environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF THE SPECIALIST, DECLARATION OF INTEREST AND UNDERTAKING UNDER OATH

	(For official use only)
File Reference Number:	
NEAS Reference Number:	DEA/EIA/
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

PROJECT TITLE

Ndau 2 Solar Energy Facility

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1. This form must always be used for applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting where this Department is the Competent Authority.
2. This form is current as of 01 September 2018. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at https://www.environment.gov.za/documents/forms.
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Departmental Details

Postal address:
Department of Environmental Affairs
Attention: Chief Director: Integrated Environmental Authorisations
Private Bag X447
Pretoria
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Department of Environmental Affairs
Attention: Chief Director: Integrated Environmental Authorisations
Environment House
473 Steve Biko Road
Arcadia

Queries must be directed to the Directorate: Coordination, Strategic Planning and Support at:
Email: EIAAdmin@environment.gov.za

1. SPECIALIST INFORMATION

Specialist Company Name:	Flori Scientific Services cc			
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)	4	Percentage Procurement recognition	100%
Specialist name:	Johannes O. Maree			
Specialist Qualifications:	MSc; MBA; Pr.Sci.Nat.			
Professional affiliation/registration:	SACNASP (Reg. No: 400077/91)			
Physical address:	15 Kiaatsingeld; Bosveldsig Phase 8; Modimolle; 0510			
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Telephone:	082 564 1211	Fax:	-	
E-mail:	johannes@flori.co.za			

2. DECLARATION BY THE SPECIALIST

I, _____ Johannes Maree _____, declare that –

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the Specialist

Flori Scientific Services cc

Name of Company:

31 May 2023

Date

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, ___Johannes Maree_____, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.

Signature of the Specialist

Flori Scientific Services cc

Name of Company

31 May 2023

Date

Signature of the Commissioner of Oaths

2023-05-31

Date

SOUTH AFRICAN POLICE SERVICE
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TERRESTRIAL ECOLOGICAL SITE SENSITIVITY VERIFICATION REPORT

ABO NDAU SOLAR ENERGY FACILITY 2 & ASSOCIATED INFRASTRUCTURE

Terrestrial Ecological Site Sensitivity Verification for the Proposed Ndau 2 Solar PV Project in the Polokwane Local Municipality of the Capricorn District Municipality, Limpopo Province

STUDY & REPORT BY: FLORI SCIENTIFIC SERVICES cc

15 Kiaatsingel, Bosveldsig Phase 8, Modimolle, 0510

Tel: 082 564 1211

Email: johannes@flori.co.za

Contact Person: Johannes Maree, MSc, MBA, *Pr.Sci.Nat*

SACNASP Registration Number: 400077/91

COMPILED FOR: EnviroSaint (Pty) Ltd

511 Velskoen Road, Die Wilgers, Pretoria

JANUARY 2023

EXECUTIVE SUMMARY

Project Overview and Location

The project is the proposed development and establishment of a Solar PV Facilities along with associated infrastructure. The project site is situated in the area southwest of the Town of Polokwane, within the Polokwane Local Municipality, Capricorn District Municipality, Limpopo Province. The proposed 'Ndau Solar PV Cluster' consists of two solar energy facilities (Ndau 1 and Ndau 2); and one battery energy storage system (Ndau BESS); and associated infrastructure including access roads. The larger cluster has been assessed holistically (to give effect to cumulative impact assessment) and each project has been assessed individually within their separate site verification reports.

The applicant proposes the development of Ndau 1, a photovoltaic (PV) solar energy generation facility, of up to 120MWac in capacity, and associated infrastructure located on Portion 19 of the Farm Rietvley No. 13; and the development of Ndau 2, a photovoltaic (PV) solar energy generation facility, of up to 80MWac in capacity, and associated infrastructure located on Portion 5 of (Portion of Portion 2) of the Farm Rotterdam No. 12 and Remaining Extent of Portion 2 of the Farm Rotterdam No. 12.

The project Study Area is situated on the Farm Witkop, approximately 20km southwest of the Town of Polokwane, close to the N1 and R101. The Witkop Substation is 14km east of the main project footprint at Witkop. The PV Solar Facilities will be established on the above-mentioned farm portions. A potential power line servitude located between the facilities and the existing Witkop Substation situated to the east of the sites between the R101 and R519 was also assessed (but would be subject to a separate environmental application process, if required).

Flori Scientific Services was appointed to undertake the terrestrial ecological desktop screening and site verification assessments for the Ndau cluster of projects. Site investigations for the site verification were conducted on 21 November 2022.

Note: This report focuses on the larger assessment area and specifically Ndau 2.

Conclusions

The conclusions of the site verification are as follows:

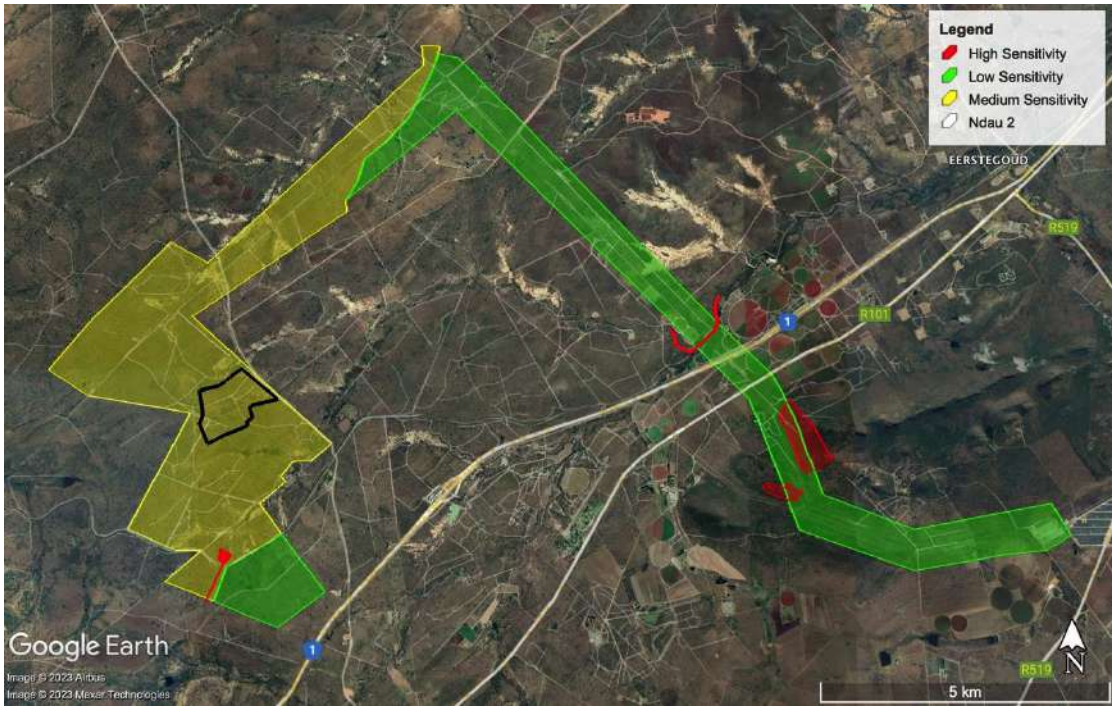
- The site is within the original extent of Polokwane Plateau Bushveld, with a small section of the secondary power line servitude in Mamabolo Mountain Bushveld. Both veldtypes are not threatened veldtypes / ecosystems and have a status of 'Least Concern'. The Ndau 2 site is only within Polokwane Plateau Bushveld.

- Much of the natural environment on larger assessment area and the specific project site (Ndau 2) is moderately degraded to altered and transformed. Erosion is also a problem in the area, especially along or near to existing watercourses.
- The Bloed River, Sand River and a few small seasonal streams / drainage lines, and in-stream dram dams are present. However, there are no watercourses directly within the demarcated preferred site area for Ndau 2.
- Sections of the study area / assessment area are within demarcated CBA and ESA areas. The site identified for Ndau 2 is not within any CBAs, but is within an ESA.
- The study site is within the priority areas of NPAES (Limpopo Central Bushveld) and demarcated nature reserves. It would appear that the section of the Percy Fyfe Nature Reserve that the Secondary Corridor (near the Witkop Substation) impacts on is not a nature reserve anymore. However, the nature reserve is still designated as a reserve in this area in the official PAR of the DFFE. The status of this reserve will need to be verified.
- There are areas of the demarcated Limpopo Central Bushveld NPAES focus area that is within the site area of Ndau 2.
- The study area (including Ndau 2) is not within a strategic water source area of South Africa (SWSA).
- During the site investigations and verification, the following was found for the Ndau 2 site, compared to that of the screening tool assessment:

Theme	Site Verification	Screening Tool
Terrestrial Biodiversity	**Medium & Low**	Very High
Plant Species	Medium	Medium
Animal Species	Medium	Medium

  - The plant and animal species themes were verified to be according to the screening tool.
  - The terrestrial biodiversity was found to be 'Medium' with some sections 'Low', and not 'Very High' as per the desktop screening tool assessment.
- The study site is not within any hotspots for butterflies. It is also not within an Important Bird Area (IBA). It is within a larger snake and lizard hotspot.
- No fatal flaws were encountered during the site verification.
- The proposed project should be allowed to proceed to the next phase, but with further detailed studies and recommended mitigating measures.
- Full specialist studies (Terrestrial Ecology and Aquatic Ecology) will be required and which must include impact assessments and mitigating measures to reduce these impacts on the natural environment. If power lines are included in the larger project then these will include a basic avifaunal impact assessment at minimum.

Below are the sensitivity maps as per the site visits and verifications.



Sensitivity Map: Total Study Area including potential Power Line Corridor

Sensitivity Map: Ndau 2

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LIST OF ACRONYMS

BA	Basic Assessment
CBA	Critical Biodiversity Area(s)
CMA	Catchment Management Agencies
DEA	Department of Environmental Affairs (Old Name for DFFE)
DFFE	Department of Forestry, Fisheries and the Environment
DWS	Department Water and Sanitation
EIA	Environmental Impact Assessment
ESA	Ecological Support Area(s)
IBA	Important Bird Area(s)
NEMA	National Environmental Management Act (Act 107 of 1998)
NEMBA	National Environmental Management: Biodiversity Act (Act 10 of 2004)
NEMPAA	National Environmental Management: Protected Areas Act (Act 57 of 2003)
NFEPA	National Freshwater Ecosystem Priority Areas
NPAES	National Protected Areas Expansion Strategy
NUSP	National Upgrading Support Programme
ODL	Orange Data Listed
PDA	Primary Drainage Area(s)
QDA	Quaternary Drainage Area(s)
RDL	Red Data Listed
SANBI	South African National Biodiversity Institute
SWSA	Strategic Water areas of South Africa
WMA	Water Management Areas
WSA	Water Source Area
WULA	Water Use Licence Application

EXPERTISE & DECLARATION

Expertise of Author

Qualifications & Expertise in: Terrestrial Ecology, Aquatic Ecology and Avifaunal Assessments.

- 2 Masters degrees (MSc & MBA); 2 Diplomas (Business & Public Speaking).
- Authored two books on Cut Flowers of the World. 2010 & 2020 (2nd ed), Briza, Pretoria.
- SAQA accreditation and qualifications in training, assessing & service provision (AgriSeta).
- Registered with South African Council for Natural Scientific Professions (SACNASP) since 1991. Registration number: 400077/91
- 21 years experience in technical and managerial positions, project management and consultancy.
- 19 years experience in writing of articles, books, training material, training & presentations, proposals.
- 14 years direct experience in EIAs.
- Has conducted hundreds of field investigations and compiled hundreds of technical speciaist reports for EIAs, including ecological assessments (fauna & flora), wetland assessments and avifauna impact assessments.
- Projects involved in include power lines, roads, quarries, housing developments, mines and wind farms.

Declaration

In terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and the 2014 NEMA Environmental Impact Assessment (EIA) Regulations (as amended on 7 April 2017).

I, **Johannes Oren Maree**, do hereby declare that I:

- Act as an independent specialist in compiling this report;
- Do not have any financial interests, or stand to gain in any way in the undertaking of this activity, other than remuneration for work performed;
- Do not have, nor will have, any vested interest in the proceeding activity or project;
- Have no, neither will engage in, conflicting interests in the undertaking of this activity;
- Undertake to disclose, to the competent authority, any material information that has, or may have, the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required; and
- Will provide competent authority access to my information regarding the report and investigations, whether such information is favourable to the applicant or not.

1 BACKGROUND

1.1 Project Overview

The Ndau project is the proposed development and establishment of Solar PV Facilities along with associated infrastructure. The project site is situated in the area southwest of the Town of Polokwane, within the Polokwane Local Municipality, Capricorn District Municipality, Limpopo Province. The proposed 'Ndau Solar PV Cluster' consists of two solar energy facilities (Ndau 1 and Ndau 2); and one battery energy storage system (Ndau BESS); and associated infrastructure including access roads. The larger cluster has been assessed wholistically (to give effect to cumulative impact assessment) and each project has been assessed individually within their separate site verification reports.

The applicant proposes the development of Ndau 1, a photovoltaic (PV) solar energy generation facility, of up to 120MWac in capacity, and associated infrastructure located on Portion 19 of the Farm Rietvley No. 13; and the development of Ndau 2, a photovoltaic (PV) solar energy generation facility, of up to 80MWac in capacity, and associated infrastructure located on Portion 5 of (Portion of Portion 2) of the Farm Rotterdam No. 12 and Remaining Extent of Portion 2 of the Farm Rotterdam No. 12.

The project Study Area is situated on the Farm Witkop, approximately 20km southwest of the Town of Polokwane, close to the N1 and R101. The Witkop Substation is 14km east of the main project footprint at Witkop. The PV Solar Facilities will be established on the above-mentioned farm portions. A potential power line servitude located between the facilities and the existing Witkop Substation situated to the east of the sites between the R101 and R519 was also assessed (but would be subject to a separate environmental application process, if required).

Flori Scientific Services was appointed to undertake the terrestrial ecological desktop screening and site verification assessments for the Ndau cluster of projects. Site investigations for the site verification were conducted on 21 November 2022.

Note: This report focuses on the larger assessment area and specifically Ndau 2.

1.2 Purpose of the study

Prior to commencing with a specialist assessment, the current use of the land and the environmental sensitivity of the site under consideration identified by the screening tool must be confirmed by the undertaking a Site Sensitivity Verification. This in accordance with the latest protocols gazetted in October 2020 regarding specialist assessments and minimum reporting (Government Gazette 43855, Notice No. 1150, October 2020).

The site sensitivity verification is to confirm the actual use of land on the ground versus that which has been identified by the screening tool and desktop screening assessment. The site sensitivity verification will confirm or refute the need to employ the various specialists as identified in the screening report. The screening tool report does not form part of the specialist report.

The site sensitivity verification must be undertaken through the use of:

- A desktop analysis, using satellite imagery;
- A preliminary site inspection; and
- Any other available and relevant information.

1.3 Quality and age of base data

The latest available data sets were used for the environmental screening and site verification.

The data, source and age of the data include the following:

- Veldtypes and ecosystems: Mucina & Rutherford, 2006, 2010. Updated 2012, 2018.
- SANBI data sets – latest updated website data (www. bgis.sanbi.org).
- Environmental Screening Tool – DFFE (www.environment.gov.za).
- Limpopo Conservation Plan (Version 2).
- Relevant District and Local Municipal management and biodiversity plans.

1.4 Assumptions and Limitations

The assumptions and limitations for the verification are as follows:

- Information for the proposed project provided by the Client is taken to be accurate.
- Field investigations were undertaken on 21 November 2022. This is within the wet (summer) season for the region.
- Precise buffer zones or exact GPS positions are accurate to within 5m.
- The latest available data sets were used in the environmental screening for the project.
- Data sets, demarcated CBAs, ESAs, Watercourses, etc. were verified and refined during field investigations (ground-truthing).
- ArcGIS (v10.8); Google Earth Pro; and other computer-based programmes were used.
- No specific limitations were encountered during the site investigations and study, which could have a significant impact on the outcomes of the assessment and report findings.
- During site investigations the Farm Manager accompanied the Specialist for most of the time. There were no areas that could not be accessed.

1.5 Methodology

1.5.1 Desktop Assessment

A preliminary desktop screening assessment was conducted using data sets, websites and satellite imagery for South Africa and the Province. Previous studies, reports, photos, etc. for the project site and area, where available, were also consulted.

1.5.2 Field Investigations

Field investigations were conducted on 21 November 2022, during which time cognisance was taken of all environmental features and attributes, namely: Biophysical environment; Regional and site specific vegetation; Habitats ideal for potential red data listed faunal species; Sensitive floral habitats; Red data listed (RDL) fauna and flora species; Protected fauna and flora species; and Watercourses.

Digital photographs and GPS reference points of importance were recorded and used in the report where applicable.

2 RECEIVING ENVIRONMENT

2.1 Study Site Location

The project is the proposed development and establishment of a Solar PV Facility along with associated infrastructure. The Study Site/Area is situated on the Farm Witkop, approximately 20km southwest of the Town of Polokwane, close to the N1 and R101, within the Polokwane Local Municipality, Capricorn District Municipality, Limpopo Province. The Witkop Substation is 14km east of the main project footprint at Witkop (Figure 1 & Figure 2).

The proposed solar energy facility (Ndau 2) is situated within the larger study area of the Witkop Project Area (Farm) as shown below in Figure 2.

Note: Initially the larger study area of Witkop was investigated and assessed and then focus was placed on the preferred and identified site for the Ndau 2 facility, where the least impact on the natural environment will be.

- Study Site Location (Witkop): 24°02'03.80"S; 29°12'52.98"E.
- Ndau 2: 24°01'29.44"S; 29°12'55.72"E.
- Witkop Substation: 24°02'37.46"S; 29°21'23.91"E.
- Polokwane: 23°53'53.94"S; 29°26'58.83"E.
- Quarter Degree Square (QDS): 2329CC, 2329CD, 2429AA & 2429AB.
- Quaternary Drainage Area (QDA): A61F, A71A.

Figure 1: Ndau 2 Site Location

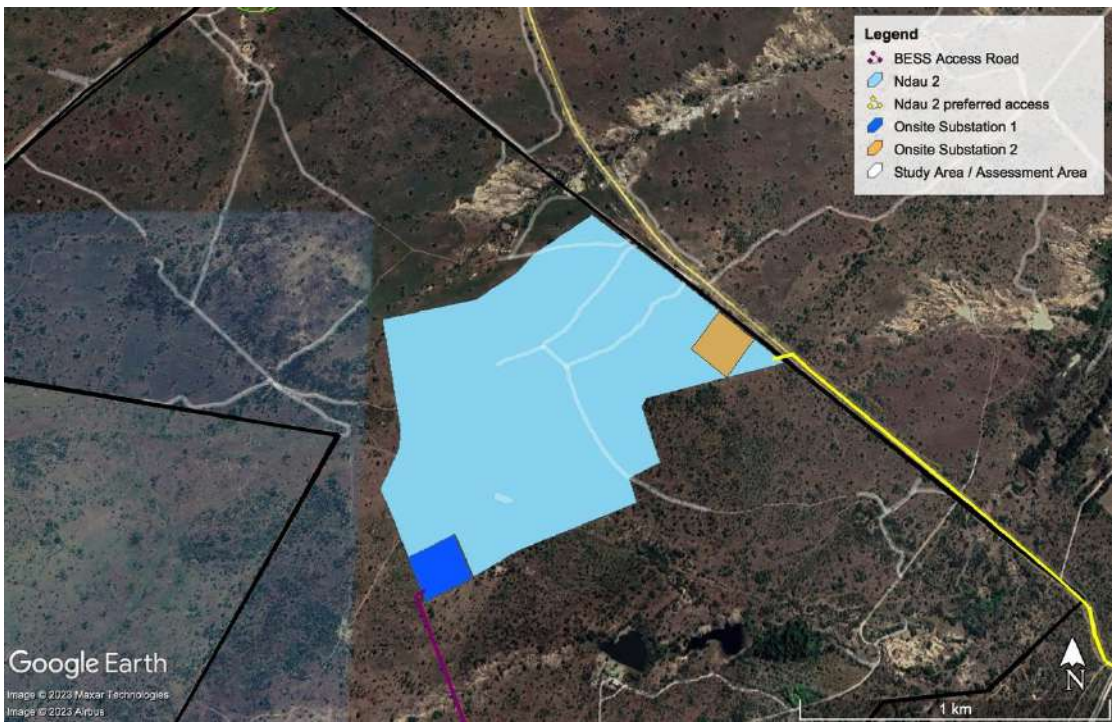


Figure 2: Location of Ndau 2 within the larger study area, which is delineated in black

2.2 Climate

The study site is situated within the medium rainfall regime of 400 - 601mm per annum (Figure 3) and in the Temperate Interior Climatic Zone of South Africa (Figure 4). The site is situated on the same plateau and nearby Polokwane. The site has the same climate as the Town of Polokwane.

Polokwane and the surrounding region have an annual average rainfall of around 560mm. The area is within a summer rainfall region, with very dry winters and long periods of open, cloudless skies (www.saexplorer.co.za). The site is within a temperate climatic zone with warm to hot summers and cool to cold winters, but seldom very cold or severe frost. The cool winter mornings usually become warm and pleasant later during the day.

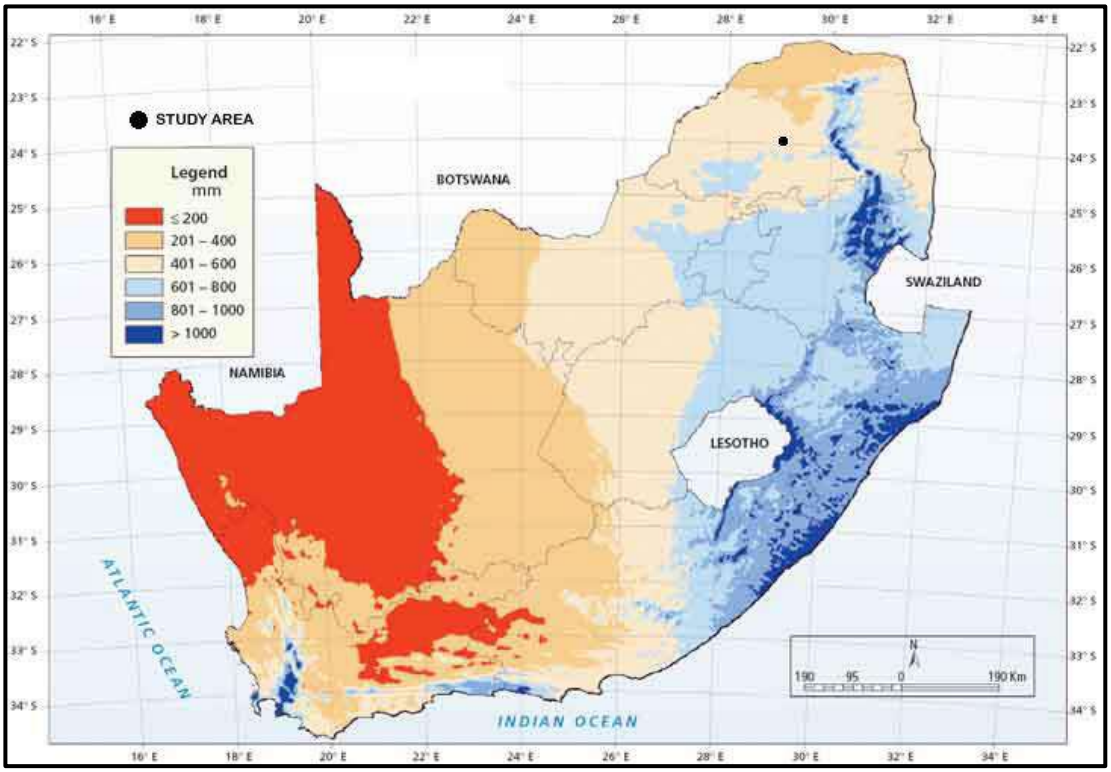


Figure 3: Rainfall Regions of South Africa

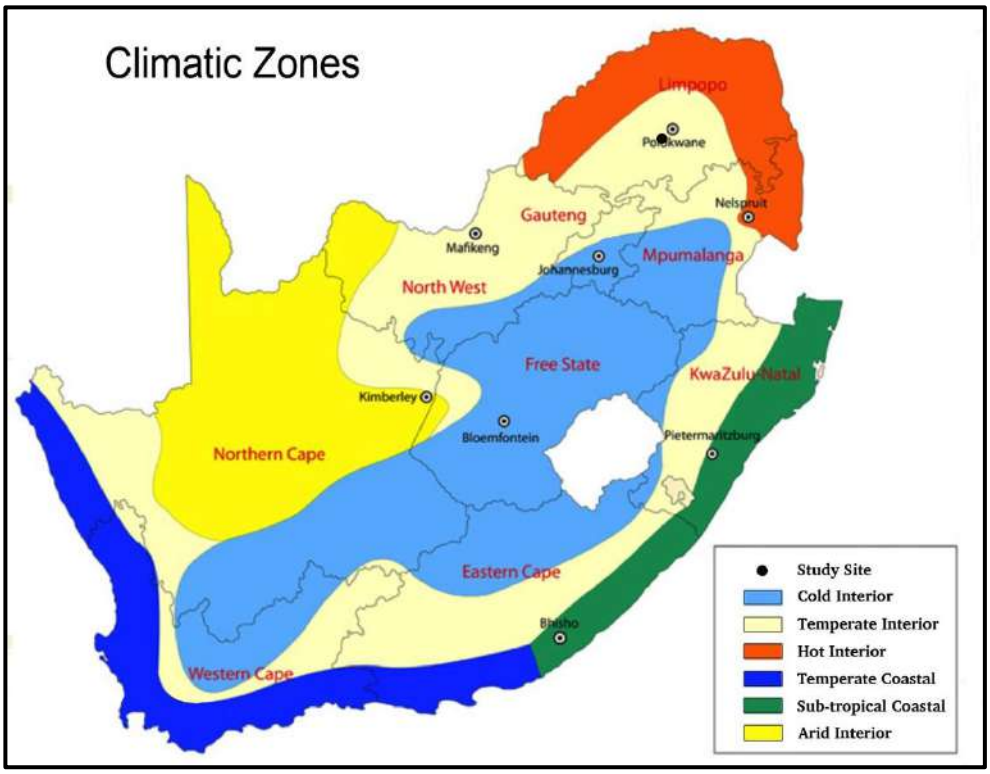


Figure 4: Climatic Regions of South Africa

2.3 Current Land Use

The current land use of the assessed study area is a mix of cultivated farmlands; grazing lands for livestock; open, mostly degraded thornveld; and infrastructure such as major roads and power lines. There are already existing large transmission power lines in the proposed corridors of the project. There are a few private and provincial nature reserves in the general area of the study site, including the Percy Fyfe Nature Reserve to the immediate west of the Ndau 2 site.

2.4 Vegetation

2.4.1 Regional Vegetation

The study site is situated within the Central Bushveld Bioregion of the Savanna Biome (Figure 5). The site is within the original extent of the veldtypes commonly known as **Polokwane Plateau Bushveld** and **Mamabolo Mountain Bushveld**, both of which are not threatened veldtypes / ecosystems. The entire Witkop Assessment Area is predominantly within Polokwane Plateau Bushveld, as well as most of the corridors. The only section that is within mountain bushveld is the corridor area just northwest of the Witkop Substation in the mountainous area of the isolated inselberg.

Polokwane Plateau Bushveld is characterised by moderately undulating plains with short open tree layer with a well-developed grass layer to grass plains with occasional trees at higher altitudes (for example the Mashashane area in the southwest and the southeastern watershed of the Sand River

catchment, such as around Eersteling). Hills and low mountains of the veldtype of Mamabolo Mountain Bushveld are embedded within Polokwane Plateau Bushveld (Mucina & Rutherford, 2010).

Mambolo Mountain Bushveld is characterised by low mountains, lower slopes of the Strydpoort and Makapan mountain ranges, and rocky hills. Slopes are moderate to steep, and very rocky, covered by small trees and shrubs. Rock slabs or domes are sparsely vegetated, and then mostly with a mixture of xerophytic or resurrection plants, with several succulents (Mucina & Rutherford, 2010).

Table 1: Hierarchy of vegetation

Category Description	Classification
Biome	Savanna
Bioregion	Central Bushveld
Vegetation Types	Polokwane Plateau Bushveld, Mamabolo Mountain Bushveld
Status: Polokwane Plateau Bushveld	Not threatened. (Least Concern)
Status: Mamabolo Mountain Bushveld	Not threatened. (Least Concern)

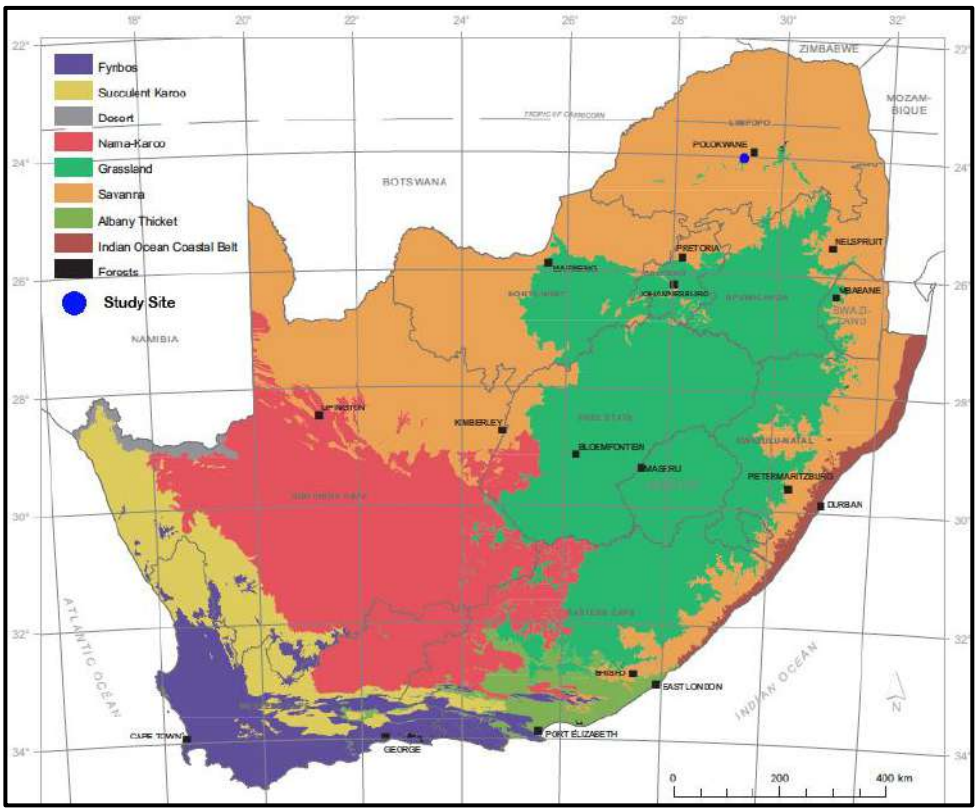


Figure 5: Biomes of South Africa

2.4.2 Vegetation of Ndau 2

The Ndau 2 site is situated within the original extent of Polokwane Plateau Bushveld, which is not a threatened veldtype / ecosystem. The vegetation of the site is a mix of levels of moderately degraded bushveld. There is no pristine veld present on the identified site.

2.5 Fauna

The study area / larger assessment area is within some open bushveld, which is a mix of moderately to mostly degraded. The corridor runs around the foot of a mountainous region near the Witkop Substation, which are ideal habitats for numerous faunal species. Other ideal habitats in the general area are the Bloed and Sand Rivers, as well as the nearby nature reserves. For these reasons it is reasonable to expect that a number of indigenous wild faunal species will be found in the study area, and traversing the study area. This would include a few Red Data Listed (RDL) and other species of conservation concern (SSC). From previous studies and general expertise the number of RDL species permanently present will be medium to low.

Ndau 2 is situated fairly close to the neighbouring Percy Fyfe Nature Reseve, but this will have little difference on the presence and movement of wild fauna in the area and on the study area. There are some introduced wild animals situated within fenced areas in the northern section of the farm (study area).

The study site (which includes the proposed localised site for Ndau 2) is not situated within any hotspots for butterflies (Figure 6), but is within QDS that are hotspots for lizards (Figure 7) and snakes (Figure 8). However, the main focus of habitats in these QDS where SCC lizards and snakes will be found are in the inselbergs, along watercourses, and protected nature reserve areas, where ideal habitat still exists, unlike outside of these reserves. The ‘hotspots’ are for species of conservation concern (SCC).

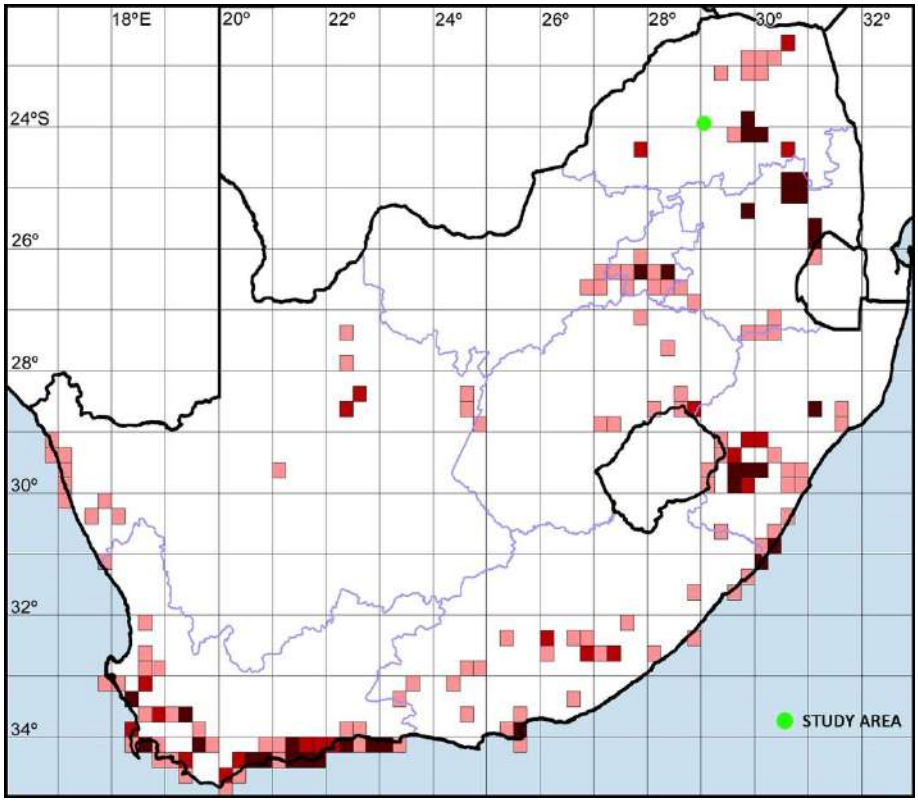


Figure 6: Hotspots for Priority Butterflies

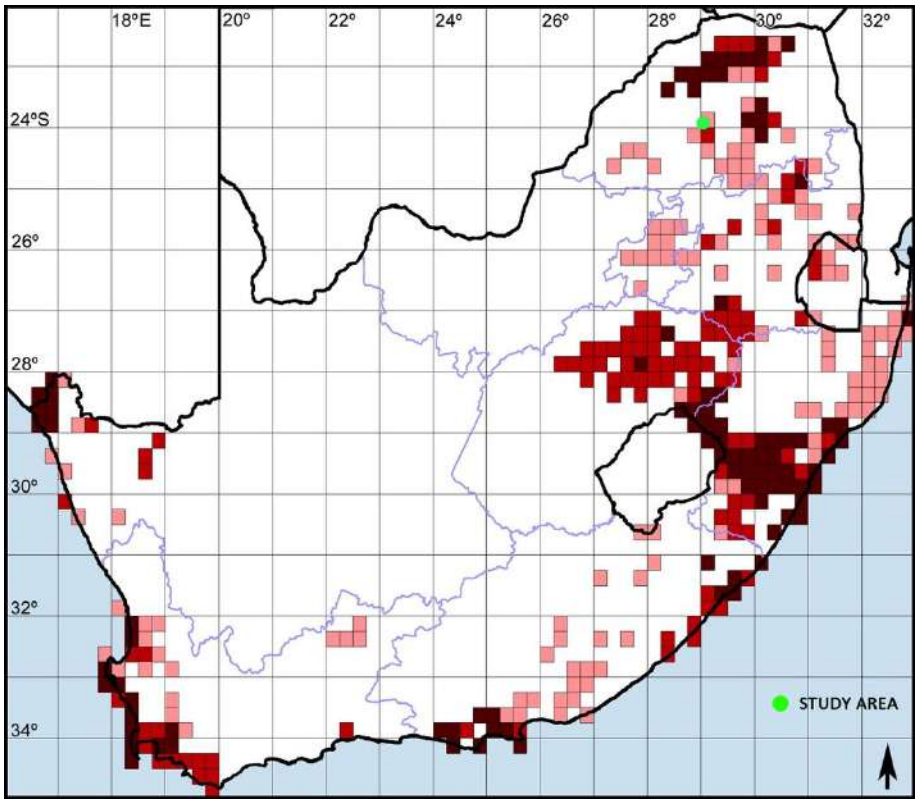


Figure 7: Hotspots for Priority Lizards

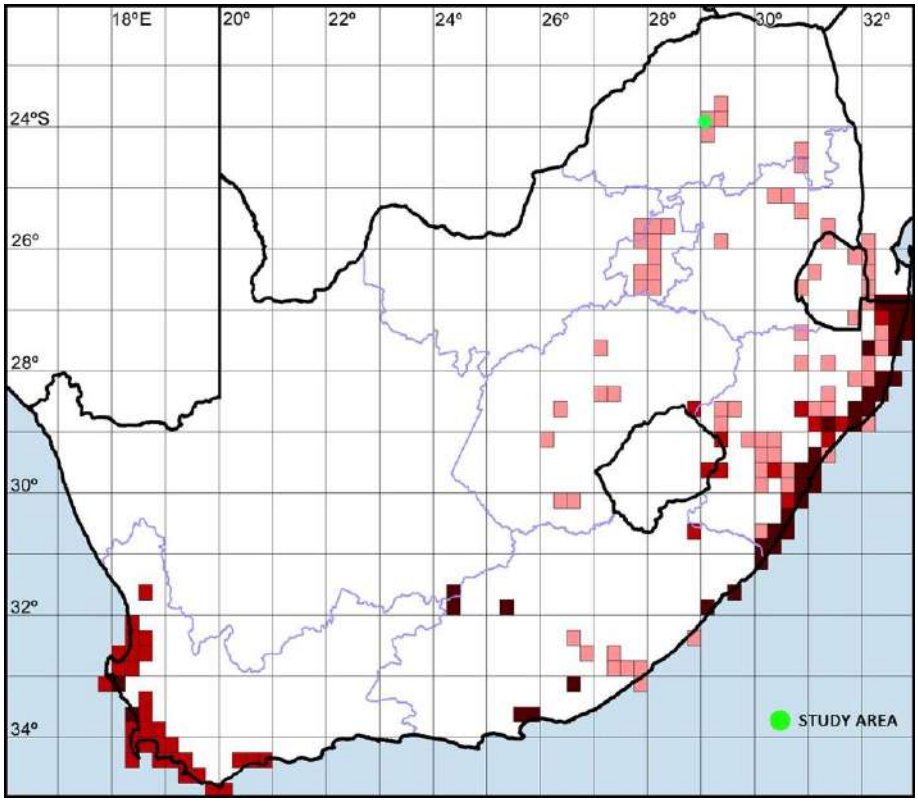


Figure 8: Hotspots for Priority Snakes

2.6 Watercourses

2.6.1 Regional

The main watercourses (perennial rivers and semi-perennial streams) in the study area and surrounding areas are the Sand River and Bloed River (Figure 9). Both watercourses flow is a northwesterly direction with the Bloed River flowing into the Sand River just north of the Town of Polokwane. There is a small seasonal stream that originates in the Witkop Assessment Area and into the Sand River, near the Secondary Corridor. There are a few dry, ephemeral drainage lines scattered throughout the general area. Most of these have very high degrees of associated erosion, which are the pale linear marks seen in the image below (Figure 9). There are numerous small in-stream farm dams scattered throughout the general area and the PV site, as can be seen in the figure below (Figure 10).

The latest national wetland map (Map 5, 2018) is shown below in Figure 11.

Note: This verification report focuses only on the terrestrial ecology and independent studies will be conducted on the aquatic ecology.

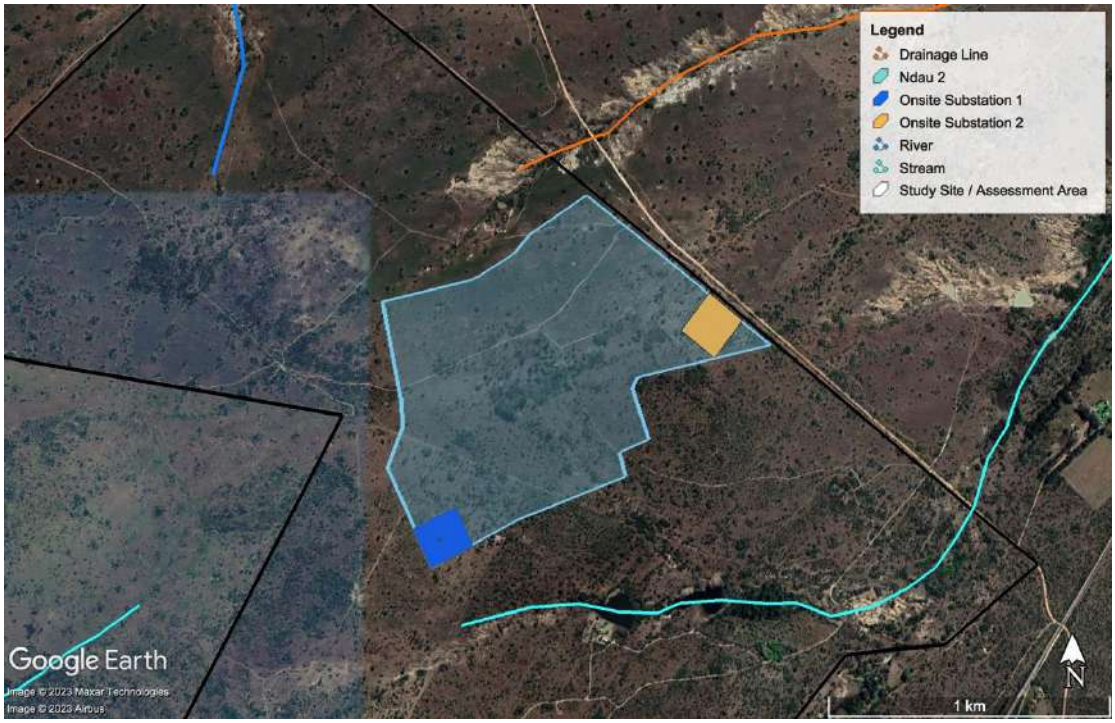


Figure 9: Watercourses

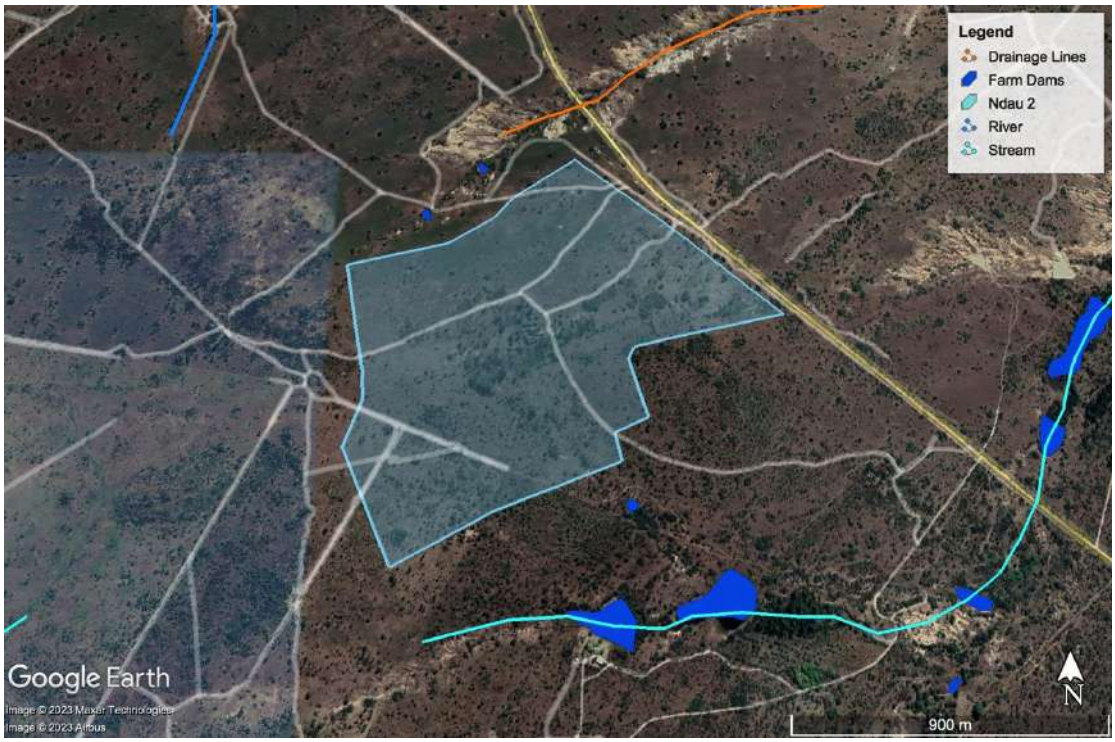


Figure 10: Farm Dams

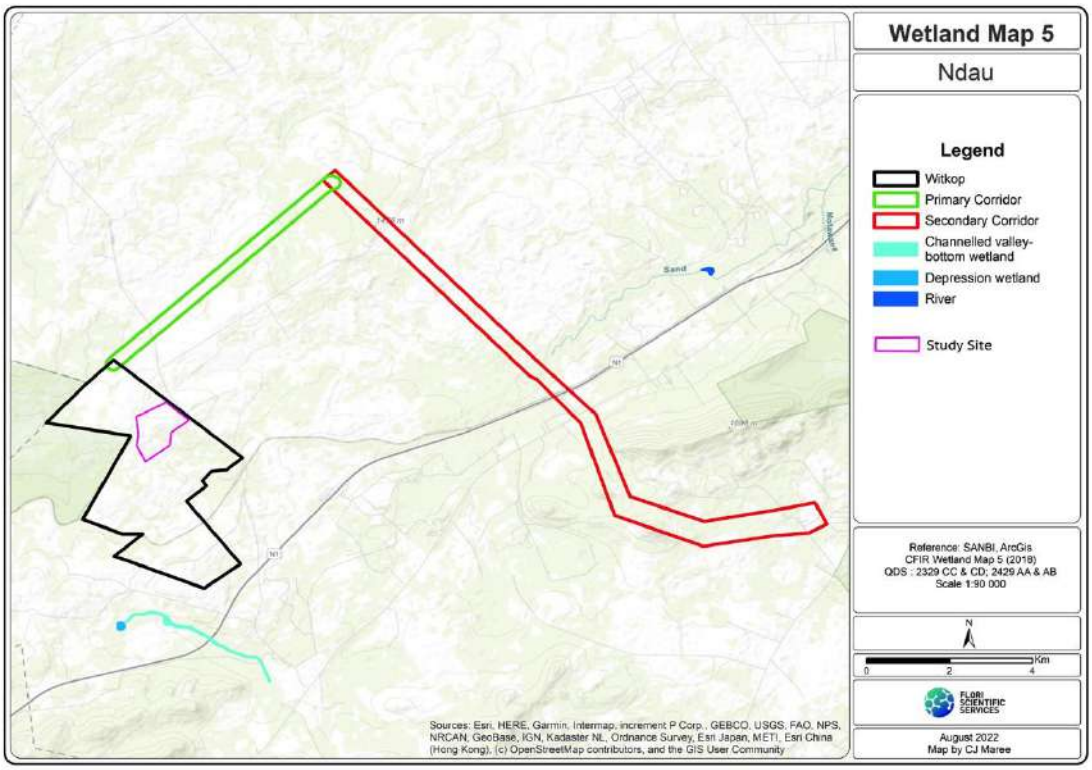


Figure 11: National Wetland Map 5 (2018) (the Ndau 2 site is shown as the 'Study Site')

2.6.2 Ndau 2

No watercourses, including drainage lines and wetlands, are found within the identified site for the Ndau 2 facility (which also includes the alternative substations). The access road between Ndau 2 and the BESS site crosses over an area of drainage that has substantial erosion damage and gully formation.

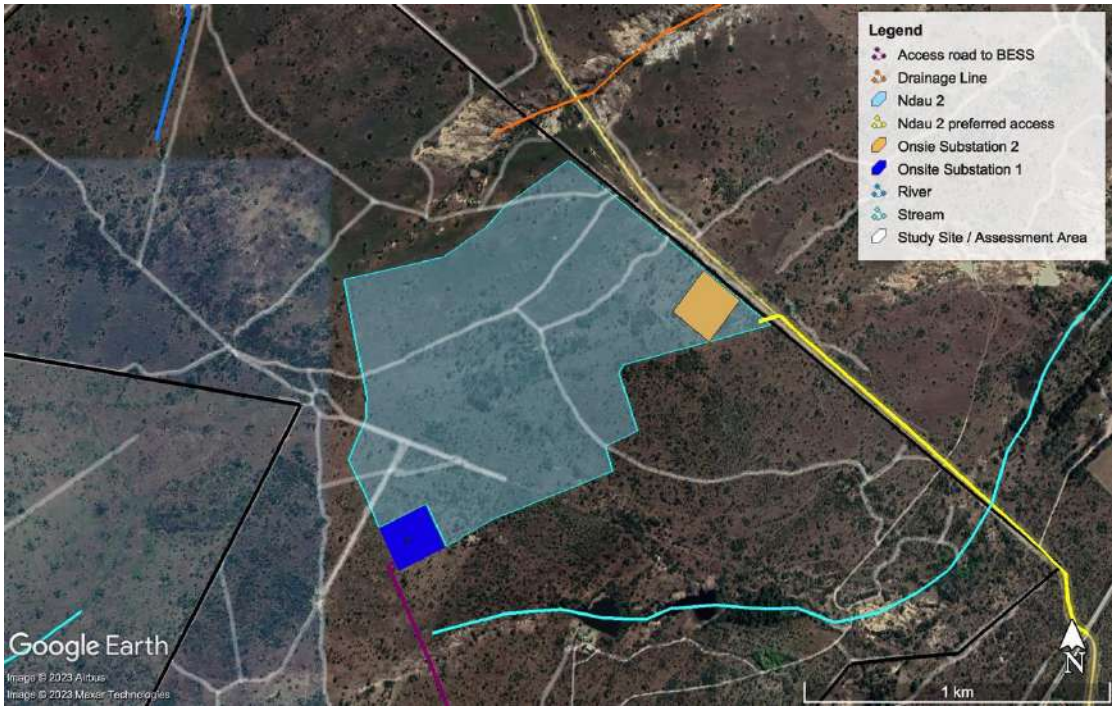


Figure 12: Watercourses in the vicinity of Ndau 2

2.7 Drainage Regions

2.7.1 Regional

South Africa is geographically divided up into a number of naturally occurring Primary Drainage Areas (PDAs) and Quaternary Drainage Areas (QDAs). The different areas are demarcated into Water Management Areas (WMAs) and Catchment Management Agencies (CMAs). As of September 2016, there are now officially nine WMAs, which correspond directly in demarcation to the CMAs (Government Gazette, 16 September 2016. No.1056, pg. 169-172). The study site is within PDA of **A** and the QDAs of **A61F & A71A**.

Most of the study area is within the QDA: A71A, with only a small section along the western side of the Witkop Assessment Area that is within QDA: A61F, and drains westward, while the area in QDA: A71A is draining east / northeast. Table 2, below, is a summary of information for the catchment areas for the site.

Table 2: Summary of Catchment Area information

Level	Category
Primary Drainage Area (PDA)	A
Quaternary Drainage Area (QDA)	A61F & A71A
Water Management Area (WMA) – Previous / Old	Limpopo
Water Management Area (WMA) – New (as of Sept. 2016)	Limpopo (WMA 1)
Sub-Water Management Area	Sand

Catchment Management Agency (CMA)	Limpopo (CMA 1)
Wetland Vegetation Ecoregion	Central Bushveld (Group 6)
River FEPA	No
Fish FEPA	No
Fish FSA	No
Fish Corridor	No
Fish Migratory	No
Priority Quaternary Catchment	No
SWSA (National importance)	No
WSA (Sub-national, provincial importance)	No

2.7.2 Ndau 2

The Ndau 2 site is situated within the QDA of A71A.

The natural surface water drainage for Ndau 2 is north towards the Bloed River. The Bloed River is a tributary of the Sand River and the confluence is approximately 33km northeast of the site. The Sand River eventually flows into the Limpopo River.

2.8 Strategic Water Source Areas

The study site (which includes Ndau 2) is situated within a Strategic Water Source Area of South Africa (SWSA). The entire study area (including the power line corridors, but except for a small section in the northwest corner of the farm area) is within the Upper Sand (Polokwane) Aquifer System. The SWSA is an important groundwater (gw) system in the region.

A Water Source Area (WSA) is a water catchment or aquifer system that either supplies a relatively large volume of water for its size or is the primary source of water for a town, city or industrial activity. Strategic Water Source Areas of South Africa (SWSA) are defined as areas of land that either: (a) supply a large) volume of surface water runoff (i.e. watercourses) in relation to their size and so are considered nationally important; (b) have relatively high groundwater recharge and groundwater forms a nationally important resource; (c) areas that meet both criteria (a) and (b) (WRC, 2019). The SWSA may be important in terms of surface water (sw) and/or groundwater (gw).

According to SANBI, a Strategic Water Source Areas of South Africa (SWSA) are those areas that supply a disproportionate amount of mean annual runoff in relation to the size of the geographical region. These areas are important because they have the potential to contribute significantly to overall water quality and supply, supporting growth and development needs that are often a far distance away. These areas make up 8% of the land area across South Africa, Lesotho and Swaziland, but provide 50% of the water in these countries (SANBI). Kindly refer to the aquatic and geohydrological studies for further information on this aspect.

2.9 National Priority areas

2.9.1 Regional

The study site impacts on some national priority areas (Figure 13). This includes the protected area near the Witkop Substation and the NPAES area of Limpopo Central Bushveld with the Witkop Assessment Area. There are also a few other protected areas in the region, with the Percy Fyfe Provincial Nature Reserve bordering on the west side of the Witkop Assessment Area. The protected areas highlighted in the map below (Figure 13) are still existing / active / designated on the official DFFE government Protected Areas Register (PAR) (egis.environment.gov.za).

The PAR registration in terms of the protected area near Witkop Substation that the power line corridor impacts on (Percy Fyfe Nature Reserve) will need to be verified. Note that in the PAR the Percy Fyfe N.R. is a 'National' reserve, while other datasets show it delineated differently and designated as a 'Local' reserve. However, the verification needs to start off at the PAR. There are numerous existing large power lines already in the proposed corridor and area of the Witkop Substation and the demarcated Percy Fyfe NR.

National priority areas include formal and informal (private) protected areas (nature reserves); important bird areas (IBA); RAMSAR sites; National freshwater ecosystem priority areas (NFEPA) and National protected areas expansion strategy (NPAES) focus areas.

According to the Protected Areas Register, which is maintained by the Department of Department of Forestry, Fisheries and the Environment (DFFE) (https://portal.environment.gov.za), the PV site is not within a protected area.

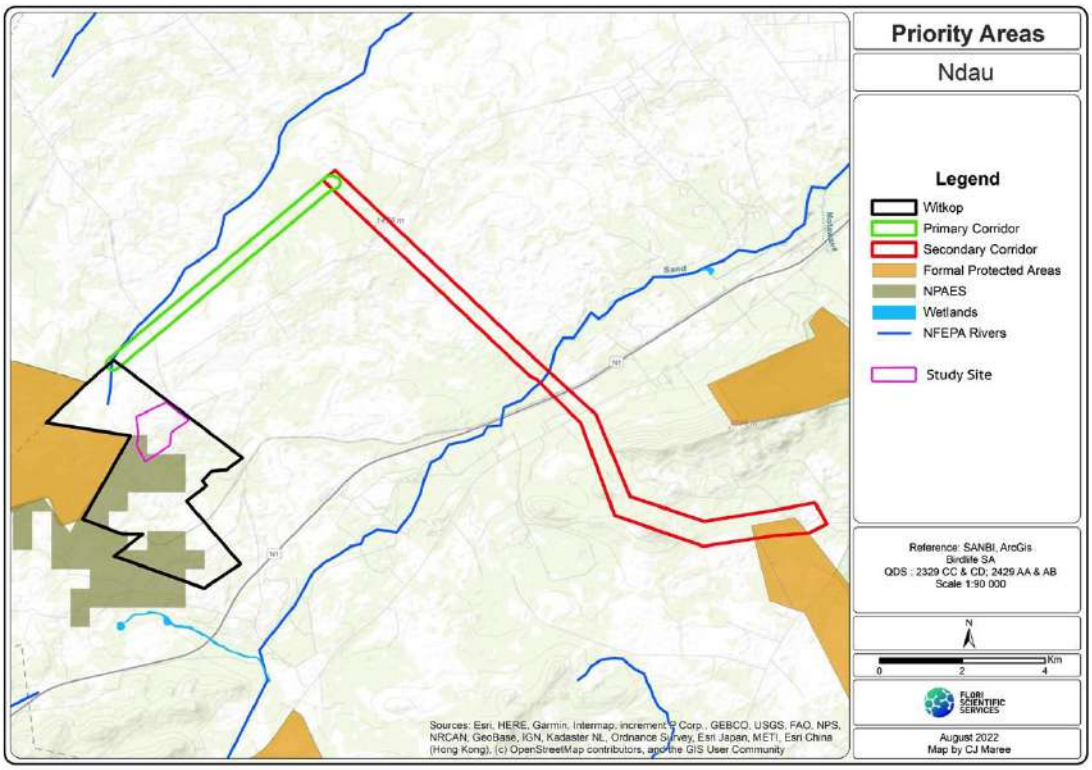


Figure 13: National Priority Areas (the Ndau 2 site is shown as the 'Study Site')

2.9.2 Ndau 2

The Ndau 2 site extends into the Limpopo Central Bushveld NPAES focus area. This is a focus area of bushveld around the existing Percy Fyfe Nature Reserve that was probably initially earmarked for potential or preferred expansion of the nature reserve or to act as buffers to the nature reserve.

2.10 Critical Biodiversity Areas & Ecological Support Areas

2.10.1 Regional

The study site (Ndau 2) is within demarcated Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) (Figure 14). This Area will need to be fully investigated and full ecological reports compiled.

Critical biodiversity areas (CBAs) are terrestrial and aquatic features in the landscape that are critical for retaining biodiversity and supporting continued ecosystem functioning and services (SANBI, 2007). These form the key outputs of a systematic conservation assessment and are the biodiversity sectors inputs into multi-sectoral planning and decision-making tools. CBAs are areas of the landscape that need to be maintained in a natural or near-natural state in order to ensure the continued existence and functioning of species and ecosystems and the delivery of ecosystem services (SANBI).

Ecological Support Areas (ESAs) are mostly natural or semi-natural areas that are often used to buffer CBAs as well as form corridors for the movement of fauna between CBAs and other natural areas.

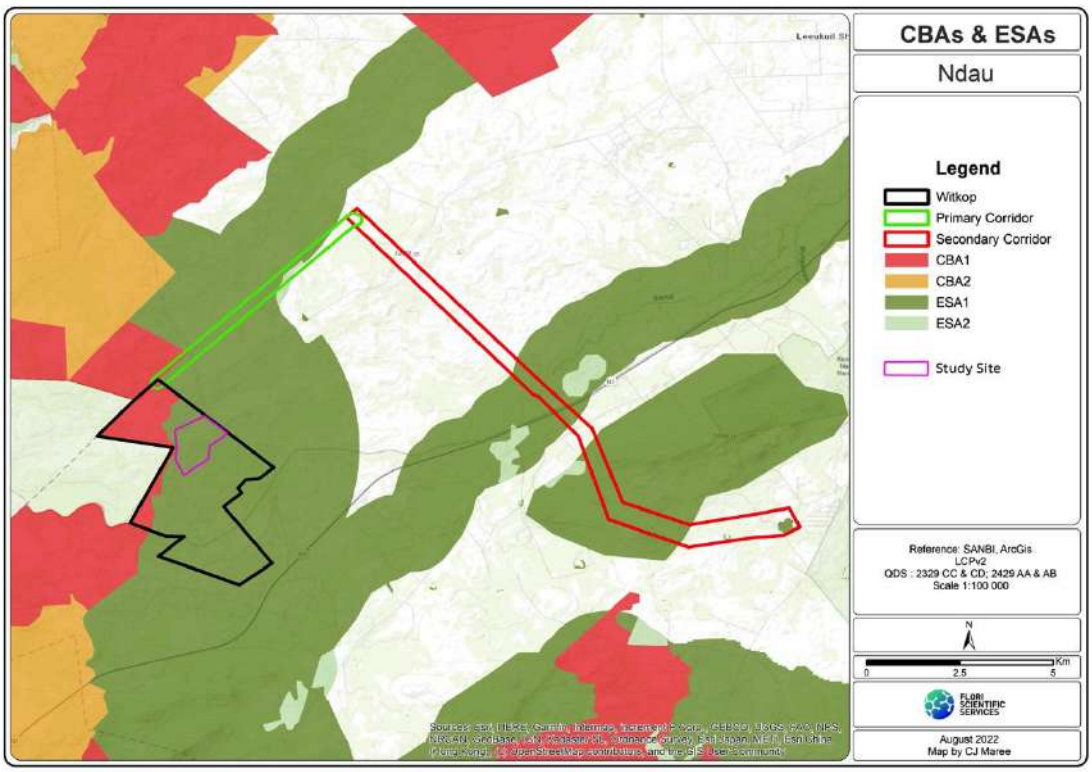


Figure 14: CBAs & ESAs (the Ndau 2 site is shown as the 'Study Site')

2.10.2 Ndau 2

The proposed solar facility site is situated within an ecological support area (ESA 1) that covers most of the study area of the farm (see Figure 14, above). The site is not within any CBAs.

2.11 National Screening Tool

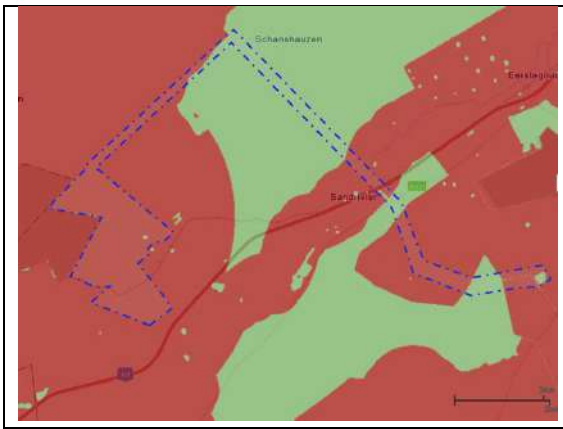
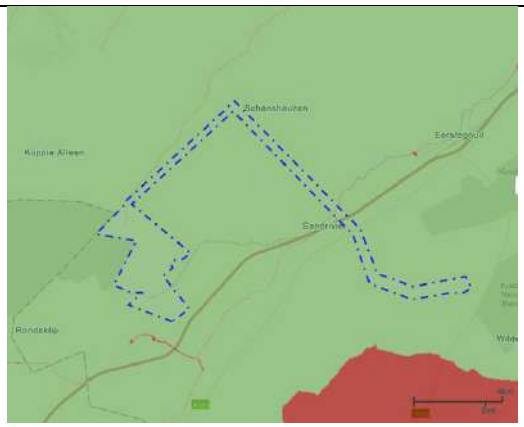
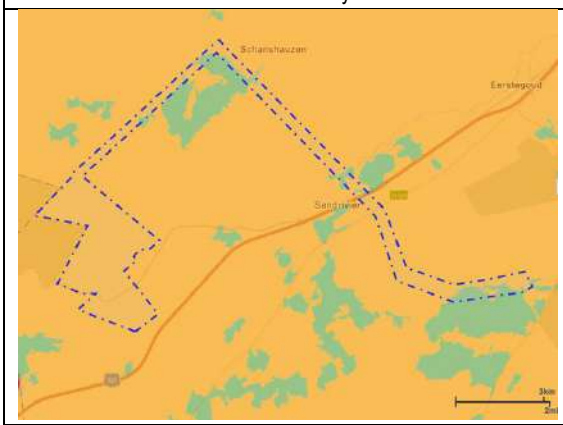
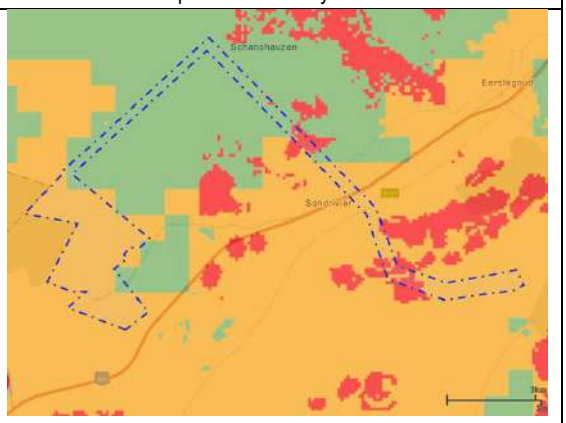
2.11.1 Regional

The DFFE National Screening Tool (www.screening.environment.gov.za) is a desktop assessment and guideline. The assessments of sensitivities according to the screening tool where updated on 5 May 2023 and are as follows:

- Terrestrial Biodiversity Theme Sensitivity: Very High & Low.
- Aquatic Biodiversity Theme Sensitivity: Low.
- Plant Species Theme Sensitivity: Mostly Medium.
- Animal Species Theme Sensitivity: Mostly Medium.

Maps of the screening tool sensitivities for the larger study area are shown below in Table 3. The 'very high' terrestrial biodiversity areas correspond with the demarcated CBAs and ESAs.

Table 3: Screening Tool Maps: Regional

	
Terrestrial Biodiversity Theme	Aquatic Biodiversity Theme
	
Plant Species Theme Sensitivity	Animal Species Theme Sensitivity
Dotted blue line – Study Site. Red – Dark Red – Very High Sensitivity. High Sensitivity. Orange – Medium Sensitivity Green – Low Sensitivity	

2.11.2 Ndau 2

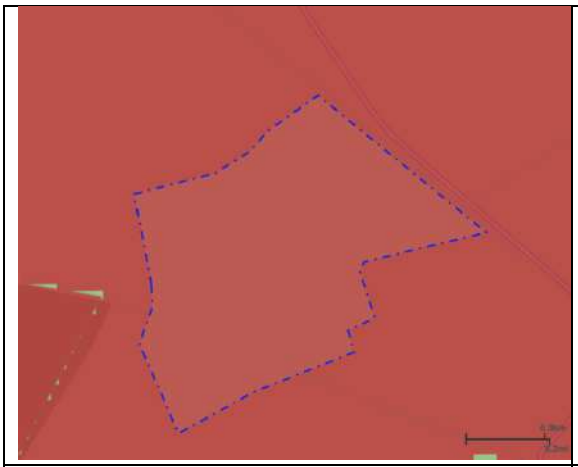
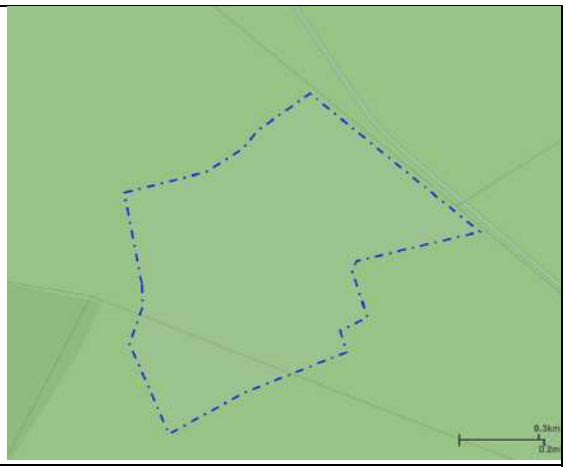
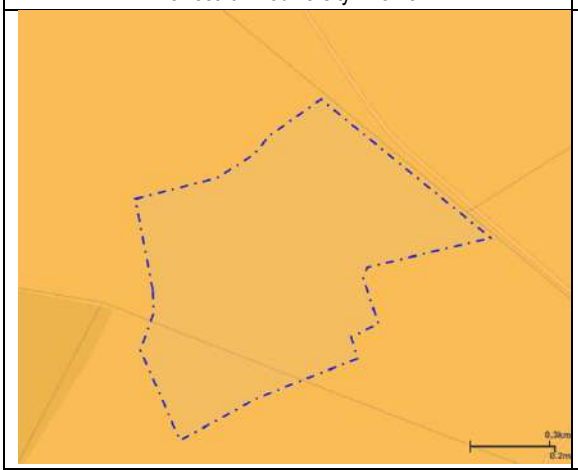
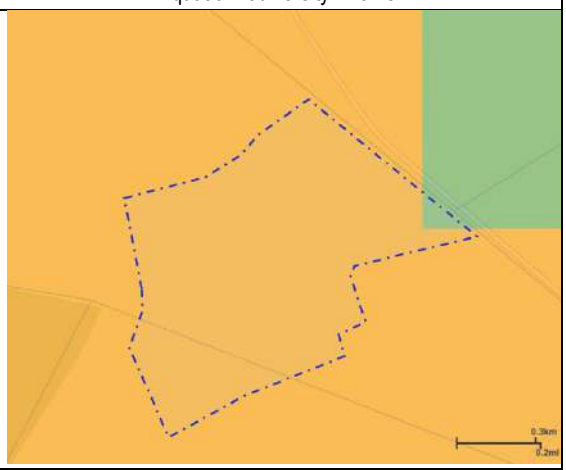
The demarcations and maps below from the national screening tool desktop assessment focus on the footprint of the proposed preferred site for Ndau solar facility 2.

The assessments of sensitivities according to the screening tool are as follows:

- Terrestrial Biodiversity Theme Sensitivity: Very High.
- Aquatic Biodiversity Theme Sensitivity: Low.
- Plant Species Theme Sensitivity: Medium.
- Animal Species Theme Sensitivity: Medium.

During site investigations the plant, animal and aquatic sensitivities were verified (confirmed) as shown by the national screening tool assessment. The sensitivity of the terrestrial biodiversity is disputed. The only reason given in the screening tool for a 'very high' sensitivity rating is because it is within an ESA. However, the tool fails to take into consideration the levels of degradation and farming activities. The terrestrial sensitivity is deemed to be 'Medium'.

Table 4: Screening Tool Maps: Ndau 2

	
Terrestrial Biodiversity Theme	Aquatic Biodiversity Theme
	
Plant Species Theme Sensitivity	Animal Species Theme Sensitivity
Dotted blue line: Ndau 2. Red – Very High Sensitivity; Orange – Medium Sensitivity; Green – Low Sensitivity	

3 FINDINGS

3.1 Background to Site Verification

The focus of the site verification process is to conduct a site visit to verify (confirm) or dispute the preliminary desktop screening assessment findings / conclusions, with special attention given to the findings of the national screening tool. Site investigations were conducted on 21 November 2022 and the findings are as follows. Desktop screening tool was initially accessed in November 2022 and then again in May 2023. Important conclusions arising from the desktop screening that were also verified or disputed are summarised in the table below (Table 5)

Table 5: Desktop Screening: Entire Study Site

Issues	Present		Description
	Total Study Site/Area	Ndau 2	
Threatened Ecosystem	No	No	Polokwane Plateau Bushveld & Mamabolo Mountain Bushveld present, both which are not threatened veldtypes / ecosystems
CBA	Yes	No	Western section of Witkop Assessment Area but not on Ndau 2.
ESA	Yes	Yes	Most of the study area
Priority Areas	Yes	Yes	Protected areas & NPAES area in the Witkop Assessment Area. This includes private reserves and adjacent formal reserves (Percy Fyfe N.R.)
Watercourses	Yes	No	Small streams / drainage lines. Potential wetlands associated with the farm dams on site.
SWSA	Yes	Yes	Upper Sand (Polokwane) Aquifer for groundwater.
RDL Floral Species	Unlikely	Unlikely	The area and thornveld do not have a high potential for RDL floral species. However this is not to say there are none present.
RDL Faunal Species	Yes	Possible	It is likely that some RDL and SCC species will be routinely found in the area. The likelihood is increased with the presence of the nearby Percy Fyfe Nature Reserve.
Sensitive Habitats	Yes	No	Watercourses, rocky outcrops / hills in the north of the larger study area.
Fatal Flaws	No	No	During the desktop screening and site verification process no obvious 'fatal flaws' were encountered.
Screening Tool: Terrestrial Biodiversity Sensitivity	Very High	Very High	Within a CBA, NPAES, there are small watercourses, and it borders on the Percy Fyfe Nature Reserve
Screening Tool: Aquatic Biodiversity	Low	Low	
Screening Tool: Plants	Medium	Medium	
Screening Tool: Animals	Medium	Medium	

3.2 General

During the site visit all areas of the study site, including the two potential power line corridors / servitudes were investigated. The overall terrestrial biodiversity sensitivity of the study site appears to be a mix of 'Medium' and 'Low' and not 'Very High' as per the screening tool assessment. Some of the regional farm assessed for the PV Solar Cluster is within a demarcated CBA. However, it is not clear why this area is a CBA as the general vegetation / veldtype is not threatened and there are no special, unusual or unique habitats or plant communities in this area. Even the nearby Percy Fyfe Nature Reserve should not be demarcated as a CBA. The power line corridors are for the most part degraded and have a sensitivity or 'Low'. Most of the Primary Corridor has a sensitivity of 'Medium' and this is because it is within an ESA. The preferred site for Ndau 2 is not within a CBA, but is within an ESA.

3.3 Witkop Assessment Area (i.e., larger Study Site/Area)

The Witkop Assessment area consists of two main farm areas. The southern one has a higher level of disturbance and degradation due to years of farming practices, which includes grazing of livestock and cultivated farmlands. The northern farm has lower levels of disturbance and degradation. At present the northern farm / area is less actively farmed.

The combined / overall terrestrial biodiversity of the Witkop Assessment Area was found to be mostly of 'Medium' sensitivity with a small section of 'Low' sensitivity in the south where there are old and active cultivated farmlands and grazing. During site investigations no areas of 'very high' or 'high' sensitivity were observed in terms of terrestrial ecology.

3.4 Power Line Corridors

The Secondary Power Line Corridor consists mostly of existing power line corridors and the corridor is mostly that of 'Low' sensitivity, which is to be expected. The Primary Corridor is mostly a sensitivity of 'Medium' as it has fewer disturbances, but is still not 'very high' or 'high' as there are no unique or sensitive habitats present.

3.5 Ground-truthing of Preliminary Screening Assessment

During the site verification an overall picture of the study site was obtained. A more detailed assessment of fauna and flora is still to proceed as detailed impact assessments. However, no unique or highly sensitive terrestrial habitats were observed in terms of floral communities and RDL species and in terms of ideal habitats for faunal RDL and SCC species. The sensitivity for the faunal component of the biodiversity was found to be higher than that of the floral component. During ground-truthing the overall sensitivity of the animal and plant components were both verified to be as according to the screening tool assessment. That is, both have a sensitivity of 'Medium'.

The plant and animal themes form the bulk of the biodiversity component, which both have a sensitivity of 'Medium'. Other attributes such as unique plant communities, presence of RDL species, ideal and unique habitats were also considered and investigated. Few of these are present. Therefore, it is the opinion of the Specialist conducting the site verification that the **overall sensitivity of the study site in terms of Terrestrial Biodiversity is 'Medium' with sections of 'Low'.** That is, the site investigations and 'ground-truthing' disputes the screening tool assessment that the Terrestrial Theme has a sensitivity of 'very high'. In reality the sensitivity is 'Medium', with some areas of 'Low' and possibly some area / habitats of 'high', which will mostly be aquatic in nature and fall outside of the scope of this report. A site verification sensitivity map for the total study site is as shown below (Figure 15).

The sensitivity map for Ndau 2 is shown below in Figure 16. The sensitivities of the Ndau 2 site verification as compared to the desktop screening assessment are shown in the table below (Table 6). Some photographs of the study area are shown below in Table 7.

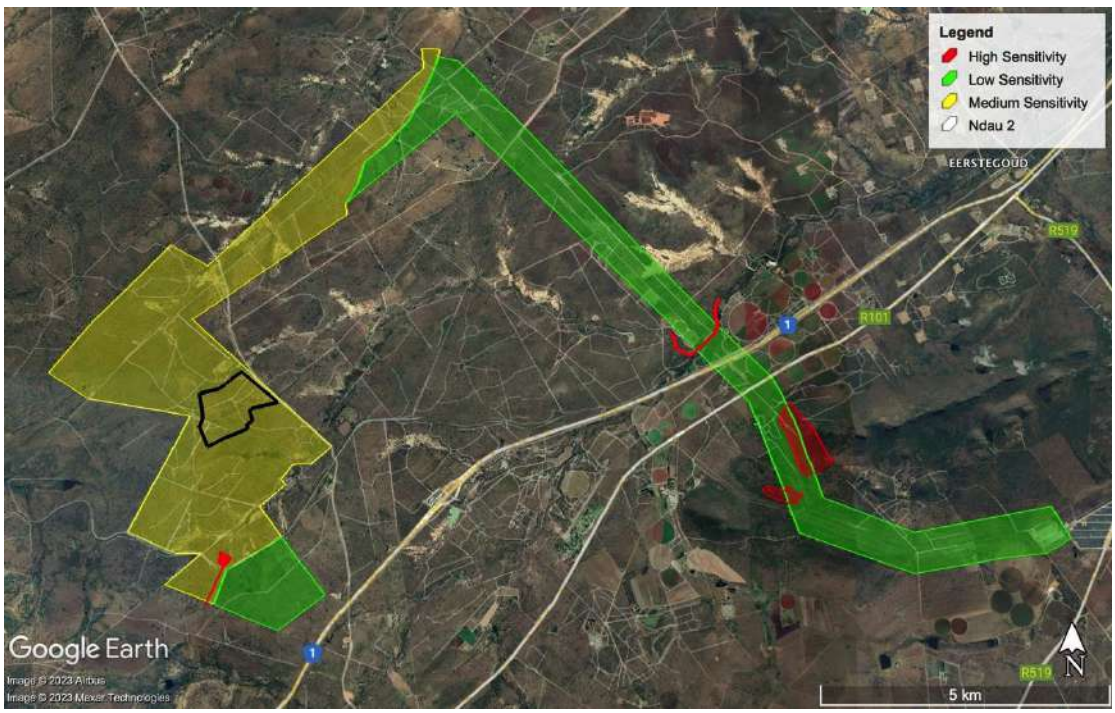


Figure 15: Sensitivity Map as per the Site Verification for the total study area

Figure 16: Sensitivity Map: Ndau 2

Table 6: Ndau 2 Site Verification Sensitivities compared to Screening Tool Sensitivities

Theme	Site Verification	Screening Tool
Terrestrial Biodiversity	**Medium & Low**	Very High
Plant Species	Medium	Medium
Animal Species	Medium	Medium

Table 7: Photographs

	Study Area showing moderately degraded Polokwane Plateau Busvheld. A mix of broad-leaved and fine-leaved trees growing on a termataria (old termite mound)

	Zebra along with some other game are kept on the one section of the study area.
	Existing large power line in the servitudes of the study site. These servitudes are moderately to highly degraded bushveld.
	An *Aloe marlotti* found on site. The aloe is a Species of Conservation Concern (SCC). These will need to be lifted and relocated if found in the development footprint. There are however very few floral SCC found on the study site

	Open / cleared bushveld areas for farmlands (cultivation and /or grazing)
	*Hypoxis hemerocallidea* is another SCC found on the study site. There are a number of these plants scattered throughout the study area.
	Transformed and altered areas within the study site that have been cleared and farmed. The green areas in the background is a shallow farm dam.

	Dwellings along with regularly mowed lawns on the study site
	Open moderately degraded Polokwane Plateau Bushveld. The destruction by too frequent wild fires is evident on the site.
	Open bushveld with an element of Sandy Bushveld.

	Active burrow most likely that of a warthog. The older or abandoned burrows are utilised by other small wild animals.

4 CONCLUSIONS

4.1 Conclusions

The conclusions of the site verification are as follows:

- The study site is within the original extent of Polokwane Plateau Bushveld, with a small section of the secondary power line servitude in Mamabolo Mountain Bushveld. Both veldtypes are not threatened veldtypes / ecosystems and have a status of 'Least Concern'. Ndau 2 is only within Polokwane Plateau Bushveld, which is not a threatened veldtype / ecosystem.
- Much of the natural environment on larger assessment area and the specific project site (Ndau 2) is moderately degraded to altered and transformed. Erosion is also a problem in the area, especially along or near to existing watercourses.
- The Bloed River, Sand River and a few small seasonal streams / drainage lines, and in-stream dram dams are present. However, there are no watercourses directly within the demarcated preferred site area for Ndau 2.
- Sections of the study area are within demarcated CBA and ESA areas. The specific site of Ndau 2 is not within any CBAs, but is within an ESA.
- The study site is within the priority areas of NPAES (Limpopo Central Bushveld) and demarcated nature reserves. It would appear that the section of the Percy Fyfe Nature Reserve that the Secondary Corridor (near the Witkop Substation) impacts on is not a nature reserve anymore. However, the nature reserve is still designated as a reserve in this area in the official PAR of the DFFE. The status of this reserve will need to be verified.
- There are areas of the demarcated Limpopo Central Bushveld NPAES focus area that is within the site area of Ndau 2.
- The study area (including Ndau 2) is within a strategic water source area of South Africa (SWSA).
- During the Ndau 2 site investigations and verification the following was found, compared to that of the screening tool assessment:
    - The plant and animal species themes were verified to be according to the screening tool.
    - The terrestrial biodiversity was found to be 'Medium' with some sections 'Low', and not 'Very High' as per the desktop screening tool assessment.
- The study site is not within any hotspots for butterflies. It is also not within an Important Bird Area (IBA). It is within a larger snake and lizard hotspot.
- No fatal flaws were encountered during the site verification.
- Full specialist studies (Terrestrial Ecology and Aquatic Ecology) will be required and which must include impact assessments and mitigating measures to reduce these impacts on the

natural environment. If power lines are included in the larger project then these will include a basic avifaunal impact assessment at minimum.

5 APPENDICES

5.1 Veldtypes

Below is a list of dominant floral species that characterise the veldtypes in which the study area is found as described by Mucina & Rutherford (2010, and updates).

Polokwane Plateau Bushveld

Small Trees: *Acacia caffra* (d), *A. permixta* (d), *A. rehmanniana* (d), *A. karroo*, *A. tortilis* subsp. *heteracantha*, *Combretum molle*, *Ormocarpum kirkii*, *Ziziphus mucronata*. Succulent Tree: *Aloe marlothii* subsp. *marlothii*. Tall Shrubs: *Acacia hebeclada* subsp. *hebeclada* (d), *Gymnosporia senegal- ensis* (d), *Combretum hereroense*, *Diospyros lycioides* subsp. *sericea*, *Euclea crispa* subsp. *crispa*, *Heteromorpha arborescens* var. *abyssinica*, *Lippia javanica*, *Rhus pyroides* var. *pyroides*, *Tephrosia rhodesica*, *Triumfetta pilosa* var. *tomentosa*. Low Shrubs: *Anthospermum rigidum* subsp. *rigidum*, *Gymnosporia glaucophylla*, *Hirpicium bechuanense*, *Lantana rugosa*, *Senecio burchellii*, *Sida rhombifolia*, *Solanum panduriforme*. Succulent Shrub: *Aloe cryptopoda*. Woody Climber: *Asparagus africa- nus*. Herbaceous Climbers: *Momordica balsamina*, *Rubia peti- olaris*. Graminoids: *Aristida diffusa* (d), *Brachiaria nigropedata* (d), *Digitaria eriantha* subsp. *eriantha* (d), *Eragrostis curvula* (d), *Themeda triandra* (d), *Aristida congesta*, *Cymbopogon cae- sius*, *Cynodon dactylon*, *Digitaria diagonalis*, *Diheteropogon amplectens*, *Elionurus muticus*, *Eragrostis gummiflua*, *E. race- mosa*, *E. superba*, *Eustachys paspaloides*, *Panicum maximum, Pogonarthria squarrosa, Sporobolus africanus. Herbs: Felicia mossamedensis, Hermbstaedtia odorata, Pollichia cam- pestris. Geophytic Herbs: Eulophia petersii, Hypoxis hemerocallidea. Succulent Herb: Aloe greatheadii var. greatheadii.*
(d) = Dominant

Mambolo Mountain Bushveld

Tall Tree: *Sclerocarya birrea* subsp. *caffra*. Small Trees: *Combretum molle* (d), *Croton gratissimus* (d), *Heteropyxis natalensis* (d), *Acacia caffra*, *A. davyi*, *A. gerrardii*, *A. nilotica*, *Berchemia zeyheri*, *Cussonia natalensis*, *C. trans- vaalensis*, *Dombeya rotundifolia*, *Erythrina lysistemon*, *Lannea discolor*, *Maytenus undata*, *Pappea capensis*, *Rhus leptodic- tya*, *Schotia brachypetala*. Succulent Trees: *Euphorbia cooperi* (d), *Aloe marlothii* subsp. *marlothii*, *Euphorbia ingens*. Tall Shrubs: *Clerodendrum glabrum* (d), *Elephantorrhiza burkei* (d), *Acokanthera oppositifolia*, *A. rotundata*, *Buddleja saligna*, *Canthium mundianum*, *Carissa edulis*, *Ehretia obtusifolia*, *Euclea crispa* subsp. *crispa* (short, small-leaved form), *Grewia occidentalis*, *Hibiscus calyphyllus*, *Olea europaea* subsp. *afri- cana*, *Pouzolzia mixta*, *Rhus pentheri*, *R. rehmanniana*, *Scutia myrtina*, *Tarchonanthus parvicapitulatus*. Low Shrubs: *Diospyros*

lycioides subsp. *nitens* (d), *Grewia vernicosa* (d), *Barleria rotun- difolia*, *Gossypium herbaceum* subsp. *africanum*, *Gymnosporia glaucophylla*, *Hermannia floribunda*, *Heteromorpha stenophylla* var. *transvaalensis*, *Lantana rugosa*, *Myrothamnus flabellifolius*, *Plinthus rehmannii*. Succulent Shrubs: *Kalanchoe sexangularis* (d), *Kleinia longiflora* (d), *Aloe arborescens*, *Cotyledon barbeyi*, *C. orbiculata* var. *orbiculata*, *Kalanchoe paniculata*, *K. rotundifo- lia*, *Senecio barbertonicus*, *Tetradenia riparia*. Woody Climbers: *Asparagus buchananii* (d), *Jasminum multipartitum* (d), *Acacia ataxacantha*, *Cryptolepis cryptolepidioides*. Herbaceous Climber: *Pentarrhinum insipidum*. Graminoids: *Cymbopogon caesius* (d), *Digitaria eriantha* subsp. *eriantha* (d), *Heteropogon contor- tus* (d), *Aristida congesta*, *A. diffusa*, *Enneapogon scoparius*, *Eragrostis rigidior*, *Tricholaena monachne*, *Triraphis andropogo- noides*. Herb: *Vahlia capensis* subsp. *vulgaris*. Geophytic Herbs: *Boophone disticha*, *Drimia altissima*, *D. robusta*, *Eulophia petersii*. Succulent Herbs: *Aloe greatheadii* var. *greatheadii* (d), *Aeollanthus rehmannii*, *Avonia rhodesica*, *Crassula swaziensis*, *Plectranthus grandidentatus*, *P. hadiensis*.

Endemic Taxa Succulent Shrubs: *Euphorbia clivicola*, *Khadia media*.

(d) = Dominant.

5.2 Fatal Flaw

A potential fatal flaw from a biodiversity perspective is seen as an impact that could have a "no-go" implication for the project. A 'no-go' situation could arise if residual negative impacts (i.e. those impacts that still remain after implementation of all practical mitigatory procedures/actions) associated with the proposed project were to:

a) Conflict with international conventions, treaties or protocols (e.g. irreversible impact on a World Heritage Site or Ramsar Site);

b) Conflict with relevant laws (e.g. clearly inconsistent with NEMA principles, or regulations in terms of the Biodiversity Act, etc.);

c) Make it impossible to meet national or regional biodiversity conservation objectives or targets in terms of the National Biodiversity Strategy and Action Plan or other relevant plans and strategies (e.g. transformation of a 'critically endangered' ecosystem);

d) Lead to loss of areas protected for biodiversity conservation;

e) Lead to the loss of fixed, or the sole option for flexible, national or regional corridors for persistence of ecological processes;

f) Result in loss of ecosystem services that would have a significant negative effect on lives (e.g. loss of a wetland on which local communities rely for water);

g) Exceed legislated standards (e.g. water quality), resulting in the necessary licences/approvals not being issued by the authorities (e.g. WULA);

h) Be considered by the majority of key stakeholders to be unacceptable in terms of biodiversity value or cultural ecosystem services.

6 REFERENCES

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