COMMENT ON THE SCOPING REPORT

This Scoping Report has been distributed for a 30-day comment period from **8 February 2023 to 10 March 2023** in order to provide I&APs with an opportunity to comment on any aspect of the proposed Project and the findings of the S&EIA process to date. Copies of the full report and NTS (this is different to the executive summary) are available on the SLR website (at https://www.slrconsulting.com/en/public-documents/Marula-Solar-PV). Electronic copies (in the form of a USB) of the report are available from SLR, at the contact details provided below. Please send your comments to SLR as per the e-mail address shown below **by no later than 10 March 2023** . The Scoping Report will be updated to include all comments received during the public review period. The updated Scoping Report will be made available to the DMRE for decision-making purposes.

SLR Consulting (South Africa) (Pty) Ltd
Tel: +27 21 461 1118
E-mail: marulasolar@slrconsulting.com

By providing your personal information to submit a comment or supply your contact details as an I&AP for this Project, you will be included in the SLR I&AP database, and you consent to SLR managing your information in accordance with the Protection of Personal Information Act, 2013 (No. 4 of 2013). It is assumed that as an I&AP for this Project you authorise SLR to retain and use your personal information as part of a contact database for this and/or other EA processes and that you confirm your acceptance for SLR to contact you regarding this and/or other EA processes. SLR will not process your personal information, other than as permitted or required by EA processes, or as required by law or public policy. SLR will use reasonable, appropriate security safeguard to protect personal information, and to reasonably prevent any damage to, loss of, or unauthorised access or disclosure of personal information, other than as required for EA processes or as required by any Law or public policy. You may request for your personal information to be deleted from the I&AP database at any time by contacting SLR.

1. DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER WHO PREPARED THE REPORT

This Section provides the details, qualifications and experience of the EAP undertaking the S&EIA.

1.1 CONTACT PERSON AND CORRESPONDENCE ADDRESS

SLR has been appointed as the independent EAP to undertake the S&EIA process for the proposed Project. The details of the EAP project team that were involved in the preparation of this Scoping Report are provided in Table 2 below. The qualifications and experience (curricula vitae) of the project team are included in Appendix A.

Table 2: Details of the Environmental Assessment Practitioner

General		
Organisation	SLR Consulting (South Africa) (Pty) Ltd	
Postal Address	PO BOX 1596, Cramerview, 2060	
Tel No.	(011) 467 0945	
Name	Role and Tasks	Email
Natasha Smyth	Project Director and Technical Support (EAPASA Registration: 2020/3035) - Management of the S&EIA process, including process and report review.	nsmyth@slrconsulting.com
Chané Coetzee	Project Manager (EAPASA Registration: 2019/1441) - Management of the S&EIA process, including process review, specialist study review and report compilation	ccoetzee@slrconsulting.com
Liandra Scott-Shaw	Project Reviewer	lscottshaw@slrconsulting.com

SLR has no vested interest in the proposed Project other than contractually agreed payment for consulting services rendered as part of the S&EIA process. An undertaking by SLR declaring its independence, as required by the EIA Regulations, 2014, is provided in Section 16.

1.2 QUALIFICATIONS AND EXPERIENCE OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

Natasha Smyth, the Project Director, holds an Honours degree in Geography and Environmental Management and has approximately 13 years of relevant experience. She has managed and assisted in a wide range of projects for major and small-scale minerals developments throughout South Africa, as well as in Namibia and Zambia. Her areas of expertise include EIAs, Environmental Compliance and Monitoring and Environmental Due Diligence. She is a member of the International Association for Impact Assessment (IAIA). She is also a Registered EAP with Environmental Assessment Practitioners Association of South Africa ((EAPASA) (EAPASA Registration: 2020/3035)).

Chané Coetzee, the Project Manager, holds an Honours degree in Geography and has approximately 10 years of relevant experience. She has experience in coordinating and managing various Environmental and Social studies in the mining, infrastructure, and energy sectors. Her key experience includes the management and compilation of local and international Environmental and Social Impact Assessments (ESIA) and various Management Plans,

in compliance with in-country and international standards. Projects that she has been engaged in are located in South Africa, Zimbabwe, Democratic Republic of Congo, Mozambique, Mali, and Ghana. She is also a Registered EAP with the EAPASA (EAPASA Registration: 2019/1441).

Liandra Scott-Shaw, the reviewer, is a Project Manager for utility scale Renewable Energy Projects and Chair of the Environmental Working Group within the South African Wind Energy Association. She has a B.Sc. and B.Sc. (Honours) in Ecological Science from the University of KwaZulu-Natal and has worked as an EAP and vegetation ecologist since 2013. She has been involved in a number of projects covering a range of environmental disciplines, including Basic Assessments, EIAs and EMPs. She has gained experience in a wide range of projects relating to renewable energy.

2. DESCRIPTION AND LOCATION OF ACTIVITY

This Section provides details of the property on which the proposed Project is located, together with a layout that provides an overview of the project elements in relation to the regional and local setting of the site and its surrounding areas. These layouts also include the co-ordinates of the main project elements.

A description of the properties on which the proposed Project are located is provided in Table 3 below. Figure 2 and Figure 3 for the regional and local settings, respectively.

Table 3: Description of the property

Description	Details
Farm name	The Marula Mine MRA is located on the following farm portions. • Driekop 253 KT; • Clapham 118 KT; • Forest Hill 117 KT and • Winnarshoek 250 KT. The proposed Project will be located on the following farms: • Driekop 253 KT; and • Clapham 118 KT.
Application area (ha)	• Total footprint 90 ha (900 000sqm)
Magisterial district	Marula Platinum (Pty) Ltd operates the Marula Platinum Mine (Marula Mine) which is located in the Burgersfort Magisterial District and the Sekhukhune District Municipality of Limpopo.
Distance and direction from nearest town	Approximately 30 km to the north-west of the town Burgersfort
Distance and direction from nearest communities	The closest communities surrounding the mine are Magabaneng, Shakung, Galane, Ga-Manyaka, Diphale, Ditiganeng, Ga-Makhwae, Seuwe, Kaleneand Winaarshoek
21-digit Surveyor General (SG) Code for each farm portion	• Driekop 253 KT - T0KT00000000025300000 • Clapham 118 KT - T0KT00000000011800000
Water catchment and management area	The proposed Project is located within the B71E quaternary catchment of the Olifants Water Management Area

Figure 2: Regional setting

Figure 3: Local setting

3. DESCRIPTION OF THE SCOPE OF THE PROPOSED OVERALL ACTIVITY

This Section identifies the listed and specified activities applicable to the proposed Project and describes the activities that would be undertaken and infrastructure that will be developed as part of the proposed Project.

3.1 LISTED AND SPECIFIED ACTIVITIES

The listed activities in terms of the Environmental Impact Assessment Regulations, 2014 applicable to the proposed Project are shown in Table 4. The proposed site layout is shown in Figure 4 below.

Figure 4: Site Layout

Table 4: Proposed Project activities/infrastructure and associated listed activities

Main project activity/infrastructure	Aerial extent of the activity (ha or m²).	Listed activity (mark with an x)	Applicable listing notice, listed activity number and activity description	Applicable waste management listed activity
Disturbance of watercourse through the establishment of a PV Plant and associated infrastructure	90 ha	X	EIA Regulation Listing Notice 1, 2014 (GN R 983 of 2014) - Activity 12 The development of - (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs - (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;- excluding - (aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies; (dd) where such development occurs within an urban area; (ee) where such development occurs within existing roads, road reserves or railway line reserves; or (ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of the development and where indigenous vegetation will not be cleared. **Relevance** Three alternatives for the Project footprint were considered, these footprints are located within 32 m of the Tshwenyane River and an unnamed tributary of the Moopetsi River.	N/A
Storage of Dangerous Goods	100m²	X	EIA Regulation Listing Notice 1, 2014 (GN R 983 of 2014) - Activity 14	N/A

Main project activity/infrastructure	Aerial extent of the activity (ha or m²).	Listed activity (mark with an x)	Applicable listing notice, listed activity number and activity description	Applicable waste management listed activity
			The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres. **Relevance** The development of the Project will require the construction and operation of facilities and infrastructure for the storage and handling of dangerous goods (combustible and flammable liquids, such as oils, lubricants, solvents) associated with the onsite substation. Such storage will inside containers with a combined capacity exceeding 80m^3¬ but not exceeding 500m^3	
Disturbance of watercourse through the establishment of a PV Plant and associated infrastructure	As above	X	EIA Regulation Listing Notice 1, 2014 (GN R 983 of 2014) - Activity 19 The infilling or depositing of any material of more than [5] 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than [5] 10 cubic metres from [–(i)] a watercourse; [(ii) the seashore; or (iii)the littoral active zone, an estuary or a distance of 100 metres inland of the high-water mark of the sea or estuary, whichever distance is the greater—] but excluding where such infilling, depositing, dredging, excavation, removal or moving— a. will occur behind a development setback; b. is for maintenance purposes undertaken in accordance with a maintenance management plan; [or] c. falls within the ambit of activity 21 in this Notice, in which case that activity applies; d. occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or	N/A

Main project activity/infrastructure	Aerial extent of the activity (ha or m²).	Listed activity (mark with an x)	Applicable listing notice, listed activity number and activity description	Applicable waste management listed activity
			e. where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies. **Relevance** The proposed Project will require an expansion of support infrastructure such as transmission lines, access roads or similar. This may result in activities (through excavation, removal of soil, infilling or deposition) which may potentially disturb the watercourses/ drainage lines within the proposed footprint.	
Establishment of a PV Plant and associated infrastructure	90 ha	X	EIA Regulation Listing Notice 1, 2014 (GN R 983 of 2014) - Activity 21D Any activity including the operation of that activity which requires an amendment or variation to a right or permit in terms of section 102 of the Mineral and Petroleum Resources Development Act, as well as any other applicable activity contained in this Listing Notice or in Listing Notice 3 of 2014, required for such amendment. **Relevance** The proposed solar PV facility will be owned by the Marula mine; the development of the solar plant therefore constitutes a change of the approved surface infrastructure at Marula. This will require a Section 102 application in terms of the MPRDA.	N/A

Main project activity/infrastructure	Aerial extent of the activity (ha or m²).	Listed activity (mark with an x)	Applicable listing notice, listed activity number and activity description	Applicable waste management listed activity
Development of roads	The main access road will be approximately 6 m wide and 4000 m long. The internal roads will be approximately 2,5 m wide and 14 000 m long. All the roads will be gravel surfaced.	X	EIA Regulation Listing Notice 1, 2014 (GN R 983 of 2014) - Activity 24 The development of a road - (i) for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or (ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres; but excluding a road - (a) which is identified and included in activity 27 in Listing Notice 2 of 2014; (b) where the entire road falls within an urban area; or (c) which is 1 kilometre or shorter. **Relevance** The main access road will be approximately 12 m wide during construction and 6 m wide and 500 m long for operation. The internal roads will be approximately 8 m wide during construction and 4 m wide and 4 000 m long for operation. All the roads will be gravel surfaced.	N/A
Site Clearance and Infrastructure Development	90 ha	X	EIA Regulation Listing Notice 1, 2014 (GN R 983 of 2014) - Activity 28 Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development: (i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare; excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes. **Relevance**	N/A

Main project activity/infrastructure	Aerial extent of the activity (ha or m²).	Listed activity (mark with an x)	Applicable listing notice, listed activity number and activity description	Applicable waste management listed activity
			The total area required for the proposed development is in excess of 1 ha.	
Solar PV Plant and infrastructure	90 ha	X	EIA Regulation Listing Notice 2, 2014 (GN R 984 of 2014) - 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. **Relevance** The proposed development will establish up to 33 MW.	N/A
Site Clearance	90 ha		EIA Regulation Listing Notice 2, 2014 (GN R 984 of 2014) - 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. **Relevance** The construction of the proposed Project will require the clearance of 90 ha for the preferred footprint.	N/A
Roads	The main access road will be approximately 6 m wide and	X	EIA Regulation Listing Notice 3, 2014 (GN R 985 of 2014) - Activity 4) The development of a road wider than 4 metres with a reserve less than 13,5 metres. e. Limpopo	N/A

Main project activity/infrastructure	Aerial extent of the activity (ha or m²).	Listed activity (mark with an x)	Applicable listing notice, listed activity number and activity description	Applicable waste management listed activity
	500 m long. The internal roads will be approximately 4 m wide and 4 000 m long. All the roads will be gravel surfaced.		i. Outside urban areas: (aa) A protected area identified in terms of NEMPAA, excluding disturbed areas; (bb) National Protected Area Expansion Strategy Focus areas; (cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (dd) Sites or areas identified in terms of an international convention; (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; (ff) Core areas in biosphere reserves. **Relevance** The main access road will be approximately 6 m wide and 500 m long. The internal roads will be approximately 4 m wide and 4 000 m long. All the roads will be gravel surfaced. The proposed Project is located in an ESA 1 and ESA 2 areas. Sections of the Sekhukhune Plains Bushveld are located within the Project area.	
Storage of dangerous goods	100m^2	X	EIA Regulation Listing Notice 3, 2014 (GN R 985 of 2014) - Activity 10 The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres. **Relevance** There may be a need for storage and handling of dangerous goods (combustible and flammable liquids, such as oils, lubricants, solvents) associated with the onsite substation. Although not currently considered as part of the project description, for completeness of the application, the project may require a Battery Energy	N/A

Main project activity/infrastructure	Aerial extent of the activity (ha or m²).	Listed activity (mark with an x)	Applicable listing notice, listed activity number and activity description	Applicable waste management listed activity
			Storage System (BESS) as part of the Project and will be assessed as part of the EIA.	
Site Clearance	90 ha	X	EIA Regulation Listing Notice 3, 2014 (GN R 985 of 2014) - 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. e. Limpopo (i) Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; ii. Within critical biodiversity areas identified in bioregional plans; or iii. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning. **Relevance** The solar facility and associated infrastructure will exceed the physical footprint of 10 square metres. The proposed Project is located in an ESA 1 and ESA 2 areas. Sections of the Sekhukhune Plains Bushveld are located within the project area.	N/A
Roads	The main access road will be approximately 6 m wide and 500 m long.	X	EIA Regulation Listing Notice 3, 2014 (GN R 985 of 2014) - Activity 18 The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre e. Limpopo	N/A

Main project activity/infrastructure	Aerial extent of the activity (ha or m²).	Listed activity (mark with an x)	Applicable listing notice, listed activity number and activity description	Applicable waste management listed activity
	The internal roads will be approximately 4 m wide and 4 000 m long. All the roads will be gravel surfaced.		i. Outside urban areas: (aa) A protected area identified in terms of NEMPAA, excluding conservancies; (bb) National Protected Area Expansion Strategy Focus areas; (cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (dd) Sites or areas identified in terms of an international convention; (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; (ff) Core areas in biosphere reserves; (gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve; or (hh) Areas within a watercourse; or within 100 metres from the edge of a watercourse; or ii. Inside urban areas: (aa) Areas zoned for use as public open space; or (bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority or zoned for a conservation purpose **Relevance** The main access road will be approximately 6 m wide and 500 m long. The internal roads will be approximately 4 m wide and 4 000 m long. All the roads will be gravel surfaced.	

3.2 EXISTING ACTIVITIES

3.2.1 Mining operations

Marula identified the UG2 and Merensky reefs as economically viable resources to be mined. The depth of mining varied from surface to over 600 Metres Below Ground Level (mbgl). The Merensky reef is located parallel and approximately 400 m above the UG2 reef. Currently the mine is exploiting the UG2 reef through conventional underground mining methods, undertaken 24 hours per a day and seven days per week. Marula has a Life of Mine (LoM) of approximately 40 years. The remaining LoM is approximately 21 years. Marula has two shaft complexes as part of the existing surface infrastructure. These are the Clapham Shaft Complex and the Driekop Shaft Complex, which are located on the farms Clapham 118 KT and Driekop 253 KT respectively. Currently access to the UG2 Reef is gained through these shaft complexes.

The ore and waste material are separated underground and transported via a conveyor belt to the run-of-mine silo located at each shaft and is then conveyed to the primary crusher. Waste rock is crushed by dedicated crushers located at each shaft complex. All waste rock is deposited on the waste rock dump (WRD). The ore is processed at the UG2 Concentrator Plant at an average rate of 162 500 tpm. In general terms, the processing activities comprise; crushing, screening, dense media separation, milling, floatation, tailing disposal and filtration. The mine product is platinum concentrate (filter cake) containing the platinum group metals, together with metals and minerals found in mineralogical association. The final product is trucked to Rustenburg for further refinement.

3.3 EXISTING AND APPROVED INFRASTRUCTURE

A high-level overview of the approved and established infrastructure within the mining right area includes the following:

- Shaft Complexes:
  - Driekop Shaft Complex and box cut with associated run-of-mine ore silo, run-of-mine emergency stockpile, primary crusher, conveyor systems, pipelines (potable, process, sewage), power supply facilities, ventilation shafts, waste rock dump area (currently not in use) and supporting facilities.
  - Clapham Shaft Complex and box cut with associated run-of-mine ore silos, run-of-mine emergency stockpiles, primary crusher, conveyor systems, pipelines (potable, process, sewage), power supply facilities, ventilation shafts, waste rock dump and primary crusher as the waste rock dump and supporting facilities.
  - Merensky Shaft Complex and box cut with associated ore stockpile during construction, run-of-mine ore silo, run-of-mine emergency stockpile, primary crusher, conveyor systems, pipelines (potable, process, sewage), power supply facilities, ventilation shafts, waste rock dump, primary crusher at the waste rock dump and supporting facilities (this shaft complex has been approved but not yet constructed);
- Ventilation shafts to assist with underground airflow.
  - Currently the mine has existing downcast ventilation shafts located on the farm Driekop 253 KT and farm Winnarshoek 250 KT (Portion 0). An approved shaft located on the farm Winnarshoek 250 KT and is not yet established.
- A Tailings Scavenger Plant.

- UG2 Concentrator Plant comprising crushing and screening, a DMS plant (not currently in use), milling, flotation, dewatering circuit, final product stockpile, loading facility and weighbridge.
- Merensky concentrator plant comprising ore storage, crushing, and screening, Dense Media Separation (DMS) (optional), milling, flotation and filtration (this plant has been approved but not yet constructed).
- UG2 tailings dam (Phase 1 and 2) with associated pipelines (tailings, return water) and return water dam.
- A DMS waste site and conveyor system.
- Main mine access road and smaller mine service and haul roads.
- Power supply facilities including powerlines and a substation at the UG2 plant.
- Water Supply facilities:
    - Main water supply facilities comprising the Lebalelo Water User Association (LWUA) pipeline.
    - A raw water dam.
    - Internal potable and process water supply pipelines.
    - A potable water treatment plant.
- Sewage treatment plant at Clapham with associated sewage pipelines from various operations at the mine.
- Water management facilities comprising clean and dirty stormwater control measures, pollution control dams, stormwater dams and process water dams.
- A river diversion at the DMS waste site – only if this site is used.
- Topsoil stockpiles have been developed behind the main offices. The topsoil has also been used to create diversion berms in several areas around the mine.
- Supporting facilities:
    - Comprising a laboratory.
    - Compressor house/s.
    - Workshops, wash bays, laydown and storage areas.
    - Handling areas for raw materials.
    - Salvage yards.
    - Explosives storage magazine and destruction area, explosives delivery points.
    - Change houses with ablution facilities.
    - Fuel and lubrication storage and handling system.
    - Security control.
    - Lamp houses and waiting rooms.
    - Bus/taxi off- loading and loading areas.
    - A clinic facility and first aid offices.
    - A training centre, trade union meeting area and main office/admin block and secondary offices and a mine camp.

3.4 DESCRIPTION OF THE ACTIVITIES TO BE UNDERTAKEN

Solar energy systems produce energy by converting photons “solar radiation” into electrons when then flow as electricity or heat. This process is referred to as the ‘Photoelectric Effect’. Three types of solar panels are proposed and will be assessed in the Impact Assessment Phase for the Proposed Project. These include monocrystalline, polycrystalline, and thin film modules solar panels.

The main components of solar PV technology to be utilized for this project are provided in Table 5.

Table 5: Proposed Project components and application area

Activities	Description
Solar PV Facility	
Installed capacity:	• Up to 33 MW
Total footprint	• Total footprint 90 ha (900 000 sqm)
PV modules:	• Type: Monocrystalline or Polycrystalline, monofacial or bifacial Solar PV modules • Total footprint: 90 ha – up to 33 MW
Mounting structures:	• Maximum height: up to 5 meters • Included in the PV Modules footprint
Inverters:	• Likely string Inverters • Included in the PV Modules footprint
Cabling:	• Underground direct current (DC) cables connecting the PV modules to the inverters and underground alternating current (AC) cables connecting the inverters to the onsite substation.
Onsite substation:	• 33 kV • Included in the PV Modules footprint • Maximum Ground Clearance is up to 5 meters
Overhead Transmission Line	
Installed capacity	Up to 33kV
Total footprint	Included in the PV modules footprint
Corridor width and length:	• Average Clearance width: 4.7 meters • Approximate Clearance Height: 16-24 meters • Approximate Length: Up to 2000 meters
Nearest mine substation	• 40 MVA, 33 kV / 11 kV Installed Capacity • Total footprint: 1000 sqm • Maximum height: up to 5 meters • Nearest mine substation has enough capacity to accommodate the tie-in of the Solar PV facility.
Grid connection:	• Installed capacity: 33 kV • Connection between the mine and the national grid • This connection could potentially be used for wheeling electricity from the Solar PV
Associated Structures and Infrastructures	
Battery energy storage system (BESS):	• As part of the current project description a BESS is not planned for the Proposed Project. However, an assessment of the different BESS technologies will be included in the Environmental Impact Report (EIR) and as part of the listed activities should the project description change during the initial phase of the S&EIR process.
Operations buildings:	• Include offices, ablution facilities, and stores. Note that there will be no one living onsite during the construction and operational phases
Laydown area:	• Total footprint up to 6 ha • For temporary storage of equipment and supplies
Security:	• Non-electrified boundary fence with permitter lighting

Activities	Description
	• Manned controlled access to the Solar PV Facility
Roads:	• The main access road will be approximately 6 m wide and 500 m long • The internal roads will be approximately 4 m wide and 4 000 m long. • All the internal roads will be gravel surfaced.
Stormwater infrastructure:	• Stormwater runoff from the Solar PV Facility will be collected in an open, V-shaped stormwater drain (within the road servitude).
Water storage tank:	• Total capacity: up to 2000 m^3 • Total footprint: 800 m^2 • For the temporary storage of water onsite (i.e., buffer tank).
Employment opportunities	
Construction	• Approximately 135 people. • Note that the number of people employed at one time may vary as different contracts and subcontracts on the project are completed at a time onsite.
Operations	• Approximately six permanently employed people. • Onsite staff will mainly be responsible for the daily operations and maintenance activities of the project.

3.5 EXISTING SERVICES

3.5.1 Road access and transport network

Marula is an operational mine with established road infrastructure which provides access to the mine. The mine is situated alongside the provincial R37, which links the towns of Burgersfort and Polokwane. The mine's access road is located just off the R37 and is surfaced with one lane per direction. In addition to servicing the mine, the access road also services surrounding residential communities. Within the mining area, there are smaller access roads which provide access to various parts of the operations. The smaller access roads are between 4 to 5 m wide and comprise of gravel material. The smaller access roads are purposed for low traffic volumes.

3.5.2 Power supply

The current power supply for Marula Platinum Mine consists of an external supply from the grid via a substation with two 40 MVA 132kV/33 kV transformers that belong to Eskom on farm Clapham 118 KT; the substation is fed from two 132 kV overhead lines. The current Notified Maximum Demand with Eskom is 39 MVA with an installed capacity that allows for N-1 contingency. The figure below shows Marula Platinum Mine demand profile. According to the figure below, the maximum power demand is going to increase to 54 MVA with the ramp up beginning in 2030. This ramp up and the projected maximum power demand has initiated a process with Eskom to upgrade the current substation capacity through an installation of an additional third 40 MVA 132kV/33 kV transformer. The current power supply consists of the Eskom yard and transmission powerlines. In addition, there are registered power servitudes within the MRA:

- Eskom consumer substation (Eskom Yard): Infrastructure at the Eskom yard comprises of two 40 MVA transformers.
- Transmission and distribution lines: A 132 kV line enters the mine from east and feeds into the existing Eskom yard located north of the existing Concentrator Plant. From the Eskom yard, power to the various operations is distributed via 11 kV lines. The main power lines service the Clapham shaft, the Driekop shaft and the Tailings Storage Facility (TSF) area. The approved Merensky Shaft will obtain power from

the Eskom Yard. A 132 kV line will be established and connected to a 132/11 kV substation at the Merensky Shaft Complex.

- Existing registered and unregistered power servitudes are located as follows:
  - Powerline servitude on Clapham 118 KT (Servitude No. K1921/2005 S – SG Diagram 13542/1997);
  - Powerline servitude on Forrest Hill 117 KT (Servitude No. K1918/2005 S – SG Diagram 13540/1997);
  - Outspan servitude on remaining extent of Winnarshoek 250 KT (SG Diagram D.B. 109/18 - it is not clear from neither the diagram where this outspan servitude area is located); and
  - Outspan servitudes (two) and Eskom Holdings servitude on Driekop 253 KT (No. A 6769/1950 – SG Diagrams 3494-9/2005 – no diagrams found at deeds office).

3.5.3 Water supply, use and management

Raw water supply - Water for the mine is sourced from the LWUA via an underground pipeline. The pipeline follows the R37 from where the mine has a take-off line. Water from LWUA is pumped to a Raw Water Dam located near to the concentrator plant. The raw water dam is operated and managed by the LWUA and has a capacity of 24 500 m^3. Marula utilises a closed water circuit where raw water is reticulated around the mine for process use. The raw water is stored in the Plant Dam. Due to the continued use of recycled water, Marula only sources make-up water from the Lebalelo Water Association via an off-take pipeline to the Plant Dam when there is a water shortfall.

Potable water supply - Potable water is obtained from the treatment of raw water in a purification plant (filtration and disinfection). This water is used for domestic purposes and is stored in steel storage tanks at the potable water plant.

Sewage treatment facility - There is a bio-disc sewage effluent plant located approximately 150 m north-west of the Clapham Shaft Complex to treat sewage effluent. The capacity of the plant is 433 m^3/day. The sludge drying beds are no longer in use. Sludge is removed by a contractor (Steelpoort Sewerage Services) from the tanks via honeysucker and transferred to the Burgersfort municipal sewage plant.

3.5.4 Waste management

The waste management procedure for the mine covers storage, handling and transportation of waster to and from the site. The management of waste at the Marula Mine will be included in the EMPr. Types of wastes generated by Marula include the following:

- Domestic wastes (such as office waste, food waste and detergents);
- Sewage wastes; and
- Industrial wastes (such as building rubble, electrical and plastic material, oils and grease, paints and solvents, scrap metal).

Marula has a Licensed salvage yard on site used for the sorting of waste. The waste is then disposed at a municipal landfill. In general, all domestic solid waste is collected and removed to the municipal landfill. The salvage yard contains recyclable wastes which have been sorted and stored. The recyclable wastes are removed by appointed contractors. Marula has existing waste management and disposal practices for their domestic and industrial wastes.

Hazardous wastes such as hydrocarbon material (motor oils, contaminated grease) are collected in designated containers and collection sumps at various locations around the site. These hazardous wastes are removed by contractor for recycling or disposal as appropriate. Contaminated soils are removed, and the areas are remediated on a as needed basis.

Sewage at the proposed Project site will be managed through a septic tank system.

3.6 PV CELL

The PV cell is the device that generates electricity when exposed to solar radiation. The absorbed solar energy excites the electrons inside the PV cell and produces electrical energy (see Figure 5). All PV cells produce DC.

3.7 PV MODULE

The PV module is the set of interconnected photovoltaic cells encapsulated between a transparent front (usually glass) and a backing support material of either laminate or glass then mounted in an aluminium frame, or frameless with durable tempered glass. The modules will appear dark blue or black and will be mounted in an aluminium frame or laminated between durable glass sheets. The modules are designed to absorb the solar radiation and hence are not susceptible to reflection or glinting. Newer modules can also absorb irradiation reflected off the ground via the back of the panel if the back of the panel is glass. This type of module technology is referred to as bi-facial modules which are produced by several panel suppliers and can be produced in either monocrystalline or polycrystalline form.

3.8 PV ARRAY

The PV array is the complete power generating plant consisting of multiple PV modules wired in series and in parallel. The PV modules will be connected by DC cables to combiner boxes mounted underneath the PV module mounting structures. Each combiner box will occupy an area of approximately one square metre. The power generated by many PV module strings is combined in the combiner box and transmitted via DC cables to an inverter and transformer enclosure.

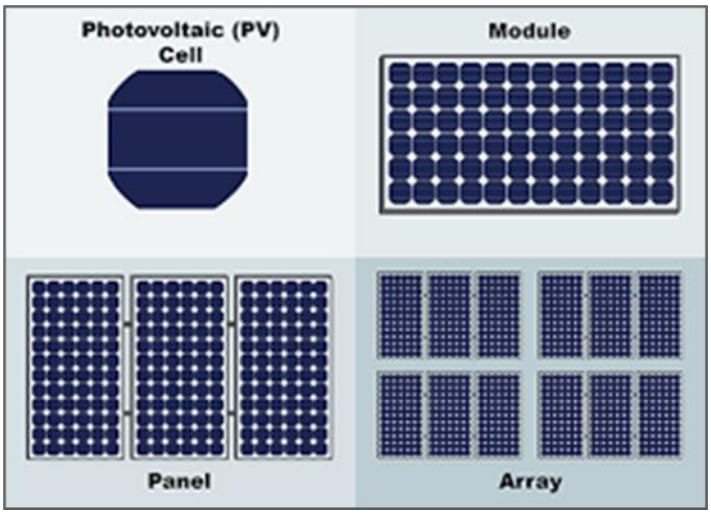

Figure 5: Illustration of the various components that make up a PV panel array

(Source: http://www.fsec.ucf.edu/en/consumer/solar_electricity/basics/cells_modules_arrays.htm , accessed July 2021).

3.9 MOUNTING STRUCTURES

Multiple PV modules are bolted onto a mounting structure which tracks the sun's progress across the sky usually in an east to west direction.

3.10 INVERTER

The inverter converts the DC to alternating current (AC). The inverter and transformer are anticipated to be housed within the same inverter station housing (typically an insulated, steel-framed 6 m shipping container, or small brick building). The transformers transform the low voltage AC from the inverter to medium voltage. The actual number of the required inverter stations for the proposed Project will be determined prior to the commencement of the construction phase of the Project. The inverters will vary in size and frequency depending on technology. Inverter stations will be installed in between the PV panel rows (see Figure 6), in a line inside the layout area at the end of each row, located on a concrete plinth.

Figure 6: Inverter positioning (red blocks) on a PV panel array

3.11 SUBSTATION

The substation receives all power from the inverters via underground cables and provides protection and control equipment required to safely manage the plant and to ensure grid code compliance regulations. The substation will consist of a building, outdoor electrical plant and equipment and the transformers.

3.12 BATTERY ENERGY STORAGE SYSTEM

Although the BESS is currently not considered for the project a short description of the technology is described below.

The BESS allows for the storage of surplus energy generated by the solar PV facility for later use. The BESS enables a balance between supply and demand of electricity during the day and uses the stored energy during peak demand periods, i.e., morning and evenings. Energy generated from the PV panel array is DC and converted to AC by the inverters and then transferred to the on-site substation where it is determined if the energy should be stored or evacuated. When the energy is required, it is evacuated into the grid network, and when it is not required, it is transferred to the BESS and stored for later use.

3.13 OPERATIONS AND MAINTENANCE BUILDINGS

Additional infrastructure is required to support the operations of a solar PV facility, and to provide services to personnel tasked with the operations and maintenance of a facility. Operations & Maintenance Buildings (O&M) typically include Offices, Operational and Control Centre, Workshop, Warehouse, and Ablution Facilities.

3.14 ACCESS ROADS

An access road will be constructed for the provision of access from the existing road network to the Project site. The main access road will be approximately 6 m wide and 500 m long. Within the Project site, internal access roads will be constructed to provide access to the PV panel array and other components of the solar PV facility. The internal roads will be approximately 4 m wide and 4 000 m long.

3.15 MAIN ACTIVITIES

The proposed Project will be carried out in the following phases:

- Development / Planning phase;
- Construction phase;
- Operational phase; and
- Decommissioning phase.

Activities to be undertaken during each of the phases are described in the following sections of this report.

3.15.1 Development and planning phase

During the development and planning phase of the Proposed Project, Marula will assess the key parameters required for the construction and operation of the solar PV facility. This will include:

- A detailed layout of the proposed Project.
- Eskom grid connection requirements.
- Detailed geotechnical investigations of the Project site.

During the development and planning phase of the Proposed Project, the Project will be adapted in order to meet regulatory requirements, time schedules and expectations of all relevant parties.

3.15.2 Construction phase

The construction phase would include the following:

- Clearance of vegetation in line with Marula's Biodiversity Management Plan.
- Establishing a contractor's camp (for equipment, offices etc only).
- Installation of perimeter fencing and levelling of the site and preliminary earthworks.
- Stripping and stockpiling of soil resources in line with soil conservation procedure.
- Cleaning, grubbing and bulldozing activities.
- Establishing access and internal roads.
- Digging trenches and foundations.
- Establishing storm water controls (channels, berms) as per storm water management plan.
- Ramming or drilling of the mounting structure frames.
- Installation of the PV modules onto the frames.
- Installation of measuring equipment.
- Laying of cables between the module rows to the inverter stations.
- Optionally laying of gravel or aggregate from nearby quarries placed in the rows between the PV panel array for enhanced reflection onto the panels, assisting in vegetation control and drainage.
- Construction of foundations for the inverter stations and installation of the inverters.
- Construction of the substation and BESS foundations and installation of the substation components and placement of BESS.
- Construction of operations and maintenance buildings.
- Undertaking of rehabilitation on cleared areas where required, and concurrent rehabilitation where necessary.
- Testing and commissioning.
- Removal of equipment and disassembly of construction camp.

Where possible, materials, plant and equipment will be sourced from suppliers within the vicinity of the Project site. The bulk of the specialist equipment, i.e., PV modules, inverters, BESS, substation components and BESS, etc, will be imported from China, Europe or the United States of America and be shipped to South Africa.

3.15.2.1Services During Construction

Construction related traffic will be associated with the delivery of construction materials and equipment to site, removal of waste from site and transport of contractors to and from site.
The types of materials that could be transported to and from site include:

- Building materials.
- Solar plant equipment.
- Prefabricated huts and containers for the contractor's camp.
- Domestic, industrial and sewage waste.

Transport routes for the proposed Project will be finalised once all suppliers are finalised after undergoing a procurement period. Traffic volumes are anticipated to diminish during the construction phase of the Proposed Project.

3.15.2.2 Access

The following access routes exist for the proposed Project:

- *Provincial Road*: The Provincial R37 is the road which provides access to the mine. This road is surfaced and links the towns of Polokwane and Burgersfort.
- *Main Access Road*: The mine's access road is surfaced and runs from the R37 to just past the existing mineral processing plant and administration complex. The main access road to the PV facility will be is approximately 500 m long and 6 m wide.
- *Internal roads*: The internal roads will be approximately 4 m wide and 4 000 m long.

3.15.2.3 Labour

The proposed Project will employ approximately 135 people during the construction phase. The number of people employed at one time may vary as different contracts and subcontracts on the project are completed at a time onsite. The construction will be undertaken 10 hours a day, for six days a week.

3.15.2.4 Water demand and Supply

Water will be sourced from the LWUA. Water volume required for the Project during construction is approximately 1.32 m litres p.a.

3.15.2.5 Duration of construction phase

The construction phase of the proposed Project will be for a period of 9 to 12 months.

3.15.3 Operation phase

The operation phase of the proposed Project will comprise the following activities:

- Regular cleaning of the PV modules by trained personnel.
- Vegetation management under and around the PV modules to allow maintenance and operation at full capacity.
- Maintenance of all components including PV modules, mounting structures, trackers, inverters, substation transformers, BESS, and equipment.
- Office management and maintenance of operations and maintenance buildings.
- Supervision of the solar PV facility operations.
- Site security monitoring.

3.15.4 Transport

Only a limited number of vehicles will travel to and from the Project site for operation and maintenance purposes.

3.15.5 Labour

The proposed Project will employ 6 people fulltime during the operation phase. Onsite staff will mainly be responsible for the daily operations and maintenance activities of the project. The proposed Project will be operated 24 hours, seven days a week.

3.15.6 Water demand

During the operation phase, water will be sourced from LWUA. Approximately 1950k litres p.a. of water will be required for domestic applications, dust suppression and cleaning of the PV modules. The PV panels will typically

be cleaned using dry brush techniques, and water cleaning will be used under certain circumstances where water will be used only to remove surface contaminants on the PV modules.

3.15.7 Waste disposal and management

There will be solid waste generated for the duration of the proposed Project and will comprise of hazardous and non-hazardous waste components. During the operation phase of the Proposed Project, non-hazardous solid waste components will comprise spoil from construction-related activities, general domestic waste (i.e., wooden pallets, cardboards, etc.) and concrete.

Hazardous materials used on site during operations will include fuels, oils, lubricants, cleaning products, and specialised gases (for use in switchgear etc.). Minimal waste is expected to be generated during the operation phase. For certain types or transformers or backup generators, oil that needs to be replaced will be recycled, if possible, or safely stored and removed from the site and correctly disposed of.

All solid wastes generated (hazardous and non- hazardous) will be disposed of at a licensed landfill site by means of contracting a suitably registered waste handling company.

3.15.8 Duration of operation phase

The proposed Project will be operational for a period of 30 years.

3.15.9 Decommissioning phase

The proposed Project is expected to operate for at least 30 years. The facility will be used to supply power into the grid at the end of its life either to be wheeled to other operations or sold to off takers.

4. POLICY AND LEGISLATIVE CONTEXT

This Section outlines the key legislative context applicable to the proposed Project and outlines the guidelines, policies and plans that have been considered during the Scoping phase of the S&EIA process.

4.1 LEGISLATION CONSIDERED IN THE PREPARATION OF THE SCOPING REPORT

In accordance with the EIA Regulations, 2014 all legislation and guidelines that have been considered in the Scoping phase of the S&EIA process are documented. A summary of the applicable legalisation that has been, and will be, considered in the assessment process is outlined in Table 6 provides a summary of other applicable legislation.

4.1.1 Mineral and Petroleum Resources Development Act, 2002 (No. 28 of 2002)

The MPRDA governs the acquisition, use and disposal of mineral and petroleum resources in South Africa. The MRPDA promotes equitable access to the nation's mineral and petroleum resources. The objectives of the Act, amongst others, are to promote economic growth and mineral and petroleum resources development in the Republic, particularly development of downstream industries through provision of feedstock and development of mining and petroleum inputs industries and also to promote employment and advance the social and economic welfare of all South Africans.

Chapter 4 of the Act provides a framework to regulate the application for mining, prospecting, and closure rights. Section 24(4) of NEMA provides the minimum requirements for procedures for the investigation, assessment, management, and communication of the potential impacts. With the establishment of the "One Environmental System" in 2014, the DMRE must apply the range of environmental principles included in Chapter 2 of NEMA when taking decisions that significantly affect the environment. To give effect to the general objectives of Integrated Environmental Management (IEM), the potential impacts on the environment of listed or specified activities must be considered, investigated, assessed, and reported on to the CA.

In addition, Section 22 of the MPRDA governs the application for a Prospecting Right, MR or Mining Permit. In terms of the Act, these rights may only be granted by the Minister.

4.1.2 National Environmental Management Act, 1998 (No. 107 of 1998)

The NEMA establishes principles and provides a regulatory framework for decision-making on matters affecting the environment. All organs of state must apply the range of environmental principles included in Section 2 of NEMA when taking decisions that significantly affect the environment. Included amongst the key principles is that all development must be socially, economically, and environmentally sustainable and that environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural, and social interests equitably. The participation of I&APs is stipulated, as is that decisions must consider the interests, needs and values of all I&APs.

Chapter 5 of NEMA provides a framework for the integration of environmental issues into the planning, design, decision-making and implementation of plans and development proposals. Section 24 provides a framework for granting of EAs. To give effect to the general objectives of Integrated Environmental Management, the potential impacts on the environment of listed or specified activities must be considered, investigated, assessed, and reported on to the competent authority. Section 24(4) provides the minimum requirements for procedures for

the investigation, assessment, management, and communication of the potential impacts. In terms of the management of impacts on the environment, Section 24N details the requirements for an EMPr.

4.1.3 Environmental Impact Assessment Regulations, 2014 (GN R 982 of 2014)

The EIA Regulations, 2014 as promulgated in terms of Chapter 5 of NEMA and published in Government Notice (GN) R 982 (as amended by GN No. 326 of 7 April 2017) control certain listed activities. These activities are listed in GN R983 (Listing Notice 1; as amended by GN R 327 of 7 April 2017), R 984 (Listing Notice 2; as amended by GN R 325 of 7 April 2017) and R 985 (Listing Notice 3; as amended by GN R 324 of 7 April 2017) and are prohibited until an EA has been obtained from the competent authority. Such an EA, which may be granted subject to conditions, will only be considered once there has been compliance with GN R 982 (as amended). GN R 983 (as amended) sets out the procedures and documentation that need to be complied with when applying for an EA. A Basic Assessment process must be applied to an application if the authorisation applied for is in respect of an activity or activities listed in Listing Notices 1 and/or 3 and a Scoping and EIA process must be applied to an application if the authorisation applied for is in respect of an activity or activities listed in Listing Notice 2. As the Marula Solar PV Facility includes activities listed in Listing Notice 2, it is necessary that a full Scoping and EIA process is undertaken in order for the DMRE to consider the application in terms of NEMA.

4.1.4 National Water Act, 1998 (No. 36 of 1998)

Chapter 4 of the National Water Act, 1998 (No 36 of 1998) (as amended), requires proponents to proposed developments to submit applications to the competent authority (Regional Office of the Department of Human Settlements, Water and Sanitation (DWS)) where a water use listed under Section 21 of the Act is triggered. Water Use is defined broadly by the Act and includes, taking and storing water, activities which reduce stream flow, waste discharges and disposals, controlled activities (activities which impact detrimentally on a water resource), alteration of a watercourse, removing water underground for certain purposes and recreation.

Possible water uses that could triggered by the Proposed Project. An application for a WUL or General Authorisation (GA) must be undertaken in accordance with the regulations of GN R267 of 2017 and be submitted to the competent authority following the granting of an EA. The IWUL application is undertaken as a separate process and does not form part of this S&EIR process.

4.1.5 National Heritage Resources, 1999 (No. 25 of 1999)

The National Heritage Resources Act, 1999 (No. 25 of 1999) (NHRA) provides for the identification, assessment, and management of the heritage resources of South Africa. Section 38(1) of the NHRA lists development activities that would require authorisation by the responsible heritage resources authority. Activities considered applicable to the proposed Project include the following:
"(a) The construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length; … (c) Any development or other activity which will change the character of a site; (i) exceeding 5 000 m² in extent".

The NHRA requires that a person who intends to undertake a listed activity notify the relevant provincial heritage authority at the earliest stages of initiating such a development. The relevant provincial heritage authority would then in turn, notify the person whether a Heritage Impact Assessment (HIA) should be submitted. However, according to Section 38(8) of the NHRA, a separate report would not be necessary if an evaluation of the impact of such development on heritage resources is required in terms of the Environment Conservation Act (No. 73 of 1989) (now replaced by NEMA) or any other applicable legislation. The decision-making authority should,

however, ensure that the heritage evaluation fulfils the requirements of the NHRA and take into account in its decision-making any comments and recommendations made by the relevant heritage resources authority.

4.1.6 National Environmental Management: Waste Act (No. 59 of 2008)

The National Environmental Management: Waste Act, 2008 (No. 59 of 2008) (NEM:WA) regulates all aspects of waste management and has an emphasis on waste avoidance and minimisation. NEM:WA creates a system for listing and licensing waste management activities. Listed waste management activities above certain thresholds are subject to a process of impact assessment and licensing. Activities listed in Category A require a BA process, while activities listed in Category B require an EIA process. NEM:WA also provides for the setting of norms and standards for the storage and disposal of waste. These norms and standards are listed in GN R 926 of 2013 (storage) and GN R 636 of 2013 (disposal). The proposed development of the proposed Project does not trigger a Listed Activity in terms of NEM:WA, thus a Waste Management License for the Project is not required. Any waste product produced would be disposed of via suitably qualified and licensed third-party service providers.

4.1.7 National Environmental Management: Air Quality Act, 2004 (No. 34 of 2004)

The National Environmental Management: Air Quality Act (NEM:AQA) regulates all aspects of air quality, including: prevention of pollution and environmental degradation; providing for national norms and standards (through a National Framework for Air Quality Management) regulating air quality monitoring, management, and control; and licencing of activities that result in atmospheric emissions and have or may have a significant detrimental effect on the environment.

4.1.8 National Dust Control Regulations, 2013 (GN R 827 of 2013)

The National Dust Control Regulations (NDCR) were gazetted on 1 November 2013. The purpose of the regulations is to prescribe general measures for the control of dust in all areas including residential and light commercial areas. The regulations provide a guideline for monitoring and measuring dust fall. Dust fall is assessed for nuisance impact and not an inhalation health impact.

4.1.9 Alien and Invasive Species Regulations, 2020 (GN R 1020 of 2020)

Alien and Invasive Species Regulations (GN R 1020 of 2020) as well as the Alien and Invasive Species List (GN R 864 of 2016) have been published to regulate the monitoring, control, and eradication of listed invasive species. All landowners on whose land alien and invasive species occur must make the necessary arrangements to be compliant with these Regulations.

4.1.10 Conservation of Agricultural Resources Act, 1983 (No. 43 of 1983)

The objects of this Act are to provide for the conservation of the natural agricultural resources of the Republic by the maintenance of the production potential of land, by combating and prevention of erosion and weakening or destruction of the water sources, and by the protection of the vegetation and the combating of weeds and invader plants.

4.1.11 National Forests Act, 1998 (No. 84 of 1998)

The NFA provides for the sustainable management and development of forests for the benefit of all, including providing special measures for the protection of certain forests and trees. In terms of Section 15(1) of the Act, no person may cut, disturb, damage, or destroy any protected tree, except under a licence.

Table 6: Additional applicable legislation

Applicable legislation	Relevance
The Constitution of the Republic of South Africa (No. 108 of 1996)	Section 24 of the Constitution provides that everyone has the right to an environment that is not harmful to their health or well-being and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures, that: • Prevent pollution and ecological degradation; • Promote conservation; and • Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development. To give effect to Section 24 of the Constitution, an application for environmental authorisation is being made in terms of the legislative requirements.
National Environmental Management: Biodiversity Act, 2004 (No. 10 of 2004)	The National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA), as amended, aims to provide for the management and conservation of South Africa's biodiversity within the framework of NEMA, the protection of species and ecosystems that warrant national protection, the sustainable use of indigenous biological resources and the fair and equitable sharing of benefits arising from bio-prospecting involving indigenous biological resources. The Act places severe restrictions on activities that could have adverse effects on threatened or protected species. The purpose of the Act includes the following: • The management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act, 1998; • The protection of species and ecosystems that warrant national protection; and • The sustainable use of indigenous resources and the fair and equitable sharing of benefits arising from bioprospecting involving indigenous biological resources. The Act makes provision for the protection of threatened or protected ecosystems and species as well as provisions guarding against the introduction of alien and invasive species. The Act identifies restricted activities involving listed threatened, protected or alien species. These activities include picking parts of, or cutting, chopping off, uprooting, damaging, or destroying, any specimen of a listed threatened or protected species. As stipulated in Section 57 of the Act, a person may not carry out a restricted activity involving a specimen of a listed threatened or protected species without a permit issued in terms of Chapter 7. A permit will be required to engage in restricted activities for the proposed Project in accordance with Section 88 of the Act. The Department of Economic, Small Business Development, Tourism and Environmental Affairs (DESTEA) will be the CA for the application.
Subdivision of Agricultural Land Act, 1970 (Act No. 70 of 1970), as amended	The Subdivision of Agricultural Land Act, 1970 (Act No. 70 of 1970), as amended provides for the subdivision of all agricultural land within the Republic thereby prohibiting certain activities from being undertaken without consent from relevant authority, the Minister of the Department of Agriculture, Land Reform and Rural Development. This Act finds relevance to the proposed Marula Solar PV facility Project as any portion of land that is zoned for agriculture and will need to be leased for a period exceeding 10 years is regulated by the Act.

Applicable legislation	Relevance
National Veld and Forest Fire Act, 1998 (No. 10 of 1998)	The National Veld and Forest Fire Act (NVFA) in Chapter 4 requires landowners to prepare and maintain firebreaks, as well as the role of adjoining landowners and the fire protection association in an area. The Act through Chapter 5 requires all landowners to acquire firefighting equipment and have available personnel for firefighting. Landowners with land where a veldfire may start or burn or from whose land it may spread must have firefighting equipment and personnel available. There are no permitting requirements for the proposed Project in accordance with the NVFA. However, it must be ensured that firebreaks within the boundaries of the Project site are prepared and maintained and that firefighting equipment and personnel for the duration of the Project life cycle of the proposed development is made available.
Occupational Health and Safety Act, 1993 (No. 85 of 1993) and Major Hazard Installation Regulations	This Act provides for the health and safety of persons at work and the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work. Every employer shall provide and maintain, as far as is reasonably practicable, a working environment that is safe and without risk to the health of his employees. The construction and operation of the proposed Project will include activities that are deemed as hazards and/risk to the health and safety of the employees employed on the project. Such hazards/risks should be managed in accordance with the relevant requirements of the Act.
Hazardous Substances Act, 1973 (Act No. 15 of 1973)	The Hazardous Substances Act, 1973 (Act No. 15 of 1973) (HAS) was promulgated to provide for the control of substances which may cause injury, ill-health, or death. Substances are defined as hazardous if their inherent nature is toxic, corrosive, irritant, strongly sensitising, flammable and pressure (under certain circumstances) which may injure ill-health, or death in humans. The Act provides for the division of hazardous substances or products into four groups in relation to the degree of danger, the prohibition and control of the importation, manufacture, sale, use, operation, application, and disposal of such substances. • Group 1: includes all hazardous substances defined in the Act; • Group 2: substances include mixtures of Group 1 substances; • Group 3: substances include substances found in certain electronic products (i.e., product with an electronic circuit); and • Group 4: substances includes all radioactive substances. The use or sale of Group I, II and III hazardous substances is prohibited. Should the use of these substances be required for the Proposed Project, a permit application should be submitted to the Department of Health (DoH) in terms of Section of the Act.
Municipal Systems Act, 2000 (Act No. 32 of 2000)	The Municipal Systems Act, 2000 (Act No. 32 of 2000) was promulgated for the administration of municipalities. The Act requires that the Constitution and other legislation, i.e., NEMA be incorporated into strategic plans at local government level. The Act regulates municipal service delivery and provides a comprehensive range of service delivery mechanisms through which municipalities may provide municipal services. The Act explains the process to be applied and the criteria to be considered in reviewing and selecting municipal service delivery mechanisms. The Act provides that each municipal council must adopt a single, inclusive, and strategic Integrated Development Plan (IDP) for the development of the municipality. At a municipal level, IDPs may require the implementation of renewable energy projects. As a

Applicable legislation	Relevance
	result, Independent Power Producers (IPPs) should consult with the relevant structures of the municipality within which a development is located.
The Spatial Planning and Land Use Management Act, 2013 (No. 6 of 2013) (SPLUMA)	The Spatial Planning and Land Use Management Act, 2013 (Act No. 6 of 2013) aims to confirm and regulate the role of municipalities in land use planning and management. Objectives of the Act relevant to the proposed Project ensure that the system of spatial planning and land use management promotes social and economic inclusion and to provide for the sustainable and efficient use of land. The current zoning of the project site is mining; thus, a rezoning application would not be required to change the zoning of the site.
Civil Aviation Act, 2009 (Act No. 13 of 2009)	The Civil Aviation Act, 2009 (Act No. 13 of 2009) (CAA), governs civil aviation in the Republic. The Act provides for the establishment of a stand-alone authority mandated with the controlling, promoting, regulating, supporting, developing, enforcing, and continuously improving levels of safety and security throughout the civil aviation industry. This mandate is fulfilled by the South African Civil Aviation Authority (SACAA), an agency of the Department of Transport (DoT). The SACAA achieves the objectives of the Act by complying with the Standard and Recommended Practices (SARPs) of the International Civil Aviation Organisation (ICAO), while considering the local context when issuing the South African Civil Aviation Regulations (SA CARs). All proposed development or activities in South Africa that potentially could affect civil aviation must be assessed by SACCAA in terms of the CARs and the South African Civil Aviation Technical Standards (SA CATs) in order to ensure civil aviation safety. The SACAA will be provided with the Scoping and EIA reports of the proposed Project for their comment during the 30-day review and comment periods.
National Traffic Act, 1996 (No. 93 of 1996)	The Act and the National Traffic Regulations, 2000 provide certain limitations on vehicle dimensions and axle and vehicle masses that a vehicle using a public road at any given time must comply with. Certain vehicles and loads cannot be moved on public roads without exceeding the limitations in terms of the dimensions and/or mass as prescribed. Where such a vehicle or load cannot be dismantled, without disproportionate effort, expense, risk, or damage, into units that can travel or be transported legally. Such load is classified as an abnormal load and is permitted to be transported on public roads under an exemption permit issued in terms of Section 81 of the Act. A permit application in terms of Section 81 of the Act will be required for the transportation of key infrastructure components and machinery to the project site during the construction phase of the Proposed Project.
Limpopo Environmental Management Act, 2003 (Act No. 7 of 2003)	Chapter 8 of the Act prohibits any persons from removing indigenous or protected species listed in Schedule 11 and Schedule 12 of the Act without a valid permit from the relevant authority. This Act finds relevance to the Marula Solar PV facility Project on the basis that protected plant species in terms of the Act may be present within the Project site and floral permits will be required from the relevant authority prior to the commencement of the construction phase for the removal of identified protected plant species. Marula will be required to obtain permits from the relevant authority for the removal of protected indigenous plant species in terms of the Act following the completion of the final site

Applicable legislation	Relevance
	walkdown survey of the project site and prior to the commencement of the construction phase.

Other legislation listed in Table 7 have been or will be considered during the S&EIA process.

Table 7: Other legislation considered in the environmental authorisation process

Guideline	Governing body	Relevance
National Development Plan 2030 (NDP)	National Planning Commission	The NDP is the overarching development planning policy for the country, to which all other development planning, in particular spatial planning must be aligned. The NDP outline South Africa's Vision and provides the Framework for eliminating poverty and reducing inequality by 2030.
New Growth Path (2011) (NGP)	Department of Economic Development	The NGP reflects the commitment of Government to prioritise employment creation in all economic policies and sets out the key drivers and sectors for employment which will be the focus of Government.
Public participation guideline in terms of NEMA (2017)	Department of Environment, Forestry and Fisheries (DEFF)	The purpose of this guideline is to ensure that an adequate public participation process is undertaken during the S&EIA process.
Guideline on need and desirability (2017)	DEFF	This guideline informs the consideration of the need and desirability aspects of the proposed Project.
National Freshwater Ecosystem Priority Areas (NFEPA) (2011)	DHSWS	Biodiversity was considered as part of project planning and in the assessment of potential impacts. Reference was made to various national and provincial databases to determine potential presence and conservation.
Mining and Biodiversity Guideline (2013)	South African National Botanical Institute (SANBI)	
Important Bird and Biodiversity Areas	Birdlife International	
National Biodiversity Assessment	DFFE	
National Protected Areas Expansion Strategy, 2008 (NPAES)		

4.2 INTERNATIONAL POLICY AND PLANNING FRAMEWORK

4.2.1 United Nations Framework Convention on Climate Change and Kyoto Protocol

The United Nations Framework Convention on Climate Change (UNFCCC) is an international environmental treaty addressing climate change, negotiated, and signed by countries at the United Nations Conference on Environment and Development (UNCED), or the 'Earth Summit', held in Rio de Janeiro from 3 to 14 June 1992. The primary objective of the treaty is to stabilize greenhouse gas emissions in the atmosphere to a level that prevents human-induced interference with the earth's climate system.

The Kyoto Protocol marked the implementation of the first measures of the UNFCCC and applies to six greenhouse gases namely CO_2, CH_4, N_2O, HFCs, PFCs and SF_6. The protocol primarily operationalises the aims of the UNFCCC by committing industrialised countries and economies in transition to limit and reduce their greenhouse emissions in accordance with the agreed individual targets. The protocol requires signatories to adopt policies, measures on mitigation and to report greenhouse gas emissions periodically[5]. South Africa is the world's 14th largest emitter of greenhouse gases and accounts for highest emissions of CO_2 on the continent[6]. South Africa's emissions are a result of its reliance on the combustion of fossil fuels for the generation of electricity. In 2019, South Africa emitted approximately 478.61 million tonnes of CO_2 annually and 279.9 million tonnes was from electricity generation[7].

In order to fulfil the requirements of the UNFCCC and the Kyoto Protocol, government has developed legislation and policy to provide the framework indicating how commitments to reduce greenhouse gas emissions will be met. These policies include the National Climate Change Response Policy, Climate Change Bill, and the Carbon Tax Act, 2019 (Act No. 15 of 2019). Taking the above into consideration, the proposed development of proposed Project will generate up to 33 MW of electricity from renewable energy, thereby reducing government reliance electricity generation from the combustion of fossil fuels which leads to the inevitable release of greenhouse gases such as CO_2 into the atmosphere. From this perspective, the proposed Project is in alignment with the obligations placed on South Africa in response to climate change through the UNFCCC and the Kyoto Protocol.

4.2.2 Paris Agreement

The Paris Agreement is an agreement in terms of the UNFCCC on climate change, mitigation, adaptation, and finance signed in 2016 at COP21 held in Le Bourget near Paris, France. The agreement set out to improve upon and replace the Kyoto Protocol by committing countries to keep the long-term rise of global temperature rise to below 2°C, above pre-industrial levels and to pursue efforts to limit the increase to 1.5°C recognizing that this would substantially reduce the risks and impacts of climate change.

By prioritising the procurement of electricity from renewable energy technologies through the Integrated Resources Plan (IRP) and the Renewable Independent Power Producer Programme (REIPPPP), government has begun acting on the obligations of the Paris Agreement. Therefore, the development of the proposed Project, which will contribute at least 33 MW of electricity from renewable energy (solar) will aid government in reaching its target to peak with greenhouse gas emissions by 2025. From this perspective, the proposed Project aligns with the Paris Agreement and any updates thereto.

5 What is the Kyoto Protocol? | UNFCCC. Accessed on 30 April 2021
6 The Carbon Brief Profile: South Africa | Carbon Brief. Accessed on 30 April 2021
7 https://ourworldindata.org/co2/country/south-africa. Accessed on 30 April 2021

4.3 REQUIRED ENVIRONMENTAL LICENCES

The proposed PV development requires an Environmental Authorisation in terms of the NEMA.

5. NEEDS AND DESIRABILITY

This Section aims to provide an overview of the need and desirability of the proposed Project with the strategic context of national development policy and planning, broader societal needs, and regional and local planning, as well as the NEMA principles and sustainable development. More detail pertaining to the need and desirability will be provided in the EIA and EMPr.

5.1 NEED

The current power supply for Marula Platinum Mine consists of an external supply from the grid via a substation with two 40 MVA 132kV/33 kV transformers that belong to Eskom; the substation is fed from two 132 kV overhead lines. The current Notified Maximum Demand with Eskom is 39 MVA with an installed capacity that allows for N-1 contingency. The figure below shows Marula Platinum Mine demand profile. According to the figure below, the maximum power demand is going to increase to 54 MVA with the ramp up beginning in 2030. This ramp up and the projected maximum power demand has initiated a process with Eskom to upgrade the current substation capacity through an installation of an additional third 40 MVA 132kV/33 kV transformer.

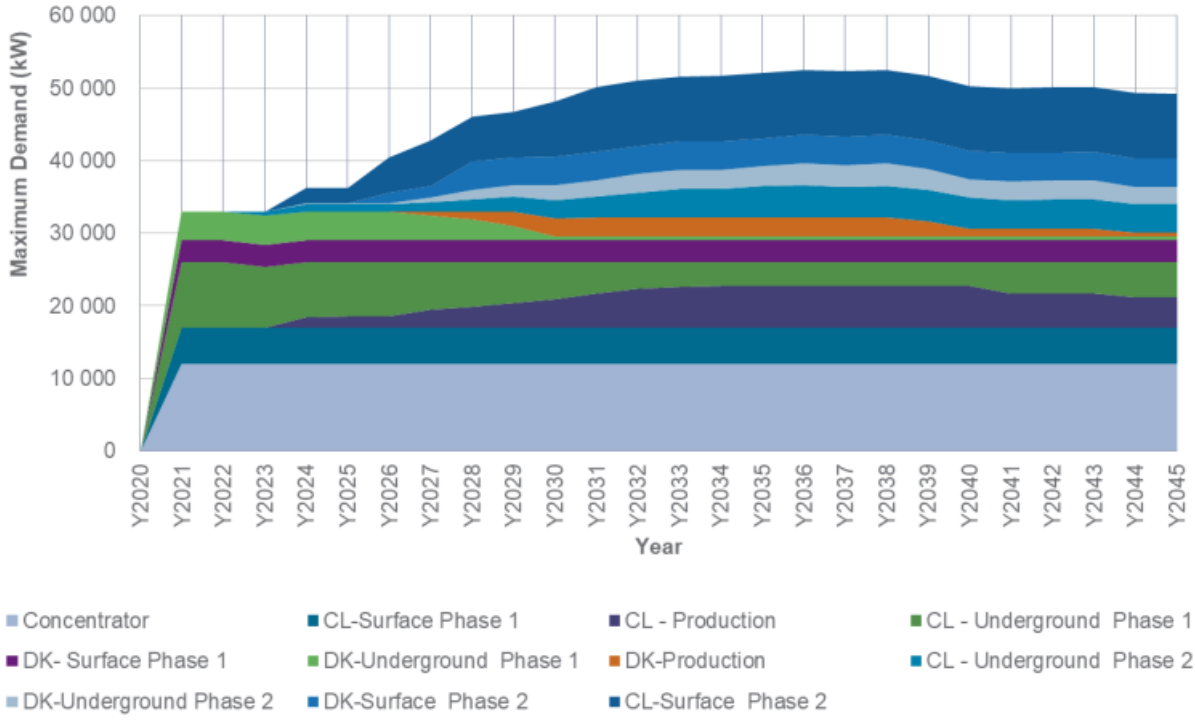

Figure 7: Marula power demand projection

5.2 DESIRABILITY

South Africa experiences some of the highest levels of solar radiation in the world (between 4.5 and 6.5 kWh/m^2) and possesses, therefore, considerable solar resource potential for solar water heating applications, solar photovoltaic and Concentrated Solar Power (CSP) generation.

Implats, together with all its subsidiaries including Marula Platinum Mine, in recognizing the urgency of addressing climate change, began developing an energy security and decarbonisation roadmap aimed at achieving carbon neutrality by 2050. Carbon neutral means that any carbon dioxide released into the atmosphere

from a company's activities is balanced by an equivalent amount being removed. Implats recognizes that delivering on these ambitious goals will require significant capital investment in new technologies, with an emphasis on increasing the proportion of low-carbon energy sources and realizing opportunities for our products to be part of solutions to facilitate a low-carbon world. Aligned with Implats decarbonisation strategy, the primary purpose of the proposed project is to implement an alternative renewable energy source at Marula Platinum Mine and commercially prove that the renewable energy source to electricity offers attractive economic returns based on the expected future price of electricity in South Africa. The business case for Marula Solar PV Power Plant project is in a bid by Marula Platinum Mine to leverage renewable energy as a climate-positive business asset to mitigate price and regulatory risks. As the global economy places more importance on climate change, the cost of carbon will become an increasingly important factor. The desire for energy security, price stability and reduced environmental impact makes effective energy management a critical piece of any sustainability strategy. The proposed Project aims to shift towards low carbon sources of energy to reduce the company's carbon footprint; and it seeks to address the internal electricity demand at lower future electricity prices compared to the national grid.

5.3 NATIONAL POLICY AND PLANNING FRAMEWORK

5.3.1 Consistency with national environmental management act, 1998 (No. 107 of 1998) principles

The national environmental management principles contained in NEMA serve as a guide for the interpretation, administration, and implementation of NEMA and the EIA Regulations, 2014. In order to demonstrate consistency with the NEMA principles, a discussion of how these principles are considered is provided in Table 8.

Table 8: Consideration of the National Environmental Management Act, 1998 (No. 107 of 1998) principles in relation to the proposed Project

NEMA Principles	Comment
(2) Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural, and social interests equitably.	The proposed Project activities would continue to support the day-to-day operations of the Marula mine while ensuring that environmental management principles are implemented during operation. The S&EIA process identifies the needs and interests of potentially affected parties and attempts to address issues and concerns raised through the course of the study.
(3) Development must be socially, environmentally and economically sustainable.	South Africa experiences some of the highest levels of solar radiation in the world (between 4.5 and 6.5 kWh/m2) and possesses, therefore, considerable solar resource potential for solar water heating applications, solar photovoltaic and CSP generation. Implats, together with all its subsidiaries including Marula Platinum Mine, in recognizing the urgency of addressing climate change, began developing an energy security and decarbonisation roadmap aimed at achieving carbon neutrality by 2050
(4)(a) Sustainable development requires the consideration of all relevant factors including the following: (i) That the disturbance of ecosystems and loss of biological diversity are avoided, or,	The S&EIA process considers resultant biophysical, cultural/heritage and socio-economic impacts as a result of the proposed Project. Measures to avoid, minimise and/or remedy potential pollution and/or degradation of the environment that may occur as a result of the proposed Project shall be detailed in the EMPr during the EIA phase.

NEMA Principles	Comment
where they cannot be altogether avoided, are minimised and remedied. (ii) That pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied. (iii) That the disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied. (iv) That waste is avoided, or where it cannot be altogether avoided, minimised, and re-used or recycled where possible and otherwise disposed of in a responsible manner. (v) That the use and exploitation of non-renewable natural resources is responsible and equitable, and considers the consequences of the depletion of the resource. (vi) That the development, use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the level beyond which their integrity is jeopardised.	
(4)(a)(vii) That a risk-averse and cautious approach is applied, which considers the limits of current knowledge about the consequences of decisions and actions.	Assumptions, uncertainties, and limitations associated with the compilation of the reports will be included in the EIA Phase. Compliance with the various legislative requirements is presented in this Scoping Report.
(4)(a)(viii) That negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied.	The S&EIA process considers and assesses the resultant social, economic, and biophysical impacts of the Project. The EMPr will provides the recommended management measures to mitigate the significance of identified impacts.
(4)(b) Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must consider the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option.	The S&EIA process that is being followed recognises that all elements of the environment are linked and interrelated. DMRE, as the CA, will be responsible for taking all aspects of the environment, including whether or not the potential impacts of the proposed Project would unfairly discriminate against any person, into consideration when making a decision regarding the proposed Project.
(4)I Environmental justice must be pursued so that adverse environmental impacts shall not be distributed in such a manner as to unfairly	

NEMA Principles	Comment
discriminate against any person, particularly vulnerable and disadvantaged persons.	
(4)(d) Equitable access to environmental resources, benefits, and services to meet basic human needs and ensure human well-being must be pursued and special measures may be taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination.	The proposed Project activities are located within the current mining operations and will not limit access to environmental resources that meet basic human needs.
(4)I Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service, or activity exists throughout its life cycle.	The applicant is committed to comply with environmental health and safety obligations for their current operations and during closure.
(4)(f) The participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills, and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured.	The PPP has been undertaken in accordance with the requirements of the EIA Regulations, 2014.
(4)(g) Decisions must consider the interests, needs and values of all I&APs, and this includes recognizing all forms of knowledge, including traditional and ordinary knowledge.	The S&EIA process will take into the account the interests, needs and values of all I&APs, through the submission of comments on the proposed Project. Thus, the decision-makers will have all the necessary information before them on which to base an informed decision.
(4)(h) Community wellbeing and empowerment must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means.	The draft Scoping Report and the draft EIA report prepared for the proposed Project will be made available to communities for review and comment.
(4)(i) The social, economic, and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed, and evaluated, and decisions must be appropriate in the light of such consideration and assessment.	The S&EIA process considers identified potential biophysical, cultural/heritage and socio-economic impacts of the proposed Project in an integrated manner. The significance of these impacts will be assessed as part of the EIA process.
(4)(j) The right of workers to refuse work that is harmful to human health or the environment and to be informed of dangers must be respected and protected.	The owners and managers of the PV facility would be required to comply with the requirements of the Occupational Health and Safety Act. An Environmental Awareness Plan will be developed in the EIA phase, which will require staff be informed about any aspects of their work that may pose a danger to the environment.
(4)(k) Decisions must be taken in an open and transparent manner, and access to	The public consultation process is being undertaken in accordance with the requirements of the EIA Regulations, 2014 and will allow for the

NEMA Principles	Comment
information must be provided in accordance with the law.	distribution of the S&EIA reports for public review and comment. This information will be provided in an open and transparent manner.
(4)(l) There must be intergovernmental co-ordination and harmonisation of policies, legislation and actions relating to the environment.	The PPP provides an opportunity for the Organs of State to provide comment on the proposed Project and address any potential conflicts between policies or other developmental proposals administered by them that may be in conflict with the proposed Project before decision-making.
(4)(m) Actual or potential conflicts of interest between organs of state should be resolved through conflict resolution procedures.	It is not anticipated that the proposed Project would result in any conflicts between Organs of State.
(4)(n) Global and international responsibilities relating to the environment must be discharged in the national interest.	DMRE, as the CA, will be responsible for taking cognisance of any international obligations that could have an influence on the proposed Project. The proposed Project does not require compliance with any international standards.
(4)(o) The environment is held in public trust for the people, the beneficial use of environmental resources must serve the public interest and the environment must be protected as the people's common heritage.	The S&EIA process considers and assesses the identified potential biophysical, cultural/heritage and socio-economic impacts of the proposed Project.
(4)(p) The costs of remedying pollution, environmental degradation, and consequent adverse health effects and of preventing, controlling, or minimizing further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment.	The O&M contractor will be responsible for the implementation of the measures that will be included in the EMPr.
(4)(q) The vital role of women and youth in environment management and development must be recognised and their full participation therein must be promoted.	The PPP for the proposed Project has been and will continue to be inclusive of women and the youth.
(4)I Sensitive, vulnerable, highly dynamic, or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure.	The S& EIA process undertaken for the proposed Project has identified relevant sensitive and/or vulnerable areas and assessed potential impacts if applicable. Appropriate mitigation measures have been proposed, where required.

5.3.2 National Climate Change Response Policy White Paper (2011)

This White Paper presents the South African Government's vision for an effective climate change response and the long-term, just transition to a climate-resilient and lower-carbon economy and society. South Africa's response to climate change has two objectives:

- Effectively manage inevitable climate change impacts through interventions that build and sustain South Africa's social, economic and environmental resilience and emergency response capacity.

- Make a fair contribution to the global effort to stabilise greenhouse gas (GHG) concentrations in the atmosphere at a level that avoids dangerous anthropogenic interference with the climate system within a timeframe that enables economic, social and environmental development to proceed in a sustainable manner.

5.3.3 Integrated Resource Plan (IRP), 2019

Section 1 of 2019 National Integrated Resource Plan (IRP) (Department of Energy, 2019) sets out targets for energy generation from renewable sources. Most of the energy targets set by the IRP will be from renewable sources, of which wind energy makes up the bulk. The IRP envisions an additional 14,400 MW of power being produced from wind, 6,000 MW from photovoltaic solar plants, 3,000 MW from gas, 2,500 MW from hydropower and an additional 1,500 MW from coal by 2030. This translates to approximately 15-18% of the country's energy needs being serviced through wind energy by 2030. The renewable energy targets are procured through a competitive tendering process called the REIPPPP run by DoE. The success of this programme has been internationally recognised, with the United Nations Environmental Programme (UNEP) 2014 Report placing South Africa among the top-10 countries in respect to renewable energy investment.

5.3.4 National Screening Tool- up to section 4

Government Notice 960, gazetted on 05 July 2019, in accordance with regulation 19 and regulation 21 of the NEMA EIA Regulations 2014 requires the applicant must submit the report generated by the National Web Based Screening Tool with their EA application to the DFFE from 05 October 2019 and onwards (90 days after the date of notice publication).

These reports are appended in Appendix C. These reports show, on a high level, the site's sensitivity to solar development based on different environmental themes (including, inter alia, terrestrial biodiversity, avifauna, heritage) and outlines assessment protocols for some of these themes that must be applied depending on the environmental theme's sensitivity rating within the development site.

The assessment protocols GN 320 and GN 1150 were gazetted on 20 March 2020 and 30 October 2020, respectively under the notice the "procedures to be followed for the assessment and minimum criteria for reporting of identified environmental themes in terms of section 24(5)(a) and (h) of the national environmental management act, 1998, when applying for environmental authorisation". In short, this notice requires, inter alia, that a Site Sensitivity Verification process must be undertaken, which confirms or disputes the findings of each of the environmental themes included in the Screening Tool Report.

Each specialist study has its own Site Sensitivity Verification report (SSVR) included either within the report or in its respective appendices. The relevant protocols that have also been gazetted with this notice have been incorporated into the specialist studies where necessary. Table 20 lists the specialists studies undertaken to inform the applications.

5.3.5 Energy White Paper, 1998

The 1998 White Paper on the Energy Policy of the Republic of South Africa is the primary policy document which guides all subsequent policies, strategies, and legislation within the energy sector. It provides specific policy statements on what government intends for the energy system as a whole and sets out five (5) key objectives. These objectives have subsequently formed the foundation and informed the development of energy policy in South Africa and still remain relevant. Various other energy policies have been developed and are in different

stages of implementation. Some of the key policies developed following the 1998 White Paper on Energy Policy include:

- The White Paper on Renewable Energy, 2003;
- The National Energy Efficiency Strategy of the Republic of South Africa, 2008; and
- The Integrated Resources Plan 2010.

The proposed Project will have a total generating capacity of up to 33 MW.

5.3.6 Electricity Regulation Act, 1999 (Act No. 47 of 1999)

The Electricity Regulation Act, 1999 (Act No. 47 of 1999), as amended provides a national regulatory framework for the electricity supply and makes the National Energy Regulator of South Africa (NERSA) the overseer and enforcer of the framework. The Act requires that anyone with the intention to generate, transmit, reticulate, distribute, import, and export electricity to obtain approval from NERSA.

The solar PV facility will require a generation license from NERSA in terms of the Act. The application process for the generation license will be undertaken when a positive decision on the application for an EA has been issued by DFFE and the project is granted preferred bidder status by the DMRE under the REIPPPP, or by another off taker.

5.3.7 Renewable Energy Development Zones and Strategic Transmission Corridors

In 2015, the then Department of Environmental Affairs through the Council for Scientific and Industrial Research (CSIR) embarked on a programme of Strategic Environmental Assessments (SEAs) for large-scale developments to support Strategic Integrated Projects. The intention of the SEAs was to pre-assess environmental sensitivities within development areas at a regional scale to simplify site-specific EIAs when they are undertaken and to focus the assessment to addressing the specific sensitivities of the site. The outcome of the programme led to the identification of eight Renewable Energy Development Zones (REDZ) and Power Corridors meant for the development of large-scale wind and solar renewable energy facilities in terms of Strategic Integrated Project 8: Green Energy in Support of the South African Economy, as well as the associated grid connection corridors for the development of grid connection infrastructure in terms of Strategic Integrated Project 10: Electricity Transmission and Distribution. Following the undertaking of further SEAs by the CSIR, DFFE through GN R 144 (published on 26 February 2021) identified additional REDZs for the development of large-scale wind and solar renewable energy facilities in the Mpumalanga, North West, and Western Cape Provinces. The additional REDZs identified include the EMalahleni REDZ (REDZ 9), Klerksdorp REDZ (REDZ 10) and Beaufort West REDZ (REDZ 11). Furthermore, DFFE issued GN R 383 (published on 29 April 2021) which identifies two additional power corridors in the Northern Cape and KwaZulu-Natal Provinces for the development of large-scale grid connection infrastructure. The identified power corridors include the Expanded Western Corridor and Expanded Eastern Corridor. Although the project site for the proposed Project is located outside of the REDZs the project will nevertheless contribute towards the need for the generation of electricity from renewable energy sources as highlighted by national policy and planning guidelines. As the project site for the Scafell Cluster Project does not fall within a REDZ, the project does not satisfy Regulation 3 of GN R 114 of 2018. As a result, the Application for EA for the proposed project requires the undertaking of a Scoping and EIA process in accordance with Regulation 21 – 24 of the EIA Regulations 2014, and the application will be considered within a period of 107 days from the day of receipt of the final EIA Report by DFFE.

5.3.8 Integrated Energy Plan, 2016

The development of a National Integrated Energy Plan (IEP) was envisaged in the White Paper on the Energy Policy of the Republic of South Africa of 1998, and in terms of the National Energy Act, 2008 (No. 34 of 2008) which places an obligation on the Minister of the DMRE to publish the IEP in the Government Gazette. The intention of the IEP is to provide a roadmap of the future of the energy landscape for South Africa which guides future energy infrastructure investments and policy development.

As a fast-emerging economy, South Africa needs to balance the competing need for continued growth with its social needs and the protection of the natural environment. South Africa needs to grow its energy supply to support economic expansion and in so doing, alleviate supply bottlenecks and supply-demand deficits. In addition, it is essential that all citizens are provided with clean and modern forms of energy at an affordable price. From the myriad of factors which had to be considered and addressed during the Integrated Planning Process, eight (8) key objectives were identified:

- Objective 1: Ensure security of supply;
- Objective 2: Minimise the cost of energy;
- Objective 3: Promote the creation of jobs and localisation;
- Objective 4: Minimise negative environmental impacts from the energy sector;
- Objective 5: Promote the conservation of water;
- Objective 6: Diversify energy supply sources and primary sources of energy;
- Objective 7: Promote energy efficiency in the economy; and
- Objective 8: Increase access to modern energy.

The proposed Project is aligned with the precepts of the IEP in exploring renewable energy sources in the country in order to ensure a security of supply to promote the creation of jobs whilst minimising negative environmental impacts within the energy sector. Solar PV facilities have limited water requirements in comparison to other energy generation technologies, such as coal-fired power stations, which further supports the objectives of the IEP regarding the promotion of water conservation. As a result, the construction and operation of the proposed Project supports the objectives of the IEP from a need and desirability perspective.

5.3.9 National Climate Change Response Strategy

The need for a National Climate Change Response Strategy was recognised as an urgent requirement by government during the ratification process of the UNFCCC in 1997. The document notes that climate change is a ‘cross cutting issue that affects the entire economy as well as many specific sectors including energy, transport, agriculture, water resources management and provision of water services and health’. The aim of the strategy is to promote and maximise the integration of the government department programmes whilst minimising negative impacts associated with climate change. Taking into consideration that South Africa is the largest emitter of greenhouse gas emissions on the continent and 14th worldwide, and the fact that the majority of these emissions are from electricity generation through the combustion of fossil fuels, the proposed Project will positively contribute towards the reduction in greenhouse gas emissions - a key objective of the National Climate Change Response Strategy.

5.4 REGIONAL AND LOCAL POLICY AND PLANNING FRAMEWORK

A summary of provincial and local planning policies in the Limpopo Province aligned to the proposed Project as well the suitability of the project site for the development of a solar PV project are described below. The proposed construction and operation of the Marula solar PV facility is considered to be in alignment with the objectives of the policies, even though the contributions to the objectives from the proposed Project can be negligible.

5.4.1 Limpopo Development Plan – 2015- 2019

The objectives of the Limpopo Development Plan include the following:

- Outline the contribution from Limpopo Province to the National Development Plan (NDP) objectives and the national MTSF1 for this period;
- Provide a framework for the strategic plans of each provincial government department, as well as the IDPs and sector plans of district and local municipalities;
- Create a structure for the constructive participation of private sector business and organised labour towards the achievement of provincial growth and development objectives; and
- Encourage citizens to become active in promoting higher standards of living within their communities.

The construction and operation of the proposed Project is aligned to the objectives of the Limpopo Development Plan as the implementation of the Project will stimulate the local economy within the surrounding areas and aid in the objective of procuring about 20 000 MW of renewable electricity by 2030. Stimulation of the local economy will be as a result of the creation of employment and business opportunities for community residents within the vicinity of the project site. The project will require numerous support services which can be rendered by Small Medium and Micro Enterprises within the surrounding area during the construction and operation phase. Support services that will be required and can be provided by the Small Medium and Micro Enterprises within the project area include, waste and sewage removal, security services, transportation of staff and the supply of construction material (i.e. sand and cement).

5.5 SITE SUITABILITY

The identification and selection of the site as a suitable area for the proposed Project was determined based on the levels of solar irradiation, topography, extent of the area available for development, and the proximity of the site to the nearest grid connection point. From a technical perspective, the project site identified for development is considered feasible for the development of solar PV facilities with a total generating capacity of up to 33 MW. The site-specific characteristics for the project site that support the development of solar PV facilities are described below.

5.5.1 Solar Irradiation

The project site is associated with Global Horizontal Irradiation (GHI) values of approximately of 5.597 KWh / m^2 per day and a PV potential of 1 778 KWh / ^{m2} (see Figure 8). Based on these values, the development of a solar PV facility on the site is considered highly desirable from a technical perspective.

5.5.2 Access routes

The Marula Mine is located in proximity to the R37 and is also accessed via the access road located off the provincial road. The R37 is classified as a Class 2 Primary Arterial, as it also links communities in the area. The proximity of the project site to a provincial road decreases the impact of traffic on secondary roads during the

construction and operation phase of the project. Site access was a key factor in the selection of the project site as a preferred area for the placement of the solar PV facility as it significantly reduces transportation costs for equipment that will be incurred during the construction phase.

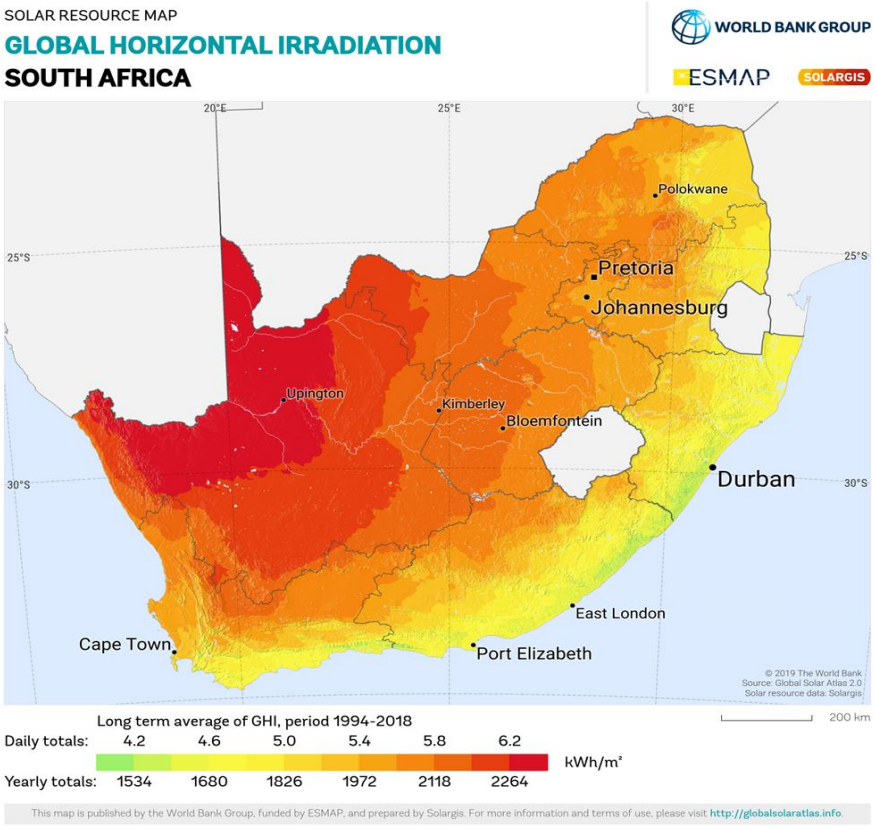

Figure 8: Global horizontal irradiation map

6. PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED

This Section provides an indication of the duration of each of the listed activities being applied for.

The application is for a period of 30 years.

7. DETAILS OF THE ALTERNATIVES CONSIDERED

This section describes the alternatives that are available for consideration (if applicable) and provides a background where no reasonable or feasible alternatives exists for a layout and activity change.

The EIA Regulations 2014 through Regulation (2)(g)(iv) of Appendix 2 ('Scoping Report') require that alternatives be considered during the Scoping phase of a project. Chapter 1 of the EIA Regulations 2014 defines 'alternatives' as a 'different means of meeting the general purpose and requirements of the activity', and alternatives may include:

- 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 of the activity;
- The technology to be used in the activity; and
- The option of not implementing the activity.

7.1 THE PROPERTY ON WHICH OR LOCATION WHERE IT IS PROPOSED TO UNDERTAKE THE ACTIVITY

For the proposed Project, three site alternatives were taken into consideration, but only the "preferred" site will be further investigated as part of the EIR. The preferred Solar PV facility site and the two alternative sites are discussed in Table 9. In general, the site selection process of a site for the development of a solar PV facility is dependent on several aspects of which are favourable at the identified project site for the construction and operation of proposed Project. These aspects include the solar irradiation, topography, extent of the area available for development, proximity of the site to the nearest grid connection point and access to the site.
The outcome of the site alternative assessment findings is shown in Table 9. The site alternatives are shown in Figure 9.

Table 9: Summary of Site A, Site B and Site C Study areas

Variable	Preferred	Site 1	Site 2
Location	Farm Driekop 253 KT; and Clapham 118 KT. Approximately bounded by Clapham shaft and processing plant.	Farm Clapham 118 KT. Approximately bounded by Clapham shaft and UG2 Concentrator Plant.	Farm Clapham 118 KT. Approximately bounded by UG2 Tailings pipeline and main mine access road.
Topography	The study area is characterised by typically flat landscape, low lying area covered by dry grass and dense thornbush. Site 1 study area tends to slope down to the east to west.	The study area is comprised of typically undulating landscape, low lying terrain covered by dry grassland including thornbush. The area tends to slope down from east to north-west.	The study area is comprised of typically gentle landscape. The study area tends to slope down to the west toward the Clapham shaft and drains into non perennial river that cut across the site.
Site Setting	The study area comprises of small open spaces, including farmland and bounded by low density residential area and	The study area comprises of open spaces, including farmland covered by dry grassland and thornbush vegetation. Mine related	The study area comprises of open spaces, grassland including thornbush vegetation. The conveyor belt cut across the

Variable	Preferred	Site 1	Site 2
	commercial properties. The powerlines cut cross the study area from east and feeds into the existing Eskom yard located north of the existing Concentrator Plant.	infrastructure transects the study area includes roads, overhead powerlines, Conveyor belt.	southwest corner of the study area. A river runs from south to north and cut across the middle of the site.
Site Drainage	The study area drains into the non-perennial river which located along the western boundary. Occasional dry channels and tributaries were observed within the study area, drains into north-west direction into the non-perennial stream.	The site drains north-west into the non-perennial river. The western boundary of the study area falls along the non-perennial river.	The dongas observed on site drains into the non-perennial river which cut across the middle of the study area.
Ground Conditions	The sub-surface conditions generally consist of prominent clay layer underlies by gabbronorite to anorthosite bedrock. The gabbronorite bedrock outcrops were observed on the riverbeds.	The sub-surface conditions generally comprise of prominent clay layer underlies by gabbronorite to anorthosite bedrock. Shallow gabbronorite outcrops were observed on the riverbeds and also occurring from surface on the north-west portion of the site.	The sub-surface conditions generally consist of clay layer underlies by gabbronorite to anorthosite bedrock. Shallow gabbronorite bedrock outcrops were also observed around the study area.
Surrounding Land Use	The surrounding land use includes: Farmland: Dry grassland including thornbush vegetation. South to north: non-perennial river along western boundary.	The surrounding land use includes: East to west: Sewage line, East to West: Conveyor belt, South: Farmland consist of dry grassland including thornbush vegetation, South to north: Overhead Powerlines South to north: non-perennial river along the north-west border of the study area.	The surrounding land use includes: Natural veld: site characterised by dry grassland including thornbush vegetation. West: Non perennial river runs at middle of the study area. South-west: Conveyor belt North to south: Overhead powerlines runs along the existing gravel road
Mining	Most of the Site A area is underlain by deep underground mining activities.	Most of the Site B area is underlain by deep underground mining activities.	No deep underground mine workings in close proximity and beneath the study area.

Variable	Preferred	Site 1	Site 2
Buildings or Structures on and around Site	The study area is characterised by surround natural veld and surrounded by mine infrastructures, community structures and mountains. The mine infrastructure near the study area includes: North: UG2 Concentrator Plant West: Ventilation shaft North: Bridge cross the local river	Access to site is via the gravel road which is located just off the main mine access road. The gravel road cut across the study area and also services the closest communities surrounding the mine. The overhead powerlines run east-west through the southern portion of the site and enters the mine from east and feeds into the existing Eskom yard located north of the existing UG2 Concentrator Plant	The site is characterised by natural veld and surrounded by the following: Mine infrastructure and mountains. South-east, Conveyor belt that transects to the southwest corner of the study area from the Driekop Shaft Complex run of mine silo towards the UG2 Concentrator plant. Driekop Shaft Complex run of mine silo. Tailings Pipeline.
Access routes and Power lines	Access to the proposed Site A will be via the gravel road which is located just off the main mine access road. The overhead powerlines run from north-eastern portion of the site and enters the mine from east and feeds into the existing Eskom yard located north of the existing UG2 Concentrator Plant.	The erosion channels were observed on southeast portion of the site which drains westerly direction into the non-perennial river forming the western boundary.	Access to the proposed site will be via the gravel road which is located just off the main mine access road. Powerlines observed transect the study area from west to east direction.
Erodibility of Soil	Occasional dongas and erosion channels were observed on site which drains in south-west direction into the non-perennial river.	No evidence of the heritage site observed during the site walkover study.	The erosion channels were observed around the site which drains into the non-perennial river.
Heritage Site	No evidence of the heritage site observed during the site walkover study.	Established graveyard site was observed on the north-eastern flank at approximately 60m from the study area.	No evidence of the heritage site observed during the site walkover study.
Archaeological site	No archaeological site observed during the site walkover at the proposed study area.		No archaeological site observed during the site walkover at the proposed study area.

Figure 9: Site Alternatives

7.2 THE TYPE OF ACTIVITY BEING UNDERTAKEN

The development of the proposed Project is required in order to add up to 33 MW of electricity generated from a renewable energy facility in order to meet the mine's electricity demands for the efficient operation of the mine. Therefore, no other activity alternatives have been considered for the project.

7.3 DESIGN OR LAYOUT ALTERNATIVES

Marula appointed specialists prior to the commencement of the Scoping phase to undertake field-based surveys of the originally preferred project site to determine the suitability of the site from an environmental perspective for the placement of proposed Project in the area. Areas with sensitive environmental features within the project site were delineated by the specialists, and together with the Preliminary Engineering Assessment (Vikinduku Engineering and Projects, 2021) have informed the layouts considered for the proposed Project. These layouts will be assessed in detail during the Impact Assessment Phase of the project, taking into consideration the identified sensitive environmental features present within the project site.

The project site has since increased and will be assessed as part of the EIA phase of the project.

The design target for the PV system is to achieve maximum output though a cost-effective configuration, while maximizing the use of the allocated area with Marula Mine. More specifically, the PV facility will be designed to adhere to the following technical design conditions:

- The plant should be designed as grid-connected PV facility tied-in to the existing network.
- It is critical to optimize the use of the designated and available areas for ground mounted generators.
- It should employ only proven technology for the system components.
- It should have maximized yield using the available areas by the choice of:
    - Appropriate technologies for key components;
    - A suitable connection to the lv and hv distribution panels;
    - An optimum plant geometry: tilt angle, and azimuth.

The plant should be developed in a way that maintenance can be performed easily by trained and skilled local technicians and where the requirement for specialized spare parts is reduced as much as possible.

It should allow for an uninterrupted operation of the mine operations and seamless cooperation of all components of the power supply system through tight integration with the existing electrical infrastructure of Marula Mine.

7.4 TECHNOLOGY ALTERNATIVES

Based on the solar irradiation resource available and the topography of the site, the placement of solar PV facilities is considered to be the preferred option from a technology perspective. Furthermore, the IRP 2019 has allocated 6000 MW to be procured from solar PV facilities up to 2030 and no allocation has been made for Concentrated Solar Power (CSP) facilities. PV technology is considered as the preferred option in comparison to CSP as it is associated with limited water demand requirements and a lower visual profile.

7.5 THE "NO-GO" ALTERNATIVE

Should the option of not implementing the proposed Project be considered, the land use of the project site (90 ha) will continue, and there would not be environmental impacts as well as socio-economic benefits associated

with the implementation of the project. The impact assessment phase will explore the impact of not implementing the project (i.e., the “No-Go” alternative from an environmental perspective).

8. DETAILS OF THE PUBLIC PARTICIPATION PROCESS

This section describes the public participation process undertaken in line with Section 6 of the EIA Regulations, 2014.

The aim of the public consultation process is to co-ordinate a process through which I&APs are informed of the proposed Project and environmental assessment process and are provided with an opportunity to provide input into the project plan, the assessment and proposed mitigation measures. I&APs broadly refers to all landowners, adjacent landowners, land users, non-government organisations, municipalities, surrounding mines and industries, communities, commenting authorities and parastatals.

The Public Participation Process (PPP) plays an integral role in any EA process because:

- It enables potential consequences or impacts of activities on the environment (biophysical, cultural and socio-economic) to be communicated to relevant Interested & Affected Parties (I&APs), including all organs of State, in relevant spheres of government that may have jurisdiction over any aspect of the activity.
- It provides I&APs with a reasonable opportunity to participate in information sharing and participation procedures in an accessible and objective manner.
- Allows I&APs to contribute local knowledge and raise comments which informs the EA process.

Numerous consultations have been undertaken with I&APs since November 2020 as part of the Marula vent shaft project. As such, Marula has a well-established I&AP database of landowners, land occupiers, authorities and other interested and affected parties.

Table 10: Interested and Affected Party and commenting authority notification process

	Task	Description
Public Participation Process Completed	**Application Phase**	
	Environmental authorisation application submission	This Application Form for an EA was submitted to DMRE on 2 February 2023
	Desktop social scan	The identification of I&APs was achieved by undertaking a desktop social scan. This consisted of an update to the existing I&AP database and verification of I&APs' details. This entailed: • The verification of the relevant surrounding landowners, land occupiers, relevant ward councillor, municipalities, organs of state, commenting authorities and other I&APs. • Verification of contact details for I&APs on the existing database. • Verification of appropriate communication structures.
	Land claims commissioner consultation	The Land Claims Commissioner (LCC) has been contacted to confirm if any land claims have been lodged on the properties that the project activities are located on. On 1 August 2022 the LCC confirmed that a land claim was associated with the project properties. Marula is aware of the claims and will inform the LCC of intent to develop on the property and the appropriate notices will be issued as required. A copy of the correspondence with the land claims commissioner is included in Appendix B

	Task	Description
Planned Public Participation Process	**I&AP Notification**	
	Site notices	Laminated A2 site notices (in English and SePedi) will be placed at key positions in and around the Marula Mine, as well as in the nearby towns. A photographic record of the placement of the site notices will be included in the Scoping Report.
	Placement of newspaper advertisements	Newspaper advertisements notifying the public of the project will be published in Steelburger News and the Sekhukhune Times. The proof of publication will be included in the Final Scoping Report.
	Review of Scoping Report	
	I&AP review of Scoping Report	The Scoping Report will be made available for review and comment for 30 days. A non-technical summary (NTS) of the Scoping Report (English and SePedi) was made available to all I&APs registered on the I&AP database via email, and post. In addition to this electronic copies will be made available on the SLR website website. Emails and text messages containing a link to the SLR website and SLR data-free website, was also sent to all I&APs registered on the project database. The following information will be provided in the scoping report: • Information about the Proposed Project. • Information about the baseline environment of the project area. • Information about the environmental authorisation process. • Information pertaining to project alternatives that will be considered as part of the environmental authorisation process (if any). • Information regarding possible biophysical, cultural and socio-economic impacts associated with the proposed Project activities. • Details pertaining to the public participation process. Information on how I&APs can have input into the environmental assessment process.
	Following the review of the Scoping Report	The Scoping Report will be updated to include all comments received during the review and comment period. This updated report will be submitted the DMRE for decision making purposes.
	Notification of DMRE decision of the Scoping Report	All I&APs will be notified via email and SMS notifications of the DMRE's decision of the Scoping Report. Once the Scoping Report is accepted, the EIA phase can be initiated.
	Review of the EIA and EMPr	
	I&APs review of the EIA and EMPr	The EIA and EMPr will be made available for review and comment for 30 days. A Non-technical Summary (NTS) of the EIA and EMPr (English and SePedi) will be made available to all I&APs registered on the I&AP database via email and post. In addition to this electronic copies will be made available on the SLR website. Emails and text messages containing a link to the SLR website, will also sent to all I&APs registered on the project database. A NTS of the EIA and EMPr, available in English and SePedi, will also be made available to all I&APs via email.
	Following the review of the EIA and EMPr	The EIA and EMPr will be updated to include all comments received during the review and commenting period. This updated report will be made available to the DMRE for decision making purposes.

	Task	Description
	Notify I&APs of the DMRE's decision and appeals process.	Notify I&APs of the decision taken by DMRE and applicable appeals processes.

8.1 SUMMARY OF ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

To date, there have been no concerns raised by I&APs with regards to the Proposed Project. This section will be updated to include comments received during the review of the Scoping Report which will be submitted to the DMRE for consideration.

9. ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE SITE

The baseline information is aimed at providing the reader with a perspective on the existing status of the biophysical, cultural and socio-economic environment. Baseline information for this Scoping Report draws extensively on information contained in previous EIA reports as well as from some studies that were conducted at the Marula Mine last year. More detailed information will be provided in the EIA report, once the specialist studies commissioned for this project have been concluded.

9.1 BASELINE BIOPHYSICAL ENVIRONMENT AFFECTED BY THE PROJECT

9.1.1 Geology

The geology of an area provides information on the presence of mineral resources (and informs the mine plan), the geochemistry and related potential for contamination from mined material and the presence of geological structures (such as faults and dykes) that act as barriers or conduits (preferential flow paths) for groundwater flow. Geological processes also influence soils forms, the type and nature of groundwater aquifers, and the potential for palaeontological resources.

9.1.1.1 Regional Geology

The eastern limb of the Bushveld Igneous Complex (BIC) underlies the farms Winnarshoek 250 KT, Driekop 253 KT, Clapham 118 KT, Forest Hill 117 KT and Hackney 116 KT. Two lithologically distinct units that are mainly intrusive into the Transvaal Supergroup make up the BIC: a lower sequence of layered mafic and ultramafic rocks, known as the Rustenburg Layered Suite (RLS), and an overlying unit of granites, known as the Lebowa Granite Suite. All the chromitite and platinum mineralisation is located in the RLS. These layered rocks have a maximum thickness of up to 8 km and occur in four areas known as the western, eastern, Potgietersrus and Bethal lobes. The RLS comprises five stratigraphic zones representing the sequential fractional crystallization that accompanied the cooling of this magmatic body:

- The Marginal Zone, which comprises pyroxenites and norites with no economic potential.
- The Lower Zone which comprises ultramafic rocks, such as pyroxenites and harzburgites, containing thin, high-grade chromitite seams.
- The Critical Zone pyroxenites, norites and anorthosites that host all the significant platinum group metals chromite deposits.
- The Main Zone, which consists mainly of homogeneous norites and gabbros that are locally exploited as dimension stone.
- The Upper Zone norites, gabbros and diorites, which host over 20 massive magnetite seams, some of which are exploited for vanadium and iron ore.

The Marula mining area in general is underlain by norite, leuconorite, anorthosite and pyroxenite of the Main and Critical Zone of the RLS of the BIC. The Leolo mountains to the west of Winnarshoek 250KT comprise of norite. The norite has weathered to black turf-like clay in the plains adjacent to the mountains and hills. The main rock types in the RLS (Geological Map, Sheet 2430 Pilgrim's Rest 1:250 000) include:

- Diabase: Green, fine to medium grained diabase.
- Shelter Norite: fine to medium grained norite and pyroxenite.
- Croydon Subsuite: medium to coarse grained pyroxenite and felspathic pyroxenite.

- Dwars River Subsuite: medium to coarse grained norite and anorthosite, pyroxenite - includes the Merensky Reef.
- Dsjate Subsuite: coarse grained gabbro and anorthosite.

The entire area is covered with quaternary sediments and the streambeds and floodplains consist of alluvium and unconsolidated deposits.

9.1.1.2 Local geology

The UG2 and Merensky Reefs are present in the Marula mining area. Currently, the mine is exploiting the UG2 Reef, The UG2 Reef is a lower chromitite layer within the Upper Critical Zone, while the Merensky Reef is a shallow sizeable platinum group element (PGE) mineral resource in a relatively simple structural regime. Both reefs strike north-north-west to south-south-east, with a vertical thickness of approximately 400 m between the Reefs. The Merensky Reef is located about 650 m below the surface with the UG2 Reef approximately 400 m deeper than the Merensky Reef. The Merensky Reefs occurs near the top of the Upper Critical Zone in a sequence of rocks knows as the Merensky Cycle. A schematic representation of the Merensky Cycle Unit showing expected widths (in metres) and informal stratigraphy within the MR area, is provided below.

		MHW1		Norite – Leuconorite	Merensky Hanging Wall 1
40		MPU	MRC	Feldspathic Pyroxenite & Pegmatoid	Merensky Upper Pyroxenite
180		MPL	MLC	Feldspathic Pyroxenite	Merensky Pyroxenite
40		MPG	MPC	Feldspathic Pyroxenite & Pegmatoid	Merensky Lower Pegmatoid
550		MF1		Feldspathic Pyroxenite & Pegmatoid	Merensky Footwall 1
		MF2		Leuconorite-Norite-Pyroxenite	Merensky Footwall 2

The Merensky Pyroxenite Unit comprises the top of the Merensky Upper Pyroxenite (MPU), the Merensky Chromitite Marker (MRC), the Merensky Lower Pyroxenite, the Merensky Lower Chromitite (MLC), and the Merensky Pegmatoid (MPG). A third chromitite stringer, the Merensky Pegmatoid Chromitite, is intermittently developed at the base of the pegmatoid. Sulphide (and PGE) mineralisation is associated mainly with the upper (MRC) and lower (MLC) chromitite stringers and the pyroxenite between these stringers. The PGE mineralisation is concentrated mainly from the Merensky Chromitite Marker (MRC) down towards the middle of the Merensky Lower Pyroxenite (MLP).

9.1.1.3 Structural features

There are several structural features that have resulted in some displacement of the UG2 and Merensky Reefs underlying the Marula Mine. Several dolerite dykes and dunite pipes intrude the RLS on the farms Winnarshoek 250 KT and Driekop 253 KT. The dykes generally trend north-east to south-west and east-northeast to south-southwest. There is a prominent dolerite dyke running down the centre of the mining right area from north-northeast to south-southwest. This type of dyke is known to have a damming and conduit effect on subsurface water and has been taken into consideration in mine planning.

The centre and southern part of the approved Merensky shaft complex area is structurally relatively simple, with little major faulting. Potholes, which represent important disruptions to normal magmatic layering in the upper Critical Zone of the Bushveld Complex, occur within the Merensky Reef. Two major pothole structures were identified in the Merensky area. A large (regional scale) pothole was identified on the Forest Hill / Winnarshoek

boundary, which affects the Merensky Reef boundary. The Merensky Reef in this area forms a mega pothole feature, with the outcrop trending eastward prior to resuming its regional position. This structure is expected to be in the order of a 1000 m in diameter. The Merensky Reef is hundreds of metres deeper than expected with an unusual reef development. The dunite pipe also affects this area and appears to be interrelated with the megapothole. Other Merensky Reef potholes were encountered in a number of boreholes. These appear to be relatively minor in size, although the frequency is relatively high.

The northern part of Winnarshoek 250 KT is structurally more complex. Numerous small (<0.5 m) faults and fractures were intersected in borehole cores. There is also a well-established dunite pipe on the farm. Dunite pipes disrupt the layered reefs in their vicinity and, therefore, are considered as areas of structural disturbance.

9.1.2 Topography

The topography of the proposed Project area is characterised by as a rugged landscape of linear and arcuate ridges representing various layered successions, which are particularly prominent in the northern part of the Eastern Limb. The Northern and Western limbs of the Bushveld Complex have a relatively poorly exposed, the Eastern Limb has been etched out by erosion, revealing spectacular outcrops of various rock layers of the complex. The main or eastern sector of the Great Escarpment forms the edge of the interior plateau, towers above the lower lying Lowveld to the northeast. The area is highly mountainous hence development occurs mostly in valleys. Settlements sizes are small and scattered due to extensive broken terrain.

The ridges and the mountains form linear dividers between the settlements. In certain areas the topography is very steep creating mountainous terrain which is impossible for inhabitation. The terrain dictates that larger settlement development occurs mainly in flat, low-lying areas in between the mountain ranges.

The scattered rural villages have located within more developable basin almost parallel to mountain range. The central spine road (normally the bus and a taxi route) usually runs along the flatter alignment in the basin. Generally, the settlements are linear in form as they are bound by the undevelopable ridges on either side of the access through-road, usually located on low-lying grounds adjacent to a stream.

9.1.3 Climatic conditions

Climate can influence the potential for environmental impacts and related mine design. Specific issues due to climatic conditions include:

- Rainfall could influence erosion, evaporation, vegetation growth, rehabilitation planning, dust suppression and surface water management planning.
- Temperature could influence the efficiency of a solar plant and influence the air dispersion through impacts on atmospheric stability and mixing layers, vegetation growth, and evaporation which could influence rehabilitation planning; and
- Wind could influence erosion, the dispersion of potential atmospheric pollutants and rehabilitation planning.

9.1.3.1 Regional climate

The regional climate can be described as typically savanna with hot and wet summers and cold and dry winters. The mean annual evaporation is approximately 1600 mm per annum. Temperatures are mostly moderate, with a mean temperature of about 20°C. However, extreme temperatures do occur, with frost in winter and temperatures rising to above 40°C in summer.

The closest weather station to the Marula Mine is Maandagshoek. The detail below provides the average climate data based on 30 years of hourly weather model simulation.

9.1.3.2 Temperature and precipitation

Day temperatures reach a maximum of up to 36°C in the months of January and December (the hottest months of the year), whilst the lowest night temperatures can drop to a minimum of 2°C. An illustration of the average precipitation and temperature is shown in Figure 10. The wettest six months of the year are between October and March, with maximum precipitation occurring in December at an average of 61mm.

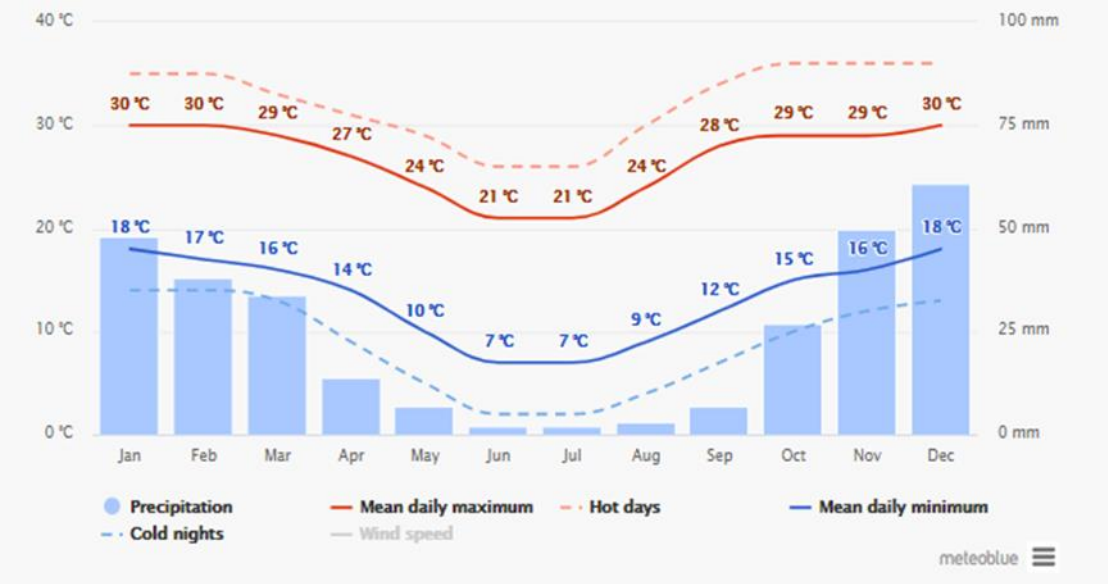

Figure 10: Average temperatures and precipitation (accessed from https://www.meteoblue.com , may 2021)

The mean annual precipitation (MAP) recorded at the weather station (Maandagshoek) with the longest record (81 years) is 565 mm. Rainfall conditions are highly variable, and droughts and floods do occur. Thunderstorms occurred on 37 days a year on average at the Maandagshoek station. On average, approximately 7 days of heavy frost occur per year. On average 1 day of hail is experienced per year and on average 1 day of fog is experienced per year. An illustration of precipitation amounts is shown in Figure 11.

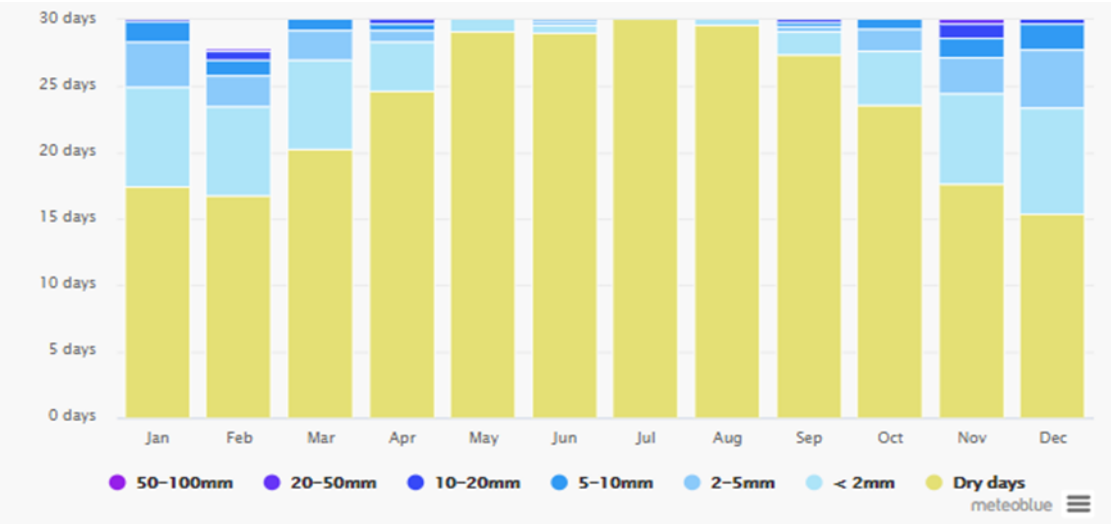

Figure 11: Precipitation amounts (accessed from https://www.meteoblue.com , May 2021)

9.1.3.3 Wind data

Updated information from the Weather Research and Forecasting (MM5)1 data for the period 2008 to 2010 was used by Airshed for their Noise Impact Assessment for the Marula mine (Airshed, November 2020). The assessment showed that during the day, the predominant wind direction is from the northeast sector while during the night the predominant wind direction is from the south eastern sector. The wind roses for MM5 data (1 January 2008 – 31 December 2010) are shown in Figure 12.

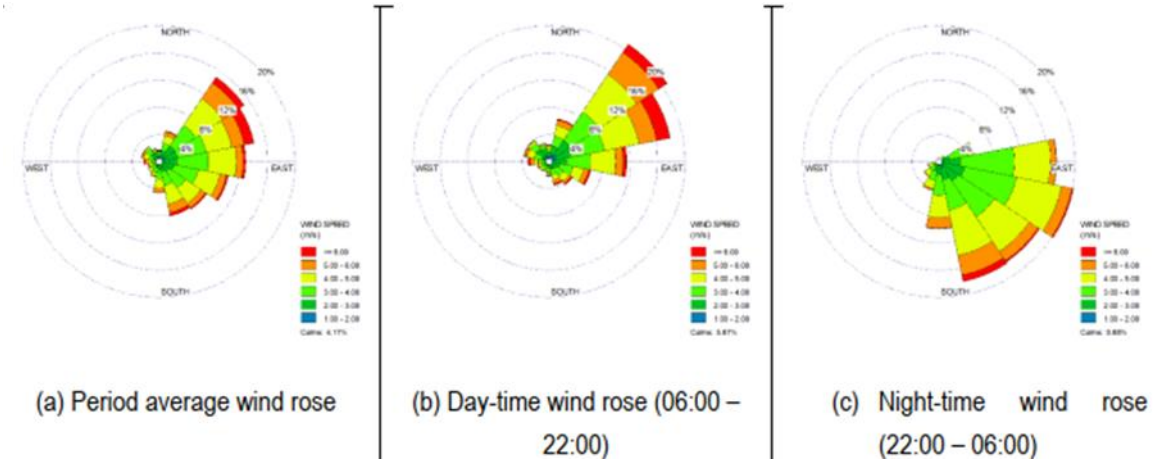

Figure 12: Wind rose for mm data, 1 January 2008 to 31 December 2010 (airshed, November 2020)

9.1.4 Soils and land capability

Soils are a significant component of most ecosystems. As an ecological driver soil is the medium in which most vegetation grows and a range of vertebrates and invertebrates exist. In the context of mining operations, soil is even more significant as mining is a temporary land use where after rehabilitation, soil availability is the key factor to the establishment of post closure land capability and use.

The land capability classification is based on the soil properties and related potential to support various land use activities. Mining operations and a solar facility have the potential to significantly transform the land capability.

9.1.5 Soil forms

A soil survey was conducted in November 2020 to identify the soil forms, according to the Soil Classification System: A Natural and Anthropogenic System for South Africa Soil Classification System (2018), within the footprint (and a 15 m buffer area) of the proposed infrastructure. It was revealed that the proposed project area is dominated by soils namely, Spionberg/Valsrivier and Brandvlei. Due to the homogenous nature of the site, it is anticipated that similar soil forms would be associated with the proposed alternatives. These soil forms associated with the proposed Project areas are considered to have poor drainage characteristics; shallow rooting depth due to high clay content in the B horizon; inadequate moisture; and bleached topsoil which lack nutrient retention capacity to support optimum growth and production. Some rocky outcrops were identified along the proposed Project area and transformed soils were noted as being used as roads and recreational areas. These

soil form characteristics imply broadly that they are not suited for cultivation and supporting agricultural activities. However, it follows that grazing activities and wildlife / wilderness can be supported.

9.1.6 Land use capability

The proposed Project area is surrounded by mining -related activities, residential activities, as well as wilderness areas and is isolated from any big scale agricultural activities in the area. The mining activities dominate a large portion of the proposed Project area and has already had a great impact on the soils in the area. It follows that the impact that the proposed Project and alternative sites considered will have on soil and land capability is low.

9.1.7 Biodiversity

In the broadest sense, biodiversity provides value for ecosystem functionality, aesthetic, spiritual, cultural, and recreational reasons. The known value of biodiversity and ecosystems relate to soil formation and fertility maintenance; primary production through photosynthesis; provision of food and fuel; provision of shelter and building materials; regulation of water flows and water quality; regulation and purification of atmospheric gases; moderation of climate and weather; control of pests and diseases; and maintenance of genetic resources.

As a baseline, this section provides an outline of terrestrial biodiversity occurring on site and the status of the identified species as well as highlighting the occurrence of sensitive ecological environments including sensitive/ endangered species (if present) that require protection and/or additional management actions should they be disturbed. The flora and fauna descriptions detailed below were obtained from the assessment reports undertaken by STS and SAS.

The proposed Project site (preferred option) is located within an Ecological Support Area (ESA) 1, ESA 2 and partially within the Sekhukhune Plains Bushveld. The integrity of the site and potential exclusion areas will be determined as part of the EIA phase of the project.

Alternative site 1 is located fully within ESA 1. Site alternative 2 is located within ESA 1, ESA 2 and partially within the Sekhukhune Plains Bushveld.

9.1.7.1 Flora

According to Mucina and Rutherford (2006), the study area falls within the Sekhukhune Plains Bushveld vegetation type (which has been listed as vulnerable) i.e., the reference state. The Sekhukhune Plains Bushveld are described as having mainly semi-arid plains and open valleys between chains of hills and small mountains running parallel to the escarpment. It is heavily degraded in places and overexploited by man for cultivation, mining, and urbanisation. As such it is often prone to severe encroachment by indigenous microphyllous (fine-leaved) trees and invasion by alien species is common throughout the area.

Overall, the study area's habitat was degraded and not representative of the reference vegetation type. Some places consisted of highly modified and transformed areas, in which vegetation was scarce. Many of the transformed areas (typical of those found close to high-intensity mining operations and housing infrastructure) supported a high abundance of alien and invasive plant (AIP) species. However, the surrounding untransformed, and undeveloped regions did not support high densities of AIPs but were not particularly species-rich. The biodiversity of the study area can thus be defined under five broad habitat units, namely Degraded Bushveld, Encroached Habitat, Rocky Habitat (which encompassed two subunits, namely Rocky Outcrops and Rocky Riverine Habitat), Watercourse Habitat and Transformed Habitat. These habitat units were distinguished based on species composition, vegetation structure, ecological function, biophysical nature of the environment and habitat condition.

9.1.7.2 Flora - Vegetation types

Degraded Bushveld

The vegetation structure of the Degraded Bushveld can be described as a species-poor and *Dichrostchys*-dominated Bushveld. The low species diversity recorded within the habitat unit is attributed to the disturbed nature of the area. Graminoids were largely absent, with large amounts of bare ground present throughout the habitat unit. Forbs were under-represented, likely attributed to the degree of browsing throughout the habitat. Representative forbs included *Aptosimum lineare, Senna italica subsp. arachoides* and *Abutilon angulatum*. The woody layer was poorly represented and dominated by *Dichrostchys cinerea*. Other woody species found within this habitat unit, albeit infrequently, included *Vachellia nilotica subsp. kraussiana, Boscia albitrunca*, and *Gossypium herbaceum subsp. africanum*. The protected species, *Aloe cryptopoda*, was located within in this habitat unit. AIPs were not prominent within the habitat unit, however, the occasional AIP found included *Argemone ochroleuca* and *Senna didymobotrya*.

Encroached Habitat

The vegetation structure of this habitat unit can be described as encroached, thorny bushveld. Vegetation cover, aside from encroaching woody species, throughout the habitat, was low. The species richness of the habitat unit was moderately low. Graminoids were largely absent in this habitat unit, with bare soils being particularly dominant throughout. The forb layer was also underrepresented, with the most common forb species being *Aptosimum lineare.*

The unit is heavily encroached by Dichrostachys cinerea, Vachellia nilotica subsp. kraussiana and Terminalia sericea. Other woody species included Gossypium herbaceum subsp. africanum and the occasional Ziziphus mucronata. Although not particularly invaded by AIP species, this habitat unit did support moderately large stands of Agave sisalana (NEMBA Category 2).

Rocky Habitat

This Habitat unit consists of two subunits, namely Rocky Outcrops and Rocky Riverine Habitat. These areas support typical rocky floral communities. However, they are distinguished from each other based on the dominant rock type that is present within each of the subunits as well as the slightly different floral communities that each support.

In particular, the Rocky Outcrop subunit displayed a moderate diversity of floral species in the project area and has an overall moderately high level of ecological functioning. Examples of floral species that were encountered within this habitat include *Aloe cryptopoda, Scadoxus puniceus, Gloriosa superba*, and several tree species including *Vangauria infausta* and *Terminalia sericea*. The habitat unit did not support AIP species.

The Rocky Riverine subunit displayed a moderately high diversity of floral species and has an overall moderately high level of ecological functioning, especially given its location next to the Mogompane River. Examples of floral species that were encountered within this habitat include *Aloe cryptopoda, Kleinia stapeliiformis, Euphorbia hirta, Eucphrobia tirucalli* and *Tinnea rhodesiana*. Although this habitat unit supports a moderately rich indigenous species diversity, two AIP species were identified within this habitat unit, namely Agave sisalana (NEMBA Category 2) and Opuntia Ficus-indica (NEMBA Category 1b).

Watercourse Habitat

The vegetation structure of the Watercourse Habitat can be defined as open, comprising of both a woody layer and a shrub layer. Floral diversity was intermediate within this habitat unit. Much of the woody and shrub layers included species found throughout the Degraded Bushveld habitat; however, within the riparian habitat the structure of the vegetation differed from that of the surrounding vegetation. The intermediate diversity of floral species can be attributed to most of the watercourses within this region being dry for large parts of the year, as well as the presence of severe erosion and bank incision in some upstream sections, thus resulting in exposed bare soils in such places.

Examples of floral species that were encountered within this habitat include *Aloe cryptopoda, Carissa bispinossa, Eucphrobia tirucalli, Tinnea rhodesiana* and several tree species including *Dichrostachys cinerea* and *Terminalia sericea.*

Several AIP species have encroached into sections of the watercourse within the study area. This can be related to its proximity to anthropogenic activities (e.g., informal housing and mining-related operations), and overgrazing impacts from domestic cattle and goats. The habitat is naturally more susceptible to erosion due to erosive soils.

Transformed Habitat

No clear vegetation structure can be defined within this habitat unit. The habitat unit consists largely of AIP species, particularly along the roadsides and within the transformed areas surrounding and within mining-related infrastructure.

Characteristic AIP species located within this habitat unit included *Agave sisalana* (NEMBA Category 2), *Thevetia peruviana* (NEMBA Category 1b), Ricinus communis (NEMBA Category 2), *Senna didymobotrya* (NEMBA Category 1b), *Amaranthus thunbergia* (Not Listed, NL), and *Zinnia peruviana* (NL).

Typical indigenous species present throughout the habitat unit included *Gomphocarpus fruticosus, Lagerra decurrens* and *Vachellia nilotica subsp. kraussiana*.

Alien and invasive species

According to Scientific Terrestrial Services (December, 2020), South Africa is home to an estimated 759 naturalised or invasive terrestrial plant species, with 327 plant species, most of which are invasive, listed in national legislation. Many introduced species are beneficial, e.g., almost all agriculture and forestry production are based on alien species, with alien species also widely used in industries such as horticulture. However, some of these species manage to “escape” from their original locations, spread and become invasive. Although only a small proportion of introduced species become invasive (~0.1–10%), those that do proceed to impact negatively on biodiversity and the services that South Africa’s diverse natural ecosystems provide (from ecotourism to harvesting food, cut flowers, and medicinal products).

Listed and Protected Plant Species

According to Desktop Biodiversity Screening Assessment undertaken by STS in August 2021, the preferred site is located within Habitat of Threatened / Rare Species (mainly red data species). However, no SANBI Red Data Listed species were observed during the Biodiversity Study field assessment. An NFA species was however

encountered within the mining right area, namely *Boscia albutruncia* (within the Degraded Bushveld Habitat). Furthermore, two protected species, *Aloe crytopoda* and *Scadoxus puniceus*, as per Schedule 12 of the Limpopo Environmental Management Act, 2003 (Act No. 7 of 2003) were identified within the Degraded Bushveld, Watercourse Habitat and within the Rocky Habitat.

Critical Biodiversity and Ecological Support Areas

Critical Biodiversity Areas (CBAs) are divided into two sub-categories – CBA 1 and CBA 2. Areas classified as CBA 1 are irreplaceable from an ecological perspective and this means no other places in the landscape where conservation and ecological objectives associated with the CBAs can be met. CBA 2 areas contain options that may be available to proponents of developments for meeting conservation and ecological objectives associated with those CBAs in certain parts of the landscape, however this can only be achieved at the cost of losing a certain portion of the spatial efficiency of the network of the CBAs. Should a CBA 2 area be lost to development, an alternative area elsewhere is identified to become part of the CBA network, and the identified area is normally larger in extent compared to the area that is lost in order to increase the CBA network.

Ecological Support Areas (ESAs) are areas of land that are considered important in ensuring the long – term persistence species or functioning of other important ecosystems. Areas identified as ESAs should be at least kept in a semi – natural condition, i.e., with their basic ecological functioning still intact.

Taking the above into consideration, the project site falls within the fragmented remnants of the threatened ecosystem, namely the Sekhukhune Plains Bushveld, which is endangered. Furthermore, the project site also falls within ESA 1 and ESA 2 (see Figure 13), but does not fall within a CBA. Where development does fall within such remnants, it is recommended that the development, and associated vegetation clearing, be kept to what is absolutely necessary and kept within the approved areas only.

Figure 13: Biodiversity sensitivity map

9.1.7.3 Fauna

From a fauna perspective, the five vegetation units, namely Degraded Bushveld, Encroached, Rocky, Watercourse and Transformed habitats are also identified within the mining right area. These habitats, in terms of fauna, will be discusses and described below:

Degraded Bushveld

The unit is the most well represented within the study area and because of its low floral diversity provides lowered forage availability for fauna, especially for grazers as the forb, herb and grass layer are poorly developed and heavily grazed. Nevertheless, within the study area this unit is anticipated to host the greatest assemblage of fauna (predominantly as a result of the extent of this habitat compared to the other habitat types).

Encroached Habitat

This unit comprises a small highly fragmented unit and is not anticipated to host a diverse assemblage of fauna or one that is different from the surrounding habitat due to the degree of fragmentation and degradation that has occurred here.

Rocky Habitat

Fauna favouring rocky habitat, such as arachnids and reptiles will find suitable shelter within these habitats. Forage for species inhabiting this location will be limiting and thus will be heavily competed for due to the small area which they overlay and highly fragmented nature of the units.

Watercourse Habitat

The watercourses identified throughout the study area were all dry at the time of assessment and are expected to be dry for the vast majority of the year (thus can be considered ephemeral watercourses). As they are only expected to flow during times of high rainfall, they do not sustain a wet response for a suitable period of time to facilitate habitat capable of supporting water dependant amphibian or insect species. In some cases, the structure of vegetation along the watercourses was denser and taller than the adjacent degraded bushveld unit which would be favoured by avian species., however, in most cases the watercourses were badly eroded and vegetation structure and species composition hardly changed or were more degraded than the surrounding areas, reducing shelter and resources for fauna within this unit.

Transformed Habitat

Due to anthropogenic influences, these areas have an altered physical environment and are scarcely vegetated. The vegetation that is present within these areas include a dominance of AIP and garden ornamental species. Avifaunal diversity appeared highest in this unit as the gardens and fruit trees within the human settlements increased foraging and habitat suitability. Insects and reptiles will also use this resource, however, an intermediate diversity for these classes is anticipated due to the transformed state of these locations.

Mammals

Only common mammal species adept at surviving in disturbed habitats in close proximity to rural housing may occur within the area. Given the localities of the various infrastructure development sites, which are to be placed between and along existing infrastructure and rural households, it is unlikely that in the long term these areas will serve as suitable habitats or areas of refuge or importance for mammal species. The general area is largely

rural residential areas where hunting with dogs and trapping utilising snares was frequent, however mammal population numbers have deceased that sightings of common mammals are rare within the area and restricted to the mountainous regions to the west and trapping no longer occurs (communication with community members). Furthermore, high populations of domestic dogs and cats in the area further reduce the potential for any mammal SCC.

Whilst on site signs of *Lepus saxatilis* (Scrub Hare) were noted while a single indigenous mammal, *Galerella sanguinea* (Slender Mongoose), was observed. These species are adept at surviving within disturbed habitats and are often noted within areas adjacent to communities.

During the field assessment, no mammal SCC were observed. The National Web Based Screening Tool indicated that *Dasymys robertsii* (Robert's Shaggy Rat), a Vulnerable species may occur within the study area. The absence of surface water areas and wetland renders the habitat unsuitable for the species.

Figure 14: Left - General indication of heavily grazed graminoid and shrub layer reducing forage for primary consumers. Right – Herpestes sanguineus (Slender Mongoose) observed within the Rocky Riverine Habitat. Source: Scientific Terrestrial Sciences Biodiversity Assessment (December, 2020)

Avifauna

Avifaunal diversity is considered intermediate, largely restricted to small common species with a low abundance of birds of prey. Within the study area it was also evident that the human settlements (within the Transformed Habitat) attracted more bird species than the adjacent Degraded Bushveld. This is predominantly due to the increased structure and the presence of fruiting trees within the household gardens foraging opportunities for avifauna, increasing both abundance and diversity of birds. The Degraded Bushveld was homogenous in its structure with a species poor floral assemblage and heavily grazed forb, herb and graminoid layer reducing its favourability to most avifaunal species, the limited food resources are likely to be a key driver in limiting avifaunal abundance herein. The Rocky Habitat and Encroached Habitat comprised of small portions within the study area, however, the greater structural diversity, floral diversity and shelter, specifically within the Rocky Outcrop sub-unit, did appear to be favoured by many avifaunal species. The overall disturbed nature of the habitats, transformation of suitable habitat and surrounding existing mining activities has led to notable decrease in habitat integrity.

During the field assessment an individual *Gyps coprotheres* (Cape Vulture) was noted soaring to the east of the study area. *Falco biarmicus* (Lanner Falcon) have a high reporting success within the area and will likely utilize

some of the transformed habitat. *Sagittarius serpentarius* (Secretarybird) was flagged by the national web-based Screening Tool, however, the encroached/dense habitat and high abundance of humans and their associated activities within the study area will not be suitable for this species.

Herpetofauna

Herpetofauna diversity and abundances appeared low during the field assessment as only rock skinks were observed. It is anticipated that an intermediate diversity of reptiles will inhabit the area while a low diversity of amphibians is likely due to the arid nature of the region. Reptile and amphibian species are notoriously hard to detect, owing to their secretive nature, and the degraded state of the various habitat units corroborated these lower than anticipated diversity levels. Very few amphibians are expected to occur within the project site, owing to the lack of surface water or areas of increased soil moisture needed to sustain amphibians. The habitat units further had limited food resources due to the moderately low abundance levels of insects and small mammals, however, very little rain had fallen prior to the field assessment which likely limited the invertebrate abundance. Though this may change after rainfall periods, the change is not expected to be significant enough to lead to notable increases in reptilian or amphibian diversity and abundances. Smaller reptile species may permanently inhabit the proposed sites, however larger predatory snakes and species that require more niche habitat (rocky outcrops, wetlands etc) are unlikely to permanently reside within the proposed study area If they are observed, it will likely be as they are passing through to other more suitable areas of habitat or whilst foraging.

No amphibian or reptile SCC were observed during the assessment, nor are any expected to occur within the proposed development sites due to the unsuitable habitat available within the footprint areas. A cautionary note regarding *Python natalensis* (Southern African Python) which local community members have claimed to see - it is anticipated that should this species occur here it would be under severe threat as a result of human wildlife conflict.

Invertebrates

Invertebrate diversity and abundance across project area were intermediate and moderately low respectively. Habitat degradation and transformation coupled with high human activity is considered to be a major factor contributing to this lowered diversity. The degraded habitat and reduced floral species composition limits insect diversity as suitable food resources are not readily available. The resources that are available are severely competed for by the domestic animals within the study area. The decrease abundance and diversity of insects directly impacts on arachnid species populations, as insects form the base food resource for arachnid species. It is further probable the diversity and abundance will increase after good rains are received; this was taken into account for the diversity scoring. As such, it is likely that the areas between mine infrastructure and households will have an increased insect abundance and diversity, and concurrently an increased arachnid diversity and abundance, as habitat and food resources are more readily available and accessible.

During the field assessment no invertebrate SCC were observed nor, given the disturbed and sub-optimal condition of the available habitat, are any expected to occur within the study area. Furthermore, it must be noted that the Limpopo State of the Environment Report (SoER) (2004) makes no provision for arachnid species within its protected species lists. *Aroegas fuscus* (Brown False Shielback), an endangered species was flagged by the national web-based Screening Tool, however, the species is found at elevations above 1200m in grassland and thus the site, which occurs below 100m in bushveld is not considered suitable.

Freshwater Resources

The proposed Project is located within the B71E quaternary catchment of the Olifants Water Management Area. According to the National Freshwater Ecosystem Priority Areas (NFEPA) database, there are three artificial unchanneled valley-bottom wetlands in heavily or critically modified condition within the investigation area. Based on digital satellite imagery these features were found to be impoundments related to mining infrastructure. These lie North-west, North-east as well as South-east of the project area. The Moopetsi River is situated approximately 1,1 km east of the project area, and according to the NFEPA Database the river is largely modified, while the Present Ecological State (PES) considers the river to be moderately modified (Class C). The River is an upstream management river and is considered to be critically endangered (Ecosystem Threat Status) and poorly protected (Ecosystem Protection Level). The wetland vegetation within the study area falls within the Central Bushveld Group 7 Wetland Vegetation Type and is considered least threatened as provided (Mbona et al., 2015). Furthermore, the project area is located within an Upstream Management Catchment which is required to prevent the downstream degradation of Freshwater Ecosystem Priority Areas (FEPAs) and Fish Support Areas (FSAs). Based on the various databases investigated it is evident that the proposed solar facility has a low sensitivity in terms of freshwater ecology, since both the NFEPA dataset and NBA dataset does not indicate any freshwater features within the proposed solar facility area.

Figure 15: Freshwater resources in relation to the solar plant subject properties

9.1.8 Surface water

Surface water resources include drainage lines and paths of preferential flow of stormwater runoff. Mine related activities have the potential to alter the drainage of surface water through the establishment of infrastructure and/or result in the contamination of the surface water resources through seepage and/or spillage of process materials, non-mineralised (general and hazardous) and mineralised wastes.

The catchment area is generally flat and has a low mean annual precipitation of 565 mm and a high annual evaporation rate of 1 695 mm. Catchment characteristics are presented in Table 11 below.

Table 11: Summary of catchment characteristics of the Marula catchments

	Area (km^2)	Longest watercourse (km)	10:85 slope (m/m)	Tc (hrs)
Unnamed tributary of Northern Stream (Catchment 1)	0.93	2.41	0.016	1.146
Northern Stream Catchment 2a	2.70	2.94	0.078	0.649
Northern Stream Catchment 2b	4.36	4.58	0.037	1.139
Northern Stream Catchment 2c	5.12	5.89	0.017	1.799
Tshwenyane tributary (Mogompane)	1.08	1.28	0.025	0.305
Tshwenyane River upstream	3.33	2.60	0.026	0.528
Unnamed Tshwenyane tributary Catchment 3 (sub-catchment of Moopetsi tributary 2)	0.55	1.65	0.02	0.796
Moopetsi tributary 2 (Tshwenyane downstream)	1.98	0.30	0.013	0.161
Moopetsi tributary 1 (Mine Stream)	4.05	3.60	0.04	0.813
Moopetsi River	59.86	22.64	0.017	4.78

The catchment presents evidence that the area is very vulnerable to erosion if stripped of vegetation. The watercourses are severely eroded, causing feel gullies on the banks. Sheet erosion is also widespread in areas where overgrazing is present.

Surface water resources

The main drainage line within the Marula mine lease area is the Moopetsi River, while the main tributary within the mine area is the Tshwenyane River. A description of the surface water resources within the Marula mine area is presented in Table 12 below.

Table 12: Summary of surface water resources within the marula mine area (SRK, 2019)

Catchment (named after main river)	Description
Moopetsi River	Drains the farm Forest Hill 117KT and is the main watercourse in the mine area. This is a seasonal river. The Moopetsi River has its confluence with the Motse River 7.5 km downstream of the mine. The Motse River flows into the Olifants River some 23.5 km downstream of the mine.
Matadi	Tributary of the Moopetsi River located to the north-east of the existing TSF. The Matadi River flows into the Moopetsi River more than 7 km downstream of the Marula mine lease area.

Catchment (named after main river)	Description
Tshwenyane	Main tributary of the Moopetsi River but largely ephemeral. The plant area is located to the north and the Clapham shaft complex and sewerage treatment plant to the south of the river.
Mogompane	A tributary of the Tshwenyane, namely- the Mogompane, converges with the Tshwenyane River south of the concentrator plant area.
Unnamed tributary of Moopetsi termed the Mine stream	Ephemeral tributary of the Moopetsi River
Unnamed tributary of Moopetsi termed the Northern stream	Ephemeral tributary of the Moopetsi River drains to the Moopetsi downstream and flows north-easterly to converge with the Moopetsi River about 2.3 km downstream of Marula mine lease area.

The preferred site has a non-perennial river to the east and west of the site. The relevant buffers have been considered as part of the site layout.
Alternative 1 has a non-perennial river to the west of the site.
Alternative 2 has a non-perennial river straight through the centre of the site and is thus not considered.

Wetlands

No natural wetlands have been identified in the Marula mining area. However, four artificial wetland areas were delineated as follows:

- Old dams at Driekop Shaft no longer in use;
- The pipeline between the TSF and TSF booster station; and
- Seep area adjacent to the Moopetsi River, approximately 350 m west of the existing TSF.

Surface water use

There is limited use of surface water with most communities reliant on groundwater resources, however livestock and small-scale farming make use of surface water resources when available. Communities have made hand dug wells in the riverbeds to access any subsurface flow.

Surface water quality

No water sampling within the proposed Project site has been conducted because there exists no perennial surface water features within 100 m of the project area. Given this, no water quality data is available.

9.1.9 Groundwater

Groundwater is defined as water which is located beneath the ground surface in soil/rock pore spaces and in the fractures of lithological formations and is a valuable resource. In arid areas groundwater is frequently the sole source of water and thus essential to agriculture and other development. Groundwater quality and quantity are key indicators of the resource value and status and can have significant effect on the suitability and availability for use. Mine related activities have the potential to influence the quality and availability of groundwater through seepage of contaminants that may reach underlying aquifers and through abstraction of water.

The regional aquifer is semi-confined and occurs at a shallow depth and is characterised by an upper intergranular zone and underlying deeper fractured rock zone. Water strikes typically occur at the contact zone

between the base of the weathered zone and the hard rock lithologies and / or in deeper fractures within the mafic lithologies of the RLS. The unconsolidated sands and gravels occurring along the drainage lines and rivers provide additional storage to the regional aquifer. The regional aquifer comprises a minor aquifer with yields of 0.5 – 2 l/s and the groundwater exploitation potential is therefore generally low except where higher yields (>2 l/s) are associated with the pyroxenite hanging wall of the UG2 and Merensky Reef and in areas of preferential weathering along major lineaments such as faults, open joint systems and the prominent northeast to southwest dolerite dyke contact. Sustainable yields were calculated as varying from 0.5 l/s to 6 l/s for a 9-hour pump cycle. Mean annual recharge is estimated at 5% of rainfall. Alternatively, recharge can be estimated from the chloride mass balance method as between 1.6 – 3.5 (average of 2.3%) of average rainfall. The main water strikes occur at a depth of 17 – 37 metres below ground level (mbgl), although deeper fractures may be intercepted up to 70 mbgl.

Groundwater levels

Water levels vary from 3 – 19 mbgl for boreholes intercepting the regional aquifer. Water levels are assumed to be lower in boreholes utilised for supply (generally around 20 – 30 mbgl) with localised dewatering in abstraction boreholes around the boxcut reducing to >40 mbgl. Water levels are variable but there is an overall drop in water levels particularly in boreholes around Clapham and Driekop (between 2 to 8 m over the past 9 to 10 years) following the initial increase in water levels once abstraction ceased at individual boreholes. Water levels around Driekop are generally lower than at Clapham. Several of the monitoring boreholes have now been mined out (SRKM19 for example). A drop in the water levels, particularly since 2015, is also evident in the regional boreholes (SRKM6, SRKM12, SRKM13) possibly due to the lower rainfall experienced over the period.

Baseline groundwater quality

The ambient groundwater quality was estimated based on the 95th percentile concentration for groundwater samples obtained from the site before the deposition on the existing TSF. The local water quality was historically of poorer quality than in the Reserve particularly in respect to sulfate and nitrate concentrations. The baseline groundwater quality was therefore, prior to construction of the TSF, unsuitable for domestic use due to the elevated nitrate concentrations of 17 mgN/l (median) to as high as 66 mgN/l (95th percentile) which exceeds the SANS 241-2015 of 11 mgN/l and groundwater reserve of 10.4 mg/l as N. The background groundwater quality continues to be represented by boreholes located up-gradient of the existing TSF (SRKM25) and new TSF under construction (AO3 and 17H-Handpump). The water quality has deteriorated in the borehole SRKM25 possibly due to the mining activities, external to Marula, located upgradient of the TSF.

Groundwater quality is influenced by existing mining operations, such as the existing TSF and the open pit mining operation to the east of the TSF.

Groundwater use

Most of the surrounding communities are reliant on groundwater resources.

9.1.10 Visual aspects

The proposed Project components and related activities have the potential to alter the landscape character of the site and surrounding area through the establishment of infrastructure. As a baseline, this section provides an understanding of the visual aspects (such as landscape character, sense of place, scenic quality, and sensitive

views) of the project area against which to measure potential change as a result of project infrastructure and activities.

Landscape Character

Regionally, Marula Mine is located within an area used mainly for residential purposes, grazing and mining activities. There are properties used for agricultural purposes, but these fields are mostly associated with smaller villages within the surrounding area. Marula mine and proposed surface infrastructure are located on the valley floor which stretches between the Lebalelo and Leolo mountain ranges. The site is semi-rural with formal and informal villages scattered throughout the area.

Scenic Quality

The scenic quality is linked to the type of landscapes that occur within an area. The overall study area can be regarded as having a high visual resource value with sections, such as the agricultural fields and villages that display a medium visual resource value. Due to the overall medium visual resource value of the area, the study area is not regarded to be sensitive to change in landscape.

Sense of Place

Central to the concept of sense of place is that the landscape requires uniqueness and distinctiveness. In this regard, a person can recognise or recall a place as being distinct from other places– as having a vivid and unique character of its own to the extent. When deriving the sense of place of the study area, the landscape context is considered, as it is the existing land uses that define a sense of place. The main land use in the area is subsistence and livestock farming, residential settlements and mining operations within the larger area. Mining activities have already impacted on the natural sense of place of the area.

The preferred site is likely to have a bigger impact on sensitive receptors to the south of the site compared to alternative 1 and 2. Mitigation measures will be considered as part of the EIA phase of the project.

9.2 BASELINE CULTURAL ENVIRONMENT AFFECTED BY THE PROJECT

9.2.1 Heritage / cultural and palaeontological resources

This section describes the existing status of the heritage and cultural environment that may be affected by the project. Heritage (and cultural) resources include all human-made phenomena and intangible products that are the result of the human mind. Natural, technological, or industrial features may also be part of heritage resources as places that have made an outstanding contribution to the cultures, traditions and lifestyles of the people or groups of people of South Africa.

Paleontological resources are fossils, the remains or traces of prehistoric life preserved in the geological (rock stratigraphic) record. They range from the well-known and well publicized (such as dinosaur and mammoth bones) to the more obscure but nevertheless scientifically important fossils (such as palaeobotanical remains, trace fossils, and microfossils). Paleontological resources include the casts or impressions of ancient animals and plants, their trace remains (for example, burrows and trackways), microfossils (for example, fossil pollen, ostracodes, and diatoms), and unmineralised remains (for example, bones of Ice Age mammals).

No heritage resources are located within or near any of the sites considered.

9.2.1.1 Palaeontology

The Palaeontological Exemption Letter indicated that the Marula Mine areas lies on non-fossiliferous rocks of the Rustenburg Layered Suite (RLS), Bushveld Igneous Complex (BIC) that has intruded through the Transvaal Supergroup rocks. Furthermore, the formations that would be affected as part of the proposed Project are that of the Dwars River Subsuite, comprising of norite and anorthosite, and the Croyden subsuite, comprising of pyroxenite and feldspathic pyroxenite. These ancient rocks are highly metamorphosed and there is no chance that fossils may be preserved within. The overlying Quaternary alluvium and soils are a product of weathering and thus, no chance exists for the preservation of fossils. In this regard, the proposed Project will not impact South African fossil heritage. This is confirmed by the SAHRIS palaeosensitivity map, which indicates a palaeosensitivity of Low.

9.2.1.2 Local Cultural landscape

Marula Mine is located in the heartland of the Steelpoort valley, along the eastern slopes of the Leolo Mountain range. This region is the heartland of the pre-historical and the historical Pedi chiefdom and is associated with a wide range of heritage resources. A part of the landscape (between the Leolo mountain range in the west and Modimolle and the Leolo mountain range in the east) was declared by the Limpopo Local Government as the Tsjate Provincial Heritage Site (PHS) (23 February 2007). This PHS penetrates into Marula's prospecting right area on its north-western perimeter.

As indicated by the Phase I HIA, earlier heritage surveys have recorded different types and ranges of heritage resources within and surrounding the Marula Mining Right area. These include:

- Scatters of stone tools from various periods of the Stone Age in dongas all over the mine lease area and beyond;
- A Late Iron Age stone walled site along the base of a kopje;
- An Early Iron Age site near a dry riverbed where pottery was found;
- Graveyards in the open veldt and within the confines of homesteads within residential areas;
- Historical homesteads older than sixty years in residential areas and towns in the mine lease area and further afield; and
- Remains from the recent past all over the mine lease area and beyond.

Heritage resources in the Marula Project Area predominantly include a Late Iron Age site and several graveyards. These resources have been mapped and included in Figure 17.

9.2.1.3 Late Iron Age Site

There are remains of a Late Iron Age stone walled site which occur along the foot of the two linked kopjes (refer to Figure 16). This site covers a considerable area as it is stretched from the northern tip of the kopje along its western foot to near the southern end of the kopjes. This site was damaged in the past when a store for equipment (east) and a destruction site, currently used for incinerating waste material (west), were established along the base of the kopje. More recently a soccer field was established near the perimeter of the site. The Site is closest in proximity to the proposed water pipeline. However, it is apparent that it is located a safe distance away. It follows that there is no reason to believe that the proposed Project would have an impact on this heritage resource.

Figure 16: Stone walls belonging to a late iron age site (lia01) along the foot of kopjes in the central part of the project area

9.2.1.4 Graveyards

Approximately 12 graveyards occur in the open veld as well as within the confines of homesteads in the mining area.

Figure 17: Graveyards and heritage resources in the proposed Project area

9.3 BASELINE SOCIO-ECONOMIC ENVIRONMENT AFFECTED BY THE PROJECT

9.3.1 Socio-economic

Typically mining projects have the potential to result in both positive and negative socio-economic impacts. The positive impacts are usually economic in nature with projects contributing directly towards employment, procurement, skills development, and taxes on a local, regional, and national scale. In addition, projects indirectly contribute to economic growth in the national, local, and regional economies. The negative impacts can be both social and economic in nature and related to the influx of people seeking job opportunities (with related social ills and pressures on existing services) and a change to existing land uses (with related changes to social structures and way of life).

The mine is located within the Limpopo Province, within the Burgersfort Magisterial District, the Sekhukhune District Municipality and the Greater Tubatse Local Municipality. The nearest major town is Burgersfort and a major labour-sending town to the mine is Steelpoort. A number of communities are present in the mine area. These include:

- Ga-Makhwae located west of the mine area upstream of the Tshwenyane River, a tributary of the Moopetsi River;
- Seuwe located west of the mine area along the Leolo mountains;
- Northern part of Seuwe and Matsakane communities located on the tributary of Moopetsi River (north of Tshwenyane River) in the northern portion of the mine area;
- Diphale located within the upper reaches of Tshwenyane River (a portion of which overlies the mine area);
- Lekgwareng and Magabaneng communities located downstream of the Tshwenyane Rivers; and
- Legabeng and Madikane located east of the Tshwenyane River.

9.3.2 Limpopo Province

Approximately four and a half million people reside in the Limpopo Province. Of this, about 47% are of a working age population between 20 and 65 years of age, while 46% are below of the age of 19. The level of education amongst the adult population is low, with 47% having received no level of schooling or only some primary education. Only 7% have attained tertiary qualifications and 14% have completed secondary schooling. Not including the informal sector, the unemployment / not economically active rate is high at an estimated 77% of the economically active age. The main contributors to employment in the province are community services, agriculture, wholesale and retail trade and private households. The mining sector employs a relatively small percentage in the province, approximately 4% pf the labour force. Income statistics indicate that 63% of the working population receive less than R 1 600 per month. However, this figure does not include income derived from government grants and pensions, or from informal employment. Secure monthly income remains minimal and is indicative of a developing regional economy. The level of service provision is generally poor. It is estimated that 69% reside in brick housing structures, however, only 15% of the 69% have access to flush toilets and only 9% receive reticulated water into their homes.

9.3.3 Sekhukhune District Municipality

The Sekhukhune District Municipality covers an area of approximately 1 358 million hectares and has a total population of 1 169 762 people living in 290 526 households. The largest share of the population is between 0 - 14 years (35%) followed by the young working age population between the ages of 25 – 44 years (30%).

Approximately 16% of adults received no schooling in the District, while only 4% have tertiary education. The unemployment rate is estimated at 29%. The District contributed approximately R 41 billion to the Gross Domestic Product (GDP) of the province, which is roughly 12%. The main contributors to the GDP in the District is the mining sector (19%) followed by manufacturing (12%) and finance (11%). Income statistics reveal that most of the households within the District can be defined as indigent / poor, where the total income is less than R 1 500 per month (79%).

The level of service provision in the District is generally low. Only 10% of households have access to piped water within their dwelling while 38% have access to piped water outside their homes (e.g. yard) and 17% have not access to piped water. Moreover, only 13% of households have access to flush toilets with the majority making use of pit toilets (62%) and ventilation improved pit toilets (22%).

9.3.4 Greater Tubatse Local Municipality

The Greater Tubatse Local Municipality has a total population size of 335 676 people living within 83 199 households. The largest share of the population is between 15 - 64 years (60%) followed by those between the ages of 0 -14 years (35%) and then elderly (5%). Approximately 15% of adults received no schooling, the percentage of adults who received Matric and tertiary education is 23% and 7%, respectively. The Municipality has a weak economic base with high poverty levels with an unemployment rate estimated at 50%. Formal economic activities are largely centred around migrant labour to other cities or town in South Africa, as prior to further mine development within the area, there were very few job opportunities. Again, the statistics relating to the level of service provision is generally low. While 83% of people live in formal dwellings, only 6% of households have access to a flush toilet and 10% have access to piped water inside their dwelling.

9.4 TRAFFIC

Traffic from mining projects has the potential to affect the capacity of existing road networks, as well as result in public road safety issues.

9.4.1 Existing road network

The Marula Mine is accessed via the access road located off the R37. This access road is a surfaced road and comprises of two 3.7 m wide lanes, with road shoulders of 0.5 m. The provincial road R37 is classified as a Class 2 Primary Arterial, as it links communities in the area. Various informal structures have been erected along the access road since the intersection with the R37 was upgraded in 2010. An informal taxi pick-up and drop-off areas has also been established over the years, on the southern side of the intersection. This embayment is deemed unsafe in its current state as taxis are forced to drive over a level different caused by edge breaking onto a gravel surface.

9.4.2 Existing traffic data

A site inspection and classified traffic counts were conducted on 15 July 2020 for the AM peak period (06:00 – 09:00) and the PM peak period (14:30 – 18:00) at the R37-access road intersection, as well as the informal taxi embayment. The peak hours for the intersection were determined to be:

- AM peak hour: 06:45 to 07:45; and
- PM peak hour: 15:30 to 16:30.

The traffic volumes for the AM and PM peak hours are summarised in Figure 18 and Figure 19.

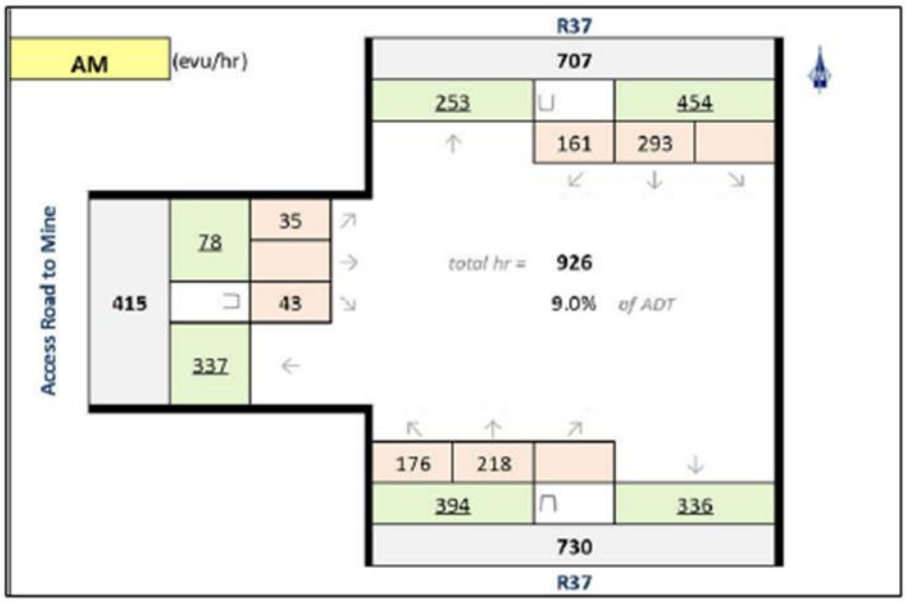

Figure 18: 2020 am background traffic

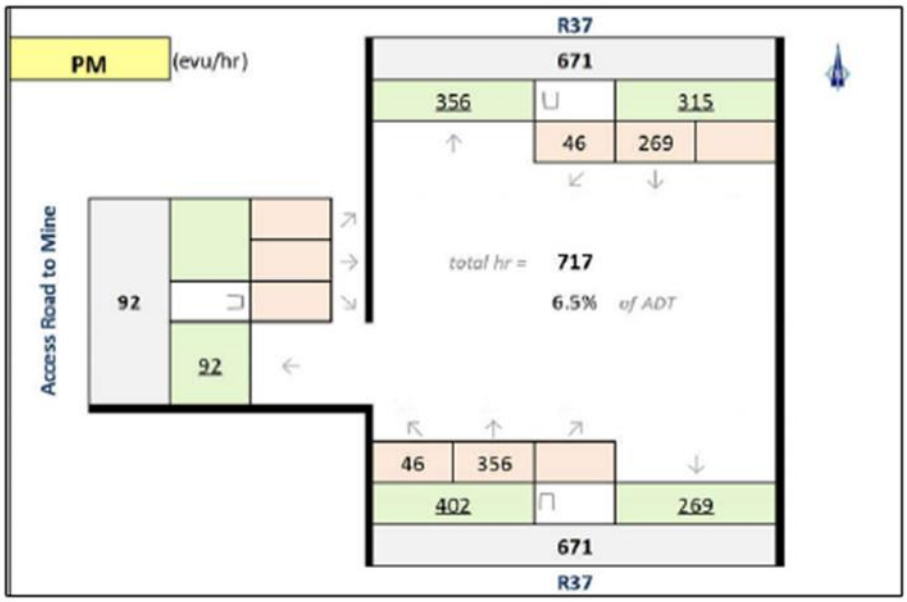

Figure 19: 2020 pm background traffic

The main movements of heavy vehicles were observed on the right-turn movement from the access road onto the R37 and on through movements on the R37.

A traffic survey was conducted at the R37-Marula Mine access road intersection during the morning and afternoon peak periods to determine the existing traffic movement and volumes. The maximum number of taxis, which was counted in a 15-minute period, was five taxis between 6:30 and 7:00 in the AM peak period and four taxis in the PM peak period between 15:30 and 15:45. The maximum accumulation of taxis at the informal embayment matches the peak traffic period of the intersection of the R37-Marula Mine access road to the.

9.5 CURRENT LAND USES

Construction-related activities have the potential to affect land uses both within the mine area and in the surrounding areas. This can be caused by physical land transformation and through direct or secondary impacts. The key related potential environmental impacts are loss of soil, loss of biodiversity, air pollution, noise pollution, pollution of water and visual impacts.

9.5.1 Residential and agriculture

The mine is located within a predominantly rural settlement. Prior to mining, the land was used for subsistence farming (dryland agriculture and grazing) as well as residential purposes. Extensive subsistence farming was restricted to the valleys, while residential areas were mostly restricted to foothills and the slopes immediately adjacent to hills.

This area is therefore not considered ideal for commercial livestock farming due to sparsity of vegetation and associated low carrying capacity, extreme temperatures and scarcity of water sources which might cause harm to livestock and subsequent loss of profit.

9.5.2 Conservation

In terms of vegetation protection level, the Marula mining right area is located on areas that are demarcated as either Poorly Protected or Not Protected (see Figure 13). With regards to the Critical Biodiversity Areas (CBA) for Limpopo, the approved mining right area is located on CBA 1, CBA 2, Ecological Support Area (ESA) 1 and ESA 2 (see Figure 13). The proposed Project is located in an ESA 1 and ESA 2 area.

9.5.3 Surface and mineral rights

The related land and land ownership details for the mine lease area and the surrounds is outlines below. For the portions of land owned by the State, Marula is in the process of formalising a lease agreement over the relevant sections of land required for its operations.

Table 13: Surface Rights

Property Description	Title Deed	LPI Code	Property Owner
Farm Quartzhill 542	T47101/1989PTA	T0KS00000000054200000	Republic of South Africa
Farm Twickenha, 114	T8670/1948PTA	T0KT00000000011400000	Republic of South Africa
Farm 115	Not available	T0KT00000000011500000	Not available
Farm Surbiton 115	T15303/1927PTA	T0KT00000000011500000	Government of Lebowa
Farm Hackney 116	T8670/1948PTA	T0KT00000000011600000	Republic of South Africa
Farm Forest Hill 117	T8670/1948PTA	T0KT00000000011700000	Republic of South Africa
Farm Clapham 118	T8670/1948PTA	T0KT00000000011800000	Republic of South Africa
Farm 119	T7107/1993	T0KT00000000011900000	Government of Lebowa
Farm Twyfelaar 119	T16452/1951PTA	T0KT00000000011900000	Republic of South Africa
Farm Croydon 120	T8670/1948PTA	T0KT00000000012000000	Republic of South Africa
Farm The Shelter 121	T8670/1948PTA	T0KT00000000012100000	Republic of South Africa
Farm Djstate 249	T15880/1989PTA	T0KT00000000024900000	South African Development Trust
Farm Winnaarshoek 250	T759/1936PTA	T0KT00000000025000000	Government of Lebowa
Farm De Kom 252	T30711/2015PTA	T0KT00000000025200000	Republic of South Africa

Property Description	Title Deed	LPI Code	Property Owner
Farm 253	T7107/1993	T0KT00000000025300000	Government of Lebowa
Farm Driekop 253	T16453/1951PTA	T0KT00000000025300000	Republic of South Africa

9.5.4 Other mining operations

Regionally, there are several mining and mining-related activities occurring within the Steelpoort valley and along the R37 between Burgersfort and Polokwane. These include:

- Modikwa Mine (Anglo Platinum) (±18km south of Marula);
- Smokey Hills' platinum mining project (Australia Platinum Ltd) (±3km south east of Marula);
- Twickenham Mine (Anglo Platinum) (±6km north of Marula);
- Dilokong Chrome Mine and Asa Metals Furnace (Asa Metals) (±6km south east of Marula, along the R37);
- Kennedy's Vale Mine (Rhodium Reefs/Barplats) (in the Steelpoort valley);
- Lion Ferrochrome smelter and old Vantech mine (Xstrata Alloys) (in the Steelpoort valley); and
- Lannex Mine and Tubatse Ferrochrome Smelter (Samancor) (in the Steelpoort valley).

9.5.5 Existing structures

Apart from the scattered residential developments and surface infrastructure on the Marula mine, no other structures exist in close proximity to the boundaries of the proposed Project area.

9.5.6 Environment and current land use map

A map illustrating the environmental sensitivities and land use is included in Figure 20.

Figure 20: Land Uses

10. METHODOLOGY USED IN DETERMINING THE SIGNIFICANCE OF ENVIRONMENTAL IMPACTS

This section describes the methodology used to determine the significance of impacts.

This assessment methodology enables the assessment of biophysical, cultural, and socio-economic impacts including cumulative impacts and impact significance through the consideration of intensity, extent, duration, and the probability of the impact occurring. Consideration is also given to the degree to which impacts may cause irreplaceable loss of resources, be avoided, reversibility of impacts and the degree to which the impacts can be mitigated.

10.1 METHODOLOGY USED IN DETERMINING THE SIGNIFICANCE OF IMPACTS

Part A provides the definition for determining impact consequence (combining intensity, extent, and duration) and impact significance (the overall rating of the impact). Impact consequence and significance are determined from Part B and C. The interpretation of the impact significance is given in Part D. This methodology is utilised to assess both the incremental and cumulative project related impacts.

PART A: DEFINITIONS AND CRITERIA		
Definition of SIGNIFICANCE		**Significance = consequence x probability**
Definition of CONSEQUENCE		**Consequence is a function of intensity, extent, and duration**
Criteria for ranking of the INTENSITY of environmental impacts	**VH**	Severe change, disturbance, or degradation. Associated with severe consequences. May result in severe illness, injury, or death. Targets, limits, and thresholds of concern continually exceeded. Habitats or ecosystems of high importance for maintaining the persistence of species or habitats that meet critical habitat thresholds. Substantial intervention will be required. Vigorous/widespread community mobilization against project can be expected. May result in legal action if impact occurs.
	H	Prominent change, disturbance, or degradation. Associated with real and substantial consequences. May result in illness or injury. Targets, limits, and thresholds of concern regularly exceeded. Habitats or ecosystems which are important for meeting national/provincial conservation targets. Will definitely require intervention. Threats of community action. Regular complaints can be expected when the impact takes place.
	M	Moderate change, disturbance, or discomfort. Associated with real but not substantial consequences. Targets, limits, and thresholds of concern may occasionally be exceeded. Habitats or ecosystems with important functional value in maintaining biotic integrity. Occasional complaints can be expected.
	L	Minor (Slight) change, disturbance, or nuisance. Associated with minor consequences or deterioration. Targets, limits, and thresholds of concern rarely exceeded. Habitats and ecosystems which are degraded and modified. Require only minor interventions or clean-up actions. Sporadic complaints could be expected.

	VL	Negligible change, disturbance, or nuisance. Associated with very minor consequences or deterioration. Targets, limits, and thresholds of concern never exceeded. Species or habitats with negligible importance. No interventions or clean-up actions required. No complaints anticipated.
	VL+	Negligible change or improvement. Almost no benefits. Change not measurable/will remain in the current range.
	L+	Minor change or improvement. Minor benefits. Change not measurable/will remain in the current range. Few people will experience benefits.
	M+	Moderate change or improvement. Real but not substantial benefits. Will be within or marginally better than the current conditions. Small number of people will experience benefits.
	H+	Prominent change or improvement. Real and substantial benefits. Will be better than current conditions. Many people will experience benefits. General community support.
	VH+	Substantial, large-scale change or improvement. Considerable and widespread benefit. Will be much better than the current conditions. Favourable publicity and/or widespread support expected.
Criteria for ranking the DURATION of impacts	**Very Short term**	Very short, always less than a year or may be intermittent (less than 1 year). Quickly reversible.
	Short term	Short-term, occurs for more than 1 but less than 5 years. Reversible over time.
	Medium term	Medium-term, 5 to 10 years.
	Long term	Long term, between 10 and 20 years. Likely to cease at the end of the operational life of the activity or because of natural processes or by human intervention.
	Very long term/ permanent	Very long, permanent, +20 years. Irreversible. Beyond closure or where recovery is not possible either by natural processes or by human intervention.
Criteria for ranking the EXTENT of impacts	**Site**	A part of the site/property. Impact is limited to the immediate footprint of the activity and within a confined area.
	Whole site	Whole site. Impact is confined to within the project area and its nearby surroundings.
	Beyond site	Beyond the site boundary, affecting immediate neighbours.
	Local	Local area, extending far beyond site boundary.
	Regional/ national	Regional/National. Impact may extend beyond district or regional boundaries with national implications.

PART B: DETERMINING CONSEQUENCE – APPLIES TO POSITIVE OR ADVERSE IMPACTS						
		EXTENT				
		Site	**Whole site**	**Beyond the site, affecting neighbours**	**Local area, extending far beyond site**	**Regional/ National**
INTENSITY = VL						
DURATION	**Very long term /permanent**	**Low**	**Low**	**Medium**	**Medium**	**Medium**
	Long term	**Very Low**	**Low**	**Low**	**Medium**	**Medium**
	Medium term	**Very Low**	**Low**	**Low**	**Low**	**Medium**
	Short term	**Very low**	**Very Low**	**Low**	**Low**	**Low**
	Very short term	**Very low**	**Very Low**	**Very Low**	**Very Low**	**Low**

INTENSITY = L						
DURATION	**Very long term /permanent**	Low	Medium	Medium	High	High
	Long term	Low	Medium	Medium	Medium	High
	Medium term	Low	Low	Medium	Medium	Medium
	Short term	Very low	Low	Low	Medium	Medium
	Very short term	Very low	Very low	Low	Low	Low
INTENSITY = M						
DURATION	**Very long term /permanent**	Medium	Medium	High	High	Very High
	Long term	Low	Medium	Medium	High	High
	Medium term	Low	Medium	Medium	Medium	High
	Short term	Low	Low	Medium	Medium	Medium
	Very short term	Very low	Low	Low	Low	Medium
INTENSITY = H						
DURATION	**Very long term /permanent**	Medium	High	High	Very High	Very High
	Long term	Medium	Medium	High	High	Very High
	Medium term	Low	Medium	Medium	High	High
	Short term	Low	Medium	Medium	Medium	High
	Very short term	Very low	Low	Low	Medium	Medium
INTENSITY = VH						
DURATION	**Very long term /permanent**	Medium	High	Very High	Very High	Very High
	Long term	Medium	High	High	Very High	Very High
	Medium term	Medium	Medium	High	High	Very High
	Short term	Low	Medium	Medium	High	High
	Very short term	Low	Low	Medium	Medium	Medium

PART C: DETERMINING SIGNIFICANCE - APPLIES TO POSITIVE OR ADVERSE IMPACTS							
PROBABILITY (of exposure to impacts)	**Definite/ Continuous**	**VH**	Very Low	Low	Medium	High	Very High
	Probable	**H**	Very Low	Low	Medium	High	Very High
	Possible/ frequent	**M**	Very Low	Very Low	Low	Medium	High
	Conceivable	**L**	Insignificant	Very Low	Low	Medium	High
	Unlikely/ improbable	**VL**	Insignificant	Insignificant	Very Low	Low	Medium
			VL	**L**	**M**	**H**	**VH**
			CONSEQUENCE				

PART D: INTERPRETATION OF SIGNIFICANCE		
Significance		**Decision guideline**
Very High	**Very High +**	Represents a key factor in decision-making. Adverse impact would be considered a potential fatal flaw unless mitigated to lower significance.
High	**High +**	These beneficial or adverse impacts are considered to be very important considerations and must have an influence on the decision. In the case of adverse impacts, substantial mitigation will be required.

Medium	**Medium +**	These beneficial or adverse impacts may be important but are not likely to be key decision-making factors. In the case of adverse impacts, mitigation will be required.
Low	**Low +**	These beneficial or adverse impacts are unlikely to have a real influence on the decision. In the case of adverse impacts, limited mitigation is likely to be required.
Very Low	**Very Low +**	These beneficial or adverse impacts will not have an influence on the decision. In the case of adverse impacts, mitigation is not required.
Insignificant		Inconsequential, not requiring any consideration.

10.2 ADDITIONAL ASSESSMENT CRITERIA

Additional criteria that are taken into consideration in the impact assessment process to further describe the impact and support the interpretation of significance in the impact assessment process include:

- the degree to which impacts may cause irreplaceable loss of resources;
- the degree to which impacts can be avoided;
- the degree to which impacts can be reversed;
- the degree to which the impacts can be mitigated; and
- the extent to which cumulative impacts may arise from interaction or combination from other planned activities or projects is tabulated below.

ADDITIONAL ASSESSMENT CRITERIA		
Criteria for DEGREE TO WHICH AN IMPACT CAN BE REVERSED	**IRREVERSIBLE**	Where the impact cannot be reversed and is permanent.
	PARTIALLY REVERSIBLE	Where the impact can be partially reversed and is temporary.
	FULLY REVERSIBLE	Where the impact can be completely reversed.
Criteria for DEGREE OF IRREPLACEABLE RESOURCE LOSS	**NONE**	Will not cause irreplaceable loss.
	LOW	Where the activity results in a marginal effect on an irreplaceable resource.
	MEDIUM	Where an impact results in a moderate loss, fragmentation or damage to an irreplaceable receptor or resource.
	HIGH	Where the activity results in an extensive or high proportion of loss, fragmentation or damage to an irreplaceable receptor or resource.
Criteria for DEGREE TO WHICH IMPACT CAN BE AVOIDED	**NONE**	Impact cannot be avoided and consideration should be given to compensation and offsets.
	LOW	Impact cannot be avoided but can be mitigated to acceptable levels through rehabilitation and restoration.
	MEDIUM	Impact cannot be avoided, but the significance can be reduced through mitigation measures.
	HIGH	Impact can be avoided through the implementation of preventative mitigation measures.
Criteria for the DEGREE TO WHICH IMPACT CAN BE MITIGATED	**NONE**	No mitigation is possible or mitigation even if applied would not change the impact.
	LOW	Some mitigation is possible but will have marginal effect in reducing the impact significance rating.
	MEDIUM	Mitigation is feasible and will may reduce the impact significance rating.

ADDITIONAL ASSESSMENT CRITERIA		
	HIGH	Mitigation can be easily applied or is considered standard operating practice for the activity and will reduce the impact significance rating.
Criteria for POTENTIAL FOR CUMULATIVE IMPACTS	**UNLIKELY**	Low likelihood of cumulative impacts arising.
	POSSIBLE	Cumulative impacts with other activities or projects may arise.
	LIKELY	Cumulative impacts with other activities or projects either through interaction or in combination can be expected.

11. IMPACTS AND RISKS IDENTIFIED INCLUDING THE NATURE, SIGNIFICANCE, CONSEQUENCE, EXTENT, DURATION AND PROBABILITY

This section gives an overview of the impacts and risks identified including the nature, significance, consequence, extent, duration and probability.

The impacts and risks identified for the proposed solar PV development are summarised in Section 12. The impact matrix is provided in Section 10.

12. POSITIVE AND NEGATIVE IMPACTS OF THE PROJECT ACTIVITIES AND ALTERNATIVES

This section provides an overview of the potential impacts of the proposed project.

Potential biophysical, cultural/heritage, and socio-economic impacts that have been identified during the Scoping process, in consultation with I&APs, are discussed in this section. The impact assessment discussion below takes into consideration all proposed Project related alternatives within all the project phases (construction, operations, decommissioning, and closure). **It is important to note, that the section below is a preliminary impact assessment and has NOT been informed by specialist input. It follows that in the absence of specialist input, the assessment conclusions are conservative and will be refined/changed in the EIA and EMPr Report with specialist input.** The section below also references assessments that are required to provide the necessary additional information to inform the identification and assessment of impacts during the EIA and EMPr phase of the proposed Project. All specialist studies with be undertaken in accordance with the DEA Screening Tool GN R 1150 of 30 October 2020).

12.1 IMPACTS ON THE BIOPHYSICAL ENVIRONMENT

12.1.1 Terrestrial ecosystems

Issue: The proposed Project would result in the clearing of vegetation within the proposed development footprint (including PV arrays, access roads, buildings, etc.). Additional areas would also need to be cleared for temporary construction camps and laydown areas that would be required during the construction phase. Due to the nature of decommission activities, impacts during the decommissioning phase would be of a similar nature and of short-term duration. The disturbance of these ecosystems would have an impact on both flora and fauna located within the study area.

The proposed Project could also result in a number of indirect impacts on terrestrial ecosystems, e.g., introduction of alien invasive plant species and the alteration of the local micro-climate beneath the modules (e.g., shading, temperature, height restriction, etc.), which may bring about changes to the species composition, diversity, vegetation structure, etc.

Response: A Terrestrial Impact Assessment will be undertaken to determine the impact on terrestrial fauna and flora and the findings presented in the draft EIA Report.

12.1.2 Avifauna

Issue: The clearing of vegetation within the proposed development footprints would result in the loss of avifaunal habitat. Operations during the construction, operational and/or decommissioning phases may result in the displacement of avifaunal species due to disturbance. During the operational phase, additional impacts on avifauna may result from possible collisions with the solar panels.

Response: The avifaunal specialists assessment have confirmed that the site is of low sensitivity with respect to avifauna and that an Avifaunal Compliance Statement would be compiled in compliance with the *"Protocol for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial animal species"* (GN No. 1150 of 30 October 2020).

12.1.3 Freshwater resources

Issue: The proposed Project could have an impact on the freshwater systems on site either through direct disturbance (e.g., placement of infrastructure footprints within rivers or wetlands) or indirectly through contamination from spills / uncontrolled releases (during the construction, operational and decommissioning phases).

Response: A Freshwater Ecological Assessment will be undertaken to determine the impact on the freshwater systems and the findings presented in the EIA Report. It will also be determined if a Water Use Licence is required for the proposed project.

12.1.4 Soils and agricultural potential

Issue: The proposed Project could result in the loss of arable/grazing land. Construction activities (e.g., excavations) may also increase the erosion potential of soils, which could result in the permanent loss of topsoil.

Response: An assessment will be undertaken to determine the impact on the soil and agricultural potential of the site and the findings presented in the Draft EIA Report.

12.2 IMPACTS ON THE SOCIO-ECONOMIC ENVIRONMENT

12.2.1 Creation of employment and local expenditure

Issue: The proposed Project and associated infrastructure would stimulate both direct and indirect employment opportunities during the construction and operation phases. The proposed Project would also result in direct and indirect local expenditure with much of the expenditure being directed at payments to labour / employees and purchase of materials.

Response: A large number of the work force (low and semi-skilled) would be sourced from the local labour force in and around the project site.

12.2.2 Visual impact

Issue: The proposed Project would potentially alter the landscape character of the site. This could have some visual implications for the immediate surrounding area and neighbouring access roads.

Response: The potential visual impact will be assessed in the specialist Visual Impact Assessment and the findings will be presented in the drafts EIA Report.

12.2.3 Impact on heritage resources

Issue: The construction of project-related infrastructure could potentially disturb cultural heritage material on site.

Response: A Heritage Impact Assessment will be undertaken during the impact assessment phase to identify the potential impact on any heritage resources which may be located on the site.

12.2.4 Impact on civil aviation

Issue: The potential impact on civil aviation is related to the reflection of sunlight during the day from the module surface, which can present a hazard during critical phases of flight, especially approach and landing.

Response: The potential impact on civil aviation at any nearby airfields, will be investigated, in consultation with the South African Civil Aviation Authority (SACAA), considering, *inter alia*, distances, orientation and angle of elevation of the modules, flight paths, etc. The findings will be presented in the EIA Report.

12.2.5 Impact of project-related noise

Issue: While noise would be generated during the construction and decommission phases and may be a nuisance to any nearby sensitive noise receptors. Although the intensity of these impacts could be high at times, the overall duration of the construction/decommissioning period would be over the short-term. During the operational phase, some equipment (e.g., transformers) can generate noise depending on their size and basic insulation level, however, it is not expected that this would have a significant impact on ambient noise levels due to the distance of the nearest sensitive noise receptors to the Project Site.

Response: Project-related noise-impacts will not be assessed further in the impact assessment phase. The EMPr for the proposed Project will include appropriate management/mitigation, where required, to address possible noise impacts.

12.2.6 Impact on air quality

Issue: Dust generated from vegetation clearing and the movement of vehicles on unsurfaced roads may contribute to elevated particulate matter levels in the air on a local scale. Emissions would also be generated by vehicles and other combustion-driven equipment (e.g., generators) that release nitrogen oxides (NO_X), carbon dioxide (CO_2), carbon monoxide (CO) and volatile organic compounds (VOC).

Response: Construction/Decommissioning activities may result in temporary dust emissions. This can be effectively managed through appropriate management/mitigation included in the EMPr. The nature of the project is such that no material air emissions are anticipated. Thus, this issue is scoped out from further assessment in the impact assessment phase.

12.2.7 Preliminary assessment of identified potential impacts

As required in terms of the EIA Regulations 2014, a preliminary assessment of the potential impacts associated with the implementation of the proposed Project is included in Table 14. It must be noted that a conservative approach has been applied to these ratings in the absence of site – specific specialists' assessments. The identified impacts and associated impact ratings may change once all the site-specific specialist studies have been completed. The final ratings will be included in the EIA Report.

Table 14: Preliminary list of potential impacts identified for the proposed Project

Potential impact	Activity	Project phases	Consequence			Probability	Significance	Degree to which impact can:		
			Intensity	Duration	Extent			Be reversed	Cause irreplaceable loss of resources	Be avoided
Impacts on terrestrial ecosystems	Site preparation Earthworks Accidental spillages and leaks from machinery and equipment General site management	C, O, D	H	L	R	Definite	VH	Unlikely	Possible	Managed / Mitigated
Impacts on avifauna	Site clearance Earthworks Noise generated from machinery and equipment	C, O, D	L	L	R	Possible	L	Partially	Possible	Managed / Mitigated
Impacts on freshwater systems	Site preparation Earthworks Accidental spillages and leaks from hazardous substances	C, O, D	H	L	L	Probable	H	Unlikely	Possible	Managed / Mitigated
Impacts on soil and agricultural potential	Site preparation Earthworks Accidental spillages and leaks from hazardous substances	C, O, D	M	L	L	Definite	M	Partially	Possible	Managed/ Mitigated
Creation of employment and local expenditure	Construction, operation and decommissioning of proposed project	C, O, D	M^+	H	R	Probable	H^+	Partially	N/A	Can be managed to enhance positive impact
Visual impacts	Site preparation Earthworks Placement of solar PV facility	C, O, D	H	L	R	Definite	VH	Unlikely	Possible	Can be managed / mitigated to acceptable levels

Potential impact	Activity	Project phases	Consequence			Probability	Significance	Degree to which impact can:		
			Intensity	Duration	Extent			Be reversed	Cause irreplaceable loss of resources	Be avoided
	Movement of people, machinery, and equipment									
Impact on heritage resources	Site preparation Earthworks	C, O, D	H	L	R	Possible	H	Unlikely	Possible	Can be managed / mitigated to acceptable levels.
Impact on civil aviation	Operation of proposed project	O	L	L	R	Improbable	L	Fully	N/A	Can be managed/mitigated to acceptable levels
Impact of additional traffic	Transportation of workers, equipment, and material to site	C, O, D	L	L	R	Probable	M	Partially	Unlikely	Can be managed/mitigated to acceptable levels
Impact of project-related noise	Site preparation Earthworks Movement of vehicles and people Noise from equipment (i.e. generators, etc.)	C, D	L	L	L	Definite	L	Fully	Unlikely	Can be managed/mitigated to acceptable levels
Impact on air quality	Site preparation Earthworks Movement of vehicles and equipment	C, D	L	L	R	Definite	L	Partially	Unlikely	Can be managed/mitigated to acceptable levels

Key:

Project Phases
C – Construction
O – Operation
D – Decommissioning

Intensity
VL – Very Low
L – Low
M – Medium
H - High

Duration
S – Short term
M – Medium term
L – Long term

Extent
L - Local
R - Regional
N - National
I - International

Significance
VL – Very Low
L - Low
M - Medium
H - High
VH - Very High

12.3 POSSIBLE MITIGATION MEASURES THAT COULD BE APPLIED AND THE LEVEL OF RISK

A preliminary, high-level list of possible mitigation measures to avoid, reduce, restore, and compensate/offset the potential impact identified is provided in Table 15. The level of residual risk after management or mitigation is also provided. **This section provides preliminary mitigation measures and has NOT been informed by specialist input. Mitigation measures will be refined/changed during the EIA and EMPr phase with specialist input.**

Table 15: Possible management actions and the anticipated level of risk

Project activity/aspect	Potential Impact	Management Action	Potential for residual risk
Construction Camps	Pollution to the environment Contamination of water resources	• The construction camp shall be located at an easily accessible point(s) and within an area of low environmental sensitivity; • No camp establishment shall be allowed within 32 m of any watercourse or drainage channel, or in any area that could cause nuisance or safety hazards to the surrounding landowners, businesses, or the general public. Construction material stockpiles shall be established in disturbed areas; • The Contractor shall submit a MS indicating the location, preparation, and layout of the construction camp(s). The plan shall include the location and layout of waste storage and treatment facilities, ablution facilities, stockpiling and spoil areas and hazardous material storage area. The demolition and removal of these facilities on completion of construction works shall also be detailed.	Low
	Pollution to the environment Contamination of water resources	• The Contractor shall provide suitable sanitary arrangements (e.g., chemical toilets) as per building guidelines (SABS 0400). There should be one toilet for every 15 workers on site (Operational Health and Safety Act No. 85 of 1993); • Toilets shall not be sited within 32 m of drainage channels or areas of sensitive natural vegetation; • The Contractor shall be responsible for ensuring that all ablution facilities are maintained in a clean and sanitary condition to the satisfaction of the RE or ECO; • The Contractor shall appoint a suitable Sub-contractor to empty toilets on a regular basis;	Low

Project activity/aspect	Potential Impact	Management Action	Potential for residual risk
		• The Sub-contractor shall ensure that there is no spillage when the chemical toilets are cleaned and that the contents are properly removed from site; • The Contractor shall be responsible for enforcing the use of these facilities; and • Performing ablutions outside of established toilet facilities is strictly prohibited.	
	Pollution to the environment Contamination of water resources	• The Contractor shall provide adequate refuse bins with lids at all eating areas to the satisfaction of the RE and shall ensure that all eating areas are cleaned up on a daily basis; • Any cooking of food on site shall be done using gas cookers; and • No surface water sources shall be used for washing of pots, plates, clothing, etc.	Low
Site demarcation and No-Go areas	Destruction of sensitive areas	• In order to limit the impact of construction activities, the Contractor shall limit activities to workspaces as defined at the site inspection during the tender process and subsequently as agreed with the RE and ECO. Construction works shall be confined to the proposed development footprint, where possible, and no materials shall be distributed into naturally vegetated areas adjacent to the development footprint. The site shall be fenced prior to site clearing activities; • Areas where construction activities are prohibited are referred to as No-Go areas and shall be demarcated to ensure that environmentally sensitive areas are not impacted by the construction activities. Any work required to take place outside of these areas shall only be undertaken once the RE and ECO has approved such work; • No-Go areas shall include all areas outside of the defined work spaces as determined during the tender process; • The Contractor shall be responsible for any clean-up and / or rehabilitation of all areas impacted outside the site.	Low
Site clearing:	Introduction of alien invasive plants	• Compile an Alien Invasive Management / Control Plan for implementation prior to	Medium

Project activity/aspect	Potential Impact	Management Action	Potential for residual risk
		construction. The Plan should be approved by the RE and the ECO; • AIPs should be cleared within the PV Facility before any vegetation clearing activities commence, thereby ensuring that no AIP propagules are spread with construction rubble, or soils contaminated with AIP seeds during the construction phase; • No use of uncertified chemicals may be used for chemical control of AIPs. Only trained personnel are to use chemical and mechanical control methods of AIPs. Chemical control may not be used within the Freshwater Habitat; • Alien vegetation that is removed must not be allowed to lay on unprotected ground as seeds might disperse upon it. All cleared plant material to be disposed of at a licensed waste facility which complies with legal standards; and • Ongoing alien and invasive plant monitoring and clearing / control should take place throughout the construction phase of the development, and a 30 m buffer surrounding the study area should be regularly checked for AIP proliferation and to prevent spread into surrounding natural areas.	
Site clearing: Disturbance on Avifauna	Displacement of avifauna	• No off-road driving; • Maximum use of existing roads where possible; • Best Practice Guideline measures to control noise and dust should be implemented; and • Access to areas outside of the construction camp(s) should be restricted.	Low
		• Appointment of a rehabilitation specialist to develop a Rehabilitation Plan; and • Site inspections to monitor rehabilitation progress.	
Site clearing: Topsoil	Loss of topsoil	• Topsoil shall only be stripped after the initial invasive alien vegetation clearing (if applicable) has been undertaken to ensure that fewer alien seeds are present in the topsoil that is used for landscaping and vegetation rehabilitation after completion of construction; • Topsoil stockpiles shall be convex and no more than 2 m high; • Ensure that no topsoil enters any watercourse;	Low

Project activity/aspect	Potential Impact	Management Action	Potential for residual risk
		• Topsoil stockpiles shall be monitored regularly to identify any alien plants, which shall be removed when they germinate to prevent contamination of the seed bank; • Stockpiles shall not be covered with materials such as plastic that may cause it to compost or would kill the seed bank; • Any topsoil contaminated by hazardous substances shall not be used but shall be disposed of at a licensed landfill site.	
Materials handling and storage: Handling	Environmental and water pollution	• The Contractor shall ensure that all suppliers and their delivery drivers are aware of procedures and restrictions in terms of this EMPr; • The Contractor (and suppliers) shall ensure that all materials are appropriately secured to ensure safe passage between destinations; • Loads including, but not limited to sand, stone chip, fine vegetation, refuse, paper, and cement, shall have appropriate cover to prevent them spilling from the vehicle during transit. The Contractor shall be responsible for any clean-up resulting from the failure by his employees or suppliers to properly secure transported materials; and • The Contractor shall ensure the supervision of the delivery drivers during offloading.	Low
Materials handling and storage: Storage of hazardous substances	Environmental and water pollution	• All fuel, oil, and other hazardous substances (i.e., bitumen, paint, etc.) shall be confined to demarcated, adequately bunded areas within the construction camp and stored in suitable containers. • The storage of any materials (e.g., cement, oil, fuel, etc.) shall not take place within 32 m of any surface water sources; • Hazard signs indicating the nature of the stored materials shall be displayed on the storage facility or containment structure; • The Contractor shall have a copy of the MSDS readily available and ensure that he / she or his / her employees who are required to use such substances are fully conversant with the safe handling precautions, protective equipment to be used and storage precautions to be taken;	Low

Project activity/aspect	Potential Impact	Management Action	Potential for residual risk
		• An on-site Emergency Plan must be implemented. • The Contractor shall submit a Method Statement detailing the location of storage, methods intended for storage of oil, fuel, herbicides, pesticides, and other hazardous / poisonous substances, if applicable. This Method Statement should also detail precautions that shall be implemented to limit spills and leakages of these substances.	
Materials handling and storage: Storage / use of equipment	Spillage of hazardous substances from equipment is prevented	• Drip trays shall be provided for stationary plant (such as compressors, pumps, generators, etc.) and for "parked" plant (e.g., mechanised equipment). • All plant, construction equipment, vehicles or other items shall be stored within the construction camp, unless prior arrangements have been made with the RE or ECO.	Low
Refuelling and maintenance: Refuelling	Environmental and water pollution	• Where reasonably practical, vehicles shall only be refuelled in a demarcated refuelling / servicing area (as agreed to with the RE and ECO). No re-fuelling shall be within 32 m of any surface water source or area of natural vegetation; and • The surface under the refuelling / servicing area shall be protected against pollution (e.g., the use of drip trays) to the reasonable satisfaction of the RE and ECO prior to any refuelling activities. • All vehicles and equipment shall be kept in good working order and serviced regularly. Leaking equipment shall be repaired immediately or removed from the site.	Low
Accidental leaks and spills	Contamination of the environment as a result of accidental leaks and spills	• The Contractor shall ensure that his / her employees are aware of the procedure to be followed for dealing with spills and leaks; • Any accidental leak and spill of fuel, oil or other hazardous substances is to be reported to the RE or ECO immediately so that the best remediation method can be quickly implemented; • In the event of a hydrocarbon spill, the source of the spillage shall be isolated, and the spillage	Low

Project activity/aspect	Potential Impact	Management Action	Potential for residual risk
		contained. The area shall be cordoned off and secured; • The Contractor shall submit a Method Statement detailing the precautions that shall be implemented to limit spills and leakages of these hydrocarbons and other hazardous substances.	
		• The Contractor shall ensure that there is always a supply of absorbent material readily available to absorb / breakdown spills. The quantity of such materials shall be able to handle the total volume of the hydrocarbon / hazardous substance stored on site. This material must be accepted by the RE prior to any refuelling activities.	
Waste Management: Hydrocarbon and hazardous waste	Contamination of the environment and water resources	• The Contractor shall prepare and implement a Hazardous Materials and Waste Management Plan prior to site establishment. The plan shall include, but not be limited to, measures to prevent: ○ Contamination of soils; ○ Pollution of water; ○ Accidental Fires; and ○ Risk / injury to people or animals.	Medium
Waste Management: General waste	Contamination of the environment and water resources	• An integrated waste management approach shall be used, based on the principles of waste minimisation, reduction, reuse, and recycling of materials. Containers for glass, paper, metals, and plastics shall be provided; • The Contractor shall remove all construction waste from site at his / her own expense; • Bins shall be located within the construction camp, eating areas and construction areas where there will be a concentration of labour; • Bins shall be emptied on a weekly basis or more frequently as required; • All solid waste may be temporarily stored on site in a demarcated area, which meets the satisfaction of the RE; • All solid waste shall be disposed of offsite at a licensed landfill site; and • No waste material or litter shall be burnt or buried on site.	Low
Waste Management:	Contamination of the environment as a	• Contaminated water (including contamination with chemicals, oils, fuels, cement, sewage,	Site Inspections and Audits.

Project activity/aspect	Potential Impact	Management Action	Potential for residual risk
Wastewater	result of wastewater management is prevented	construction water, water carrying products, etc.) from the construction site(s) should be prevented from entering groundwater, or surface water bodies. Appropriate measures, as agreed with the RE, shall be taken to limit the volume of water entering the site and to improve the water quality before it leaves site (e.g., stormwater cut-off drains, straw bales or geofabric siltation barriers constructed across the site at specific points).	Monthly wastewater reconciliation.
Erosion and sedimentation control	Soil loss and sedimentation of water resources are prevented	• The Contractor shall, as an ongoing exercise, provide sedimentation and erosion control to the satisfaction of the RE; • A Method Statement shall be developed and submitted to the RE and ECO that indicates how the Contractor shall deal with erosion and sedimentation issues.	Site Inspections and Audits.
Protection of natural features, fauna, and flora	Damage and disturbance to flora and fauna is prevented or minimised	• The Contractor shall not permit his employees to make use of any natural water sources for the purposes of swimming, personal washing and the washing of machinery or clothes; • Any amphibian, reptile, bird, or mammal encountered during site preparation that cannot flee of its own accord shall be relocated to a suitable area immediately outside of the proposed development footprint; • No collection of indigenous floral species must be allowed by construction personnel, especially with regards to floral SCC (if encountered); • The Contractor shall ensure that no hunting, trapping, shooting, poisoning, or other activity causing disturbance of any fauna takes place; • The feeding of any wild animals is prohibited; and • No domestic pets or livestock are permitted on site.	Site Inspections and Audits.
Cultural heritage	Protection of archaeological resources	• A destruction permit should be obtained from the relevant authority prior to the removal of the packed stone feature. • All staff on the site should be informed by the EO on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites;	Site Inspections and Audits.

Project activity/aspect	Potential Impact	Management Action	Potential for residual risk
		• If an archaeological site / archaeological finds are discovered during any construction activity, the work is to be halted and the RE or ECO notified immediately; • The Contractor will be required to abide by the specifications as set out in the Chance Finds Procedure / Protocol, or by any specifications from SAHRA; • Only after the site has been inspected will the Contractor be allowed to continue.	
Fire control	Effective fire prevention and control	• No open fires shall be allowed on site for the purpose of cooking or warmth. *Bona fide* braai fires (such braai fires shall be limited to the traditional "month end" braais and not individual daily cooking fires) may be lit within the construction camp; • The Contractor shall take all reasonable steps to prevent the accidental occurrence or spread of fire; • The Contractor shall ensure that all site personnel are aware of the procedure to be followed in the event of a fire; • The Contractor shall ensure that there is basic fire-fighting equipment on site at all times. This equipment shall include fire extinguishers and beaters; • The Contractor shall ensure that the telephone number of the local Fire and Emergency Service is displayed at the site offices; • Smoking is not allowed on site, other than at designated smoking points. Cigarette butts shall not be discarded on the ground; and • Prior to the commencement of construction activities, the Contractor is to ascertain the fire requirements of the local authorities and must submit a fire contingency plan Method Statement to the RE.	Site Inspections and Audits.
Air quality control	Dust generation is minimised	• The Contractor shall ensure that the generation of dust is minimised and shall implement a dust control programme to maintain a safe working environment and minimise nuisance for the surrounding landowners and businesses; • The Contractor shall ensure that exposed soil and material stockpiles are adequately	Site Inspections and Audits.

Project activity/aspect	Potential Impact	Management Action	Potential for residual risk
		protected against the wind (e.g., water spray vehicles, covering of material stockpiles, etc.); • The location of stockpiles shall take into consideration the prevailing wind directions and locations of sensitive receptors; • The Contractor shall submit a Method Statement detailing the control of dust on site.	
Noise control and working hours	Noise disturbance to neighbouring properties is avoided or minimised	• The Contractor shall be familiar with and adhere to, any local by-laws and regulations regarding the generation of noise and hours of operation. In addition, the provisions of SABS 1200A Sub clause 4.1 regarding "built-up areas" shall apply to all areas within audible distance of residents whether in urban, peri-urban, or rural areas; • Construction activities should be limited to 08:00 and 17:00. This should be determined together with the local authorities; • The Contractor shall inform RE of any complaints received from the public or any other parties.	Site Inspections and Audits. Noise monitoring in accordance with SANS 10103 (when noise-related complaints have been received).
Access, traffic, and safety	Safe traffic management	• The Contractor shall ensure that existing roads within and surrounding the site are maintained in a suitable condition; • The Contractor shall ensure that all regulations relating to traffic management are observed; • The Contractor shall also ensure that adequate traffic accommodation, signage and safety measures (as appropriate) are put in place on site	Site Inspections and Audits. Local Authority By-Law for control of Outdoor Advertising / SAMOAC.
Site rehabilitation	Successful restoration of disturbed areas	• On completion of the project, the Contractor shall ensure that all structures, equipment, materials, waste, rubble, notice boards and temporary fences used during the construction operation are removed with minimum damage to the surrounding area; • The Contractor shall clean and clear the site to the satisfaction of the RE; • The Contractor shall take all appropriate measures to prevent erosion, especially wind and water erosion, during the rehabilitation phase. Any erosion caused on site during the construction phase as a result of runoff shall be rehabilitated;	Site Inspections and Audits. Post construction audits and closure reports.

Project activity/aspect	Potential Impact	Management Action	Potential for residual risk
		• Temporary erosion protection measures shall be kept in place until permanent preventative measures (such as establishment of vegetation) are concluded.	
Socio-economic: Social project risks	Effective management of social risks and stakeholders	• The Contractor should appoint an appropriately qualified Community Liaison Officer (CLO) to deal with social aspects of the project throughout the life of the project; and • The Contractor should develop a community relations strategy. The RE should approve the strategy.	N/A

		• Any person employed on the project must sign the Code of Conduct and be presented with a copy;
		• The Code of Conduct must include the following aspects;
		  ○ Respect for residents, their customs and property;
		  ○ Respect for farm infrastructure and agricultural activities;
		  ○ Prohibition of hunting and theft of livestock or products;
		  ○ Zero tolerance for working under the influence of alcohol or any other illegal substance, i.e., dagga; and
		  ○ A description of the disciplinary measures for the violation of the Code of Conduct.
		• Stock theft should considered as a dismissible offence; and
		• Compensation for loss of land, structures and infrastructure associated with the development shall occur in a timeous manner.
			N/A

13. PLAN OF STUDY FOR THE ENVIRONMENTAL IMPACT ASSESSMENT

This section describes the nature and extent of further investigations to be conducted by SLR in the EIA phase and sets out the proposed approach to the EIA phase.

13.1 ENVIRONMENTAL IMPACT ASSESSMENT OBJECTIVES

The main objectives of the Impact Assessment phase are to:

- Assess the potential biophysical, cultural, and socio-economic impacts of the Proposed Project.
- Liaise with I&APs on issues relating to the proposed Project to ensure compliance with existing guidelines and regulations.
- Identify and describe procedures and measures that will mitigate potential negative impacts and enhance potential positive impacts.
- Undertake consultation with I&APs and provide them with an opportunity to review and comment on the outcomes of the EIA process and acceptability of mitigation measures.
- Develop an EMPr and a conceptual closure/decommissioning plan.
- Provide measures for ongoing monitoring (including environmental audits) to ensure that the project plan and proposed mitigation measures are implemented as outlined in the detailed EIA.

13.2 MOTIVATION WHERE NO ALTERNATIVE SITES WERE CONSIDERED

Refer to Section 7 for information on the alternatives considered as well as the no-go option.

13.3 ASPECTS TO BE ASSESSED BY SPECIALISTS

SLR has identified specific specialists studies to support the EIA process. The specialists were chosen on the basis of SLR's knowledge of mining and renewable energy related projects and through the results of the Department of Environment, Forestry and Fisheries (DEFF) screening tool (see Section 18). Each specialist study will undertake the following steps:

- Define the baseline environment through review of available information from past studies and additional field studies, where required.
- Define relevant laws and regulations that apply to the specific specialist study.
- Identify specific issues of concern through an understanding of the project and the sensitivity of the affected environment as well as review of all issues raised by I&APs.
- Interact with other specialists, where required, to ensure the integration of issues of concern and appropriate assessment.
- Assess the direct, indirect, and cumulative impacts.
- Provide mitigation measures to reduce impacts to an acceptable level i.e. Residual impact. Where necessary provide recommendations to address residual impacts i.e. Biodiversity offsets; and
- Where required, provide detailed monitoring plans.

The aspects to be assessed by the various specialists are included in Table 16 below.

Table 16: Specific terms of reference for the proposed specialist studies

Specialist Study		Terms of Reference
Biophysical environment	Soil, Land Use, Land Capability and Land Potential Study	The proposed terms of reference for the Soils, Land and Land Capability Study is as follows: • Results of a desktop review of existing soil and land capability databases, to establish broad baseline conditions and to identify areas of environmental sensitivity and sensitive agricultural areas. • Results of a field survey where soil samples will be collected within the project area and to classify the dominant soil types according to the South African Soil Classification System (Soil Classification Working Group, 2018). • Illustrations of the spatial distribution of various soil types and land capability within the project area based on the results of the desktop review and the field survey. • An identification and assessment of potential impacts on the receiving environment as a result of the project activities. • Mitigation measures identified to manage the potential impacts.
	Biodiversity – Terrestrial Study	The proposed terms of reference for the Terrestrial Biodiversity Study is as follows: • Identify, map (vegetation types, locations of species of conservation concern and conservation value / sensitivity map) and describe the flora present on site that could be affected by the Proposed Project, based on a field survey and available literature. • Provide a broad description of the existing environment in terms of its fauna (focusing on vertebrates, but with cognition of invertebrates of conservation concern), based on a field survey and available literature. • Identify and describe sensitive faunal habitats within the study area. • Comment on the conservation status and ecological importance of species on a local, regional, and national scale. • Identify any species of special concern viz. species with conservation status, endemic to the area or threatened species that exist or may exist on site. • Provide a conservation importance rating of the vegetation on site (in local, regional, and national terms). • Incorporate the relevant requirements of the Terrestrial Plant and Animal Species Protocols. • Investigate ecological / biodiversity processes that could be affected (positively and/or negatively) by the Proposed Project. • Provide guidance for the requirement of a permit in terms of the National Environmental Management: Biodiversity Act, 2004 (No. 10 of 2004) to remove or destroy threatened or protected species. • Assess the significance of the loss of vegetation, faunal species, and impact on ecological / biodiversity processes as a result of the implementation of the Proposed Project. • Identify practicable mitigation measures to reduce any negative impacts to the indigenous vegetation (including species and techniques that could potentially be used for rehabilitation purposes) and indicate how these could be implemented in the construction and management of the Proposed Project.
	Biodiversity – Freshwater	The proposed terms of reference for the Freshwater Biodiversity Study is as follows:

Specialist Study		Terms of Reference
	Ecological Study	• Identify, map, and describe the freshwater systems on site, both natural and man-made, that could be affected by the Proposed Project, based on a field survey and available literature. • Describe the ecological condition, sensitivity, ecological important and conservation value of all identified freshwater systems. • Identify and assess the significance of potential impacts associated with the proposed Project on the freshwater systems. • Investigate ecological / biodiversity processes that could be affected (positively and/or negatively) by the proposed Project. • Identify practicable mitigation measures to reduce impacts on the aquatic fauna and flora during construction and operation.
	Biodiversity - Avifauna Study	The proposed terms for the Avifauna Study are as follows: • Determination of Avifaunal assemblage. • Determining and assessing sensitive avifaunal habitat areas, highlighting impacts as a result of habitat disturbance and the construction and operation of the proposed solar development. • Consideration of the RDL avifaunal probability assessment in order to quantify the importance of the study area in terms of RDL avifaunal conservation with special mention of the avifaunal species listed within the National Environmental Management Biodiversity Act and the provincial RDL/protected lists. • The general effects of the proposed powerline on migratory routes and breeding sites of RDL birds as well as ecological and migratory connectivity will be assessed. • A detailed impact assessment on all identified significant risks will take place including cumulative impacts on the avifaunal assemblage in the region. • Recommendations on management and mitigation measures. • Monitoring requirements (as deemed necessary).
	Visual Study	The proposed terms for the Visual Study is as follows: • Quantify and assess the existing scenic resources/visual characteristics in and around the proposed site in relation to the surrounding areas. • Evaluate and classify the landscape in terms of its sensitivity to a changing land use. • Determine viewsheds (visual horizons) and important viewpoints in order to assess the visual impact of the Proposed Project. • Assess the significance of potential visual impacts resulting from the proposed Project from various important viewpoints, e.g., transport corridors, neighbouring farmsteads / residential areas, recreational areas and other surrounding land-uses (i.e. viewer-observer distances, bulk, compatibility with surrounding area, viewer catchments, etc.); and • Identify practicable mitigation measures to reduce negative visual impacts and to identify how these can be built into the project design.
	Bat Compliance Statement	A site visit will be undertaken to assess and verify the proposed solar facility area as well as the adjacent sites as having a low sensitivity for bats (as identified by the screening tool). A short report in the form of a compliance statement will confirm or dispute the current use of the land and the environmental sensitivity as identified by the screening tool.

Specialist Study		Terms of Reference
Cultural environment	Heritage and Palaeontology Study	The proposed terms for the Heritage Study is as follows: • Provide a description of the archaeology, palaeontology and cultural heritage of the site and identify and map any sites of archaeology, palaeontology or cultural significance that may be impacted by the Proposed Project. • Assess the sensitivity and conservation significance of any sites of archaeological, palaeontology or cultural heritage significance affected by the Proposed Project. • Identify and assess the significance of the potential impacts of the proposed Project on archaeological, palaeontology and cultural heritage. • Make recommendations on the protection and maintenance of any significant cultural heritage and/or archaeological / palaeontology sites that may occur on site. • Identify practicable mitigation measures to reduce negative impacts on the archaeological / palaeontology resources and indicate how these can be incorporated into the construction and management of the Proposed Project. • Provide guidance for the requirement of any permits from the South African Heritage Resources Agency (SAHRA) that might become necessary.

Rehabilitation	Financial Provision	The Financial Provision Study will provide the closure liabilities estimate for the project in according to the requirements of GNR 1147. The study includes the following:
		• An updated closure plan which will include:
		  ○ the closure strategy, closure objectives and mechanisms, design principals and motivations for achieving the closure objective;
		  ○ an environmental risk assessment;
		  ○ an assessment of any long-term latent impacts and mitigation strategies (to be informed by specialist input); and
		  ○ the planned closure monitoring, auditing and reporting procedures.
		• Updated quantities and cost estimate associated with the closure activities as per the Financial Provisioning Regulations (GNR. 1147 of 2015); and
		• An updated preliminary annual rehabilitation plan.

13.4 METHOD OF ASSESSING THE ENVIRONMENTAL ASPECTS INCLUDING ALTERNATIVES

The method that will be utilised to assess the impact significance of biophysical, cultural/heritage, and socio-economic impacts including alternatives during the EIA and EMPr phase of the proposed Project is included in Section 10.

13.5 METHOD OF ASSESSING IMPACT SIGNIFICANCE

Refer to Section 10 for the method of assessing impact significance.

13.6 CONSULTATION WITH THE COMPETENT AUTHORITY

The EIA and EMPr Report, including comments received during the I&AP review process, will be prepared, and submitted to the DMRE for their review and decision-making. A site visit and meeting will be held, if requested by the DMRE.

Table 17: Stages at which the competent authorities will be consulted

Task Name	Date
Submit EA and section 102 applications	February 2023
Distribute draft scoping report for public review	February 2023
Submit final scoping report	April 2023
DMR accepts final scoping report (within 43 days of receipt of scoping report)	May 2023
Distribute draft EIR/EMPr for public review	July 2023
Submit final EIR/EMPr (within 106 days of acceptance of final scoping report by DMR)	October 2023
Authority decisions on applications	December 2023

13.7 PUBLIC PARTICIPATION PROCESS IN THE ENVIRONMENTAL IMPACT ASSESSMENT PHASE

13.7.1 Notification of interested and affected parties

All I&APs registered on the project database will be notified of relevant events in the impact assessment phase of the project via electronic mail, Short Message Service (SMS), or, if required, post. This will include when the EIA and EMPr (including specialist reports) are available for the 30-day review and comment period, and invitations to possible focussed group meetings, as well as the notification of the DMRE's decision.

13.7.2 Details of the public participation process to be followed

The table below outlines the details of the public participation process that will followed during the EIA phase of the project.

Table 18: Details of the public participation process to be followed during the Environmental Impact Assessment Phase

Task	Description
Scoping Report DMRE decision	
Notification of DMRE decision of the Scoping Report	All I&APs will be notified via email and SMS notifications of the DMRE's decision of the Scoping Report. Once the Scoping Report is accepted, the EIA phase can be initiated.
Review of the EIA and EMPr	
I&APs review of the EIA and EMPr	The EIA and EMPr will be made available for review and comment for 30 days. A non-technical summary of the EIA and EMPr (English and SePedi) will be made available to all I&APs registered on the I&AP database via email and post. In addition to this electronic copies will be made available on the SLR website (at https://www.slrconsulting.com/en/public-documents/Marula-Solar-PV) and the data-free website (at slrpublicdocs.datafree.com). Emails and text messages containing a link to the SLR website and SLR data-free website, will also sent to all I&APs registered on the project database.
Following review of the EIA and EMPr	The EIA and EMPr will be updated to include all comments received during the review and commenting period. This updated report will be made available to the DMRE for decision making purposes.

Task	Description
Notify I&APs of the DMRE's decision.	Upon receipt of the decision on the EA the EIA Project Team will assist the applicant in making the application decisions available to all registered I&APs and notifying them of the appeal procedure to be followed in terms of the National Appeal Regulations [Government Notice No. R.993 promulgated in terms of section 44(1a) and 43(4) of NEMA].

13.7.3 Information to be provided to interested and affected parties

During the EIA phase of the project, I&APs will be provided with an opportunity to review the EIA and EMPr. The EIA and EMPr will include the following information:

- Detailed description of the current biophysical, cultural, and socio-economic environments.
- Detailed description of the project including information pertaining to the scale, extent, and duration of the project activities.
- Responses to issues and comments received from I&APs, commenting authorities and the competent authority.
- Copies of the specialist reports undertaken for the project.
- An assessment of the biophysical, cultural, and socio-economic impacts identified during the EIA process, with input from I&APs, commenting authorities, the competent authorities, and specialists; and
- An EMPr, with detailed management measures and mitigation to reduce and control identified impacts.

Once the DMRE has issued a decision on the EIA and EMPr Report, SLR will inform registered I&APs of the decision and the opportunity to appeal the DMRE decision.

13.8 TASKS TO BE UNDERTAKEN DURING THE EIA PHASE

A summary of the tasks that would be undertaken during the Impact Assessment Phase, together with the anticipated schedule is provided in Table 19.

Table 19: Key tasks (and indicative timing) of the impact assessment phase

Phase	EAP activity	Opportunities for Consultation and Participation		Schedule*
		Competent Authority	I&APs	
Specialist Studies	EAP to manage specialist activities and receive inputs for EIA.	-	-	November 2022 – March 2023
	Specialists to be kept informed of issues raised by I&APs throughout the EIA process.	-	-	
Impact Assessment Phase	Compile EIA report	-	-	March 2023 – April 2023
	Upload a copy of EIA report on SAMRAD	✓	-	May 2023

Phase	EAP activity	Opportunities for Consultation and Participation		Schedule*
		Competent Authority	I&APs	
	I&AP consultations	-	Review of EIA (30 days), Comments to EAP	
	Collate and respond to comments and finalise EIA report	-	-	
	Submit final EIA report to DMRE	-	-	July 2023
Competent authority review and decision-making	EIA report to DMRE (107 days from acceptance of Scoping Report).	DMRE acknowledge receipt of EIA (10 days).	-	July 2023 – October 2023
		DMRE Review (107 days)		
		Environmental Authorisation Granted / Refused	-	
Decision	Notify registered I&APs of decision (within 14 days of date of decision)	-	-	October 2023
Appeal Phase	EAP to provide information on appeal process as and when required.	Consultation during processing of appeal if relevant.	Opportunity to appeal decision in terms of National Appeal Regulations, 2014	-

13.9 MEASURES TO AVOID, REVERSE, MITIGATE, OR MANAGE IDENTIFIED IMPACTS

A key component of an S&EIA process is to explore practical ways of avoiding or reducing potentially significant impacts. These are commonly referred to as mitigation measures and will be identified through the development of an EMPr. Mitigation is aimed at preventing, minimising, or managing significant negative impacts to as low as reasonably practicable and optimising and maximising any potential benefits of the proposed Project.

As part of developing the EMPr, consideration will be given to the mitigation hierarchy in terms of managing risks. This is aimed at ensuring that wherever possible potential impacts are mitigated at source rather than mitigated through restoration after the impact has occurred. Any remaining significant or residual impacts are then highlighted, and additional actions are proposed. The mitigation measures for the proposed Project will be established through the consideration of legal requirements, best practice industry standards and specialist input. The mitigation hierarchy that will be taken into consideration during the EIA and EMPr phase is presented in Figure 21. For the purpose of this Scoping Report, a preliminary high-level list of possible mitigation measures to avoid, reduce, restore, and compensate/offset the potential impact identified is provided in Section 12 and will be refined during the EIA and EMPr phase of the proposed Project.

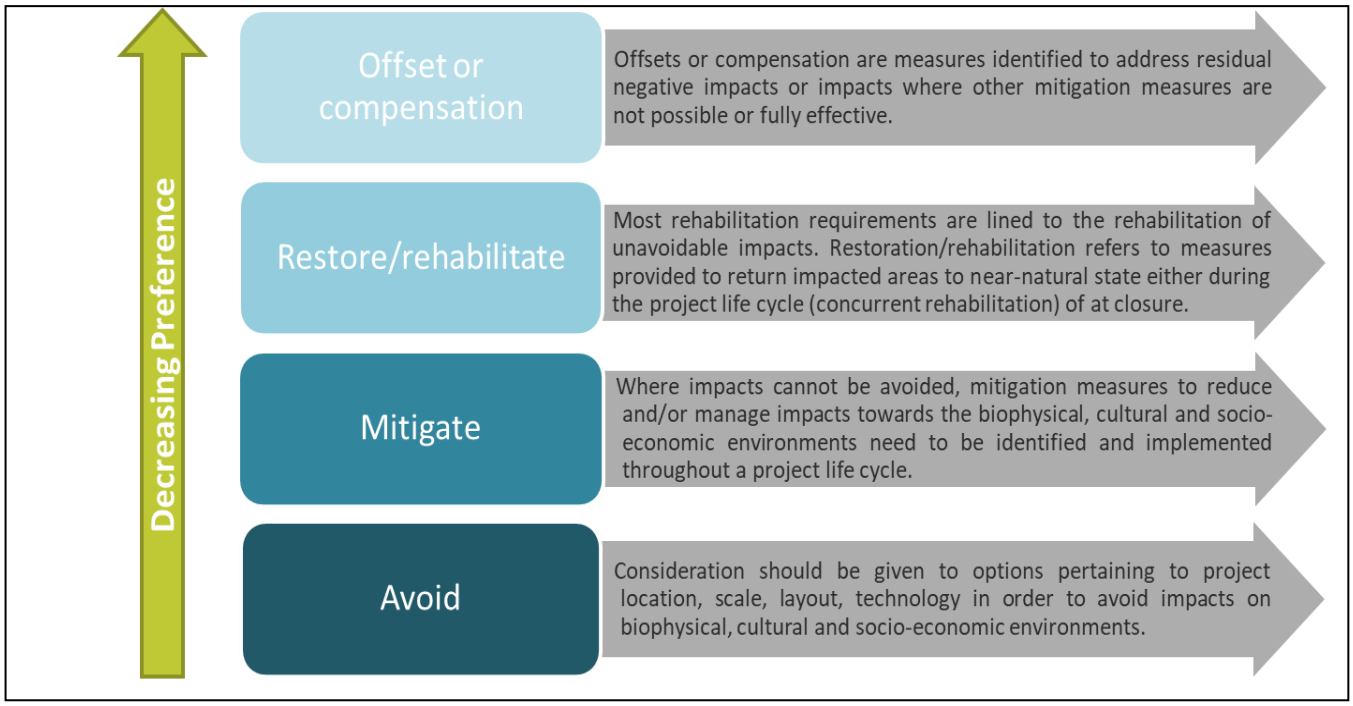

Figure 21: Mitigation hierarchy

14.OTHER INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

This Section sets out any additional requirements by the CA.

14.1 SCREENING TOOL

It became compulsory to use the Department of Forestry, Fisheries, and the Environment (DFFE) online screening tool from the 4 October 2019. The report generated by the DFFE screening tool was attached to the NEMA Environmental Authorisation application for the project and is included in Table 20. The screening tool report outlines specialist studies that need to be considered as part of the project. In this regard, the table below outlines the specialist studies identified in the screening tool report along with an explanation regarding the applicability of these specialist studies in relation to the project.

Table 20: Screening tool results

Agricultural Impact Assessment	The screening tool report indicates that the proposed Project components fall within a high agricultural sensitive area. For the purpose of the Proposed Project a Soils, Land Use and Land Capability Study, which will include agricultural aspects, will be compiled for the Proposed Project.
Landscape/Visual Impact Assessment	The screening tool report indicates that the proposed Project components fall within a high landscape (solar) sensitive area. A visual assessment will be undertaken for the Proposed Project.
Archaeological And Cultural Heritage	The screening tool report indicates that the proposed Project components fall in a low cultural and archaeological sensitivity area. A screening assessment will be undertaken as part of the Proposed Project.
Heritage and Palaeontological Studies	The screening tool report indicates that the proposed Project components fall in a low heritage resources environmental sensitivity area, and medium paleontological sensitive area. as such Heritage and Palaeontological assessments will be prepared for the Proposed Project.
Biodiversity (Terrestrial and Aquatic) Study	The screening tool report indicates that the proposed Project components fall within a very high terrestrial biodiversity theme. The sensitivity theme for plants and animals are medium and within a low sensitivity environmental area for aquatic biodiversity. For the purpose of the proposed Project a Biodiversity (Terrestrial and Aquatic) Study will be prepared for the Proposed Project.
Civil Aviation Study and Defence	The screening tool report indicates that the proposed Project components fall within a low sensitivity area for civil aviation. For the purpose of this project, there are no tall structures that are likely to influence flight paths. It follows, for this project a civil aviation specialist study is deemed unnecessary for this project and the screening tool will be sent with the Scoping Report to CAA as evidence. The defence theme is of low environmental sensitivity and no known defence base is situated in close proximity to the Proposed Project.
RFI Assessment	The screening tool report indicates that the proposed Project components fall within a low sensitivity theme for RFI.
Geotechnical Assessment	The screening tool requested a geotechnical investigation to be undertaken as part of the Proposed Project.
Socio-Economic Assessment	The outcomes of the specialist investigations will enable the identification of sensitive environments and/or sensitive receptors given that Marula is surrounded by several communities. In addition to this, potential impacts can be assessed in the context of the proposed activities as

	well as cumulatively in the context of existing operations. The specialist recommendations will also inform the mitigation measures, which will be included in the EMPr for the Proposed Project.

No additional requests for information have been received to date.

15.OTHER MATTERS REQUIRED IN TERMS OF SECTIONS 24(4)(A) & (B) OF THE ACT

This Section set out any requirements that need to be considered as part of the proposed Project in terms of Section 24(4)(a) and (b) of NEMA.

This section is not applicable. All relevant requirements are provided throughout the report.

16. UNDERTAKING BY THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

I, Chané Coetzee, the EAP responsible for compiling this report and Natasha Smyth, the project Reviewer/Director, undertake that:

- The information provided herein is correct.
- The comments and inputs from I&APs have been correctly recorded.
- Information and responses provided to I&APs by the EAP is correct to the best of SLR's knowledge at the time of compiling the report.
- The level of agreement with I&APs has been correctly recorded and reported.

Chané Coetzee
Name
(Signature of EAP)

03/02/2023
Date

I certify that the DEPONENT has acknowledged that he/she knows and understands the contents of this affidavit, he/she does not have any objection to taking the oath, and he/she considers it to be binding on his/her conscience and that the administering oath complied with the regulations contained in GN R 1258 of July 1972.

Name
(Signature of Commissioner of Oaths)

3/2/23
Date

COMMISSIONER OF OATHS
Oren Jan Van Vrede
Ex Officio – Professional Accountant (S.A.)
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17.REFERENCES

Marion Bamford. October. 2020. Request for Exemption of any Palaeontological Impact Assessment for the proposed construction of three ventilation shafts for Marula Mine, Limpopo Province Palaeontological Impact Assessment for the proposed project.

Scientific Aquatic Services CC. 2021. Desk based freshwater ecological screening assessment as part of the environmental assessment and authorisation process for the proposed solar plant alternatives at the Marula Platinum Mine, Limpopo Province

Scientific Terrestrial Services CC. 2021. Desktop biodiversity screening assessment as part of the environmental authorisation process for the proposed solar plant alternatives at Marula Platinum Mine, Limpopo Province.

Pulles, Howard and De Lange. 2001. Environmental Management Programme Report for the proposed Impala Platinum Mine (Marula) near Burgersfort.

SLR Consulting. 2021. Geotechnical desktop and walkover assessment of for a proposed photovoltaic solar facility.

Visual Resource Management Africa cc. 2021. Preliminary Visual Impact Assessment Report for Environmental Impact Assessment Scoping Phase.

Zimpande Research Collaborative. 2021. Desk-based agriculture and land capability analyses as part of the environmental assessment and authorisation process for the proposed solar plant areas at Marula Platinum Mine, Limpopo Province.

Appendix A: Curricula Vitae (including Professional Registrations) of the Project Team

Appendix B: Public Participation

- Copy of the correspondence with the Land Claims Commissioner.

Appendix C: Screening Report

RECORD OF REPORT DISTRIBUTION

SLR Reference:	710.09012.00025
Title:	Scoping Report for the Proposed Establishment of a Solar PV Facility at Marula Platinum Mine
Report Number:	1
Client:	Marula Platinum (Pty) Ltd

Name	Entity	Copy No.	Date Issued	Issuer
Mabosha Phaswana	Ga-Mashishi Traditional Council	1	8 February 2023	CC
Ga-Kgwete	Ga-Kgwete	1	8 February 2023	CC
Ga-Mahlokwane	Ga-Mahlokwane	1	8 February 2023	CC

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