

# **NYALA 1 SOLAR PV**

**Terrestrial Ecological Site Sensitivity Verification  
for the Proposed ABO Nyala Solar Energy Facility 1 and associated  
infrastructure near Northam in the Thabazimbi Local Municipality,  
Waterberg District Municipality,  
Limpopo Province**

**STUDY & REPORT BY:** FLORI SCIENTIFIC SERVICES cc

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**JANUARY 2023**

## **EXECUTIVE SUMMARY**

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### **Project Overview and Location**

The project is the proposed development and establishment of a Solar PV Facility and associated infrastructure, namely Nyala 1. The project site and study area are situated in the area just north of the small Town of Northam in the Thabazimbi Local Municipality, Waterberg District Municipality, Limpopo Province. Two potential areas were assessed for PV development along with two potential power line corridors between the Solar PV Facilities and the existing substations. The Nyala Project cluster comprises of three proposed solar facilities, namely Nyala Solar Energy Facility 1, 2 and 3, 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 sensitivity verification reports.

The Applicant proposes the development of three solar facilities within the larger assessed study area as follows:

- Nyala 1, a photovoltaic (PV) solar energy generation facility, of up to 65 MWac in capacity, and associated infrastructure on Portion 2 of the farm Gouvernements Plaats No. 417, situated 3.8 km north-east of Northam (which is the focus of this report);
- Nyala 2, a photovoltaic (PV) solar energy generation facility, of up to 120MWac in capacity, and associated infrastructure on the Remaining Extent of the farm De Deur No. 419 and Portion 2 of the farm De Deur No. 419, situated 4.2 km north-east of Northam; and
- Nyala 3, a photovoltaic (PV) solar energy generation facility, of up to 55MWac in capacity, and associated infrastructure on the Remaining Extent of the farm Leeuwkopje No. 415, situated 1.5 km north of Northam.

Flori Scientific Services was appointed to undertake the terrestrial ecological desktop screening assessments and site sensitivity verification for the Nyala Cluster of projects. Site investigations for the site verification were conducted on 22 November 2022.

**Note: This report addresses the regional environment of the assessment area and specifically the Nyala 1 Solar PV site.**

### **Conclusions**

The conclusions of the site verification are as follows:

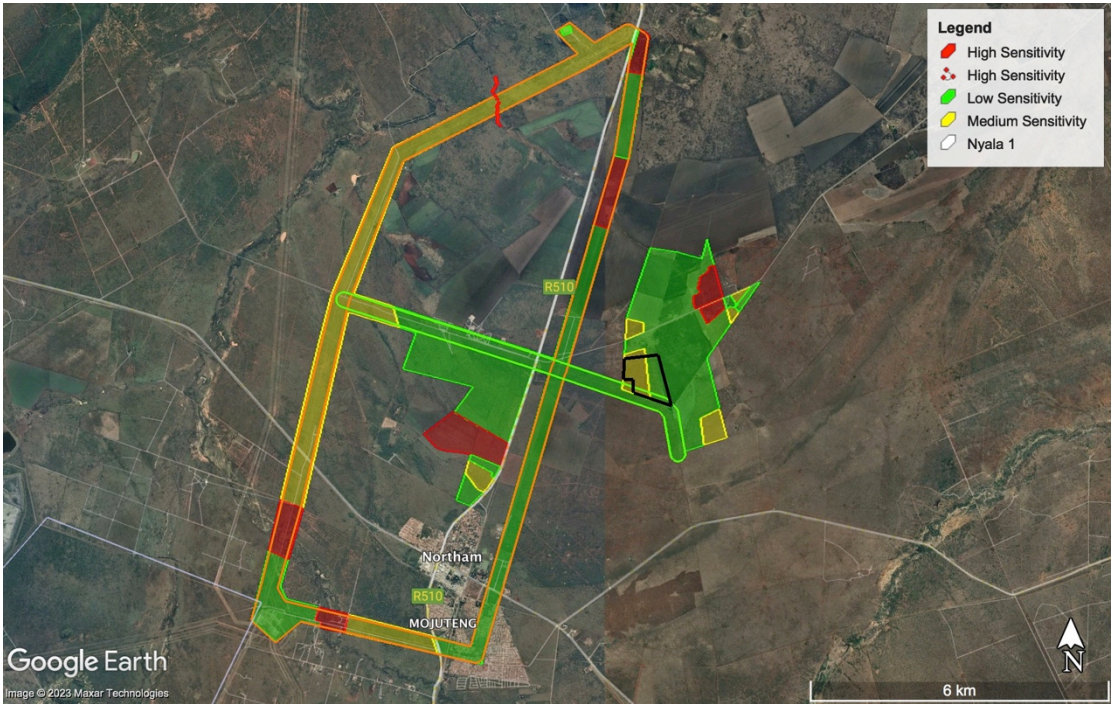
- The Study Area and Nyala 1 site are within the original extent of Dwaalboom Thornveld, which is not a threatened veldtype / ecosystem.

- The Study Area and Nyala 1 site are within an Important Bird Area (IBA). This is not a 'fatal flaw' but will require an avifaunal assessment., especially in terms of the potential power lines.-
- There are private nature reserves that lie within a 5km radius of the project site (Nylala 1).
- The Nyala 1 site is not within a critical biodiversity area (CBA) or an ecological support area (ESA).
- During site investigations the national screening tool assessments for the preferred site for Nyala 1, was verified and confirmed. The overall terrestrial biodiversity sensitivity is 'Low'.
- The study site is not within any hotspots for butterflies, lizards or snakes.
- During the site sensitivity verification, no fatal flaws were observed.
- Full specialist studies will be required due to the presence of CBAs, ESAs, watercourses, NPAES areas.
- Verification (including delineation) is required as to the status of the Leeukopje Private Nature Reserve.
- During the site investigations and verification, the following was found for the entire study area, compared to that of the screening tool assessment:

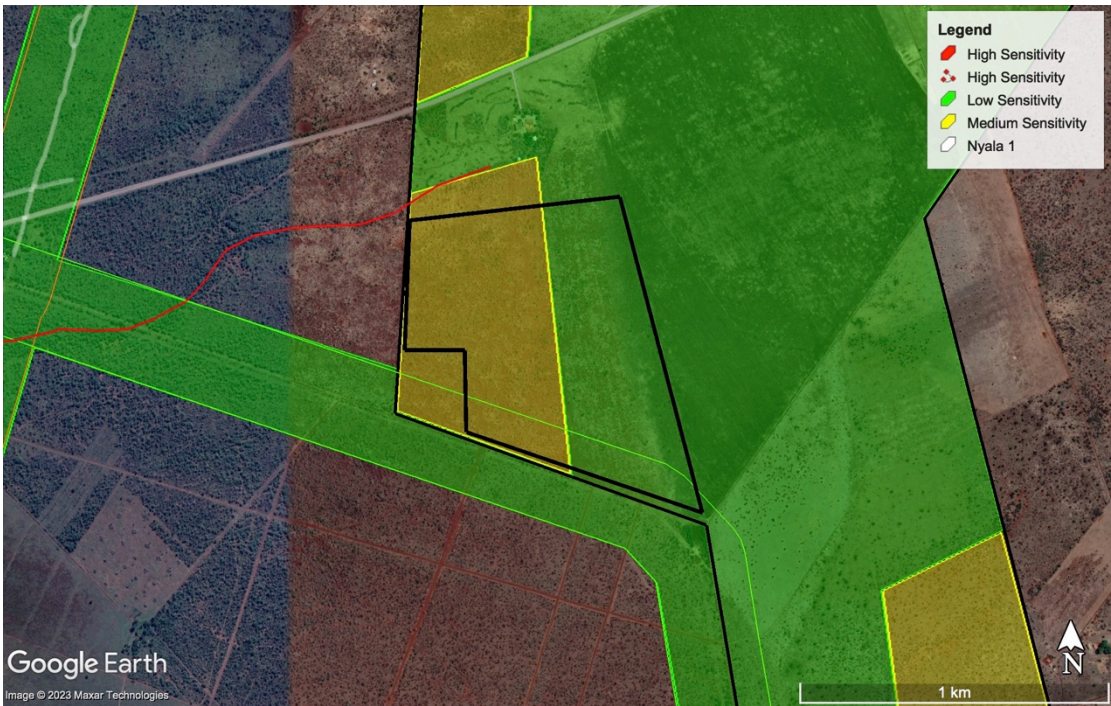
Theme	Site Verification	Screening Tool
Terrestrial Biodiversity	<b>Medium &amp; Low</b>	Very High & Low
Aquatic Biodiversity	Not assessed	Low
Plant Species	Low (small patches of medium & high)	Low
Animal Species	Medium	Medium

- The plant and animal species themes were verified to be according to the screening tool.
- The terrestrial biodiversity was found to be 'Medium' and not 'Very High'. The 'low' sensitivities were verified.
- The proposed project should be allowed to proceed to the next phase, but with caution and further detailed studies.
- Full environmental specialist studies (Terrestrial Ecology and Aquatic Ecology) are going to be required which must include impact assessments and mitigating measures to reduce these impacts on the natural environment.

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



Sensitivity Map: Entire Study Area including potential Power Line Corridors



Sensitivity Map: Nyala 1



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## LIST OF ACRONYMS

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



## EXPERTISE & DECLARATION

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### 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 (2<sup>nd</sup> 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 specialist 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**

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### **1.1 Project Overview**

The project is the proposed development and establishment of a Solar PV Facility, namely Nyala 1, along with associated infrastructure. The project site and study area are situated in the area just north of the small Town of Northam in the Thabazimbi Local Municipality, Waterberg District Municipality, Limpopo Province. Two potential areas for PV development were assessed along with two potential power line corridors between the Solar PV Facilities and the existing substations. The Nyala Project cluster comprises of three proposed solar facilities, namely Nyala Solar Facility 1, 2 and 3, 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 three solar facilities within the larger assessed study area as follows:

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Flori Scientific Services was appointed to undertake the terrestrial ecological desktop screening assessments and site sensitivity verification for the Nyala Cluster of projects. Site investigations for the site verification were conducted on 22 November 2022.

**Note: This report addresses the regional environment of the assessment area and specifically the Nyala 1 Solar PV site.**

### **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 National screening tool must be confirmed by the undertaking of 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 site sensitivity report does not replace a full specialist report or verification 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.

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](http://www.bgis.sanbi.org)).
- Environmental Screening Tool – DFFE ([www.environment.gov.za](http://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 22 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 desktop screening assessment was conducted using data sets and satellite imagery for South Africa and the relevant 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 22 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

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### 2.1 Study Site Location

The two assessment areas (Study Area) for the proposed solar PV facilities are situated in the area just north of the small Town of Northam in the Thabazimbi Local Municipality, Waterberg District Municipality, Limpopo Province. The Study Area (area of assessment) included two assessment areas (Farms De Deur and Leeukopje) and two potential power line corridors (Primary and Secondary). The two existing Eskom Substations within the assessment corridors are: Phoko Substation in the north, and Spitskop Substation in the south. Leeukopje is west of the R510 and De Deur east (Figure 1, **Error! Reference source not found.**).

The proposed **Nyala 1** solar energy facility is situated within the larger assessment areas (Study Area) on the Farm De Deur, east of the R510, as shown in the figure below (Figure 2).

- Nyala Solar Facility 1: 24°55'26.37"S; 27°18'9.09"E.
- Town of Northam: 24°57'28.81"S; 27°15'47.57"E.
- Quarter Degree Square (QDS): 2427CC & 2427CD.
- Quaternary Drainage Area (QDA): A24E & A24F.



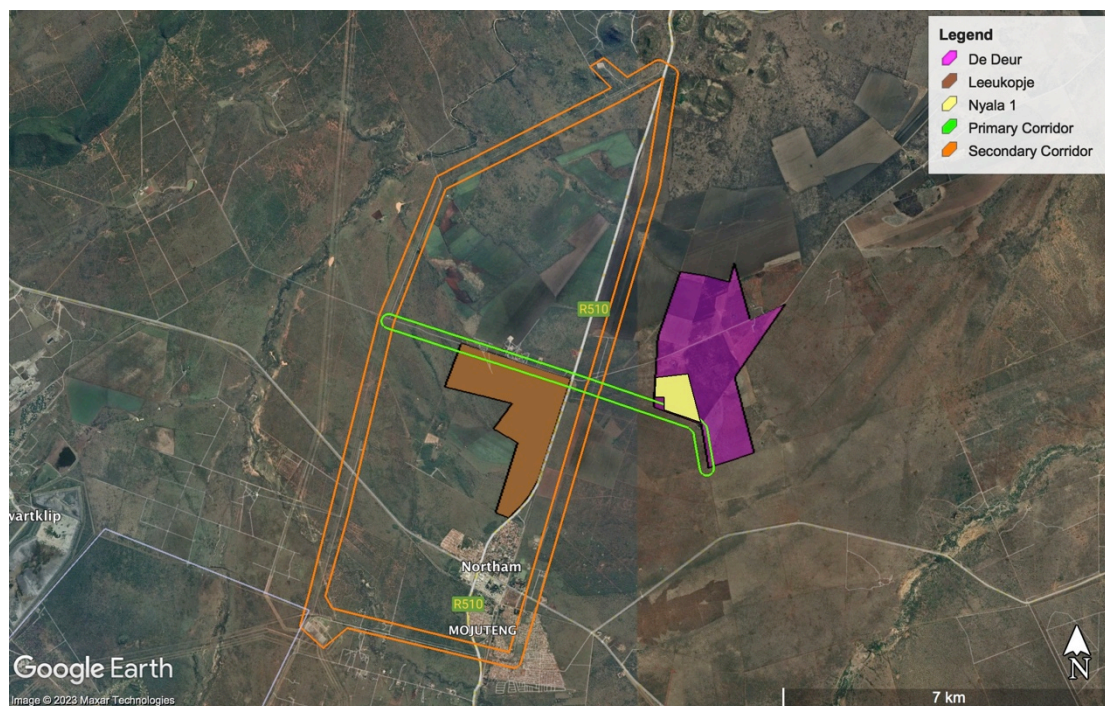


Figure 1: Study Area

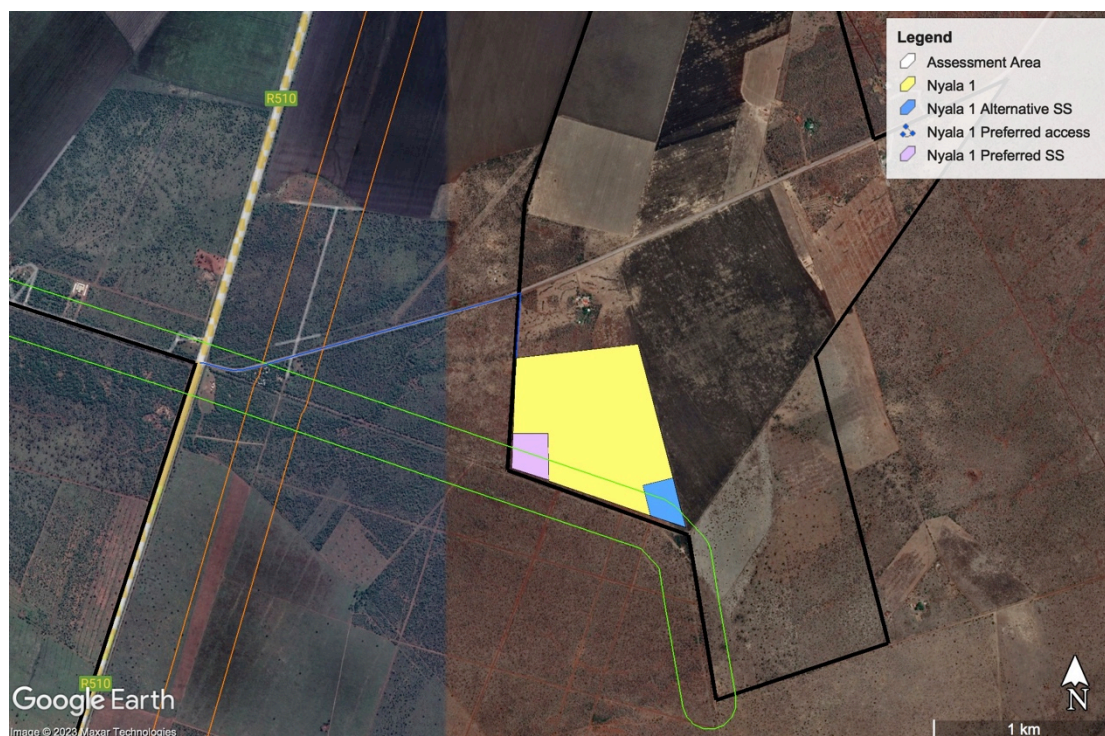


Figure 2: Location of Nyala 1 within the larger study area / assessment area

## 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 surrounding region has an annual average rainfall of around 551mm. The area is within a summer rainfall region, with very dry winters and

long periods of open, cloudless skies ([www.saexplorer.co.za](http://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.

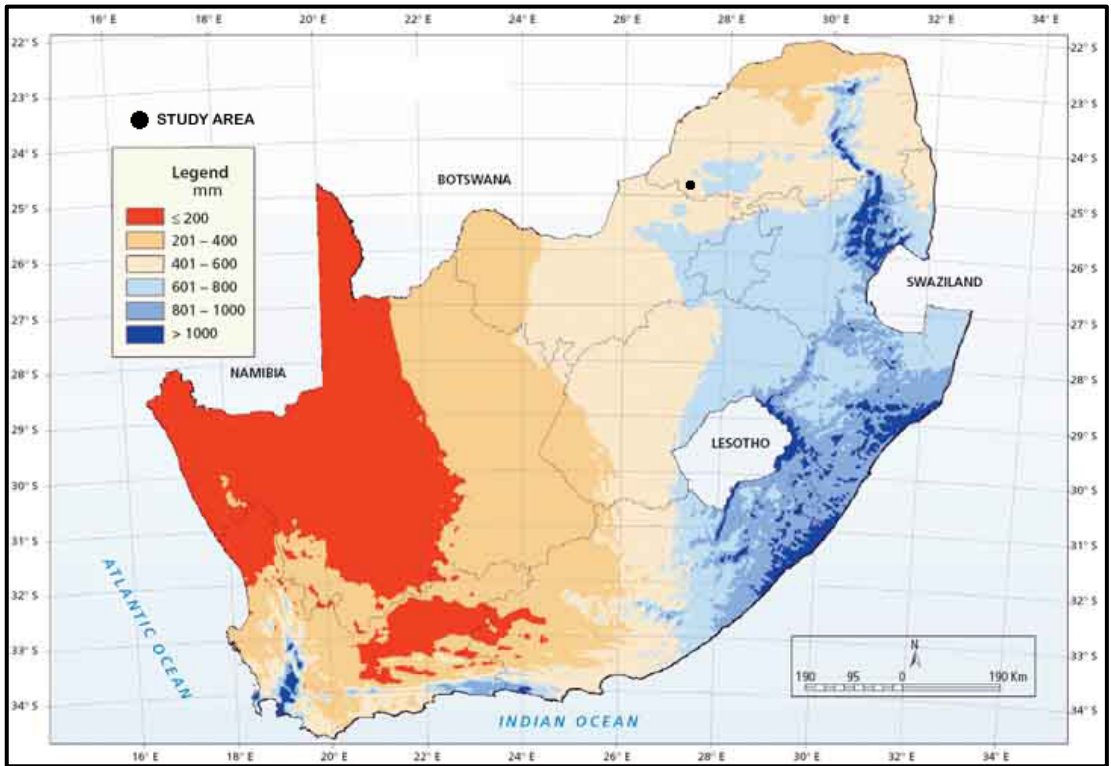


Figure 3: Rainfall Regions of South Africa

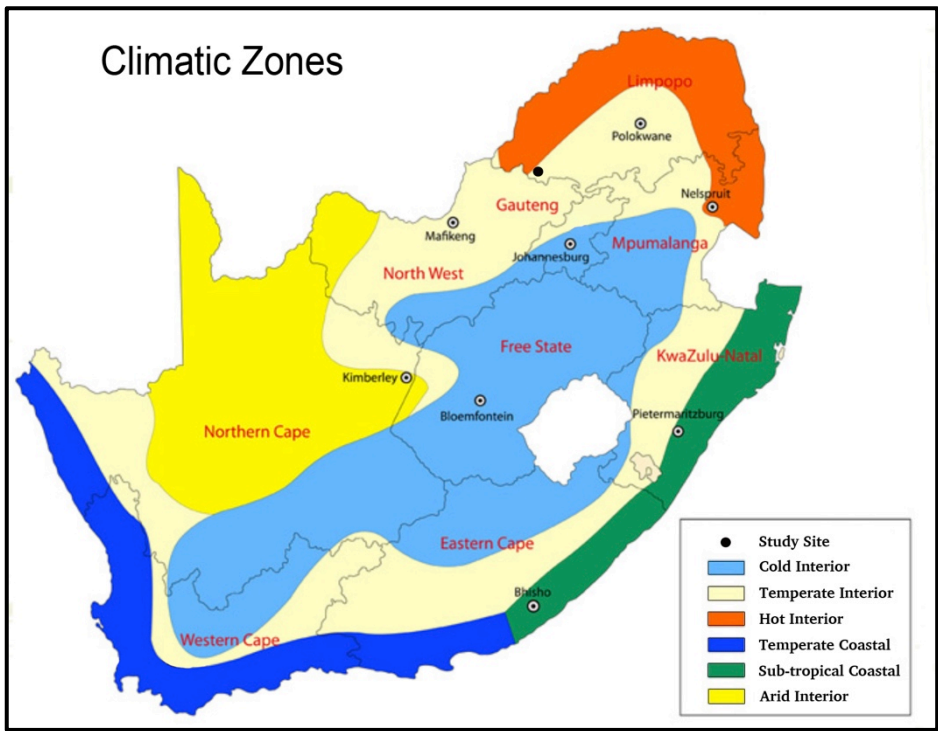


Figure 4: Climatic Regions of South Africa



## 2.3 Current Land Use

The current land use of the Study Area is a mix of cultivated farmlands; Town of Northam (high-density urbanisation); agricultural holdings (plots with low-density urbanisation); open thornveld; and other infrastructure (roads, powerlines, substations). The proposed Nyala 1 solar site is within farmlands that are a mix of cultivated lands, grazing lands and general farm use as typically found on large farming operations.

## 2.4 Vegetation

### 2.4.1 Regional Vegetation

The Study Area is situated within the Central Bushveld Bioregion of the Savanna Biome. The area is within the original extent of the veldtype commonly known as **Dwaalboom Thornveld**, which is not a threatened veldtype / ecosystem.

The thornveld in the region is not known for the high presence of Red Data listed (RDL) floral species, but it is likely that a few Orange Data Listed (ODL) species will be found scattered throughout the area. Due to the nature of the project, where large areas of vegetation are cleared for the PV solar panels, a full assessment will be required and the necessary permits to lift and relocate any RDL or ODL species observed.

Dwaalboom Thornveld is characterised by flat to slightly undulating bushveld plains with a layer of scattered, low- to medium-high, deciduous microphyllous (small-leaved) trees and shrubs with a few broad-leaved tree species, and an almost continuous herbaceous layer dominated by grass species. *Vachellia (Acacia) tortilis* and *Vachellia (Acacia) nilotica* dominate on the medium clays (at least 21% clay in the upper soil horizon but high in the lower horizons). On particularly heavy clays (>55% clay in all horizons) most other woody plants are excluded and the diminutive *Vachellia (Acacia) tenuispina* dominates at a height of less than 1 m above ground. On the sandy clay loam soils (with not more than 35% clay in the upper horizon but high in the lower horizons) *Vachellia (Acacia) erubescens* is the most prominent tree (Pauw 1988). The alternation of these substrate types creates a mosaic of patches typically 1–5 km across, for example in the unit west of Thabazimbi.

**Table 1: Hierarchy of vegetation**

Category Description	Classification
Biome	Savanna
Bioregion	Central Bushveld
Vegetation Types	Dwaalboom Thornveld

Status	Not threatened. (Least Concern)
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### 1.5.2 Vegetation of Nyala 1

The Nyala 1 site is within the original extent of Dwaalboom Thornveld, which is not a threatened veldtype / ecosystem. Nyala 1 (east of the R510) is situated in areas that are a mix of old/active cultivated farmland, cleared areas and degraded thornveld. The degraded thornveld is due to various factors included grazing, and other unknown farming activities taking place over the years.

No pristine Dwaalboom Thornveld is present in the area of the demarcated Nyala 1 site.

### 1.6 Fauna

The Study Area is within some open thornveld and nearby rocky hills and low mountains that are ideal habitat for a number of faunal species, including medium-sized mammals. The region is also home to a number of game reserves. It is therefore reasonable to assume that a few red data listed (RDL) faunal species and other species of conservation concern (SCC) will have been recorded in the study area and surrounding areas. However, due to the nature of the project this is not a 'fatal flaw', but full assessments will be required with necessary mitigating measures put in place. The site is not within any 'hotspots' for RDL or SCC for butterflies, lizards and snakes (Figure 5, Figure 6, Figure 7).

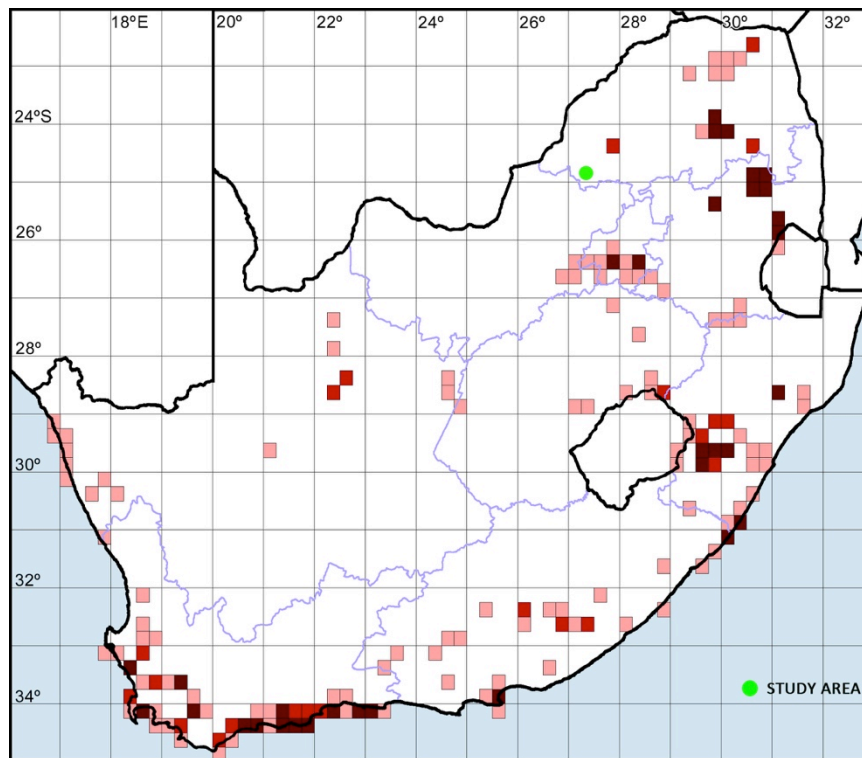


Figure 5: Hotspots for Priority Butterflies



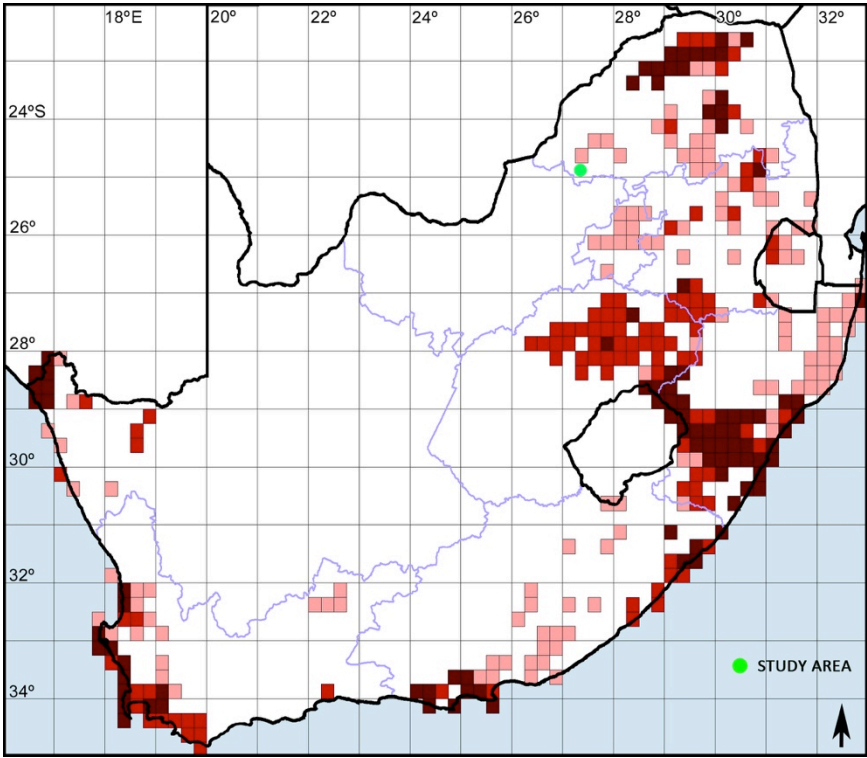


Figure 6: Hotspots for Priority Lizards

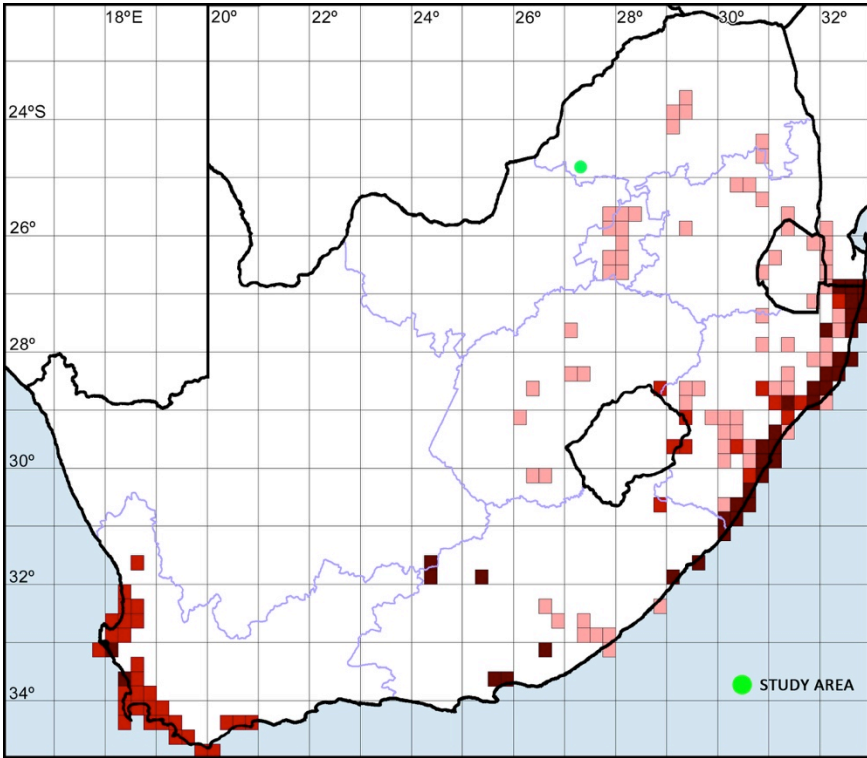


Figure 7: Hotspots for Priority Snakes

## 1.7 Watercourses

### 1.7.2 Regional

There are no perennial rivers or semi-perennial large streams in the study area. However, there is a small seasonal stream that flows north around Spitskop Substation and into the Brakspruit (Brak Stream). There is also a 'wet' looking area in the south of the Leeukopje Assessment Area with what appears to be a seasonal and ephemeral drainage line that runs northwest and into the Brakspruit (Figure 8).

The latest national wetland map (Map 5, 2018) does not highlight / demarcate any major wetlands or watercourses in the study area (Figure 9).

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

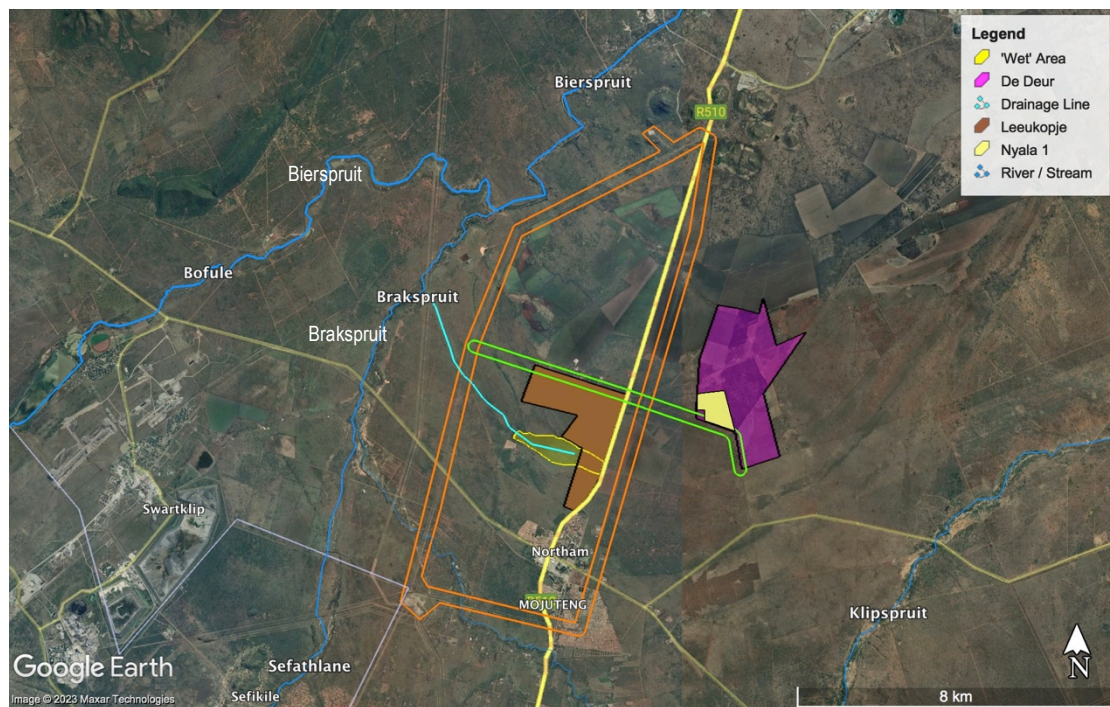


Figure 8: Watercourses located within the Study Area

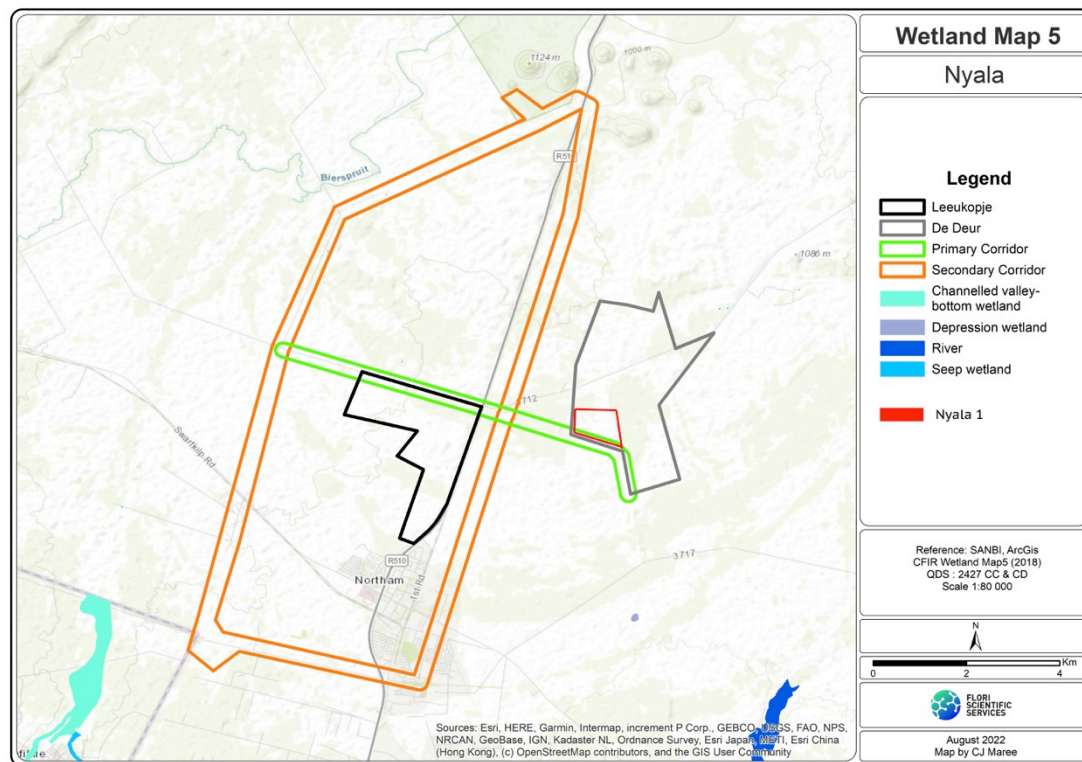


Figure 9: National Wetland Map 5 (2018)

### 1.7.3 Nyala 1

There are no watercourses in the demarcated preferred site of Nyala 1. There is a natural shallow drainage line just north and west of Nyala 1. The area is very flat and due to the topography, there appears to be an area where stormwater surface flow will tend to move into and along, but with no permanent flow and seldom any end-to-end flow. There does also not appear to be distinctive riparian vegetation or zones along this drainage system, only a slight visible increase in bush density.

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



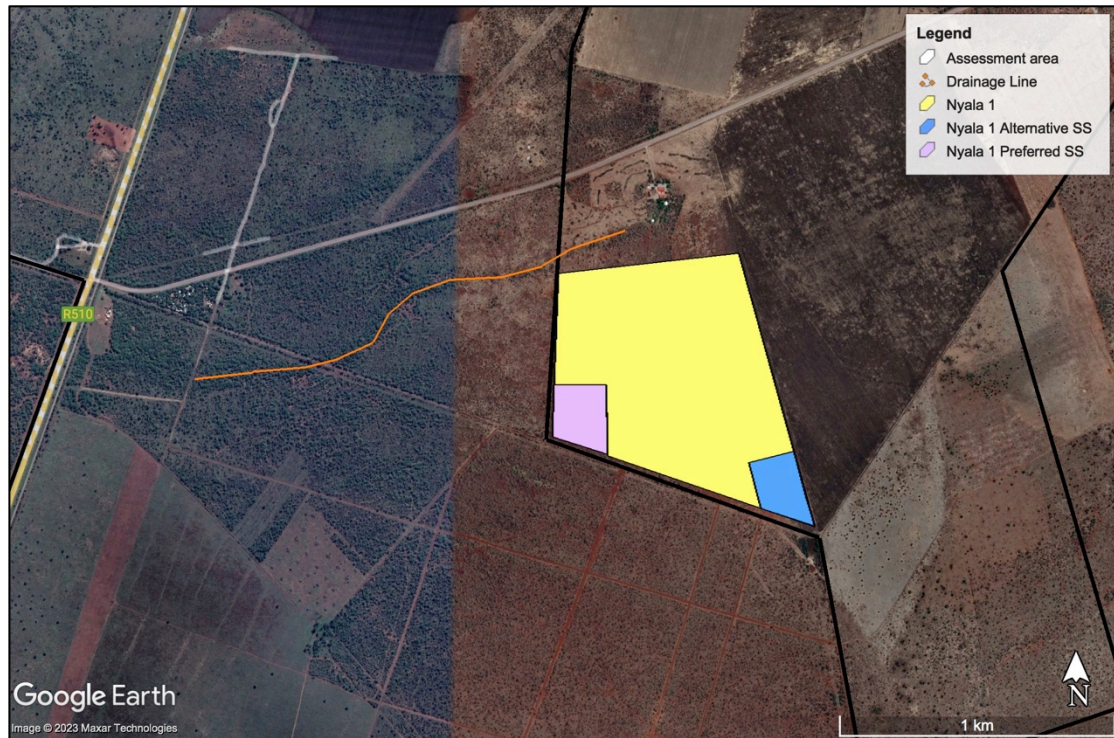


Figure 10: Watercourses in the vicinity of Nyala 1

## 1.8 Drainage Regions

### 1.8.2 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 QDA of **A24E & A24F**.

Table 2, below, gives a summary of information for the catchment areas for the study area.

Table 2: Summary of Catchment Area information

Level	Category
Primary Drainage Area (PDA)	A
Quaternary Drainage Area (QDA)	A24E & A24F
Water Management Area (WMA) – Previous / Old	Crocodile (West) & Marico
Water Management Area (WMA) – New (as of Sept. 2016)	Limpopo (WMA 1)
Sub-Water Management Area	Lower Crocodile
Catchment Management Agency (CMA)	Limpopo (CMA 1)

Wetland Vegetation Ecoregion	Central Bushveld (Group 2)
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

### 1.8.3 Nyala 1

The Nyala Solar PV Facility 1 area is situated within the QDA of A24F.

The main watercourse in QDA A24E is the Brakspuit, which flows north and into the Bierspruit, which is the main drainage watercourse in QDA A24F. Both watercourses and QDAs drain north and eventually into the Crocodile River system.

## 1.9 Strategic Water Source Areas

The study area (including the power line corridors) is not situated within any Strategic Water Source area of South Africa (SWSA), or important Water Source Area (WSA) of the Province. That is, not within a groundwater (gw) or a surface water (sw) SWSA. The site for Nyala 1 is also not within any SWSA. The closest SWSA is the Crocodile River Valley, which is a groundwater SWSA and is situated east of the entire study area.

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).

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.

## **1.10 National Priority areas**

### **1.10.2 Regional**

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.

The study site is within the Important Bird Area (IBA) of Northern Turf Thornveld and impacts on two registered protected areas (Figure 11). This in accordance with official datasets from those of SANBI ([bgis.sanbi.org](http://bgis.sanbi.org)), BirdLife ([birdlife.org.za](http://birdlife.org.za)), and the governmental Protected Areas Register (PAR) ([egis.environment.gov.za](http://egis.environment.gov.za)).

The fact that the study site is within an IBA is not a fatal flaw, as there are good mitigating measures that can be deployed along power lines, etc. However, an avifaunal impact assessment will be required. Refer to the separate Avifaunal study for more information on the Avifaunal aspects.

More investigation is required into whether these PAs are still registered or have been deregistered, as they are still shown as 'designated' on the official PAR system of the DFFE.

Leeukopje Private Nature Reserve (Declared on 27/1/1960) is at the Leeukopje Assessment Area, and Arizona Private Nature Reserve (Declared on 27/1/1960) is in the south in the area of the Spitskop Substation. It would seem as if these two private nature reserves are not 'functional' anymore.



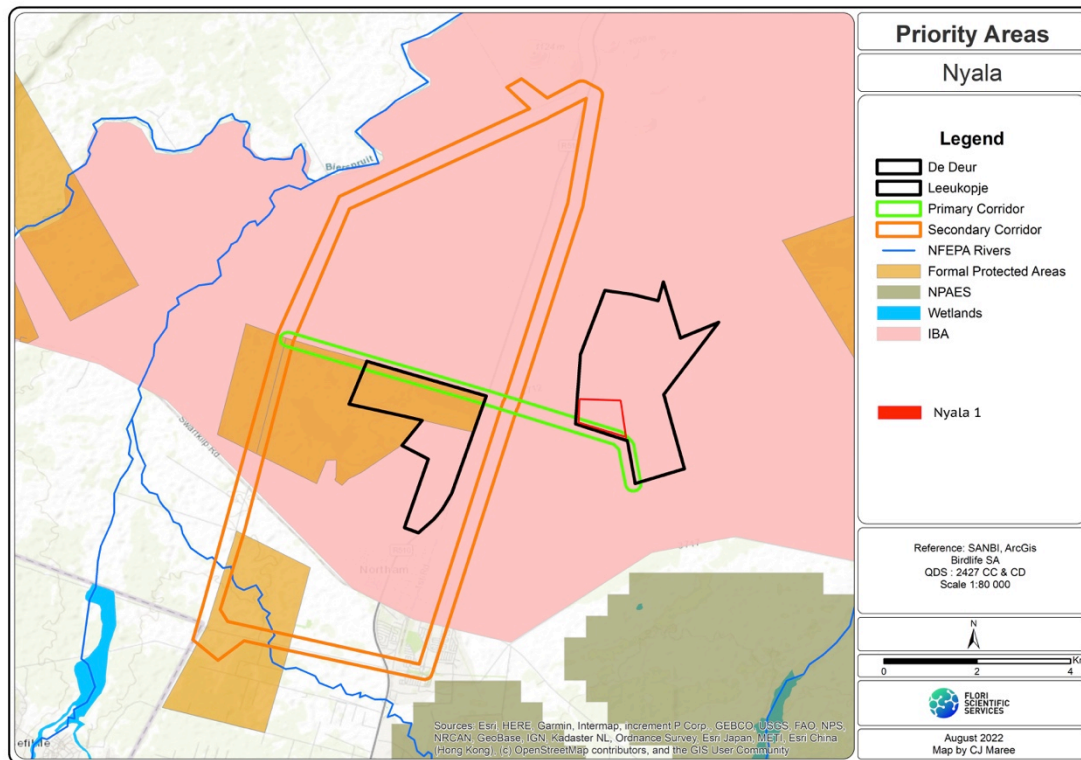


Figure 11: National Priority Areas

### 1.10.3 Nyala 1

The preferred Nyala 1 site is situated within the Northern Turf Thornveld IBA, but not within any of the other national priority areas. The nature and location of the project, along with mitigating measures, will likely result in low levels of negative impact on avifauna (please refer to the separate Avifaunal study for further details).

## 1.11 Critical Biodiversity Areas & Ecological Support Areas

### 1.11.2 Regional

The western proposed power line corridor and parts of Leeukopje are situated within demarcated critical biodiversity areas (CBAs). The southern section of the proposed power line corridor is within an ecological support area (ESA) (Figure 12). Further studies will be required.

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.

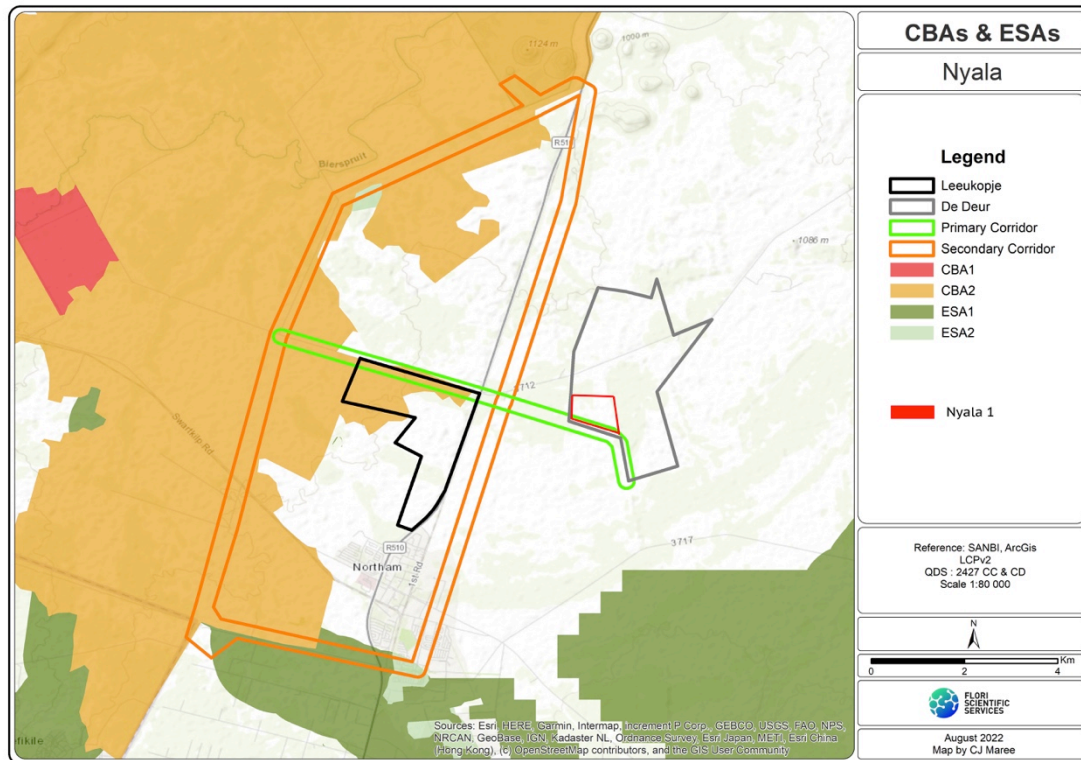


Figure 12: CBAs & ESAs

### 1.11.3 Nyala 1

The proposed site for the Nyala 1 Solar PV Facility and associated infrastructure such as substations, are not situated within or immediately adjacent to any demarcated CBAs or ESAs. Refer to Figure 12.

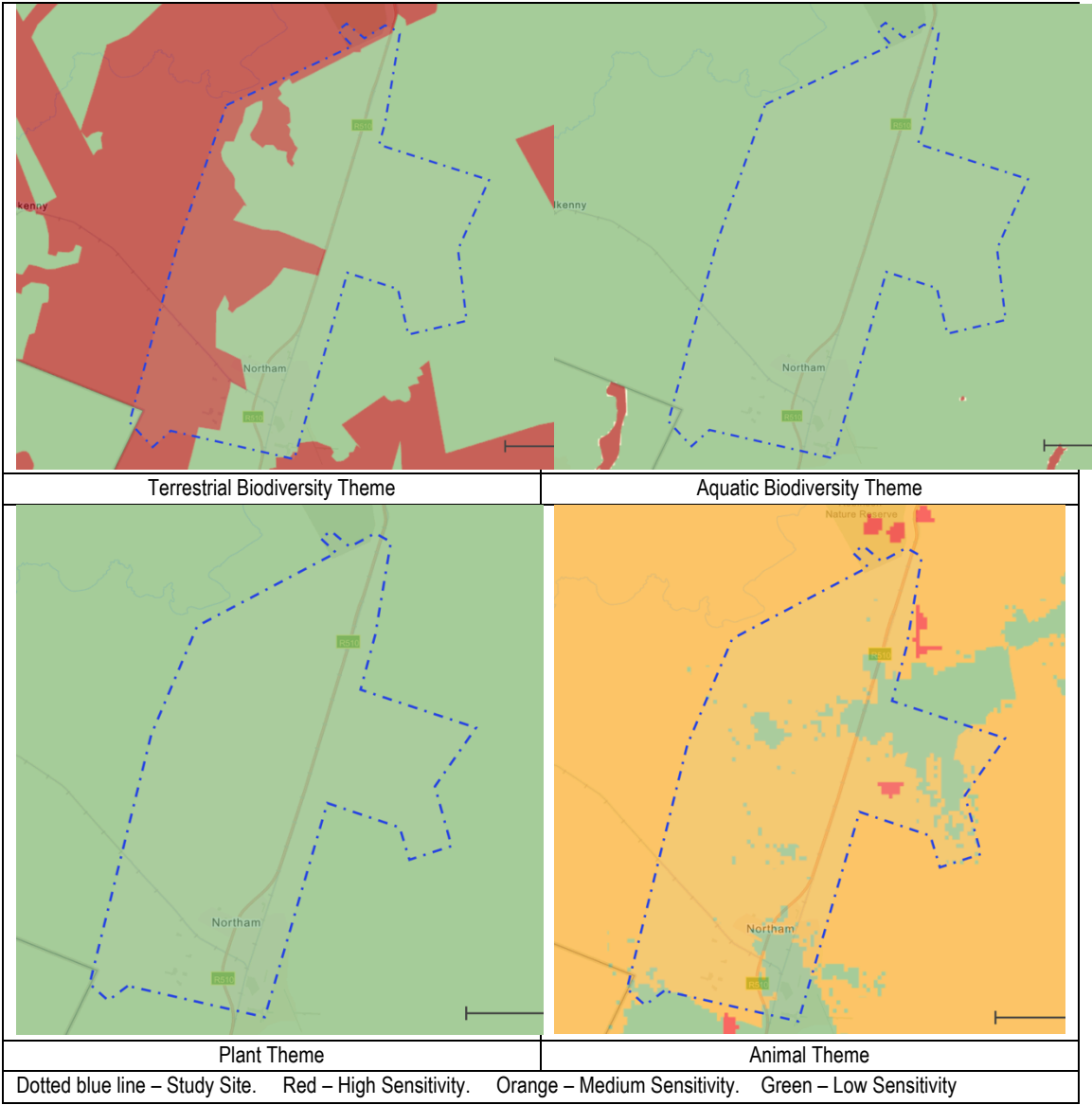
## 1.12 National Screening Tool

### 1.12.2 Regional

The DFFE Screening Tool ([www.screening.environment.gov.za](http://www.screening.environment.gov.za)) is a desktop assessment and guideline. The assessments of ecological sensitivities according to the screening tool are as follows:

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

Table 3: Screening Tool Maps: Study Area



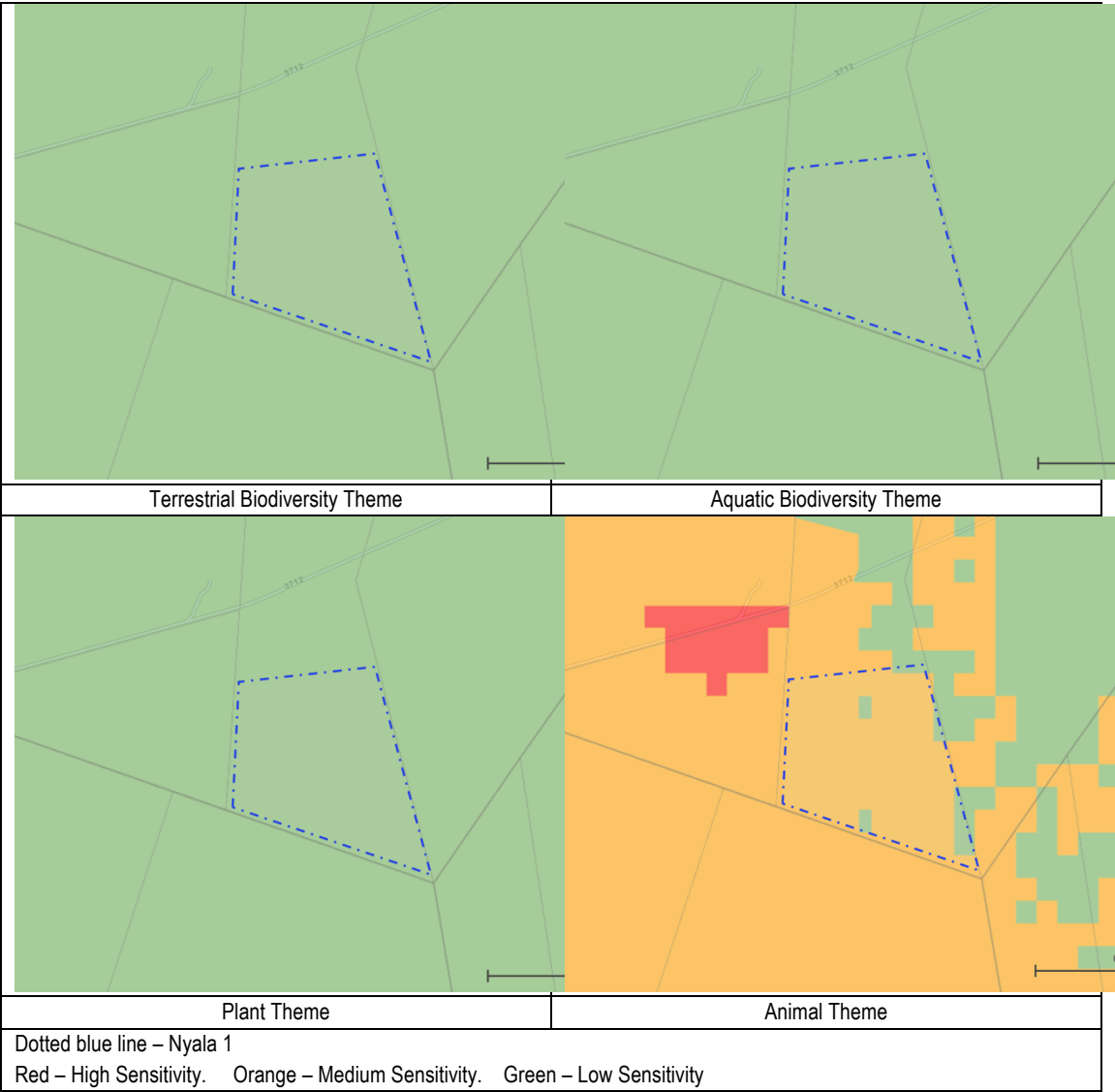
1.12.3 Nyala 1

The demarcations and maps below, as taken from the national screening tool desktop assessment, focus on the footprint of the proposed preferred site Nyala 1.

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

- Terrestrial Biodiversity Theme Sensitivity: Low.
- Aquatic Biodiversity Theme Sensitivity: Low.
- Plant Species Theme Sensitivity: Low.
- Animal Species Theme Sensitivity: Mostly Medium with some patches of Low.

Table 4: Screening Tool Maps: Nyala 1



## FINDINGS

### 1.13 Background to Site Sensitivity 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 22 November 2022 and the findings are as follows. Important conclusions arising from the desktop screening that were verified or disputed are summarised in the table below (Table 5).

**Table 5: Desktop Screening Results**

Issues	Site		Description
	Study Area	Nyala 1	
Threatened Ecosystem	No	No	Dwaalboom Thornveld – Least Concern
CBA	Yes	No	Along the west and Leeukopje but not Nyala 1
ESA	Yes	No	South near Spitskop Substation but not on Nyala 1
Priority Areas	Yes	Yes	IBA & Protected Areas (to be verified within Study Area)
Watercourses	Yes	No	Small streams / drainage lines. Potential 'wet' area
SWSA / WSA	No	No	-
RDL Floral Species	Unlikely	Unlikely	The area and thornveld does not have a high potential for RDL floral species.
RDL Faunal Species	Yes	Possible	It is likely that a few RDL and SCC species will be routinely found in the area and possible on the Nyala 1 site.
Sensitive Habitats	Yes	No	Watercourses, rocky outcrops / hills in the north of the Study Area but not the Nyala 1 site.
Buffers Required	Yes	No	Around watercourses.
Fatal Flaws	No	No	During the desktop screening and site verification process no obvious 'fatal flaws' were encountered.
Screening Tool: Terrestrial Biodiversity Sensitivity	High and Low	Low	Study Area within a CBA, NPAES, there are small watercourses, and it borders on the Leeukopje Private Nature Reserve
Screening Tool: Aquatic Biodiversity	Low	Low	Sensitivity to be confirmed by aquatic specialist.
Screening Tool: Plants	Low	Low	-
Screening Tool: Animals	Medium	Medium	-

### 1.14 General

During site investigations undertaken on 22 November 2022 (during the wet season) the various theme sensitivities as per the screening tool assessment were investigated and verified. In other words, the

ground-truthing and site investigations confirmed the levels of sensitivity as shown in the screening tool assessment.

### 1.15 De Deur and Leeukopje Assessment Areas

Both Farms / potential project site areas were investigated. Both sites have areas that have medium and high levels of sensitivity. In the case of De Deur there is an area that is a nature reserve / lodge, where the bushveld is fairly pristine and characteristic of Dwaalboom Thornveld. Keeping in mind that the veldtype is not a threatened veldtype / ecosystem with a status of 'Least Concern'. In the case of Leeukopje the high sensitivity was related to aquatic ecology, which was not investigated as it falls outside the scope of this report and study.

Both areas are active farms with impacts typical to farming practices of cultivation and livestock. Large areas of De Deur have been altered due to cultivated farmlands, where at Leeukopje the impacts are mostly related to the keeping and grazing of cattle.

### 1.16 Power Line Corridors

Potential primary and secondary power line corridors were investigated. Both corridors have a mix of low, medium and high sensitivities. The high sensitivities are related to aquatic systems and also to norite / dolomite koppies (rocky outcrops). Most of the length of the corridors is within altered and degraded bushveld with existing power lines and other impacts, including roads and substations. There are numerous potential fringe negative impacts due to the closeness of the Town of Northam and the movement of people and vehicles through the area.

### 1.17 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. A few unique and high sensitive terrestrial habitats were observed in the Study Area in terms of floral communities and RDL species and in terms of ideal habitats for faunal RDL and SCC species. These unique habitats are mostly related to the norite / dolomite koppies (rocky outcrops). The sensitivity for the faunal component of the biodiversity was found to be higher than that of the floral component. During ground-truthing / verification the overall sensitivity of the animal and plant components were both verified to be as according to the screening tool assessment. That is, the **plant theme is 'Low'** and the **animal theme is 'Medium'**.

The **terrestrial ecology (biodiversity)** was found to be a mix of **'Low'** and **'Medium'**. This disputes the screening tools assessment of 'Low' and 'Very High'. The 'very high' demarcated were found to have a terrestrial sensitivity of 'Medium'. A site verification sensitivity map for the entire assessment area / study site is as shown below (Figure 13).



The sensitivity map for only Nyala 1 is shown below in Figure 14.

The sensitivities of the site verification for Nyala 1 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.

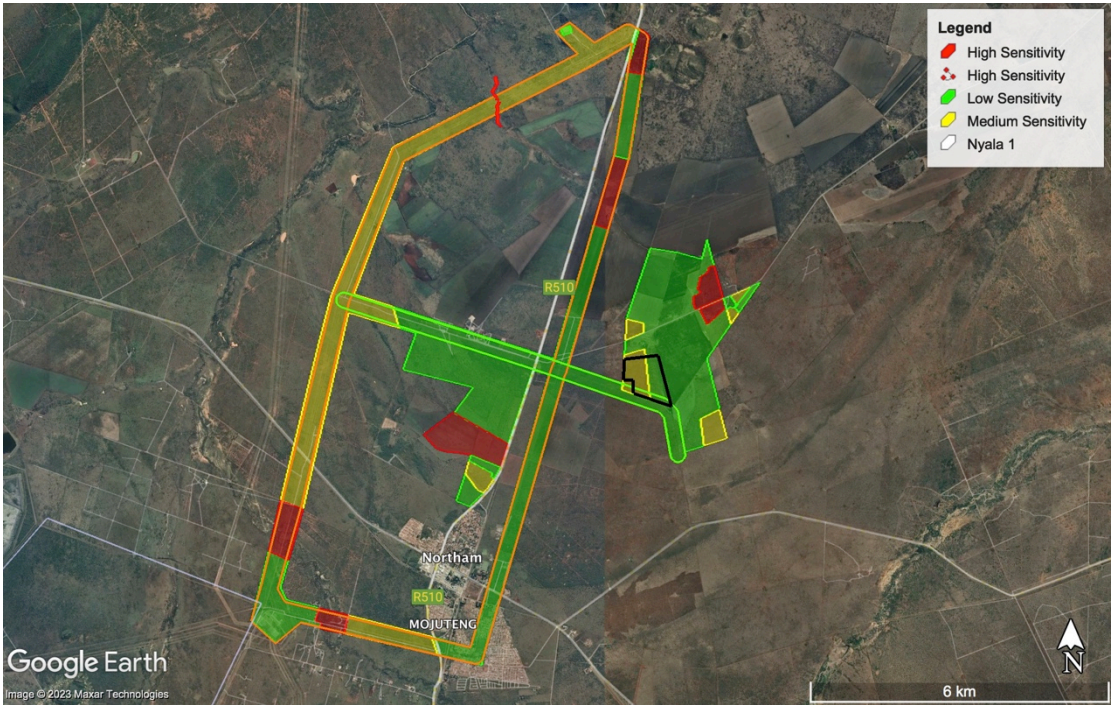


Figure 13: Sensitivity Map as per the Site Verification





Figure 14: Sensitivity Map: Nyala 1

Table 6: Site Verification Sensitivities compared to Screening Tool Sensitivities for Nyala 1

Theme	Site Verification	Screening Tool
Terrestrial Biodiversity	Medium & Low	Very High & Low
Aquatic Biodiversity	Not assessed	Low
Plant Species	Low (small patches of medium & high)	Low
Animal Species	Medium	Medium




Table 7: Photographs

	Cultivated farmlands in the study area
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	<p>Example of Dwaalboom Thornveld in the study area</p>
	<p>Cattle farming and grazing lands are found within the study area</p>
	<p>The norite / dolomite koppies (rocky outcrops) found in some areas of the power line corridors. These habitats are sensitive</p>



	<p>Existing Power Lines in the demarcated power line corridors of the project</p>
	<p>Example of poison apple found on site. There are a number of alien invasive plant species scattered throughout the study area.</p>
	<p>Dilapidated dwellings on a section of the study site. The area is a prime spot for the proposed PV Solar Facility due to the low sensitivity.</p>



	<p>Old fallow farmlands with secondary growth of grasslands. The thornveld was cleared but a number of thorn trees can be seen emerging again.</p>
	<p>Degraded Dwaalboom Thornveld found in the study area</p>
	<p>Fallow cultivated farmlands in the study area</p>

## CONCLUSIONS

### 1.18 Conclusions

The conclusions of the site verification are as follows:

- The Study Area and Nyala 1 site are within the original extent of Dwaalboom Thornveld, which is not a threatened veldtype / ecosystem.
- The Study Area and Nyala 1 site are within an Important Bird Area (IBA). This is not a 'fatal flaw' but will require an avifaunal assessment., especially in terms of the potential power lines.-
- There are private nature reserves that lie within a 5km radius of the project site (Nylala 1).
- The Nyala 1 site is not within a critical biodiversity area (CBA) or an ecological support area (ESA).
- During site investigations the national screening tool assessments for the preferred site for Nyala 1, was verified and confirmed. The overall terrestrial biodiversity sensitivity is 'Low'.
- The study site is not within any hotspots for butterflies, lizards or snakes.
- During the site sensitivity verification, no fatal flaws were observed.
- Full specialist studies will be required due to the presence of CBAs, ESAs, watercourses, NPAES areas.
- Verification (including delineation) is required as to the status of the Leeukopje Private Nature Reserve.
- During the site investigations and verification, the following was found for the entire study area, compared to that of the screening tool assessment:

Theme	Site Verification	Screening Tool
Terrestrial Biodiversity	<b>Medium &amp; Low</b>	Very High & Low
Aquatic Biodiversity	Not assessed	Low
Plant Species	Low (small patches of medium & high)	Low
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' and not 'Very High'. The 'low' sensitivities were verified.
- The proposed project should be allowed to proceed to the next phase, but with caution and further detailed studies.
- Full environmental specialist studies (Terrestrial Ecology and Aquatic Ecology) are going to be required which must include impact assessments and mitigating measures to reduce these impacts on the natural environment.

## APPENDICES

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### 1.19 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).

#### Dwaalboom Bushveld

Tall Tree: *Acacia erioloba*. Small Trees: *Acacia erubescens* (d), *A. nilotica* (d), *A. tortilis* subsp. *heteracantha* (d), *A. fleckii*, *A. mellifera* subsp. *detinens*, *Combretum imberbe*, *Rhus lancea*, *Ziziphus mucronata*. Tall Shrubs: *Acacia hebeclada* subsp. *hebeclada*, *Combretum hereroense*, *Diospyros lycioides* subsp. *lycioides*, *Euclea undulata*, *Grewia flava*, *Tarchonanthus camphoratus*. Low Shrubs: *Acacia tenuispina* (d), *Abutilon austro-africanum*, *Aptosimum elongatum*, *Hirpicium bechuanense*, *Pavonia burchellii*, *Solanum delagoense*. Succulent Shrubs: *Kalanchoe rotundifolia*, *Talinum cafferum*. Herbaceous Climber: *Rhynchosia minima*. Graminoids: *Aristida bipartita* (d), *Bothriochloa insculpta* (d), *Digitaria eriantha* subsp. *eriantha* (d), *Ischaemum aegyptium* (d), *Panicum maximum* (d), *Cymbopogon pospischilii*, *Eragrostis curvula*, *Sehima galpinii*, *Setaria incrassata*. Herbs: *Heliotropium ciliatum*, *Kohautia caespitosa* subsp. *brachyloba*, *Nidorella hottentotica*.

(d) = Dominant.

### 1.20 Fatal Flaw

A potential fatal flaw (or flaws) 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.



## REFERENCES

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- BirdLife SA ([www.birdlife.org.za](http://www.birdlife.org.za))
- DFFE Screening Tool ([www.screening.environment.gov.za](http://www.screening.environment.gov.za)).
- Mucina, L. & M.C. Rutherford (eds). 2006. The vegetation of South Africa, Lesotho and Swaziland. SANBI, Pretoria.
- South African National Biodiversity Institute (SANBI) ([www.bgis.sanbi.org](http://www.bgis.sanbi.org)).
- IUCN Red List of Threatened Species (<http://www.iucnredlist.org>).
- Raimondo D., L. von Staden, W. Fonden, JE Victor, NA. Helme, RC. Turner, DA. Kamundi, PA. Manyama (eds). 2009. Red List of South African Plants. Strelitzia 25. SANBI. Pretoria.
- Protected Areas Register ([egis.environment.gov.za](http://egis.environment.gov.za)).
- Water Research Commission (WRC) ([wrc.org.za](http://wrc.org.za)).



## 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

**Nyala 1 Solar Energy Facility**

#### Kindly note the following:

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>.
3. A copy of this form containing original signatures must be appended to all Draft and Final Reports submitted to the department for consideration.
4. All documentation delivered to the physical address contained in this form must be delivered during the official Departmental Officer Hours which is visible on the Departmental gate.
5. All EIA related documents (includes application forms, reports or any EIA related submissions) that are faxed; emailed; delivered to Security or placed in the Departmental Tender Box will not be accepted, only hardcopy submissions are accepted.

#### Departmental Details

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Department of Environmental Affairs  
Attention: Chief Director: Integrated Environmental Authorisations  
Private Bag X447  
Pretoria  
0001

##### Physical address:

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](mailto: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
Specialist name:	Johannes 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		
Postal address:	PO Box 7222; Bosveldsig Phase 8; Modimolle		
Postal code:	0510	Cell:	082 564 1211
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

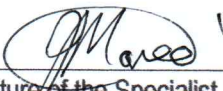
Name of Company:

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

