

# PALLADIUM SOLAR POWER PLANT



**SITE ASSESSMENT FOR THE DEVELOPMENT OF PALLADIUM SOLAR POWER  
PLANT ON PORTION 3 AND PORTION 4 OF THE FARM ZWARTDOORNS NO.  
421, REGISTRATION DIVISION KQ, LIMPOPO PROVINCE**

Prepared for:  
Environamics  
Environmental

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## 1. Executive Summary

Palladium Solar Power Plant (RF) (Pty) Ltd is proposing the development of a photovoltaic solar energy facility located approximately 10 km South East of Northam in the Limpopo Province. The development area will be located on Portion 3 and Portion 4 of the farm Zwartdoorns No. 421, Thabazimbi Local Municipality area of jurisdiction (see Figure 1). These properties are owned by Tortillis Boerdery (Pty) Ltd with a combined extent of 265.3965 and 276.7117 hectares. 522ha out of the 542.1082 will be developed on.

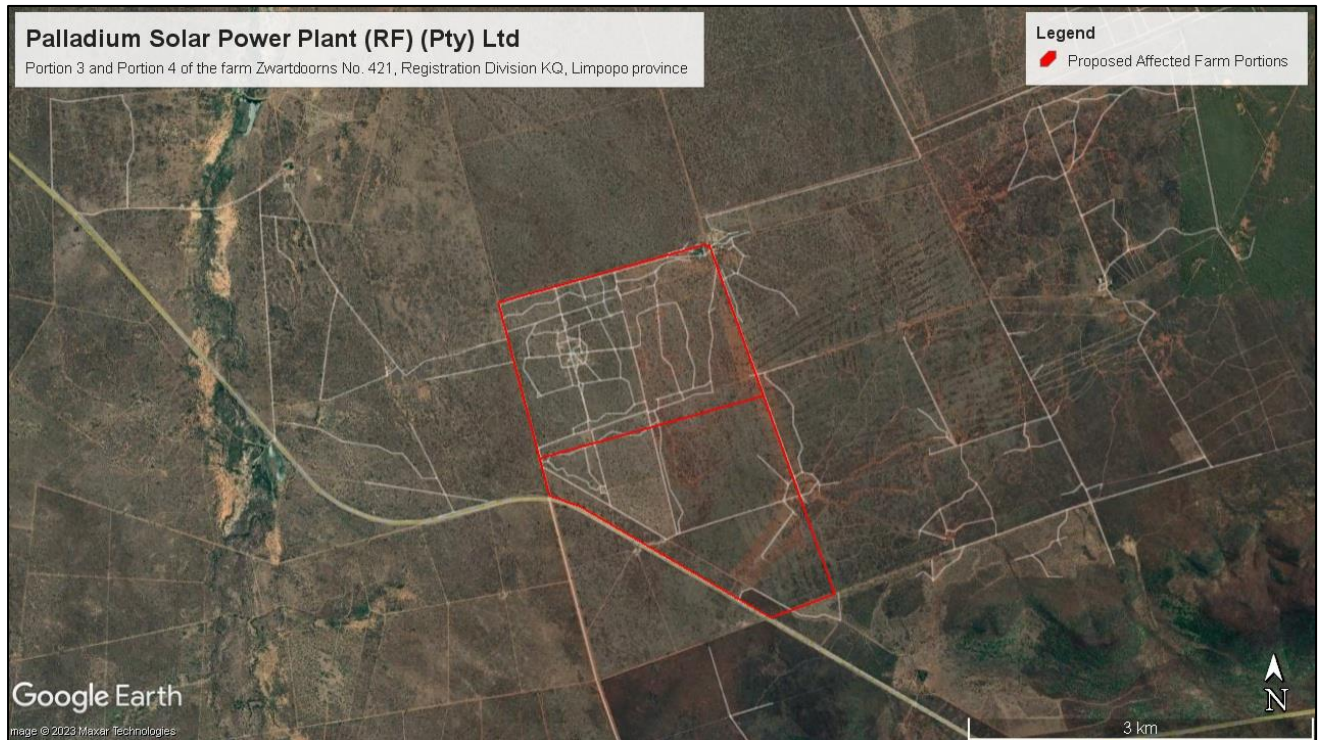
The landscape consists of level plains with some relief. Access to the proposed development will be obtained via the road named D1235. Generation from the facility will tie in with the existing Eskom Spitskop 400/275/88kV MTS Substation. The connection power line will be constructed within the limits of the grid connection corridor.

The site has low to medium agricultural potential as well as Low-Moderate to moderate potential grazing capacity. This site has favourable conditions for a solar power plant due to its environmental conditions, weather conditions, as well as good site access.

The site has good solar radiation, ecology and relative flat terrain (refer to Figures below).

## 2. Site Identified

Portion 3 and Portion 4 of the farm Zwartdoorns No. 421, Registration Division KQ, Limpopo Province, falls within the Thabazimbi Local Municipality.



*Figure 1: Proposed affected farm portions.*

### 3. Power lines and Substations

#### 3.1 Substations near the site

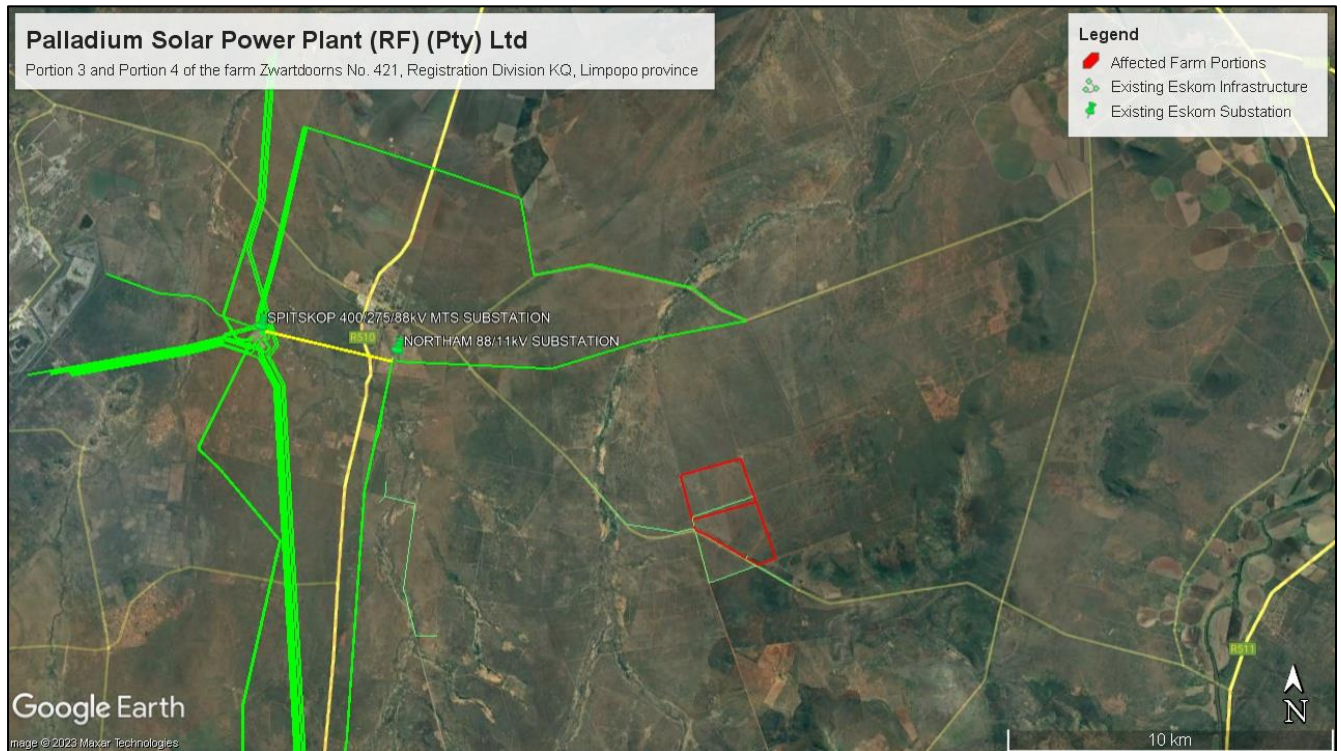
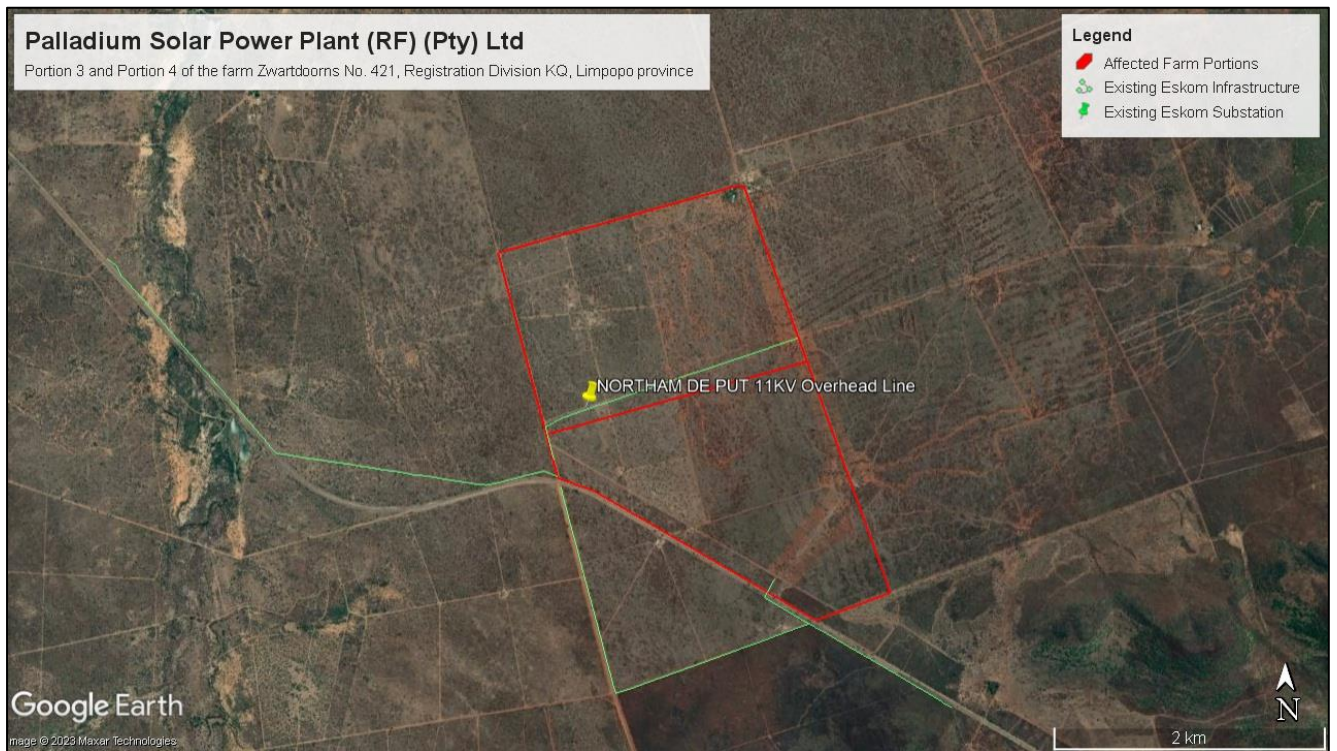


Figure 2: Northam 88/11kV Substation, Spitskop 400kV MTS substation

#### **Spitskop MTS statistics:**

- Supply Area: Limpopo Province
- Local Area: Lephalale
- Transformer Voltage: 400/275 kV
- Transformers installed: 2
- REIPPPP Generation allocation to date: 0 MW
- Load at Spitskop MTS: -
- Transformer Limit: -
- Substation Limit: 1280 MW
- Local Area Limit: 2819 MW
- Supply Area Limit: 2507MW

### 3.2 Power Lines near the site



*Figure 3: Illustration of Affected powerlines*

NORTHAM /DE PUT 11kV Overhead Line

#### 4. Environmental Impact Assessments done in the area.

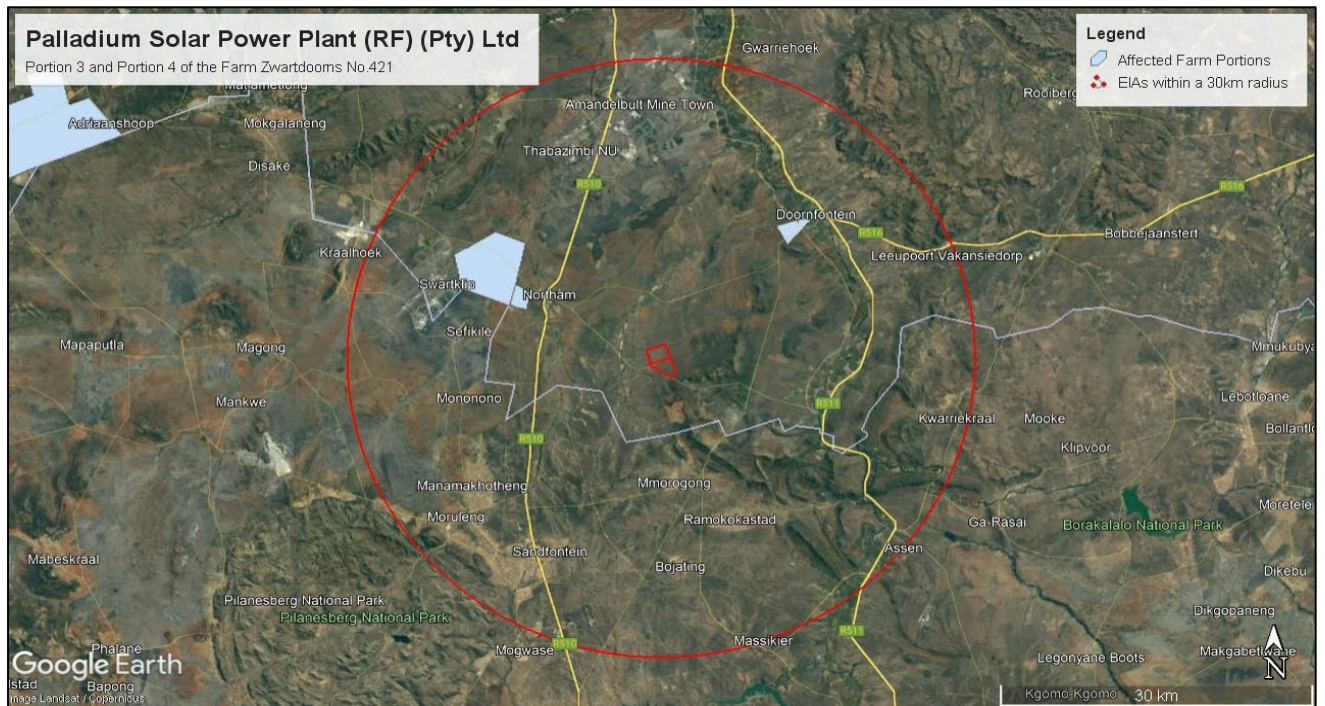


Figure 4: Summary of similar EIAs conducted within 30km of the site.

Site	Proposed generating capacity	DEFF Reference	EIA Process	Project status
Portion 10 of the farm Wildebeestlaagte 411 KQ	40 MW	12/12/20/2129	Scoping and EIA	Approved
Portion 5 of the farm Grootkuil 409 KQ	30MW	12/12/20/2526	Scoping and EIA	In process
Farm Liverpool 543 KQ Portion 2	10 MW	14/12/16/3/1/969	BAR	Approved
Farm Liverpool 543 KQ Portion 2	10 MW	14/12/16/3/3/1/969	BAR	Approved
Spitsksp Solar Park	0MW	14/12/16/3/3/2/702	Scoping and EIA	In process

## 5. Natural Resources

### 5.1 Geology

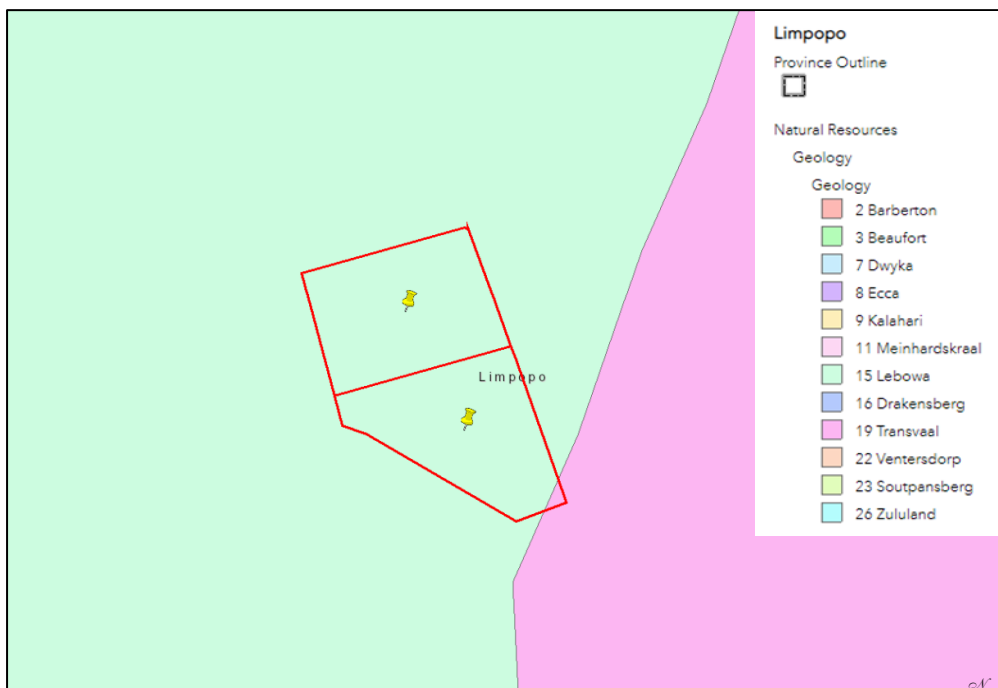


Figure 5: The proposed Development is underlain by the Transvaal and Lebowa groups.

### 5.2 Terrain

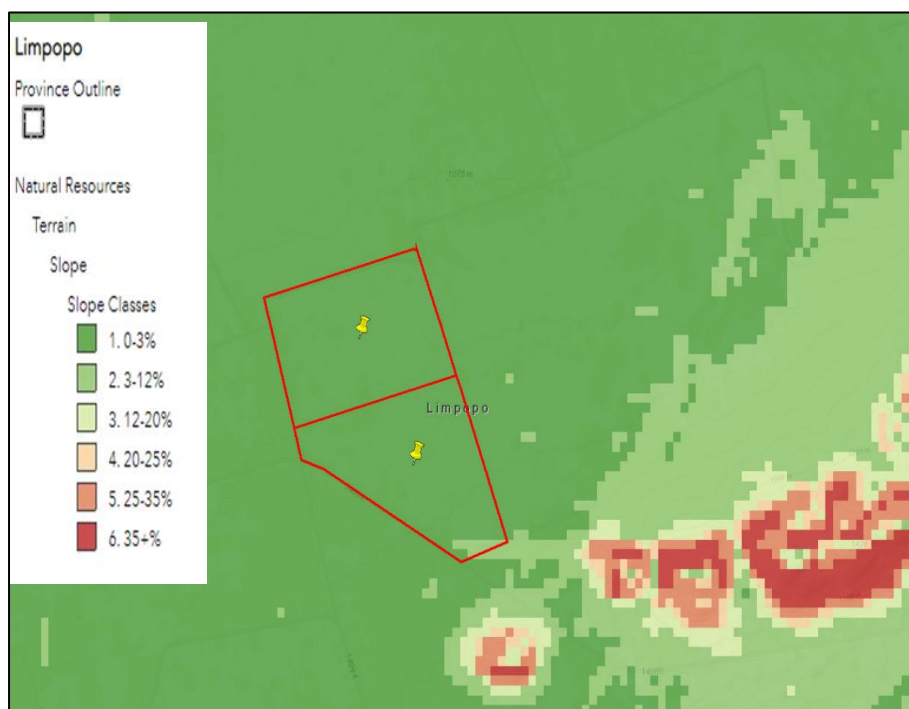


Figure 6: The slope class of the study area consists of the lowest slope class 0-3% and a small section which consists of 3-12%: The terrain is therefore considered flat and suitable for a solar PV development.



### 5.3 Vegetation

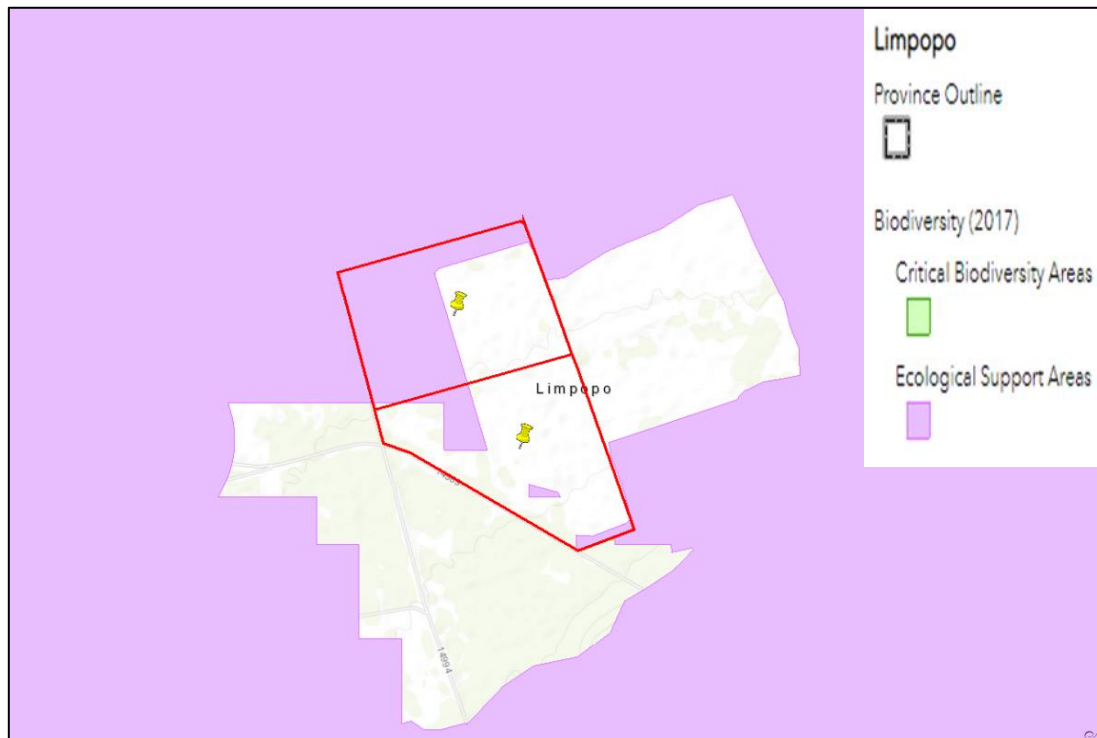


Figure 7: The study falls within an Ecological Support Area (ESA). There are sections of the site where it is not classified as an ESA or CBA and is therefore considered less sensitive.

### 5.4 Water

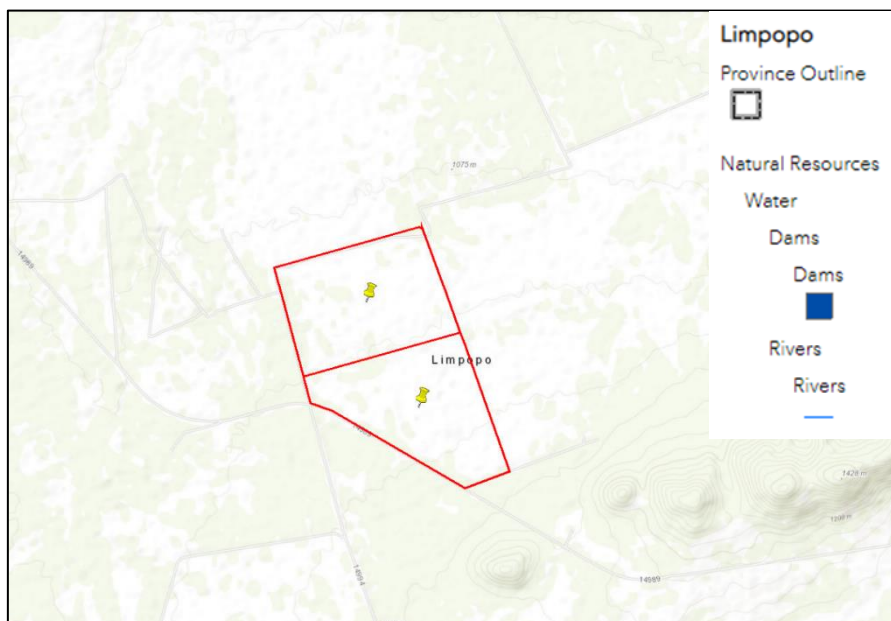


Figure 8: There is no water course crossing the development or close to the proposed development footprint.

## 5.5 Agriculture

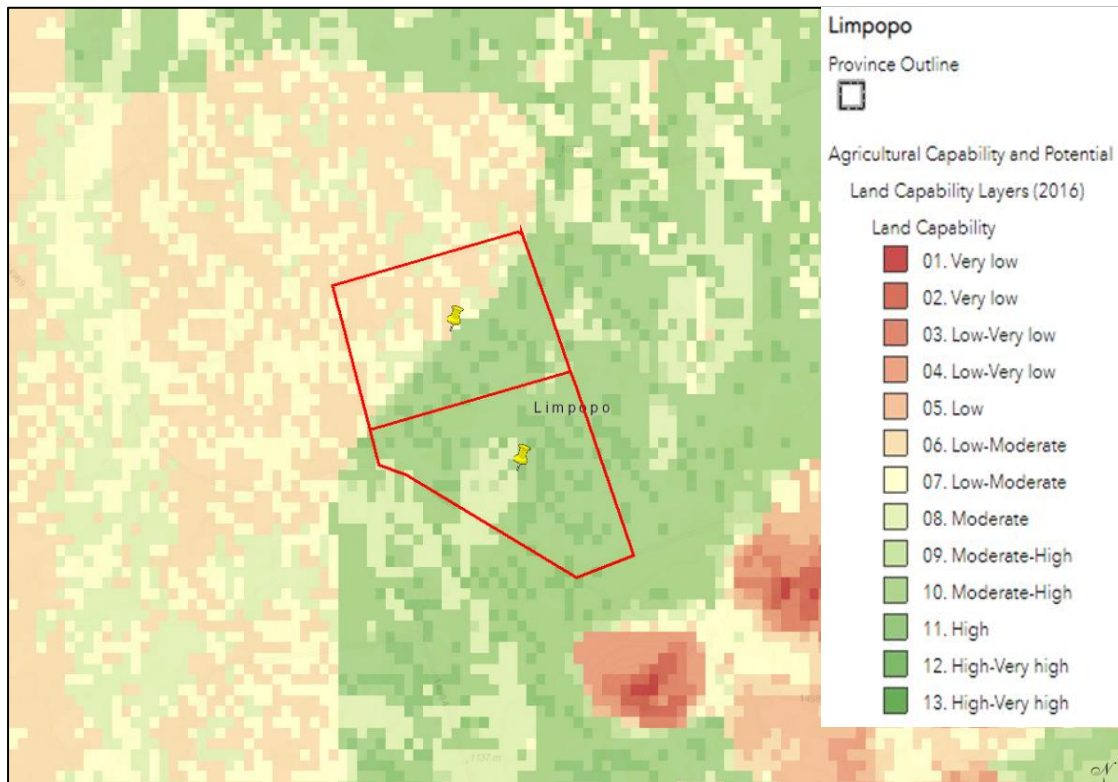


Figure 9: The land capability in the study area consists of Low-Moderate to Moderate land capability.



Figure 10: The grazing capability in the study area has a value of 6 and areas of 8, this is considered a low- moderate grazing capacity

## 6. Global Horizontal Irradiation (SolarGIS)

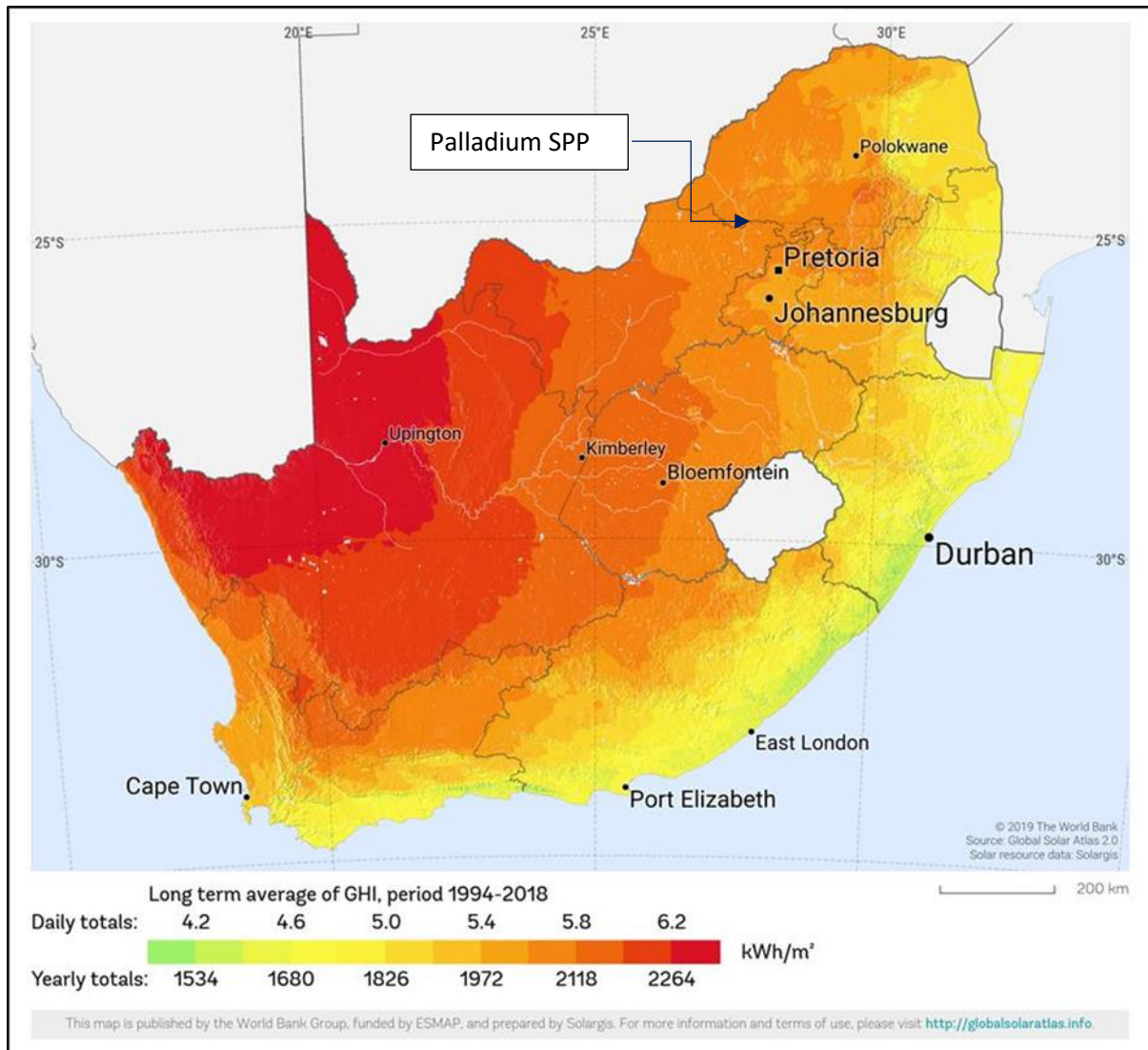
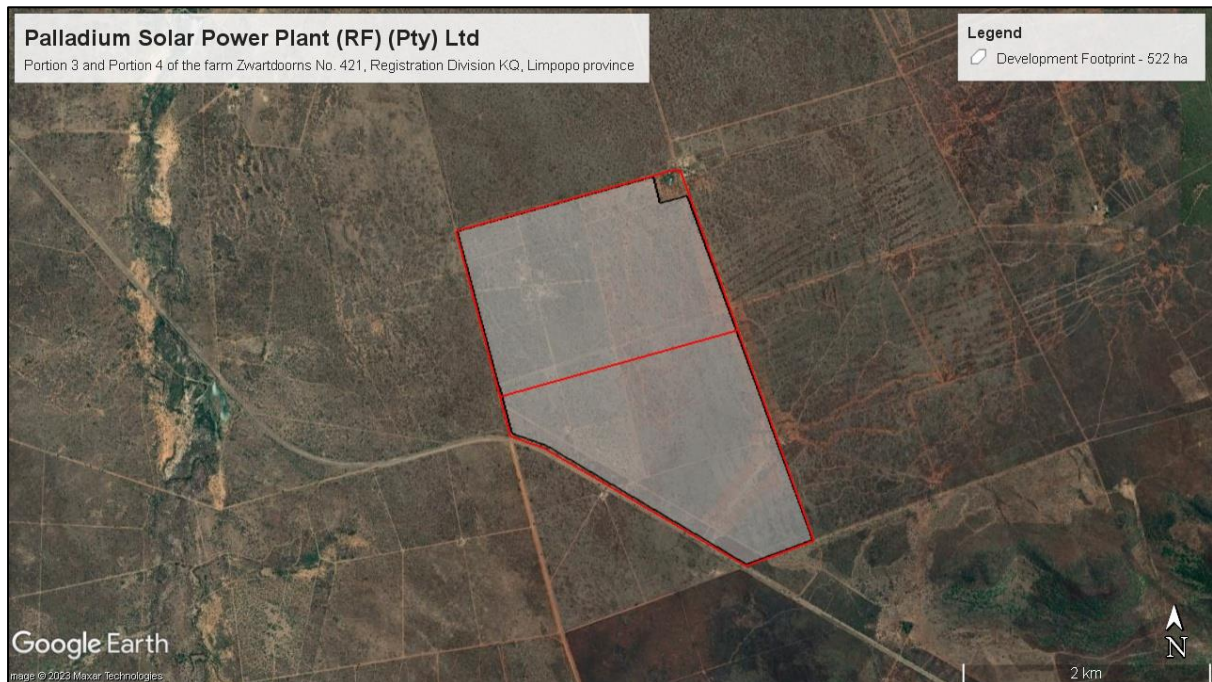


Figure 11: This study falls within an area with a global horizontal irradiation

## 7. Possible Areas for development



*Figure 12: Proposed Development area for a solar power plant*

A proposed development footprint was identified for a proposed solar plant, this footprint is 522ha in extent.

Preferred development site (white portion): This is the preferred option since there are no major issues to be avoided near the site and the terrain is flat. The proposed development footprint has various access route options.

Keeping all the above information into consideration, the proposed development footprint would be the preferred option for the development of a solar plant. This area was identified due to the low impact on the environment and infrastructure of the land portion.

## 8. References

NDAGIS Esri website <https://ndagis.nda.agric.za/portal/apps/webappviewer> SOLARGIS. 2022.  
SolarGIS GeoModal Solar, accessed from

<http://solargis.info/pvplanner/#tl=Google:hybrid&bm=satellite> on 02-05-2022