Site Sensitivity Verification Report 14/12/16/3/3/2/2294

PROPOSED RENEWABLE ENERGY GENERATION PROJECT ON PORTION 12 OF THE FARM BLAAUWBANK 125 IQ, MERAFONG CITY LOCAL MUNICIPALITY, WEST RAND DISTRICT MUNICIPALITY, GAUTENG PROVINCE

Short name: MOPANE SOLAR PV 3

June 2023

Commissioned by: Voltalia South Africa (Pty) Ltd

Document Version 1.0 – Draft

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Short name: MOPANE SOLAR PV 3

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REPORT DISTRIBUTION LIST

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	Department of Water and Sanitation (DWS)
	Department of Agriculture, Land Reform and Rural Development (DALRRD)
	Gauteng Department of Agriculture and Rural Development (GDARD)
Municipal Manager	West Rand District Municipality
Municipal Manager	Merafong City Local Municipality
	South African Heritage Resources Agency (SAHRA)
	Eskom Land & Rights
	Registered Interested and Affected Parties (I&AP's)

DOCUMENT HISTORY

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14/12/16/3/3/2/2294	June 2023	1.0	Draft

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ANNEXURES

ABBREVIATIONS AND ACRONYMS

AGES	Africa Geo-Environmental and Engineering Services (Pty) Ltd
BID	Background Information Document
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CSP	Concentrating Solar Power
DALRRD	Department of Agriculture, Land Reform and Rural Development
DFFE	National Department of Forestry, Fisheries and the Environment
DMR	Department of Mineral Resources
DME	Department of Energy
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EIR	Environment Impact Assessment Report
EMPr	Environmental Management Programme
ESS	Environmental Scoping Study
GHG	Green House Gases
GIS	Geographic Information Systems
GN	Government Notice
GWh	Giga Watt hour
I&AP	Interested and Affected Party
IDP	Integrated Development Plan
IEM	Integrated Environmental Management
IPP	Independent Power Producer
kV	kilovolt
MW	Mega Watt
MWp	Mega Watt peak
NEMA	National Environmental Management Act - Act no. 107 of 1998
NERSA	National Energy Regulator of South Africa
NHRA	National Heritage Resources Act - Act no. 25 of 1999
NWA	National Water Act - Act no. 36 of 1998
PoS	Plan of Study
Property / Project site	Portion 12 of the Farm Blaauwbank 125 IQ (Merafong City Local Municipality, West Rand District Municipality, Gauteng Province)
PV	Photovoltaic
RFP	Request for Qualification and Proposals for New Generation Capacity under the IPP Procurement Programme
REIPPPP	Renewable Energy IPP Procurement Programme
RMIPPPP	Risk Mitigation IPP Procurement Programme
SAHRA	South African Heritage Resources Agency
SANRAL	South African National Roads Agency Limited
SANS	South African National Standard
UPS	Uninterruptible Power Supply
Voltalia South Africa	Voltalia South Africa (Pty) Ltd (Applicant)

1. INTRODUCTION

VOLTALIA SOUTH AFRICA (PTY) LTD is proposing to develop, construct and operate five **renewable energy generation facilities (Photovoltaic Power Plants),** including Battery Energy Storage Systems (BESS) and associated infrastructure and structures approximately 7 km north-west of Welverdiend, near Carltonville, along the border between Gauteng and the North-West Province. The five projects are referred to as **Mopane 1, 2, 3, 4 and 5 PV Solar Park** respectively.

The total generation capacity of the proposed five solar PV facilities would be up to 610 MWac. The details of the five PV plants are summarised in Table 1 below and the location is illustrated in Figures 1 to 3. Each solar PV facility is subject to a separate Environmental Authorisation application process and separate applications, Scoping and Environmental Impact Assessment Reports was compiled for each individual facility. **This specific Site Sensitivity Verification Report is compiled for Mopane 3 PV Solar Park** and Figure 1 indicates its' the location.

Site location - Surveyor-general 21-digit site code:

T	0	I	Q	0	0	0	0	0	0	0	0	0	1	2	5	0	0	0	1	2
1	2			3				4								5				

Table 1. Details for each of the projects included in the Mopane Solar PV Cluster

Applicant	Project name	Capacity (MW)	Affected property
Voltalia South Africa (Pty Ltd)	Mopane Solar PV 1	120 MW	Remainder of the Farm DOUGLASDALE 95 IQ
	Mopane Solar PV 2	130 MW	Portion 12 of the Farm BLAAUWBANK 125 IQ
	Mopane Solar PV 3	**120 MW**	**Portion 12 of the Farm BLAAUWBANK 125 IQ**
	Mopane Solar PV 4	120 MW	Ptn 2 of the Farm ROOIDRAAI 85 IQ
	Mopane Solar PV 5	120 MW	Ptn 2 of the Farm ROOIDRAAI 85 IQ
	Mopane Solar PV Powerline		Gauteng Province

To connect the solar PV facilities to the grid, grid connection infrastructure comprising a transmission line and a collector substation will be required for each of the projects. Each PV facility will have a powerline to the collector substation. From the collector substation there will be one 275 kV powerline which will connect the collector substation with Eskom **Carmel Substation (MTS)** which is located approximately 16,4 km south-east of the project site.

The grid connection infrastructure is assessed separately.

Key infrastructure components associated with the proposed Solar PV Facility include:

- Photovoltaic modules (mono-crystalline, poly-crystalline, mono or bi-facial modules)
- Mounting systems for the PV arrays (single-axis horizontal trackers or fixed structures) and related foundations
- Internal cabling and string boxes
- Medium voltage stations, hosting DC/AC inverters and LV/MV power transformers
- Medium voltage receiving station(s)
- Workshops & warehouses
- One on-site high-voltage substation with high-voltage power transformers, stepping up voltage, and one high-voltage busbar with metering and protection devices.
- On-site 132kV powerline to collector substation, approximately 1,1km long.
- Battery Energy Storage System (BESS).
- Electrical system and UPS (Uninterruptible Power Supply) devices
- Lighting system
- Grounding system
- Internal roads
- Fencing of the site and alarm and video-surveillance system
- Water access point, water supply pipelines, water treatment facilities

The powerline to ensure an Eskom connection will consist of monopole structures up to 18m in height, positioned 200m between each pole, with a 30m servitude to accommodate sufficient space for the powerline.

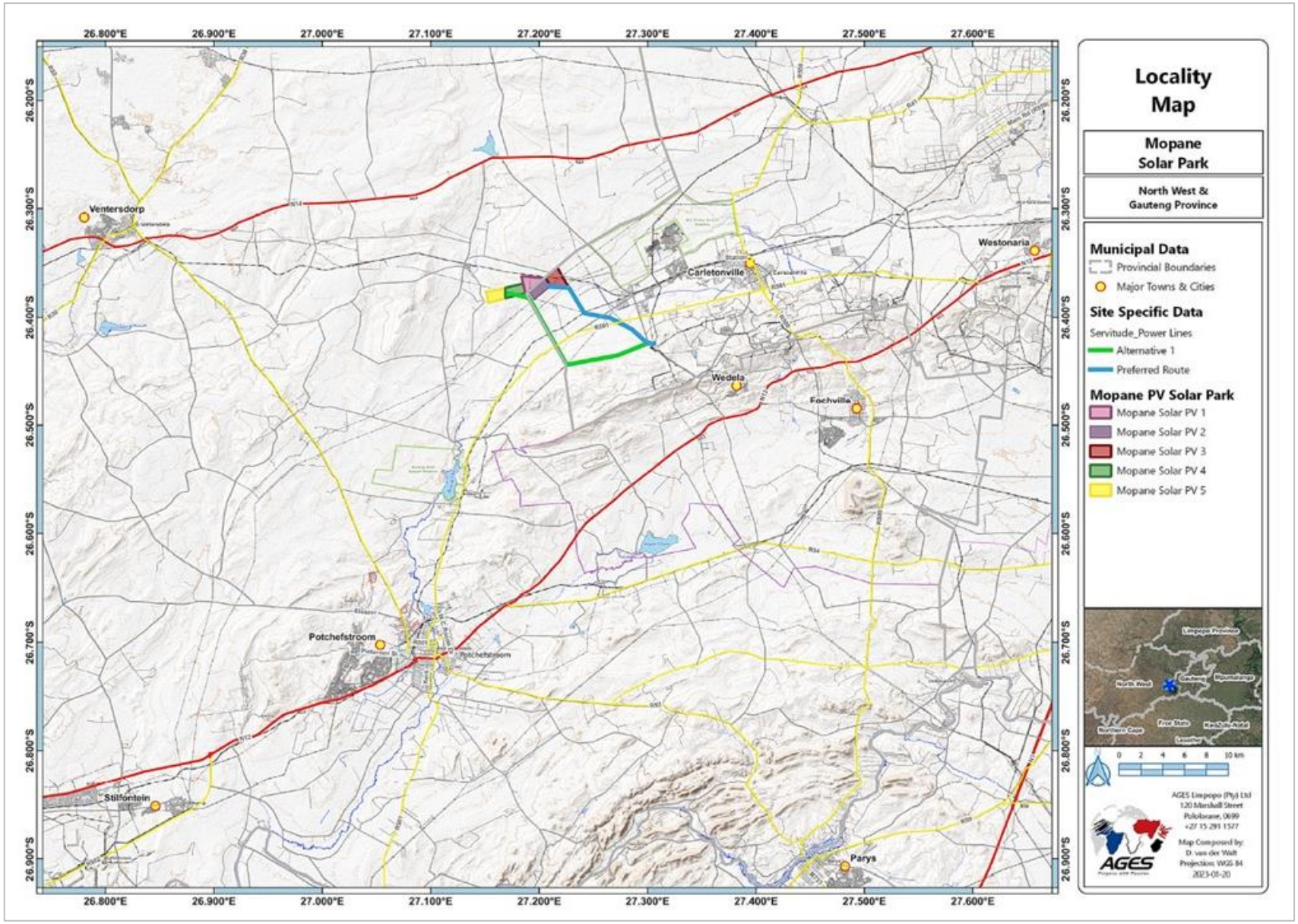

Figure 1. Topographical map of the Mopane 1 - 5 PV Solar Parks cluster

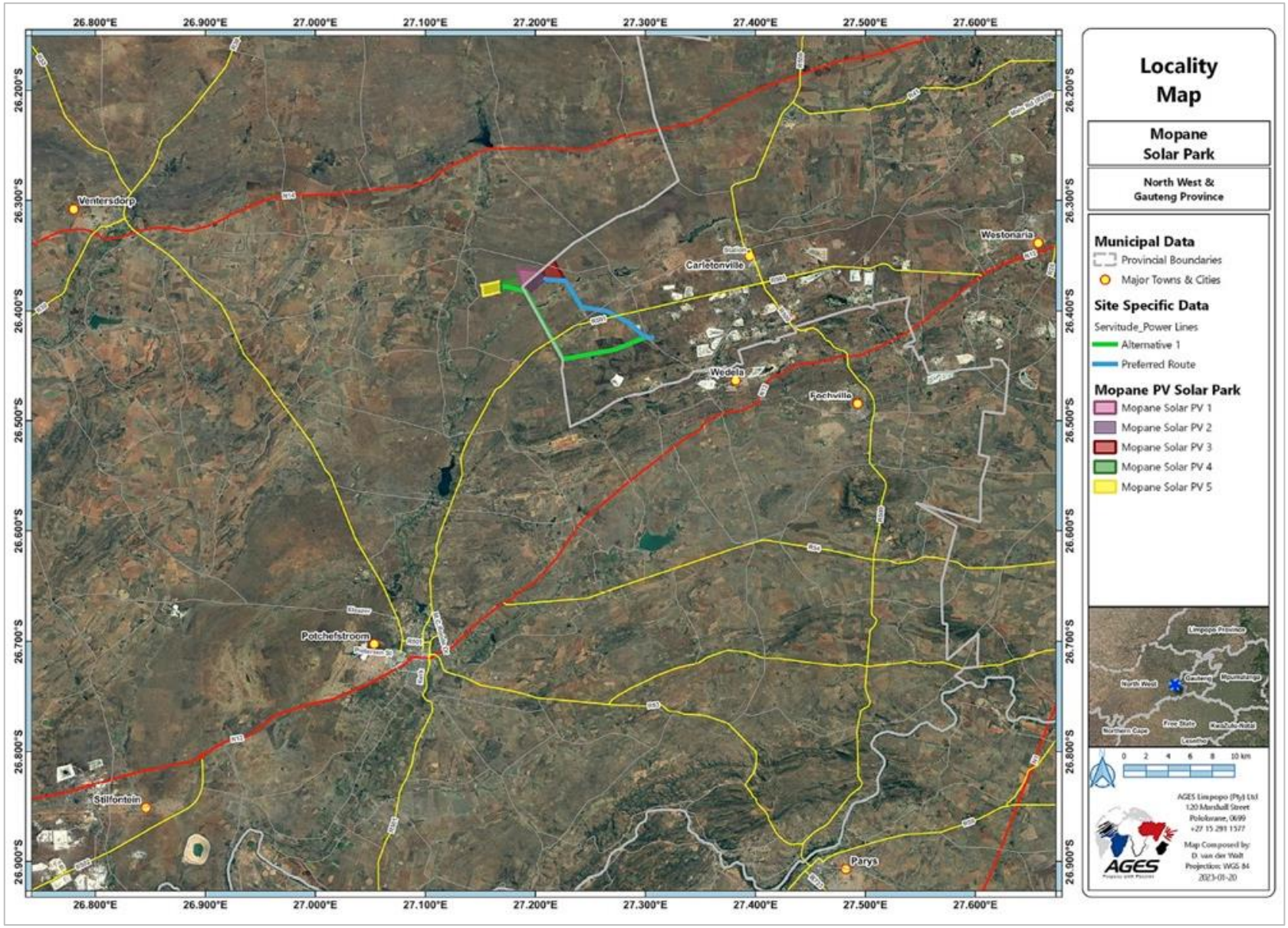

Figure 2. Regional location map of the Mopane 1 - 5 PV Solar Parks cluster

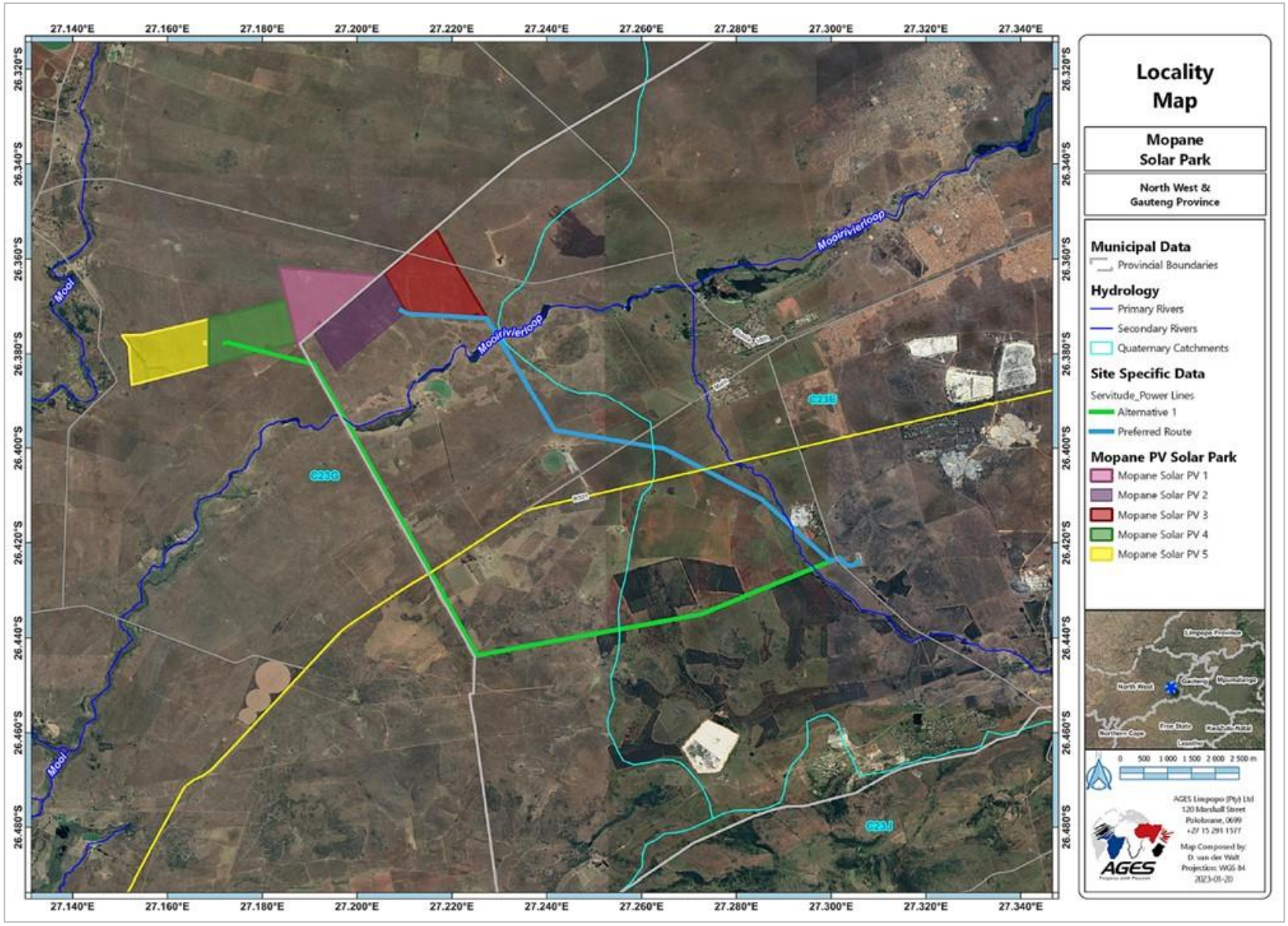

Figure 3. Aerial view map of the Mopane 1 - 5 PV Solar Parks cluster

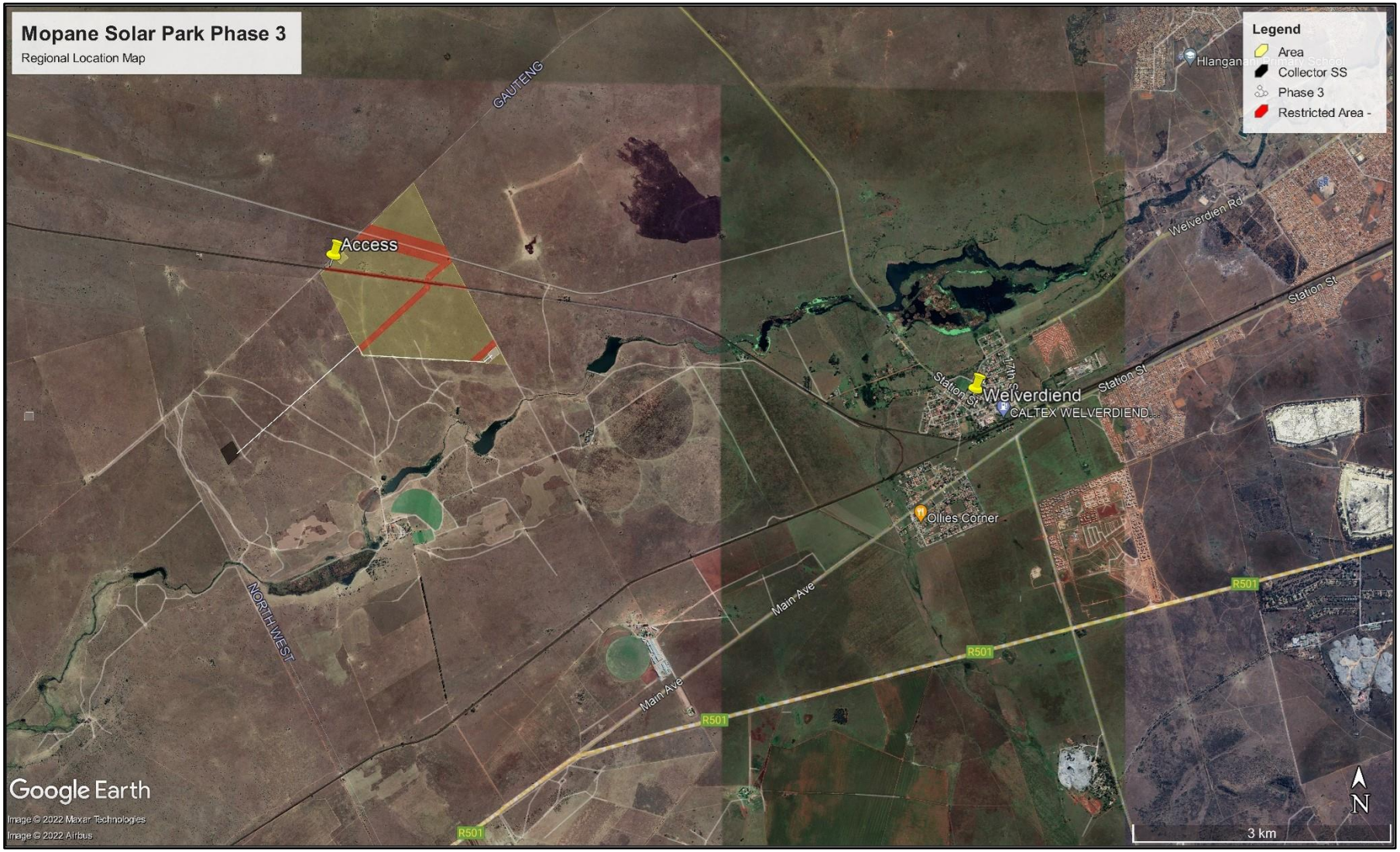

Figure 4. Regional location map of the Mopane Solar PV 3 project site

2. PURPOSE OF THE REPORT

AGES Limpopo (Pty) Ltd was appointed by Voltalia South Africa (Pty) Limited to undertake the required Environmental Authorisation (EA) application process in terms of the Environmental Impact Assessment (EIA) Regulations, 2014 (as amended) promulgated under the National Environmental Management Act, 1998 (No. 107 of 1998; NEMA), for the proposed Mopane Solar PV Projects 1 - 5.

A Screening Tool Report for the proposed **Mopane Solar 3 PV** facility was generated as part of the EA application process. According to the Screening Tool Report, the following specialist assessments were identified and recommended to be undertaken as part of the environmental impact assessment (EIA) process:

- Agricultural Impact Assessment
- Landscape / Visual Assessment
- Archaeological and Cultural Heritage Impact Assessment
- Palaeontology Impact Assessment
- Terrestrial Biodiversity Impact Assessment
- Aquatic Biodiversity Impact Assessment
- Civil Aviation Assessment
- Defense Assessment
- RFI Assessment
- Geotechnical Assessment
- Socio-Economic Assessment
- Plant Species Assessment
- Animal Species Assessment

In accordance with the Procedures for the Assessment and Minimum Criteria for Reporting on identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of NEMA, this Site Sensitivity Verification Report (SSVR) was compiled to provide a rationale for the specialist studies undertaken as part of the environmental impact assessment (EIA) process.

3. DESKTOP ANALYSIS

The site is located within the C23G quaternary catchment and is situated in the Upper Vaal Water Management Area. Drainage occurs as sheet-wash into the drainage channels and wetlands on site that eventually drains into the major river namely the Mooi River and Mooiriviersloop River that occurs to the west and south of the site respectively.

The climate for the region is warm-temperate, summer rainfall region, with overall mean annual precipitation of 593mm. Severe, frequent frost occurs, although summer temperatures are high. The mean annual temperature for the area is 16.1°C, and the mean annual frost days is 37 days. Mean Annual Potential Evaporation is 2407mm, with Mean Annual Soil Moisture Stress of 78%.

The land type unit represented within the study area include the Fa14 land type (Land Type Survey Staff, 1987) (ENPAT, 2001), consisting of dolomite and chert of the Chuniespoort Group; chert gravels are abundant on middle and footslopes including valley bottoms. Soils associated with the site vary between slightly deeper, loamy red apedal soils, to shallow rocky soils.

The topography is characterised by slightly undulating plains. The topography of the site can be described as generally favourable, when considering that most of the area consists of slopes of less than 1:5. The site is located at an altitude of 1460 meters above mean sea level (AMSL).

Most properties situated within a 500m radius are being used for livestock grazing and crop cultivation. The proposed development land is used for livestock farming at present. The natural vegetation of the site varies from intact to planted pastures.

The most recent classification of the area by Mucina & Rutherford (2006) shows that the site is classified as Carletonville Dolomite Grassland. Carletonville Dolomite Grasslands (Gh15) are predominantly found in the North-West Province, in the regions around Potchefstroom, Ventersdorp and Carletonville. Vegetation and Landscape Features Carletonville Dolomite Grasslands occur on slightly undulating plains which are typically intersected by rocky chert ridges. They are species rich and according to Mucina and Rutherford (2006), dominated by many plant species.

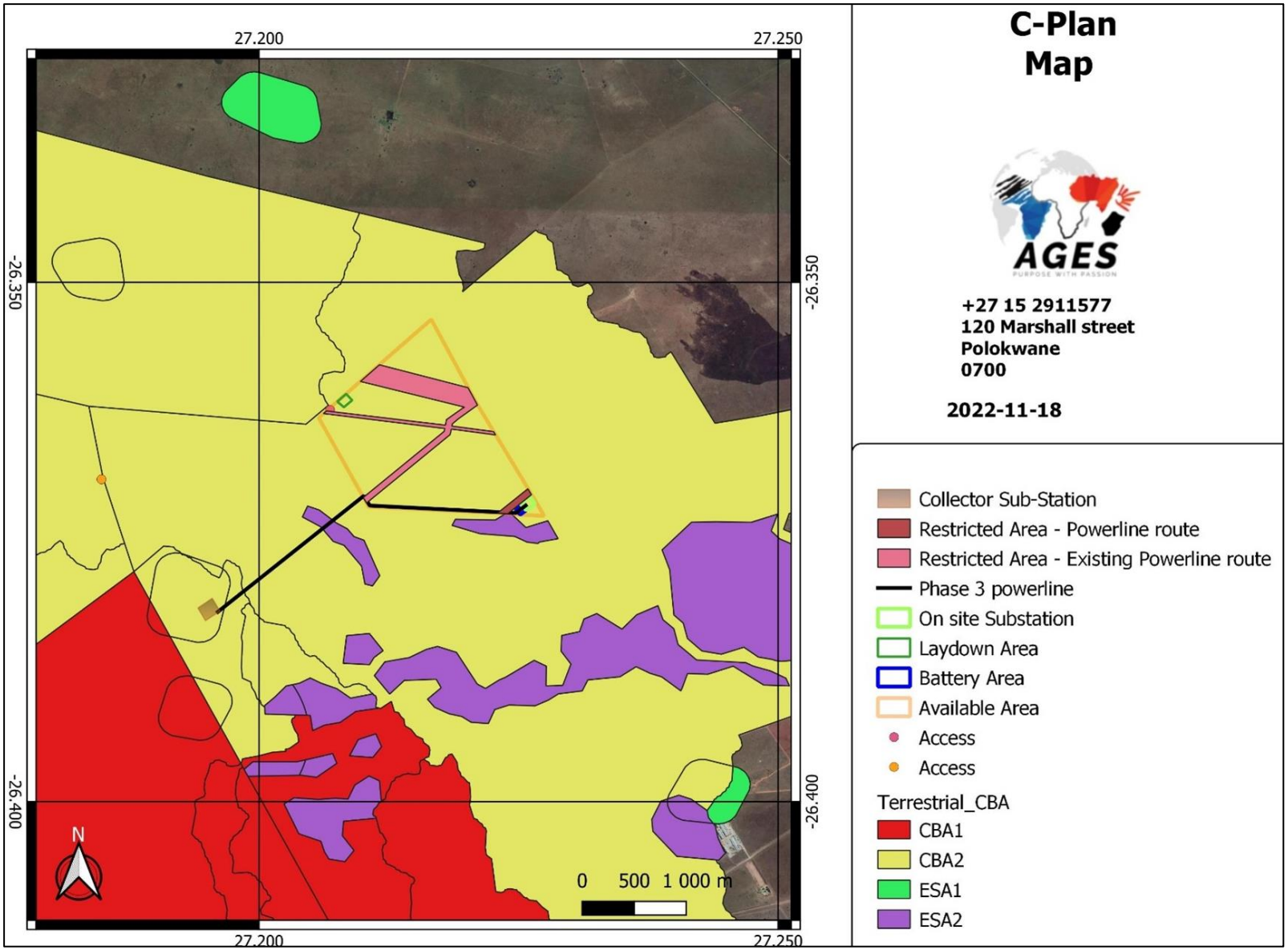

Figure 5. Location of CBA1, CBA2, ESA1 and ESA2 areas relative to the project area (Gauteng C-Plan map 2015)

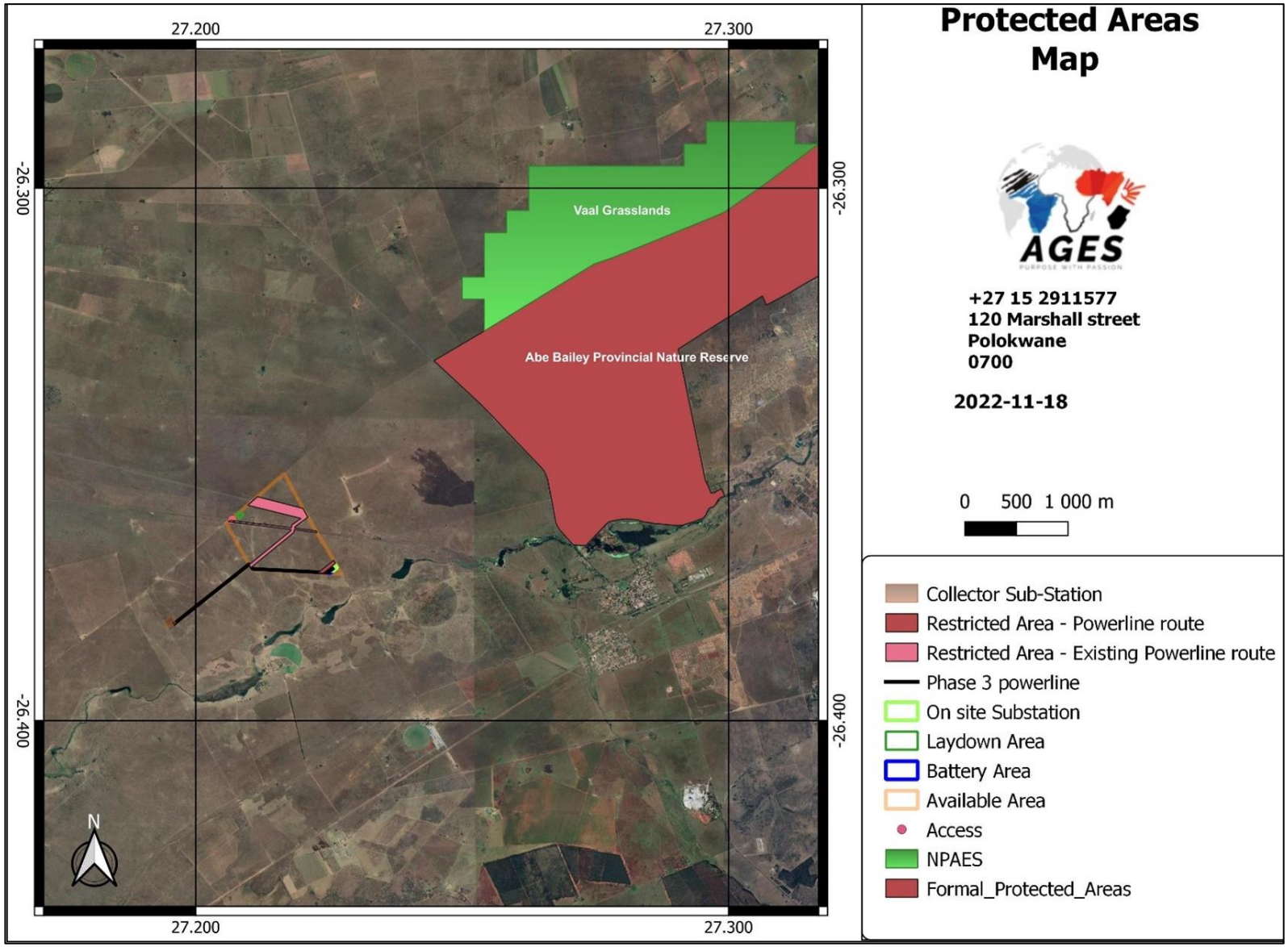

Figure 6. Location of the project area in relation to listed protected areas.

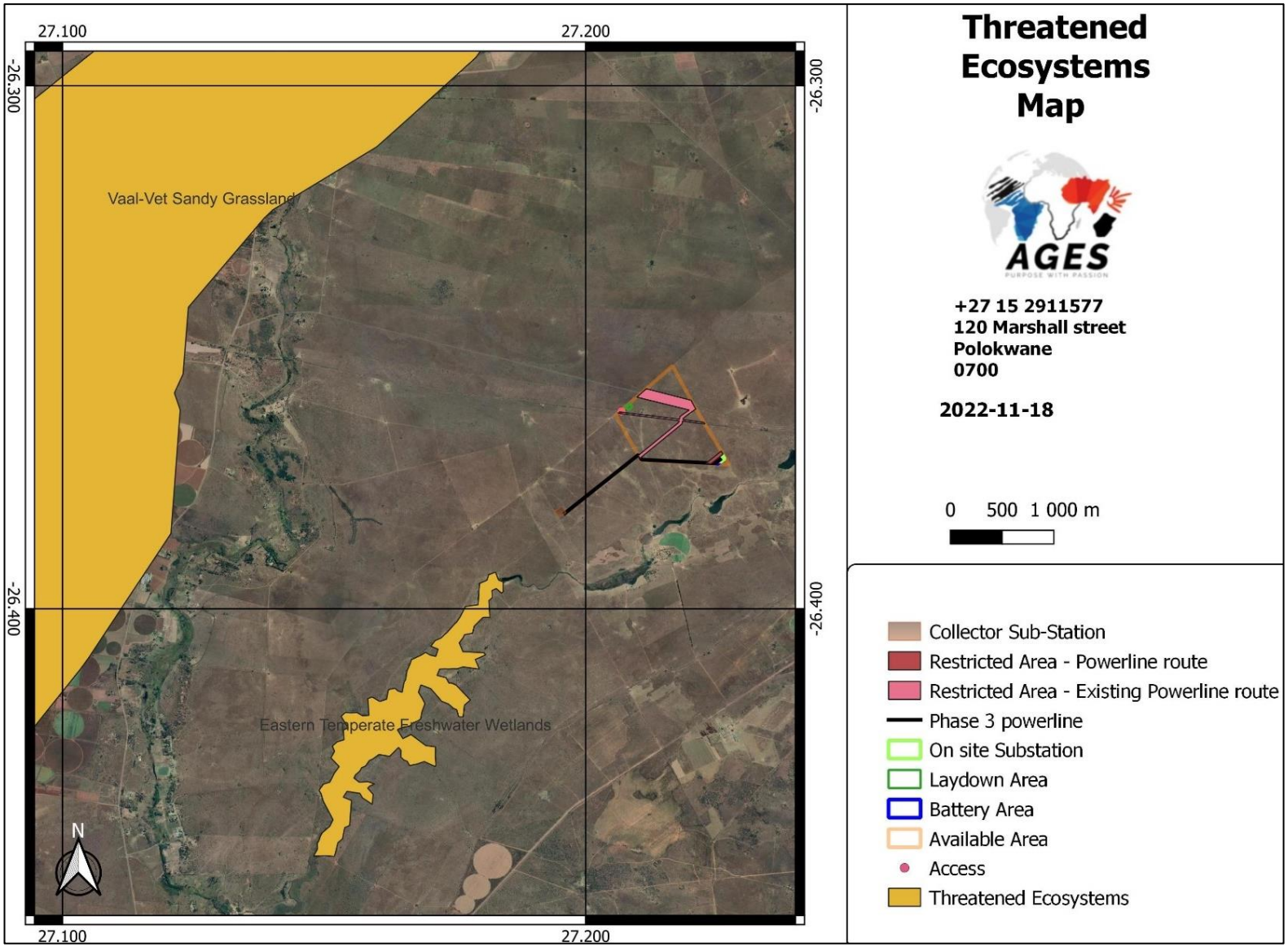

Figure 7. Listed threatened ecosystems in proximity to the proposed development site (SANBI).

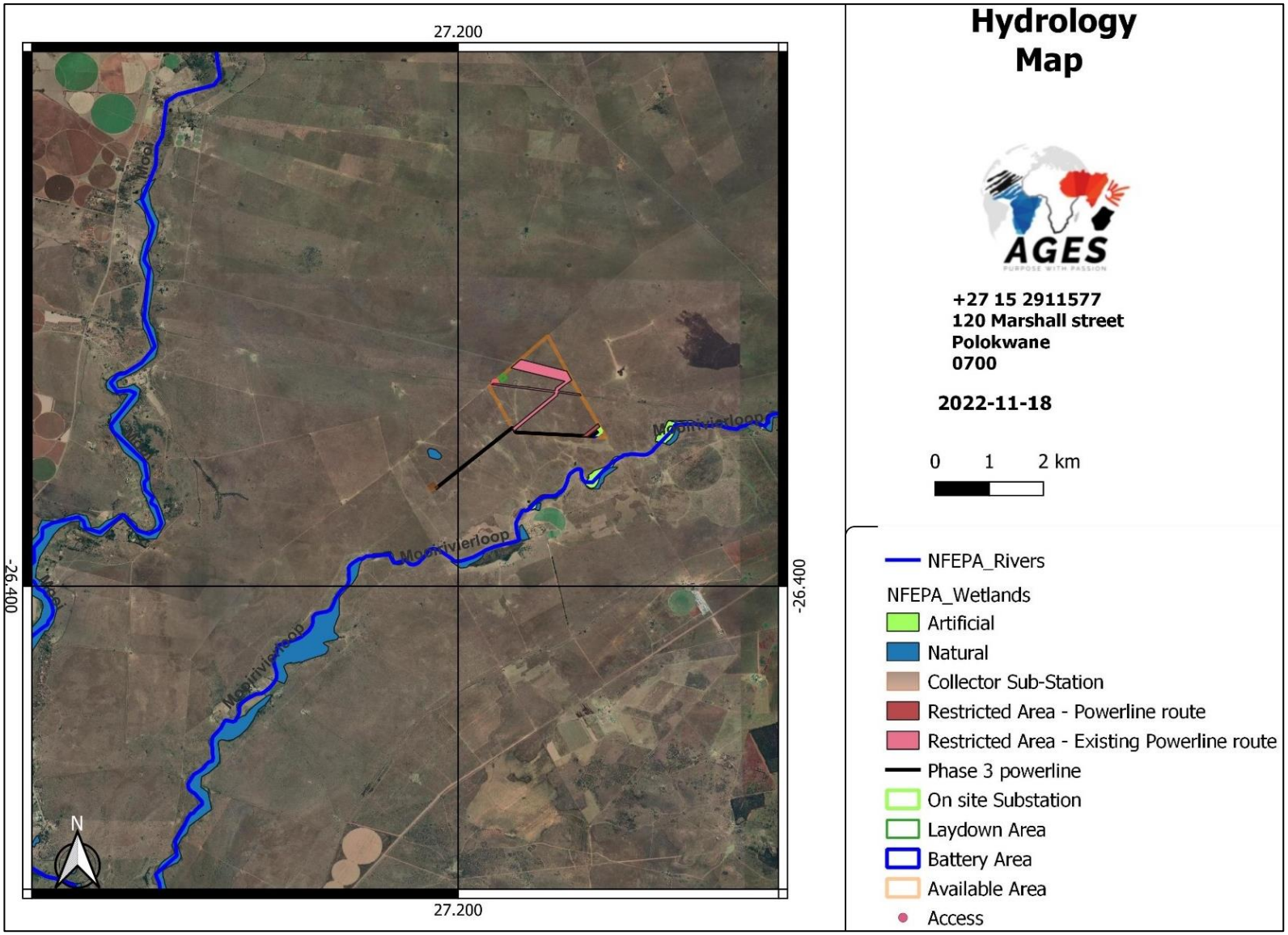

Figure 8. Location of the project area in relation to NFEPA Rivers and SWSA

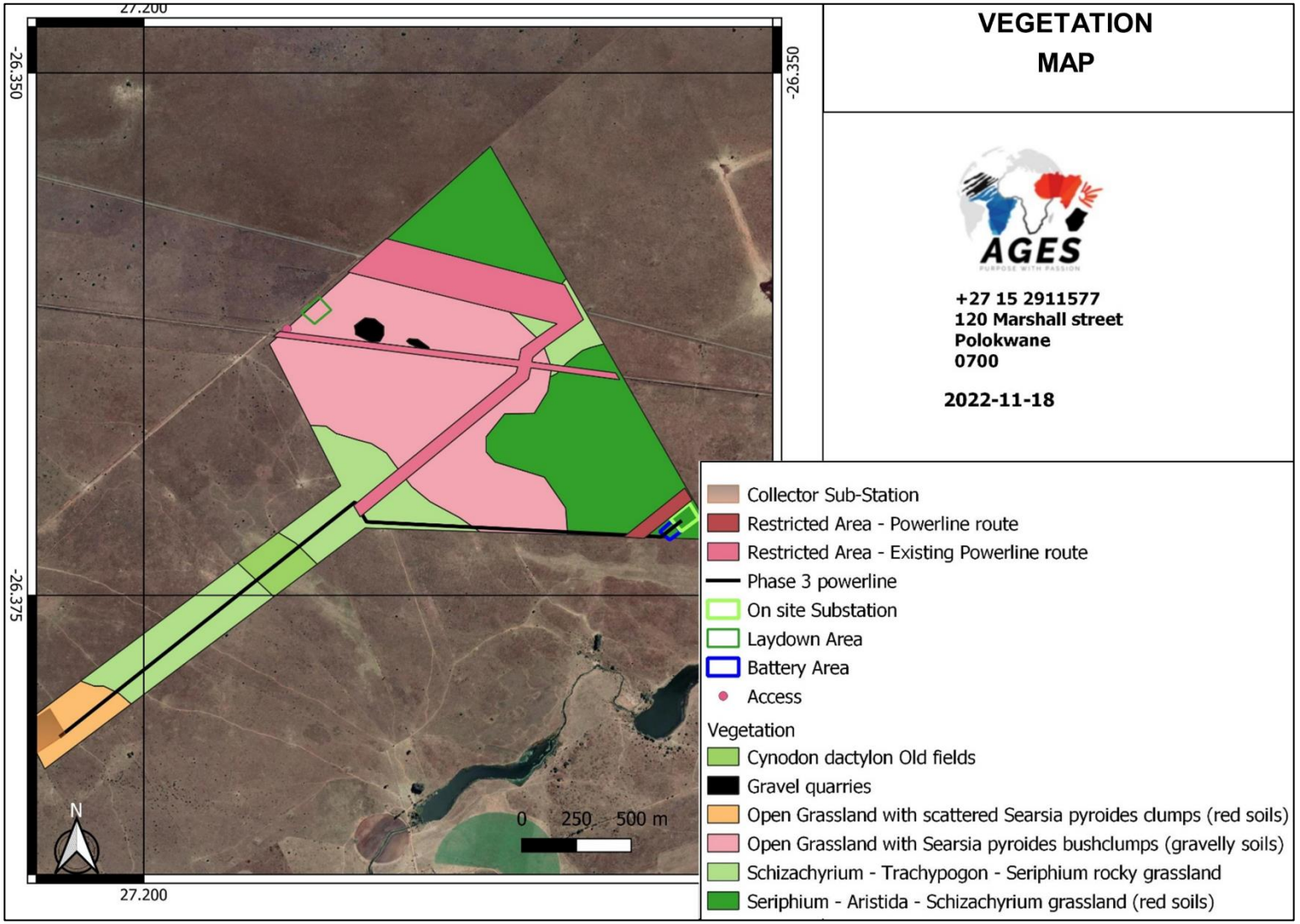

Figure 9. Vegetation Unit Map of the proposed development area

4. SITE ASSESSMENT

Desktop analysis and field-based surveys of the project site were undertaken by the following specialists between October 2022 and March 2023:

Agro-Ecosystem	Dr B Henning
Avifauna	Kemp Operations
Aviation	Tappas Aviation Consultant
Aquatic Biodiversity	Scientific Aquatic Services
Geotechnical Investigation (Preliminary)	AGES
Heritage Impact Assessment	Beyond Heritage
Noise	Enviro-Acoustic Research
RFI & Defence	PF Smuts
Socio-economic impact assessment	Glen Steyn & Associates
Terrestrial Biodiversity	Dr B Henning
Traffic Study (Baseline)	Ziyasi Limpopo Consulting Services
Visual Impact Assessment	Graham Young Landscape Architects

This Site Sensitivity Verification Report used the information collected by the above-mentioned specialists to confirm or dispute (as applicable) the environmental sensitivity ratings identified by the National Screening Tool. A copy of the Screening Report is attached as Annexure A of the Draft Environmental Impact Assessment Report. The specialist assessments/theme and sensitivity ratings identified by the Screening Tool are summarised in Table 2 below.

Table 2. Specialist Assessments/themes and Sensitivity Ratings identified by DFFE's Web-based Screening Tool

Specialist Assessment / Theme	Sensitivity rating as per Screening Report	Sensitivity rating as per Specialist Verification	Annexure
Agricultural	Medium	Medium	L
Rationale for and Results of Specialist Assessments			
The main purpose of this study was to assess the agricultural potential and value of the soil types on the site. This assessment is essential as it will contribute to meeting the requirements of the National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998) in compliance with Gazette No. 43310 Government Notice R320. The Agricultural Environmental Impact Assessments Guideline has been developed in support of the Agricultural study protocols that were gazetted 30th October 2020 (Government Notice number 1150). This guideline provides details for implementing relevant species protocols and is available for use to soil scientists, environmental assessment practitioners and Competent Authorities. According to the national web-based environmental screening tool in terms of National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998), the site has the following Agricultural Sensitivities: • **Medium** A pre-screening site visit was conducted to determine if the assessment was accurate and if the studies recommended should be conducted. After the site visit the following was concluded: The site has a MEDIUM from an Agricultural Sensitivity point of view due to areas of the site being used for livestock grazing. After the assessment, it was concluded that a detailed Agro-Ecosystem study should be conducted.			
Landscape/Visual	None provided	Moderate - Low	K
Rationale for and Results of Specialist Assessments			
In accordance with Government Notice No. 320 of 20 March 2020, "Site sensitivity verification requirements where a specialist assessment is required but no specific assessment protocol has been prescribed" a site sensitivity verification which complies with Appendix 6 of the EIA Regulations was compiled. However, to document the visual baseline environment, identify and assess visual impacts and ensure that the visual/aesthetic consequences of the proposed project are understood, a comprehensive VIA was compiled. The Visual Impact Assessment conducted by the specialist concluded that the study area's scenic quality has been rated low to high within the context of the sub-region, and the Project site is in a moderate rated landscape type. Sensitive viewing areas and landscape types have been identified and mapped, indicating potential sensitivity to the Project, mainly for residences of farmsteads to the immediate west and south of the site. The degree of Confidence of the significance assessment is moderate as the results of the I&AP process were not known at the time of drafting the report. It is assumed that sensitivity to the Project is moderate to low.			
Archaeological and Cultural Heritage	Low	Low	H
Rationale for and Results of Specialist Assessments			
Subject to the National Heritage Resources Act, 1999, Act 25 of 1999, section 38, a Heritage Impact Assessment is required as the proposed development footprint and associated infrastructure. Appendix 6 of the GNR 326 EIA Regulations - 7 April 2017 provides the requirements for specialist reports undertaken as part of the environmental authorisation process. An Archaeological and Cultural Heritage Impact Assessment conducted on 20 December 2022. The study area consists of slightly undulating plains and rocky chert outcrops. Isolated and low density MSA artefacts are found across the wider landscape. These artefacts are mainly made from the abundant locally occurring chert and Cryptocrystalline silica (CCS) and is considered to form part of the background scatter (Orton 2016) of the larger area. No distinct heritage sites or scatters of stone tools were recorded in the development footprint of PV3. This area is seen as of low heritage sensitivity based on the extensive survey of the surrounding area but should be subjected to a heritage			

walkdown prior to development and any changes to the layout should be assessed by a heritage specialist.			
Palaeontology	**Very high**	**Low**	**I**
Rationale for and Results of Specialist Assessments			
The palaeontological sensitivity of the study area is rated as very high by the South African Heritage Resources Agency (SAHRA), (https://sahris.sahra.org.za/), indicating that a field assessment and protocol for finds is required. To comply with the regulations of the South African Heritage Resources Agency (SAHRA) in terms of Section 38(8) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA) and in accordance with Government Notice No. 320 of 20 March 2020, "Site sensitivity verification requirements where a specialist assessment is required but no specific assessment protocol has been prescribed" a site sensitivity verification which complies with Appendix 6 of the EIA Regulations was compiled. The site visit and walk through (Phase 2) Palaeontological Impact Assessment (PIA) confirmed that there were NO FOSSILS in the project footprint. Since there is an extremely small chance that trace fossils from the Malmani Subgroup may be disturbed a Fossil Chance Find Protocol has been added to this report. Taking account of the defined criteria, the potential impact to fossil heritage resources is extremely low. No further palaeontological studies are deemed necessary. A Fossil Chance Find Protocol should be added to the EMPr.			
Terrestrial Biodiversity	**Very high**	**High**	**E**
Rationale for and Results of Specialist Assessments			
The Species Environmental Impact Assessments Guideline has been developed in support of the Terrestrial Biodiversity, Plant and Animal Species protocols that were gazetted 30th October 2020 (Government Notice number 1150). According to the national web-based environmental screening tool in terms of National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998), the site has the following sensitivities: • Terrestrial Biodiversity: Very High Sensitivity • Animal Species Theme: Medium or Low Sensitivity • Plant Species Theme: Medium Sensitivity A pre-screening site visit was therefore conducted to determine if the assessment was accurate and if the studies recommended should be conducted. After the site visit the following was concluded: The site has a HIGH Sensitivity from a terrestrial biodiversity perspective due to the presence of indigenous grassland. The site has a Medium Sensitivity from an Animal Species Theme Perspective due to the presence of natural fauna habitats. The site has a Medium Sensitivity from a Plant Species Theme Perspective due to the presence of indigenous grassland. After the assessment, it was concluded that a detailed terrestrial biodiversity, plant species theme and animal species theme assessment should be conducted.			
Plant species	**Medium**	**Medium**	**E**
These requirements will be addressed as part of the Terrestrial Biodiversity Impact Assessment conducted.			
Animal species	**Medium - Low**	**Medium**	**E**
These requirements will be addressed as part of the Terrestrial Biodiversity Impact Assessment conducted.			
Aquatic Biodiversity	**Very high**	**Low**	**G**
Rationale for and Results of Specialist Assessments			
Following on from desk-based investigation of possible freshwater features in the study area and investigation area (defined as a 500 m radius around the study area, in line with GN 509 as it relates to the National Water Act, 1998 (Act No. 36 of 1998), a field assessment was undertaken on the 10 November 2022 to verify the presence of freshwater features. It was confirmed that no freshwater ecosystems occur in the study area. The DFFE National Web-based Environmental Screening Tool (2020), provides the criteria for the assessment and reporting of impacts on aquatic/freshwater biodiversity for activities requiring EA. The DFFE Web based Environmental Screening Tool has designated the study area as being of very high aquatic biodiversity sensitivity. However, since the site survey confirmed that no natural freshwater ecosystems are located within the study area, and the proposed PV plant poses no significant quantum of risk to any freshwater ecosystems in the investigation area, the study area has been assessed to have a low aquatic biodiversity sensitivity. Accordingly, an Aquatic Biodiversity Compliance Statement has been compiled.			

Due to the nature of the topography between the study area and the closest freshwater ecosystem and the limited size of the freshwater ecosystem section that lies within 500 m from the study area, it was confirmed that the proposed PV Power Plant poses no significant quantum of risk to the existing freshwater ecosystems in the area. Therefore, the property will not be subject to a Water Use Authorisation in terms of Section 21 c and i of the National Water Act (Act No 36 of 1998), nor would a risk assessment be required in accordance with GN509 of 2016.

Civil Aviation (Solar PV)	Low	Low	N

Rationale for and Results of Specialist Assessments

The Screening Tool identified the site as being of 'low' sensitivity. However, in light of the cumulative impact of the proposed five (5) renewable energy generation facilities it was decided to undertake a safeguarding assessment for the entire proposed development. The report was compiled in accordance with Government Gazette 43110, Government Notice no. 320 of 20 March 2020 "PROTOCOL FOR THE SPECIALIST ASSESSMENT AND MINIMUM REPORT CONTENT REQUIREMENTS FOR ENVIRONMENTAL IMPACTS ON CIVIL AVIATION INSTALLATIONS".

Carletonville Airport and the project area was visited from 10 to 12 November 2022 for inspection and consulting with appropriate role players involved with Carletonville Airport and the Johannesburg Sky Diving Club.

There are no Military installations and no promulgated Danger, Restricted and Prohibited areas according to the South African Civil Aviation Authority (SACAA) listed in the vicinity of the Mopane Solar PV 1 to 5 projects.

Evidence from the assessment and the technical drawings show clearly that the Mopane Solar PV 3 project:

- will not interfere with the Obstacle Limit Surfaces and the Approach/Departure Surfaces of Carletonville Airport (FACR), and Carletonville airport will therefore have no problem to become an Instrument rated airport in the future.
- will not interfere with the Landing Zone of the Johannesburg Sky Diving Club, present and in the long term.

RFI (Minimum Assessment) Defense (Minimum Assessment)	Low Low	Low Low	O O

Rationale for and Results of Specialist Assessments

For an RFI combined sensitivity classification of "low" the prescribed assessment protocol required states the following: "Where a specialist assessment is required and no specific environmental theme protocol has been prescribed, the required level of assessment must be based on the findings of the site sensitivity verification and must comply with Appendix 6 of the EIA Regulations", while for the Defence theme the protocol states "PROTOCOL FOR THE SPECIALIST ASSESSMENT AND MINIMUM REPORT CONTENT REQUIREMENTS FOR ENVIRONMENTAL IMPACTS ON DEFENCE INSTALLATIONS". The environmental assessment subsequently is done in accordance with Government Notice No. 320 of 20 March 2020 subject to the respective protocols as stated above.

- There are no military training areas and bases in the close vicinity and thus is not foreseen to have any impact on military landwards activities.
- The combined RFI sensitivity analysis results indicated RF and or radio communication installations close the proposed PV Solar Park and power lines. Any military communications deployed, should the need arise, in the same conditions and under the same EMC regulations.
- There are no runways visible in this area as well as the close surrounding area. It is not foreseen that a military airport will be constructed in this area but the final approval has to be provided by the DoD.
- No Cumulative RFI effects are expected at any of the adjacent sites and whether there are one or five PV solar sites the outcome will be the same.

The site sensitivity verification agrees with the identification of the site as being of low sensitivity and no further assessment is deemed necessary.

Geotechnical (Preliminary)	None provided	Medium-High	J

Rationale for and Results of Specialist Assessments

In accordance with Government Notice No. 320 of 20 March 2020, "Site sensitivity verification requirements where a specialist assessment is required but no specific assessment protocol has been prescribed" a site sensitivity verification (preliminary stage geotechnical investigation which complies with Appendix 6 of the EIA Regulations was compiled.

The assessment flagged issues of a geological, geotechnical, and geomorphological nature, classified according to the SANS 634 (2012)

and supplemental parameters. The results of the assessment indicated the following potential issues:

Shallow water table (less than 1.5 m deep):	**YES**	NO
Dolomite, sinkhole, or doline areas:	**YES**	NO
Seasonally wet soils (often close to water bodies):	YES	**NO**
Unstable rocky slopes or steep slopes with loose soil:	YES	**NO**
Dispersive soils (soils that dissolve in water):	YES	**NO**
Soils with a high clay content (clay fraction more than 40%):	YES	**NO**
Any other unstable soil or geological feature:	**YES**	NO
An area sensitive to erosion:	**YES**	NO

It is recommended that a full Geotechnical investigation be conducted prior to commencement of the construction phase.

Socio-Economic	**None provided**	**Positive impact**	**P**

Rationale for and Results of Specialist Assessments

In accordance with Government Notice No. 320 of 20 March 2020, "Site sensitivity verification requirements where a specialist assessment is required but no specific assessment protocol has been prescribed" a site sensitivity verification which complies with Appendix 6 of the EIA Regulations was compiled.

A Socio-economic assessment for the project was compiled and concluded that:

- Construction projects are associated with increased levels of vandalism, crime and disruption to established local social relationships. This impact could be negative, albeit low.
- The socio-economic impact of the proposed Mopane Solar PV 3 project will be positive with a low to moderate significance.

Avifauna	**High**	**Very high - Low**	**F**

Rationale for and Results of Specialist Assessments

The outcomes of the field-based survey by the specialist indicate that the project site is associated with a medium sensitivity. In accordance with Government Notice No. 1150 "Protocol for specialist assessment and minimum report content requirements for environmental impacts on terrestrial animal species" an Avifauna Specialist Assessment Report was compiled, compliant with the Best Practice Guidelines for Birds & Solar Energy (Jenkins et al. 2017) and the Environmental Impact Assessment (EIA) guidelines for renewable energy projects.

A detailed field survey was carried out from 28 to 30 October 2022 (the start of the wet season). The National Screening Tool lists the proposed animal species theme sensitivity as medium and the avian theme sensitivity as high due being within 20 km of a known vulture supplementary feeding site.

The specialist site assessment confirmed the location of the proposed development to be within a Priority Focus Area and Critical Biodiversity Area 2 (CBA2).
The proposed development is not located within an IBA, but the closest is the Magaliesberg IBA, located North of the proposed development, is home to a huge variety of bird species and home to two Cape Vulture (*Gyps coprotheres*) colonies with ~300-400 active breeding pairs (Hirschauer et al. 2021). In addition, the African Grass Owl (*Typo capensis*) and Secretarybird (*Sagittarius serpentarius*) are regularly recorded within the area. However, the area is also important for other reptiles, mammals and amphibians.

Site ecological importance for various habitats on site were rated Very High (water habitat), Medium (grassland) and Low (transformed).

As most threats to birds and other wildlife posed by PV facilities are poorly understood, the Mopane Solar Parks, if endorsed, have the potential to provide an ideal platform for monitoring the impact of Solar Parks on the avifaunal communities in grasslands close to wetlands and a river system. Birds within these systems usually stick to them but can occasionally fly between these systems, which increases the risk of a negative interaction with the Solar Park. The Solar Parks might have a negligible effect on the overall bird community, as more than 38% of the landscape has already undergone some anthropogenic disturbance, and even the proposed area is used for grazing livestock. However, the biggest threat will come from the overhead power lines between the Solar Park and the substation (Discussed in a separate report). The proposed development allows institutions to conduct valuable and relevant research into threats posed to avifauna by PV facilities and how to avoid these threats, especially to high-priority species, as described in the Best Practice Guidelines Birds & Solar Energy (Jenkins et al. 2017).

Traffic	**None provided**	**Low and High**	**R**

Rationale for and Results of Specialist Assessments

While the National Screening Tool Report did not require a Traffic Impact Assessment to be provided, a Baseline Traffic Impact Assessment was conducted to assess and document local site conditions. In accordance with Government Notice No. 320 of 20 March 2020, "Site sensitivity verification requirements where a specialist assessment is required but no specific assessment protocol has been prescribed" a site sensitivity verification which complies with Appendix 6 of the EIA Regulations was compiled.

Preparation of a Traffic Impact Assessment is guided by guidelines published by the Committee of Transport Officials (COTO) which have been adopted by all relevant road authorities as instructed by the Department of Transport. The manuals contain requirements for Traffic Impact Assessments (TIAs) and Site Traffic Assessments (STAs) in South Africa. Requirements are provided for aspects such as responsibilities and submission of traffic assessments as well as assessment standards.

- Road Safety: Vehicle/non-motorised transport conflict - Low
- Road Safety: Need for dedicated turning lanes - Low
- Road Safety: High volumes of vehicular traffic conflicts (turning movements) - Low
- Pavement Condition: Intersection of Roads D859 and D331 (Point A) = High

The sensitivity of the intersection of Roads D859 and D331 (Point A) is regarded as high due to the intersection being in a very poor condition due to an excess of potholes and the lack of a dedicated right-turn lane on the northern approach of Road D331.
The relevant existing roads under investigation have a low sensitivity in terms of vehicle traffic volumes and conflicts between vehicles and non-motorised transport.

The following recommendations are made from a traffic engineering point of view and need to form part of the EIA process:
a) Based on the anticipated number of vehicle trips to be generated for Phase 3 of the Proposed Development and for all phases cumulatively, it is recommended that a Traffic Impact Assessment for Phase 3 of the Proposed Development and all phases cumulatively be prepared in order to assess the potential road related impact that the phases of the Proposed Development would have on the relevant intersections under investigation from a road capacity and safety perspective and to determine the required mitigating measures in order to mitigate the potential road related impact that Phase 3 of the Proposed Development and all phases cumulatively might have.
b) An investigation at the relevant proposed access intersection to and from the Proposed Development was conducted in order to determine the intersection performance (impact) of the anticipated vehicle trips to be generated by Phase 3 and all phases cumulatively. Collaboration with Transnet and further investigations would be required with regards to the proposed access road/existing railway line at-grade crossing.

POTENTIAL ROAD-RELATED CONSTRAINTS, FATAL FLAWS AND RED FLAGS AS PART OF PHASE 3 OF THE PROPOSED DEVELOPMENT
a) As determined by a visual inspection, the road surface of the intersection of Roads D859 and D331 (Point A) is currently in very poor condition with an excess of potholes. Should the roadway deteriorate more and not be repaired, access to Phase 3 of the Proposed Development will become problematic via the last-mentioned intersection. The last-mentioned is regarded as a potential constraint and fatal flaw and should be attended to in more detail by a pavement engineer.
b) No further road-related constraints, fatal flaws or red flags that could have an impact on the feasibility of Phase 3 of the Proposed Development are envisaged or could be identified as part of this study for the existing road network in terms of road safety and capacity. Further investigation by means of preparing a full Traffic Impact Assessment is required in order to determine the road-related impact that Phase 3 of the Proposed Development might have and the required mitigating measures should any be required.

Noise	**None provided**	**Low**	**Q**

Rationale for and Results of Specialist Assessments
As the online screening tool does not identify noise as an environmental theme requiring further investigation for a photovoltaic facility, this report considers the requirements of SANS 10328:2008 to assess whether noise is a potential issue of concern. Considering the distance of potential noise sources from Noise Sensitive Receptors (NSR), the temporary nature of construction noise impacts as well as the low magnitude of operational noises, the development of the Mopane Solar PV 3 facility is unlikely to influence ambient sound levels at the NSR in the vicinity of the project site. No further Scoping or other acoustical studies would be required for the proposed development of the Mopane Solar PV 3 facility, and it is recommended that the project be authorised (in terms of acoustics).

5. CONCLUSION

Based on the outcome of this Site Sensitivity Verification Report, the following specialist studies were undertaken during the scoping phase for the proposed project:

- Agro-Ecosystem — Dr B Henning
- Avifauna — Kemp Operations
- Aviation — Tappas Aviation Consultant
- Aquatic Biodiversity — Scientific Aquatic Services
- Terrestrial Biodiversity — Dr B Henning
- Heritage Impact Assessment — Beyond Heritage
- Palaeontological Impact — Prof Marion Bamford
- Visual Impact — Graham Young Landscape Architects
- Baseline Traffic Study — Ziyasi Limpopo Consulting Services
- Geotechnical Investigation (Preliminary) — AGES Alpha
- Noise — Enviro-Acoustic Research
- RFI & Defence — PF Smuts
- Socio-economic — Glen Steyn & Associates

The specialist terms of reference are presented in Section 9.5 of the Scoping Report. The terms of reference of these investigations have been designed to address all the issues that were identified by the EIA project team. As part of these studies, specialists will gather data relevant to identifying and assessing environmental impacts that might occur as a result of the proposed project in their particular field of expertise. They will provide baseline information and identify and assess impacts according to predefined rating scales. Specialists will also suggest ways in which negative impacts could be mitigated and benefits could be enhanced. The results of the specialist studies will be integrated into an EIA Report.