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**DRAFT SCOPING REPORT:**  
**PROPOSED CONSTRUCTION OF A SOLAR  
PHOTOVOLTAIC (PV) PLANT TO GENERATE UP TO  
40 MW OF ENERGY (PHASE 2),  
BRAKPAN, CITY OF EKURHULENI METROPOLITAN  
MUNICIPALITY, GAUTENG PROVINCE  
(DMRE REF: GP158MREA)**

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**Draft for Public Review  
24 March 2022 – 25 April 2022**

**Prepared for:**

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**mineral resources**

Department:  
Mineral Resources  
**REPUBLIC OF SOUTH AFRICA**

## **SCOPING REPORT**

# **FOR PROPOSED CONSTRUCTION OF A SOLAR PHOTOVOLTAIC (PV) PLANT TO GENERATE UP TO 40 MW OF ENERGY (PHASE 2), BRAKPAN, CITY OF EKURHULENI METROPOLITAN MUNICIPALITY, GAUTENG PROVINCE**

**GP 30/5/1/2/2 (158) MR**

SUBMITTED FOR ENVIRONMENTAL AUTHORIZATION IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 IN RESPECT OF LISTED ACTIVITIES THAT HAVE BEEN TRIGGERED BY APPLICATIONS IN TERMS OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (MPRDA) (AS AMENDED).

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**FILE REFERENCE NUMBER SAMRAD:** GP158MREA



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Appendix H: Surface Water Assessment and Storm water management Scoping Report

Appendix I: Wetland Impact Assessment and Aquatic Scoping Report

Appendix J: Soils, land capability and agricultural potential Scoping Report

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Appendix L: Visual Scoping Report

Appendix M: Socio-economic Scoping Report

Appendix N: Noise opinion

Appendix O: EAP undertaking



## List of Abbreviations and Acronyms

ADU	Animal Demographic Unit
Absl	Above sea level
AGL	Above ground level
ARC	Agricultural Research Council
BA	Basic Assessment
BESS	Battery Energy Storage System
BID	Background Information Document
C&RR	Comments and Response Report
CA	Competent Authority
CARA	Conservation of Agricultural Resources Act 43 of 1983
CBA	Critical Biodiversity Areas
Cllr	Ward Councillor
CSP	Concentrated solar power
DEAT	Department of Environmental Affairs and Tourism
DFFE	Department of Forestry, Fisheries and the Environment
DMRE	Department of Mineral Resources and Energy
DRDLR	Department of Rural Development and Land Reform
DSR	Draft Scoping Report
DWS	Department of Water and Sanitation
ECCS	Energy and Climate Change Strategy
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EIS	Ecological Importance and Sensitivity
EMPr	Environmental Management Programme
EO	Ecological / Environmental Officer
ESA	Early Stone Age
ESAs	Ecological Support Corridors
FAA	Federal Aviation Administration
FSR	Final Scoping Report





GDARD	Gauteng Department of Agriculture and Rural Development
Ha	Hectare
HGM	Hydrogeomorphic
I&APs	Interested and affected parties
IBA	Important Bird Area
IFC	International Finance Corporation
IPP	Independent Power Producer
IRP	Integrated Resource Plan 2019
Km	Kilometre
KVA	Kilo Volt Amperes
M	meter
MPRDA	Mineral and Petroleum resources Development Act 28 of 2002
MSA	Middle Stone Age
MVA	Megavolt amperes
MWhs	Megawatt hours
NDP	National Development Plan 2030
NEMA	National Environmental Management Act 107 of 1998, as amended
NEMAQA	National Environmental Management: Air Quality Act 39 of 2004
NEMBA	National Environmental Management: Biodiversity Act 10 of 2002
NEMPA	National Environmental Management: Protected Areas Act 57 of 2003
NEMWA	National Environmental Management: Waste Act 59 of 2008
NFA	National Forest Act 84 of 1998
NHRA	National Heritage Resources Act 25 of 1999
NPAES	National Protected Areas Expansion Strategy
NWM	National Wetland Map
NWA	National Water Act 36 of 1998
O&M	Operation & Maintenance
PES	Present Ecological State
PV	Photovoltaic
QDGS	Quarter degree grid squares





REIPPPP	Renewable Energy Independent Power Producer Procurement Programme
SABAP2	South African Bird Atlas Project 2 Data
SCC	Species of conservation concern
SDG	Sustainable Development Goal
SEF	Solar Energy Facility
SIP	Strategic Infrastructure Projects
SP	Significance Points
SWSA	Strategic Water Source Areas
TOP	Threatened or protected
UPS	Uninterruptible Power Supply
VAC	Visual Absorption Capacity
WML	Waste management license
WULA	Water Use License Application



**DOCUMENT TITLE:** Draft Scoping Report for the Proposed Construction of a Solar Photovoltaic (PV) Plant To Generate Up To 40 MW Of Energy (Phase 2), Brakpan, City Of Ekurhuleni Metropolitan Municipality, Gauteng Province (DMRE REF: GP158MREA)

**Document Control:**

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<b>Date</b>	<b>Date</b>
22 March 2022	22 March 2022

<b>REVISION DATE:</b>	<b>Version</b>
2022/03/22	Original Draft Scoping Report

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**Invitation to comment on the Draft Scoping Report**

I&APs are invited to a 30-day commenting period from 24 March 2022 to 25 April 2022 (as the last day for commenting). This draft Scoping report will be available for Public Viewing and Commenting at the following localities:



- 1) Electronic version available for download at <http://www.emassistance.co.za/index.php/public-documents>

Hard copies:

- 2) **Brakpan Library**

Cnr Elliott and Escombe Avenue, Brakpan, 1541 (26°13'50.43"S 28°22'1.87"E); and

- 3) **Tsakane Customer Care Centre**

Nzima Street, Tsakane, Brakpan, 1548 (26°20'47.22"S 28°22'25.16"E)

Kindly direct any comments or queries regarding the draft scoping report in writing to EnviroRoots (Pty) Ltd at:

**PUBLIC PARTICIPATION CONSULTANT**

EnviroRoots (Pty) Ltd

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NB Note: This process is a PUBLIC PROCESS. All comments and/or questions received from I&APs on this process is considered public knowledge. In accordance with the Environmental Impact Assessment Regulations, EnviroRoots (Pty) Ltd will not keep any information of this nature confidential and will submit all comments and/or questions received to the Regulatory Authority in a verbatim manner.

This Public Participation Process is conducted in accordance with Section 11(1)(c) of the Protection of Personal Information Act, 2013 (Act No. 4 of 2013), which allows for the processing of personal information if processing complies with an obligation imposed by law on the responsible party and in accordance with Section 11(1)(f) of the Act which allows for the processing of personal information if processing is necessary for pursuing the legitimate interests of the responsible party or of a third party to whom the information is supplied.

A Public Meeting will take place during the public review period (details below):

Date: Wednesday, 30th March 2022

Time: 10h00 am to 11h00 am

Venue: Wosom City - Light Ark Church on Vlakfontein Road, Vulcania, Brakpan

Coordinates: 26°17'36.69"S 28°22'19.80"E

Details have been communicated via a letter/ notification to registered I&APs (dated 18 March and 23 March 2022).



## EXECUTIVE SUMMARY

Environmental Management Assistance (Pty) Ltd has been appointed as the independent Environmental Assessment Practitioner (EAP) to manage the Scoping and Environmental Impact Reporting (S&EIR) process for the proposed Solar Photovoltaic (PV) Plant to Generate Up To 40 MW of Energy: Phase 2 (proposed project), Brakpan, City of Ekurhuleni Metropolitan Municipality, Gauteng Province (DMRE REF: GP158MREA). The proposed Project Site is located on Ergo Mining owned land adjacent to the Withok Estates Agricultural Holdings area of Brakpan within the City of Ekurhuleni Metropolitan Municipality, Gauteng Province.

Tshedza 3 Investments (Pty) Ltd proposes to construct the PV facility capable of generating up to 40 MW, as assessed through this draft scoping report. The aim of the proposed project is to add onto the approved Phase 1 project (19.9 MW PV, substation, 100MWh battery energy storage system (BESS), and 11km of 22kV overhead powerlines) to generate up to 59.9MW of energy in total to sustainably supply the existing Ergo Mining Brakpan Plant and the Brakpan/Withok Tailings Dam facility with clean and stable electricity during grid curtailments and outages through embedded generation. It is intended that excess energy produced by the solar energy facility (SEF) will be fed back into the grid. The mine can therefore contribute toward alleviating the current pressure on the Eskom grid through the construction of the proposed SEFs.

The proposed project triggers an application for Environmental Authorisation and is subject to a Scoping and Environmental Impact Assessment Process in terms of the National Environmental Management Act (107 of 1998) (NEMA):

- 1) GN R. 982: Independent EAP selected to ensure compliance with EIA procedures.
- 2) GN R. 983, 984 and 985: A Scoping report followed by an Impact Assessment report, both of which is to undergo public participation submitted to the DMRE for approval and issuance of an Environmental Authorisation (EA).

The environmental authorisation in terms of NEMA, will be applied for at the Gauteng DMRE. The WUL authorisation in respect of the NWA will be applied for from the Department of Water and Sanitation (DWS) in Gauteng. The proposed development will require a Water Use License (WUL) by means of a Water Use License Application (WULA) in terms of Section 40 of the National Water Act (NWA), 1998 (Act No. 36 of 1998) or Registration under a General Authorisation in terms of Section 39 of the NWA for water uses listed under Section 21 of the Act. The following water uses will be applied for:

- Section 21(a) taking water from a water resource;
- Section 21(c) impeding or diverting the flow of water in a watercourse; and
- Section 21(i) altering the bed, banks, course or characteristics of a watercourse.



The Phase 2 project is associated with the following key activities:

Activity	Description
<b>PV panels</b>	<ul style="list-style-type: none"> <li>• Design capacity: 40 MW</li> <li>• PV Panel dimensions: 2.1m x 1.1 m</li> <li>• PV Panel height: 1.2 - 1.6m above ground level</li> <li>• Footprint: To be confirmed following Scoping (anticipated to be 80- 100ha)</li> </ul>
<b>Substations and electrical systems</b>	Shared use of approved phase 1 PV plant
<b>Battery storage</b>	Not applicable: will feed into the Phase 1 containerized 100MWh battery storage system
<b>Overhead power line</b>	<ul style="list-style-type: none"> <li>• Will feed into the Phase 1: 22 kV overhead transmission lines where required – only in abnormal circumstances i.e. river crossings, etc.</li> <li>• New &lt;22kV overhead transmission line requirements to be determined by design engineer in impact assessment phase</li> </ul>
<b>Access and security services</b>	<ul style="list-style-type: none"> <li>• Upgrade of existing access roads or construction of new internal and external roads to the PV site with crusher run or similar materials (not paved)</li> <li>• Low water bridge as a river crossing to access northern areas may be required with a pole height of up to 1.3m (to be determined and assessed at impact assessment phase)</li> <li>• Appropriate lighting, access control with guard house and fencing around the PV site</li> </ul>
<b>Auxiliary services</b>	<p>Same as proposed for Phase 1, namely:</p> <ul style="list-style-type: none"> <li>• Operational power supply and use -from existing Ergo Mining operations and onsite diesel generators (i.e. Eskom, existing)</li> <li>• Water supply and use from existing Ergo Mining operations transported via tankers to site (i.e., municipal, existing)</li> <li>• Waste management (private, existing)</li> </ul>



## Alternatives considered

The location and technology proposed in the Phase 2 Solar Energy Facility (SEF) is directly linked to the location of the previously assessed Phase 1 SEF, i.e. 19.9MW Photovoltaic facility to feed into the Ergo mining works and Ergo tailings dam where an off grid energy supply is needed as per the Ergo energy needs.

Therefore, the only alternatives that will be considered as part of this scoping report is the:

- layout alternatives of the project related infrastructure, that will be implemented to allow for the expansion of the approved Phase 1 SEF, in a phased approach, as well as
- property alternatives.

Engineering details associated with the layout alternatives are being refined and will be reported on in full detail during the impact assessment phase where specialists will ground truth the sensitivities identified through this scoping phase, to finalise designs.

## Summary of the key findings of the Scoping Phase

The following includes the key findings and impact statements from the specialist scoping studies undertaken as part of this report:

<p><b>Flora Terrestrial biodiversity:</b></p>	<p>Due to the largely modified and secondary nature of the vegetation, the proposed development will have a limited impact on sensitive vegetation. However, the degraded rocky grassland and moist grassland should be investigated as these areas could provide suitable habitat to plant species of conservation concern.</p>
<p><b>Fauna Terrestrial biodiversity:</b></p>	<p>The only significant desktop features included the surface water features, CBAs and ESAs, largely associated with the streams and adjacent areas. Most of these areas have been incorporated into the Restricted Areas (Figure 49), along with undesignated undisturbed areas; areas that appear to have not been historically cultivated or impacted by mine infrastructure and may have experienced only superficial impacts. A few desktop ecological features have been included within the allowable development area (Figure 49), as they have little value in terms of habitat provision or ecological connectivity for terrestrial fauna.</p> <p>As the Phase 2 areas incorporate more sensitive and less disturbed habitat units, the area is more likely to support TOP species / SCCs, although these are still expected to be fairly limited</p>



	<p>on site due to general anthropogenic activity in and around the general area. Most are expected to traverse or forage in the area; the Restricted Areas (Figure 49), are most likely to host these species on a more permanent basis. Being mobile they can move away from the development once it commences, and return after activities are completed, as long as the Restricted Areas are maintained. Significant direct impacts to fauna species are therefore not anticipated, but must be actively managed.</p>
<b>Avifauna:</b>	<p>The high-level avifaunal assessment has identified at least four avifaunal habitats of varying sensitivities within the proposed study area. Despite anthropogenic impacts, mostly in the form of agricultural practices that have largely transformed the landscape resulting in a negative impact on avifaunal abundance, potentially sensitive habitat persists within the study area. The construction of the proposed Phase 2 PV SEF facility and its ancillary infrastructure will likely result in impacts of medium significance, which can be reduced through the application of mitigation measures. It is anticipated that sustainable development of the proposed Phase 2 PV SEF facility and grid connection can be achieved with acceptable levels of impact on the resident avifauna subject further specialist avifaunal impact assessment studies to be conducted as part of the EIA process in order to:</p> <ol style="list-style-type: none"> <li>1) Confirm avifaunal microhabitats within the proposed development area and assess these for their suitability to support Red List and non-Red List priority species, in terms of breeding, roosting and foraging;</li> <li>2) Describe the avifaunal communities (both Red List and non-Red List priority species) most likely to be impacted, based on data collected as part of a systematic and quantified data collection process.</li> </ol>
<b>Surface Water Assessment:</b>	<p>The hydrology of the region is characterised by a mixture of perennial and non-perennial watercourses. The site falls within the upper reaches of quaternary catchment C22C of which the primary watercourse is the Rietspruit River. Drainage at the site is generally in a south-westerly direction into a combination of non-perennial streams, dams, as well as formalised furrows and drainage canals as defined by the NGI's 1:50,000 topographical map sheets. These then flow into the Withokspruit and subsequently the Rietspruit River.</p>
<b>Wetland and Aquatic Impact Assessment:</b>	<p><b>Wetland Findings</b></p> <p>Four HGM units were delineated within the study area and 500m assessment buffer. These were classified as an unchannelled valley bottom wetland, a seep system, and a depression</p>





wetland, while a fourth HGM unit, a channelled valley bottom wetland, was delineated to the south of the study site but within the 500m assessment buffer.

Apart from the four natural HGM units delineated within the study site and 500m assessment area, a number of artificial wetlands, functional dams, discarded dams and seepage from dams were delineated. The 'wetlands' were delineated during phase 1 of the Ergo Gold PV project based on the presence of hydric characteristics of the soil, at the surface of the soil profile or within the first 10cm. Similar 'wetland' areas were identified during the examination of aerial imagery of the site, within and adjacent to areas that have been extensively modified by historic and current mining activities and the subsequent rehabilitation of these areas.

The four natural HGM units were assessed with regards to their health according to the Wet-Health methodology. HGM 1, the unchannelled valley bottom wetland, was classified as Seriously Modified (PES Category E), HGM 2, the seep system has been classified as Largely Modified (PES Category D), HGM 3, the depression system has been classified as Moderately Modified (PES Category C), and HGM 4, the channelled valley bottom wetland has been classified as Largely Modified (PES Category D).

### **Aquatic Findings**

In general, valley bottom wetlands and depressional systems such as was determined to be present within the study area are unlikely to support a diverse array of aquatic biota given the lack of diverse hydraulic habitat relative to true riverine reaches of watercourses. As such, only a limited acquired diversity of aquatic biota is expected to be associated with the wetlands present within the study area.

A total of four indigenous fish species and one alien fish species are expected to be associated with the larger study area. Such diversity may however be considered optimistic, and only limited fish diversity is expected to be associated with HGM 1 (if any), while no fish species are expected HGM 3.

Determination of the ecological state from an aquatic perspective is not considered suitable, and therefore reliance should be placed on that as determined from a wetland perspective. This is also applicable to the determination of the ecological importance and ecological sensitivity of the wetland systems.



<p><b>Soils, land capability and agricultural potential:</b></p>	<p>Utilising the soil information, climatic information, and topography, the study site was assessed in terms of the agricultural and land capability potential. The study site has been categorised into the Class III, Class IV, Class V, Class VI, and Class VIII categories. The Class III and Class IV category is classified in areas that contain the natural Mispah/Glenrosa and Hutton/Nkonkoni soils. Class III areas occupy 14.4% of the study site, while Class IV areas occupy 12.39% of the site. The Class V category is reserved for saturated soils and was thus mapped where the Stilfontein and Katspruit soils were identified or are likely to be identified. Class V areas occupy 29.1% of the site. The Grabouw or Physically Disturbed Anthrosol soils have been classified as Class VI areas. Class VI areas have severe restrictions to cropping and are therefore excluded from production under perennial vegetation. Class VI soils occupy 17.9% of the study site. The remaining Johannesburg and Witbank soils are categorised as Class VIII soils. These soils have been completely modified and are not productive for any agricultural activities. Current infrastructure is situated within these areas. The Class VIII areas occupy 26.3% of the study site.</p> <p>Overall, the study site can be considered to have a low agricultural potential with severe limitations to crop cultivation. The majority of the site is classified as Class V, Class VI, or Class VIII (73.3%). This is as a result of a combination of factors including the significant long term anthropogenic modifications to the soils of the entire study site, the presence of saturated horizons, and the use of the surrounding landscape for mining and urban activities.</p>
<p><b>Heritage:</b></p>	<p>The area is characterised by cultivation and mining activities from the 1940's onwards that altered the landscape. A grave site is indicated on the 1976 topographical map of the area (Figure 25) but not on subsequent or previous maps and it is not certain if the grave site still exists. Based on the desktop study sites dating to the following periods are known to occur in the study area:</p> <ul style="list-style-type: none"> <li>• Based on the SAHRA paleontological sensitivity map, the study area is indicated as of insignificant, low, moderate and high sensitivity and further studies will be required in the HIA phase.</li> <li>• The Stone Age;</li> <li>• Historical structures older than 60 years; and</li> <li>• Graves can be expected anywhere on the landscape.</li> </ul>



	<p>Every site is relevant to the Heritage Landscape, but it is anticipated that few sites in the study area could have conservation value. From a heritage viewpoint, the proposed project is viable and impacts to heritage resources can be successfully mitigated. This will however be confirmed through the Heritage Impact Assessment to be undertaken.</p>
<p><b>Visual:</b></p>	<p>The fact that some components of the proposed ERGO Mining Solar Energy (PV) Projects, Phase 2: 40MW may be visible does not necessarily imply a high visual impact. Sensitive visual receptors within (but not restricted to) a 3km buffer zone from the facility need to be identified and the severity of the visual impact assessed within the EIA phase of the project.</p> <p>It is recommended that additional spatial analyses be undertaken in order to create a visual impact index that will further aid in determining potential areas of visual impact. This exercise should be undertaken for the core PV Plant as well as for the ancillary infrastructure, as these structures (e.g. the substation, inverters and transformers) are envisaged to have varying levels of visual impact at a more localised scale. The site-specific issues (as mentioned earlier in the report) and potential sensitive visual receptors should be measured against this visual impact index and be addressed individually in terms of nature, extent, duration, probability, severity and significance of visual impact.</p> <p>This recommended work must be undertaken during the Environmental Impact Assessment (EIA) Phase of reporting for this proposed project.</p>
<p><b>Socio-economic:</b></p>	<p>The proposed project site is located within an area that comprises a mix of agricultural small holdings and mining activities. The scoping assessment did not identify any immediate fatal flaws in terms of potential socio-economic impacts. There is, however, the potential for certain residential properties, specifically within Withok Estates and suburbs of Brakpan (namely Minnebron) to be negatively affected by the proposed project in terms of change in visual landscape, nature of the land use and sense of place due to the construction and operation of the proposed PV facility. It is therefore recommended that a detailed socio-economic impact assessment study should be undertaken during the EIA phase.</p>

**EAP Summary:** The proposed Power Project is seen to have a LOW to HIGH impact on the receiving environment and LOW to MODERATE if mitigation measures are implemented. Cumulative Impacts could lead to higher impact levels and will be assessed and significance rating measured at the impact assessment phase. Mitigation measures will be presented



at the impact assessment phase as well as good practice guidelines and community engagement. Based on an understanding of the proposed solar PV project, the scoping assessment and desktop sensitivity of the affected environment, EMA is confident that the significance of anticipated impacts can be mitigated to an acceptable level during the impact assessment phase. EMA is therefore of the opinion that the proposed Phase 2 Ergo Solar Energy Facility and associated infrastructure should proceed to the impact assessment phase and with appropriate mitigation measures proposed through the EMPr.

The submission of this report is in compliance with the EIA regulations stipulated in GN R. 982 of the National Environmental Management Act, 1998 (Act no. 107 of 1998) as amended, and The Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).



## IMPORTANT NOTICE

In terms of the Mineral and Petroleum Resources Development Act (Act 28 of 2002 as amended), the Minister must grant a prospecting or mining right if among others the mining “will not result in unacceptable pollution, ecological degradation or damage to the environment”.

Unless an Environmental Authorisation can be granted following the evaluation of an Environmental Impact Assessment and an Environmental Management Programme report in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA), it cannot be concluded that the said activities will not result in unacceptable pollution, ecological degradation or damage to the environment.

In terms of section 16(3)(b) of the EIA Regulations, 2014, any report submitted as part of an application must be prepared in a format that may be determined by the Competent Authority and in terms of section 17 (1) (c) the competent Authority must check whether the application has taken into account any minimum requirements applicable or instructions or guidance provided by the competent authority to the submission of applications.

**It is therefore an instruction that** the prescribed reports required in respect of applications for an environmental authorisation for listed activities triggered by an application for a right or a permit are submitted in the exact format of, and provide all the information required in terms of, this template. Furthermore please be advised that failure to submit the information required in the format provided in this template will be regarded as a failure to meet the requirements of the Regulation and will lead to the Environmental Authorisation being refused.

**It is furthermore an instruction that** the Environmental Assessment Practitioner must process and interpret his/her research and analysis and use the findings thereof to compile the information required herein. (Unprocessed supporting information may be attached as appendices). The EAP must ensure that the information required is placed correctly in the relevant sections of the Report, in the order, and under the provided headings as set out below, and ensure that the report is not cluttered with un-interpreted information and that it unambiguously represents the interpretation of the applicant.



## OBJECTIVE OF THE SCOPING PROCESS

The objective of the scoping process is to, through a consultative process—

- 1) identify the relevant policies and legislation relevant to the activity;
- 2) motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
- 3) identify and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking process;
- 4) identify and confirm the preferred site, through a detailed site selection process, which includes an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment;
- 5) identify the key issues to be addressed in the assessment phase;
- 6) 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 through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site; and
- 7) 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.



## SCOPING REPORT

### 1) Contact Person and correspondence address

The aim of an Independent Power Producer (IPP) is to generate electricity, and in line with best practice, the IPP must strive to do so in a sustainable manner to avoid co-lateral environmental damage. As such, the proposed project will require the services of an independent Environmental Assessment Practitioner and SACNASP registered professional to undertake a Scoping and Environmental Impact Reporting (S&EIR) process associated with the application for environmental authorisation as required for the proposed 40MW Solar Energy Facility (SEF) on Ergo Mining owned land triggering associated listed activities in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) as amended (NEMA). The application is to be submitted to the National Department of Mineral and Resources and Energy (DMRE) on behalf of Tshedza 3 Investments (Pty) Ltd (applicant) for the proposed Solar Photovoltaic (PV) Plant to Generate up to 40 MW of Energy in Brakpan, City of Ekurhuleni Metropolitan Municipality, Gauteng Province (DMRE REF: GP158MREA) (hereafter referred to as "Phase 2" or the "proposed project").

The International Finance Corporation (IFC) also recommends that an Environmental Impact Assessment (EIA) process is undertaken by an experienced Independent Environmental Assessment Practitioner (EAP) and specialists. This is in line with EIA regulations section 13, which further stipulates that an EAP and specialists must be knowledgeable of NEMA and the EIA regulations and guidelines required to undertake a specific activity to ensure compliance as such. The EAP must run a transparent process and disclose all findings of the study to the proponent, registered interested and affected parties (I&APs) and the Competent Authority (CA) of the proposed development.

Tshedza 3 Investments (Pty) Ltd appointed Environmental Management Assistance (Pty) Ltd as an independent EAP to undertake a S&EIR process for the proposed project. Contact details are as follows:

#### a) Details of the EAP

<b>Name of the Practitioner:</b>	Alicia Govender
<b>Contact person:</b>	083 784 0460
<b>Tel No.:</b>	086 226 7324
<b>Fax No. :</b>	alicia@hunadigroup.co.za
<b>E-mail address:</b>	Alicia Govender

#### b) Expertise of the EAP

A detailed portfolio of the team members associated with the management and compilation of reports presented for this project can be found in **Appendix B**.



### c) The qualifications of the EAP

(With evidence attached as **Appendix B**)

The EAP project team consists of Deon Esterhuizen (Review and sign off) and Alicia Govender (Senior Environmental Assessment Practitioner).

Mr. Deon Esterhuizen is a certified Professional Natural Scientist (Registration Number: 400154/09) with a MSc in Environmental Management.

Mrs. Alicia Govender holds a master's degree (LLM) in Environmental Law.

Table 1: Names, details and expertise of EAPs

Names of EAP	Education Qualifications	Professional affiliations	Relevant experience (years)
Mr. Deon Esterhuizen	MSc in Environmental Management	Professional Natural Scientist (Registration Number: 400154/09)	29
Mrs. Alicia Govender	LLM Environmental Law	EAPASA registration in progress	14

### d) Summary of the EAP's past experience.

(Attach the EAP's curriculum vitae as **Appendix B**)

**Environmental Management Assistance (Pty) Ltd** (hereafter referred to as "EMA") (Registration No 2013/154475/07) is a specialist environmental consulting company established in May 2013. The company benefits from the pooled resources, diverse skills and experience in the fields of environmental and renewable energy held by its team (**refer to Appendix A for the Company profile**). EMA was established for the purpose of providing a holistic and professional environmental management assistance and service to public and private sector clients.

**Mr. Deon Esterhuizen** has over 29 years of experience in water related projects, which include water quality management, registration and licencing of water users, completion of Environmental Impact Assessments in support of the issuing of Record of Decisions/ Environmental Authorisations, development of a management guide for domestic water use, project management, and implementation of the Resource Directed Measures as required by the Department of Water and Sanitation (DWS).

**Mrs. Alicia Govender** is a senior EAP having gained extensive experience in the last 14 years, specialising in Environmental Management. She started as an EAP in 2008 where she led a number of environmental assessments, with involvement in





public participation and Water Use Licence Applications. Other areas of expertise include Waste Management, Project Management as well as Business Development of renewable energy projects in South Africa and other African Countries. Having been especially involved in solar developments over the last 5 years, Alicia has a focussed interest in renewable energy projects (EAPASA registration in progress).

A detailed description of all past experiences is available in **Appendix B**.

**e) Declaration of Independence:**

Tshedza 3 Investments (Pty) Ltd appointed EMA as an independent specialist consultant to undertake the environmental impact assessment process for the proposed project. Neither EMA nor any of its EAPs will benefit from the outcome of the project decision-making, except for reasonable compensation for professional services provided (Refer to Appendix O).

**f) Appointed Specialists**

Specialists that form part of the S&EIR project team are indicated in Table 2.

Table 2: Specialists form part of the S&EIR project team:

Specialist Aspect	Name of Specialist	Appendix to report
Public Participation	Chantel Muller	Appendix D
Flora Terrestrial biodiversity Impact Assessment	Barbara Kasl	Appendix E
Fauna Terrestrial biodiversity Impact Assessment	Antoinette Eyssell-Knox	Appendix F
Avifauna Impact Assessment	Megan Diamond	Appendix G
Surface Water Assessment and Strom water management Impact Assessment	Luke Wiles	Appendix H
Wetland Impact Assessment and Aquatic Impact Assessment	Rowena Harrison and Byron Grant	Appendix I
Soils, land capability and agricultural potential Impact Assessment	Rowena Harrison	Appendix J
Heritage Impact Assessment	Jaco Van der Walt	Appendix K



Visual Impact Assessment	Lourens du Plessis	Appendix L
Socio-economic Impact Assessment	Danielle Saunderson	Appendix M

## 2) Description of the property

The proposed Project Site is located on Ergo Mining owned land adjacent to the Withok Estates Agricultural Holdings in the area of Brakpan within the City of Ekurhuleni Metropolitan Municipality, Gauteng Province. The site is located approximately 6km south of the Brakpan central business district.

Table 3: Description of the property

<b>Farm Name:</b>	Farm Withok 131 IR Portion 9  Farm Witpoortje 117 IR Portion 183 Portion 272 Portion 283  Withok Estates Agricultural Holdings Holdings 203 Holdings 204 Holdings 205 Holdings 206 Holdings 207 Holdings 208 Holdings 240 Holdings 241 Holdings 242 Holdings 243 Holdings 244 Holdings 245 Holdings 296 Holdings 297 Holdings 298
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	Holdings 299 Holdings 300 Holdings 301 Holdings 302 Holdings 303 Holdings 348 Holdings 349 Holdings 350 Holdings 351 Holdings 352 Holdings 353 Holdings 354 Holdings 355
<b>Application area (Ha) :</b>	~557ha
<b>Magisterial district:</b>	City of Ekurhuleni Metropolitan Municipality
<b>Distance and direction from nearest town:</b>	The site is approximately 5km south of Brakpan and approximately 9km south-west of Springs, Gauteng Province
<b>21 digit Surveyor General Code for each farm portion:</b>	FARM PORTIONS  WITHOK 131 IR T0IR0000000013100009  WITPOORTJE 117 IR T0IR0000000011700183 T0IR0000000011700272 T0IR0000000011700283  WITHOK ESTATES (Agricultural Holdings) T0IR07370000020300000 T0IR07370000020400000 T0IR07370000020500000 T0IR07370000020600000 T0IR07370000020700000 T0IR07370000020800000 T0IR07370000024000000



	T0IR07370000024100000
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	T0IR07370000029700000
	T0IR07370000029800000
	T0IR07370000029900000
	T0IR07370000030000000
	T0IR07370000030100000
	T0IR07370000030200000
	T0IR07370000030300000
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	T0IR07370000035000000
	T0IR07370000035100000
	T0IR07370000035200000
	T0IR07370000035300000
	T0IR07370000035400000
	T0IR07370000035500000

**a) Locality map**

*(show nearest town, scale not smaller than 1:250000 attached as **Appendix C**)*

Figure 1 indicates the locality of the proposed activity (included in **Appendix C**).

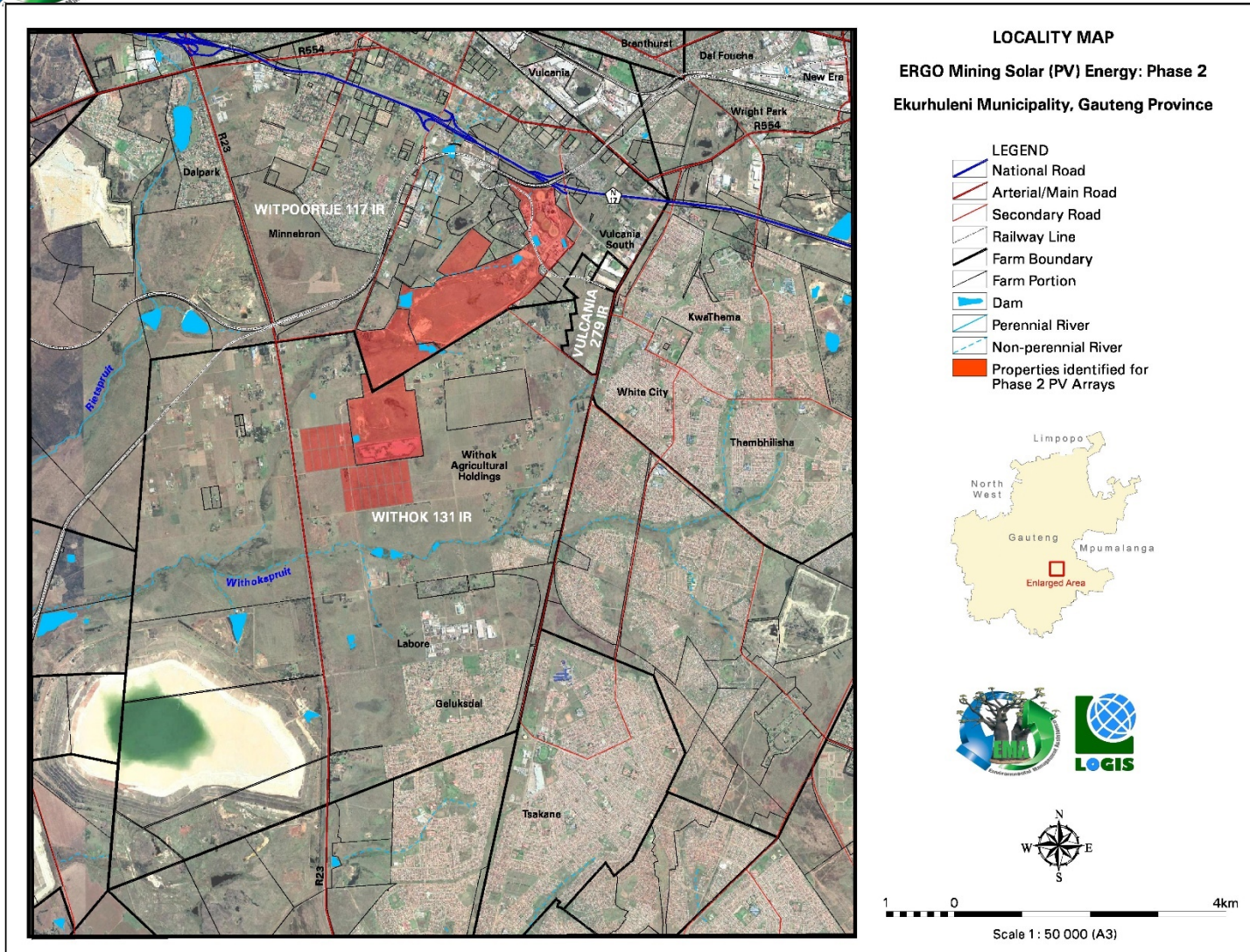


Figure 1: Locality map of the proposed site





### 3) Description of the scope of the proposed overall activity

*(Provide a plan drawn to scale acceptable to the competent authority but not less than 1: 10 000 that shows the location, and area (hectares) of all the aforesaid main and listed activities, and infrastructure to be placed on site and attach as **Appendix C**)*

Tshedza 3 Investments (Pty) Ltd proposes to construct a PV facility capable of generating up to 40 MW, as assessed through this scoping report. The aim of the proposed project is to add onto the approved Phase 1 project (19.9 MW PV, substation, 100MWh battery energy storage system (BESS), and 11km of 22kV overhead powerlines) to generate up to 59.9MW of energy in total to sustainably supply the existing Ergo Mining Brakpan Plant and the Brakpan/Withok Tailings Dam facility with clean and stable electricity during grid curtailments and outages through embedded generation. It is intended that excess energy produced by the solar energy facility (SEF) will be fed back into the grid. The mine can therefore contribute toward alleviating the current pressure on the Eskom grid through the construction of the proposed SEFs.

The proposed project will take approximately twelve to fifteen months to construct, and the operational lifespan of the facility is estimated at twenty to twenty-five years (up to 30 years), which could be renewed every five years. Functionality of the proposed facility could potentially result in a thirty-year operational lifespan. It must be noted that the proposed Phase 2 40MW PV plant is to be built in addition to the approved Phase 1 (19.9MW), and involves the addition of a 40MW solar field, i.e. extension of the underground MV cabling; inverters and minisubs, solar panels and structures, roads and storm water management.

The proposed project entails the following infrastructure:

- 1) Solar PV array footprint comprising of:
  - a) PV panels with an export capacity of up to 40MW (footprint to be determined in Impact Assessment Phase);
  - b) Single axis mounting structures to support the PV panels. The PV panels will be mounted at an appropriate height (approximately 1.2m – 1.6m Above Ground Level (AGL)) so as to receive the maximum amount of solar radiation without the buffeting effects of the wind. The angle of the panel moves and tracks the sun for the maximum amount of solar radiation to be collected throughout the day;
- 2) Inverter and transformer stations to collect the energy generated from the PV panels and convert the electricity from direct to alternating current which can be evacuated into the electricity distribution grid;
- 3) Cabling between the project components (usually underground, but dependent on design- to be determined in Impact Assessment Phase);
- 4) Access roads, internal distribution roads. Internal roads will be built by grading, compacting, and covering the roads with a suitable aggregate. Tar or asphalt will not be used inside the PV plant. (road lengths to be determined in Impact Assessment phase based on design of the proposed PV facility);
- 5) Fencing around the development footprint. The plant area will be protected by a single wire-mesh fence of 2.6-meter-high,(barbed wire or similar on top running all along the site perimeter to be considered). Access to the site will be through the approved phase 1 motorized double gate. If required, two such access points may be provided;



- 6) The approved phase 1 component 22kV grid connection infrastructure will be used;
- 7) The approved phase 1 component Admin block will be used by this additional (phase 2) 40MW proposal;
- 8) Additional infrastructure includes:
  - a) Power during construction to be supplied by a diesel generator under abnormal circumstances. Most likely grid power will be supplied to the site during construction from the approved Phase 1 project component; the contractor will pay for such power.
  - b) Internet infrastructure from the phase 1 component within the site will be expanded to the new phase 2 components. This infrastructure will become permanent for real time remote monitoring of operations.
  - c) The phase 1 component Water filtration and reticulation system (not resulting in brine disposal requirements) is available for cleaning of the additional modules.
  - d) During construction temporary site offices/ workshops will be erected.
  - e) During construction temporary storage and laydown areas will be erected and secured, i.e., a hazardous storage facility.
- 9) Upon completion of construction the site will be rehabilitated so that soil erosion is mitigated.

Table 4: Overview of key project activities

Activity	Description
<b>PV panels</b>	<ul style="list-style-type: none"> <li>• Design capacity: 40 MW</li> <li>• PV Panel dimensions: 2.1m x 1.1 m</li> <li>• PV Panel height: 1.2 - 1.6m above ground level</li> <li>• Footprint: To be confirmed following Scoping (anticipated to be 80- 100ha)</li> </ul>
<b>Substations and electrical systems</b>	Shared use of approved phase 1 PV plant
<b>Battery storage</b>	Not applicable: will feed into the Phase 1 containerized 100MWh battery storage system
<b>Overhead power line</b>	<ul style="list-style-type: none"> <li>• Will feed into the Phase 1: 22 kV overhead transmission lines where required – only in abnormal circumstances i.e. river crossings, etc.</li> <li>• New &lt;22kV overhead transmission line requirements to be determined by design engineer in impact assessment phase</li> </ul>
<b>Access and security services</b>	<ul style="list-style-type: none"> <li>• Upgrade of existing access roads or construction of new internal and external roads to the PV site with crusher run or similar materials (not paved)</li> </ul>



	<ul style="list-style-type: none"> <li>• Low water bridge as a river crossing to access northern areas may be required with a pole height of up to 1.3m (to be determined and assessed at impact assessment phase)</li> <li>• Appropriate lighting, access control with guard house and fencing around the PV site</li> </ul>
<p><b>Auxiliary services</b></p>	<p>Same as proposed for Phase 1, namely:</p> <ul style="list-style-type: none"> <li>• Operational power supply and use -from existing Ergo Mining operations and onsite diesel generators (i.e. Eskom, existing)</li> <li>• Water supply and use from existing Ergo Mining operations transported via tankers to site (i.e., municipal, existing)</li> <li>• Waste management (private, existing)</li> </ul>

### Lightning Protection

A lightning protection system will be required for coverage of the entire proposed project. A natural air termination system and a natural down-conductor system connected to the PV plant earthing protection system will form the lightning protection system. Lightning conductors will be mounted on the roof of the containers and on the transformer stations.

### Technology -PV

The proposed Ergo SEF will utilise a proven PV technology that has been tried and tested for over 20 years, and anticipates up to 90% efficiency up to the 25<sup>th</sup> year of operation. The Single Axis Tracking system is the preferred mounting structure solution (Refer to Figure 2 and Figure 3). The design allows for each PV table to consist of 3 rows of panels to facilitate easy cleaning and maintenance of modules. Both the solar DC and AC cables will be hidden visually as a mitigation measure against theft. The DC cables will be strung along the mountings in wire trays to the DC junction boxes and the AC cables will be laid underground.

String inverters are proposed with the added benefit of negligible down time losses, easier maintenance, and use of much less land / concrete slabs, as they will be mounted onto the shady side of the PV tables.





Figure 2: Single Axis Tracking for Panel Mounting

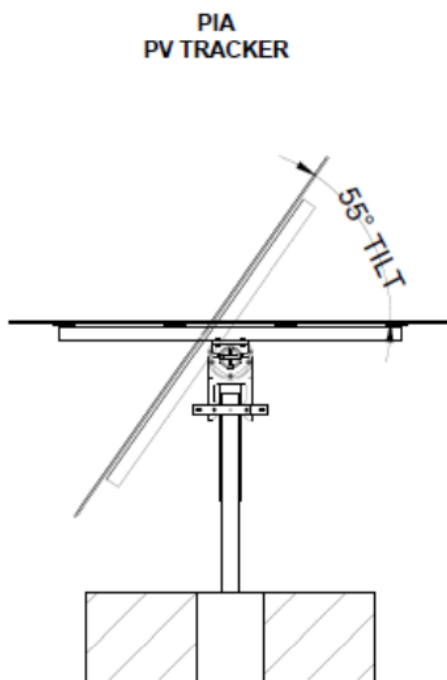


Figure 3: Detail of the proposed PV tracking system



A detailed scope on the proposed activity, site layout plan indicating the location, the area (hectares) of all the main listed activities, and infrastructures to be placed on the associated properties will be provided in the impact assessment phase and will be defined based on site sensitivities of this scoping assessment.

**a) Listed and specified activities**

Table 5: Listed and specified activities associated to the proposed mining operation

<p><b>NAME OF ACTIVITY</b> (All activities including activities not listed) (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)</p>	<p><b>Aerial extent of the Activity</b>  <b>Ha or m<sup>2</sup></b></p>	<p><b>LISTED ACTIVITY</b>  <b>Mark with an X where applicable or affected.</b></p>	<p><b>APPLICABLE LISTING NOTICE</b>  (GNR 544, GNR 545 or GNR 546)/NOT LISTED</p>
<p>Construction of a Photovoltaic (PV) facility and ancillary infrastructure to generate up to 40MW Peak of electricity to operate mining works in surrounding areas on disturbed mining owned land.</p> <p>The proposed project entails the construction of a Solar PV Energy Facility. Based on the screening study and the biodiversity specialist reports, a large portion of the proposed site has extensively been disturbed from mining operations and tailings management. It should be noted that the site falls within an urban area.</p> <p>Proposed infrastructure could potentially be developed within 32m of a watercourse. A Water Use Licence will be applied for.</p> <p>Electricity is required for the processing of minerals through mining operations for the mine to</p>	<p>80-100 ha</p>	<p>x</p>	<p><b>GN.R 983: (12)</b> The development of—</p> <p>(i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or</p> <p>(ii) infrastructure or structures with a physical footprint of 100 square metres or more;</p> <p>where such development occurs—</p> <p>(a) within a watercourse;</p> <p>(b) in front of a development setback; or</p> <p>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; —</p> <p><b>GN.R 983: (19)</b> The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse; ...</p>



<b>NAME OF ACTIVITY</b> <i>(All activities including activities not listed) (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)</i>	<b>Aerial extent of the Activity</b>  <b>Ha or m<sup>2</sup></b>	<b>LISTED ACTIVITY</b>  <b>Mark with an X where applicable or affected.</b>	<b>APPLICABLE LISTING NOTICE</b>  <i>(GNR 544, GNR 545 or GNR 546)/NOT LISTED</i>
<p>operate in a more carbon neutral capacity through the use of renewable energy.</p> <p>The proposed PV facility is expected to be decommissioned at the end of it's operational life, i.e. 20- 25years (up to 30 years).</p>			<p><b>GN.R 983: (26)</b> Residential, retail, recreational, tourism, commercial or institutional developments of 1 000 square metres or more, on land previously used for mining or heavy industrial purposes; — excluding —</p> <p>(i) where such land has been remediated in terms of part 8 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies; or</p> <p>(ii) where an environmental authorisation has been obtained for the decommissioning of such a mine or industry in terms of this Notice or any previous NEMA notice; or</p> <p>(iii) where a closure certificate has been issued in terms of section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) for such land.</p> <p><b>GN.R 983 (27)</b> The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for—</p> <p>(i)the undertaking of a linear activity; or</p> <p>(ii)maintenance purposes undertaken in accordance with a maintenance management plan.</p> <p><b>GN.R 984 (1)</b> The development of facilities or infrastructure for the generation of electricity from a</p>



<b>NAME OF ACTIVITY</b> <i>(All activities including activities not listed) (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)</i>	<b>Aerial extent of the Activity</b> <b>Ha or m<sup>2</sup></b>	<b>LISTED ACTIVITY</b>  <b>Mark with an X where applicable or affected.</b>	<b>APPLICABLE LISTING NOTICE</b>  <i>(GNR 544, GNR 545 or GNR 546)/NOT LISTED</i>
			<p>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 –</p> <p>(a) within an urban area; or</p> <p>(b) on existing infrastructure.</p> <p><b>GN.R 984 (15)</b> The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for –</p> <p>(i) the undertaking of a linear activity; or</p> <p>(ii) maintenance purposes undertaken in accordance with a maintenance management plan.</p> <p><b>GN.R 985 (10)</b> 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.</p>
<p>Access roads are required to gain access to the PV facility, but existing roads will be used where possible.</p>		<p>x</p>	<p><b>GN.R 983: (12)</b> The development of—</p> <p>(i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or</p> <p>(ii) infrastructure or structures with a physical footprint of 100 square metres or more;</p> <p>where such development occurs—</p>



<b>NAME OF ACTIVITY</b> <i>(All activities including activities not listed) (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)</i>	<b>Aerial extent of the Activity</b> <b>Ha or m<sup>2</sup></b>	<b>LISTED ACTIVITY</b> <b>Mark with an X where applicable or affected.</b>	<b>APPLICABLE LISTING NOTICE</b> <i>(GNR 544, GNR 545 or GNR 546)/NOT LISTED</i>
			<p>(a) within a watercourse;</p> <p>(b) in front of a development setback; or</p> <p>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; —</p> <p><b>GN.R 983: (19)</b> The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse; ...</p> <p><b>GN.R 983 (24)</b> The development of a road –</p> <p>(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</p> <p>(ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres;</p> <p>Does not potentially trigger a listed activity- to be further investigated in impact Assessment Phase, as</p> <ul style="list-style-type: none"> <li>- Site falls in an urban area</li> <li>- Road width anticipated to be limited to 6m (i.e. not wider than 8m)</li> <li>- Road access not fall within a protected area.</li> </ul>



NAME OF ACTIVITY (All activities including activities not listed) (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	Aerial extent of the Activity Ha or m <sup>2</sup>	LISTED ACTIVITY Mark with an X where applicable or affected.	APPLICABLE LISTING NOTICE (GNR 544, GNR 545 or GNR 546)/NOT LISTED
			<b>GN.R 985 (4)</b> The development of a road wider than 4 metres with a reserve less than 13,5 metres.

**b) Description of the activities to be undertaken**

*(Describe Methodology or technology to be employed, and for linear activity, a description of the route of the activity)*

A S & EIR process will be followed for the proposed project.

The two mining facilities i.e., Ergo Mining Brakpan Plant and the Brakpan/Withok Tailings Dam facility, are currently supplied with electricity by Eskom via an existing grid infrastructure. The proposed PV facility will generate electricity, to interface with the Eskom grid to supply the Ergo Mining Brakpan Plant and the Brakpan/Withok Tailings Facility, with the connection of 100MWh battery storage proposed from phase 1. The electricity generated is primarily intended to supply the Ergo Mining Brakpan Plant and the Brakpan/Withok Tailings Dam facility, and surplus electricity may be provided to other mines in the area.

The electricity generated from the proposed project footprint will be stepped up to 22kV at the solar field minisubs on the Ergo SEF side (19.9MW + 40 MW), to tie in with the approved phase 1 22kV Substation and overhead powerline transporting power to the Consumer Substation and export to the Eskom network via the Ergo Tailings Dam Substation. It is Ergo Mine’s intention to facilitate the appointment of an IPP to own, operate and manage the proposed phase 2 facility through a PPA with an option to also buy their (Ergo) investment in the phase 1 19.9MW facility if terms are favourable. This will be handled in accordance with required environmental and statutory permits.

The proposed project (Phase 2), a 40MW PV facility, is designed to tie in with the planned Phase 1 project, a 19.9MW PV facility, and forms part of Ergo Mine’s holistic energy plans to develop, own, and operate a total proposed ~60MW PV facility, which is to be developed in a phased approach (this report only undertakes an environmental assessment for phase 2. **Phase 1 has previously been assessed and approved through a separate Basic Assessment Process (DMRE REF: GP 30/5/1/2/2 (158) MR) in line with the Ergo’s energy requirements as follows:**





- 1) Phase 1 as assessed through a Basic Assessment Report encompasses the development of up to 19.9MW Ergo SEF with the containerised 100MWH Battery Power facility and the 22kV overhead power line connection.
- 2) Phase 2: up to 40 MW PV facility will be built on adjacent properties, modularly in 4 x 10 MW bundles. Phase 2, is currently being assessed through a separate EIA process with cumulative impacts taken into consideration, in accordance with the National Environmental Management Act 107 of 1998 (NEMA) and the Environmental Regulations 2014 (as amended).

### c) Policy and Legislative Context

This section will provide the detailed description of the policy and legislative context associated with the proposed PV Project (Phase 2: 40MW) (

Table 6).

Table 6: Detailed Policy and legislative context

<b>Applicable Legislation and Guidelines</b> (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 frameworks and instruments that are applicable to this activity and are to be considered in the assessment process);	<b>Reference Where Applied</b>  (i.e. where in this document has it been explained how the development complies with and responds to the legislation and policy context)
The Constitution of South Africa (Act no. 108 of 1996) Section 24	This entire Scoping report is prepared as part of the Environmental Authorisation application process under NEMA.  Refer to Socio Economic Impact Assessment (Appendix M).
Environmental Conservation Act (73 of 1989) (ECA)	This entire Scoping report is prepared as part of the Environmental Authorisation application process under NEMA.
Environmental Impact Assessment Regulations Listing Notice 1 of 2014 (GN 983 as amended in GN. 327) Listing Notice 2 of 2014 (GN 984 as amended in GN. 325) and Listing Notice 3 of 2014 (GN. 985 as amended in GN. 324) of GG 40772.  Activity 1 of Listing Notice 2 of 2014 (GN 984 as amended in GN. 325):	This entire Scoping report is prepared as part of the Environmental Authorisation application process under NEMA.



<b>Applicable Legislation and Guidelines</b>  (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 frameworks and instruments that are applicable to this activity and are to be considered in the assessment process);	<b>Reference Where Applied</b>  (i.e. where in this document has it been explained how the development complies with and responds to the legislation and policy context)
Activities relating to the generation of electricity from a renewable energy source of more than 20MW.	
National Environmental Management Act 107 of 1998 (NEMA)  Section 24- Environmental Authorisations	This scoping report is prepared as part of the Environmental Authorisation application process under NEMA.
Minerals and Petroleum Resources Development Act (28 of 2002) (MPRDA)	This entire scoping report is prepared as part of the Environmental Authorisation application process and is line with the Department of Mineral Resources and Energy (DMRE) scoping guideline.
South African National Roads Agency Limited and National Roads Act (7 of 1998)	Mitigation measures relating to the management of traffic impacts will be included in the EMPr of the Impact Assessment report
National Road Traffic Act (93 of 1996)	Mitigation measures relating to the management of traffic impacts will be included in the EMPr of the Impact Assessment report
The Infrastructure Development Act (23 of 2014)	Mitigation measures relating to the management of Infrastructure will be included in the EMPr of the Impact Assessment report
National Environmental Management: Air Quality Act 39 of 2004 (NEMAQA) <ul style="list-style-type: none"> <li>o GN 893: List of activities which result in atmospheric emissions</li> <li>o GN R. 827: National dust control regulations</li> <li>o GN R. 283: National atmospheric emissions reporting regulations</li> <li>o GN R. 1210: National ambient air quality standards</li> </ul>	Mitigation measures relating to the management of dust impacts will be included in the EMPr of the Impact Assessment report
Atmospheric Pollution Prevention Act (45 of 1965) <ul style="list-style-type: none"> <li>o GN R. 1651 - Control of noxious or offensive gasses emitted by vehicles</li> </ul>	Mitigation measures relating to the management of dust impacts will be included in the EMPr of the Impact Assessment report





<b>Applicable Legislation and Guidelines</b>  (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 frameworks and instruments that are applicable to this activity and are to be considered in the assessment process);	<b>Reference Where Applied</b>  (i.e. where in this document has it been explained how the development complies with and responds to the legislation and policy context)
National Environmental Management: Protected Areas Act (57 of 2003) (NEMPA)	No Protected Areas will be impacted. Refer to Appendix E for Flora Terrestrial Biodiversity Impact Assessment.  Refer to Section 8)a)of this scoping report.
National Environmental Management: Waste Act (59 of 2008) (NEMWA) <ul style="list-style-type: none"> <li>o GN R. 634 – classification of waste and plan of waste management</li> <li>o GN R. 632 - Regulations concerning the planning and management of residue stockpiles and deposits from prospecting, mining, exploration or production operation</li> <li>o GN R. 921 - Activities requiring a waste management licence (WML):</li> <li>o GN R. 633 - List of waste management activities that may be detrimental to the ecosystem.</li> <li>o GN R. 625 - National waste information regulations based on those classified in GN R.633.</li> <li>o GN R. 635 - National standards for the assessment of waste for designated landfill disposal.</li> <li>o GN R. 636 - National norms and standards for disposal of waste to landfill.</li> <li>o Describing the general procedure for waste disposal to designated landfill.</li> <li>o GN R. 926 - National norms and standards for management and storage of waste.</li> </ul>	Mitigation measures relating to the management of dust impacts will be included in the EMPr of the Impact Assessment report.
National Water Act (36 of 1998) (NWA)	The proposed development will require a Water Use License (WUL) by means of a Water Use License Application (WULA) in terms of Section 40 of the National Water Act (NWA), 1998 (Act No. 36 of 1998) or Registration under a General Authorisation in terms of Section 39 of the NWA for water uses listed under Section 21 of the Act. The following water uses will be applied for:



<b>Applicable Legislation and Guidelines</b>  (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 frameworks and instruments that are applicable to this activity and are to be considered in the assessment process);	<b>Reference Where Applied</b>  (i.e. where in this document has it been explained how the development complies with and responds to the legislation and policy context)
	3) Section 21(a) taking water from a water resource; 4) Section 21(c) impeding or diverting the flow of water in a watercourse; and 5) Section 21(i) altering the bed, banks, course or characteristics of a watercourse.  The EMPr of the Impact Assessment report will provide detail on applicable water uses.
Mine Health and Safety Act (29 of 1996) o GN R. 1237 - Mines and works regulations o GN R. 911 - Health and safety regulations for mining	Mitigation measures relating to the management of dust impacts will be included in the EMPr of the Impact Assessment report.
Fertilizers, farm feeds, agricultural remedies and stock remedies Act (36 of 1947)	Mitigation measures relating to the management of dust impacts will be included in the EMPr of the Impact Assessment report.
Conservation of Agricultural Resources Act (43 of 1983) (CARA) o GN R. 1048 – Declaration of weeds and invasive plant species.	Agricultural potential is considered of low significance. (Refer to Appendix J (Soils land capability and Agricultural potential Impact Assessment), and Section 8)f) of this scoping report.
National Environmental Management: Biodiversity Act (10 of 2002) (NEMBA) Section 57 and 87. o GN R. 151 - Publication of lists of species that are threatened or protected, activities that are prohibited and exemption from restriction. o GN R. 152 - Threatened or Protected Species Regulations. o GN R. 1003 - Alien and Invasive Species Lists. o GN R. 1020 - Alien and Invasive Species Regulations.	Regulations published under NEMBA provides a list of protected flora and fauna species, according to NEMBA (GN R. 151 dated 23 February 2007, as amended in GN R. 1187 dated 14 December 2007) a protected species require a permit in order to be disturbed or destroyed.  This scoping report assess the impacts on flora and fauna species. No Protected species will be impacted. Refer to Appendix E for Flora Terrestrial Biodiversity Impact Assessment and Appendix F for Fauna Terrestrial Biodiversity Impact Assessment, and Sections 8)a) and 8)b)of this scoping report.
National Veld and Forest Fire Act (101 of 1998)	Will be included in the EMPr of the Impact Assessment report.



<b>Applicable Legislation and Guidelines</b>  (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 frameworks and instruments that are applicable to this activity and are to be considered in the assessment process);	<b>Reference Where Applied</b>  (i.e. where in this document has it been explained how the development complies with and responds to the legislation and policy context)
National Forest Act (84 of 1998) (NFA)	Refer to Flora Terrestrial Biodiversity Scoping Assessment (Appendix E).
National Heritage Resources Act (25 of 1999) (NHRA)	Section 7)k) and 8)g) describes of the cultural and heritage landscape. Refer to Appendix K (Heritage Impact Assessment Report).
Occupational Health and Safety Act (85 of 1993) o GN R.1248	Mitigation measures relating to the management of health and safety impacts will be included in the EMPr of the Impact Assessment report.
Hazardous Substances Act (15 of 1973)	Mitigation measures relating to the management of hazardous substances will be included in the EMPr of the Impact Assessment report.
SANS 10103 (Noise Regulations)	Mitigation measures relating to the management of noise impacts will be included in the EMPr of the Impact Assessment report.  Refer to Appendix N for specialist opinion.
Gauteng Nature Conservation Ordinance 12 of 1983, as amended by Gauteng General Law Amendment Act 4 of 2005	Refer to Section 8)a) and the Flora Terrestrial Biodiversity Impact Assessment (Appendix E).
Gauteng Transport Infrastructure Act (8 of 2001) o GN R. 219 - Gauteng Transport Infrastructure Regulations.	Will be included in the Traffic Impact Assessment as part of the Impact Assessment Report.

#### d) Need and desirability of the proposed activities

*(Motivate the need and desirability of the proposed development including the need and desirability of the activity in the context of the preferred location).*

Tshedza 3 Investments (Pty) Ltd proposes to construct the PV facility capable of generating up to 40 MW, as assessed through this scoping report. The aim of the proposed project is to add onto the approved Phase 1 project (19.9 MW PV, substation, 100MWh battery energy storage system (BESS), and 11km of 22kV overhead powerlines) to generate up to



59.9MW of energy in total to sustainably supply the existing Ergo Mining Brakpan Plant and the Brakpan/Withok Tailings Dam facility with clean and stable electricity during grid curtailments and outages through embedded generation. It is intended that excess energy produced by the SEF will be fed back into the grid. The mine can therefore contribute toward alleviating the current pressure on the Eskom grid through the construction of the proposed SEFs.<sup>1</sup>

The need and desirability of the proposed SEF is two-fold. The mine firstly needs a stable supply of energy to sustainably meet its electricity consumption demands through the proposal of generating clean energy, and secondly, by generating its own power, the mine can alleviate the current pressure on the Eskom grid.

The National Development Plan 2030 (NDP), implemented in 2013, identifies the need for various sectors to invest in a network of infrastructure that will support the country's medium- and long-term economic and social objectives (<https://ipp-projects.co.za>). Not surprisingly, energy infrastructure is a critical component of the NDP. Energy infrastructure plays an important role in fortifying economic activity and growth across the country and therefore the development of this infrastructure needs to be robust and extensive enough to meet industrial, commercial and household needs. South Africa's Renewable Energy potential is significant and together with a national commitment to transition to a low carbon economy, 26 030MW of the 2019 Integrated Resources Plan (IRP) target of newly generated power is expected to be from renewable energy sources (<https://ipp-projects.co.za>). The Renewable Energy Independent Power Producer (REIPP) Procurement Programme was established to stimulate the renewable industry by contributing to the 26 030MW target and to ensure socio-economic and environmentally sustainable growth within South Africa.

In order to demonstrate commitment to sustainable development and a pledge to move towards a cleaner energy future, Tshedza 3 Investments (Pty) Ltd proposes to construct a SEF in a phased approach to supply power to the existing Ergo Mining (Pty) Ltd Brakpan Plant and the Brakpan/Withok Tailings Facility. The identified site is centrally situated on Ergo Mining owned land between the Brakpan Plant and the Brakpan/Withok Tailings Facility within the City of Ekurhuleni Metropolitan Municipality, Gauteng Province. To date, renewable energy sources have been under-utilised within the Ekurhuleni Municipality and as a result, the Energy and Climate Change Strategy (ECCS) set a target of 10% of all energy used in Ekurhuleni to be supplied by clean energy resources by 2020. The two mining facilities i.e., Ergo Mining Brakpan Plant and the Brakpan/Withok Tailings Dam facility, are currently supplied with electricity by Eskom via the existing grid infrastructure. The proposed SEF will generate electricity (up to 40MW- also referred to as Phase 2) and integrate with the Phase 1 (up to 19.9MW as assessed through a separate Basic Assessment Process) of the project to utilise a 100MWh battery energy storage system. Phase 1 (19.9MW) and Phase 2 (40MW) will integrate with the existing Eskom grid to supply up to 59.9MW to the Ergo Mining Brakpan Plant and the Brakpan/Withok Tailings Facility. The generated electricity can be utilised to supplement the Eskom supply, and when there is an interruption to Eskom's supply in energy.

There is an abundance of flat terrain and high irradiation at the proposed site, making it an ideal site for a PV facility. The proposed SEF will be in line with the country's national commitment to a low carbon economy, through a 'just transition' from coal to Renewable Energy. Cleaner energy is necessary to meet Paris Agreement goals to contribute to a reduced carbon footprint for South Africa as well as on a global level. Favourable conditions allow for an untapped abundance of solar resources to be exploited, allowing for the generation of electricity to the Ergo mining works with the potential to supply surplus power to neighbouring mines.



The proposed SEF can also contribute towards the mine rehabilitation plan by utilising already disturbed mining land for the generation of renewable energy and in support toward a just energy transition to counter energy production of existing coal fired powered stations.

## **Energy Security**

The short to medium-term goal of the project is to obtain a secure energy supply for Ergo Mining to ensure operational capacity during grid supply curtailment and interruptions. Current operations are impacted by the ongoing load shedding and interruptions from Eskom. This is assumed to affect mining production, which could have broader implications for the business. Low or inconsistent production could result in lower output and other risks, such as damage to equipment (due to unscheduled shutdowns) and potentially large-scale issues that could lead to the closure of the facility.

The Ergo Plant has been in operation since 1977 (although closed between 2005 and 2007) and has a 25.2 Mt annual capacity. The mine currently has many employees at the plant and associated facilities. Hindered performance could result in loss of jobs and impact service providers and could potentially result in other losses in the supply chain on a local and regional scale. In addition, the broader economic revenue generated by the business could be affected, resulting in regional socio-economic impacts. The mine therefore must prioritise securing its own electricity in line with its energy requirements to reach its long-term operational goals.

## **Use of Renewable Energy and reduction in Greenhouse Gas Emissions**

The proposed use of alternative power for securing energy for the Ergo plant will first reduce the load on the Eskom grid to supply the region, and thus open up supply for other sectors that may require it. The selection of solar PV technology provides an opportunity for Ergo Mining to reduce its carbon footprint and potentially move towards meeting investment requirements in terms of integrated sustainability and environmental, social and governance targets.

The proposed phase 2 of the solar PV project, will add an additional 40MW of PV capacity to the currently approved Phase 1 (19.9MW) totalling an anticipated 59.9MW of energy production for the mining plant. This will enable Ergo Mining to supply energy back into the main grid and assist with meeting national requirements for a move towards renewable energy on a national level under the Integrated Resource Plan (IRP). The IRP and related strategies and initiatives provide broader socio-economic benefits in terms of reduced reliance on finite resources, reduced carbon and greenhouse gas emissions, and promotion of equity and equality.

Ergo's efforts in promoting renewable energy and energy efficiency projects contribute to the United Nations' (UN) Sustainable Development Goal (SDG) SDG 7 (*Ensure access to affordable, reliable, sustainable and modern energy for all*) and SDG 13 (*Take urgent action to combat climate change and its impacts*) and help drive South Africa towards carbon neutrality in the fight against the global climate crisis. Carbon neutrality refers to achieving net zero carbon dioxide emissions by balancing carbon output through promoting carbon offsets. Renewable energy is seen as a carbon offset, and the proposed SEF will replace energy resources that would normally generate carbon emissions.

## **Strategic Infrastructure Projects (SIP) projects**

The proposed Ergo SEF is in line with the Infrastructure Development Act (Act 23 of 2014) which prompts infrastructure investment in South Africa while unlocking the Energy SIPs i.e., SIP 8 (Green Energy in support of the South African



economy), SIP 9 (Electricity generation to support socio-economic development) and SIP 10 (Electricity transmission and distribution, thus playing a critical role in the South African economy inclusive of economic growth and employment creation, while assisting in stabilising national energy efficiencies.

#### **SIP 8: Green energy in support of the South African economy**

Support sustainable green energy initiatives on a national scale through a diverse range of clean energy options as envisaged in the Integrated Resource Plan (IRP2010) and support bio-fuel production facilities.

***The proposed SEF will have the capacity to generate and deliver up to 40MW of electricity to mining works in surrounding areas.***

#### **SIP 9: Electricity generation to support socioeconomic development**

Accelerate the construction of new electricity generation capacity in accordance with the IRP2010 to meet the needs of the economy and address historical imbalances. Monitor implementation of major projects such as new power stations: Medupi, Kusile and Ingula.

***The proposed PV facility will have the capacity to generate and deliver up to 40MW of electricity to mining works in surrounding areas.***

#### **SIP 10: Electricity transmission and distribution for all**

Expand the transmission and distribution network to address historical imbalances, provide access to electricity for all and support economic development.

Align the 10-year transmission plan, the services backlog, the national broadband roll-out and the freight rail line development to leverage off regulatory approvals, supply chain and project development capacity.

***Ancillary infrastructure (assessed through a Basic Assessment for phase 1) includes up to 11km of 22kV overhead power line to link the proposed SEF to existing substations which tie into the Eskom Grid.***

Long after the COVID-19 pandemic abates, the global warming issue will remain a world priority which will continue to hinder the delivery of electricity by ESKOM. The following points are also important to note in emphasising the need for the proposed 40MW SEF:

- 1) ESKOM is the state-owned power generator in SA - with 15 coal fired power stations (including newly build Medupi and Kusile) with an installed capacity of 45GW. It has 1 nuclear station (Koeberg) with a capacity of 1.9GW. These power stations currently provide around 95% of SA's electricity requirements.
- 2) ESKOM must de-commission up to 17.5GW of old coal fired power stations that are at, or nearing the end of life (including Hendrina, Camden, Grootvlei, Komati). New coal-based power stations will not replace them and instead, the focus is on an energy transition.
- 3) ESKOM cannot currently meet SA's energy requirements, and its average energy availability factor is down to 60%. This issue manifests in unpredictable power outages - known as load shedding - to maintain grid stability and match demand with supply.





- 4) Government has moved towards energy liberalization in the 2019 energy policy roadmap known as the Integrated Resource Plan 2019 (IRP), which sets out SA's energy mix until 2030. The IRP stipulates the sources from which SA may derive new energy.

The IRP is the overarching Energy Plan of SA and authorises new-builds comprising 14.6 GW of utility scale wind, 6 GW of utility-scale solar photovoltaic (PV), and about 5 GW of distributed self-generation by energy consumers, augmented by 3 GW of gas/diesel-fired power and 2 GW of battery storage.

#### **e) Period for which the environmental authorisation is required**

The expected operational phase of the proposed PV facility is expected to be 20-30 years or more.

#### **4) Description of the process followed to reach the proposed preferred site**

*(NB!! – This section is not about the impact assessment itself; It is about the determination of the specific site layout having taken into consideration (1) the comparison of the originally proposed site plan, the comparison of that plan with the plan of environmental features and current land uses, the issues raised by interested and affected parties, and the consideration of alternatives to the initially proposed site layout as a result.)*

During the EIA phase of the proposed Solar Energy Facility, alternatives in terms of the site layout will be determined as guided by the DEAT (2004) Criteria for determining Alternatives in EIA, Integrated Environmental Management, Information Series 11.

A comprehensive comparison of all potential impacts, both direct, indirect, and cumulative will be considered during the site selection process. Reasonable and feasible alternatives have been considered during the scoping phase to determine the most suitable alternatives, however, will be further assessed during the EIA phase. These alternatives will include the assessment of the following:

- 1) Location/ property alternatives;
- 2) Site layout alternatives;
- 3) Design alternatives.

The consideration of alternatives will consider significant constraints such as social, financial, and environmental issues during the evaluation of the alternatives. The preferred option will then be highlighted and presented to the stakeholders to ensure that their views are also taken into account. Once all the alternatives are identified, it may be necessary to focus on a few and to eliminate others. The elimination process will be well documented and substantiated, with an explanation of why certain alternatives are not being considered in detail. A detailed analysis of potential environmental impacts, as well as a consideration of technical and financial aspects, will be given for each of the remaining preferred alternatives during the EIA phase.



## ▪ **Details of all alternatives considered**

*(With reference to the site plan and the location of the individual activities on site, provide details of the alternatives considered with respect to: (a) the property on which or location where it is proposed to undertake the activity; (b) the type of activity to be undertaken; (c) the design or layout of the activity; (d) the technology to be used in the activity; (e) the operational aspects of the activity; and (f) the option of not implementing the activity.*

Based on preliminary assessment during the scoping phase, the sections to follow describes the alternatives that have been considered. These alternatives will be furthered assessed during the EIA phase.

### ▪ **(a) Property on which or location where it is proposed to undertake the activity**

The identified site is currently vacant, and the development is proposed on a portion of land that was previously two gold mine tailings facilities with a small portion on degraded natural areas. Portions of the land has been re-mined, and most of the site subsequently rehabilitated to its current naturally vegetated condition which now comprises mostly disturbed grassland. The properties are currently zoned as mining and agriculture, and a consent use application will be applied for in planning to accommodate the renewable energy structures. The properties are entirely owned by ERGO Mining Limited, falling within the existing approved Mining Right Area.

The proposed site is centrally situated between the Brakpan Plant and the Brakpan/Withok Tailings Facility. These two mining facilities are currently supplied with electricity by Eskom via the existing grid infrastructure. The ERGO Plant is currently fed from 88kV primary (Springs Industries and Snowdown) to 6.6 kV supply on the secondary side of the ESKOM substation. The Brakpan Tailings Dam facility is fed from a 10 MVA 88 kV primary to 11 kV supply on the secondary side of the ESKOM substation. The proposed SEF will generate electricity and tie into the approved battery storage system of Phase 1, to integrate with the existing Eskom grid to supply the Ergo Mining Brakpan Plant and the Brakpan/Withok Tailings Facility. The proposed centralized PV system shall interface and tie into the 6.6 kV network to connect into the ESKOM network but prohibit feedback while generating electricity when the site is being fed from the generator and energy storage system during grid curtailment and outages.

A large area of 557ha has been scoped as part of this scoping phase by the EAP and appointed specialists. Sensitive areas as highlighted as part of the scoping assessment will be further ground-truthed in the Impact Assessment phase to verify sensitivities (Figure 52). The proposed 40MW PV facility requires a total area of 80-100ha of land within the area scoped. Property alternatives are being considered at this stage, as a smaller area will be selected from the broader study area for the proposed PV layout.

A number of alternative properties regarding the placement of infrastructure are currently being considered during the scoping process and will be further investigated during the Impact Assessment phase. There are a number of alternate properties that will however not be developed; hence property alternatives are being considered within the area.





▪ **(b) Type of activity to be undertaken**

The development of a renewable energy power producing facility, a PV facility in particular is assessed through this scoping report. No activity alternatives are being considered in this S&EIR Process.

▪ **(c) Design or layout of the activity**

The proposed photovoltaic layout is dictated by solar irradiance economics and the layout will be designed for most economic energy “capture” per square meter. The layout is therefore designed to ensure highest energy “capturing” over the smallest area. Layout alternatives will be considered in the Impact Assessment Phase of the reporting process.

Several land portions are being considered for the proposed Phase 2 SEF facility. A site visit for the Layout alternatives will be undertaken by specialists to ground truth and verify site sensitivities in the impact assessment phase. A preferred layout for the establishment of the proposed Phase 2 SEF facility (based on the avoidance of site sensitives) will be identified, following a detailed assessment of the primary data collected during a proposed site survey of the proposed 40MW SEF development envelope.

▪ **(d) Technology to be used in the activity**

There are a few renewable energy technologies, of which the most common around the world are wind, solar (concentrated solar power (CSP) plants and photovoltaic (PV) power plants), hydro and geothermal. The City of Ekurhuleni has released a statement that “the department has identified Solar PV as the best available technology to invest in, in terms of renewable energy to augment the current status of increasing energy demand”<sup>1</sup> toward the target set by the Climate Change Strategy (as approved in September 2017) for there to be 25% clean energy mix and energy efficiency by 2030. On the energy supply side, studies were done to determine the most sustainable replacement of certain energy sources for transport, residential, commercial and industrial uses. Solar formed a critical part of the strategy to replace the energy supply and form a cleaner energy mix. The potentials for hydro and wind power is low in Gauteng, and not feasible and therefore the renewable energy replacement test concluded on solar. A PV solar energy facility is therefore proposed to supply power to the Ergo mining works and tailings facility.

No further alternatives in terms of the technology to be used have been considered during the scoping phase.

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1) <sup>1</sup> City of Ekurhuleni, 3 July 2020, “Renewable Energy is a Cost Effective Solution for the City” available at <https://www.ekurhuleni.gov.za/component/content/article/48-press-releases/service-delivery/5395-renewable-energy-is-a-cost-effective-solution-for-the-city.html> (Accessed 4 March 2022).



▪ **(e) Operational aspects of the activity**

No operational alternatives were considered during the scoping phase.

▪ **(f) The option of not implementing the activity**

Should the proposed SEF not receive an Environmental Authorisation, the Ergo mining works will continue to suffer operational losses, entailing job and economic losses as a negative impact on the socio-economic scale on regional and national levels. The IDP objective for green energy, as well as the loss of economic investment into the area will also be lost.

The “no-go” option for implementing the activity will be further assessed during the Impact Assessment phase.

## 5) Details of the Public Participation Process (PPP) followed

*(Describe the process undertaken to consult interested and affected parties including public meetings and one on one consultation. NB the affected parties must be specifically consulted regardless of whether or not they attended public meetings. (Information to be provided to affected parties must include sufficient detail of the intended operation to enable them to assess what impact the activities will have on them or on the use of their land.)*

An extensive public participation process has been undertaken to date by EnviroRoots (Pty) Ltd (Refer to Appendix D for the detailed Public participation specialist report).

### a) Identification of I&APs

The following groups were identified as potential Interested and Affected Parties (I&APs) by the public participation specialist:

- Relevant Government Departments;
- Relevant Municipal Representatives, including Ward Councillors;
- Landowners/Occupiers;
- Adjacent Landowners/Occupiers;
- Community Institutions and members;
- Relevant Institutional/Organisational Representatives;
- Land Claimants; and
- Governmental and Non-Governmental Organisations and Agencies.

To ensure that all potential I&APs were made aware of the project and had the opportunity to register and provide comments, the notification process was as thorough as possible. Registration will remain open throughout the Public Participation Process to allow I&APs to register and submit their input throughout. For the list of identified I&APs refer to Appendix 1 of Appendix D.



## b) Notification of I&APs

### • Site Notices

To inform surrounding and immediate community members, landowners, occupiers, workers and passers-by of the proposed project and to invite registrations and comments, four (4) A2 notices were erected at visible and accessible localities throughout the study area on 27 November 2021. These notices were strategically erected along access routes throughout the study area and are summarised in Table 7 below. Photographic evidence of the site notices erected is attached as Appendix 2 of Appendix D. All I&APs who registered in response to the site notices placed, were directly informed of the correction of the applicant's name for the purpose of the application process on 06 January 2022 via their preferred method of communication.

Table 7: Locality of Site Notices Placed

Date	Number	Coordinates	Placement
27/11/2021	Site Notice 01	26°16'57.41"S 28°22'39.43"E	Entrance Road to Ergo Plant
27/11/2021	Site Notice 02	26°17'28.98"S 28°22'5.71"E	Corner of 10 <sup>th</sup> Street and Reid Street at access to Withok Estates Agricultural Holdings
27/11/2021	Site Notice 03	26°19'1.96"S 28°21'1.77"E	Lukas Steyn Street near properties earmarked for development
27/11/2021	Site Notice 04	26°17'58.61"S 28°20'51.85"E	Corner of Floors Street and 18 <sup>th</sup> Street at access to Withok Estates Agricultural Holdings

### • Newspaper Advertisements

To inform a broad spectrum of individuals who might want to register as I&APs, a newspaper advertisement was placed in the Brakpan Herald newspaper on Friday, 26 November 2021 (Page 14). For proof of the advertisement placed, refer to Appendix 3 of Appendix D. All I&APs who registered in response to the advertisement placed, were directly informed of the correction of the applicant's name for the purpose of the application process on 06 January 2022 via their preferred method of communication.

### • Written Notifications

Identified I&APs were directly informed of the application processes to be followed by means of email, hand delivery, registered post, social media and text messages. Proof of written notifications sent is provided in the relevant appendices as described in the Public Participation report (Appendix D). Note that the written notifications encouraged potential I&APs



to register and provide their comments/questions on the proposed project and related application processes currently underway.

- **Email Notifications**

I&APs were notified of the proposed project by means of email on 25 & 29 November 2021 and 01 & 02 December 2021. The Background Information Document (BID) was attached to the emails and all email notifications sent provided the contact information for EnviroRoots (Pty) Ltd. Refer to Appendix 4 of Appendix D for the BID. Proof of written notifications sent via email is attached to Appendix D – Appendix 5. An erratum email notification was sent on 06 January 2022 and 10 January 2022 to correct the applicant's name which was initially reflected incorrectly.

- **Hand Delivery**

BIDs providing information on the proposed project, were physically hand delivered on 06 December 2021. The acknowledgements of receipt of hand delivered notifications is attached to the Public Participation report as Appendix 6. Further to the above, BIDs were placed at the gates of adjacent landowners and at post boxes of known physical addresses on 06 December 2021 where it could not be electronically delivered. BIDs were in addition couriered where applicable on 29 November 2021 and 09 December 2021. Photographic evidence of BIDs placed at residences and for proof of couriered BIDs is included in Appendix 6 of Appendix D. All I&APs who registered in response to the hand delivered notifications, were directly informed of the correction of the applicant's name for the purpose of the application process on 06 January 2022 via their preferred method of communication.

- **Registered Post**

Where I&APs could not be provided with the BID either electronically or by hand delivery, and postal addresses were available, the BID was sent via Registered Post on 27 November 2021 and 11 December 2021. Proof of Registered Post sent is attached to the Public Participation report in Appendix 7 of Appendix D. All I&APs who registered in response to the hand delivered notifications, were directly informed of the correction of the applicant's name for the purpose of the application process on 06 January 2022 via their preferred method of communication.

- **Text Message**

I&APs were notified by means of text message (SMS) where mobile numbers were available, and no other means of notification was possible. Refer to Appendix 9 of Appendix D for proof of SMS notifications sent on 25 November 2021 and 02 December 2021. The SMS notification highlighted the intention to lodge an application for Environmental Authorisation by means of a Scoping and EIA Process and an application for a Water Use License and indicated an invitation to



register/comment as part of the Environmental Process. An erratum email notification was sent on 06 January 2022 to correct the applicant's name which was reflected incorrectly.

- **Social Media**

A notification was sent to the New Life Church situated on Portion 3 of the Farm Withok 131 IR via their Facebook page on 07 December 2021 as no other communication methods were possible at the time. The notification to the email address failed and at the time there was no answer at the available mobile number. For proof of the Facebook notification sent refer to Appendix 8 of Appendix D. An erratum email notification was sent on 06 January 2022 to correct the applicant's name which was initially reflected incorrectly.

- c) **Public Meeting**

A Public Meeting will be held at 10:00 30 March 2022 during the scoping phase and Impact Assessment phase depending allowable actions in terms of the Disaster Management Act: Direction Regarding Measures to Address, Prevent and Combat the Spread of COVID-19, at the time.

- d) **Notification Of I&APs of Reports Availability**

Registered I&APs will be notified of the availability of the Scoping Report, Draft EIA Report, and the Draft Water Use License Application (WULA) Report for Public Commenting as and when required. I&APs will be informed of the relevant commenting periods and will be encouraged to submit any comments or questions on or before the closing date (to be confirmed).

Hard copies of the draft documents will be placed at relevant public entities and will be provided to the relevant Departments requiring hard copies of the documents. Further to this, electronic copies of the draft documents will be uploaded onto the Environmental Management Assistance (Pty) Ltd Website.

- e) **Access and Commenting Opportunity**

- **Registration and Commenting**

Commenting and Registration will be provided for throughout the Public Participation Process. The Draft Scoping Report (SR), Draft EIA Report and Draft Water Use License Application (WULA) commenting periods will be preceded by a thorough notification process to allow I&APs to familiarise themselves with the proposed project prior to making the Draft Scoping Report, and Draft EIA Report that will be available for public commenting. The entire process will remain transparent and allow for I&APs to register and comment throughout.

- **Draft SR, and Draft EIA Report**



Commenting periods will be provided for as part of the Draft SR, and Draft EIA Report phase of the Public Participation Process. This will be conducted in accordance with Clause 3(8) of the NEMA EIA Regulations (GN No. 326 of 07 April 2017) which indicates that any public participation process must be conducted for a period of at least 30 days.

The local community will be taken into consideration by placing hard copies of the relevant documents for Public Commenting at the public entities. Furthermore, as mentioned earlier in this report an electronic copy will also be uploaded onto the Environmental Management Assistance (Pty) Ltd Website to ensure easy access to the documents available for public commenting.

#### **f) Regulatory Consultation**

- **Notification Period**

All Departments and State-Owned Entities listed in the I&AP Register (Appendix 1 of Appendix D) have been and will continue to be included in the Public Participation Process. However, direct consultations will be conducted with the Regulatory Authorities relevant to this Public Participation Process.

- **Department Of Mineral Resources and Energy (DMRE)**

A pre-application consultation meeting has been held with the Department of Mineral Resources and Energy (DMRE) to introduce the proposed project and the way forward for the application processes. The minutes of the meeting is attached to the Public participation report as Appendix 10 of Appendix D.

- **Department Of Agriculture, Land Reform and Rural Development (DALRRD)**

A formal request for the land claim status of all properties earmarked for development has been submitted to the Department of Agriculture, Land Reform and Rural Development (DALRRD) to which a response has been received. Refer to Appendix 11 of Appendix D for communications with the DALRRD. It is important to note that the Department of Rural Development and Land Reform is not mandated to disclose any claimant's information to a third party as per the Protection of Personal Information Act, 2013 (Act No. 4 of 2013). Since the claimants lodge their claims against the state only the Commission on Restitution of Land Rights, not the claimants, may be included as an Interested and Affected Party.

- **Ward Councillors and Municipalities**

The Ward Councillors for Ward 82, Ward 74 and Ward 99 as well as an extensive list of contacts from the Ekurhuleni Metropolitan Municipality were informed of the proposed project. No responses have been received to date. Refer to Appendix 12 of Appendix D for municipal communications.



#### **g) Disclosure of I&APs' Interests**

Registered I&APs have been informed that this process is a public process. All comments and/or questions received from I&APs on this process is considered public knowledge. In accordance with the Environmental Impact Assessment Regulations, EnviroRoots (Pty) Ltd (the public participation specialist) will not keep any information of this nature confidential and will submit all comments and/or questions received to the Regulatory Authority in a verbatim manner.

This Public Participation Process is conducted in accordance with Section 11(1)(c) of the Protection of Personal Information Act, 2013 (Act No. 4 of 2013), which allows for the processing of personal information if processing complies with an obligation imposed by law on the responsible party and in accordance with Section 11(1)(f) of the Act which allows for the processing of personal information if processing is necessary for pursuing the legitimate interests of the responsible party or of a third party to whom the information is supplied.

#### **h) Registrations and Comments Received**

Identified I&APs were encouraged to submit their registrations and comments to EnviroRoots (Pty) Ltd, via any of the avenues provided for, for them to receive further correspondence regarding the proposed project currently underway. All registrations and comments received thus far is attached as Appendix 14 of Appendix D.

#### **i) Addressing Comments and Concerns**

A Comments and Response Report (C&RR) has been compiled as part of the Public Participation Process for the proposed project, which records the issues of concern, questions and suggestions contributed by stakeholders during the Environmental Authorisation Process. This report also includes the responses provided by the relevant parties. The C&RR is attached as Appendix 16 of Appendix D. It should be noted that the C&RR is an active document which will be updated throughout the process as comments and concerns are received. However, following submission of all final documents to the relevant Competent Authorities (CAs), all additional comments should be directed directly to the relevant CAs.

#### **j) Notifying I&APs of The Decision**

Following the verdict by the DMRE on whether to grant or reject the Environmental Authorisation Application, all registered I&APs will be informed of the decision as well as the appeal process and its timeframes for submission, if applicable.



### k) Summary of issues raised by I&APs

(Complete the table summarising comments and issues raised, and reaction to those responses)

Table 8: Summary of comments and issues raised by the I&AP

<b>Interested and Affected Parties</b>  <i>List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.</i>	<b>Date Comments Received</b>	<b>Issues raised</b>	<b>EAPs response to issues as mandated by the applicant</b>	<b>Section and paragraph reference in this report where the issues and or response were incorporated.</b>	
<b>AFFECTED PARTIES</b>					
<b>Landowner/s</b>					
<b>Lawful occupier/s of the land</b>					
<b>Landowners or lawful occupiers on adjacent properties – See Appendix E</b>					
Format: Email  Name: Keith Edmond	x	2021/11/26	Good Day  I am the owner of [address not disclosed].  I would like to be kept up to date on developments in this project.  Regards	Good day Keith,  We hereby confirm your registration as an Interested and Affected Party.	Appendix D





				Please be assured that you will receive all relevant future communication in this regard.  Regards	
Format: Email  Name: Prudence Geyer and Jared Geyer	x	2021/11/26	Hi Chantel  I trust you are well, we spoke a while back regarding the property erf [address not disclosed]. We are interested in selling the property, is it possible for you to find out if ERGO is interested in purchasing the property? or perhaps you know of an interested party?  We are open to offers, the erf is +- 56 Hectares situated opposite Egro mining and has their pipeline running at the back of the property. I have attached our municipal account with the details of the property.  Your assistance will be highly appreciated  Thank you  Regards	Dear Prudence/Jared,  I will forward your request to the Environmental Assessment Practitioner. Perhaps they know which avenues to follow in this regard.  Regards	Not related to EIA process, therefore not further considered as part of this process.
Format: Email in which EnviroRoots was CC'd  Name: Santjie White		2021/12/09	Dear all,  Please see attached as discussed.  The second phase proposal looks like it will destroy the basin of the Wetland.  Wetlands are protected by the Environmental Act and also by International treaties. The proposal is in the Wetland and in a grassland that is also marked as a place of environmental importance in the Ekurhuleni Spatial Development plan.	Good day Santjie,  Many thanks for providing us with your comments.  Kindly note that that for the Scoping phase of the Environmental Authorisation Application process, the entire study area comprising of	Section 8) of scoping report.



		<p>I will send a full report on the area as there are some areas that are of Environmental importance that was marked for your second phase by SANBI as a place where there are species on the red data list.</p> <p>We need our Environmental Managers to support us in the saving of our precious water resources as well as our grass and wetlands.</p> <p>Kind regards</p> <p>Regards</p>	<p>approximately 560 ha will be scoped and assessed by the appointed independent Specialists. However, for a 40 MW Solar PV Facility only approximately 80 to 100 ha of the area investigated will be required for development.</p> <p>Following assessment of the entire study area, the independent Specialists will demarcate/map all sensitive areas and will recommend buffer zones and/or no-go areas for protection of sensitive environmental features.</p> <p>We welcome and value your input and suggestions. Kindly therefore provide us with a map and/or coordinates of the sensitive areas referred to in your email. We will forward this to the independent Specialists for their consideration as part of their investigations.</p> <p>Regards</p>
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Format: Registration and Comment Sheet

x 2021/12/09

Name: Santjie White

COMMENTS OR QUESTIONS:

WE NEED YOUR ENVIRONMENTALISTS TO  
COME AND SEE US ON SITE URGENTLY  
  
SEE MY MAIL TO EKURHULENI ENVIRONMENTAL  
MANAGEMENT, YOU ARE COW  
  
THE SECOND PHASE WILL DESTROY THE  
WETLAND BASIN OF A WETLAND THAT HAS  
BEEN REHABILITATED BY THE METRO

Good day Santjie,

Many thanks for providing us with your comments.

Kindly note that for the Scoping phase of the Environmental Authorisation Application process, the entire study area comprising of approximately 560 ha will be scoped and assessed by the appointed independent Specialists. However, for a 40 MW Solar PV Facility only approximately 80 to 100 ha of the area investigated will be required for development.

Following assessment of the entire study area, the independent Specialists will demarcate/map all sensitive areas and will recommend buffer zones and/or no-go areas for protection of sensitive environmental features.

We welcome and value your input and suggestions. Kindly therefore provide us with a map

Section 8) of scoping report. To be further investigated in Impact Assessment Phase.



				<p>and/or coordinates of the sensitive areas referred to in your email. We will forward this to the independent Specialists for their consideration as part of their investigations.</p> <p>With your permission, we will furthermore forward your request for onsite meetings to the independent Ecological and Aquatic/Wetland Specialists. Please confirm whether we have your consent to provide the relevant specialists with your contact information.</p> <p>Regards</p>	
<p>Format: Email</p> <p>Name: Santjie White</p>	x	2021/12/10	<p>Good afternoon Chantel,</p> <p>We value and appreciate the opportunity as quoted below.</p> <p>“With your permission, we will furthermore forward your request for onsite meetings to the independent Ecological and Aquatic/Wetland Specialists. Please confirm whether we have your consent to provide the relevant specialists with your contact information.”</p> <p>Please understand that we welcome the project but we need to work around the critical biodiversity. We have a vast amount of photographic evidence, sightings etc. Both Jeanne-Michele and I grew up here.</p>	<p>Good day Alicia,</p> <p>Kindly refer to the email below, received from Santjie White, also CC'd in this email.</p> <p>Could you please liaise with the project Biodiversity Specialists regarding the email thread below and provide Santjie's and</p>	<p>To be further investigated in Impact Assessment Phase.</p>



			<p>Our details are as follows and we would really love to work with your teams.</p> <p>Regards</p>	<p>Jeanne-Michele's details to them?</p> <p>Santjie has requested for the independent Ecological and Aquatic/Wetland Specialists to contact her regarding information sharing on the Phase 2 Solar PV Project.</p> <p>Many thanks in advance.</p> <p>Kind regards</p>	
<p>Format: Email</p> <p>Name: James Stewart</p>	x	2022/01/06	<p>Chantel,</p> <p>As discussed briefly on the phone, I have four properties (listed below) that are contiguous with the properties shown on the plan in your document. I would be grateful if you could ask your client if they would be interested in acquiring these properties.</p> <p>Portion 270 (a portion of Portion 263) of the Farm Witpoortjie 117-IR</p> <p>Portion 275 (a portion of Portion 263) of the Farm Witpoortjie 117-IR</p> <p>Portion 276 (a portion of Portion 263) of the Farm Witpoortjie 117-IR</p> <p>Portion 277 (a portion of Portion 263) of the Farm Witpoortjie 117-IR</p> <p>Regards,</p>	<p>Good day Alicia,</p> <p>Kindly refer to the email below received from James Stewart.</p> <p>James is looking to sell his properties to the proponent, if interested.</p> <p>Could you please forward his request and contact information to the correct persons in this regard?</p> <p>Many thanks!</p> <p>Regards</p>	<p>Not related to EIA process, therefore not further considered as part of this process.</p>

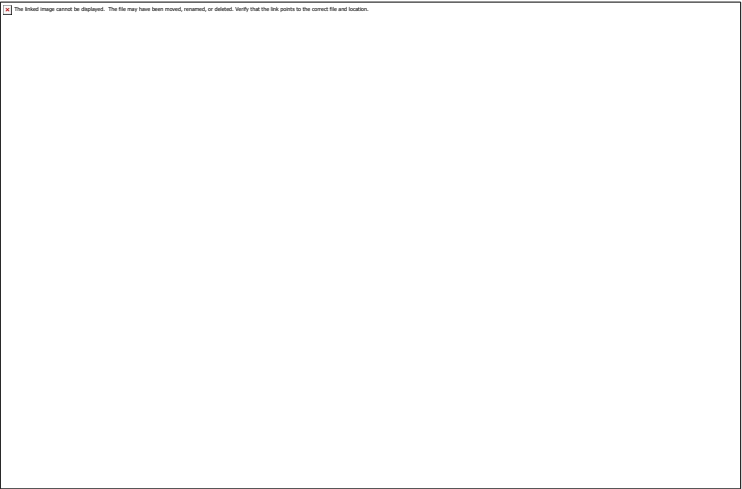


Municipal councillor - See Appendix D					
Municipality - See Appendix D					
Format: Email	x	2021/11/29	To whom it may concern at Enviroroots.  Kindly forward communications of this nature to our Environmental Resource Management Department, in order for them to record the matter on their records and for them to then liaise with the appropriate departments within the City of Ekurhuleni, as each respective matter may warrant.  If our Environmental Resource Management Department require inputs from other departments within the city, they will communicate with such other departments accordingly.  The relevant colleagues in the said department are as follows (and they are also copied herein):  [contact details not disclosed]  Kindly update your stakeholder database accordingly for purposes of future communication in respect of other projects as well.  The above is proposed in the interest of facilitation proper co-ordination in dealing with this type of matter within the City of Ekurhuleni Municipality.  Kind regards,	Good day Martin,  Many thanks for the information.  The contact details provided has been included in the I&AP Register and will receive all relevant future communications regarding the proposed project.  Regards	Appendix D.
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWS etc.)					



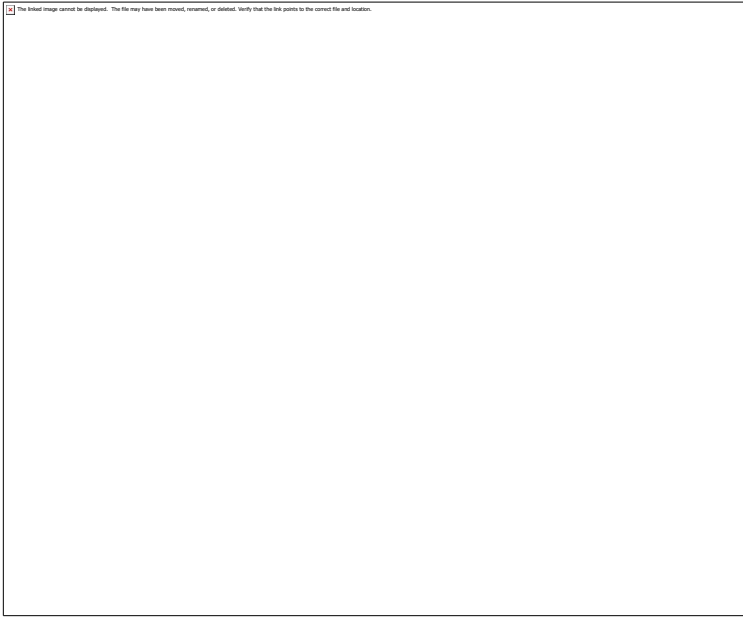
Communities -					
Dept. Land Affairs -					
Format: Email in which EnviroRoots was CC'd Name: Solomon Maruma (DALRRD)	x	2021/11/26	Good day Desiree  Please find land claim enquiry for your attention. Please work on the enquiry and submit it to my office for signing as you that both Amu and Fundiswa are on quarantine until the 3rd December 2021.  Chantel, please note that received of your land claim enquiry is acknowledged. You are further advised that the office's turnaround time for responding to land claim enquiries is 14 days.  Regards	Dear Solomon,  Many thanks, much appreciated.  We await the Department's response.  Regards	Appendix D.
Format: Email Name: Fundiswa Ndaba (DALRRD)	x	2021/12/21	Good morning  Kindly receive the attached confirmation letter for your attention.  Regards	Good day Fundiswa,  Many thanks for the information. Received.  Regards	Appendix D.



					
<p>Format: Email</p> <p>Name: Fundiswa Ndaba (DALRRD)</p>	<p>x</p>	<p>2021/12/21</p>	<p>Good morning</p> <p>Kindly receive the attached confirmation letter for your attention.</p> <p>Regards</p>	<p>Good day Fundiswa,</p> <p>Many thanks for the information.</p> <p>Received.</p> <p>Regards</p>	<p>Appendix D.</p>





					
<p>Format: Email</p> <p>Name: Fundiswa Ndaba (DALRRD)</p>	<p>x</p>	<p>2021/12/21</p>	<p>Good morning</p> <p>Kindly receive the attached confirmation letter for your attention.</p> <p>Regards</p>	<p>Good day Fundiswa,</p> <p>Many thanks for the information.</p> <p>Received.</p> <p>Regards</p>	<p>Appendix D.</p>



<b>Traditional Leaders -</b>					
<b>Dept. Environmental Affairs</b>					
<b>Other Competent Authorities affected -</b>					
Format: Pre-application Consultation Meeting	x	2020/11/26	Not verbatim: Discussion session Site 1) DMRE: The study area seems to be on an area deemed L3- which is a geographical area that has already been mined and disturbed.	Refer to Discussion session and actions below.  Actions 1) EAP to consult with DWS in terms of WUL	Appendix D.



		<p>Battery Storage</p> <p>2) DMRE: The facility will have battery storage, i.e. 40 containers, each 40 feet.</p> <p>Water Use Licence</p> <p>3) DMRE: Will a water use licence be triggered by the proposed activity?</p> <p>4) Senior EAP: Yes, a WUL will be triggered. There are wetlands/ pans around the proposed site. National Water Act Section 21 (c ) and (i) most likely to be triggered, making the proposed site fall under a regulated zone. If the proposed site falls within 100m of a pan it will trigger a WUL. Should the site fall within 500m of a wetland, it will trigger a WUL.</p> <p>5) DMRE: it is advisable to consult with DWS.</p> <p>6) Senior EAP: Pro governance is important. DWS will definitely act as a commenting authority on the BAR and EIA process, and the WUL will be raised with the DWS.</p> <p>Specialist input</p> <p>1) EAP: Planned specialist input</p> <ol style="list-style-type: none"> <li>1) Avifauna</li> <li>2) Surface Water Assessment and Storm water management</li> <li>3) Soils, land capability and agricultural potential assessment</li> <li>4) Heritage Assessment (only for EIA)</li> <li>5) Visual Assessment</li> <li>6) Socio-economic Assessment</li> <li>7) Water Use Licence</li> <li>8) GIS Application</li> </ol> <p>9) Additional potential studies that may be triggered</p> <ol style="list-style-type: none"> <li>1) Terrestrial biodiversity (fauna and flora)</li> </ol>	<p>and commenting authority</p> <p>2) EAP to consult with GDARD regarding specialist input.</p> <p>3) Conduct a baseline land contamination study</p> <p>4) amend Mine Closure, rehabilitation and liability plan to include proposed PV facilities</p> <p>5) Attach Ergo mining right to EIA application forms for both phases proposed.</p>	
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		<p>2) High level contaminated land assessment: 3) Wetland and Aquatic Impact Assessment</p> <p>4) DMRE: EAP should consult with GDARD. Send GDARD a shapefile of the site to check against their most updated EMF. GDARD are better equipped to advise on environmental sensitivity and required site specific specialist input. GDARD can advise on requirements of terrestrial biodiversity specialist input. The DMRE do not have the tools/ GIS software and therefore rely on GDARD to offer such advice.</p> <p>5) Senior EAP: Confirmed that GDARD currently have a 2018 EMF. The EMF is normally updated every 5 years.</p> <p>6) EAP: requested a contact from GDARD to fast track the process.</p> <p>7) DMRE: suggested contacting Albertina Setsiba from the GDARD biodiversity division. GDARD is based in Ghandi Square.</p> <p>Land Contamination</p> <p>1) DMRE: be careful not to trigger an activity unintentionally, especially if the activity triggering the EIA process is not a contributing factor to contamination.</p> <p>2) Senior EAP: Runoff from the area will be a problem of the new owner of the PV facility. It is important to understand the baseline site information. There is vegetation currently growing on the proposed site- an indication that there is sufficient leaching taking place.</p> <p>Mine Closure, Rehabilitation and Liability Plan</p> <p>1) EAP: The way forward in terms of the Closure, Rehabilitation and Liability plan –The proposed photovoltaic (PV) facilities can be included in the mine’s current Closure, Rehabilitation and Liability plan. If this is acceptable, we proposed that the mine get their consultant’s to amend the plan to include the PV facilities. At the end of life of the Mine, the mine can</p>		
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		<p>then decide if they would like to continue to operate the PV facilities and can then opt to relinquish their responsibility of the PV portions to the holding company of the PV facilities (as the PV facilities will be under a separate SPV).</p> <p>2) DMRE: DMRE agrees with proposed approach, the Mine's future plans must tie in with closure objectives.</p> <p>EIA/ BAR templates</p> <ol style="list-style-type: none"> <li>1) Senior EAP enquired about the templates required to be used for the EIA/ BAR process.</li> <li>2) DMRE: DMRE uses the same EIA templates as the DEFF.</li> <li>3) DMRE: Link the EIA/ BAR application forms and the existing mining right of Ergo. If the two are not linked, it will then look like a completely new development. DMRE is the competent authority for the purpose of the existing mining right.</li> </ol> <p>Purpose of running two different EIA processes (Phased approach)</p> <ol style="list-style-type: none"> <li>1) DMRE enquired what was the point of running two separate EIA and BAR processes, i.e. a 10MW and a 50MW facility.</li> <li>2) Senior EAP: Could all be part of the mine's planning, reasons behind this decision include regulated timeframes to get energy generation asap for the mine. The mine would like to run the PV development in a phased approach through phased applications that can be run concurrently. Could also be linked to a cash flow agreement. The mine could also possibly want to confirm if the 10MW facility is a correct working model for the mine before constructing the full remaining 50MW facility required.</li> <li>3) Applicant Representative: Confirmed that the phased approach forms part of the technical design of the mine. Battery storage- the mine needs an urgent energy storage facility, as they face a major energy insecurity based</li> </ol>	
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			<p>on current practice. Current load shedding places added pressure on mining operations, the proposed PV facilities will reduce 25% reliance on the Eskom grid. Model is to discharge through pioneer storage, and utilize and maximise the renewable energy generation when the eskom grid is offline. This will enhance trading, and create reserve energy. 20MW peak can create 5 hours of reserve energy which will allow the mine to be more efficient. The mine wants the 10MW plant up and running ASAP. Eskom grid application needs to be taken into consideration, a generation licence can take 120 days. The FBAR can be used for a generation licence application.</p> <p>4) Applicant Representative added that there is currently a lot of pressure on the mine from a cash flow issue- as the mine currently runs diesel generators which implicates carbon tax and decarbonization factors. The mine wants to expand but it needs a secure energy source for supply and demand. The proposed facilities are considered a priority and is quite urgent. The ramifications are therefore extreme should the mine not be able to secure its own power source with urgency. The average KW/price still needs to be determined.</p>		
<p>Format: Telephone Call</p> <p>Name: Mogale Matseba (DWS)</p>	x	2021/11/30	<p>Not verbatim:</p> <p>Mogale Matseba from DWS phoned to enquire about the Ergo PV Facility project.</p> <p>He is interested to know whether rehabilitation of the area proposed for development was approved and requested for proof of such to be forwarded to him.</p> <p>Mogale further indicated that the EAP will most likely receive an invite to the next forum meeting. He indicated the importance of highlighting projects of this nature in the Catchment. The next forum meeting will be in Feb next year.</p>	<p>Good day Mogale,</p> <p>Trust that you are doing well.</p> <p>Pertaining to our telephone discussion of yesterday, the proposed site for Ergo Phase 1 is proposed on land that is "currently vacant, and the development is proposed on a portion of land that was</p>	<p>Appendix D, to be further assessed as part of the Impact Assessment Phase.</p>



				<p>previously a gold mine tailings facility. This land has been re-mined, and subsequently rehabilitated to its current naturally vegetated condition which now comprises mostly disturbed grassland” (extracted from the DRAFT BASIC ASSESSMENT REPORT: PROPOSED ERGO MINING SOLAR ENERGY FACILITY PHOTOVOLTAIC PROJECT, PHASE 1: 19.9MW ON FARM WITPOORTJE 117 IR WITH ASSOCIATED POWER LINES, SOUTH OF BRAKPAN, GAUTENG PROVINCE, September 2021).</p> <p>A closure plan for the proposed Solar Energy Facility (SEF) up to 20MW (Phase 1) was included as part of the DBAR, which included the closure and rehabilitation plan for the proposed site (refer to attached report).</p> <p>The Project Company will decommission the solar facilities</p>
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				<p>at the end of life of the SEF in line with Mine closure regulations. The Mine was advised to update their existing Closure, Rehabilitation and Liability Plan to include the SEF.</p> <p>The Mine Closure, Rehabilitation and Liability Plan was discussed with the DMRE during the preapplication consultation, and the DMRE was happy with this approach.</p> <p>We trust that you find the above in order.</p> <p>Regards</p>	
<b>OTHER AFFECTED PARTIES</b>					
Format: Email  Name: Danny Jacobs	x	2021/11/28	<p>Good Evening Chantel</p> <p>Please can you forward me more details of the Ergo Mining Solar Development Project.</p> <p>Kind Regards</p>	<p>Good day Danny,</p> <p>Kindly find the attached notification and Background Information Document for your attention.</p> <p>Interested and Affected Parties (I&amp;APs) are hereby invited to register and provide their</p>	Appendix D.





				<p>comments/questions on the proposed project and related application processes currently underway.</p> <p>To ensure that you are registered as an I&amp;AP and receive further information on this process, including information on the upcoming commenting periods for the Draft Scoping Report, Draft EIA Report and the Draft Water Use License Application (WULA) Technical Report, submit your comments and/or questions to EnviroRoots (Pty) Ltd at:</p> <p>Email: <a href="mailto:info@enviroroots.co.za">info@enviroroots.co.za</a></p> <p>Address: P.O. Box 1082, Bapsfontein, 1510</p> <p>Mobile: Ms. Chantél Muller at 084 444 2414</p> <p>Please distribute the information as far as possible and provide EnviroRoots (Pty) Ltd with any additional contact information for</p>
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			<p>any other potential I&amp;APs that might be interested in receiving the documents for public commenting.</p> <p>NB Note: This process is a PUBLIC PROCESS. All comments and/or questions received from I&amp;APs on this process is considered public knowledge. In accordance with the Environmental Impact Assessment Regulations (Government Notice No. R.982 of 4 December 2014, as amended) and the Regulations regarding the procedural requirements for Water Use License Applications and Appeals (Government Notice No. R. 267 of 24 March 2017), EnviroRoots (Pty) Ltd will not keep any information of this nature confidential and will submit all comments and/or questions received to the Regulatory Authority.</p> <p>By providing comments, you consent to the above. Note that</p>
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				<p>no contact information for I&amp;APs will be made available to the public at any point during the process. However, names and surnames will accompany comments in the Comments and Responses Report (C&amp;RR) to form part of this process. If you would prefer your name and surname to not accompany your comments kindly inform EnviroRoots of such.</p> <p>This Public Participation Process is conducted in accordance with Section 11(1)(c) of the Protection of Personal Information Act, 2013 (Act No. 4 of 2013), which allows for the processing of personal information if processing complies with an obligation imposed by law on the responsible party and in accordance with Section 11(1)(f) of the Act which allows for the processing of personal information if processing is necessary for pursuing the</p>	
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				legitimate interests of the responsible party or of a third party to whom the information is supplied.  Regards	
Format: Email  Name: Saul Magengenene	x	2022/01/06	Greetings  Report received  Just a quick question  Are the house hold numbers, house that are affected by the installation or people who participated in the project	Good day Saul,  Kindly note that the Interested and Affected Parties Register contain details of adjacent landowners within 500 m from the study area investigated for potential development. Notifying adjacent landowners and occupiers of the proposed project enables the nearby community to provide input to the project.  Further note that the area investigated for development is situated on Ergo owned land.  Regards	Appendix D.
<b>INTERESTED PARTIES</b>					



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Refer to attached **Appendix D** for the details of all registered I&AP.



## 6) Environmental attributes associated with the proposed site

*(The environmental attributed described must include socio-economic, social, heritage, cultural, geographical, physical and biological aspects)*

The section to follow describes the environmental attributes associated with the development footprint alternatives.

### Baseline Environment: Type of Environment affected by the proposed activity

*(Its current geographical, physical, biological, socio- economic and cultural character)*

The information in the following sections has been extracted from the specialist desktop assessments as part of the scoping investigation.

#### a) Climate

The study area is situated in the Highveld with summer rainfall and dry winters. Summer temperatures can reach an average of about 30°C while frost is common in winter. Annual rainfall is about 630 and 720mm (Mucina and Rutherford, 2006).

The Ergo Gold Mine is situated within an area characterised by summer rainfall patterns with sporadic rainfall events during the winter months. The mean annual precipitation is 692mm, with the bulk of the rainfall occurring between September and March (summer months). These high intensity rainfall conditions are conducive to high levels of surface runoff and subsequent erosion where soils are shallow, occur on steep slopes or are overgrazed. The wettest time of the year is January with an average of 123mm and the driest is June and July with 7mm (Table 9). The seasonality of precipitation is a driving factor behind the hydrological cycles of water resources within the area. Typically, watercourses have a higher flow rate during the summer months.

Mean temperatures vary between 9.7°C to 19.7°C for the Brakpan region (Table 10). The area is coldest in July with average minimum temperatures of 2.8°C and hottest in November and December with average maximum temperature of 25.2°C on average (Climate-data.org; Mucina & Rutherford, 2006; updated 2018).

Table 9: Mean annual rainfall data for the Brakpan area

	January	February	March	April	May	June	July	August	September	October	November	December
Mean Rainfall (mm)	123	96	86	42	19	7	7	9	24	65	105	109

Table 10: Temperature data for the Brakpan area



	January	February	March	April	May	June	July	August	September	October	November	December
<b>Mean Temperature (°C)</b>	19.7	19.6	18.4	15.7	12.8	10	9.7	13	16.8	18.5	18.9	19.7
<b>Max Temperature (°C)</b>	25	24.9	23.9	21.5	19.6	17.3	17.4	20.9	24.6	25.7	25.2	25.2
<b>Min Temp (°C)</b>	14.8	14.6	13.2	10.2	6.5	3.5	2.8	5.6	9.1	11.6	12.9	14.6

While evaporation is illustrated as greatly exceeding rainfall, this is representative of the maximum A-Pan equivalent potential evaporation that could occur assuming no limitations are placed on evaporative demand. The combination of rainfall, evaporation and temperature result in a warm temperate climate with dry winters and warm summers according to the Köppen-Geiger<sup>2</sup> climate classification (Refer to Figure 4).

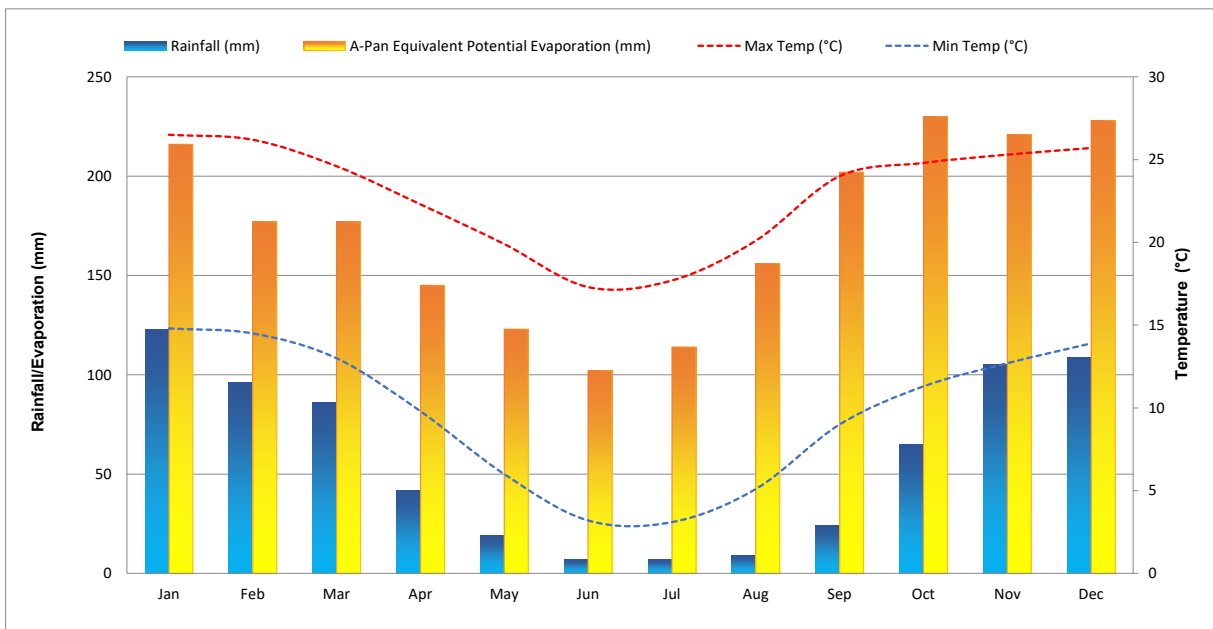


Figure 4: Average Monthly Climate for the Site

<sup>2</sup> [http://stepsa.org/climate\\_koppen\\_geiger.html](http://stepsa.org/climate_koppen_geiger.html)

## b) Topography

The project area is situated on a gently undulating landscape. Average slopes are between 2% to 2.5% with maximum slopes of 11% within the northern section of the study site, where the existing Ergo Gold Mine Brakpan Plant is located. The altitude ranges from 1583m above sea level (absl) in the south-eastern portion of the study site and rises to 1659m absl in the northern extent of the study site (Figure 5). Topography is not considered a limitation to agricultural production. Portions of the Farm Witpoortjie 117 and Withok 131 (historical slimes dams) are relatively flat, with an average elevation of about 1620m. These areas were relandscaped after being remined in the year 2000.

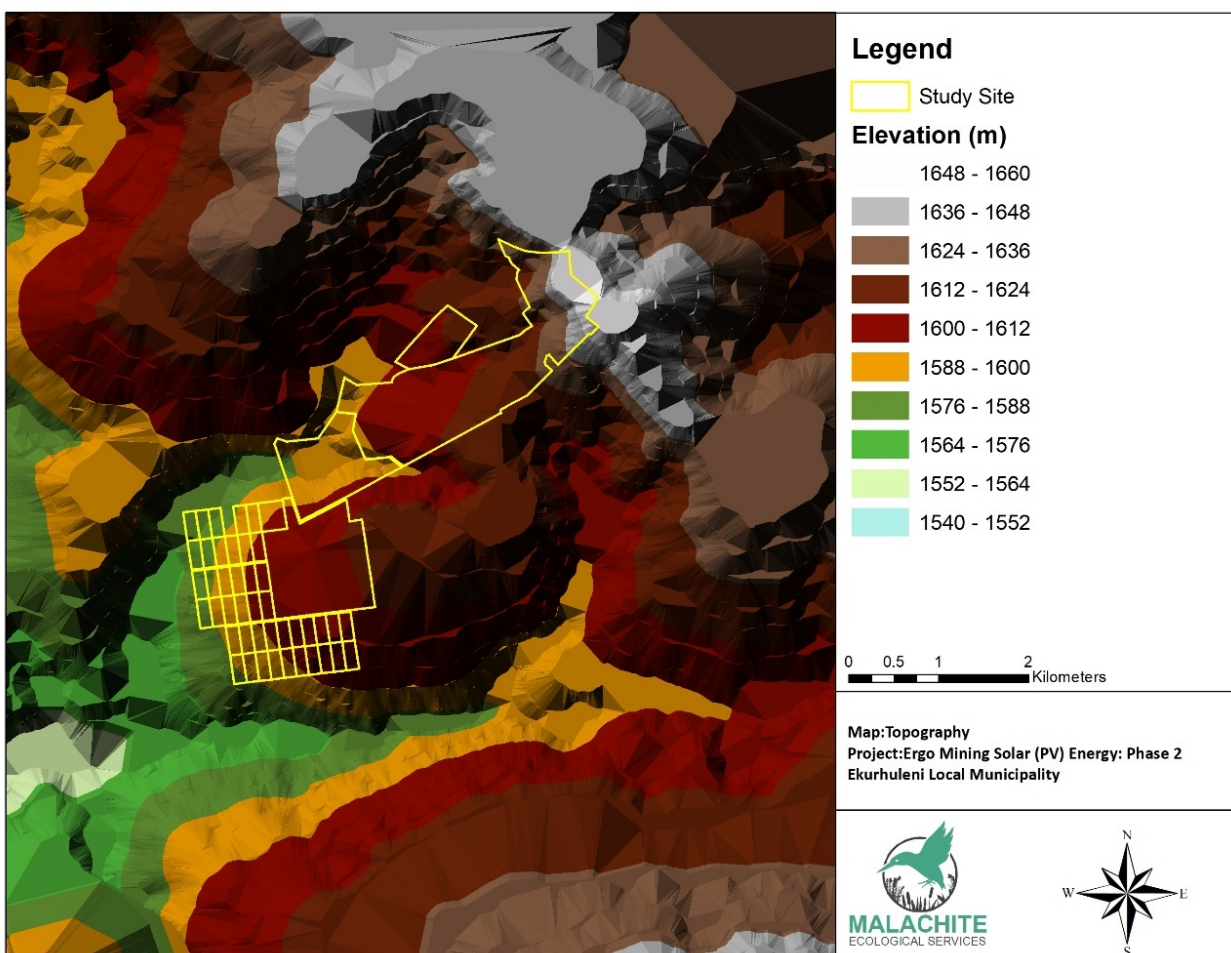


Figure 5: Topography of the site showing the range in altitude

## c) Geology

South Africa is a semi-arid country with differences in rainfall patterns, topography, and geology. The geological characteristic of an area influences the topography, soil types and textures, vegetation communities and faunal assemblages present.



The study area is underlain predominantly by the Ecca Group of the Madzaringwe Formation of the Karoo Supergroup. The geology of this region is primarily known to be sedimentary strata and is a very thick sequence of carbonaceous siltstone, mudstone, shale, sandstone and coal ([www.agis.agric.za](http://www.agis.agric.za)).

#### d) Land type data

The majority of the study site is situated in the Bb3 land type with a portion of the northern extent of the site situated within the Ba1 land type (Figure 6). The B land types represent a large proportion of the interior of South Africa and is made up of plinthic soils. Plinthic soils indicate a fluctuating water table. Hillslope catenas within these land types are represented by the soil forms Hutton, Bainsvlei, Avalon, and Longlands. Valley bottoms consisting of a gley soils such as the Katspruit soil form or Willowbrook, Rensburg or Champagne. In the Ba and Bb land types the plinthic character of soils makes up more than 10% of the area.

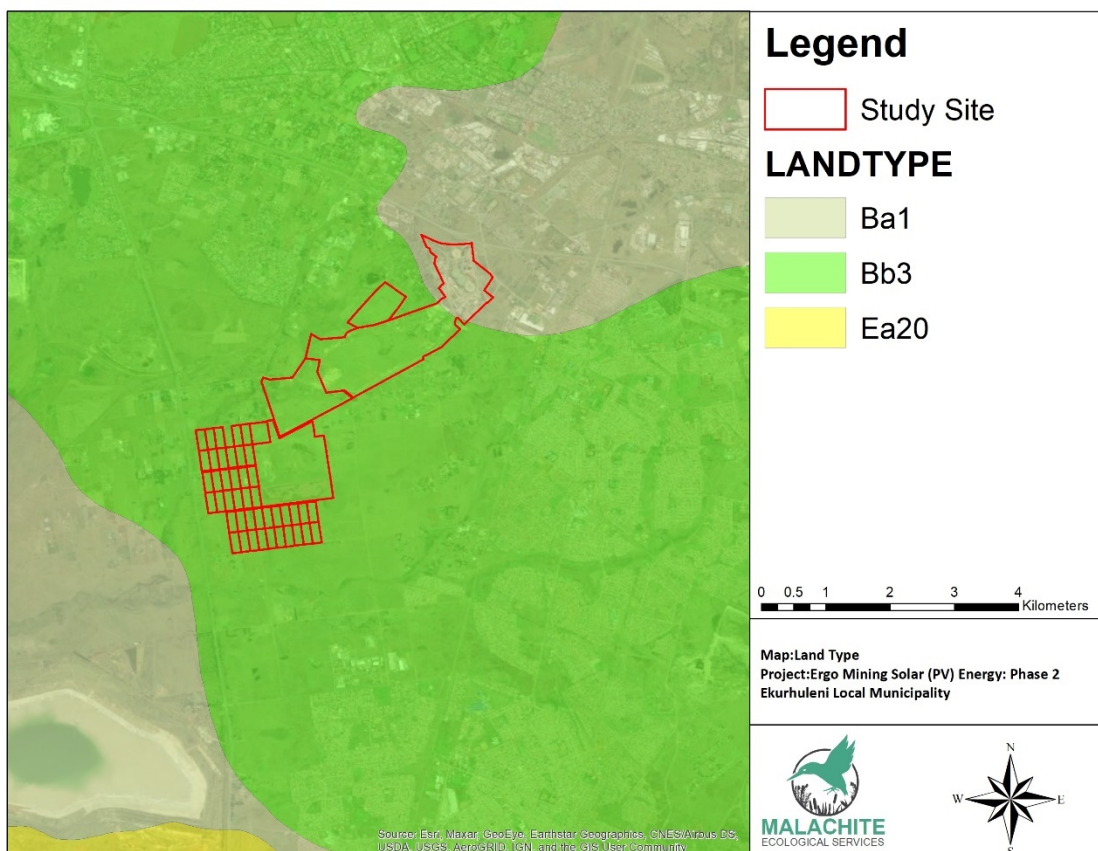


Figure 6: Land Type data associated with the study site



## e) Soils

(Refer to Appendix J for the Soils, land capability and agricultural potential Scoping Report).

The study site was divided into two separate soil types, the Natural Soils and the Anthrosols and Technosols. The first group are naturally occurring with the soil morphological expression and sequence of soil horizons being formed without significant human intervention. Anthrosols and Technosols on the other hand are soils which have been drastically altered by human intervention such that the natural soil properties are no longer identifiable, and an anthropogenic classification is applied.

According to the 2018 Soil Classification Working Group, Anthrosols are soils which have been drastically changed by intentional human activity to improve productivity of an area. Technosols are soils that comprise material from mining, industry, construction, or urban activities that often supply parent material for new anthropogenic soils. They may also be created from alteration of natural soils by physical, chemical, or hydrological processes resulting from mechanical working, water diversion, pollution, and/or extraneous additions of harmful solids or liquids. Table 11 shows the Anthrosols and Technosols identified within the site as well as their soil class as per Figure 9.

Table 11: Anthropogenic soil materials and associated classes identified in the site

Type of Anthropogenic Material Identified in the site	Soil Class
Physically Disturbed Anthrosols	Grabouw
Transported Technosols	Witbank
Hydric Technosols	Stilfontein
Urban Technosols	Johannesburg

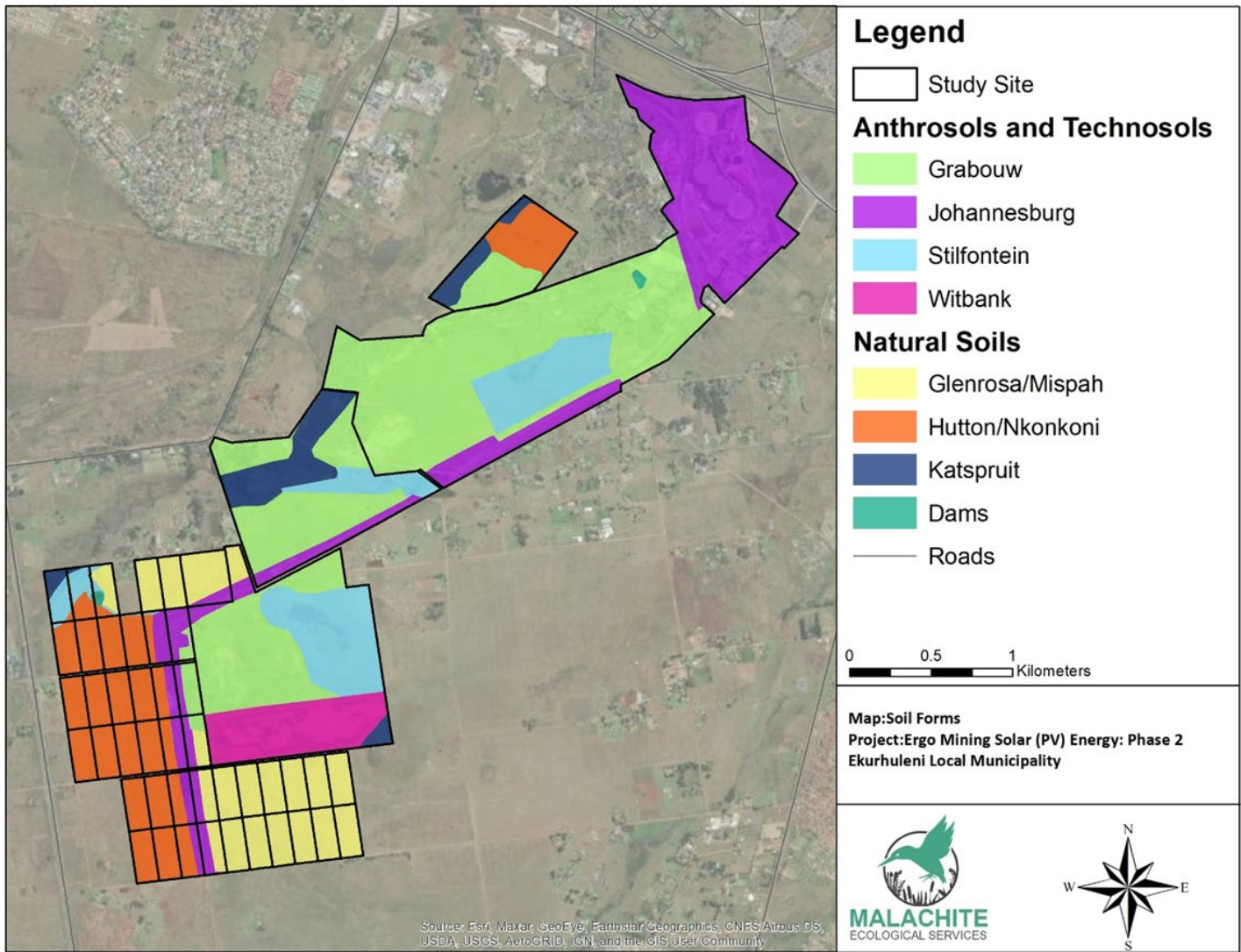


Figure 7: Soils associated with the study site



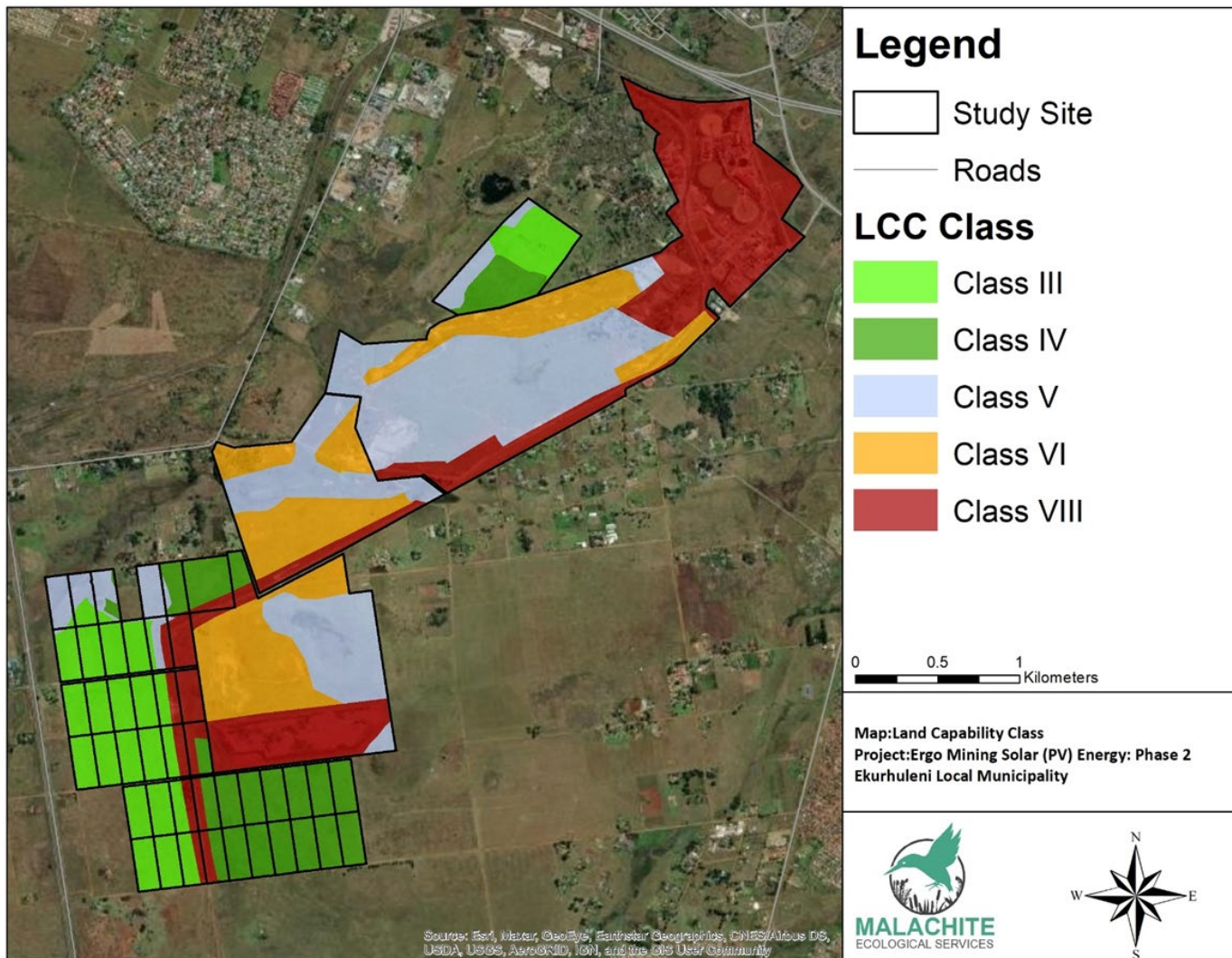


Figure 8: Land Capability Classes of the proposed site which guide the Agricultural Land Potential of the site



## Soil Agricultural potential

The study site has been categorised into the Class III, Class IV, Class V, Class VI, and Class VIII categories (Figure 8).

The Class III and Class IV category is classified in areas that contain the natural Mispah/Glenrosa and Hutton/Nkonkoni soils. The Hutton/Nkonkoni soils are productive with regards to crop cultivation as they are well drained, generally rich in minerals and nutrients and have the depth required to sustain a number of crops. These areas are classified as Class III and occupy 14.4% of the study site. The hard rock or lithic horizon associated with the Mispah and Glenrosa soils can be a limitation to crop production, particularly if it is identified at shallow depths. Within phase 1 of the Ergo Gold PV project, hard rock and the lithic horizon was identified at depths ranging from 300mm to 700mm, and thus it is considered a limitation to crop production. As such, these areas are classified as Class IV and occupy 12.3% of the site.

The Class V category is reserved for saturated soils and was thus mapped where the Stilfontein and Katspruit soils were identified or are likely to be identified. These soils show a high degree of mottling and gleying and indicate a shallow water table for most of the year. The soils are either anthropogenically modified, in the case of the Stilfontein soils or form part of wetland systems in the case of the Katspruit soil form. Cropping in these areas would require intensive protection measures and special practices such as the drainage of the soil. Class V areas occupy 29.1% of the site.

The Grabouw or Physically Disturbed Anthrosol soils have been classified as Class VI soils. Class VI soils have severe restrictions to cropping and are therefore excluded from production under perennial vegetation. This is due to the anthropogenic disturbances to these soils and the use of the soils for human activity. Class VI areas occupy 17.9% of the study site.

The remaining Johannesburg and Witbank soils are categorised as Class VIII soils. These soils have been completely modified and are not productive for any agricultural activities. Current infrastructure is situated within these areas. These areas occupy 26.3% of the study site.

## f) Hydrology and Catchment characteristics

(Refer to Appendix H for the Surface Water Assessment and Storm water management Scoping Report)

The project area lies within the Vaal Water Management Area. Major rivers within this WMA include the Wilge, Liebenbergsvlei, Mooi, Renoster, Vals, Sand, Vet, Harts, Molopo and Vaal. These rivers experience significant levels of high-water demand related stress, particularly during drought seasons. Many of the surrounding communities rely on fresh water from these rivers throughout the year to supply adequate water for domestic, stock and irrigation.

Figure 9 presents the hydrological setting of the site. The hydrology of the region is characterised by a mixture of perennial and non-perennial watercourses. The site falls within the upper reaches of quaternary catchment C22C of which the primary watercourse is the Rietspruit River. The Rietspruit flows approximately 2.7km to the west of the study site with a tributary of this river flowing approximately 1.5km to the south of the study sit. Drainage at the site is generally in a south-westerly direction into a combination of non-perennial streams, dams, as well as formalised furrows and drainage canals as defined



by the NGI's 1:50,000 topographical map sheets. These then flow into the Withokspruit and subsequently the Rietspruit River as illustrated in the Surface Water Assessment and Storm water management Impact Assessment (Appendix H). Figure 9 includes 100m buffers on surface water features including streams, dams, canals and furrows.

An artificial dam is present on Portion 183 of the Farm Witpoortjie 117. A tributary of the Withokspruit flows along much of the western boundaries of the larger area (Figure 10). Another tributary joins from the south. The most southern extent of the site falls within a wetland buffer.



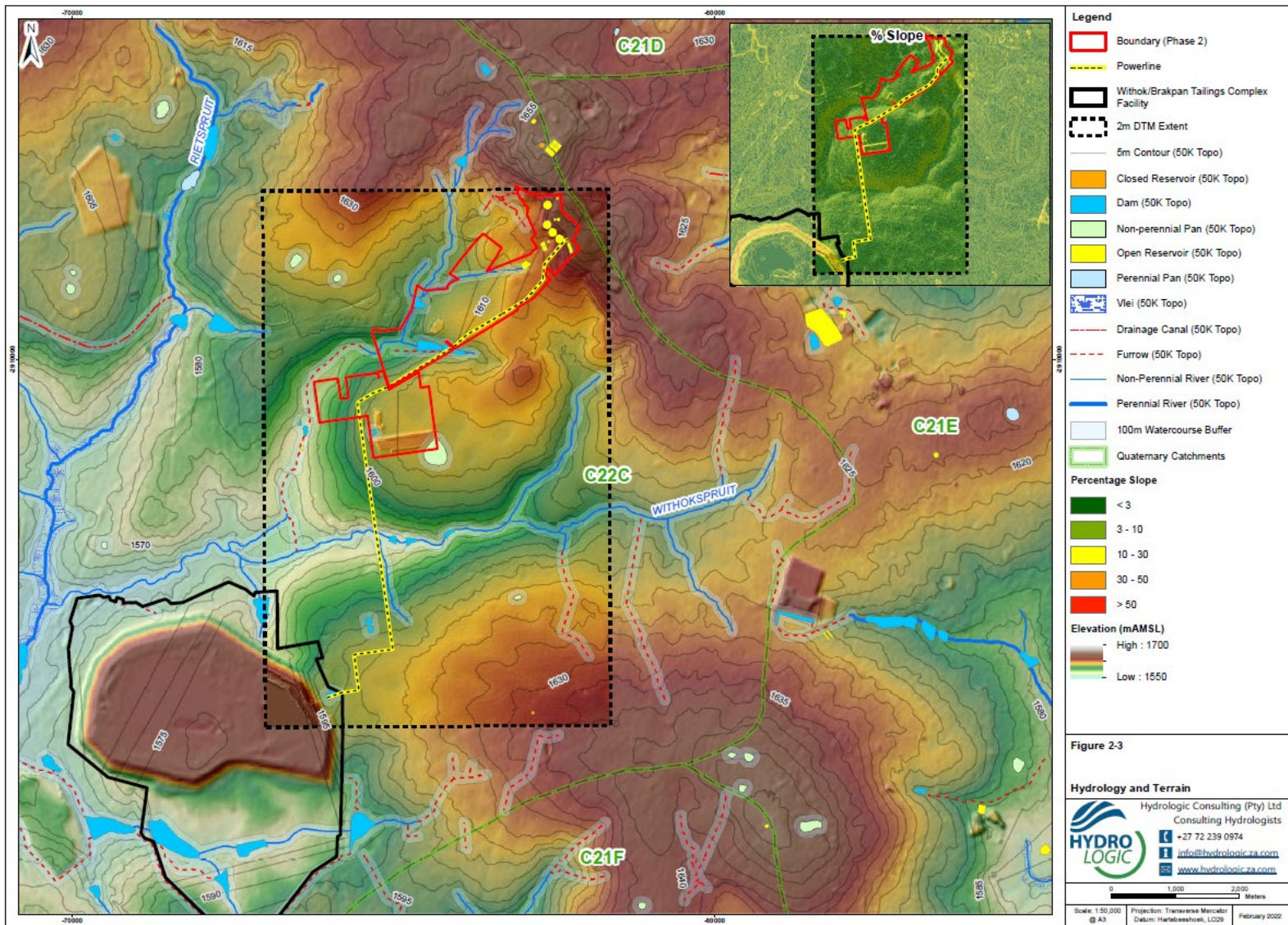


Figure 9: Hydrology and terrain of proposed site



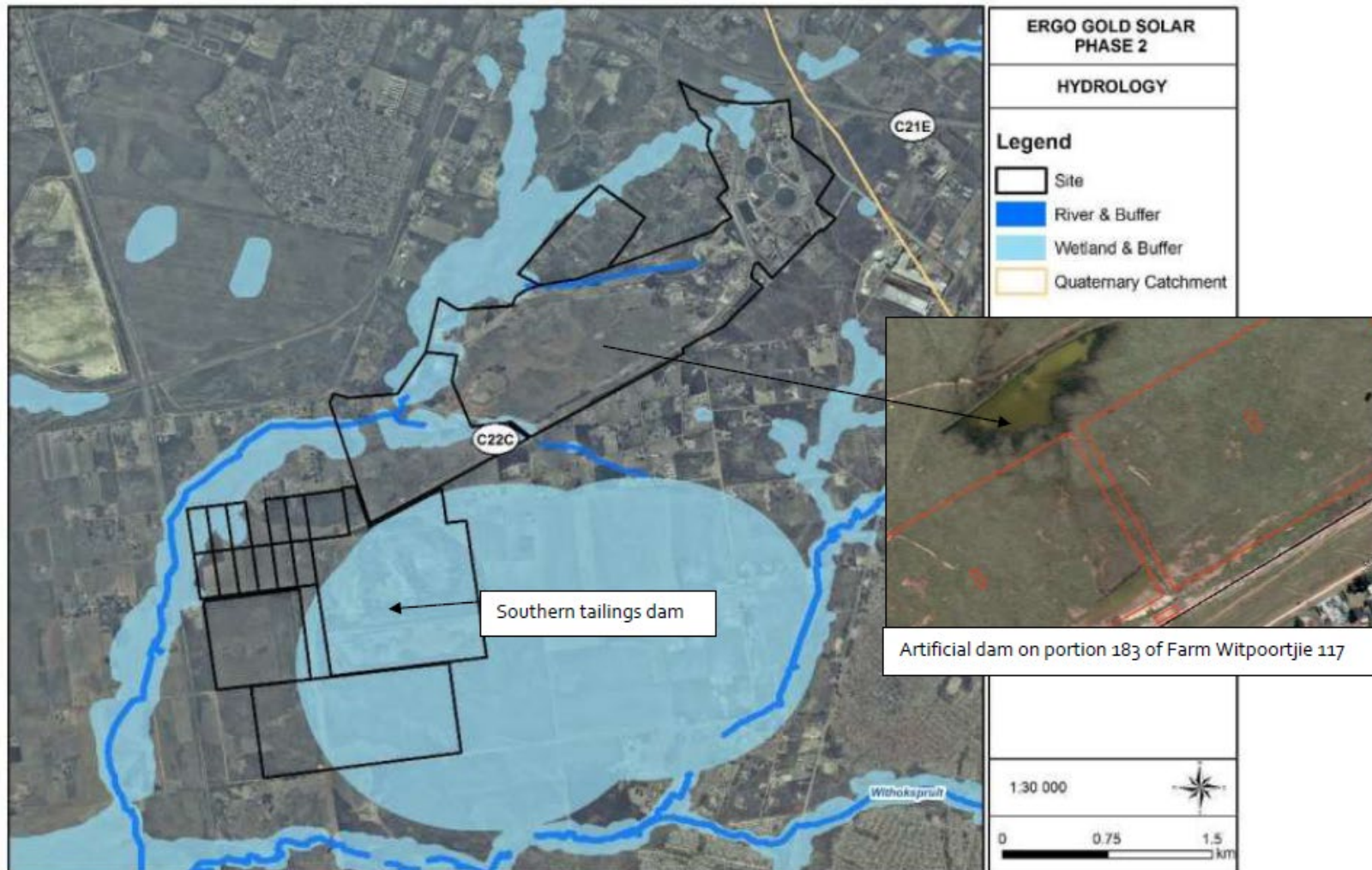


Figure 10: Hydrology of the area that the site is situated in, as per available national spatial data



## g) Wetland systems

(Refer to Appendix I for the Wetland Impact Assessment and Aquatic Scoping Report)

The recent publication of the National Wetland Map 5 (Van Deventer et al, 2019) (NWM5) database forms part of the National Biodiversity Assessment (2018), within the category of the Inland Aquatic (Freshwater) Realm. The NWM5 was utilised to assess the project area. As shown in Figure 11, a number of unchannelled valley bottom wetlands, and depressions/pans are located within the study site. These systems are often utilised for agricultural production leading to negative impacts on their health and functional integrity (Refer to Appendix I: Wetland and Aquatic Assessment).

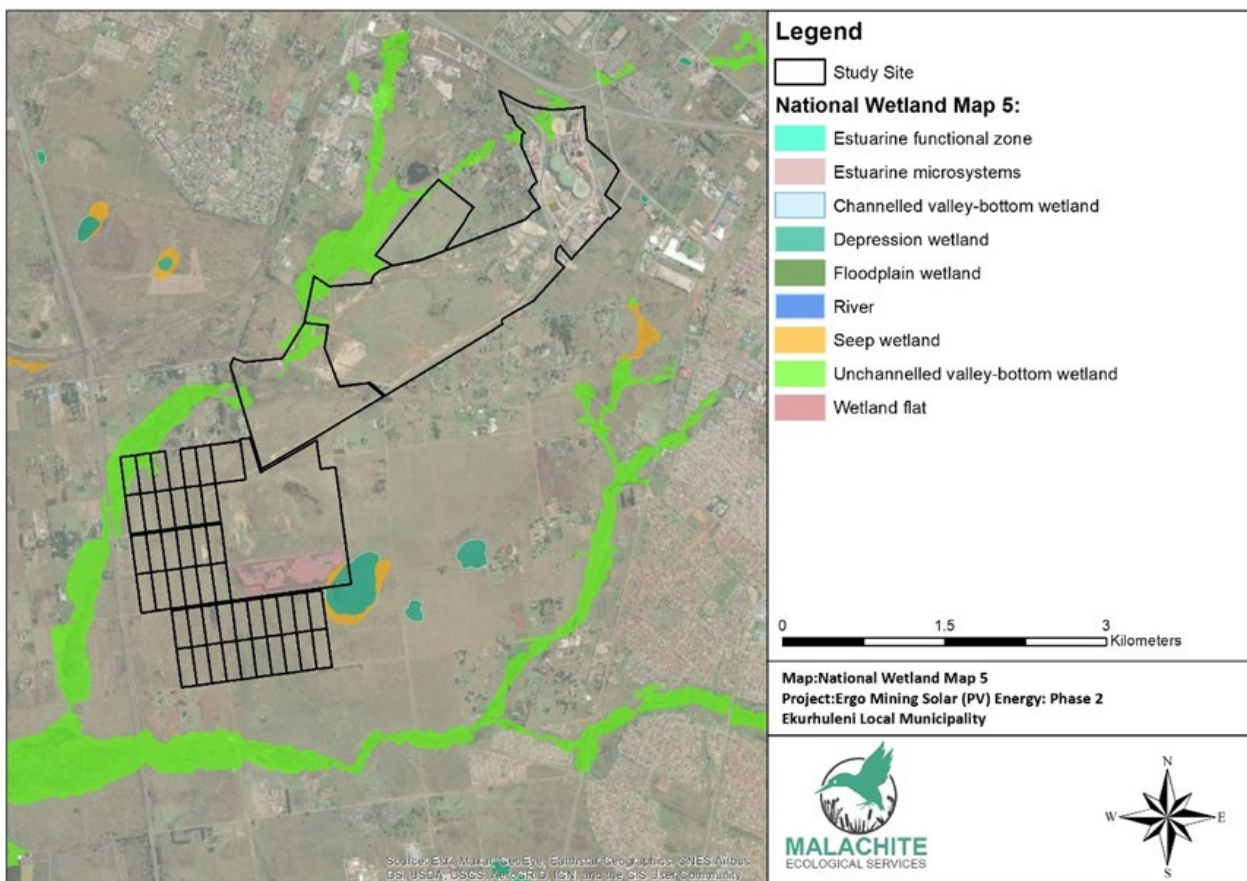


Figure 11: Wetland systems surrounding the site as per the National Wetland Map 5 database

## National Freshwater Ecosystem Priority Areas (NFEPA) and the National Wetland Map 5

According to the outputs of the NFEPA project (Figure 12) a number of wetland systems are located within the assessment area. These are classified as an unchannelled valley bottom wetland, seep systems as well as depression and flat systems. These are furthermore classified as both natural and artificial, with the natural systems categorised as Moderately Modified (PES Category C).



As an additional database to the NFEPA database layer, the more recent National Wetland Map 5 (Van Deventer et al, 2019) database was furthermore utilised to assess the project area. The National Wetland Map 5 (NWM5) forms part of the National Biodiversity Assessment (2018), within the category of the Inland Aquatic (Freshwater) Realm.

The NWM5 was utilised to assess the project area. As shown in Figure 13, unchannelled valley bottom wetlands are located along the northern and western boundary of the study site as well as a depression wetland located in the southern area adjacent to the mining stockpile (Refer to Appendix I: Wetland and Aquatic Assessment).

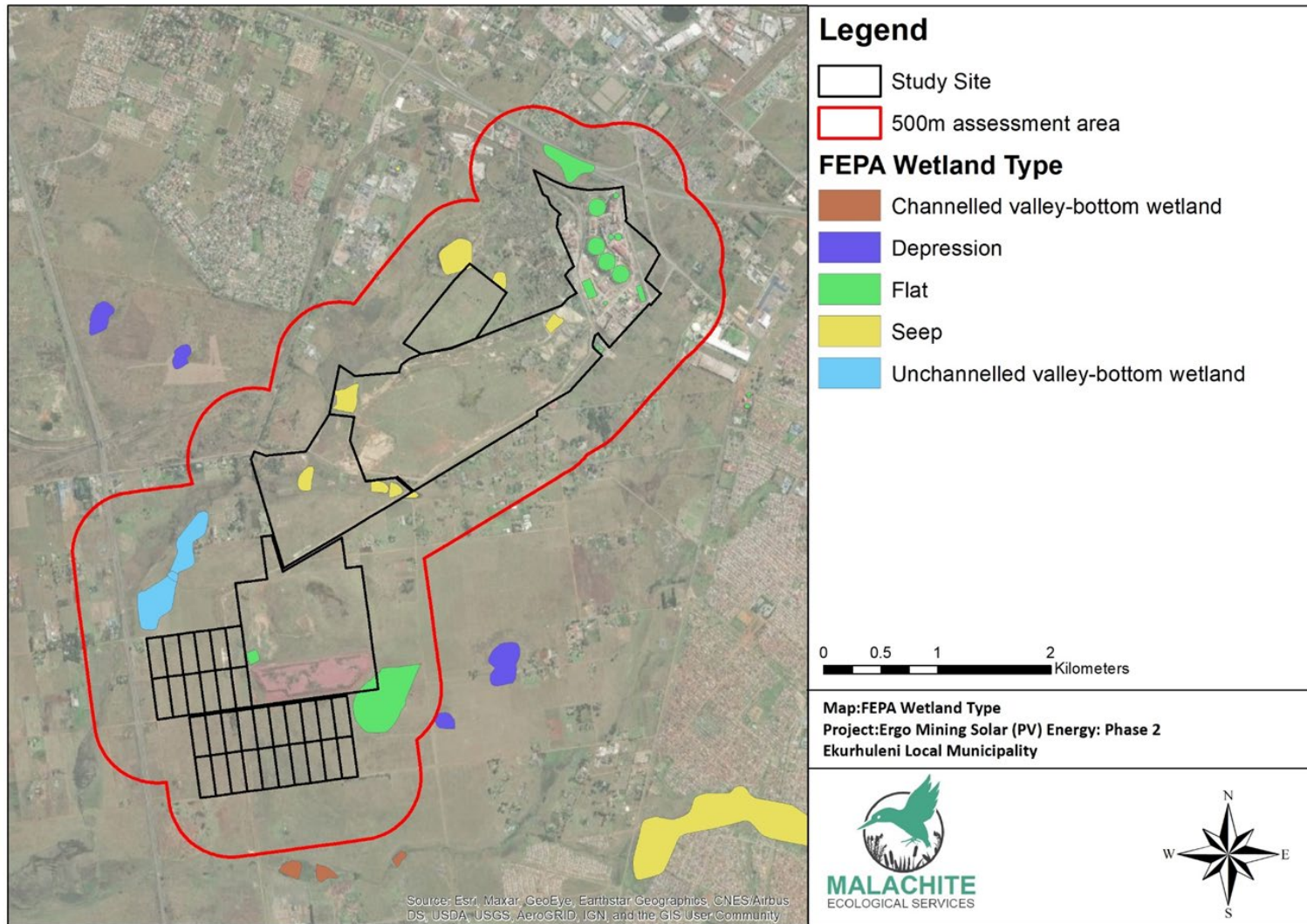


Figure 12: FEPA wetlands identified within the assessment area with 500m buffer



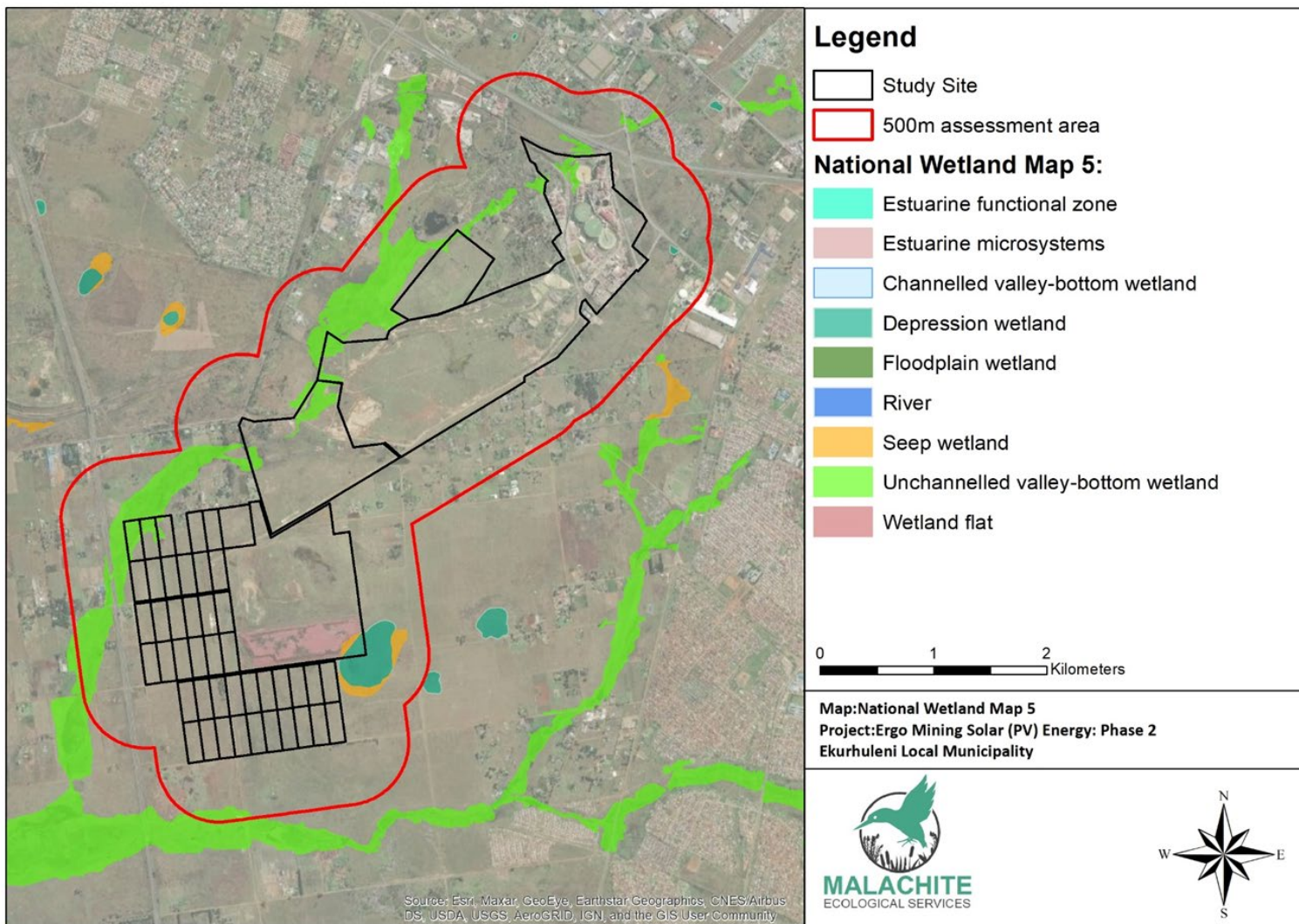


Figure 13: Wetland systems within the assessment area as per the National Wetland Map 5 database with 500m buffer



## Wetland Findings

A desktop assessment concluded four Hydrogeomorphic (HGM) units which were delineated within the proposed study area and a 500m assessment buffer. These were classified as an unchannelled valley bottom wetland, a seep system, and a depression wetland, while a fourth HGM unit, a channelled valley bottom wetland, was delineated to the south of the study site but within the 500m assessment buffer. These HGM units are detailed in Table 12 and displayed in Figure 14 (refer to Appendix I).

Table 12: Summary table of delineated wetlands

HGM unit number	Wetland Type
HGM 1	Unchannelled Valley Bottom
HGM 2	Seep
HGM 3	Depression
HGM 4	Channelled Valley Bottom

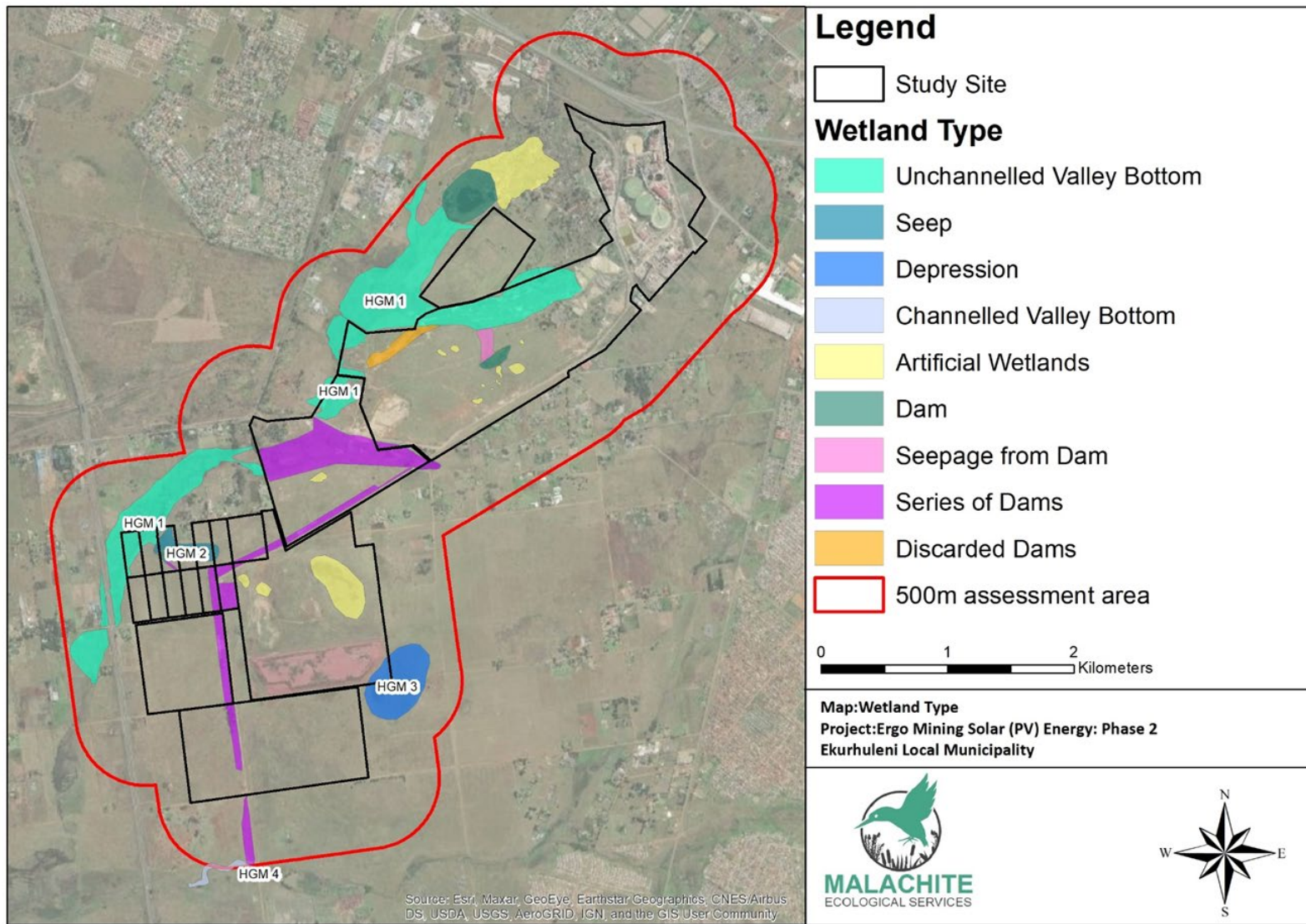


Figure 14: Wetland systems delineated within the assessment area





## Aquatic Habitat

In general, a low diversity of aquatic habitats is expected within HGM 1 due to the unchanneled valley-bottom wetland nature as well as the underlying geology which has resulted in a notable lack of stones habitat. Further, HGM1 has a relatively small, low-gradient catchment and thus a low accumulation of flow, resulting in slow-flowing hydraulic habitat. Consequently, it is expected that aquatic habitat within HGM 1 would comprise almost solely of dense stands of emergent vegetation of *Phragmites* sp. and *Typha capensis* with slow-flowing water and a mud-based substrate. The expected physico-chemical properties of HGM 1 are further likely to present a limiting factor to the occurrence of aquatic biota within the wetland.

Aquatic habitat within HGM 3 (depression wetland) is also expected to be limited, with water only likely to be present during the rainfall season and emergent vegetation being the dominant habitat structure. However, the shallow depth and lack of flowing water as well as possible water quality impairment from seepage of contaminated water from the tailing's storage facility located within the wetland's boundary are expected to present limiting factors to the occurrence of diverse aquatic biota.

## Aquatic Macroinvertebrates

In general, valley bottom wetlands and depressional systems such as was determined to be present within the study area are unlikely to support a diverse array of aquatic biota during even unimpacted conditions given the lack of diverse hydraulic habitat relative to true riverine reaches of watercourses. Accordingly, given the water quality of the generally reducing environmental conditions associated with wetlands and the possible impacts from historic gold mining activities within the area, as well as hydrological dynamics of such systems and the lack of diverse habitat, the aquatic macroinvertebrate assemblage is expected to be dominated by taxa with a strong preference for instream and emergent vegetation within very slow-flowing habitats, as well as taxa with a very low to low preference for unmodified water quality. As such, only a limited acquired diversity of aquatic biota is expected to be associated with the wetlands present within the study area.

On the other hand, the intrinsic aquatic macroinvertebrate diversity associated with a depressional system such as HGM 3 is largely based on the egg bank which is supported by such a system, as well as the extent and duration of inundation at any given time. Variability in terms of the total number of hatched nauplii and the temporal variability of the hatching from depressional systems is expected, as successful hatching is a function of conditions of exposure, the species present and the fraction of quiescent and diapausing eggs (Henri et al., 2014). Branchiopod eggs have been found to exhibit different states of dormancy. Diapause is one state of dormancy where the arrest in development is initiated by internal factors - eggs do not hatch even when environmental conditions are favourable as diapause termination is also internally controlled (Lavens & Sorgeloos, 1987; Drinkwater & Clegg, 1991; Brendonck et al., 1993; cited in Henri et al. 2014). Quiescence is an alternate state of dormancy where the arrest in development is initiated by external factors, is induced by unfavourable external conditions, and is terminated as soon as conditions are permissible (Lavens & Sorgeloos, 1987;



Drinkwater & Clegg, 1991; Brendonck, 1996; cited in Henri et al. 2014). Both forms of dormancy have been found to occur in a single brood of eggs. Quiescent eggs respond rapidly to a change in environmental conditions giving species a quick start to colonisation before the pan dries up (Brendonck, 1996; cited in Henri et al. 2014). Diapause is most likely the phenomenon which ensures some eggs always remain dormant in the sediment to ensure the continuation of the species over long periods of time and is most likely responsible for the long-term viability of eggs in the egg bank.

Hatching of individuals is also known to vary under identical conditions and only a fraction of the total viable egg banks are likely to hatch during the inundation period (Brendonck et al., 1996; Vanderkerkhove et al., 2004; cited in Henri et al., 2014). According to Henri et al. (2014), a temporal succession in the diversity of invertebrates was noted during the hatching period following inundation, and the rate of nauplii hatching therefore appeared to be related to the diversity of the egg bank, with pans that had a peak in hatching within the 4-16 day interval having an abundance of Anostraca, while those pans where hatching peaked in the 16-18 day interval had high numbers of Cladocera and Ostracoda.

However, the impacts of mine-affected water on HGM 3 are likely to significantly decrease the intrinsic biodiversity features associated with the wetlands. According to studies conducted by Henri et al. (2014), mine-affected water in the form of Acid Mine Drainage had a negative effect on the hatching success from egg banks of depressional wetlands systems within the Highveld region. Furthermore, such impacted depressional wetlands had lower recovery rates, suggesting that such wetlands will suffer a loss of biodiversity.

## Aquatic Ichthyofauna

A total of four indigenous fish species and one alien fish species are expected to be associated with the larger study area (Table 13). Such diversity may however be considered optimistic, and only limited fish diversity is expected to be associated with HGM 1 (if any), while no fish species are expected HGM 3.

Table 13: Fish species expected to be associated with the study area

Scientific Name	Common Name	Conservation Status
<b>Indigenous species</b>		
<i>Clarias gariepinus</i>	Sharptooth Catfish	Least Concern
<i>Enteromius cf. anoplus</i>	Chubbyhead Barb	Least Concern
<i>Enteromius cf. pallidus</i>	Goldie Barb	Least Concern
<i>Tilapia sparrmanii</i>	Banded Tilapia	Least Concern
<b>Non-native Species</b>		
<i>Gambusia affinis</i>	Mosquitofish	Alien





It should be noted that there are current taxonomic uncertainties with several species of fish expected to occur within the larger study area which may have implications on assigned conservation status. These include:

1) *Enteromius cf. anoplus* (Chubbyhead Barb complex). Genetic studies done on the Chubbyhead Barb complex by Da Costa (2012) suggested this group to have significant genetic variation and to represent multiple potential species. The study by Da Costa (2012) showed the separation of the complex into distinct lineages, with the species likely to occur within the present study area corresponding with Lineage A which represents the largest of the lineages identified. Four sub-groups were observed within Lineage A by Da Costa (2012), with those specimens present within the Upper Vaal catchments corresponding to sub-group 1, again the largest of the sub-groups identified. Nevertheless, if further taxonomic studies confirm that there are separate species, the assessment as Least Concern may need revision in some cases.

2) *Enteromius cf. pallidus* (Goldie Barb). According to Chakona et al. (2015), genetic analyses of *Enteromius pallidus* collected from the currently known distribution range of the species within South Africa grouped into two distinct lineages, namely a southern lineage from where the original type specimen was collected, and a northern lineage. Further, the deep genetic divergence between the northern and southern lineages of *E. pallidus* suggests a long history of isolation, raising two taxonomic possibilities: The first possibility is that the northern lineage of *E. pallidus* may represent an undescribed species. A second possibility is that the 'true' *E. pallidus* is confined to coastal rivers of the Eastern Cape, and the northern lineage belongs to a different, but known species or species complex. However, further research is required to resolve this taxonomic uncertainty between the two genetically distinct lineages to determine implications on conservation priorities.

## h) Vegetation

(Refer to Appendix E for the Flora Terrestrial Biodiversity Scoping Report)

The study site is situated within the Grassland Biome of South Africa. This biome is dominated by grasslands wherein high summer rainfall, combined with dry winters, night frost and marked diurnal temperature variations are unfavourable to tree growth. Most plant species in grasslands are non-grassy herbs (forbs), most of which are perennial plants with large underground storage structures. Furthermore, many Rare and Threatened plant species in the summer rainfall regions of South Africa are restricted to high-rainfall grasslands, making the Grassland Biome in most urgent need of conservation.

The Grassland Biome comprises several vegetation types (Mucina & Rutherford, 2006). Most of the proposed sites are situated within the historical extent of the Tsakane Clay Grassland that occurs on slightly undulating plains and low hills (Figure 15). The vegetation is short, dense grassland dominated by a mixture of common highveld grasses such as



*Themeda triandra*, *Heteropogon contortus*, *Elionurus muticus* and several *Eragrostis* species. Disturbance leads to an increase in the abundance of the grasses *Hyparrhenia hirta* and *Eragrostis chloromelas* (Mucina & Rutherford, 2006). Only about 2% of the 24% target of this grassland is conserved and it is classified as Endangered (Mucina & Rutherford, 2006). More than 60% was transformed by cultivation, urbanisation, mining, dam-building and roads and urbanisation is threatening the remaining portions of this grassland. The most eastern extent of the proposed sites falls within the Soweto Highveld Grassland. This vegetation type is also greatly transformed and classified as being Endangered. The vegetation grows on gently to moderately undulating landscapes of the Highveld Plateau and supports short to medium-high, dense, tufted grassland, dominated by a variety of grasses, mainly *Themeda triandra*.

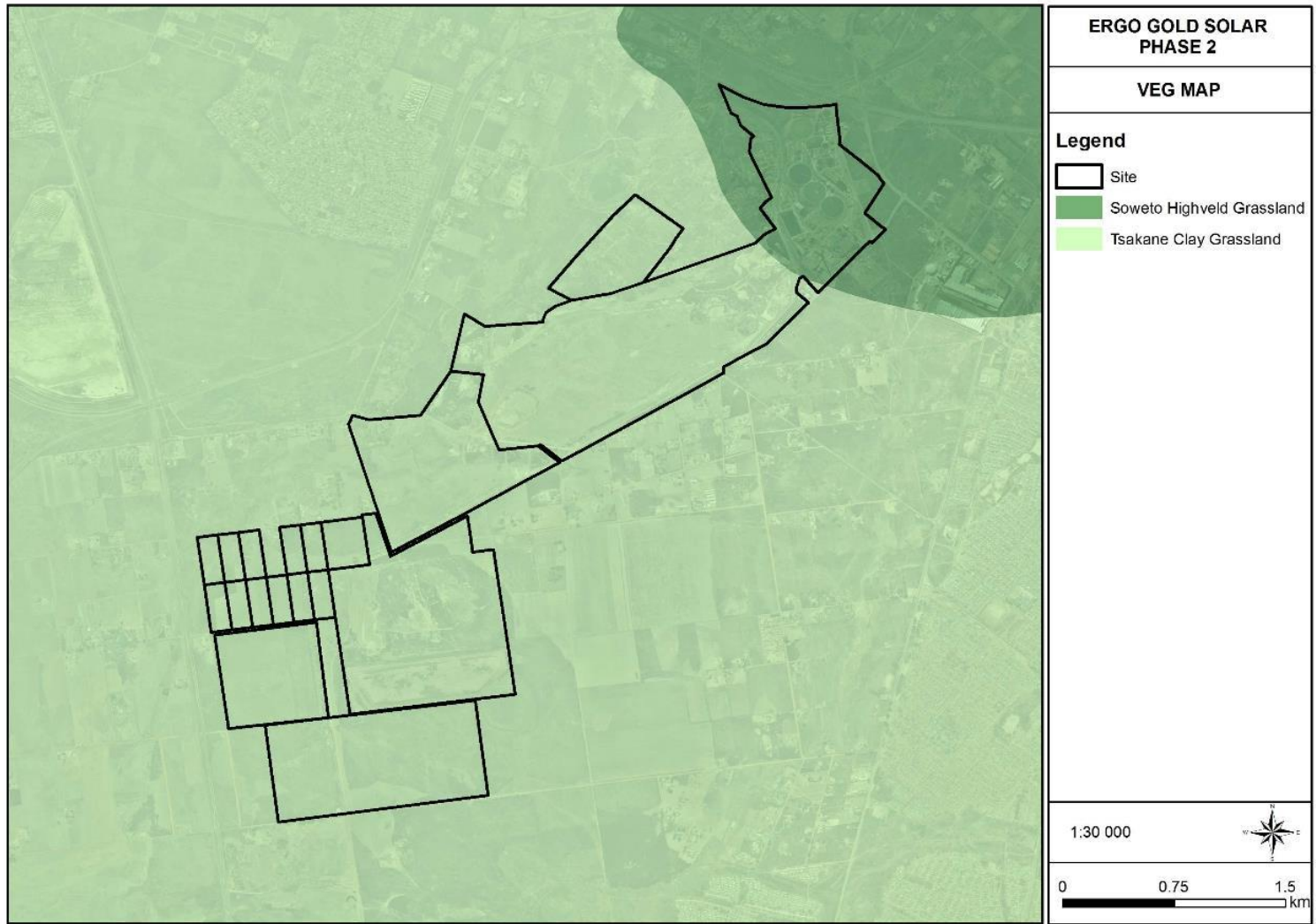


Figure 15: Vegetation units underlying the study area (Mucina and Rutherford, 2006).



## Listed Ecosystems

The South African Biodiversity Act (Act 10 of 2004) provides for the listing of threatened or protected ecosystems. These ecosystems are grouped into Critically Endangered-, Endangered-, Vulnerable- and Protected Ecosystems (Section 52(1) (a) of the National Environmental Management: Biodiversity Act (Government Gazette 34809, Government Notice 1002, and 9 December 2011)).

Most of the proposed sites fall within the Critically Endangered Klipriver Highveld Grassland ecosystem, whereas the eastern extent thereof falls partly within Soweto Highveld Grassland (Vulnerable), and the Tsakane Clay Grassland (Endangered) listed ecosystems (Figure 16). Google Earth satellite imagery however shows that much of the development footprint traverse areas that have already been modified from the natural state.

## Gauteng Conservation Plan

The Gauteng Conservation Plan (Version 3.3) (GDARD, 2011) classified areas within the province based on its contribution to reach the conservation targets within the province. These areas are grouped as Critical Biodiversity Areas (CBAs) or Ecological Support Corridors (ESAs). The CBAs comprise 'Irreplaceable' areas that must be conserved and areas classified as 'Important' to reach the conservation targets of the Province. ESA's are areas that are not essential for meeting biodiversity representation targets/thresholds but which nevertheless play an important role in supporting the ecological functioning of critical biodiversity areas and/or in delivering ecosystem services that support socio-economic development, such as water provision, flood mitigation or carbon sequestration. ESAs ensure sustainability in the long term.

Large portions of the proposed site are not classified as being of conservation concern. However, CBAs classified as Important to reach the conservation targets in the Province are present, with the largest unfragmented CBA within the most southern extent of the site (Figure 17). The CBAs indicate areas that likely comprise primary vegetation and could be suitable habitat for plant species of conservation concern. The ESAs present on the site are associated with the Withokspruit tributaries and drainage lines on and around the site.

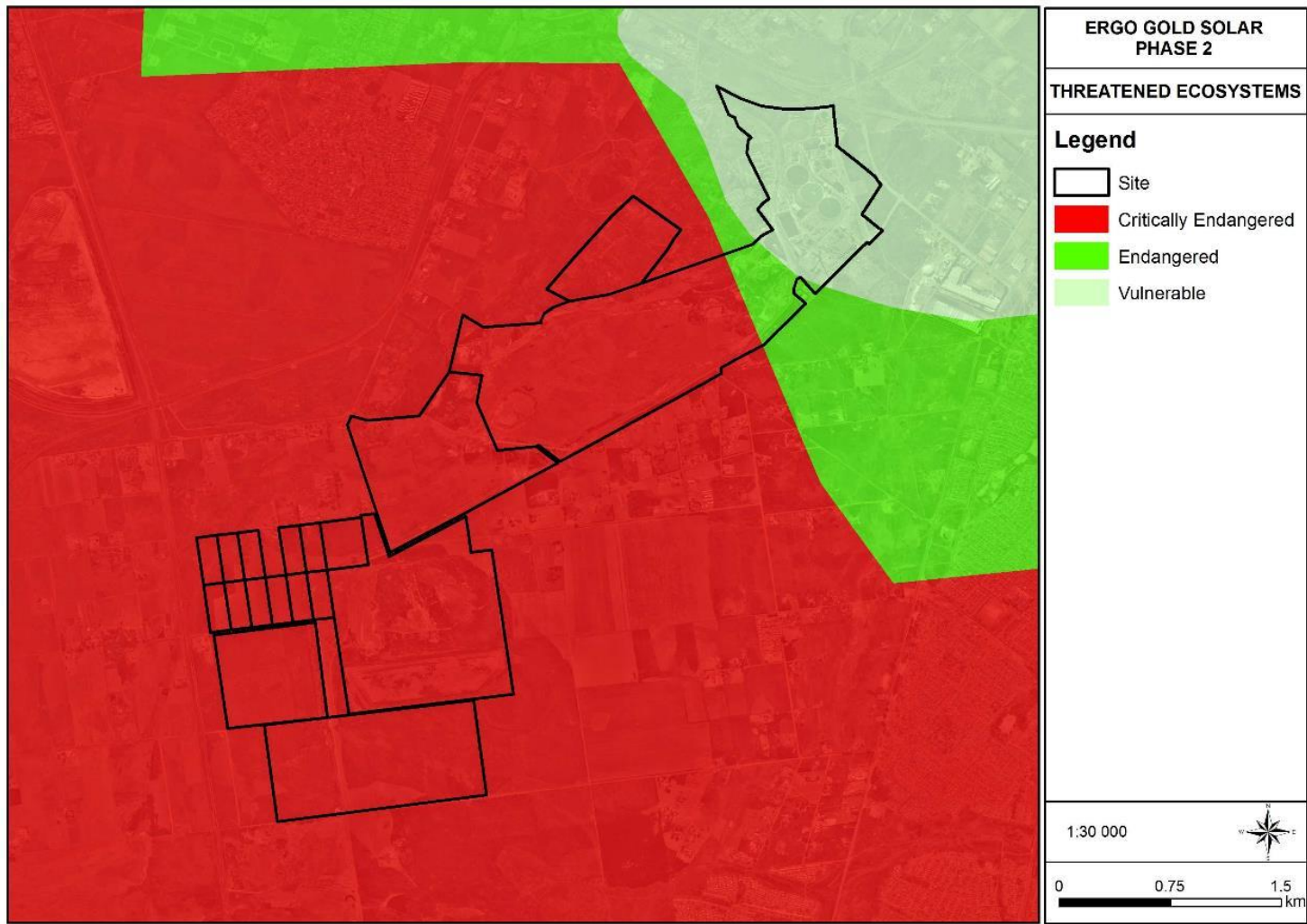


Figure 16: Threatened ecosystems



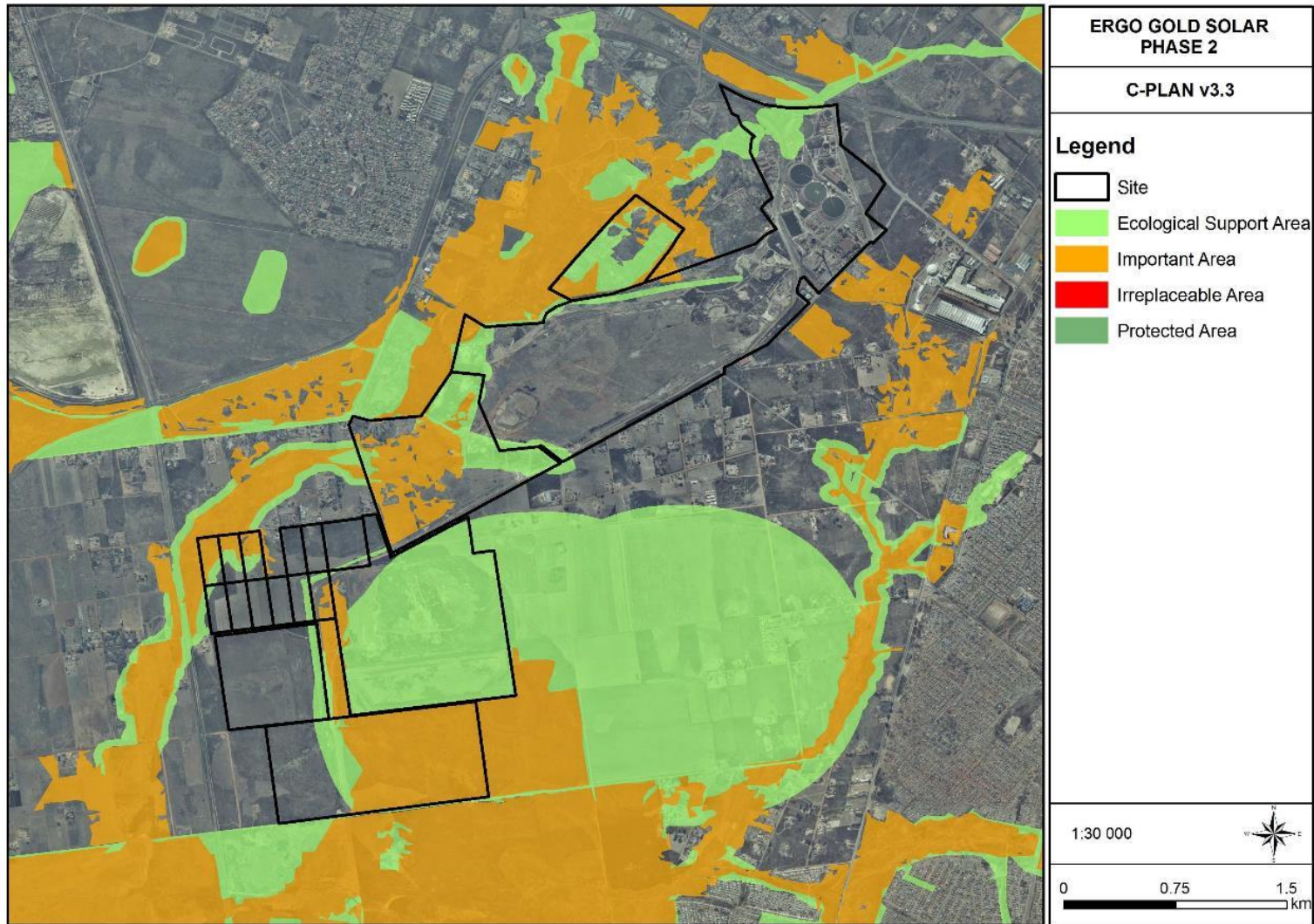


Figure 17: The proposed development in relation to the Gauteng Conservation Plan

### Ecological drivers and processes in grassland

Frost, fire and grazing maintain the herbaceous grass and forb layer and prevent the establishment of thickets or encroachment by trees into grasslands (Tainton, 1999). Fire is a natural disturbance caused by lightning, and regular burning is therefore essential for maintaining the structure and biodiversity of grasslands. If fire is prevented due to activities such as agriculture and mining, the vegetation structure degrades, and alien species could eventually dominate the natural vegetation.

When Tsakane Clay Grassland vegetation is disturbed, *Hyparrhenia hirta* (common thatching grass) and *Eragrostis curvulua* become dominant (Mucina and Rutherford, 2006).

### Protected areas within 10km of site

No areas of international conservation (RAMSAR Wetlands and World Heritage Sites), Important Bird Areas (IBAs), National or Provincial Protected Areas, or National Protected Areas Expansion Strategy (NPAES) areas occur within 10km of site. However, a Private Nature Reserve is situated to the west of the site (Figure 18). The status of the reserve is unknown.

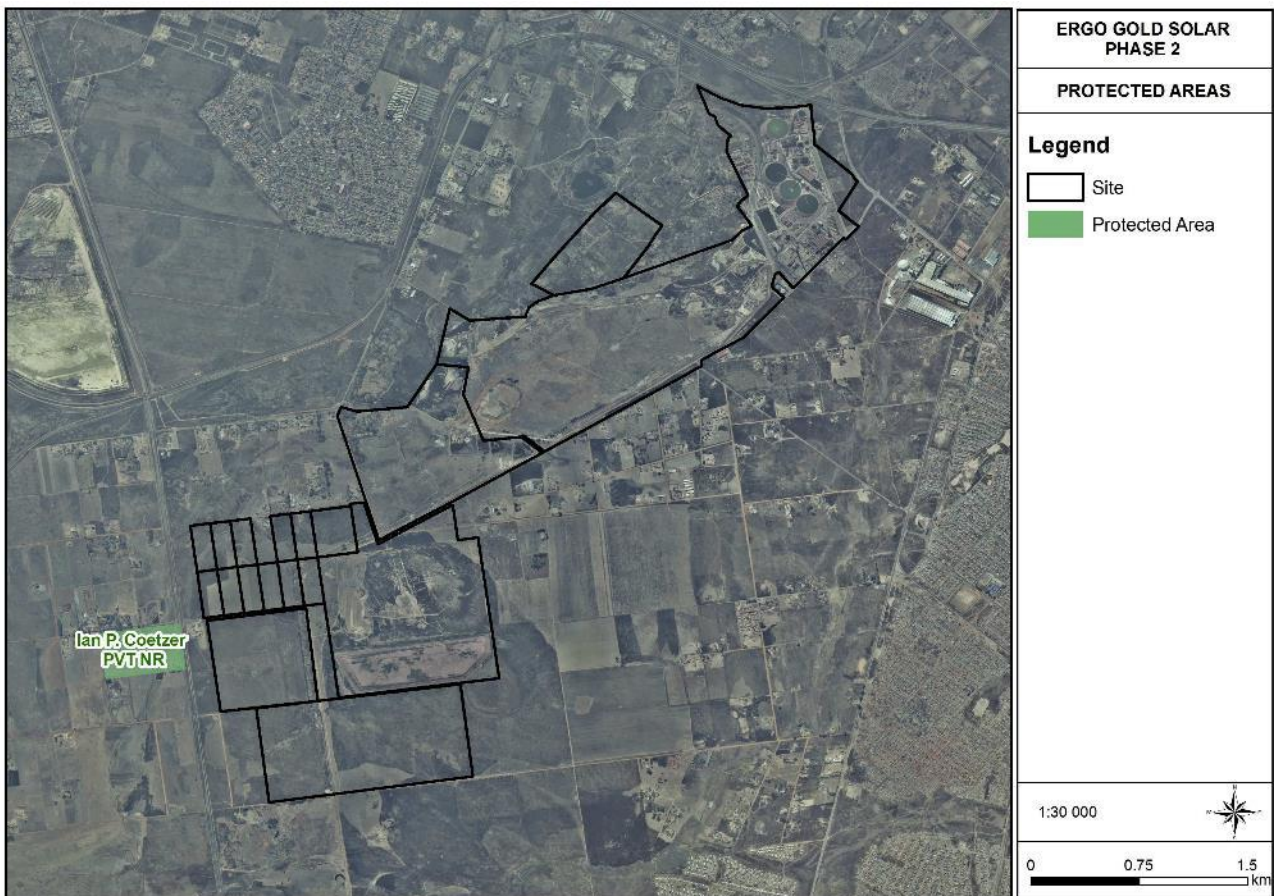


Figure 18: Protected Areas map





## i) Fauna

(Refer to Appendix F for the Fauna Terrestrial Biodiversity Scoping Report)

The historical activities that have taken place within the area means that there is very little likelihood of grassland representing TOP ecosystems occurring in the area. Therefore, from Table 14, the only significant desktop features relevant to terrestrial fauna included the streams, CBAs and ESAs, largely associated with the streams and adjacent areas.

The fauna survey carried out for Phase 1 through the Basic Assessment of the proposed 19.9MW PV plant confirmed that the bulk of the Phase 1 project area was previously developed, supported infrastructure or was completely denuded or supported disturbed grasslands (historically impacted by mining or crop farming). Some fauna species still utilise such areas, but tend to be species that are highly tolerant of human activity and generalists species with wide habitat tolerances or very common species widely distributed in crop-lands of the Highveld. Most of the AI species (birds and rats) would also occupy such areas as most are closely linked to human settlements and areas of activity. More sensitive habitats within the Phase 1 project area were limited and associated with the riverine areas and undisturbed grasslands and often correlated with the CBAs and ESAs, other than the highly disturbed grassland in an historical tailings dump in the southern extent of the proposed Phase 2 project area.

It is expected that Phase 2 will have similar habitat units, although the project area incorporates the non-perennial tributary (along the northern and north-western boundaries of the area) and is, therefore, likely to support more sensitive habitat units. As the entire area will not be developed, there is potential to exclude any sensitive habitat units from the final development footprint.

The complete desktop fauna lists as extracted from the various citizen science sites are included in Appendix B of the Fauna Scoping Report (refer to Appendix F). The TOP and endemic species extracted from this list are further discussed below. Each faunal vertebrate group discusses, as relevant, the TOP species, endemic and restricted species and the AIS, focussing on species that are highly likely to occur on site for extended periods and therefore most likely to be exposed to the development and potential impacts. Invertebrates are discussed more generally but TOP species lists are included.

Table 14: Ecologically significant features (distances are “as the crow flies” approximations)

Ecological feature / area	Description of feature relevant to the site
International Conservation:	The Blesbokspruit RAMSAR Wetlands (incorporated in part in the Marievale Bird Sanctuary Provincial Nature Reserve) are approximately 12km east of site. No World Heritage sites occur within 50km of site.
Protected Areas (PAs) (Plan 2)	The formally protected Suikerbosrand Provincial Nature Reserve lies <10km south of site. Other nearby provincial nature reserves and bird sanctuaries are all more than 10km from site. No National Protected Area Expansion Strategies (NPAES) are targeted within 10km of site.





Ecological feature / area	Description of feature relevant to the site
National Freshwater Priority Area (NFEPA) Features (Plan 3)	<p>The site is not within a NFEPA Catchment.</p> <p>A non-perennial tributary flows just within the north and north-west property boundaries and flows south into the Rietspruit Tributary, which is a NFEPA river with an unacceptable ecological state (river condition has not been assessed). The tributary eventually confluences with the NFEPA Rietspruit (unacceptable ecological state and river condition) 5.3km further west.</p> <p>The wetlands associated with this non-perennial tributary and with the mine area and other nearby wetlands (Plan 1) are Rank 5 and 6 NFEPA wetlands, which provide little in terms of habitat for TOP species (cranes, TOP water birds and frogs).</p> <p>In terms of the desktop information, the aquatic habitats are impaired and unlikely to have significant value for sensitive riverine and wetland fauna species.</p>
Strategic Water Source Areas (SWSAs)	The Eastern Karst Belt SWSA occurs just over 2km north-east of the project area.
Biome and Ecosystem	<p>The area falls within the Grassland Biome. The following is relevant:</p> <ol style="list-style-type: none"> <li>1) The bulk of the project area is within the Klipriver Highveld Grassland, listed as a Critically Endangered ecosystem (NEM:BA, GN1002, 2011).</li> <li>2) The northern-eastern part extends into Tsakane Clay Grassland, listed as an Endangered ecosystem (NEM:BA, GN1002, 2011).</li> <li>3) The very north-eastern extent of the area extends into Soweto Highveld Grassland, which is listed as a Vulnerable ecosystem (NEM:BA, GN1002, 2011).</li> </ol> <p>Given the history of the site, and the historical impacts and ongoing activities in and around the area, it is not expected that the area will support representative units of these ecosystems (to be confirmed by the flora specialist), however any good grassland habitats would support grassland fauna species.</p>
Gauteng Ridges	No Class 1 or 2 ridges occur on or near site. Small Class 4 (lowest ridge classification) ridges occur within 4-11km of site. On-site ridges are related to mine dumps and are not natural features.
Conservation Plan (Plan 4)	Much of the project area is currently / was historically occupied by mining-related infrastructure and lies within undesignated areas. CBAs and ESAs are associated with the non-perennial



Ecological feature / area	Description of feature relevant to the site
	tributary and form an ecological corridor in the area. The far southern extent of the project area also extends into ESA and CBA); the bulk of this ESA is a cleared tailings dump.
Quarter degree grid squares (QDGS)	The site lies within QDGS 2628AD. All desktop data obtained from the citizen science sites have been sourced for this QDGS.

## Mammals

### Confirmed Site Species (from Phase 1 assessments only)

The Yellow Mongoose (*Cynictis penicillata*), Common Duiker (*Sylvicapra grimmia*) and Pretoria Mole Rat (*Cryptomys pretoriae*) are considered as confirmed species as from the Phase 1 project area assessment. All are tolerant of man-modified habitats and common in rural settings.

### Historical & Likely TOP, Species of Conservation Concern (SCC) & Endemic Species

The previously recorded TOP and endemic mammals for the area and those with distributions across the area are indicated in Table 3 of the Fauna Scoping Report (refer to Appendix F). All previously recorded TOP species are antelope which are not likely to occur on site unless deliberately stocked on site and are not further discussed.

The Phase 2 project area is likely to incorporate more sensitive and undisturbed habitats. The Oribi (*Ourebia ourebia*), a potential SCC for the area, which utilises the more natural, undisturbed grasslands as part of their territory (Shrader *et al.*, 2016), is likely to occur in the Phase 2 project area. The likelihood of the Spotted-necked Otter (*Hydrictis maculicollis*), another potential SCC for the area, which has a preference for large rivers, permanent pools, lakes, dams and wellwatered swamps and is likely to be deterred by poor quality water (Ponsoby *et al.*, 2016) and has been considered only as a possible species for the general area.

The following TOP and endemic species are listed as likely to occur in the Phase 2 project area and surrounds, based on desktop findings:

- 1) Oribi (*Ourebia ourebia*) (GN151 Endangered; RL Endangered; SCC, Provincially Protected). Main threats include habitat destruction, illegal hunting, poor farm management practices, poor law enforcement, including the lack of coordinated / cooperative management and lack of awareness of the status, threats and legal repercussions of killing Oribi which prevents effective implementation of interventions (Shrader *et al.*, 2016).
- 2) Southern African Hedgehog (*Atelerix frontalis*) (GN151 Protected; Provincially Protected). Plays a role in invertebrate pest control as an insectivore. Main threats include habitat loss, degradation and fragmentation from



urban sprawl and agriculture. Also threatened by illegal harvesting from the wild for food, or for sale as pets and for traditional medicine (Light *et al.*, 2016).

- 3) Serval (*Leptailurus serval*) (GN151 Protected). Servals may play a functional role in agricultural landscapes in controlling the numbers of pest species, specifically rodents and invertebrates. Main threats include loss and degradation of wetlands and associated grasslands. Wetlands generally harbour high rodent densities compared with other habitat types, and form the core areas of Serval home ranges; disruption to such habitats reduces prey-base (Ramesh *et al.*, 2016).
- 4) Southern Reedbuck (*Redunca arundinum*) (GN151 Protected; Provincially Protected). Impacted in the past by habitat transformation and degradation associated with agricultural activities and settlements. On agricultural land, they are subjected to possible persecution due to damage to pastures and crops. Also susceptible to hunting, snaring and poaching (du Plessis *et al.*, 2016).
- 5) Steenbok (*Raphicerus campestris*) (Provincially Protected). Species may contribute to seed dispersal as the species is known to eat fruit and pods. The Steenbok is also an important prey species for carnivores. No major threats to this species, but minor threats include subsistence hunting, range restriction through erection of fences, and loss of habitat through poor ranch management (Palmer *et al.*, 2016).
- 6) Forest Shrew (*Myosorex varius*) (Endemic). The Forest Shrew is an important prey for the Barn Owl, Water Mongoose, African Striped Weasel and Striped Polecat. The main threat to Forest Shrew is the loss or degradation of moist, productive areas such as wetlands and rank grasslands within suitable habitat. Climate change is also seen as a threat (Taylor *et al.*, 2016).

### **Alien & Exotic Species**

No exotic or AI species were recorded for the QDGS. Cats were noted in the area and dogs were heard around site during Phase 1 assessments. The area is also an agricultural area and utilised for stock grazing. Cattle and chickens are confirmed and it is also suspected that sheep occur in the area based on scat and tracks observed during Phase 1 site assessments.

### **Ecosystem Services**

The various ecosystem services provided by the fauna species previously recorded and likely to occur in the area are fairly typical and include:

- 7) Prey-base for predators / raptors.
- 8) Control of potential vermin, pests and AI species, including potential vectors for disease.
- 9) Seed dispersal.
- 10) Ecosystem engineers:



- 1) Bulk grazers facilitate the presence of more selective, smaller grazers by inducing productive grasslands for these species. Burrowers (for refuge, habitat or simply digging for tubers / roots). Diggings and burrows affect flow of resources, trapping materials that change soil chemical, physical nature and moisture, creating a mosaic of varied and regenerating habitat patches.

## Herpetofauna

In terms of the Animal Demographic Unit (ADU) list (refer to Appendix B of Fauna Scoping Report (included as Appendix F of this report), the following is relevant:

- 1) Omitted species are excluded from the fauna specialist report.
- 2) The species names used in the fauna report are as per Bates *et al.* (2014) and du Preez and Carruthers (2009).
- 3) The ADU list includes *Leptotyphlops* sp. *Leptotyphlops scutifrons* has a corresponding distribution and is included in Appendix B of Fauna Scoping report (refer to Appendix F).

The Gauteng Province lists several non-serpentine reptiles as Schedule 2: Protected Game and the list is too extensive to incorporate in this report. The Giant Bullfrog (*Pyxicephalus adspersus*) is the only amphibian listed (listed as Schedule 2: Protected Game). The proposed development does not intend any specific scheduled activities (hunting, catching, transporting, amongst others) involving herpetofauna, but the legislation must be consulted and complied with should any species need to be handled under any circumstances.

## Site Species (from Phase 1 assessments only)

Only one species of frog was confirmed for site and was also previously recorded in the larger QDGS:

- 4) Giant Bullfrog (*Pyxicephalus adspersus*) (GN151 Protected; Provincially Protected). Species is threatened by loss and degradation of its wetland and neighbouring terrestrial habitat.

A juvenile Giant Bullfrog was observed during Phase 1 assessments, on the move near the Rietspruit Tributary further south of the Phase 2 project area. The Giant Bullfrog has been reported to be declining and is listed nationally as Near Threatened and effort must be made to conserve the species by way of maintaining the natural habitats and ecological corridors remaining in the area.

## Historical & Likely TOP, SCC & Endemic Species

No other TOP species (other than the Giant Bullfrog) or SCC are expected in the area (Table 4 of Appendix F). The following endemic herpetofauna have been previously recorded in the greater area and could occur in the project area:



- 5) Eastern Ground Agama (*Agama aculeata distantii*) (Endemic).
- 6) Common Crag Lizard (*Pseudocordylus melanotus melanotus*) (Endemic).
- 7) Transvaal Thick-toed Gecko (*Pachydactylus affinis*) (Endemic).
- 8) Aurora House Snake (*Lamprophis aurora*) (Endemic).
- 9) Thin-tailed Legless Skink (*Acontias gracilicauda*) (Endemic).
- 10) Raucous Toad (*Amietophrynus rangeri*) (Endemic).

Other endemic species that are likely to occur on site include:

- 1) Delalande's Sandveld Lizard (*Nucras lalandii*) (Endemic).
- 2) Spotted Harlequin Snake (*Homoroselaps lacteus*) (Endemic).
- 3) Olive Ground Snake (*Lycodonomorphus inornatus*) (Endemic).
- 4) Rattling Frog (*Semnodactylus wealii*) (Endemic).

Rocky habitats were very limited within the Phase 1 project area and are not likely to significantly increase within the Phase 2 area. This obviously reduces the likelihood of the rocky species that are listed above from occurring on site, but as habitat requirements are met, the species are retained as likely species for the project area.

### **Alien & Exotic Species**

No AIS or exotic species were identified from ADU lists or iNaturalist.

### **Ecosystem Services**

Many of the herpetofauna species feed on arthropods and will cumulatively contribute to control of invertebrate numbers, including aquatic invertebrates that may be vectors for disease. Many reptiles and frogs are also food sources to many birds and mammals, as well as other reptile species.

### **Invertebrates**

A summary of TOP and provincially protected invertebrates with distribution ranges over and near the survey area are included in Table 5, with ADU desktop species (no iNaturalist species) indicated in bold. It must be stressed that the distribution of many species are unknown and it is very possible that species in Table 5 do not occur in the area and possibly the province (these are indicated as such). They have been included as a cautionary measure. Furthermore, in many instances, entire Family or Genera are listed and listing all these species would be too extensive.

Of the TOP ADU species confirmed for the QDGS (indicated in bold in Table 5 of Appendix F), the Baboon Spider, *Harpactira hamiltoni* (Araneae: Theraphosidae), is a nocturnal burrowing species unlikely to be confirmed during diurnal surveys, but cannot be excluded from the more natural habitats.



One SCC butterfly has distribution near the area and has been recorded for the QDGS (October 2015) and includes:

- 1) *Aloeides dentatis dentatis* (Lepidoptera: Nymphalidae) (RL Endangered; IUCN Vulnerable; Schedule 7: Invertebrata). Host plants include *Hermannia depressa*, confirmed and scattered throughout the grasslands along the power line route, and *Lotononis eriantha* (not confirmed on site).
  - i) The species is mapped in the Gauteng conservation plan and is known from three localities in Gauteng Province, all within protected areas (i.e. Ruimsig Entomological Reserve, Klipriviersberg Nature Reserve, Suikerbosrand Nature Reserve). The species is therefore unlikely on site (Gauteng C-Plan technical report).
  - ii) Butterflies were specifically noted on site during the Phase 1 survey, but no *Aloeides dentatis dentatis* or similar, potentially confusing, species were noted on site, despite surveys being within a peak flight period of the species.

The following butterflies were confirmed for the site during Phase 1 assessments:

- a) *Junonia orithya madagascariensis* (Lepidoptera: Nymphalidae) (Eyed Pansy).
- b) *Junonia hierta cebrene* (Lepidoptera: Nymphalidae) (Yellow Pansy).
- c) *Danaus chrysippus* (Lepidoptera: Nymphalidae) (African Monarch).
- d) *Pontia helice helice* (Lepidoptera: Pieridae) (Meadow White).
- e) *Eurema brigitta brigitta* (Lepidoptera: Pieridae) (Broad-bordered Grass Yellow).
- f) *Catopsilia florella* (Lepidoptera: Pieridae) (African / Common Vagrant).
- g) *Tarucus sybaris* (Lepidoptera: Lycaenidae) (Dotted Blue).

The bush cricket, (Orthoptera: Tettigoniidae) is the only other SCC listed in Table 4, but there is no information provided on the SANBI Species database on the species distribution range or habitat preferences so as to determine the likelihood of the species on site. According to the IUCN distribution data, the project area is just south and outside the species main distribution range, which reduces the likelihood of this species occurring in the area.

## j) Avifauna

(Refer to Appendix G for Avifauna Scoping Report)

### Relevant Bird Populations

#### Important Bird Areas

The proposed Phase 2 40MW SEF is not located within the confines of an Important Bird Area (IBA). The closest IBA to the proposed study area is the Blesbokspruit IBA (SA021) with its most western boundary located approximately 12km to the east of the proposed solar site (Figure 19). The Blesbokspruit IBA is a large, highly modified wetland which extends along the Blesbokspruit, one of the Vaal River's larger tributaries, from the Grootvaly Wetland Reserve in the north to the



Marievale Bird Sanctuary in the south. More than 220 species have been recorded for the IBA in SABAP2 (Marnewick et al. 2015). African Marsh Harrier *Circus ranivorus* and African Grass-Owl *Tyto capensis* have been displaced from much of the surrounding area as a result of intense industrialisation, urbanisation and habitat modification. The proximity of the IBA provides an indication of the species that are likely to occur in similar habitats found within the proposed development area. In particular, they highlight those species of conservation concern that are vulnerable to the displacement and collision impacts associated with the construction and operation of the 40MW SEF.

### Protected Areas

Four protected areas are located within a 20km radius of the proposed 40MW SEF (Figure 34). These areas are protected by law and managed for biodiversity conservation, providing much needed habitat that can potentially support a diversity and abundance of avifaunal species. Similarly, to IBAs these areas may provide an indication of the avifaunal species that are likely to occur in similar habitats found within the study area.

### Coordinated Avifaunal Roadcount (CAR) Routes

Cranes, bustards, storks and other large birds that spend most of their time on the ground, need wide, open spaces and are certainly not restricted to protected areas. Agricultural habitats are used extensively for feeding, roosting and breeding, often because no natural, pristine habitats are available, and sometimes because the agricultural habitats are especially attractive to birds. The Coordinated Avifaunal Roadcounts (CAR) project monitors the populations of 36 species of large terrestrial birds in agricultural habitats, in addition to gamebirds, raptors and corvids along 350 fixed routes covering over 19 000km (<http://car.adu.org.za/>). Although CAR road counts do not give an absolute count of all the individuals in a population, they do provide a measure of relative abundance in a particular area. Given the built-up nature of the study area, there are no CAR routes within the proposed development area. Route GD02 occurs within a 20km of the study area and is associated with the Blesbokspruit IBA (Figure 19). This route has recorded White Stork, Secretarybird *Sagittarius serpentarius*, Steppe Buzzard and Back-shouldered Kite *Elanus caeruleus*.

### Coordinated Waterbird Count (CWAC) Sites

A CWAC site is any body of water, other than the oceans, which supports a significant number (set at approximately 500 individual waterbirds, irrespective of the number of species) of birds which use the site for feeding, and/or breeding and roosting (Harrison et al, 2004). This definition includes natural pans, vleis, marshes, lakes, rivers, as well as a range of manmade impoundments (i.e. sewage works). The presence of a CWAC site within the study area is an indication of a large number of waterbird species occurring there and the overall sensitivity of the area. Eight CWAC sites occur within 20km of the proposed solar site. These include Cowles Dam, Grootvaly Wetland Reserve, Grootvaly on Blesbok, the Anglo Reserve, Marievale (Areas A & B), Leeupan and Apex Pan (Figure 19). While these CWAC sites may provide an indication of the waterbird species that could be supported by natural and artificial impoundments within the study area, these sites will not have a significant impact on the sensitivity rating for the proposed 40MW SEF.



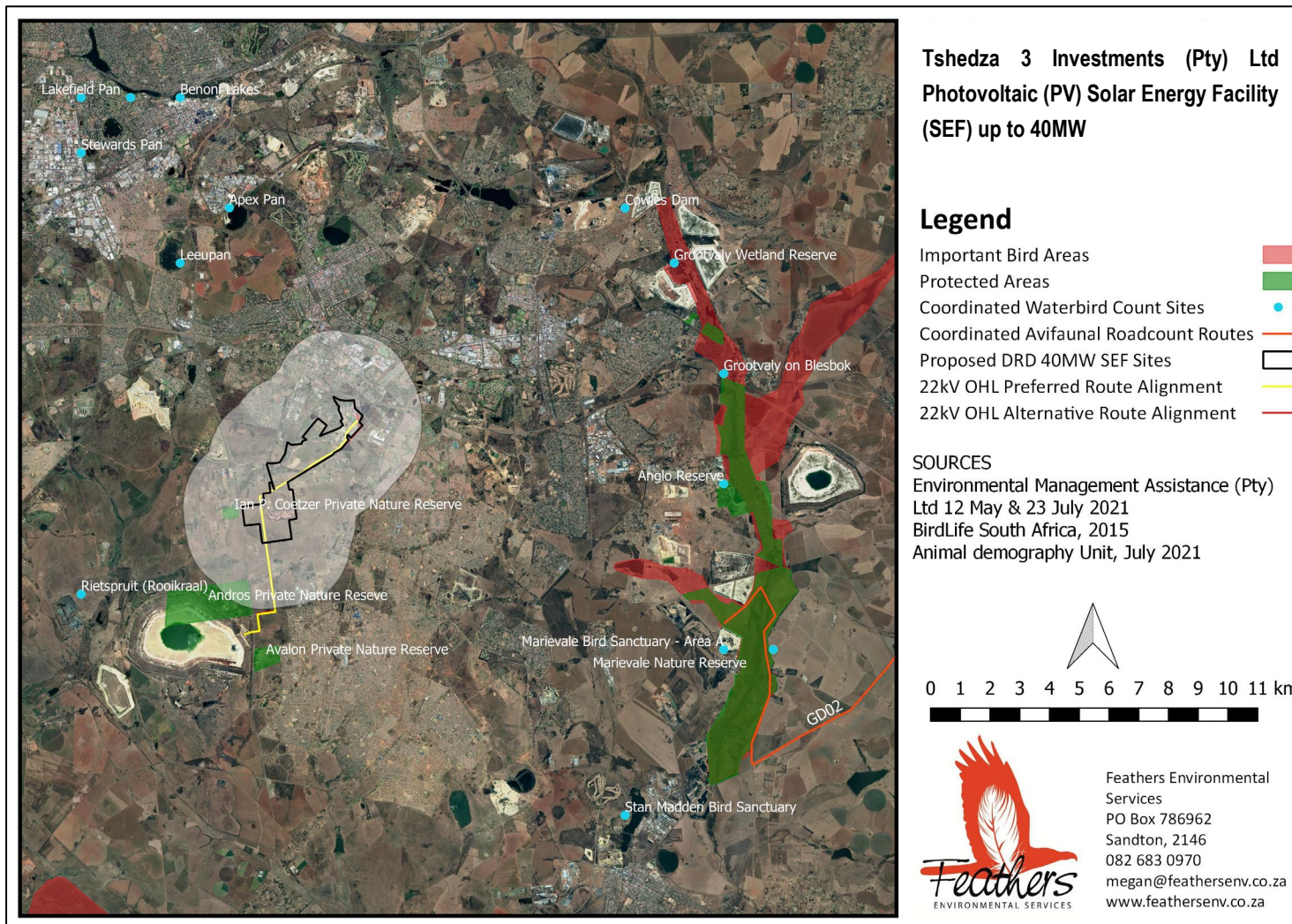


Figure 19: Protected Regional map detailing the location of the proposed 40MW SEF development site in relation to Important Bird Areas (IBAs), Protected Areas, Coordinated Waterbird Count Sites and Coordinated Avifaunal Roadcount Routes.



## South African Bird Atlas Project 2 Data (SABAP2)

A total of 309 bird species have been recorded within the relevant pentads during the SABAP2 atlassing period to date (refer to APPENDIX 1 of the Avifauna specialist report- Appendix G). The presence of these species in the broader area provides an indication of the diversity of species that could potentially occur within the areas earmarked for the proposed 40MW SEF, particularly where pockets of natural vegetation/habitats persist. Of the 309 species, 16 of these are considered to be of regional conservation concern i.e. regional Red List species (Taylor et al, 2015). The White Stork *Ciconia ciconia*, which is not listed, but is protected internationally under the *Bonn Convention on Migratory Species* and Lesser Kestrel *Falco naumanni*, a GDARD priority species has also been recorded in the study area. It is important to note that with the exception of Maccoa Duck *Oxyura maccoa* (n=129), Lesser Flamingo (n=166) and Greater Flamingo (n=409) the remaining Red List species have been recorded in low numbers, with less than 20 individual birds being recorded over the fourteen-year survey period. The significant individual numbers of Maccoa Duck, Lesser and Greater Flamingo can be attributed to the number of observations/surveys conducted within three pentads to the north of the study area, which contain a series of wetlands and waterbodies - habitat that is capable of supporting these species in their abundance. Lanner Falcon *Falco biarmicus* is the only Red List species recorded in the single pentad within which the proposed 40MW SEF development sites are located. The low report rates can be attributed to fairly high levels of disturbance and habitat loss associated with the surrounding mining and industrial practices which has undoubtedly displaced many of the naturally occurring species, that under optimum conditions, would inhabit these areas. Although the avifauna report focuses on Red List species, since the impacts associated with the construction and operation of the proposed 40MW SEF is likely to be more biologically significant for these species, the impact on non-Red List species is also assessed, albeit in less detail. Furthermore, Red List species can often be used as surrogate species for the others in terms of impacts and the necessary mitigation. The non-Red List priority species that have been considered for this assessment include korhaan, buzzards, kestrels, falcons, herons, geese, ibis and various water dependent species. Each Red List species' potential for occurring in a specific habitat class is indicated in the avifauna report (Appendix G- TABLE 1).

## Interested and Affected Party Comments and Local Knowledge

Comments were received from Ms. Jeanne-Michele White and Mrs. Santjie White on 17 and 25 March 2021 respectively, regarding the presence and breeding activities of African Grass Owl, Marsh Owl *Asio Capensis* and African Marsh Harrier, in addition to the occasional presence of Blue Crane *Anthropoides paradeus*, Verreaux's Eagle *Aquila verreauxii* and Secretarybird according to observations carried out in the area over a 15-year period. These comments have been considered for this scoping assessment



in addition to the following observations made by the avifaunal specialist during the Phase 1 impact assessment for the previously assessed 19.9MW SEF:

\* A Phase 1 site sensitivity verification of the project was conducted through the use of both a desktop analysis and an on-site inspection, conducted on 8-9 February 2021. The desktop analysis and on-site inspection, revealed that the study area demarcated as potential African Grass Owl habitat, occurs within a rehabilitated mine area and is bordered by a light industrial zone and residential area. The natural habitat in this area is highly fragmented and subject to significant disturbance (i.e., pastoral activities, industrial activities as well as vehicle and pedestrian traffic) and therefore unlikely to support African Grass Owl. An analysis of the South Africa Bird Atlas Project 2 and CAR datasets supports this premise, with no African Grass Owl observations in the study area or within the much broader area of 68,000ha.

\* The Phase 1 site visit produced a combined list of 40 species, covering both the study area and to a limited extent, the surrounding area. No Red List species were observed during the site visit. Most observations were of small passerine species that are common to this area. Each of these species has the potential to be displaced by the proposed 40MW SEF as a result of habitat transformation and disturbance. However, these species have persisted despite existing disturbance within the study area. This resilience, coupled with the fact that similar habitat is available throughout the broader area, means that the displacement impact will not be of regional or national significance. In addition, no raptor nests or other possible breeding sites were noted during the site survey.

### **Bird Habitat Classes (Microhabitats)**

Vegetation is one of the primary factors determining bird species distribution and abundance in an area. It is widely accepted within ornithological circles that vegetation structure is more important in determining which bird species will occur there. The classification of vegetation types is from Mucina & Rutherford (2006 and 2012), while from an avifaunal perspective, the Atlas of southern African Birds (SABAP1) recognises six primary vegetation divisions or biomes within South Africa, namely (1) Fynbos (2) Succulent Karoo (3) Nama Karoo (4) Grassland (5) Savanna and (6) Forest (Harrison et al. 1997). Whilst much of the distribution and abundance of bird species can be attributed to the broad vegetation types present in an area, it is the smaller spatial scale habitats (micro habitats) that support the requirements of a particular bird species that need to be examined in greater detail. Micro habitats are shaped by factors other than vegetation, such as topography, land use, food availability, and various anthropogenic factors all of which will either attract or deter birds and are critically important in mapping the site in terms of avifaunal sensitivity and ultimately informing mitigation requirements. Investigation of the proposed



40MW SEF development site revealed at least four broadly described avifaunal micro habitats i.e. grassland, rivers, waterbodies and exotic/alien tree stands (Figure 20).

Refer to TABLE 1 in Appendix G for details the micro habitats that each Red List bird species and non-Red List priority species (recorded by SABAP2) will typically frequent in the study area. It must be stressed that birds can and will, by virtue of their mobility, utilise almost any areas in a landscape from time to time. However, the analysis in TABLE 1 in Appendix G represents each species' most preferred or normal habitats. These locations are where most of the birds of that species will spend most of their time which in turn provides an indication of where impacts on those species will be most significant.

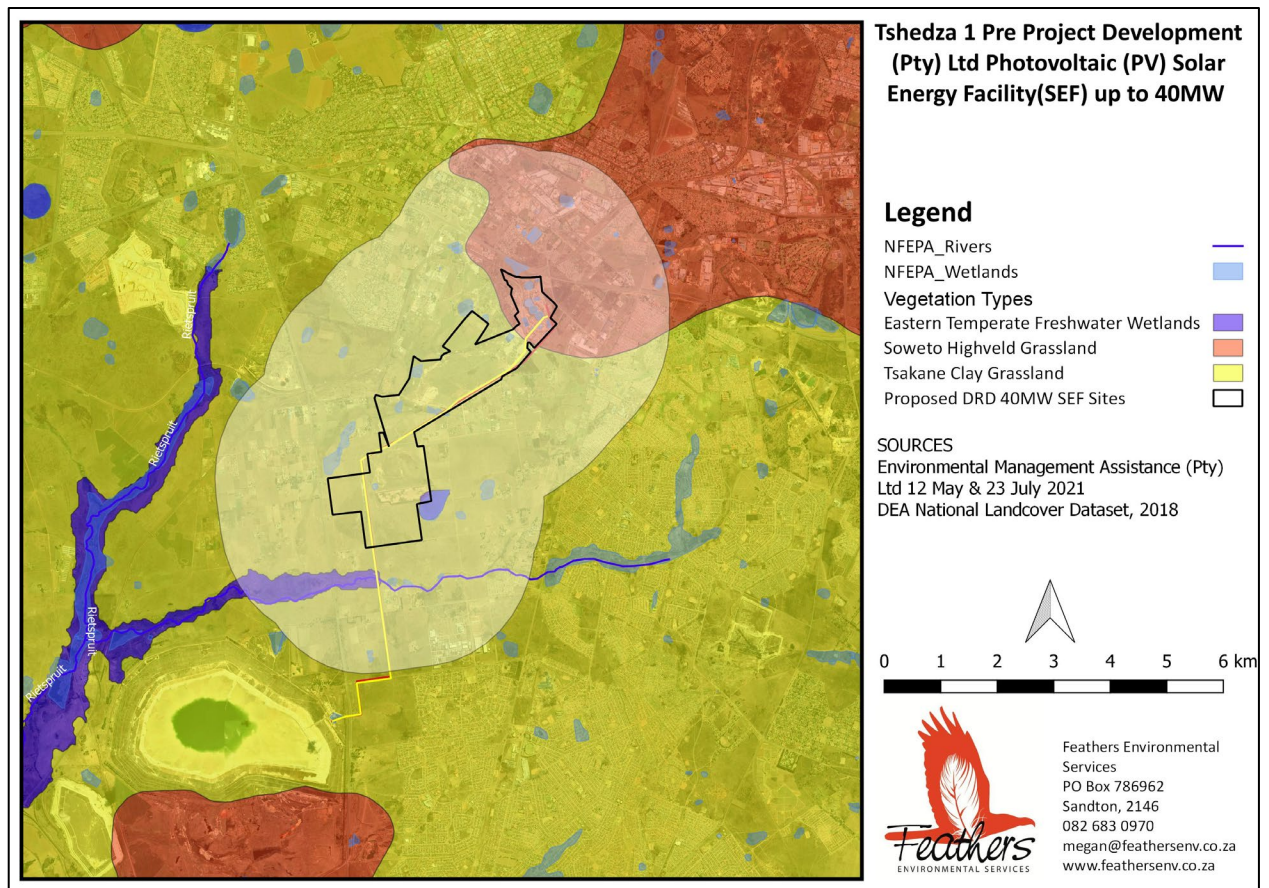


Figure 20: Regional map detailing the various vegetation types, perennial, non-perennial rivers and wetlands occurring at the proposed development site and within the broader study area

### k) Heritage (Archaeological and Cultural Environment)

(Refer to Appendix K for Heritage Scoping Report)



## **Archaeology of the area**

The archaeological record for the greater study area consists of the Stone Age and Iron Age.

### **Stone Age**

The Stone Age can be divided in three main phases as follows;

- Later Stone Age (LSA); associated with Khoi and San societies and their immediate predecessors. Recently to ~30 thousand years ago
- Middle Stone Age (MSA); associated with Homo sapiens and archaic modern humans. 30-300 thousand years ago.
- Earlier Stone Age (ESA); associated with early Homo groups such as Homo habilis and Homo erectus. 400 000-> 2 million years ago.

Although there are no published Stone Age sites located near the study area an Early to Middle Stone Age site occur in the study area and more sites dating to this period can be expected. There is also evidence of the use of the larger area by Stone Age communities for example along the Kliprivier where ESA and MSA tools were recorded. LSA material is recorded along ridges to the south of the current study area (Huffman 2008). Petroglyphs occur at Redan as well as along the Vaal River (Berg 1999).

### **The Iron Age**

The Iron Age as a whole represents the spread of Bantu speaking people and includes both the pre-Historic and Historic periods. It can be divided into three distinct periods:

- The Early Iron Age: Most of the first millennium AD.
- The Middle Iron Age: 10th to 13th centuries AD
- The Late Iron Age: 14th century to colonial period.

The Iron Age is characterised by the ability of these early people to manipulate and work Iron ore into implements that assisted them in creating a favourable environment to make a better living. Extensive Stone walled sites are recorded at Klipriviers Berg Nature reserve belonging to the Late Iron Age period. A large body of research is available on this area. These sites (Taylor's Type N, Mason's Class 2 & 5) are now collectively referred to as Klipriviersberg (Huffman 2007).

These settlements are complex in that aggregated settlements are common, the outer wall sometimes includes scallops to mark back courtyards, there are more small stock kraals, and straight walls separate households in the residential zone. These sites date to the 18th and 19th centuries and was built by people in the Fokeng cluster. In this area the Klipriviersberg walling would have ended at about AD 1823,



when Mzilikazi entered the area (Rasmussen 1978). This settlement type may have lasted longer in other areas because of the positive interaction between Fokeng and Mzilikazi.

### **Historical Information**

Brakpan was first named in 1886 and grew rapidly after the discovery of coal (in 1888) and gold (in 1905). Brakpan officially became a town in 1919.

#### **Anglo-Boer War**

The Anglo-Boer War was the greatest conflict that had taken place in South Africa up to date. One skirmish is listed for the Brakpan area on the Farm Hartebeesfontein on 18th February 1901 (<http://www.boerenbrit.com/archives/9658>)

#### **Cultural Landscape**

The project site is situated on Ergo Mining owned land adjacent to the Withok Estates Agricultural Holdings and Witpoort Estates Agricultural Holdings areas of Brakpan within the City of Ekurhuleni Metropolitan Municipality, Gauteng Province. The area is characterised by cultivation and mining activities from the 1940's onwards (Figure 21 to Figure 25) with a single grave site indicated in Figure 24 just outside of the study area.



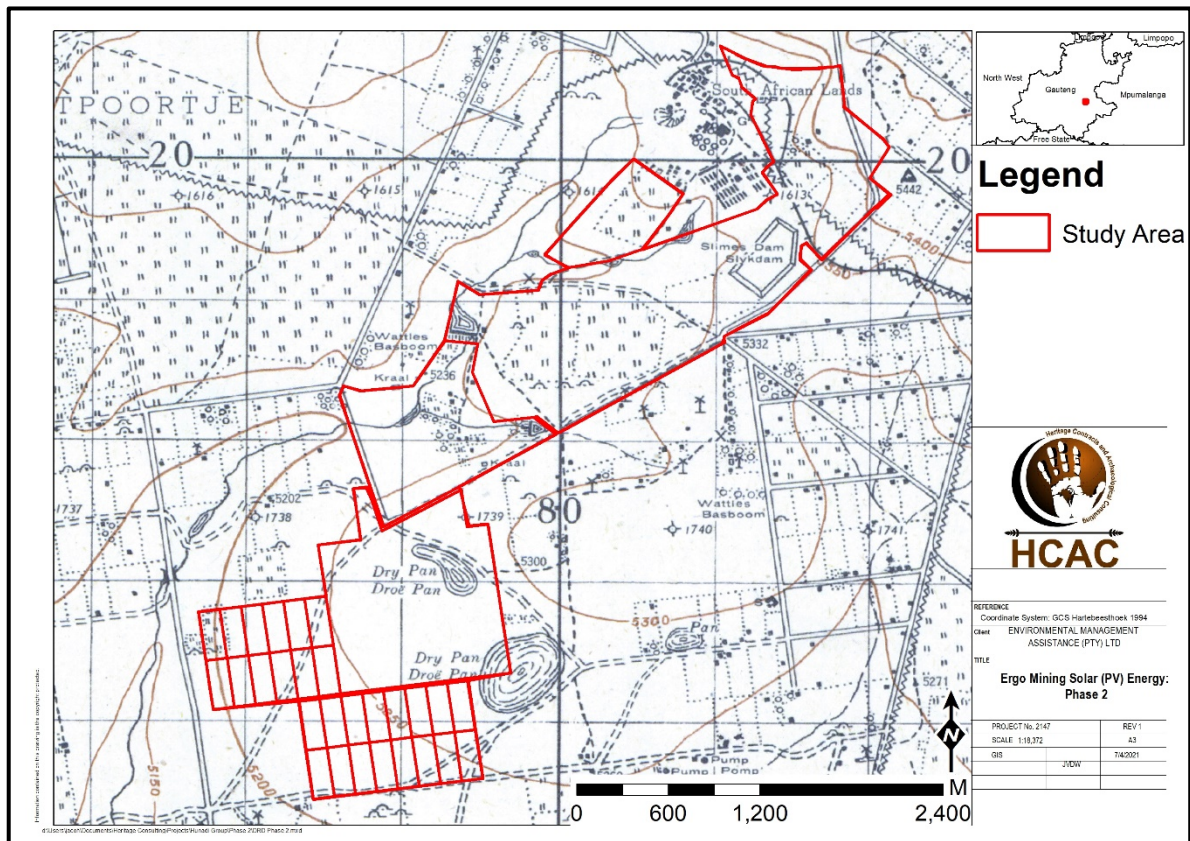


Figure 21: 1944 Topographic map of the study area. Portions of the study area have been mined and cultivated.



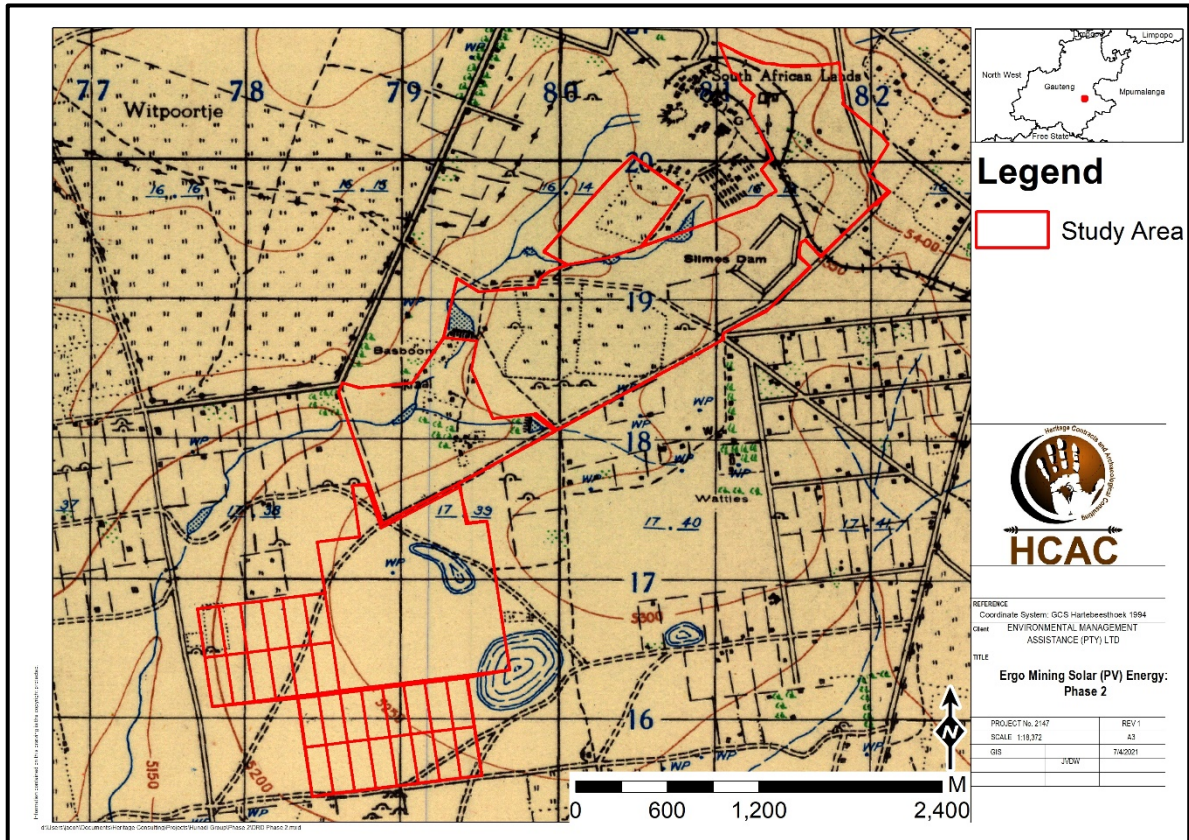


Figure 22: 1945 Topographic map of the study area. Mining activities cultivation and road developments are visible throughout the study area.

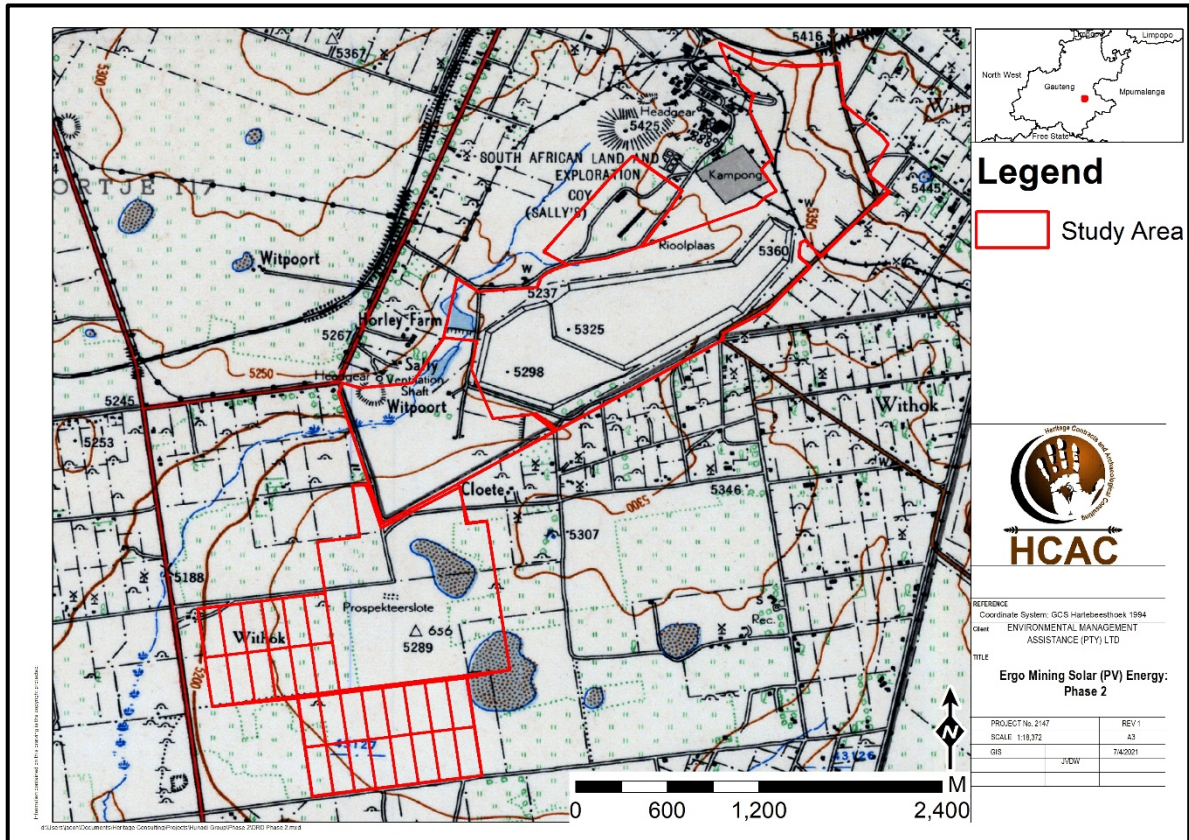


Figure 23: 1960 Topographic map of the study area. Mining activities and cultivation in the area escalated.



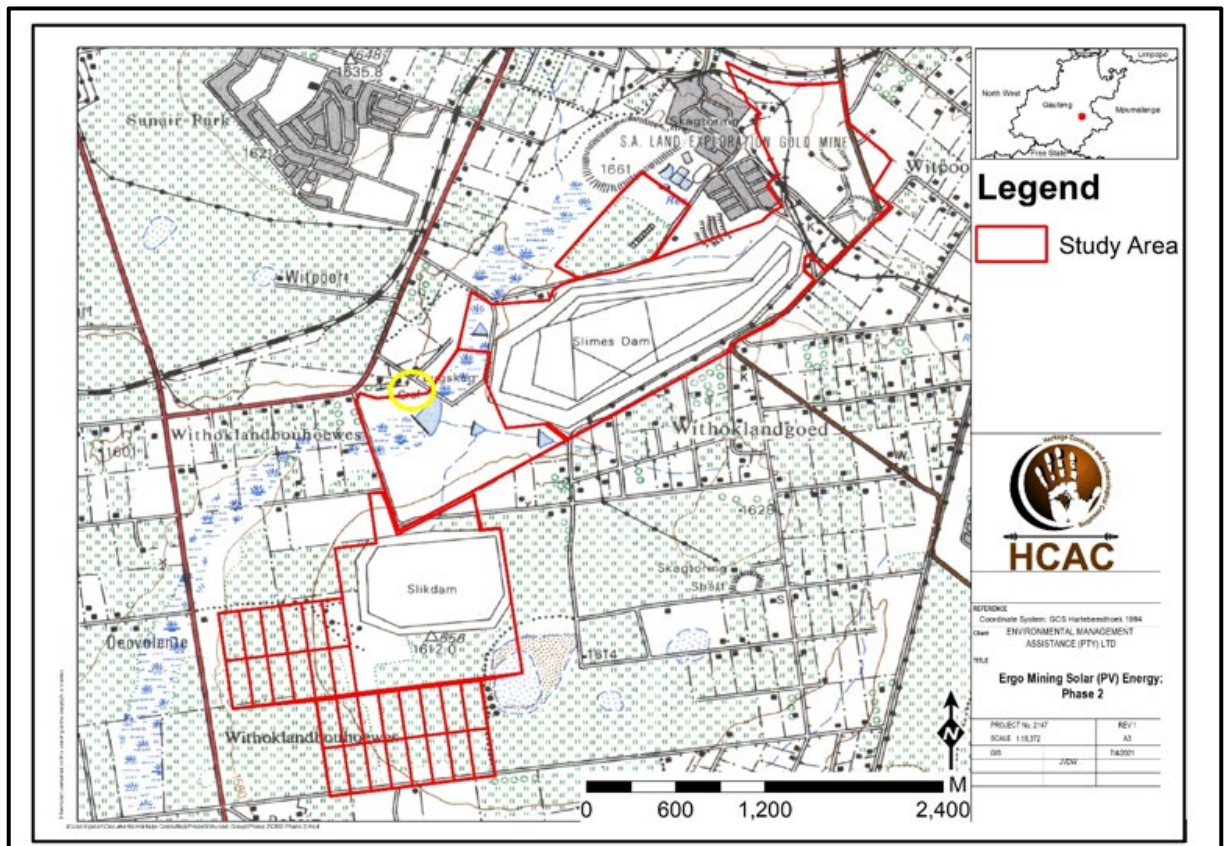


Figure 24: 1976 Topographic map of the study area. The central area is a large slimes dam and the area to the south as well. Large areas are cultivated and a single grave site is indicated (yellow polygon) just outside of the study area.

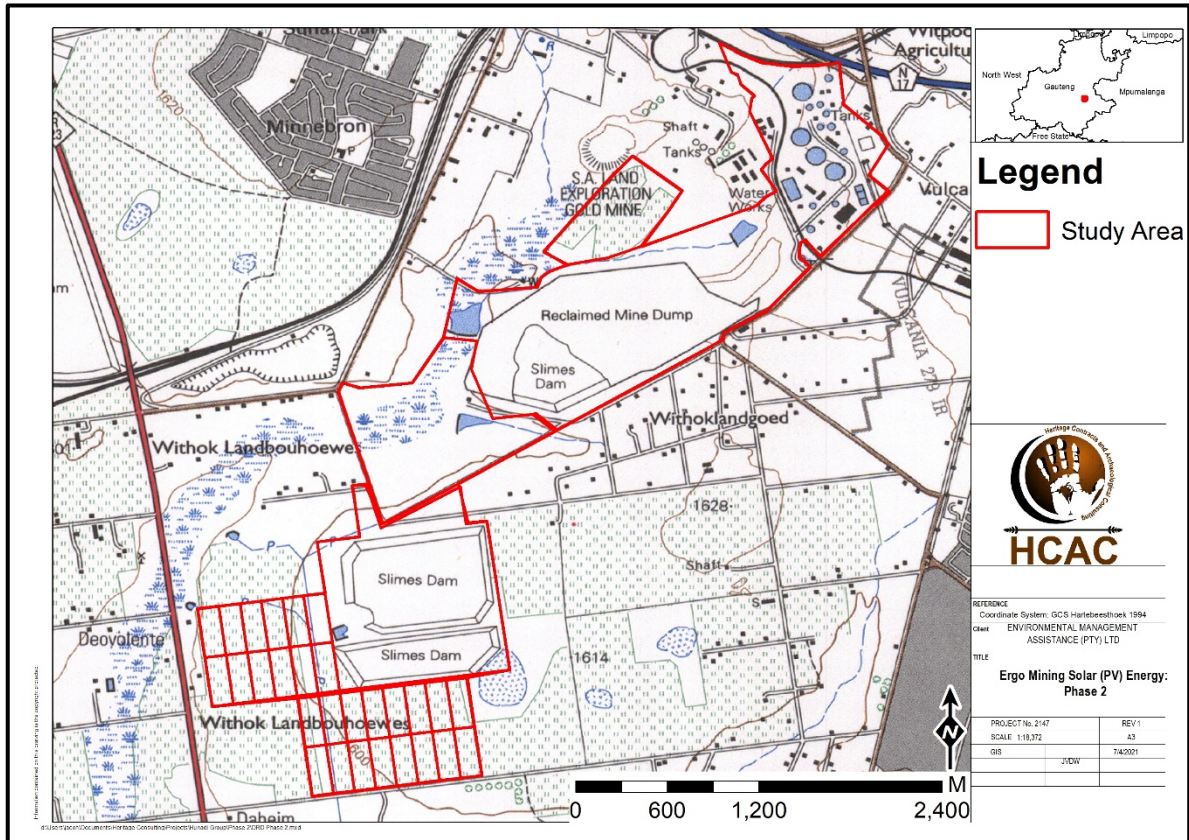
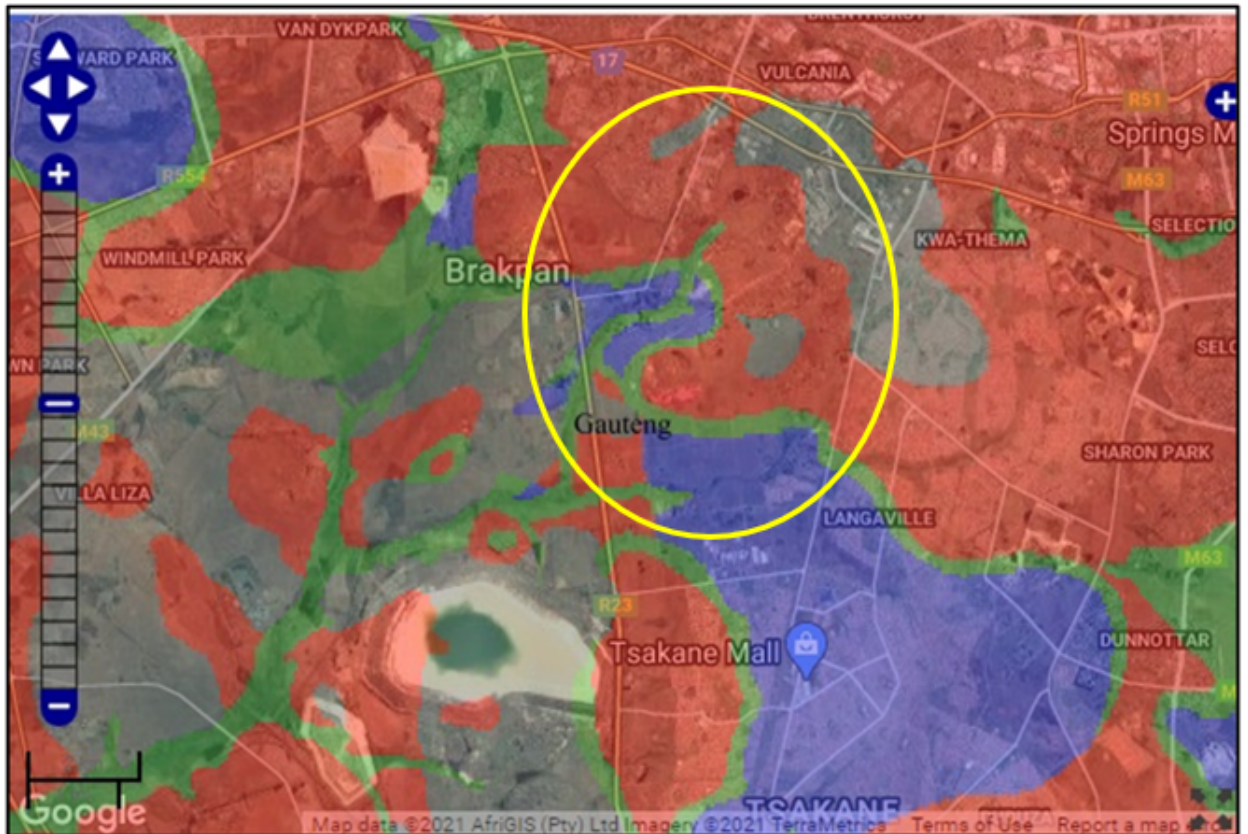


Figure 25. 1995 Topographic map of the study area. Portions of the slimes dams are still visible and the central area is now a reclaimed mine dump with mining activities and cultivation characterising most of the study area.

▪ **Paleontological Resources**

Based on the South African Resource Heritage Resource Association (SAHRA) paleontological sensitivity map (Figure 26) the study area is indicated as of insignificant, low, moderate and high sensitivity and further studies will be required as part of the Heritage Impact Assessment phase.





Colour	Sensitivity	Required Action
RED	VERY HIGH	Field assessment and protocol for finds is required
ORANGE/YELLOW	HIGH	Desktop study is required and based on the outcome of the desktop <u>study</u> , a field assessment is likely
GREEN	MODERATE	Desktop study is required
BLUE	LOW	No paleontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	No paleontological studies are required
WHITE/CLEAR	UNKNOWN	These areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

Figure 26: Paleontological Sensitivity of the study area is indicated as ranging from insignificant, low, moderate and high (approximate area is highlighted by the yellow polygon).

### l) Visual

(Refer to Appendix L for Visual Scoping Report)

The properties identified for the proposed PV Plant (Phase 2) is located approximately 6km south of Boksburg, within the ERGO Mining property. The properties are located within an area with a mixed land



use character that includes mining, industrial areas, high density residential areas, as well as low density small holdings and farm land. The entire proposed project site is currently zoned as mining or agriculture.

The topography of the study area is relatively flat and homogenous, consisting predominantly of *plains*. The elevation ranges from 1,540m above sea level (a.s.l.) in the south-west to 1,670m a.s.l. north of the ERGO Mining Brakpan Plant. The proposed PV Plant site is located at an average elevation of 1,614m a.s.l. and has an even slope to the south-west. There are no prominent hills within the study area and the most prominent topographical features are the slimes dams (tailings dams) associated with the mining activity in the area.

The most prominent hydrological features are the Rietspruit perennial river to the west and the non-perennial Withokspruit traversing from east to west across the study area. Other than these rivers there are a number of mine and farm dams located within the region, as well as wetlands along the floodplains of these rivers.

Land use within the study area is indicated as *mixed use*, with a varied urban (residential), mining, industrial and agricultural character. The main populated places include KwaThema (White City, Masimini and Thembilisha), Minnebron, Sunair Park, Dal Park and Geluksdal. The Withok Agricultural Holdings (or small holdings) are located immediately south and west of the proposed PV Plant properties and the Witpoort Estate Agricultural Holdings to the north of the properties. Existing industrial areas include the Vulcania industrial area and Vulcania South industrial area east of the mine. The Labore industrial area is located north of Geluksdal near the Ergo Transfer Pumps Substation.

The study area is largely transformed by human settlements, industrial activities, and agricultural and mining land uses. The natural land cover is grassland (*Tsakane Clay Grassland* and *Soweto Highveld Grassland* vegetation types) that is in varying stages of degradation, i.e. it could include recovering grassland on old agricultural fields (to be read with flora specialist report- Refer to Appendix E). Besides the grassland and agricultural fields there are also a variety of planted pastures or grass, associated with the small holdings in the area.

The main access routes to the region include the N17 national road, the R23 and R554 arterial roads, and a number of lower order secondary roads and streets. Access to the site, from the N17, is along the Ergo Road, 17<sup>th</sup> road and 10<sup>th</sup> Street. These roads will lead you to the Withok Small Holdings immediately south of the proposed development site. The latter road traverses adjacent to the slurry pipeline that traverses between the mine and the tailings dam.

There are no protected areas or identified tourist attractions or destinations within the study area and the visual quality of the receiving environment is largely considered to be compromised by human activities





and structures. In spite of this, the study area, especially to the south-west, still has a rural character that could be considered aesthetically pleasing.<sup>3</sup>

Refer to Figure 27 and Figure 46 for the topography and land cover maps of the study area.

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<sup>3</sup> Sources: DEAT (ENPAT Gauteng), NBI (Vegetation Map of South Africa, Lesotho and Swaziland), NLC2018 (ARC/CSIR), REEA\_OR\_2021\_Q1 and SAPAD2021\_Q1 (DEA).

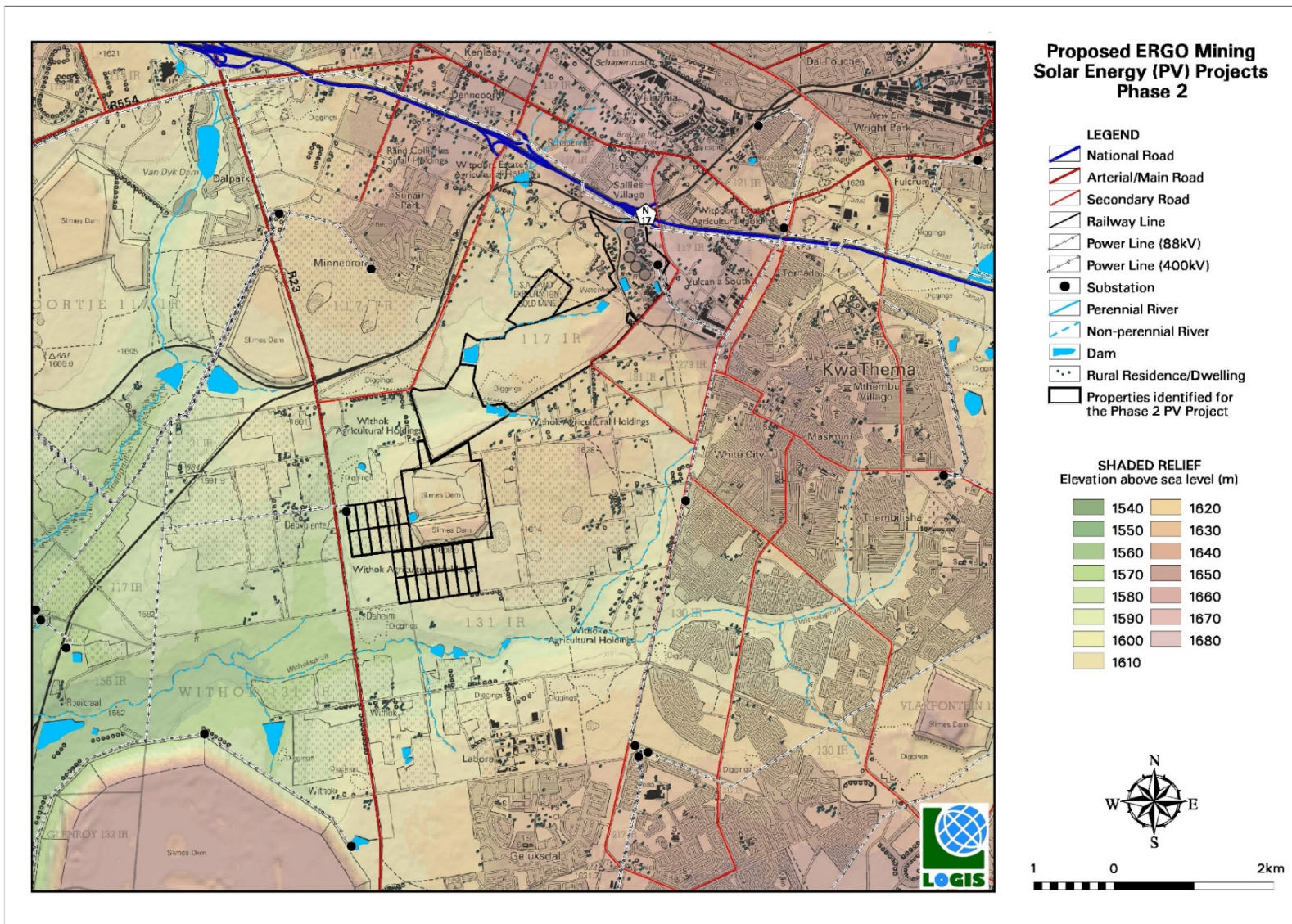


Figure 27: Shaded relief map of the study area.



## m) Socio Economic Context

(Refer to Appendix M for Socio-Economic Scoping Report)

The proposed project site is located in Brakpan on the East Rand, within Wards 74, 82 and 99 of the City of Ekurhuleni metropolitan area. The local area, however, encompasses a broader region of Brakpan.

### Demographics

The population of Ward 74, 82 and 99 is 100 839 people (in 2011), with an average population density of 714 (ranging from 505 to 1124) people per square kilometre (Statistics SA, 2012). This is 3% of the total population of the City of Ekurhuleni Municipality (3.1 million).

The population of the wards is considered youthful, with 67% being below the age of 35, and 26% below the age of 15 (Figure 28) (Statistics SA, 2012). There is a slightly higher ratio of men to women in the local area at 52% male to 47% female (Statistics SA, 2012). This is likely to be due to the high concentration of mining and industrial activities, and the related in-migration of men for employment.

The dependency ratio is 40%, which is marginally higher than Gauteng (39%) but lower than the national ratio of 56% (Statistics SA, 2012). The majority (85%) of the population within the three wards is Back African, followed by Coloured (8%), and White (6%) (Figure 29) (Statistics SA, 2012).

There are a number of languages spoken within the study area. isiZulu is the most spoken (19%), followed by English (13%), Afrikaans (12%), Sesotho (11%) and Sepedi (10%). This variety is likely to reflect the in-migration of people seeking work or working in the area (Figure 29Figure 30Figure 29: ).

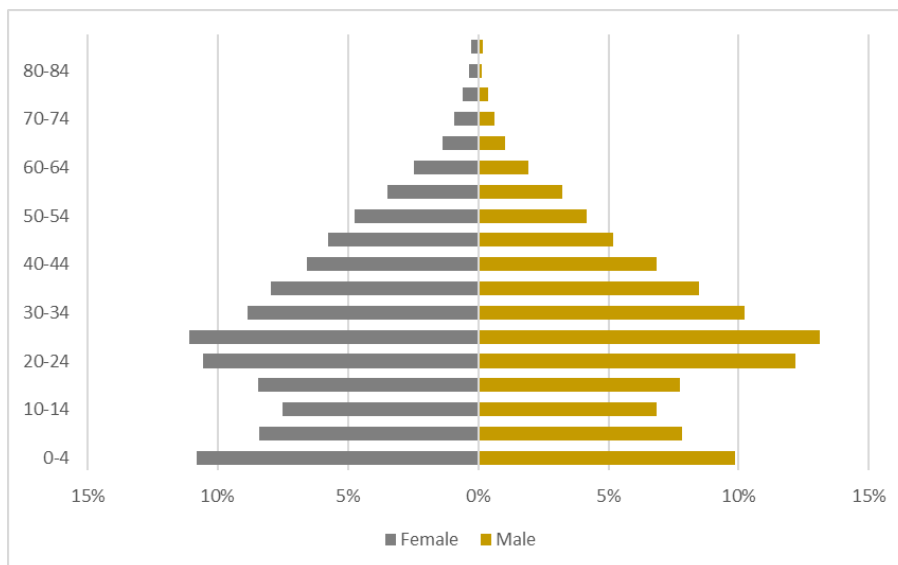


Figure 28: Population pyramid for Wards 74, 82 and 99

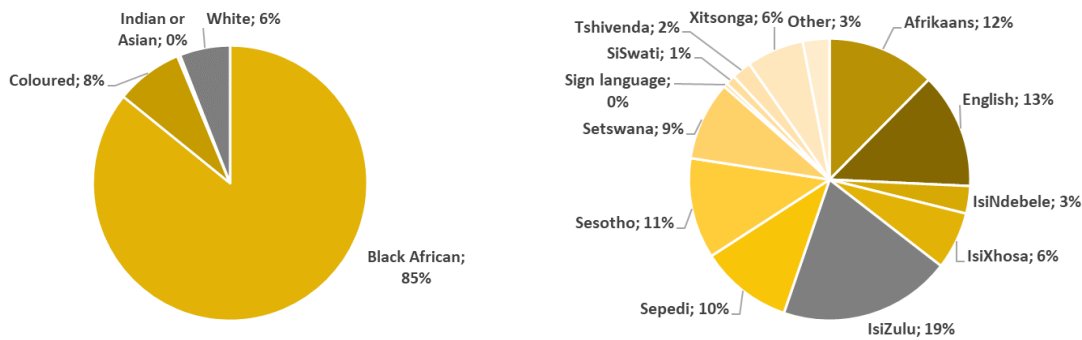


Figure 29: Population groups and languages for wards 74, 82, 99

The local area is classified as urban and comprises 77% formal residential, 15% informal residential, 1% smallholdings and 1% industrial properties (Statistics SA, 2012)<sup>4</sup>. The level of access to basic services is moderate and slightly lower than the Gauteng and Ekurhuleni Municipality averages. The key indicators for municipal service for the three wards are provided in Table 15 below.

Table 15: Level of access to basic services for wards 74, 82 and 99

Service		Highest percentage	Next Highest percentage	No access
Piped Water		51% inside dwelling	29% in yard	0.4%
Sanitation		78% flush toilet	17% pit latrine	1%
Energy	Cooking	71% electricity	24% paraffin	0.1%
	Heating	62% electricity	13% paraffin	10%
	Lighting	73% electricity	19% candles	1%
Refuse removal		85% by municipality	7% own / communal dumps	6%

Source: Census 2011, Statistics SA 2012

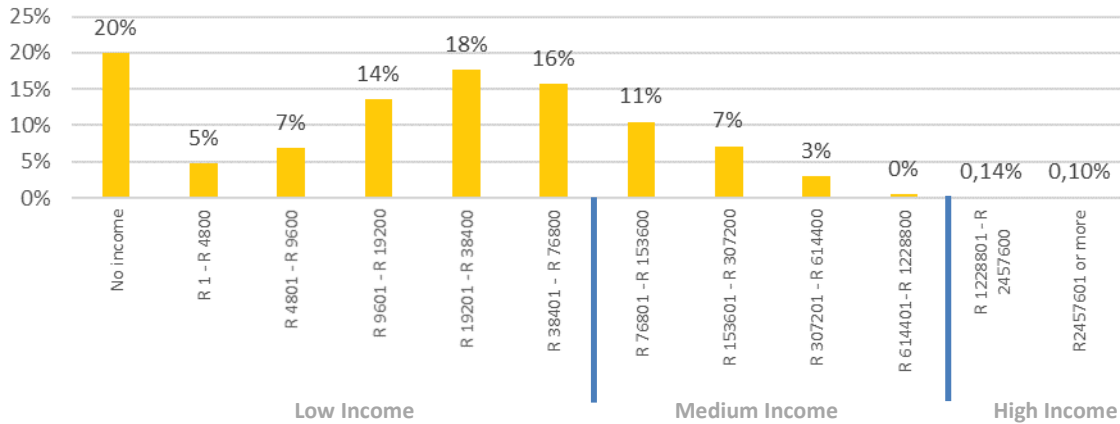
The local area comprises a mix of low and middle-income households, with 20% of local households not receiving any form of income. The majority of households (59%) are considered low-income, 21% of households considered middle-income, and 0.2% considered high-income households (See Figure 30).

Unemployment in these wards is 33% (excluding 5% discouraged work seekers) (Statistics SA, 2012). This is lower than the national and municipal (Ekurhuleni) levels of 27%, and provincial levels of 25% in 2011 (Statistics SA, 2012). There

<sup>4</sup> Note percentages are based on the number of land parcels, not percentage of land. Many formal houses take up small amounts of land, but smallholdings cover a large portion of the local area.



are likely to be a number of people who have moved into the area seeking jobs, but not able to find employment. This is likely to have become exacerbated during 2020 due to Covid-19-related restricts and economic slow-down.



Source: Census 2011, Statistics SA 2012

Figure 30: Total household income per year - wards 74, 82 and 99

## Potential Primary Receptors

### Residential

The land use immediately surrounding the proposed project site (all properties) is agricultural. This area comprises Withok Estates AH and Witpoort Estates AH. Both comprise of small holdings, which are used for a variety of activities, including residential, agricultural, small businesses, and light industrial. An overview of each residential area is provided in **Table 16**.

**Figure 31** indicates the 500m and 1 km radius around the proposed project site. Based on previous studies undertaken by the specialist (SIA undertaken for phase 1:19.9MW), the area of direct impact is likely to be within 500m. Changes in the socio-economic dynamics of the local environment are likely to occur within 1 km of the site (including visual, traffic, and change in nature of the area).

Table 16 Summary of residential areas within 1 km of the Proposed site

Residential Area	Distance & Direction from site	Broad characteristics
<b>Withok Estate</b>	Neighbouring to the east, south and south-west and south-east	<ul style="list-style-type: none"> <li>Formal, mixed smallholdings and industrial/trade</li> <li>Low- to middle-income</li> <li>Basic Services</li> </ul>





Residential Area	Distance & Direction from site	Broad characteristics
<b>Witpoort Estates AH</b>	Neighbouring to the north-west	<ul style="list-style-type: none"> <li>Formal, mixed smallholdings and industrial/trade</li> <li>Low- to middle-income</li> <li>Basic Services</li> </ul>
<b>Minnebron</b>	500 m north-west	<ul style="list-style-type: none"> <li>Formal, small properties with standalone houses</li> <li>Low- to middle-income</li> <li>Basic Services</li> </ul>

### Industrial and Mining

The site and areas adjacent to the northern end of the site are comprised of mining activities (including the Ergo Brakpan Mine), as well as light industry (including construction materials manufacturing, logistics and distribution).

An overview of each residential area is provided in **Table 17** and mapped in **Figure 31**.

*Table 17 Summary of industrial areas within 1 km of the Proposed site*

Industrial Area	Distance & Direction from site	Broad characteristics
<b>Ergo Mining Brakpan Plant</b>	Immediately north of the site	<ul style="list-style-type: none"> <li>Metallurgical plant and associated</li> </ul>
<b>Witpoort Estates AH</b>	500 m north-west	<ul style="list-style-type: none"> <li>Transport and logistics</li> <li>Manufacturing - construction</li> </ul>
<b>Vulcania South</b>	500 m north-east	<ul style="list-style-type: none"> <li>Manufacturing and logistics</li> </ul>

### Commercial

There are no formal commercial areas within 1 km of the proposed project site. There may be informal food sellers in the vicinity of the Ergo Plant and industrial areas, as well as small businesses run from properties within the smallholdings in Witpoort and Withok Estates.

### Potential Secondary receptors

The secondary receptors, namely those that could be indirectly impacted by the proposed project, are likely to include the broader Brakpan area, including mining, agricultural, industrial and residential areas (Figure 32). This area has been defined as within 10 km of the proposed project site, however, could extend to a regional level.

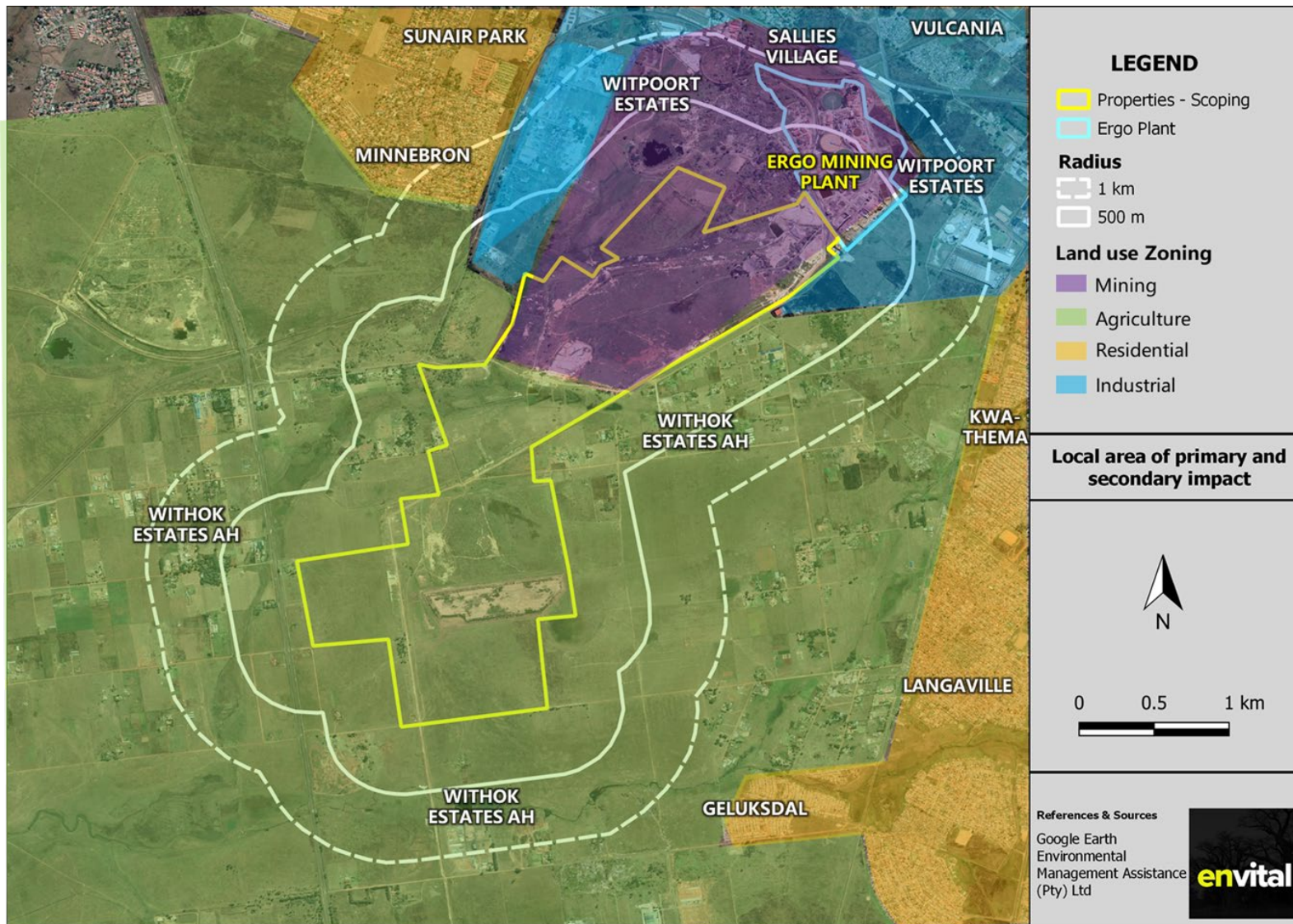


Figure 31: Area of direct impact



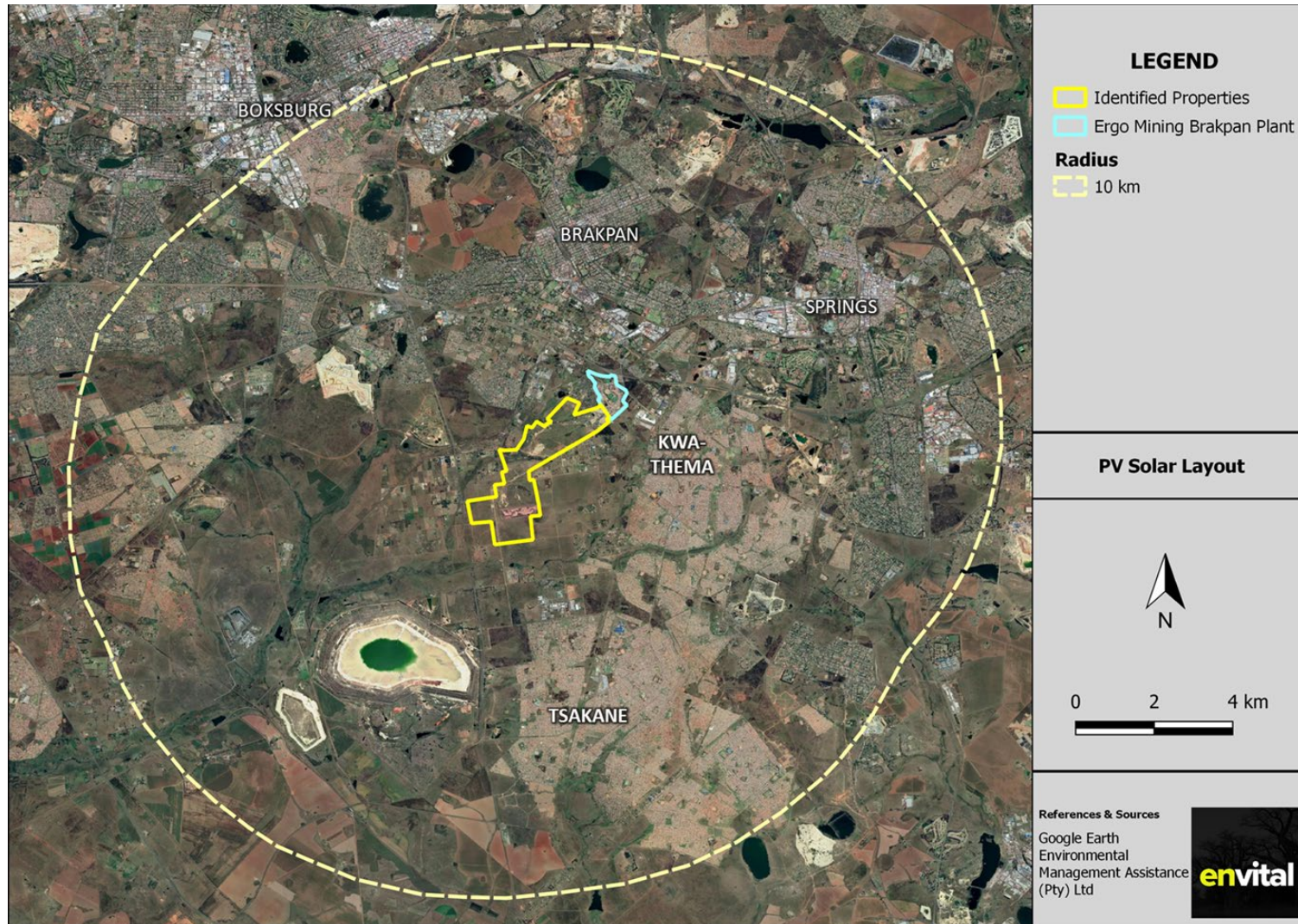


Figure 32: Area of Indirect impact

## 7) Description of land uses

### a) Historic Land Use

An investigation into historic aerial imagery of the site was undertaken. Portions of the study site are visible in historical aerial imagery from 1938 (Figure 33 and Figure 34). In this imagery, development within the area is apparent with mining operations underway at the current location of the Brakpan Plant. Development is furthermore noted in the form of roads and scattered residential buildings. This development has had an impact on wetlands and watercourses within the study area.



Figure 33: Historic aerial imagery from 1938 showing portions of the study site, with mining already underway, the creation of road networks and the cultivation of crops (eastern section)





Figure 34: Historic aerial imagery from 1938 showing portions of the study site, with mining already underway, the creation of road networks and the cultivation of crops (western section)

In imagery from 1985 the use of large portions of the site as mining areas and/or tailings dams is clearly evident (Figure 35). These dams are indications of the disturbed nature of the study site as a result of the use of this area for mining activities.





Figure 35: Historic aerial imagery from 1985

Aerial imagery from 2002 shows the mining and remining of the central to southern portions of the study site (Figure 36). Haul roads, mining operations, and the continued transformation of the site is apparent in the aerial imagery.



Figure 36: Aerial imagery from 2002



Mining was then discontinued within the study site and the rehabilitation of the area undertaken, from approximately 2004/2005. Soil is seen to be deposited within the disturbed sites as well as the re-grassing of these areas. This is shown in aerial imagery from 2008 (Figure 37). Topsoil stockpiles are still evident in the southern portion of the study area.

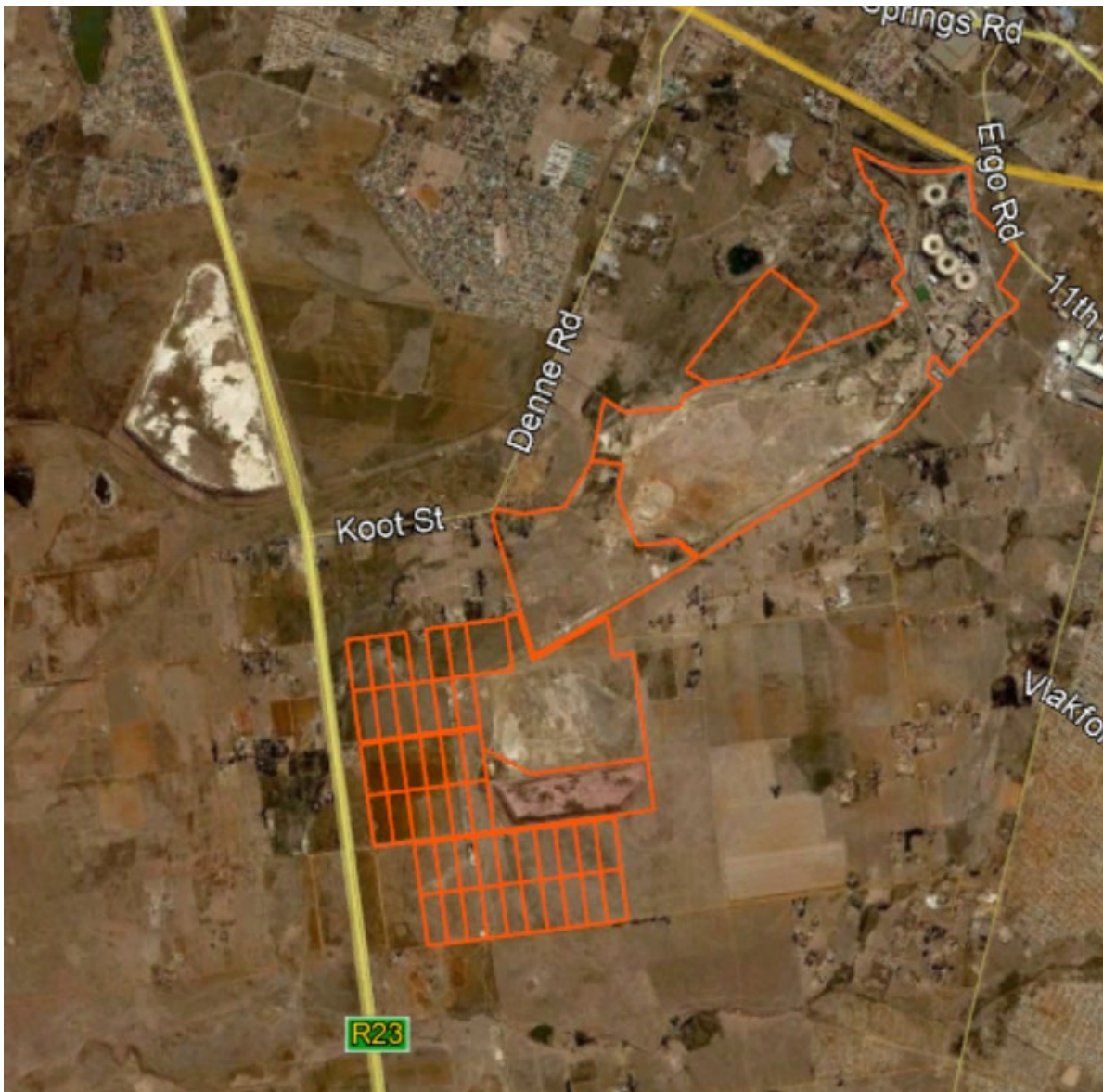


Figure 37: Aerial imagery from 2008

The most current aerial imagery available on Google Earth™ is from April 2021 (Figure 38). This shows the completed rehabilitation process of the disturbed portions of the study site, with these areas now grassed.



Figure 38: Current imagery from April 2021

### b) Current Land Use

The site is located within an active gold mining area of the East Rand. There are several mining activities (mostly tailings facilities and slimes dams) within a 5 km radius of the site. The closest urban centre to the site is Brakpan, which is located approximately 5 km north of the site, and Springs, which is located approximately 8 km north-east of the site.

Both Brakpan and Springs began developing in the late 19th century as a result of the coal and gold-bearing resources found in the area, together with the associated mining and industrial activities. Today this area is characterised by a mosaic of mining and industrial land uses, interspersed with urban centres, residential areas, agriculture and open veld.

### c) Mining and Related Operations

The Gauteng region is known as the key mining area in South Africa, with gold, platinum, coal and other mineral resources being found in the area. The main mining corridor runs from east to west across the province, with Brakpan, Springs and Nigel forming the eastern and south-eastern extends (Ekurhuleni Metropolitan Municipality, 2015). Due to historic and



ongoing mining, the landscape is scattered with tailings and other waste dumps and dams. Numerous mining-related operations are found in the area, including associated engineering and related services.

Mining has shaped the East Rand, however, due to declines in recent years in this sector business and government have looked to new means of economic sustainability within urban areas. One such means reclaiming of old tailing facilities for reprocessing, of which the Ergo Mining is one such operation. The Ekurhuleni Spatial Development Framework (SDF) indicates that old mining areas are also becoming focal points for the development of a variety of mixed uses, including active open space system for recreation and tourism to overcome social inequalities and provide more socio-economically sustainable and beneficial environments (Ekurhuleni Metropolitan Municipality, 2015).

#### **d) Industry and Commercial**

The industrial and commercial aspects of the East Rand reflect the development around mining and subsequent socio-economic dynamics. Brakpan and Springs make up one of the seven industrial areas of the municipality and contribute significantly to the local economy.

There are several industrial areas within 10 km of the proposed project site, including Vulcania (1.7 km north), Vulcania South (<1 km east), New Era (4 km north-east), and Boksburg East Industrial (9 km north-west). While much of the manufacturing in this area started as mining related, a wide variety of products are now produced here, from construction supplies and electronics to health care and food.

Transport and logistics is also a key component of the local services, as the location and space available in the area (outside of the densely developed City of Johannesburg) provides a good logistics hub.

Retail and other tertiary sector activities (consulting, financial) have developed in the area over the past few decades, as population and industrial activities have increased. There are several malls and office parks in the area that support these activities.

#### **e) Description of specific environmental features and infrastructure on site**

The most notable infrastructure located within the application area includes the following:

- Slurry pipelines
- Overhead power lines
- Industrial, commercial and agricultural activities
- Tailings Facilities
- Gravel roads and foot paths



Figure 39 to Figure 45 provides the reader with a photographic record of infrastructure around the general site and surrounds.



Figure 39: Topography and general environment of the proposed PV Plant site and surrounds.



Figure 40: General environment along the slurry pipeline.



Figure 41: Withok Small Holdings (left) and the proposed PV Plant project site (right).



Figure 42: Existing tailings dam at the Ergo Transfer Pumps Substation.





Figure 43: ERGO Gold Mine.



Figure 44: Existing slurry pipeline near the R23 arterial road.



Figure 45: Industrial/commercial land use within the study area.

**f) Environmental and current land use map**

*(Show all environmental and current land use features)*

Figure 46 gives an indication of the current land use map of the study site and surrounding areas.



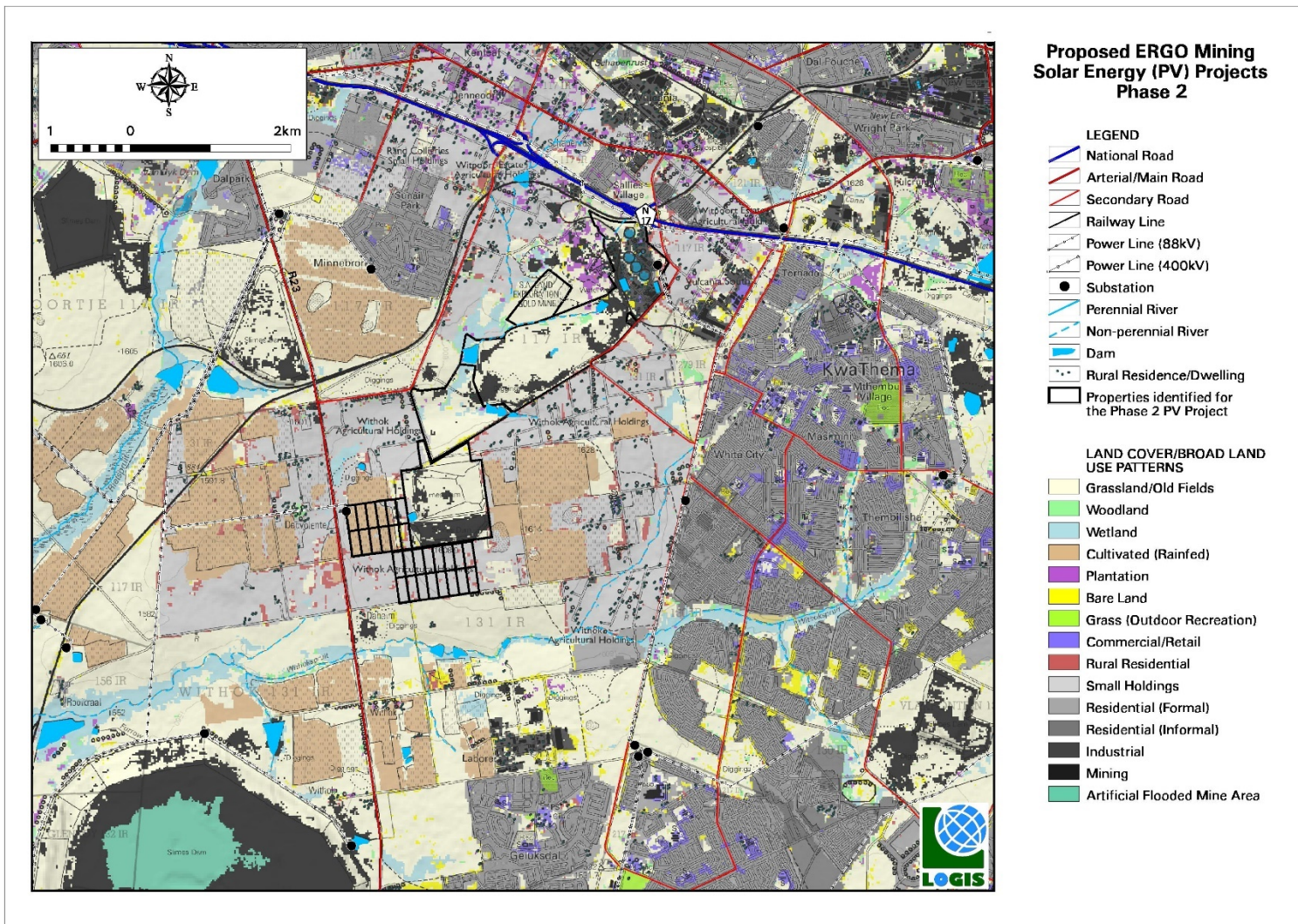


Figure 46: Land cover and broad land use patterns





## 8) Impacts identified

### a) Flora Terrestrial Biodiversity

(Refer to Appendix E for scoping report)

Much of the vegetation on the proposed sites were historically disturbed by either cultivation, paddocks surrounding slimes dams, or the presence and maintenance of the slurry pipes. Parts of the proposed site comprise historic slimes dams, that was remined and left to naturally revegetate. Most of the eastern section is modified or built-up.

The *likely* vegetation present, based on aerial imagery and an extrapolation of data recorded during the Phase 1 assessment of the proposed 19.9MW solar facility in the same area, are as follows:

1. Degraded rocky grassland;
2. Secondary grassland;
3. Moist grassland; and
4. Modified vegetation.

These vegetation groups are shortly discussed below and represented in a preliminary vegetation map in Figure 47. Built-up areas are not further discussed.

#### \* Degraded rocky grassland

Small portions of natural to near-natural grassland could be present on parts of the Withok Estate holdings and Witpoortjie farm east thereof (Figure 47). A small, patch is also present south of the Ergo Central 88/6.6kV substation. The grasslands were seemingly not cleared for cultivation or mining but was historically disturbed and impacted on by edge effects. The area around the Withok Estate holdings is currently grazed and edge effects from the historic mining activities degraded the grassland. However, some rocky outcrops are noted and could be suitable habitat to plant species of conservation concern. The state of this vegetation and occurrence of plant species of conservation concern needs to be verified to determine its sensitivity to the development.

#### \* Secondary grassland

Secondary grasslands develop where the original, undisturbed grassland vegetation was removed (e.g. cultivation or mining). After such disturbances cease, pioneer grassland species, as well as weedy pioneer plants, colonise the fallow lands leading to a pioneer grassland state with a much lower initial species diversity as opposed to the primary (climax) state prior to any disturbances. In the absence of further disturbances, the grassland could reach a secondary grassland state (more diverse and ecologically stable than pioneer grassland, yet lower in species diversity than primary grassland) and theoretically the primary state over time. However, primary grasslands are species rich ecosystems, which once disturbed, are difficult, if not impossible to restore.



Secondary grasslands have undergone extensive modification (e.g. to cultivated or mined areas) and a fundamental shift from their original state but have then been left to return to a grassland state. Although secondary grasslands may superficially look like primary grasslands, they differ markedly with respect to species composition and vegetation structure, while some or most ecological functions have been compromised.

Most of the proposed site comprise secondary grassland that was either historically cultivated or contained slimes dams and other mining infrastructure. Some ecological functions are restored in the secondary grasslands, although the species diversity is likely low with limited potential to support plant species of conservation concern. The secondary grasslands are likely developable provided that no sensitive plant species are present and edge effects to moist grasslands be limited.

\* Moist grassland

Moist grasslands in this report refer to grassland vegetation that supported plant species with an affinity to grow in permanent, temporary, or seasonally saturated conditions. Note that the moist grasslands are an indication of where wetlands could occur, based on plant species that are adapted to growing in inundated soils, or species that prefers moist soils, but are not necessarily wetlands.

Most of the moist grasslands are likely dominated by *Phragmites australis*. *Phragmites* plays an important role in wetlands, particularly disturbed or impacted wetlands as it has an extensive root system that binds soils and prevent erosion. It can withstand high levels of environmental contamination and can assimilate heavy metals, nitrogen and phosphorous and can become the dominant grass in disturbed wetland areas (Tarr, 2006).

Data recorded during the Phase 1 assessment, also indicated the presence of moist grassland dominated by *Eragrostis plana*. These moist areas are likely small and isolated from the main tributaries.

Moist grasslands are protected by legislation and form part of the ESAs through the site.

\* Modified vegetation

Modified land comprises areas where the natural vegetation was destroyed or degraded beyond a threshold of recovery, or replaced by lawns, invasive species, or ongoing activities. Most of the eastern extent of the proposed site as well as large soil heaps or remnant slimes dams were classified as modified land. These areas are developable and of little to no conservation concern.

Refer to Figure 48 and Table 18 for an indication of the preliminary site sensitivity identified by the flora specialist. The site visit may find that some secondary grassland reached an advanced succession state and may be rated as medium sensitivity. The areas most likely to be rated medium are south and south west of the southern tailings dam, which was not ground-truthed during the phase 1 assessment.

Table 18: Preliminary scoring of vegetation that occurs within the PAOI

Preliminary broad vegetation community	Conservation Importance (CI)	Functional Integrity (FI)	Receptor Resilience (RR)	Biodiversity Importance (BI)	Preliminary Site Ecological Importance (SEI) – mitigation
Secondary grasslands*	Very -low	Medium	High	Very-low	Very-low (Minimise & Restore)
Modified vegetation	Very -low	Low	High	Very-low	Very-low (Minimise & Restore)
Degraded Rocky grassland	Very high (threatened ecosystems)	Medium	Medium	High	High (Avoid & Minimise)
Moist grassland	High	Medium	Medium	Medium	Medium (Minimise & Restore)

#### SEI discussion:

The preliminary SEI rating was utilised to generate the vegetation sensitivity map (Figure 48). This map must be considered as a preliminary map until such time that it is verified with a field survey.

- High SEI

The semi-natural to natural rocky grassland should be regarded as sensitive until its state and potential to support plant species of conservation concern is verified. As per the GDARD sensitivity mapping rules, all good condition grassland must be regarded as sensitive (GDARD, 2012). In addition, the remaining natural vegetation falls within CBAs: Important and provide suitable habitat for plant species of conservation concern.

- Medium SEI

The moist grasslands have been impacted on by mining activities. Although the species diversity is likely compromised, the vegetation function remains largely intact. Development must be restricted in footprint and impacts managed and mitigated by an approved management plan.

- Low and very-low SEI

The secondary grasslands and modified vegetation are likely not representative of the natural state and will probably comprise of a low species diversity with no plant species of conservation concern present or likely to be present. *Note that secondary grasslands may exhibit a higher species diversity during ground-truthing and may be rated as medium sensitivity.* Development activities of medium to high impact are acceptable followed by appropriate restoration activities. Edge effects must be prevented.



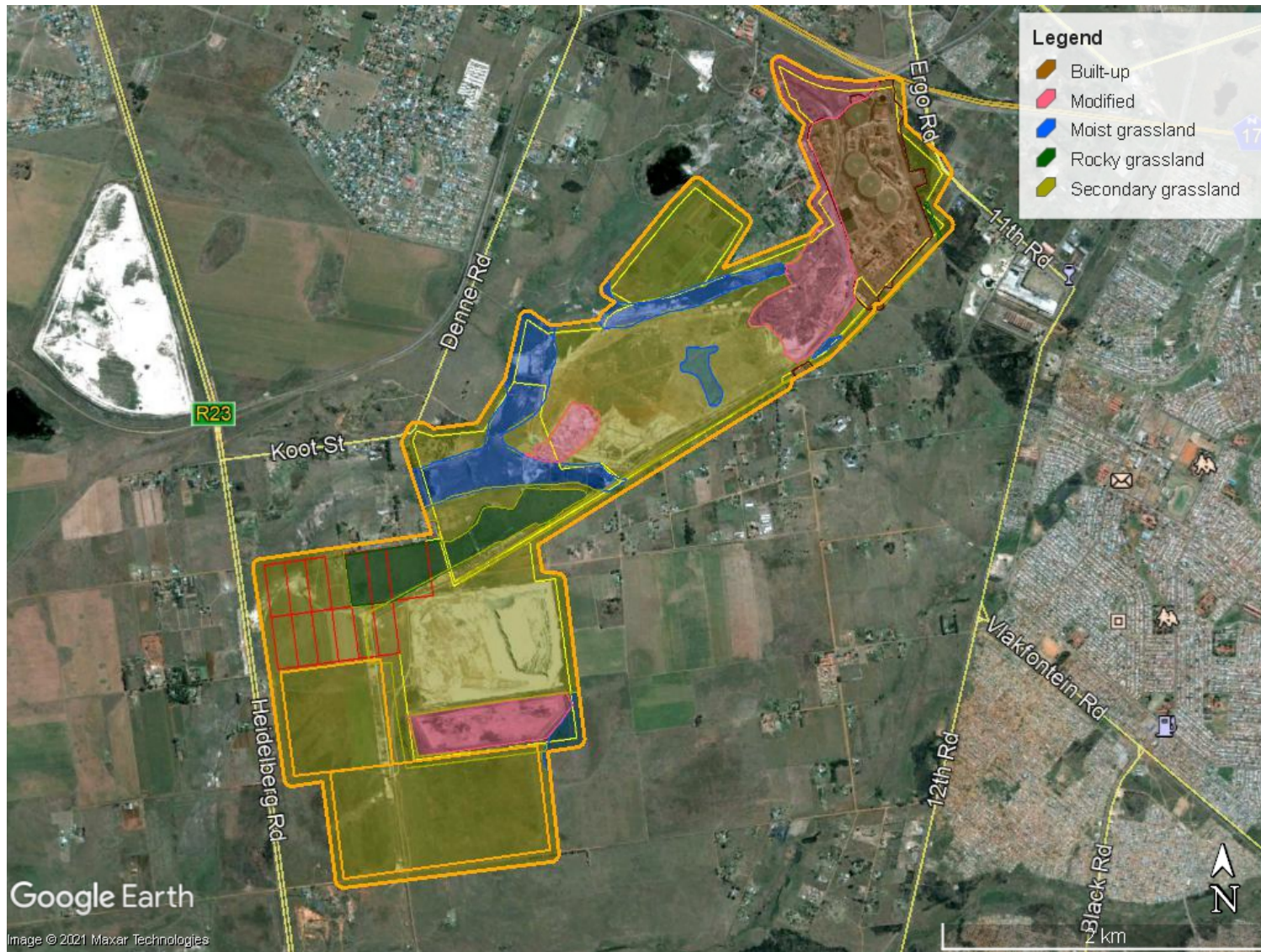


Figure 47: Preliminary vegetation map



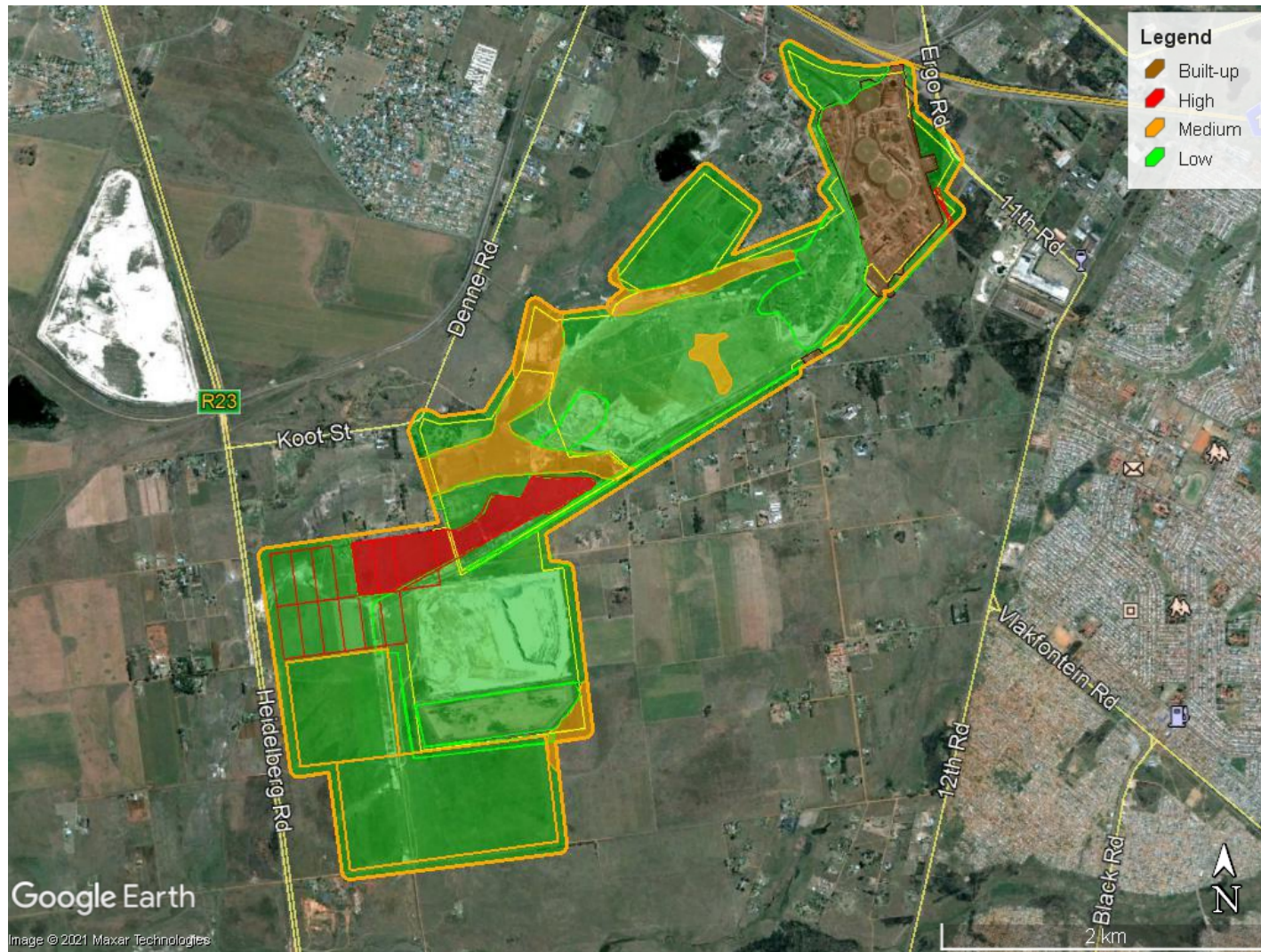


Figure 48: Preliminary Site Ecological Sensitivity for the proposed site, including a 50m buffer





## b) Fauna Terrestrial Biodiversity

(Refer to Appendix F for scoping report)

In terms of the fauna biodiversity and animal species, the following impacts could be significant during the construction and operational phases (requires ground-truthing) and are assessed further in the desktop fauna report:

- Destruction of significant fauna habitat, specifically potential TOP species habitat.
- Destruction of ecological corridors and impaired ecological connectivity.
- Hindering or interfering with TOP fauna species.
- Contaminated or silt-loaded runoff to on-site and nearby aquatic ecosystems.

The following is relevant regarding the areas in the sensitivity map indicated in Figure 49:

- The Withok Estates small holdings include the properties in the far western and southern extent:
  - The northern part of the western small holdings are designated as restricted as the site contains largely CBAs, some ESAs and a NFEPA wetland (area 1a) and incorporates largely undisturbed habitats (some areas with historical disturbance included to maintain the ecological connectivity) and provides a good terrestrial ecological corridor to the non-perennial tributary and associated aquatic ecological corridor (refer to Area 1b). Some of the designated wetland was historically farmed, but the remainder of the area appears relatively undisturbed, limited to secondary impacts.
  - The western small holdings have a CBA and ESA along the eastern boundary and have been incorporated in the discussion for Portion 9 of the Farm Withok 131 IR below (area 2d).
  - The southern small holdings are designated as restricted and incorporate a CBA connected to the Rietspruit Tributary in the south and also incorporating an NFEPA wetland (area 1c). The juvenile Giant Bullfrog was observed on the move along the road adjacent to this area during the Phase 1 assessment.
  - The remaining areas are not designated in terms of desktop ecological features and areas and have been historically farmed and are considered as priority areas for development pending site assessments. They may still function as buffer areas and the panel development should be prioritised and densified in areas away from the Restricted Areas where possible.
- Portion 9 of the Farm Withok 131 IR, the southern-most property:
  - The area along the western boundary (along with the south-eastern small holding) incorporates a section of CBA, a narrow stretch of ESA and an old mine dam designated as an NFEPA wetland (area 2d). These ecological units occur along a gravel road and are within the impacted area of an old tailings dump. In terms of terrestrial fauna, this area would provide limited value in terms of habitat and connectivity but does create a corridor between the CBA in the south and the restricted areas to the north and has been designated a Potential Development Area if the additional area is required and pending site findings.



- The northern protuberance of the property is undesignated (area 2e) in terms of ecological desktop features but has been incorporated as a Restricted Area as this area connects the Restricted Area and CBAs of the small holdings in the west to the CBA grasslands to the east. The area also appears to be largely undisturbed grassland, therefore provides habitat and ecological connectivity.
- The bulk of the site, designated as an ESA, is an old tailings dump with recovering grassland and an existing rock dump and in terms of terrestrial fauna has little value as habitat or connectivity and is considered as a priority area for development pending site assessments.
- Portion 283 of the Farm Witpoortjie 117 IR, north of Portion 9 of the Farm Withok 131 IR:
  - The bulk of the property is designated as a Restricted Area incorporating all the CBAs and NFEPA wetlands, most of the ESAs on the property and also undesignated areas that contain undisturbed habitats. The property contains the confluence of two tributaries, the main tributary flowing west and connecting to the Restricted Area of the small holdings.
  - The bulk of this property should therefore be avoided other than undesignated areas.
  - A section of ESA (area 3f) in the north-east of the property has been incorporated into a Potential Development Area. The area forms part of the smaller tributary which has been highly impacted (historically and currently) by the surrounding land uses and activities. The area is unlikely to be utilised by sensitive or significant fauna species, but does still provide an ecological corridor within a largely disturbed area. This secondary tributary is therefore designated as a Potential Development Area that should be considered if additional area is required, but where activities will be completed in a manner that will not significantly impair the ecological connectivity (activity is to be considered along edges rather than across the ecological corridor).
- Remaining Extent of Portion 183 of the Farm Witpoortjie 117, the main property incorporating the Phase 1 panel development area:
  - The bulk of the site includes historical and existing mine infrastructure areas and is considered as a priority area for development pending site assessments.
  - A small area in the far east (Plan 5 area 4g), which contains small, undisturbed patches of habitat and provides ecological connectivity southwards, is considered a Restricted Area and should be avoided.
  - Some CBAs and ESAs are associated with the secondary tributary that encroaches along the northern boundary of this property, and incorporate edges of the tailings facility that occupies the bulk of the property. This secondary tributary is designated as a Potential Development Area, much of which falls outside the proposed project area (it is part of the same tributary discussed for Portion 283 of the Farm Witpoortjie 117 IR) and that should be considered if additional area is required, but where activities will be completed in a manner that will not significantly impair the ecological connectivity.
- Portion 272 of the Farm Witpoortjie 117 IR, north of the Remaining Extent of Portion 183 of the Farm Witpoortjie 117:
  - The bulk of the site is under ESA and CBAs along the boundaries. The northern part of the property was historically cultivated and disturbed and considered as priority for development.

- The southern half of the property has been included as a Potential Development Area (forming part of the secondary tributary discussed for Portion 283 of the Farm Witpoortjie 117 IR).

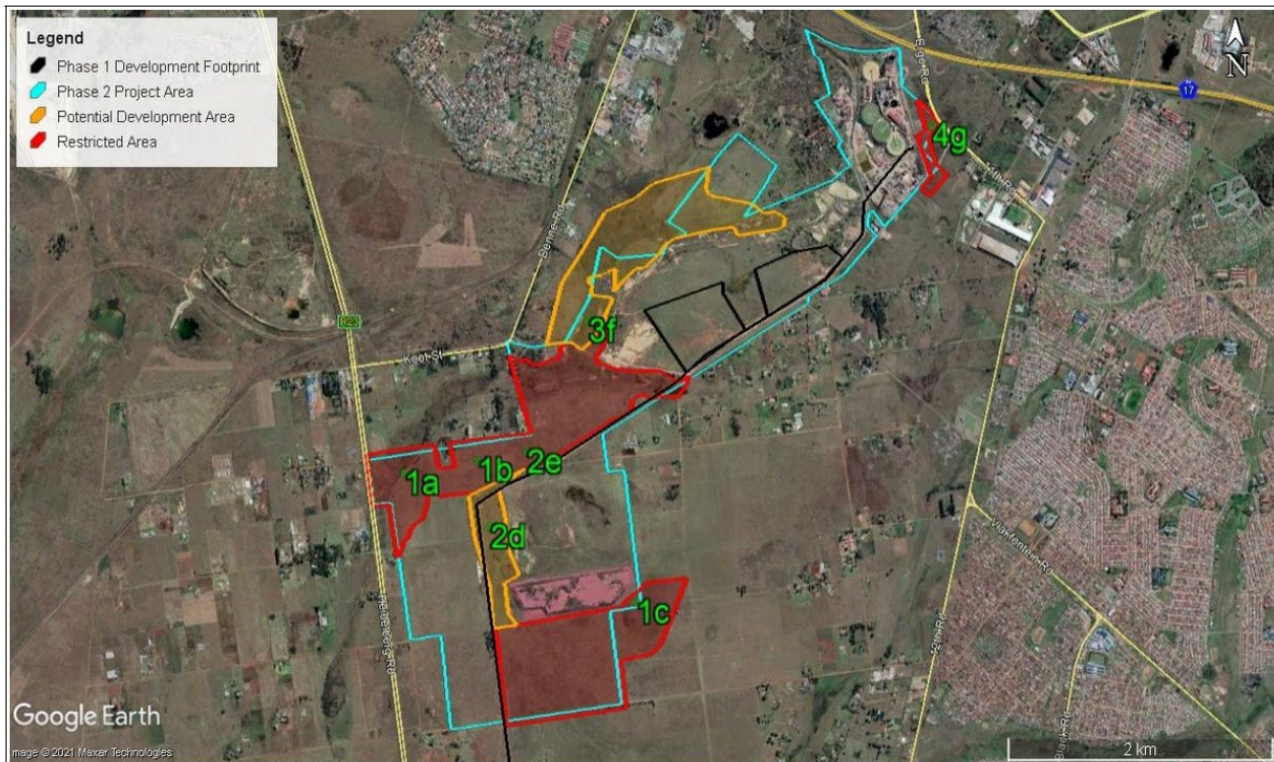


Figure 49: Desktop fauna site sensitivity identified

### c) Avifauna

(Refer to Appendix G for scoping report)

The effects of any development on birds are highly variable and depend on a wide range of factors including the specification of the development, the topography of the surrounding land, the habitats affected and the number and diversity of species present. The principal areas of concern for Red List and non-Red List priority species related to the proposed 40MW SEF development are listed below:

- Displacement due to habitat loss in the physical SEF infrastructure footprint;
- Displacement due to disturbance associated with construction and operation/maintenance of the proposed 40MW SEF development;
- Mortality due to collision with the PV panels; and
- Displacement due to habitat loss as a result of altered run-off and the use of chemical pollutants.



The aforementioned impacts will be described and assessed in detail, following the site visit to the Phase 2 study area during the EIA phase of the project process. Table 19 provides a summary of the potential impacts associated with the proposed development, based on a preliminary assessment of the species and habitat information contained within this scoping report.



Table 19: Scoping assessment of the potential impacts associated with the proposed Phase 2 40MW SEF development

IMPACT	NATURE OF THE IMPACT	GEOGRAPHICAL EXTENT	NO-GO AREAS
Displacement: Habitat loss or transformation	<p>Avifaunal habitat is cleared to accommodate the Phase 2 PV SEF facility and its ancillary infrastructure reducing the amount of habitat available to birds for foraging, roosting and breeding.</p> <p>It is also important to note that this impact, associated with the construction of the Phase 2 PV SEF facility and its on-site ancillary infrastructure, may potentially have dire consequences for the smaller passerine species with small home ranges as entire territories could be removed.</p>	Local	<p>Relevant to this assessment, although sections of the study area have already been intensively transformed through agricultural and mining activities, industrial activities and urbanisation, <b>rivers systems and waterbody/wetland habitat</b> feature within the study area that are likely to be transformed (or further transformed) during the course of the construction activities, which could in turn impact on birds using these habitats. <b>Development in these areas should be precluded.</b></p>
Displacement: Disturbance	<p>Excavation and construction activities are a source of significant disturbance particularly as a result of the machinery and construction personnel that are present on site for the duration of the construction of the facility. For most bird species, construction activities are likely to be a cause of temporary disturbance and may impact on foraging, breeding and roosting behaviours or in more extreme cases, result in displacement from the site entirely.</p>	Local	<p>The study area is already subjected to a fairly significant degree of disturbance due to the existing mining, urban and industrial activities in the immediate vicinity of the proposed development area. However, <b>rivers systems and waterbody/wetland habitat</b> are present and remain areas of refuge for priority species. Development within these habitats may be a significant source if disturbance and should be precluded.</p>
Direct Mortality: Collisions with the PV panels	<p>This impact refers to collision-related fatality resulting from the direct contact of the bird with the PV panel infrastructure. In some instances, the bird is not killed outright by the collision impact, but succumbs to predation later, as it cannot avoid predators due to its injuries. Bird abundance and flight activity levels differ according to habitat availability, and other natural features. Therefore, the impact on birds through</p>	Local	<p><b>Rivers systems and waterbody/wetland habitat</b> are present and remain areas of refuge for priority waterbird species, that may be susceptible to the 'lake effect'. Development within these habitats may be a significant source if disturbance and should be precluded.</p>





IMPACT	NATURE OF THE IMPACT	GEOGRAPHICAL EXTENT	NO-GO AREAS
	direct fatality is very site specific. In addition, the so-called "lake effect" could act as a potential attraction to numerous waterbird species recorded in the broader study area.		It is also important to note, that in order to increase solar panel efficiency and power output, most solar panels are treated with an anti-reflective coating which may mitigate this impact. It is not possible to determine whether this impact will occur until operational monitoring reveals actual mortalities at the proposed SEF.
Altered Runoff and Chemical Pollution	<p>The transformation of the site surface from natural vegetation to infrastructure alters the manner in which water moves on the site after rainfall and cleaning of infrastructure. If this is not carefully managed this could cause soil erosion reducing the remaining bird habitat further. Increased runoff could also create moister conditions on or near the site thereby attracting more birds to the area and increasing the likelihood of other interactions with the facility.</p> <p>Pollution could occur if hazardous chemicals are used to clean PV panels once operational. This could have secondary effects on vegetation, invertebrate populations and in turn food availability and habitat for birds.</p>	Local	Habitat within the study area is already transformed to a large degree through agriculture. mining, industrial and urban activities. However sensitive avifaunal habitat still occurs in pockets (i.e. rivers, waterbodies, wetlands and some intact grassland. Construction and operational practices associated with this development may further degrade the natural habitat. Development in these areas should be precluded.
Nesting	Various bird species are quick to seize a new opportunity for perching, roosting or nesting, including on man- made structures. Relevant to the proposed 40MW SEF, passerine and corvid species are likely to use certain parts of the proposed facility once commissioned. Whilst	Local	N/A



IMPACT	NATURE OF THE IMPACT	GEOGRAPHICAL EXTENT	NO-GO AREAS
	nesting could be viewed as a positive impact for birds, it can result in operational problems for the facility.		



#### **d) Surface Water Assessment and Storm water management**

(Refer to Appendix H for scoping report)

A baseline hydrological assessment for the proposed solar development (Phase 2) has been undertaken to support the application of appropriate environmental and water use authorisation processes. Baseline information including monthly rainfall, monthly evaporation, design event rainfall, as well as site topography and regional and local catchment hydrology were considered for the proposed development. Elevation data for the site was obtained in the form of a 2m DTM (bare earth) supplemented by a 30m AW3D30 DSM for areas not covered by the 2m DTM.

The hydrology of the region is characterised by a mixture of perennial and non-perennial watercourses. The site falls within the upper reaches of quaternary catchment C22C of which the primary watercourse is the Rietspruit River. Drainage at the site is generally in a south-westerly direction into a combination of non-perennial streams, dams, as well as formalised furrows and drainage canals as defined by the NGI's 1:50,000 topographical map sheets. These then flow into the Withokspruit and subsequently the Rietspruit River.

#### **e) Wetland and Aquatic Impact Assessment**

(Refer to Appendix I for scoping report)

A desktop assessment was conducted within the study area based on historic and current aerial imagery. This desktop assessment was added to the delineations undertaken during phase 1 of the Ergo Gold PV project. Four HGM units were delineated within the study area and 500m assessment buffer. These were classified as an unchannelled valley bottom wetland, a seep system, and a depression wetland, while a fourth HGM unit, a channelled valley bottom wetland, was delineated to the south of the study site but within the 500m assessment buffer. These HGM units are detailed in Table 12 and displayed in Figure 50.

Apart from the four natural HGM units delineated within the study site and 500m assessment area, a number of artificial wetlands, functional dams, discarded dams and seepage from dams were delineated. These wetland areas were identified both within phase 1 of the Ergo Gold PV project as well as on the aerial images examined.

During phase 1 of the Ergo Gold PV project, these areas were confirmed to be artificial in nature and have been created by the extensive anthropogenic modifications throughout the study site. As a result of these disturbances, the soils of the site have been completely modified and are now classified as the Hydric Technosol, Stilfontein form. These soils show signs of saturation but are not natural wetland soils. The 'wetlands' were delineated during phase 1 of the Ergo Gold PV project based on the presence of hydric characteristics of the soil, at the surface of the soil profile or within the first 10cm. Similar 'wetland' areas were identified during the examination of aerial imagery of the site, within and adjacent to areas that have been extensively modified by historic and current mining activities and the subsequent rehabilitation of these areas.



It is recommended that these artificial 'wetland' areas are studied in more detail during the impact assessment phase of the wetland assessment. A detailed field investigation by the specialist, of the boundary of these systems, their ecological integrity and functionality within their catchment will aid in determining the nature of the 'wetland' areas as well as any mitigation measures needed for their protection.

## **Wetland Health Assessment**

### **Present Ecological State (PES)**

HGM 1, the unchannelled valley bottom wetland, was classified as Seriously Modified (PES Category E), HGM 2, the seep system has been classified as Largely Modified (PES Category D), HGM 3, the depression system has been classified as Moderately Modified (PES Category C), and HGM 4, the channelled valley bottom wetland has been classified as Largely Modified (PES Category D).

Impacts to the wetland systems stem from the use of the catchments associated with each wetland for historic and current mining activities as well as urban development. These developments have impacted the hydrological flow of the wetlands as well as the geomorphic setting. HGM 1 has been particularly disturbed as a result of mining within the catchment. This wetland has been dammed during historic mining within the area and while much has been rehabilitated through the decommissioning of the dams, the wetland remains seriously impacted. The existing Ergo Gold Mine Brakpan Plant is situated within the catchment of this HGM unit, with tailings facilities in the upper reaches of the valley bottom wetland. These have had a serious impact on the flow dynamics of the wetland, leading to erosion, desiccation, and encroachment of alien invasive species.

Dams associated with HGM 2, the seep wetland, and HGM 4, the channelled valley bottom wetland, have also had an impact on the flow dynamics of these systems. The damming of wetland systems has long-term negative impacts on the hydrology, geomorphology, and vegetation dynamics of these systems. Dams cause a decrease in the quantity of water reaching downstream wetland areas as well as the increase in flooding of the upstream wetland systems, leading to changes in the hydrological flow through the channels as surface flow and through the soil profile as subsurface flow. Further to this, impoundments act as sediment sinks, reducing the sediment load of water released downstream of the dam. This results in water that is regarded as 'sediment hungry', having an increased capacity for erosion.

The depression wetland, HGM 3, has a smaller catchment area and this has limited the impacts to this wetland to a degree. However, the wetland has still been impacted through the use of the adjacent area as a tailing's storage facility. Sediment from this storage facility can easily be deposited within the depression, affecting the hydrology, geomorphology, and vegetation dynamics of the system. A general desiccation of the wetland is apparent in the series of aerial imagery from 1985 to 2021. A summary of the PES scores obtained for the delineated systems following application of the Wet-Health approach is provided in Table 21.

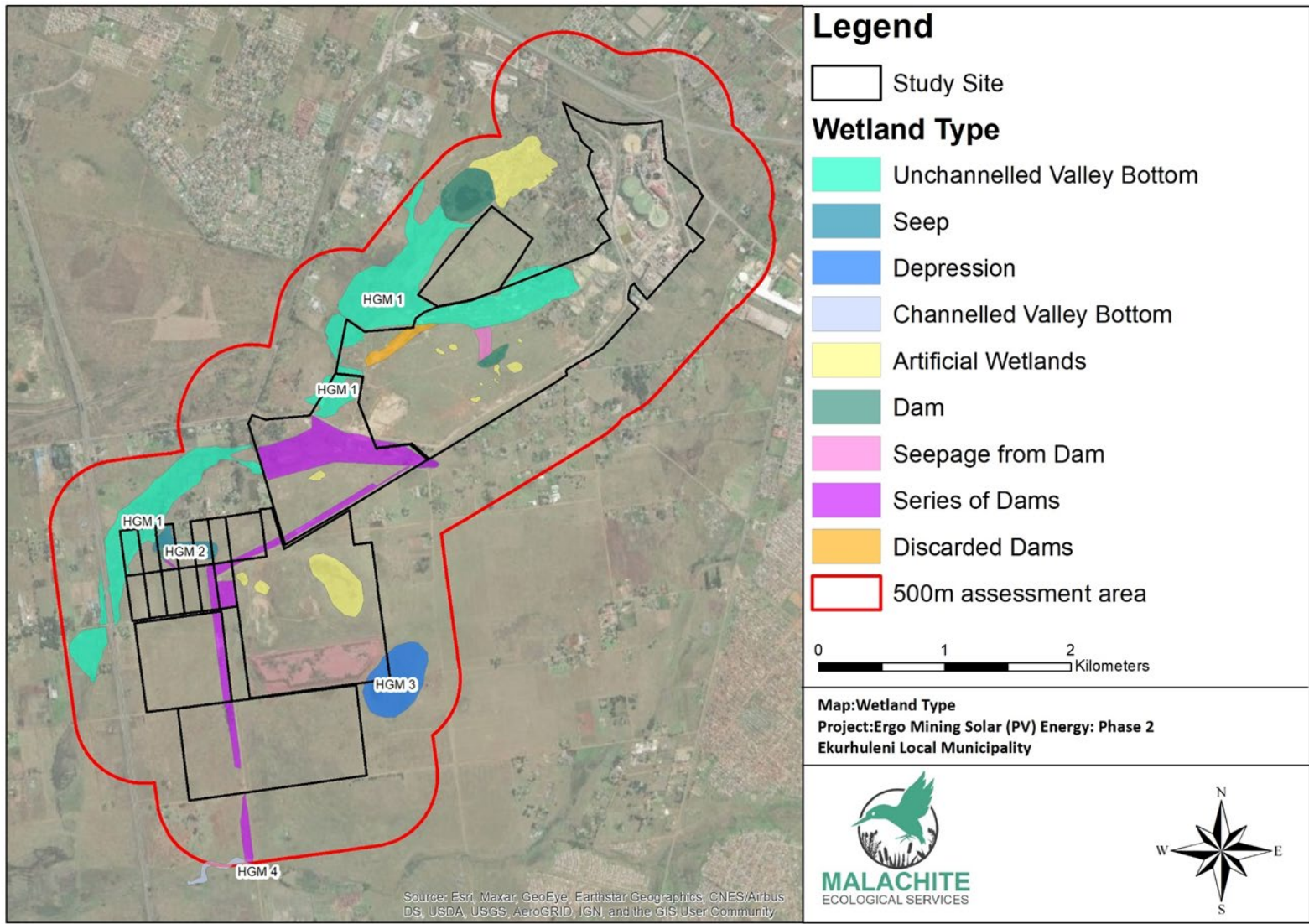


Figure 50: Wetland systems delineated within the assessment area:





Table 20: Summary of PES score

HGM UNIT	EXTENT DELINEATED (HA)	HYDROLOGY	GEOMORPHOLOGY	WATER QUALITY	VEGETATION	PES SCORE (CATEGORY)
HGM 1	138.04	6.5	4.7	7.5	7.5	<b>E (6.5)</b>
HGM 2	5.15	5.2	4.0	3.4	6.0	<b>D (4.70)</b>
HGM 3	21.57	3.9	2.5	6.3	2.7	<b>C (3.80)</b>
HGM 4	2.70	4.2	3.0	4.8	4.4	<b>D (4.10)</b>

#### f) Soils, land capability and agricultural potential

(Refer to Appendix J for scoping report)

The majority of the central portion of the study site, particularly within Portions 183 and 283 of the Farm Witpoortjie 117 and Portion 9 of the Farm Withok 131 I.R was classified as the Physically Disturbed Anthrosol, Grabouw. This soil form is physically disturbed as a result of historic and current activities and includes areas where the soils have been mixed, compacted, or excavated by human activity. Adjacent to the Grabouw soils, in areas which have been converted to infrastructure, the soils were classified as the Urban Technosol, Johannesburg. Urban Technosols encompass the whole spectrum of urban development and for the study site, the classification includes the buildings and mining operations of the Brakpan Plant, the gravel roads, and the slurry pipelines. The Witbank soil, which is another Technosol, a Transported Technosol, was classified in an area which serves as a stockpile for historic mining operations. Transported Technosols include any relatively fine or crushed material which has been intentionally transported from a separate location and deposited on the land surface.

The final Technosol encountered within the study site, the Hydric Technosol Stilfontein, was classified in areas which have undergone saturation for an extended period of time. This classification is also applied to former wetland soils that have suffered altered soil properties resulting from direct human intervention. The classification was applied to areas which have undergone historic transformation to tailings dams, remined areas, rehabilitated areas, as well as areas currently used to convey water for mining operations. The alteration to the natural topography and drainage of the majority of these areas has furthermore caused ponding of stormwater. These saturated areas display hydric properties both at the surface of the



soil as well as within the lower reaches of the soil profile and include gleying of the soil matrix as well as distinct and a high concentration of mottles and concretions.

Scattered throughout the study area, between the Anthrosols and Technosols, natural soil profiles are also apparent. These are classified as either Mispah/Glenrosa soils, Hutton/Nkonkoni soils or the Katspruit soils.

The Mispah and Glenrosa soil forms are categorised as belonging to the Lithic class. Lithic soils are characterised by hard rock or saprolite dominating the soil profile. Mispah soils are characterised by an Orthic A horizon overlying hard rock, while Glenrosa soils are characterised by an Orthic A horizon overlying a lithic horizon (weathering rock). These soils are often identified on convex and steeper slopes where natural erosion keeps pace with weathering and the result is shallower soil profiles. These Mispah/Glenrosa soils are mapped in the south-western portion of the study site in Holdings 203-208, 240-245, 296-303 and 348-355 of the Withok Estates I.R.

To the south of the Mispah/Glenrosa soils, in Holdings, 203-206, and 240-243 Withok Estates I.R, the Hutton/Nkonkoni soil forms were mapped. Furthermore, these soils were mapped in parts of Portion 272 of the Farm Witpoortjie 117. The Hutton/Nkonkoni are categorised as belonging to the Oxidic soil class. Oxidic soils have a B horizon that is uniformly coloured with red and/or yellow oxides of iron. These soils exhibit a broad geographic distribution in South Africa and are considered mature soils, coupled with free drainage in the upper solum of the soil profile. The Nkonkoni soil form consists of an orthic A horizon overlying a red-apedal B horizon which overlies a lithic horizon. The Hutton form is the same as the Nkonkoni form, with the red-apedal horizon being much thicker in this soil form.

Within the more permanently saturated sections of channelled valley bottom wetland system, along the northern boundary of the study site, as well as a depression system in the southern point of the site, the Katspruit soil form was mapped. This soil form belongs to the Gleyic soil class. Gley soils display reduction and are located within saturated environments. They are considered wetland soils and are generally identified in the low-lying parts of the landscape. The Katspruit soil form consists of an orthic A horizon overlying a gley horizon and this saturated horizon.

Overall, the study site can be considered to have a low agricultural potential with severe limitations to crop cultivation. The majority of the site is classified as Class V, Class VI or Class VIII (73.3%) (refer to Figure 8). This is as a result of a combination of factors including the significant long term anthropogenic modifications to the soils of the entire study site, the presence of saturated horizons, and the use of the surrounding landscape for mining and urban activities. Portions of the site are considered acceptable for crop production; however, these are small in comparison to the non-suitable areas. The areas classified for crop production will furthermore require more in-depth examination during the impact assessment phase of this study to determine their suitability.

#### **g) Heritage**

(Refer to Appendix K for scoping report)



Based on the current information obtained for the area it is anticipated that any heritage sites that occur within the proposed development area will have a Generally Protected B (GP. B) or lower field rating and all sites should be mitigatable. A grave site is indicated on the 1976 topographical map of the area (Figure 24) but not on subsequent or previous maps of the area and it is not certain if the grave site still exists and therefore no red flags have been identified.

» Archaeological and Cultural Heritage Landscape

NOTE: *Archaeology is the study of human material and remains (by definition) and is not restricted in any formal way as being below the ground surface.*

Previous assessments in the area recorded Stone Age sites of which one occur in the study area (HIA conducted for Phase 1: 19.9MW assessment). More sites can be expected in the study area especially close to water sources like pans and streams. Impacts to heritage resources will occur primarily during the construction phase and no impacts are expected during the operation and decommissioning phase.

*Archaeological remains dating to the following periods can be expected within the study areas:*

» Stone Age finds

*ESA: High Probability*

*MSA: High Probability*

*LSA: Medium Probability*

*LSA –Herder: Low Probability*

*Shell Middens – No Probability.*

» Iron Age finds

*EIA: Low Probability*

*MIA: Low Probability*

*LIA: Medium Probability*

» Historical finds

Historical finds include structural remains and the cultural landscape and can be expected in the study area. Impacts to heritage resources will occur primarily during the construction phase and no impacts are expected during the operation and decommissioning phase. The construction of the project could have a low impact on a local scale.

*Historical period: Medium Probability*

*Historical dumps: Medium Probability*

*Structural remains: High Probability*



» Living Heritage

For example, rainmaking sites: *Low Probability*

» Burial/Cemeteries

Graves and informal cemeteries can be expected anywhere on the landscape, and a single grave site is indicated just outside the study area (Figure 25). The project could have a low to medium impact on a local scale.

Burials over 100 years: *Medium Probability*

Burials younger than 60 years: *High Probability*

Subsurface excavations including ground levelling, landscaping, and foundation preparation can expose any number of these resources.

<b>Impact on Heritage resources</b>			
The construction of the proposed project could directly impact on graves, archaeological sites and historical sites.			
<b>Issue</b>	<b>Nature of Impact</b>	<b>Extent of Impact</b>	<b>No-Go Areas</b>
Disturbance and destruction of archaeological sites, historical sites and graves.	Construction activities could cause irreversible damage or destroy heritage resources and depletion of the archaeological record of the area.	Low to Medium on a local scale.	Where known graves occur
<b>Description of expected significance of impact</b>			
Significance of sites, mitigation and significance of possible impacts can only be determined after the HIA but based on the current information the impact on heritage resources can be mitigated to an acceptable level.			
<b>Gaps in knowledge &amp; recommendations for further study</b>			
It is recommended that a field based HIA should be conducted to comply with Section 38 (8) of the National Heritage Resources Act.			

**h) Visual**

(Refer to Appendix L for scoping report)

**Potential Visual exposure**

The result of the viewshed analysis for the proposed facility is shown on the map below (Figure 51). It must be borne in mind that the viewshed analyses were done from vantage points distributed across all the properties, which represent a larger area (558ha) than the actual proposed development footprint (approximately 80-100ha).

The development would be quite easily visible within a 1km radius of the site. This area (0 – 1km) includes sections of public roads (secondary roads, streets and the R23 arterial road) traversing within this zone. The facility is also expected to be visible from the Withok Small Holdings east, south and west of the proposed development site, as well as the Witpoort



Estate Small Holdings to the north. Besides the small holdings, two additional farmsteads (Daheim and Deovolente) were also identified. These are located respectively south and west of the properties identified for the PV Plant.

Within a 1 – 3km radius, the visual exposure is more scattered and interrupted due to the undulating nature of the topography. Most of this zone falls within vacant open space and agricultural/mining land, but does include some farm dwellings and residences on the abovementioned small holdings.

Visibility within 3 - 6km is greatly reduced and is primarily expected from higher ground (e.g. the north-facing slopes of the tailings dam) or vacant open space to the north-west.

At distances exceeding 6km the intensity of visual exposure is expected to be very low and highly unlikely due to the distance between the object (development) and the observer.

In general terms it is envisaged that the structures, where visible from shorter distances (e.g. less than 1km and potentially up to 3km), and where sensitive visual receptors may find themselves within this zone, may constitute a high visual prominence, potentially resulting in a visual impact. This may include residents residing at the Withok Small Holdings (east, west and south) and at the Witpoort Estate Small Holdings, as well as observers travelling along the roads in close proximity to the facility.

### **Anticipated Issues Related to The Visual Impact**

Anticipated issues related to the potential visual impact of the proposed PV Plant include the following:

- The visibility of the facility to, and potential visual impact on, observers travelling along the secondary or arterial roads within the study area.
- The visibility of the facility to, and potential visual impact on residents of dwellings within the study area, with specific reference to the agricultural or small holdings in closer proximity to the proposed development.
- The potential visual impact of the facility on the visual character or sense of place of the region.
- The potential visual impact of the facility on tourist routes or tourist destinations/facilities (if present).
- The potential visual impact of the construction of ancillary infrastructure (i.e. internal access roads, buildings, etc.) on observers in close proximity to the facility.
- The visual absorption capacity of the natural vegetation (if applicable).
- Potential cumulative visual impacts (or consolidation of visual impacts), with specific reference to the placement of the PV Plant within a predominantly mining area with existing industrial structures.
- The potential visual impact of operational, safety and security lighting of the facility at night on observers residing in close proximity of the facility.
- Potential visual impact of solar glint and glare as a visual distraction and possible air travel hazard.
- Potential visual impacts associated with the construction phase.
- The potential to mitigate visual impacts and inform the design process.





It is envisaged that the issues listed above may potentially constitute a significant visual impact at a local and/or regional scale. These need to be assessed in greater detail during the EIA phase of the project.

<p><b>Impact</b></p> <p>Visual impact of the facility on observers in close proximity to the proposed PV Plant infrastructure and activities. Potential sensitive visual receptors include:</p> <ul style="list-style-type: none"> <li>Residents of the Withok and Witpoort Estate Small Holdings</li> <li>Residents of homesteads and farm dwellings (if present in close proximity to the facility)</li> <li>Observers travelling along the secondary roads, streets and the R23 arterial road</li> </ul>			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
The viewing of the PV Plant infrastructure and activities	The potential negative experience of viewing the infrastructure and activities within a predominantly undeveloped setting	Primarily observers situated within a 3km radius of the facility	N.A.
<p><b>Description of expected significance of impact</b></p> <p>Extent: Local Duration: Long term Magnitude: Moderate to High Probability: Probable Significance: Moderate to High Status (positive, neutral or negative): Negative Reversibility: Recoverable Irreplaceable loss of resources: No Can impacts be mitigated: Yes</p>			
<p><b>Gaps in knowledge &amp; recommendations for further study</b></p> <p>A finalised layout of the PV Plant and ancillary infrastructure are required for further analysis. This includes the provision of the dimensions of the proposed structures and ancillary equipment.</p> <p>Additional spatial analyses are required in order to create a visual impact index that will include the following criteria:</p> <ul style="list-style-type: none"> <li>Visual exposure</li> <li>Visual distance/observer proximity to the structures/activities</li> <li>Viewer incidence/viewer perception (sensitive visual receptors)</li> <li>Visual absorption capacity of the environment surrounding the infrastructure and activities</li> </ul> <p>Additional activities:</p> <ul style="list-style-type: none"> <li>Identify potential cumulative visual impacts</li> <li>Undertake a site visit</li> <li>Recommend mitigation measures and/or infrastructure placement alternatives</li> </ul> <p>Refer to the Plan of Study for the EIA phase of the project below.</p>			

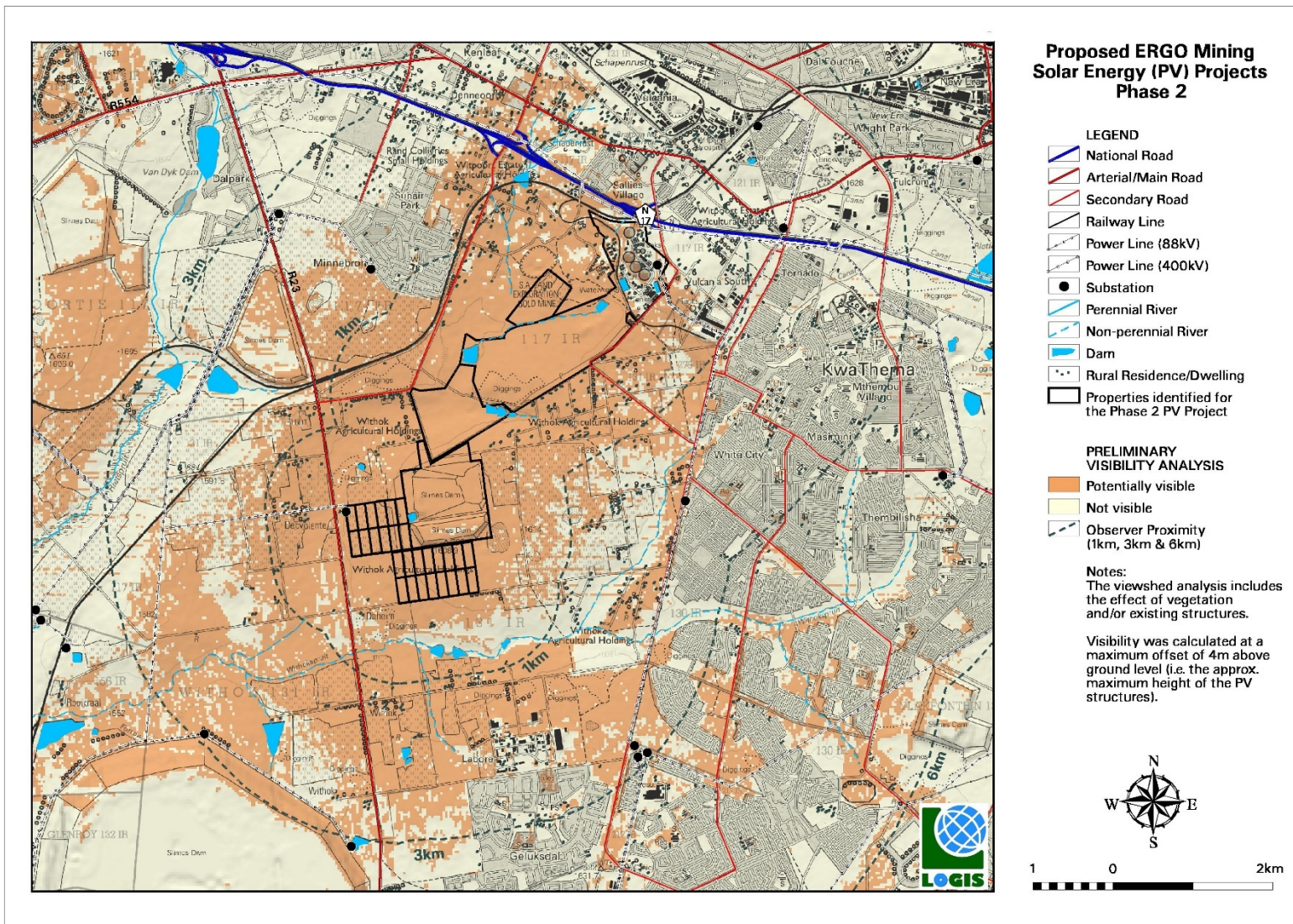


Figure 51: Map indicating the potential (preliminary) visual exposure of the proposed PV Plant properties



## i) Socio-economic

(Refer to Appendix M for scoping report)

The following potential socio-economic impacts have been provided as a preliminary assessment based on previous studies undertaken for the Phase 1 Assessment of the 19.9MW and a desktop assessment of the proposed project and socio-economic receiving environment.

### Construction Phase

- Increased temporary local employment opportunities – It is anticipated that up to 273 temporary or short-term employment opportunities may be generated during the construction phase. Some of which may benefit local unemployed individuals. The benefits may impact beyond the local area – i.e. to the regional or national level – as many of these opportunities may be skilled or professional and so are unlikely to be sourced locally.
- Increased local economic development opportunities – The local procurement of materials and services could benefit local businesses and indirectly provide employment and improved local spending in the short-term. As the types of services required during construction is unlikely to exist locally, these benefits may be realised on a regional or national level, however the procurement of locally available materials (e.g. crusher run) and services such as security and cleaning could be sourced locally.
- Reduced access to livelihood resources – Construction activities may require the securing of certain portions of the site for security of the PV facility, which may be used by local communities to support their subsistence livelihoods, including grazing.
- Reduced public safety - During the construction phase, there will be an influx of labour, machinery, traffic, and potentially jobseekers into the area over the twelve - fifteen-month construction phase. This is likely to increase the exposure of local public (including residents, roads users and businesses) to health and safety risks. These risks may include the potential for increased levels of crime, traffic accidents, and exposure to dust and vehicle emissions.
- Increased nuisance, disruption and indirect costs – The construction phase is likely to alter the sense of place and impact the local residents through changing the local environment. These changes are likely to include increased noise (excavation, labour, machinery and traffic), reduced local air quality (dust, vehicle emissions), increased traffic, machinery and people in the area, and potentially an increased in crime and presence of “outsiders” and construction activities in the area. These aspects can result in nuisance and disruption to social and economic activities and communities, as well as create an environment that spreads social pathologies and ills.

### Operational Phase

- Increased employment opportunities – It is anticipated that the operational phase will see the employment of approximately 27 people for the 20 to 25-year duration for the operational phase, creating direct employment for the region. In addition, the sourcing of materials and services could develop indirect employment opportunities.
- Increased local economic stimulation opportunities – Local businesses could also see growth and diversification through the provision of services and materials to the operation, thus encouraging diversification within the local economy. The removal of the Ergo Plant for the grid could also allow for a more stable energy supply to be made available to the region which could support local economic development and investment.
- Increased nuisance, disruption and indirect costs – The operation of the proposed project could result in indirect economic impacts on the local environment. It is likely that the facility will disrupt the immediate visual landscape and could change the nature of the area and sense of place for local residents. Any significant disruption could





change how immediately adjacent residents live, work and experience this area. This is likely to be through visual intrusion, increased traffic and dust, and potentially indirect impacts such as crime and security issues.

- Reduced access to livelihood resources – The operational phase may see the reduced access to livelihood resources by local communities, such as grazing land for subsistence farmers.
- Reduced public safety and security – The operational phase is likely to make the area more secure, as the PV facility will be fenced and monitored due to the high value of the equipment. However, this could also attract criminal activity to the area, as cables and equipment for the PV facility are likely to be targeted for theft. The close proximity of this site to residential houses and businesses within Withok Estates AH means that these houses and business are likely to be the most exposed to public health and safety risks.
- Change in sense of place – The visual intrusion of the proposed project is unlikely to be significant but is likely to change the nature of the area from agriculture to an industrial landscape. While this is unlikely to affect businesses in the area, it could impact on residents, including property values.

### Decommissioning Phase

- Loss of permanent jobs - The employment during the operational phase is likely to be phased out during decommissioning at end of life of the PV facility, resulting in a loss employment locally and regionally.
- Loss of local economic opportunities - The decommissioning of the PV facility is likely to remove direct and indirect opportunities for local and regional businesses to benefit from providing goods and services to the facility.
- Increase temporary employment – Approximately 127 temporary employment opportunities may be generated during the decommissioning phase, which could benefit local communities.
- Increased local procurement - The decommissioning phase may see the need for local procurement of goods and services.

### j) Summary of the key findings of the Scoping Phase

The following includes the key findings and impact statements from the specialist scoping studies undertaken as part of this report:

<p><b>Flora Terrestrial biodiversity:</b></p>	<p>Due to the largely modified and secondary nature of the vegetation, the proposed development will have a limited impact on sensitive vegetation. However, the degraded rocky grassland and moist grassland should be investigated as these areas could provide suitable habitat to plant species of conservation concern.</p>
<p><b>Fauna Terrestrial biodiversity:</b></p>	<p>The only significant desktop features included the surface water features, CBAs and ESAs, largely associated with the streams and adjacent areas. Most of these areas have been incorporated into the Restricted Areas (Figure 49), along with undesignated undisturbed areas; areas that appear to have not been historically cultivated or impacted by mine infrastructure and may have experienced only superficial impacts. A few desktop ecological features have</p>



	<p>been included within the allowable development area (Figure 49), as they have little value in terms of habitat provision or ecological connectivity for terrestrial fauna.</p> <p>As the Phase 2 areas incorporate more sensitive and less disturbed habitat units, the area is more likely to support TOP species / SCCs, although these are still expected to be fairly limited on site due to general anthropogenic activity in and around the general area. Most are expected to traverse or forage in the area; the Restricted Areas (Figure 49), are most likely to host these species on a more permanent basis. Being mobile they can move away from the development once it commences, and return after activities are completed, as long as the Restricted Areas are maintained. Significant direct impacts to fauna species are therefore not anticipated, but must be actively managed.</p>
<p><b>Avifauna:</b></p>	<p>The high-level avifaunal assessment has identified at least four avifaunal habitats of varying sensitivities within the proposed study area. Despite anthropogenic impacts, mostly in the form of agricultural practices that have largely transformed the landscape resulting in a negative impact on avifaunal abundance, potentially sensitive habitat persists within the study area. The construction of the proposed Phase 2 PV SEF facility and its ancillary infrastructure will likely result in impacts of medium significance, which can be reduced through the application of mitigation measures. It is anticipated that sustainable development of the proposed Phase 2 PV SEF facility and grid connection can be achieved with acceptable levels of impact on the resident avifauna subject further specialist avifaunal impact assessment studies to be conducted as part of the EIA process in order to:</p> <ol style="list-style-type: none"> <li>3) Confirm avifaunal microhabitats within the proposed development area and assess these for their suitability to support Red List and non-Red List priority species, in terms of breeding, roosting and foraging;</li> <li>4) Describe the avifaunal communities (both Red List and non-Red List priority species) most likely to be impacted, based on data collected as part of a systematic and quantified data collection process.</li> </ol>
<p><b>Surface Water Assessment:</b></p>	<p>The hydrology of the region is characterised by a mixture of perennial and non-perennial watercourses. The site falls within the upper reaches of quaternary catchment C22C of which the primary watercourse is the Rietspruit River. Drainage at the site is generally in a south-westerly direction into a combination of non-perennial streams, dams, as well as formalised furrows and drainage canals as defined by the NGI's 1:50,000 topographical map sheets. These then flow into the Withokspruit and subsequently the Rietspruit River.</p>





<b>Wetland Assessment and Aquatic:</b>	<b>Impact and</b>	<b>Wetland Findings</b>
		<p>Four HGM units were delineated within the study area and 500m assessment buffer. These were classified as an unchannelled valley bottom wetland, a seep system, and a depression wetland, while a fourth HGM unit, a channelled valley bottom wetland, was delineated to the south of the study site but within the 500m assessment buffer.</p> <p>Apart from the four natural HGM units delineated within the study site and 500m assessment area, a number of artificial wetlands, functional dams, discarded dams and seepage from dams were delineated. The 'wetlands' were delineated during phase 1 of the Ergo Gold PV project based on the presence of hydric characteristics of the soil, at the surface of the soil profile or within the first 10cm. Similar 'wetland' areas were identified during the examination of aerial imagery of the site, within and adjacent to areas that have been extensively modified by historic and current mining activities and the subsequent rehabilitation of these areas.</p> <p>The four natural HGM units were assessed with regards to their health according to the Wet-Health methodology. HGM 1, the unchannelled valley bottom wetland, was classified as Seriously Modified (PES Category E), HGM 2, the seep system has been classified as Largely Modified (PES Category D), HGM 3, the depression system has been classified as Moderately Modified (PES Category C), and HGM 4, the channelled valley bottom wetland has been classified as Largely Modified (PES Category D).</p> <p><b>Aquatic Findings</b></p> <p>In general, valley bottom wetlands and depressional systems such as was determined to be present within the study area are unlikely to support a diverse array of aquatic biota given the lack of diverse hydraulic habitat relative to true riverine reaches of watercourses. As such, only a limited acquired diversity of aquatic biota is expected to be associated with the wetlands present within the study area.</p> <p>A total of four indigenous fish species and one alien fish species are expected to be associated with the larger study area. Such diversity may however be considered optimistic, and only limited fish diversity is expected to be associated with HGM 1 (if any), while no fish species are expected HGM 3.</p> <p>Determination of the ecological state from an aquatic perspective is not considered suitable, and therefore reliance should be placed on that as determined from a wetland perspective.</p>



	<p>This is also applicable to the determination of the ecological importance and ecological sensitivity of the wetland systems.</p>
<p><b>Soils, land capability and agricultural potential:</b></p>	<p>Utilising the soil information, climatic information, and topography, the study site was assessed in terms of the agricultural and land capability potential. The study site has been categorised into the Class III, Class IV, Class V, Class VI, and Class VIII categories. The Class III and Class IV category is classified in areas that contain the natural Mispah/Glenrosa and Hutton/Nkonkoni soils. Class III areas occupy 14.4% of the study site, while Class IV areas occupy 12.39% of the site. The Class V category is reserved for saturated soils and was thus mapped where the Stilfontein and Katspruit soils were identified or are likely to be identified. Class V areas occupy 29.1% of the site. The Grabouw or Physically Disturbed Anthrosol soils have been classified as Class VI areas. Class VI areas have severe restrictions to cropping and are therefore excluded from production under perennial vegetation. Class VI soils occupy 17.9% of the study site. The remaining Johannesburg and Witbank soils are categorised as Class VIII soils. These soils have been completely modified and are not productive for any agricultural activities. Current infrastructure is situated within these areas. The Class VIII areas occupy 26.3% of the study site.</p> <p>Overall, the study site can be considered to have a low agricultural potential with severe limitations to crop cultivation. The majority of the site is classified as Class V, Class VI, or Class VIII (73.3%). This is as a result of a combination of factors including the significant long term anthropogenic modifications to the soils of the entire study site, the presence of saturated horizons, and the use of the surrounding landscape for mining and urban activities.</p>
<p><b>Heritage:</b></p>	<p>The area is characterised by cultivation and mining activities from the 1940's onwards that altered the landscape. A grave site is indicated on the 1976 topographical map of the area (Figure 25) but not on subsequent or previous maps and it is not certain if the grave site still exists. Based on the desktop study sites dating to the following periods are known to occur in the study area:</p> <ul style="list-style-type: none"> <li>• Based on the SAHRA paleontological sensitivity map, the study area is indicated as of insignificant, low, moderate and high sensitivity and further studies will be required in the HIA phase.</li> <li>• The Stone Age;</li> <li>• Historical structures older than 60 years; and</li> </ul>



	<ul style="list-style-type: none"> <li>Graves can be expected anywhere on the landscape.</li> </ul> <p>Every site is relevant to the Heritage Landscape, but it is anticipated that few sites in the study area could have conservation value. From a heritage viewpoint, the proposed project is viable and impacts to heritage resources can be successfully mitigated. This will however be confirmed through the Heritage Impact Assessment to be undertaken.</p>
<p><b>Visual:</b></p>	<p>The fact that some components of the proposed ERGO Mining Solar Energy (PV) Projects, Phase 2: 40MW may be visible does not necessarily imply a high visual impact. Sensitive visual receptors within (but not restricted to) a 3km buffer zone from the facility need to be identified and the severity of the visual impact assessed within the EIA phase of the project.</p> <p>It is recommended that additional spatial analyses be undertaken in order to create a visual impact index that will further aid in determining potential areas of visual impact. This exercise should be undertaken for the core PV Plant as well as for the ancillary infrastructure, as these structures (e.g. the substation, inverters and transformers) are envisaged to have varying levels of visual impact at a more localised scale. The site-specific issues (as mentioned earlier in the report) and potential sensitive visual receptors should be measured against this visual impact index and be addressed individually in terms of nature, extent, duration, probability, severity and significance of visual impact.</p> <p>This recommended work must be undertaken during the Environmental Impact Assessment (EIA) Phase of reporting for this proposed project.</p>
<p><b>Socio-economic:</b></p>	<p>The proposed project site is located within an area that comprises a mix of agricultural small holdings and mining activities. The scoping assessment did not identify any immediate fatal flaws in terms of potential socio-economic impacts. There is, however, the potential for certain residential properties, specifically within Withok Estates and suburbs of Brakpan (namely Minnebron) to be negatively affected by the proposed project in terms of change in visual landscape, nature of the land use and sense of place due to the construction and operation of the proposed PV facility. It is therefore recommended that a detailed socio-economic impact assessment study should be undertaken during the EIA phase.</p>



## 9) Methodology to be used in determining the significance of environmental and social impacts

This section presents the methodology that will be applied by the EAP for determining the significance of potential environmental and social impacts during the EIA/EMPr phase associated to the three different phases of the proposed SEF activities. The potential impacts and risks will be explored by investigating each aspect (i.e. flora, fauna, wetland, soil quality, water quality, heritage etc.) associated to the proposed activities.

The impact assessment methodology has been formalised to comply with Regulation 31(2)(l) of NEMA, which states:

*(2) An environmental impact assessment report must contain all information that is necessary for the competent authority to consider the application and to reach a decision ..., and must include –*

*(l) an assessment of each identified potentially significant impact, including –*

*(i) cumulative impacts;*

*(ii) the nature of the impact;*

*(iii) the extent and duration of the impact;*

*(iv) the probability of the impact occurring;*

*(v) the degree to which the impact can be reversed;*

*(vi) the degree to which the impact may cause irreplaceable loss of resources; and*

*(vii) the degree to which the impact can be mitigated.*

### **Methodology used in determining the significance of environmental impacts:**

The significance (quantification) of potential environmental impacts identified during the preliminary assessment will be determined using a ranking scale, based on the following (terminology has been taken from the Guideline Documentation on EIA Regulations, of the Department of Environmental Affairs and Tourism, April 1998):

#### **Occurrence**

- 1) Probability of occurrence (how likely is it that the impact may occur?)
- 2) Duration of occurrence (how long may it last?)

#### **Severity**

- 3) Magnitude (severity) of impact (will the impact be of high, moderate or low severity?)
- 4) Scale/extent of impact (will the impact affect the national, regional or local environment, or only that of the site?)

Each of these factors has been assessed for each potential impact using the ranking scales represented by **Table 21**.



Table 21: Ranking scale of the four factors considered to determine significance rating

Characteristic	Definition	Terms	Scoring
Duration	The time period over which a resource / receptor is affected.	<p><b>Temporary</b> - (period of less than 1 year - negligible/ pre-construction/ construction)</p> <p><b>Short term</b> - period of less than 5 years ie commissioning/operational period</p> <p><b>Medium term</b> - period of less than 15 years ie operational period</p> <p><b>Long term</b> - period of less than 20 years ie life of project</p> <p><b>Permanent</b> - a period that exceeds the life of project– ie irreversible.</p>	<p>Temporary – 1</p> <p>Short term – 2</p> <p>Medium term – 3</p> <p>Long term – 4</p> <p>Permanent – 5</p>
Extent	The reach of the impact (ie physical distance an impact will extend to)	<p><b>On-site</b> - impacts that are limited to the Project site.</p> <p><b>Local</b> - impacts that are limited to the Project site and adjacent properties.</p> <p><b>Regional</b> - impacts that are experienced at a regional scale, ie Gauteng.</p> <p><b>National</b> - impacts that are experienced at a national scale.</p> <p><b>Trans-boundary/International</b> - impacts that are experienced outside of South Africa.</p>	<p>On-site – 1</p> <p>Local – 2</p> <p>Regional – 3</p> <p>National – 4</p> <p>International – 5</p>
Probability	Measure of the probability with which the impact is expected to occur	<p><b>Unlikely</b> - probably will not happen</p> <p><b>Improbable</b> - some possibility, but low likelihood</p> <p><b>Probable</b> - distinct possibility)</p> <p><b>Highly probable</b> - most likely</p> <p><b>Definite</b> - impact will occur regardless of any prevention measures</p>	<p>Unlikely – 1</p> <p>Improbable – 2</p> <p>Probable – 3</p> <p>Highly probable – 4</p> <p>Definite – 5</p>
Magnitude	A measure of the damage that the impact will cause if it does occur	<p><b>No effect</b> - will have no effect on the environment</p> <p><b>Minor</b> – minor and will not result in an impact on processes</p> <p><b>Low</b> – low and will cause a slight impact on processes</p> <p><b>Moderate</b> – moderate and will result in processes continuing but in a modified way</p>	<p>No effect – 0</p> <p>Minor – 2</p> <p>Low – 4</p> <p>Moderate – 6</p> <p>High – 8</p> <p>Very high – 10</p>





Characteristic	Definition	Terms	Scoring
		<p><b>High</b> - processes are altered to the extent that they temporarily cease</p> <p><b>Very high</b> - results in complete destruction of patterns and permanent cessation of processes</p>	

The environmental significance of each potential impact is assessed using the following formula:

$$\text{Significance Points (SP)} = (\text{Magnitude} + \text{Duration} + \text{Extent}) \times \text{Probability}$$

The maximum value is 100 Significance Points (SP). Potential environmental impacts were rated as high, moderate or low significance on the following basis:

- 1) < 30 significance points = **LOW** environmental significance.
- 2) 31- 60 significance points = **MODERATE/ MEDIUM** environmental significance
- 3) 60 significance points = **HIGH** environmental significance

Table 22: Explanation of colour indicator

Colour	Significance Points	Explanation
	≤ 30	<b>LOW</b> environmental significance
	31 - 60	<b>MODERATE</b> environmental significance
	> 60	<b>HIGH</b> environmental significance

## 10) Positive and negative impacts that the proposed activity (in terms of the initial site layout) and alternatives will have on the environment and the community that may be affected

*(Provide a discussion in terms of advantages and disadvantages of the initial site layout compared to alternative layout options to accommodate concerns raised by affected parties)*

The potential impacts that the proposed Phase 2 SEF may pose was discussed in section 8).

Recommendations were made by the specialist to conduct further investigations that will include field work that was not conducted as part of the desktop-scoping review process. See Table 23 for the specialist recommendations.



## **11) Possible mitigation measures that could be applied and the level of risk**

*(With regard to the issues and concerns raised by affected parties provide a list of the issues raised and an assessment/ discussion of the mitigations or site layout alternatives available to accommodate or address their concerns, together with an assessment of the impacts or risks associated with the mitigation or alternatives considered)*

Appropriate mitigation and management measures to avoid and /or minimise the identified impacts associated with the project will be developed and included in the EIA/EMPr report. Preparation of a detailed management plan of each identified impact and risks as identified in section 8 will be further undertaken during the EIR and EMPr phase. The management plan will address mitigation measures in detail for the construction, operation and decommissioning phases.

All concerns raised by the I&AP as part of the PPP listed in the section 5) will be incorporated and addressed and will form part of the consideration of mitigation measures.

## **12) The outcome of the site selection Matrix (Final Site Layout Plan)**

*(Provide a final site layout plan as informed by the process of consultation with interested and affected parties)*

A site sensitivity map (Figure 52) has been developed as the outcome of this scoping report and is supported by the various specialist studies undertaken. Feasible layouts are currently being established by the engineering team, in consideration of the site sensitivity map and will be further investigated during the Impact Assessment Phase.

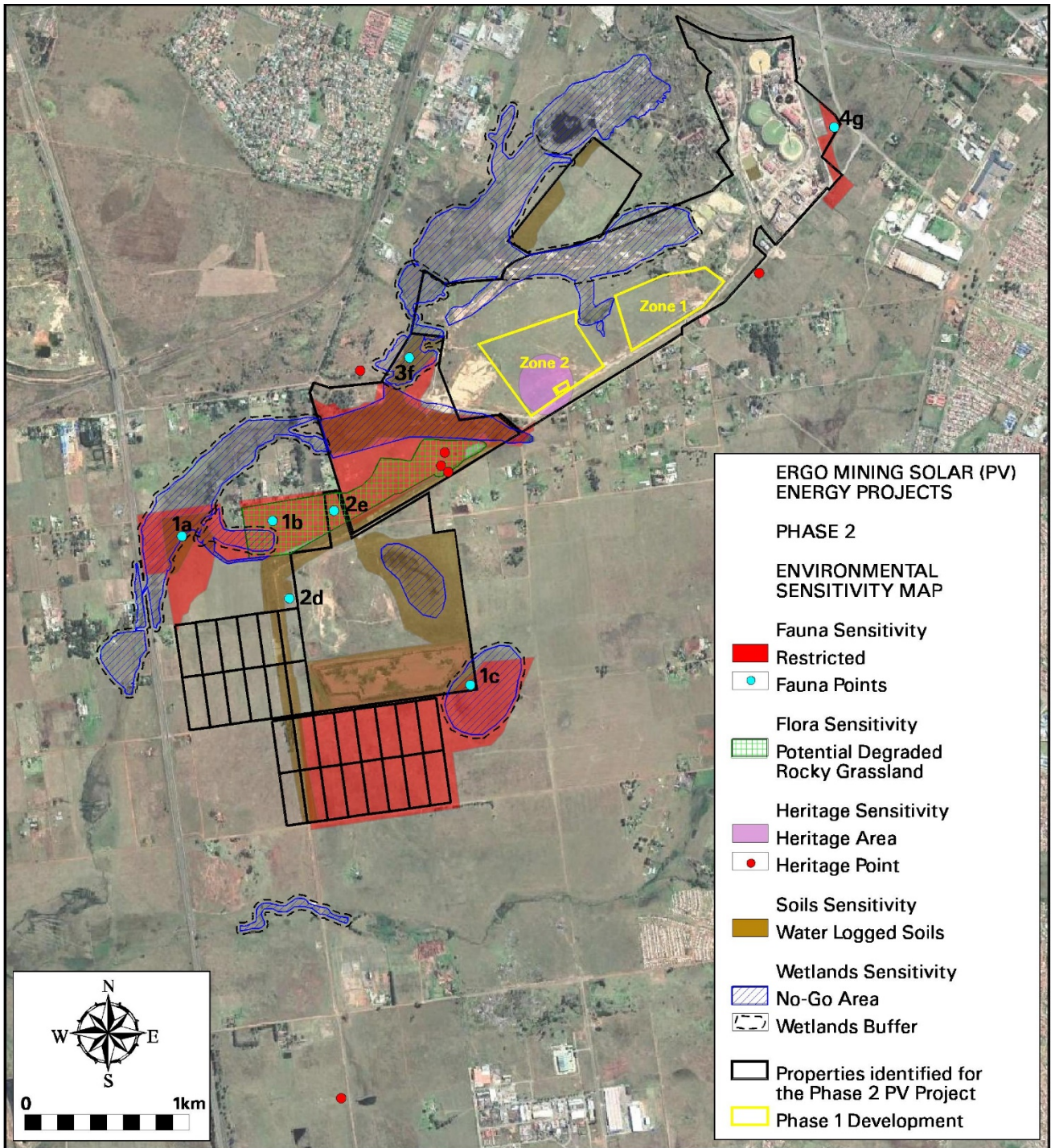


Figure 52: Sensitivity map

### 13) Motivation where no alternative sites were considered

As discussed in section 4) of this report, property alternatives are currently being considered.





A large area of 557ha has been scoped as part of the scoping phase by the EAP and appointed specialists. Sensitive areas as highlighted as part of the scoping assessment will be further ground-truthed in the Impact Assessment phase to verify sensitivities. The proposed 40MW PV facility requires a total area of 80-100ha of land within the area scoped. Property alternatives are being considered at this stage, as a smaller area will be selected from the broader study area for the proposed PV layout.

A number of alternative properties regarding the placement of infrastructure are currently being considered during the scoping process and will be further investigated during the Impact Assessment phase. There are a number of alternate properties that will however not be developed, hence property alternatives are being considered within the area.

The current site sensitivity map (Figure 52) has been determined by considering both environmental and social sensitive receptors, and will be ground truthed and refined for the Impact Assessment phase.

#### **14) Statement of motivation of the preferred site**

As discussed in the previous sections, both environmental and social sensitive receptors are currently being considered in the proposed site layouts to be established. The location of the proposed Ergo Phase 2 project components is constrained to the location of the authorised Phase 1 infrastructure (DMRE Ref: GP 30/5/1/2/2 (158) MR- Phase 1 19.9MW).

In terms of the actual photovoltaic layout areas, there are no alternative sites proposed as it would not be a feasible Plan of study for the Environmental Impact Assessment process considering the need and desirability to supply the existing Ergo Mining Brakpan Plant and the Brakpan/Withok Tailings Dam facility with clean and stable electricity during grid curtailments and outages through embedded generation in development of the authorised 19.9MW (Phase 1).

The section to follow describes how the EIA process will be approach in the development of the EIR and EMPr. Specialist studies will investigate the baseline environment, identify and assess potential impacts and propose management measures to mitigate impacts. Findings from these studies will be incorporated into the EIA and EMPr.

#### **15) Description of alternatives to be considered including the option of not going ahead with the activity**

As discussed in section 4) of this report, property alternatives are currently being considered as the proposed activities will occur on Ergo owned properties adjacent to the authorised Phase 1 development (DMRE Ref: GP 30/5/1/2/2 (158) MR- Phase 1 19.9MW) to be developed in a phased approach to supply the existing Ergo Mining Brakpan Plant and the Brakpan/Withok Tailings Dam facility with clean energy. A number of alternatives regarding the placement of infrastructure within the property boundaries will be considered throughout this process. The placing of PV panels; inverters and associated infrastructure will be assessed and placed accordingly.



In line with section 3)d) of this scoping report, the short to medium-term goal of the project is to obtain a secure energy supply for Ergo Mining Brakpan Plant and the Brakpan/Withok Tailings Dam facility to ensure operational capacity during grid supply curtailment and interruptions. Current operations are impacted by the ongoing load shedding and interruptions from Eskom. Should the activity not be authorised, the mining production could continue to be impacted, which could have broader implications for the business. Low or inconsistent production could result in lower output and other risks, such as damage to equipment (due to unscheduled shutdowns) and potentially large-scale issues that could lead to the closure of the facility.

The Ergo Plant has been in operation since 1977 (although closed between 2005 and 2007) and has a 25.2 Mt annual capacity. The mine currently has many employees at the plant and associated facilities. Hindered performance from electricity curtailments could result in loss of jobs and impact service providers and could potentially result in other losses in the supply chain on a local and regional scale. In addition, the broader economic revenue generated by the business could be affected, resulting in regional socio- economic impacts. The mine therefore must prioritise securing its own electricity in line with its energy requirements to reach its long-term operational goals.

## 16) Description of aspects to be assessed by specialists (Plan of study for the EIA phase)

### ▪ Description of the aspects to be assessed as part of the environmental impact assessment process

*(The EAP must undertake to assess the aspects affected by each individual mining activity whether listed or not, including activities such as blasting, Loading, hauling and transport, and mining activities such as Excavations, stockpiles, discard dumps or dams, water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.).*

In section 8) possible impacts and aspects associated to the proposed 40MW PV project have been predetermined. As part of the EIR and EMPr these impacts and aspects will be explored further and mitigation and management measures will be developed to control reduce and or eliminate possible environmental impacts.

As part of the desktop studies undertaken by the appointed specialist, several aspects have been identified that will need to be assessed during the EIA phase. Table 23 highlights the aspects identified by the various specialist components.

Table 23: Aspects to be assessed by the appointed specialists

Appointed specialist	Aspects to be considered
<b>Flora Terrestrial biodiversity:</b>	The specialist must assess the proposed footprint and based on the findings: <ol style="list-style-type: none"> <li>1. Amend the vegetation sensitivity map and discuss no-go areas.</li> <li>2. Discuss the occurrence of plant species of conservation concern, if any.</li> </ol>





	<p>3. Give a reasoned opinion whether the development can go ahead from a vegetation perspective and recommend mitigation measures to limit the perceived negative impacts on vegetation.</p>
<p><b>Fauna Terrestrial biodiversity:</b></p>	<p>In terms of terrestrial fauna and the proposed Phase 2 development, the ground-truthing and site assessments must be completed and the fauna report updated with the site findings once the preferred and alternative development sites are finalised. The following is still required in order to complete Phase 2:</p> <ul style="list-style-type: none"> <li>• Obtain the final development footprints and alternative sites.</li> <li>• Obtain the final environmental screening report for these areas and determine the terrestrial biodiversity and animal species sensitivity ranking and any additional listed SCCs.</li> <li>• Complete the necessary site assessment of these areas during a time of year when the SCCs are more likely to be active and detected.</li> <li>• Complete the Site Ecological Importance assessment based on SCCs confirmed or likely to occur on site if relevant.</li> <li>• Update this desktop report to reflect the site assessment findings and protocol requirements for the terrestrial fauna biodiversity and animal species reports.</li> </ul>
<p><b>Avifauna:</b></p>	<ul style="list-style-type: none"> <li>• The site survey should be conducted during the austral summer (November to March) to ensure observations of the migrant species that may occur within the study area. If the fieldwork is conducted in the austral autumn or winter, field survey data will be supplemented with secondary data sources and the findings of the Phase 1 survey.</li> <li>• Further assessment of the displacement impact as a result of disturbance will occur during the impact assessment phase of the project.</li> <li>• If the 40MW SEF is authorised, a detailed inspection of the authorised site, prior to construction, would be required to establish if there are any breeding Red List species that could be disturbed. In such an event, appropriate mitigation measures would need to be implemented (such as postponing the construction of the PV facility to avoid peak breeding season)</li> </ul> <p>1) Sample counts of small terrestrial species</p>



	<p>Small terrestrial birds are an important component of this programme. Given the spatial scale of the development, these smaller species may be particularly vulnerable to displacement and habitat level effects. Sampling these species is aimed at establishing indices of abundance for small terrestrial birds in the study area. These counts should be done when conditions are optimal. In this case this means the times when birds are most active and vocal, i.e. early mornings. A minimum of 12 point count survey points will be established across the proposed 40MW SEF sites.</p> <p>2) Counts of large terrestrial species and raptors</p> <p>This is a very similar data collection technique to that above, the aim being to establish indices of abundance for large terrestrial species and raptors. These species are relatively easily detected from a vehicle, hence vehicle-based counts are conducted in order to determine the presence and number of birds of relevant species in the study area. Detection of these large species is less dependent on their activity levels and calls, so these counts can be done later in the day. A minimum of one driven transect route will be established and conducted during the single-day site survey.</p> <p>3) Focal site surveys and monitoring</p> <p>Any particularly sensitive sites such as wetlands, dams and breeding sites will be identified and monitored during the site visit.</p> <p>4) Incidental observations</p> <p>All other incidental sightings of Red List and non-Red List priority species (and particularly those suggestive of breeding or important feeding or roosting sites) within the development area will be georeferenced and documented.</p> <ul style="list-style-type: none"><li>• Provide a detailed description of the impacts associated with the construction, operation and decommissioning of the proposed Phase 2 40MW SEF development;</li><li>• Assess the significance (rated according to a pre-determined set of criteria, as supplied by the primary consultant) of the identified direct, indirect and cumulative impacts, during the construction, operation and decommissioning phases of the proposed development based on data collected in-field;</li><li>• Consider layout plans and advise possible changes to the layout;</li></ul>
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	<ul style="list-style-type: none"> <li>• Recommend practical mitigation measures for the management of the identified impacts, at each stage of the development process, for inclusion in the draft Environmental Management Programme (EMPr);</li> <li>• Propose a monitoring programme for the sensitive areas, species or receptors (if necessary); and</li> <li>• Describe the gaps in baseline data will be provided. An indication of the confidence levels will be given. The best available data sources will be used to predict the impacts, and extensive use will be made of local knowledge if available.</li> </ul>
<p><b>Surface Water Assessment:</b></p>	<p>Flood buffers (100m) as well as flood lines for the 1:100 year recurrence interval event will need to be considered to inform the placement of proposed infrastructure. It is further recommended that a conceptual storm water management plan be developed once proposed infrastructure has been sited to ensure clean and dirty water can be managed accordingly. A surface water quality monitoring program can also be developed to ensure receiving surface water qualities are not detrimentally impacted through the establishment and operation of the proposed development.</p> <p>Impacts relating to flood risk, the sedimentation and siltation of water courses as well as the alteration of the natural drainage patterns will need to be assessed during the impact assessment phase. The impact significance will be determined based on duration, extent, magnitude and probability of each considered impact. This will include details relating to cumulative impacts, residual impacts, reversibility as well as mitigation measures which can be considered to reduce impact significance.</p> <p>All of the above considerations including flood line modelling, the development of a conceptual storm water management plan, surface water quality monitoring program, as well as the subsequent impact assessment will be undertaken according to governing legislation such as the National Water Act (Act 36 of 1998) and Government Notice 704 (Government Gazette 20118 of June) and used to inform and support the Water Use License (WUL) application.</p>
<p><b>Wetland Impact Assessment and Aquatic:</b></p>	<p>Buffer Requirements</p> <p>A buffer was calculated for the protection of the natural wetland systems delineated and assessed as part of this scoping assessment. The buffer may need to be refined during the impact assessment and once the field investigation has taken place. The buffer takes into account the proposed activity, climatic factors, topographical factors, the nature of</p>



the soils, and the sensitivity of the water resource. A 21m buffer has been calculated for the protection of the natural wetland systems.

#### Wetland Component

It is recommended that a more in-depth study, with the inclusion of field sampling takes place during the impact assessment phase of this study. This will focus on groundtruthing the desktop delineated boundaries of all wetland systems within the study site. Wetlands within 500m of the finalised location of the infrastructure will either be delineated during the field work or if they are located on private land will remain as delineated from the desktop study. A field-based wetland delineation exercise will be conducted according to: '*A practical Field Procedure for Identification and Delineation of Wetland and Riparian Areas – Edition 1 (DWA 2005)*'. This tool uses various indicators (e.g., soil wetness, vegetation, and terrain unit) to determine the outer edge of the wetland or watercourse systems.

A level 2 Wet-Health assessment will be conducted on all field-based delineated wetlands. This is a more detailed assessment of the health of each wetland system and uses indicators based on geomorphology, hydrology, water quality and vegetation both at a catchment scale and within the wetland system. Furthermore, an indication of the functions and ecosystem services provided by all field based delineated wetlands will be assessed through the WET-EcoServices manual (Kotze et al., 2008). This is based on a number of characteristics that are relevant to the particular benefit provided by the wetland. The tool uses biophysical characteristics of the wetland and the level of disturbance within the wetland and its catchment to estimate the level of supply of ecosystem goods and services. Finally, the Ecological Importance and Sensitivity (EIS) of any field-based delineated wetlands will be determined using a rapid scoring system. The system has been developed to assess the EIS of the wetland within the larger landscape; the 'Hydrological Functional Importance' of the wetland; and the 'Direct Human Benefits' obtained from the wetland through either subsistence or cultural practices.

The buffer tool (Macfarlane & Bredin, 2016) will be utilised again after the field work has been conducted and buffers refined taking into account all information gathered during the field work.



	<p><b>Aquatic component</b></p> <p>Given the nature of the associated aquatic ecosystem, assessment of the potential impacts associated with the proposed activity will include a review of field data collected during the wetland element (including photographs). Such data will be used to additionally inform the completion of the DWS Risk Matrix for Water Use Licencing Application processes from an aquatic ecosystem perspective.</p> <p><b>Impact assessment component</b></p> <p>A full assessment of the project's potential direct, indirect, and cumulative impacts will be evaluated on the delineated and assessed wetland/watercourse systems.</p> <p>Significance scoring will be utilised, and this assesses and predicts the significance of environmental impacts through evaluation of the following factors: probability of the impact; duration of the impact; extent of the impact; and magnitude of the impact. The significance of environmental impacts is then assessed considering any proposed mitigations. The significance of the impact "without mitigation" is the prime determinant of the nature and degree of the remediation that will be required. Each of the above impact factors will be used to assess each potential impact using ranking scales.</p> <p>The impacts of the proposed project on any impacted wetlands identified within the study area, would be assessed according to the risk assessment methodology as per the General Authorisation in terms of Section 39 of the National Water Act, 1998 (Act No. 36 of 1998) for Water Uses as defined in Section 21 (c) and (i) (Notice 509 of 2016). This is appropriate to DWS standards. Suitable recommendations and mitigation measures will be recommended.</p>
<p><b>Soils, land capability and agricultural potential:</b></p>	<p>The impact assessment report will include a detailed field investigation of the project area. The field investigation will include taking soil samples using an auger to a depth of 1200mm or to refusal. At each sample location the soils will be classified, and a description of the physical soil characteristics will be conducted. These characteristics will include:</p> <ul style="list-style-type: none"> <li>• Diagnostic soil horizons and their respective sequence.</li> <li>• Depth of the identified soil horizons.</li> </ul>





	<ul style="list-style-type: none"> <li>• Soil field texture.</li> <li>• Colour.</li> <li>• Effective rooting depth.</li> <li>• Surface crusting.</li> <li>• Depth to saturation (water table), if encountered.</li> <li>• Terrain morphological units/Landscape position (slope %); and</li> <li>• Rockiness.</li> </ul> <p>The field data will be utilised to refine the agricultural land capability of the specific study site for the project. This will consider the terrain and soil properties, as well as the climatic, water and vegetation data. The field data will be used to particularly describe areas within the study site where natural soils still remain and are therefore more productive with regards to agricultural activities.</p> <p>Land use impacts of the proposed development will be evaluated. An impact assessment will be undertaken to determine the significance of impacts to the agricultural land capability of the site for any direct, indirect, and cumulative impact. Significance scoring will be undertaken. This assesses and predicts the significance of environmental impacts through evaluation of the following factors: probability of the impact; duration of the impact; extent of the impact; and magnitude of the impact. The significance of environmental impacts is then assessed considering any proposed mitigations. The significance of the impact “without mitigation” is the prime determinant of the nature and degree of the remediation that will be required. Each of the above impact factors will be used to assess each potential impact using ranking scales. Risk assessments and various management options will be recommended.</p>
<p><b>Heritage:</b></p>	<p>The development triggers the National Heritage Resources Act (Act 25 of 1999) (NHRA) as the site footprint of impact area exceeds 5000m<sup>2</sup> and therefore a Phase 1 Heritage Impact Assessment (HIA) is recommended.</p> <p>With cognisance of the recorded heritage sites in the wider area and in order to comply with the NHRA, it is recommended that a field-based impact assessment should be conducted. During this study sites of archaeological, historical or places of cultural interest must be located, identified, recorded, photographed and described. During this study, the levels of significance of recorded heritage resources must be determined and mitigation proposed should any significant sites be impacted upon, ensuring that all the requirements of the SAHRA are met.</p>



<p><b>Visual:</b></p>	<p>The VIA is determined according to the nature, extent, duration, intensity or magnitude, probability and significance of the potential visual impacts, and will propose management actions and/or monitoring programs, and may include recommendations related to the solar energy facility layout.</p> <p>The visual impact is determined for the highest impact-operating scenario (worst-case scenario) and varying climatic conditions (i.e. different seasons, weather conditions, etc.) are not considered.</p> <p>The VIA considers potential cumulative visual impacts, or alternatively the potential to concentrate visual exposure/impact within the region.</p> <p>The following VIA-specific tasks must be undertaken:</p> <ul style="list-style-type: none"><li>• Determine potential visual exposure</li></ul> <p>The visibility or visual exposure of any structure or activity is the point of departure for the visual impact assessment. It stands to reason that if (or where) the proposed facility and associated infrastructure were not visible, no impact would occur.</p> <p>The viewshed analyses of the proposed facility and the related infrastructure are based on a detailed digital terrain model of the study area.</p> <p>The first step in determining the visual impact of the proposed facility is to identify the areas from which the structures would be visible. The type of structures, the dimensions, the extent of operations and their support infrastructure are taken into account.</p> <ul style="list-style-type: none"><li>• Determine visual distance/observer proximity to the facility</li></ul> <p>In order to refine the visual exposure of the facility on surrounding areas/receptors, the principle of reduced impact over distance is applied in order to determine the core area of visual influence for this type of structure.</p> <p>Proximity radii for the proposed infrastructure are created in order to indicate the scale and viewing distance of the facility and to determine the prominence of the structures in relation to their environment.</p> <p>The visual distance theory and the observer's proximity to the facility are closely related, and especially relevant, when considered from areas with a high viewer incidence and a predominantly (anticipated) negative visual perception of the proposed facility.</p>
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	<ul style="list-style-type: none"><li>• Determine viewer incidence/viewer perception (sensitive visual receptors)</li></ul> <p>The next layer of information is the identification of areas of high viewer incidence (i.e. main roads, residential areas, settlements, etc.) that may be exposed to the project infrastructure.</p> <p>This is done in order to focus attention on areas where the perceived visual impact of the facility will be the highest and where the perception of affected observers will be negative.</p> <p>Related to this data set, is a land use character map, that further aids in identifying sensitive areas and possible critical features (i.e. tourist facilities, protected areas, etc.), that should be addressed.</p> <ul style="list-style-type: none"><li>• Determine the visual absorption capacity of the landscape</li></ul> <p>This is the capacity of the receiving environment to absorb the potential visual impact of the proposed facility. The VAC is primarily a function of the vegetation, and will be high if the vegetation is tall, dense and continuous. Conversely, low growing, sparse and patchy vegetation will have a low VAC.</p> <p>The VAC would also be high where the environment can readily absorb the structure in terms of texture, colour, form and light / shade characteristics of the structure. On the other hand, the VAC for a structure contrasting markedly with one or more of the characteristics of the environment would be low.</p> <p>The VAC also generally increases with distance, where discernible detail in visual characteristics of both environment and structure decreases.</p> <ul style="list-style-type: none"><li>• Calculate the visual impact index</li></ul> <p>The results of the above analyses are merged in order to determine the areas of likely visual impact and where the viewer perception would be negative. An area with short distance visual exposure to the proposed infrastructure, a high viewer incidence and a predominantly negative perception would therefore have a higher value (greater impact) on the index. This focusses the attention to the critical areas of potential impact and determines the potential magnitude of the visual impact.</p> <p>Geographical Information Systems (GIS) software is used to perform all the analyses and to overlay relevant geographical data sets in order to generate a visual impact index.</p> <ul style="list-style-type: none"><li>• Determine impact significance</li></ul>
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	<p>The potential visual impacts are quantified in their respective geographical locations in order to determine the significance of the anticipated impact on identified receptors. Significance is determined as a function of extent, duration, magnitude (derived from the visual impact index) and probability. Potential cumulative and residual visual impacts are also addressed. The results of this section are displayed in impact tables and summarised in an impact statement.</p> <ul style="list-style-type: none"> <li>• Propose mitigation measures</li> </ul> <p>The preferred alternative (or a possible permutation of the alternatives) will be based on its potential to reduce the visual impact. Additional general mitigation measures will be proposed in terms of the planning, construction, operation and decommissioning phases of the project.</p> <ul style="list-style-type: none"> <li>• Reporting and map display</li> </ul> <p>All the data categories, used to calculate the visual impact index, and the results of the analyses will be displayed as maps in the accompanying report. The methodology of the analyses, the results of the visual impact assessment and the conclusion of the assessment will be addressed in this VIA report.</p> <ul style="list-style-type: none"> <li>• Site visit</li> </ul> <p>A site visit must be undertaken in order to verify the results of the spatial analyses and to identify any additional site specific issues that may need to be addressed in the VIA report.</p>
<p><b>Socio-economic:</b></p>	<ul style="list-style-type: none"> <li>• Desktop Review</li> </ul> <p>The socio-economic impact assessment (SIA) will build on the scoping assessment to further develop a baseline of the socio-economic receiving environment associated with the project. This will include a review of existing data and information including geographical, demographic, socio-economic, institutional, and sociocultural. Other key sources of information may include project documentation, studies for past and similar projects, and relevant policy and planning information. The desktop review will aim to contextualise the proposed development and provide insight into potential impacts.</p> <ul style="list-style-type: none"> <li>• Field Work</li> </ul>



	<p>It is anticipated that field work will be required to establish the current socio-economic environment associated with the proposed project. It is anticipated that the fieldwork will take place over two or three days. During this time, observational data will be obtained, as well as interviews with key stakeholders and community representatives. At this time, it is not anticipated that detailed investigations, such as household surveys will be required.</p> <ul style="list-style-type: none"><li>• Review of other specialists</li></ul> <p>The SIA process will include a review of the other specialist studies, specifically the visual impact assessment. The specialist will engage with each relevant report and specialist to determine the extent and significance to which the biophysical impacts may affect the local social and socio-economic environment.</p> <ul style="list-style-type: none"><li>• Reporting</li></ul> <p>A SIA report will be compiled in line with the requirements Appendix 6 to the 2014 EIA Regulations (GN R 982). The report will contain a description of the socio-economic receiving environment, potential positive and negative socio-economic impacts, qualitative impact assessment, and recommended management and mitigation measures to be included in the Environmental Management Programme and/or the Environmental Authorisation.</p>
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Proposed method of assessing the environmental aspects including the proposed method of assessing alternative. Environmental Management Assistance (Pty) Ltd as the appointed EAP took an <sup>5</sup>Integrated Environmental Management (IEM) approach. However, the adoption of an IEM approach should not be interpreted as an Environmental Impact Assessment (EIA) in itself. It should rather be seen as an underlying philosophy and set of principles, supported by an EIA and management tools that are aimed at promoting sustainability (DEAT, 2004).

Together with the requirements stipulated in GN R. 982 (2014 EIA regulations) the principles set out in the IEM Guideline series published by the Department of Environmental Affairs (DEA, 1992) were considered throughout the assessment process.

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<sup>5</sup> Definition of IEM according to DEAT (2004): *IEM provides a holistic framework that can be embraced by all sectors of society for the assessment and management of environmental impacts and aspects associated with an activity for each stage of the activity life cycle, taking into consideration a broad definition of environment and with the overall aim of promoting sustainable development.*





The impact assessment will provide a full description of all environmental issues and risks identified during the EIA process. Secondly it will provide the assessment of the significance (as summarised in section 8) of this report) of each issue and risk according to the methodology discussed in section 9) of this report. Lastly, it will provide with an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures.

- **The proposed method of assessing duration significance**

The same approach as described in section 9) will be used to assess the duration significance.

- **The stages at which the competent authority will be consulted**

The competent authority will be consulted throughout the EIR and EMPr process. All correspondence from and to the registered I&AP will be forwarded to the authority.

- **Particulars of the public participation process with regard to the impact Assessment process that will be conducted**

The process as outlined in section 5) and Appendix D will be conducted during the Impact Assessment process.

### **Steps to be taken to notify interested and affected parties**

As discussed in section 5).

### **Details of the engagement process to be followed**

*(Describe the process to be undertaken to consult interested and affected parties including public meetings and one on one consultation. NB the affected parties must be specifically consulted regardless of whether or not they attended public meetings and records of such consultation will be required in the EIA at a later stage)*

As discussed in section 5) and Appendix D.

### **Description of the information to be provided to Interested and Affected Parties**

*(Information to be provided must include the initial site plan and sufficient detail of the intended operation and the typical impacts of each activity, to enable them to assess what impact the activities will have on them or on the use of their land)*

As discussed in section 5) and Appendix D.

- **Description of the tasks that will be undertaken during the environmental impact assessment process**

As discussed in the previous sections in this report, all possible impacts and aspects will be assessed associated to the proposed PV facility. Mitigation and management measures will be developed to reduce, avoid, and remedy all potential environmental impacts. These findings will be discussed in the final EIR and EMPr that will be subjected to the required 30



days public comment period. Any comments received from the registered I&AP will be included in the final EIR and EMPr and be submitted to the competent authority for a decision to be made.

The following activities will take place as part of the planned Environmental Authorisation process going forward:

- Finalise Draft Scoping Report (DSR) to Final Scoping Report (FSR) once comments and feedback have been received from I&APs and authorities post a 30 day public review period;
- Submit the FSR to DMRE for decision-making;
- Undertake specialist impact assessment studies of the proposed Project;
- Assess potential impacts using impact assessment methodology described in section 9);
- Develop an EMPr which will include management measures to avoid and/or mitigate and manage the potential impacts identified in the impact assessment;
- Provide registered I&APs feedback on the impact assessment phase;
- Submit the draft EIA/EMPr for I&AP and authority comment;
- Submit the final EIA/EMPr to the relevant authorities following the incorporation of I&APs comments; and
- Communicate the decision of the DMRE and DWS to registered I&APs.

#### **17) 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**

The proposed Ergo Phase 2 Project, for the properties detailed in this scoping report will incorporate measures aimed at mitigating and managing impacts into the Impact Assessment /EMPr report. This will assist in the development of a more effective environmental management tool for the construction, operation and decommissioning phases of the proposed project. Detailed mitigation and management measures for identified positive and negative impacts associated with the proposed Phase 2 Project will be developed and included in the EIR/EMPr report.

Each impact identified within the impact assessment process will be evaluated in terms of whether a mitigation measure can be applied or not, and what kinds of mitigation measures can be applied. This will be reported in a detailed impact assessment table (as compiled for the EMPr of the authorised Phase 1 19.9MW) that will be completed for the EIR/EMPr. Therefore, each site specific impact, i.e. of low moderate or high significance, will have a mitigation measure stipulated where applicable. Furthermore, a post-mitigation assessment of the significance of the impact will also be completed, which will provide an indication of the effectiveness of said mitigation measures.



## 18) Other information required by the competent Authority

At the time of finalising this report for public comment, no specific information was requested by the competent authority.

### ▪ **Compliance with the provisions of sections 24 (4)(a) and (b) read with section 24 (3)(a) and (7) of NEMA**

Section 24 (4)(a) and (b) of NEMA states the following:

*“Procedures for the investigation, assessment and communication of the potential consequences or impacts of the activities on the environment – (a) must ensure, with respect to every application for an environmental authorisation –*

- *Coordination and cooperation between organs of state in the consideration of assessments where an activity falls under the jurisdiction of more than one organ of state;*
- *that the findings and recommendations flowing from an investigation, the general objectives of integrated environmental management laid down in this Act and the principles of environmental management set out in section 2 are taken into account in any decision made by an organ of state in relation to any proposed policy, programme, process, plan or project;*
- *that a description of the environment likely to be significantly affected by the proposed activity is contained in such application;*
- *investigation of the potential consequences for or impacts on the environment of the activity and assessment of the significance of those potential consequences or impacts; and*
- *public information and participation procedures which provide all interested and affected parties, including all organs of state in all spheres of government that may have jurisdiction over any aspect of the activity, with a reasonable opportunity to participate in those information and participation procedures; and*
  - *must include, with respect to every application for an environmental authorisation and where applicable –*
    - *investigation of the potential consequences or impacts of the alternatives to the activity on the environment and assessment of the significance of those potential consequences or impacts, including the option of not implementing the activity;*
    - *investigation of mitigation measures to keep adverse consequences or impacts to a minimum;*



- *investigation, assessment and evaluation of the impact of any proposed listed or specified activity on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999), excluding the national estate contemplated in section 3(2)(i)(vi) and (vii) of that Act;*
- *reporting on gaps in knowledge, the adequacy of predictive methods and underlying assumptions, and uncertainties encountered in compiling the required information;*
- *investigation and formulation of arrangements for the monitoring and management of consequences for or impacts on the environment, and the assessment of the effectiveness of such arrangements after their implementation;*
- *consideration of environmental attributes identified in the compilation of information and maps contemplated in subsection (3); and*
- *provision for the adherence to requirements that are prescribed in a specific environmental management Act relevant to the listed or specified activity in question.”*

Section 24 (3)(a) and (7) of NEMA states the following:

*“24 (3) The Minister, or an MEC with the concurrence of the Minister, may compile information and maps that specify the attributes of the environment in particular geographical areas, including the sensitivity, extent, interrelationship and significance of such attributes which must be taken into account by every competent authority.”*

*“24 (7) Compliance with the procedures laid down by the Minister or an MEC in terms of subsection (4) does not absolve a person from complying with any other statutory requirement to obtain authorization from any organ of state charged by law with authorising, permitting or otherwise allowing the implementation of the activity in question.”*

The EIR and EMP that will follow this report will fulfil the requirements stipulated in section 24 of NEMA. This report resulted with the outcomes of the detailed impact assessment carried out and provides recommendations from a broad spectrum of expertise.

▪ **Impact on the socio-economic conditions of any affected persons**

*(Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any directly affected person including the landowner, lawful occupier, or, where applicable, potential beneficiaries of any land restitution claim, attach the investigation report as Appendix 2.19.1 and confirm that the applicable mitigation is reflected in 2.5.3; 2.11.6 and 2.12. herein)*

As part of the scoping phase the following studies took place:



1) Socio-economic assessment (**Appendix M**); and

The impacts of the said studies as described in section 1)f) of this report.

▪ **Impact on any national estate referred to in section (3)2 of the National Heritage Resource act**

A detailed Heritage Impact Assessment is attached as **Appendix K** Section 8) summarises the findings and recommendations made by the specialist investigation.

○ **Other matters required in terms of sections 24(4)(a) and (b) of the Act**

*(the EAP managing the application must provide the competent authority with detailed, written proof of an investigation as required by section 24(4)(b)(i) of the Act and motivation if no reasonable or feasible alternatives, as contemplated in sub-regulation 22(2)(h), exist. The EAP must attach such motivation as Appendix O).*

As discussed in previous sections in this report, no alternatives in terms of property were considered. The proposed 40MW PV Project is located within Ergo owned land and the surrounding area is currently used for mining related activities.

**19) Undertaking Regarding Correctness of Information**

I, **Alicia Govender**, herewith undertake that the information provided in the foregoing report is correct, and that the comments and inputs from stakeholders and Interested and Affected parties have been correctly recorded in the report.

Signature of the EAP

DATE: 22 March 2022

**k) UNDERTAKING REGARDING LEVEL OF AGREEMENT**

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

Signature of the EAP

DATE: 22 March 2022





## 20) References

Diamond, M., (August 2021) Tshedza 3 Investments(Pty) Ltd 40MW Photovoltaic Solar Energy Facility (Phase 2), Avifaunal Scoping Report.

du Plessis, L., (January 2022) Proposed Ergo Mining Solar Energy (PV) Projects Phase 2: 40MW Ekurhuleni Metropolitan Municipality, Gauteng, Visual Assessment – Input For Scoping Report.

Eyssell-Knox, A., (June 2021) ERGO SOLAR PHASE 2: Up to 40MW PV facility on the farm Witpoortjie 117, Withok 131 and Withok Estates, Ekurhuleni Municipality, Gauteng, Terrestrial Biodiversity (Vegetation) Scoping Report.

Harrison, R.; Grant, B., (February 2022) Baseline Wetland and Aquatic Assessment for an Environmental Impact Assessment Application for the Ergo Mining Solar PV Facility (Phase 2), with a Plant Capacity of 40MW, within The Ekurhuleni Local Municipality, Gauteng

Harrison, R., (February 2022) Baseline Soils, Land Capability and Agricultural Potential Assessment for an Environmental Impact Assessment Application for the Ergo Mining Solar PV Facility (Phase 2), with a Plant Capacity of 4MW, within the Ekurhuleni Local Municipality, Gauteng.

Kasl, B., (January 2022) Tshedza 3 Investments (Pty) Ltd: Solar PV Project Phase 2 (40 MW): Gauteng Province, Terrestrial Fauna Desktop Assessment (Scoping Phase).

Sanderson, D. (July 2021) Socio-economic Scoping Assessment: Proposed Ergo Mining Solar (PV) Energy: Phase 2 (40MW), Draft. Envital Consulting.

van der Walt, J., (July 2021) Heritage Scoping Report for the Proposed Ergo Mining 40MW Solar (PV) Energy: Phase 2 Project, Gauteng Province.

Wiles, L., (February 2022) Phase 2 Baseline Hydrological Assessment for the Proposed Tshedza 3 Investments (Pty) Ltd Development of a 40 MW Solar Photovoltaic and Associated Infrastructure Development, Gauteng Province.

**-END-**