

BONSMARA SOLAR POWER PLANT



SITE ASSESSMENT FOR THE DEVELOPMENT OF BONSMARA SOLAR POWER PLANT ON THE FARM LEEUWPAN NO.697, REGISTRATION DIVISION IQ, GAUTENG PROVINCE

Prepared for:
Environamics Environmental Consultants

Contact Person:
Stephanie Fasaki
Email: fasasie@subsolar.co.za
PO BOX 785553,
Sandton,
2146



01 March 2023

Contents

1. Executive Summary.....	2
2. Site Identified	3
3. Power lines and Substations	4
3.1 Substations near the site	4
3.2 Power Lines near the site.....	5
4. Environmental Impact Assessments done in the area.....	6
5. Natural Resources.....	7
5.1 Geology	7
5.2 Terrain.....	7
5.3 Vegetation.....	8
5.4 Water	8
5.5 Agriculture	9
6. Global Horizontal Irradiation (SolarGIS).....	10
7. Possible Areas for development	11
8.References	12

1. Executive Summary

Bonsmara Solar Power Plant (RF) (Pty) Ltd is proposing the development of a photovoltaic solar energy facility located approximately 17 km north of the town of Carletonville in Gauteng Province. The development area will be located on the Farm Leeuwpan No. 697, Registration Division IQ, within the Merafong City Local Municipality area of jurisdiction (see Figure 1). The property is owned by the Theodon Boerdery Pty Ltd with an extent of 4276.41 hectares. 500 ha out of the 4276.41 will be used for the development.

The landscape consists of level plains with some relief. Access to the proposed development will be obtained via a gravel road off of the R500 road that's off of the N14 highway. It is expected that generation from the facility will connect to the national grid via the Pluto 400/275/22kV MTS substation. The connection power line will be constructed within the limits of the grid connection corridor.

The site has low to moderate agricultural potential as well as 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). Some parts of this site may not be suitable due to issues found on it namely rock outcrops, cultivated land etc.

2. Site Identified

The Farm Leeuwpans No.697, is located within the Gauteng Province, Registration Division IQ, South Africa and falls within the Merafong City Local municipality.

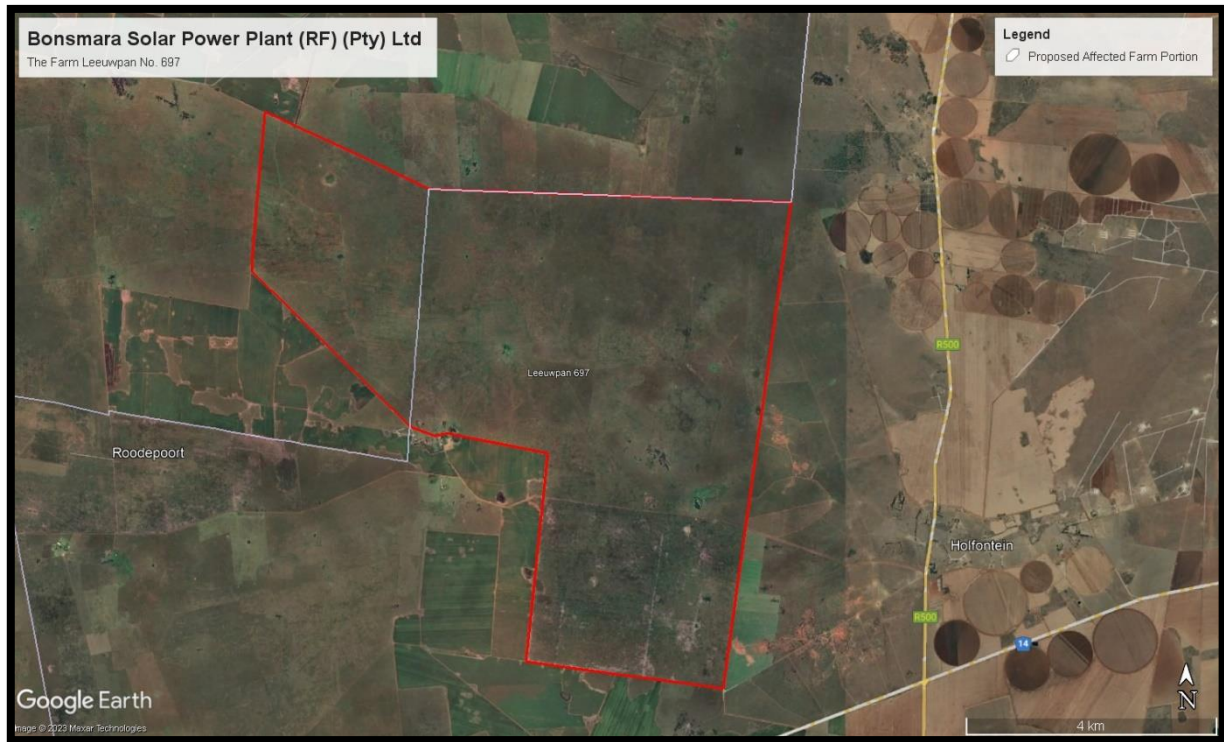


Figure 1: Proposed affected farm portion

3. Power lines and Substations

3.1 Substations near the site

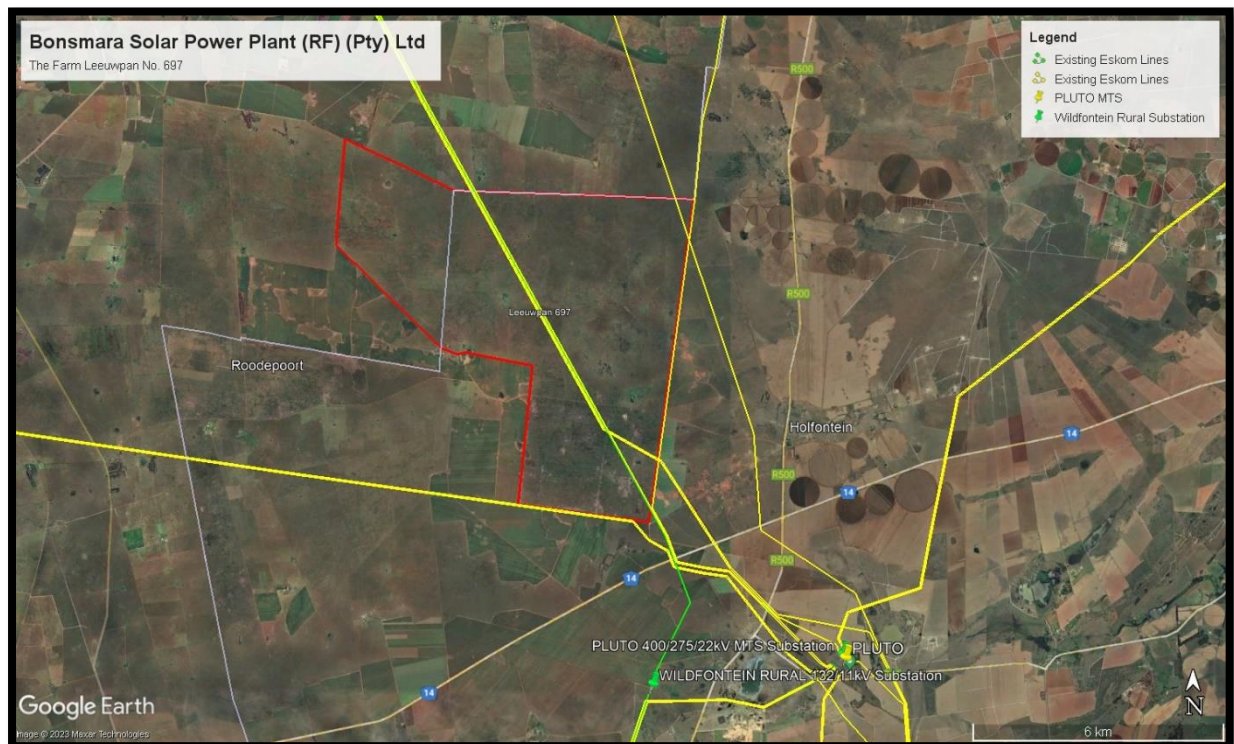


Figure 2: Wildfontein Rural 132kV Substation, Pluto 400kV MTS substation

Pluto MTS statistics:

- Supply Area: Gauteng Province
- Local Area: Hofffontein
- Transformer Voltage: 400/275/22 kV
- Transformers installed: 2
- REIPPPP Generation allocation to date: 0MW
- Load at Pluto MTS: 0
- Transformer Limit: -
- Substation Limit: 2580
- Local Area Limit: 2580
- Supply Area Limit: 4051

3.2 Power Lines near the site

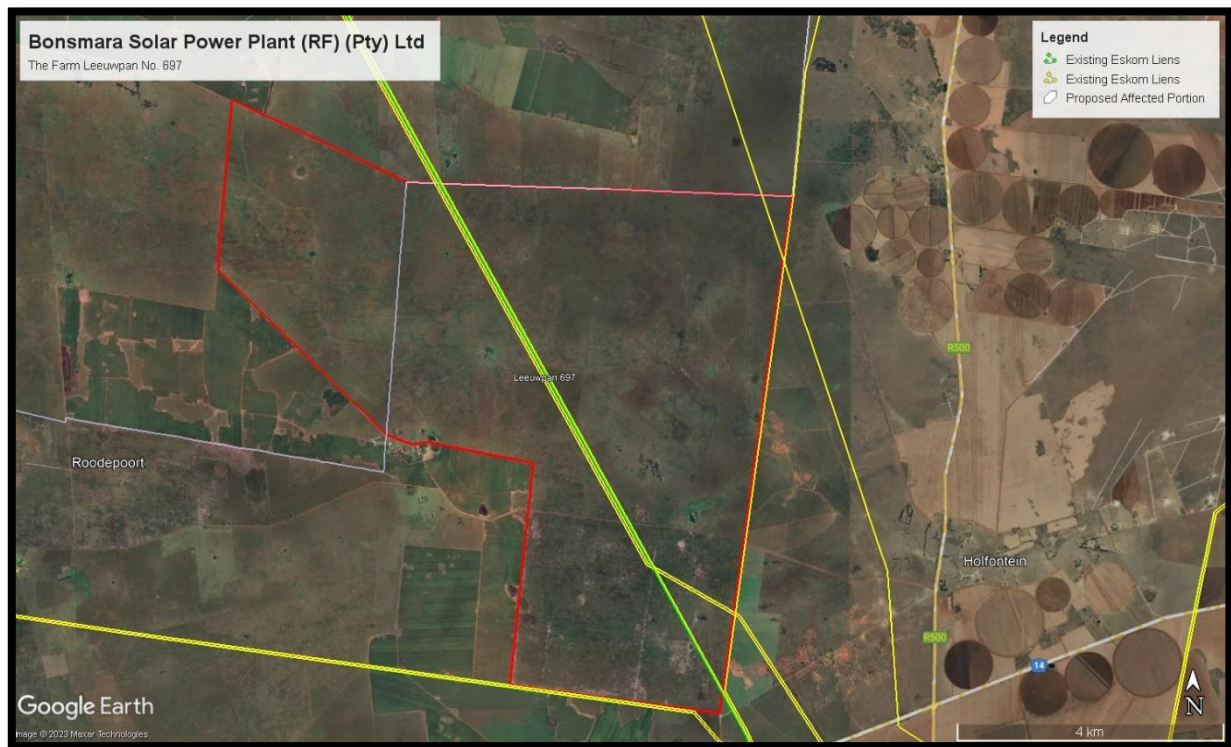


Figure 3: Illustration of Affected powerlines

MATIMBA PLUTO 1

MIDAS NGWEDI 1

387 OLIFANTSNEK / WILDFONTEIN 1 132kV Feeder HV Overhead Line

PLUTO TRIDENT 1

010 Bighorn/Pluto 1 275kV Overhead Line

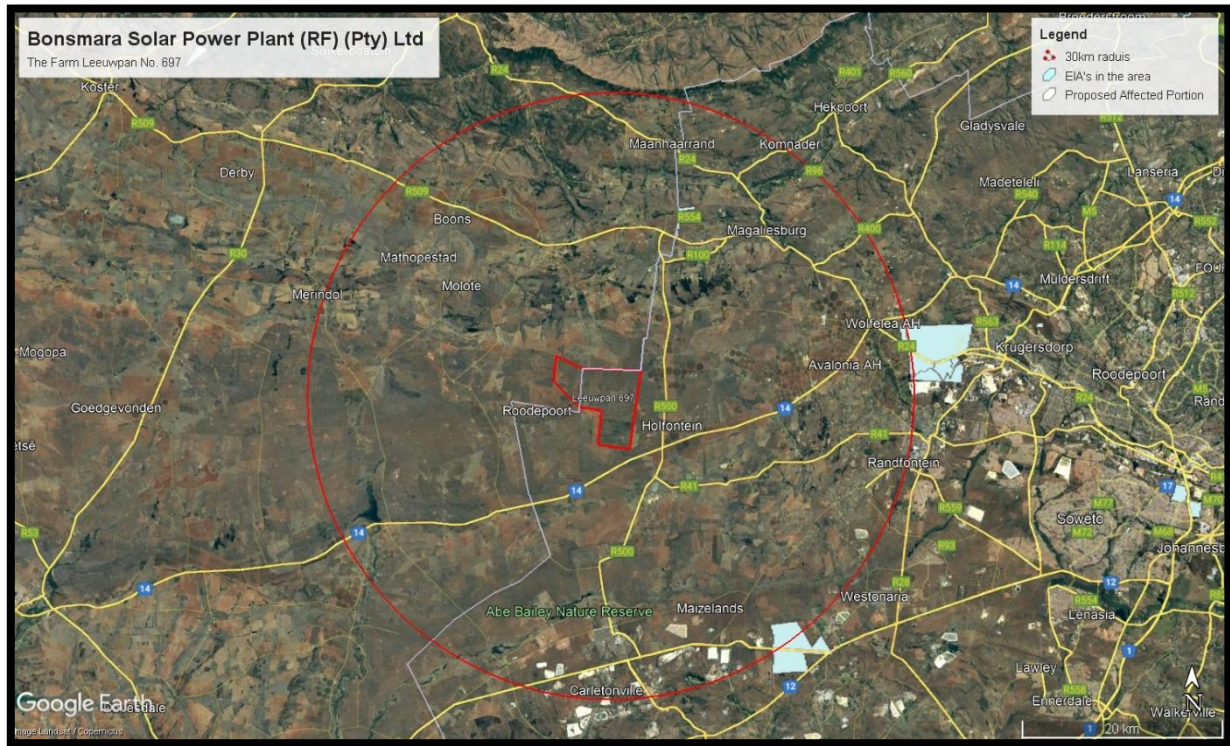
PLUTO WATERSHED 1

655 Hera/Watershed 1 275kV Overhead Line

MIDAS NGWEDI 2

4. Environmental Impact Assessments done in the area

Three other EIA have been conducted within a 30km radius of the farm portions.



Summary of similar EIAs conducted within 30km of the site.

Project name	Proposed generation capacity (MW)	DDFE Reference	Project Status
The Proposed Construction Of Photovoltaic Solar Panels On Portion 3 (Portion Of Portion 2) Of The Farm Rietpoort 395 Iq, Mogale City Local Municipality, Gauteng Province	15	12/12/20/2330	Approved
Proposed establishment of PV Cell on Farm Brickvale 161 IQ, Krugersdorp, Mogale City Local Municipality, Gauteng Province	19.9	14/12/16/3/3/1/636	In Process
Proposed construction of the 200 MW Photovoltaic Energy Facility for Sibanye Gold Limited on Portion 1, 2, 4, 5 and 6 of the Farm Uitval 280 within the Westonaria Local Municipality in the Gauteng Province	200	14/12/16/3/3/2/919	Approved

5. Natural Resources

5.1 Geology

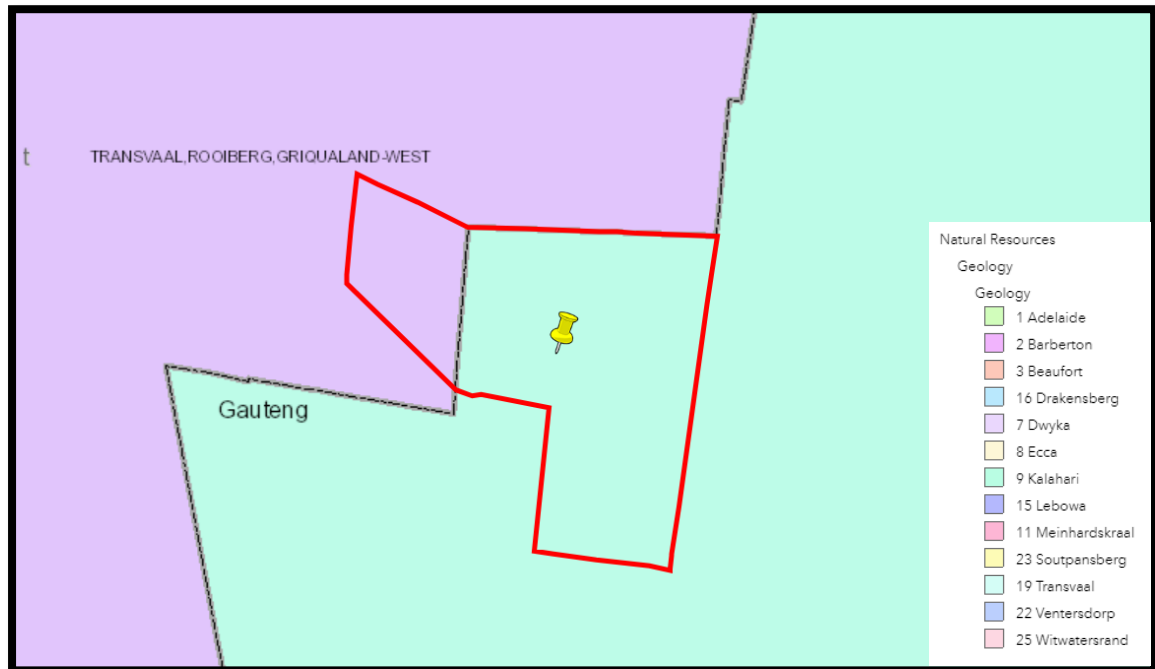


Figure 5: The proposed Development is underlain by the Transvaal Rooiberg Griqualand-west group

5.2 Terrain



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

5.3 Vegetation

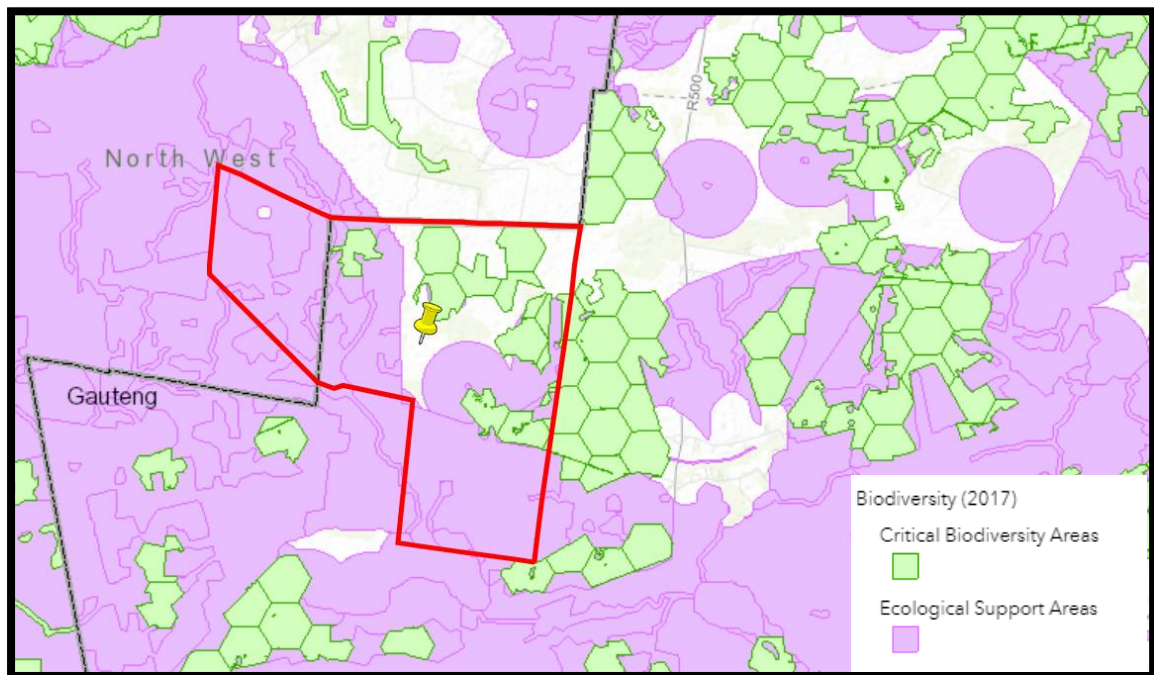


Figure 7: The study area has Ecological Support Area (ESA) present and a few sections are classified as a Critical Biodiversity Area (CBA). Sections of the site is not classified as an ESA or CBA and is therefore considered less sensitive.

5.4 Water

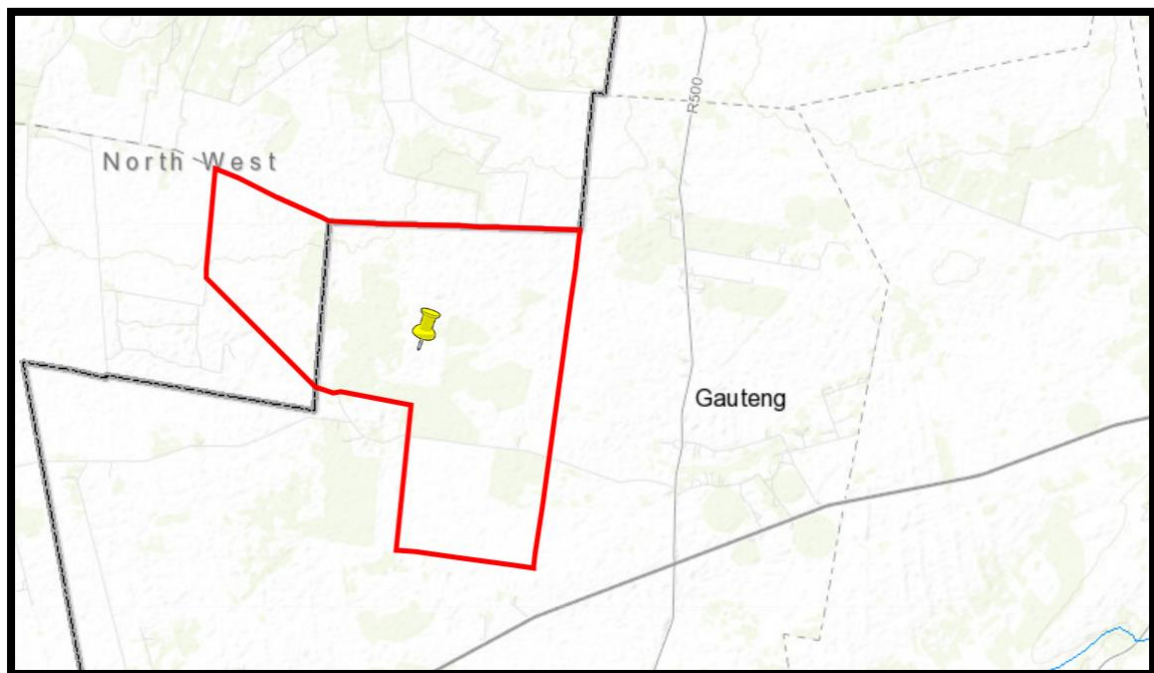


Figure 8: There are no NFEPA rivers present near the farms

5.5 Agriculture

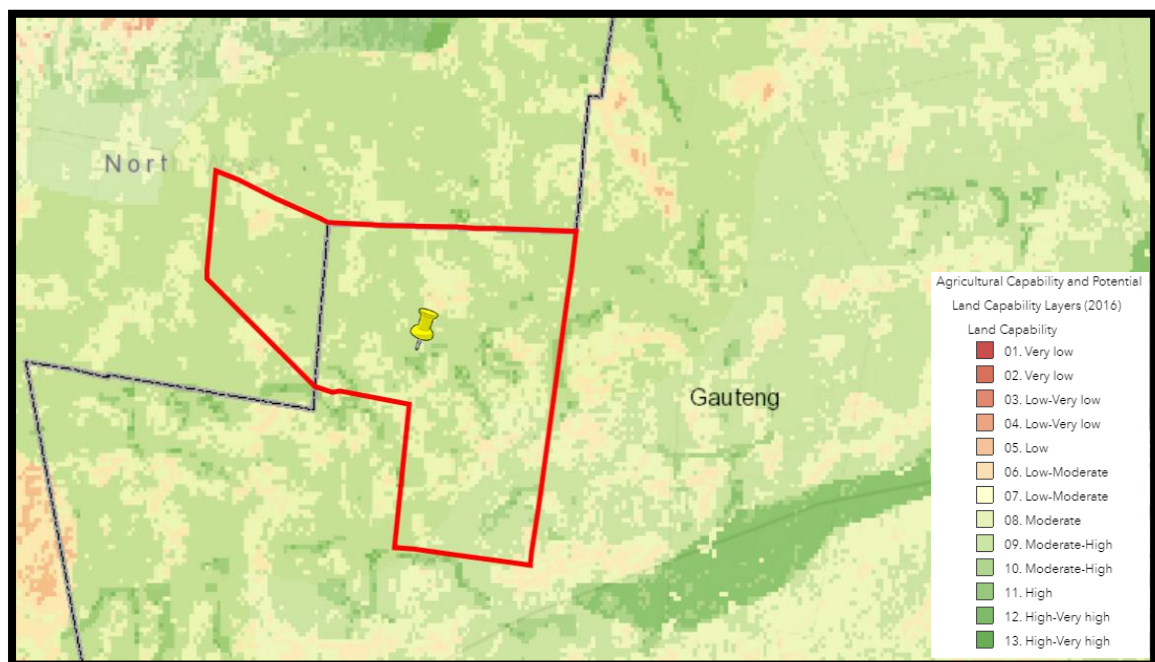


Figure 9: The land capability in the study area consists of Low-Moderate to Moderate- High land capability

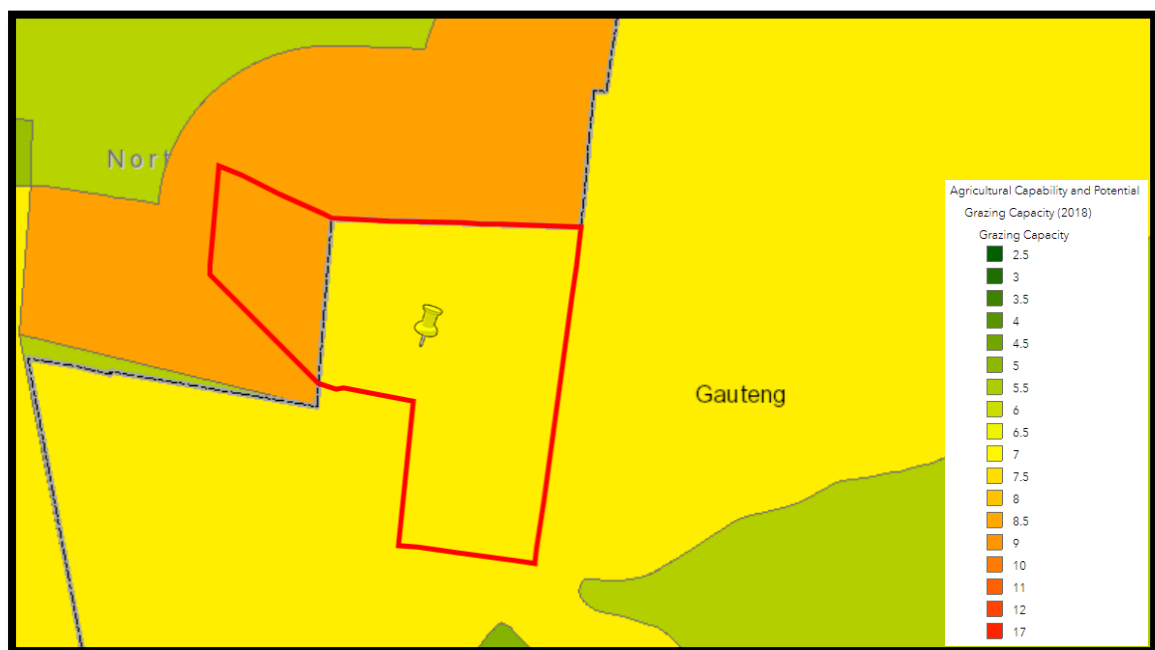


Figure 10: The grazing capacity in the study area has a value of 7 to 8, this is considered a moderate grazing capacity

6. Global Horizontal Irradiation (SolarGIS)

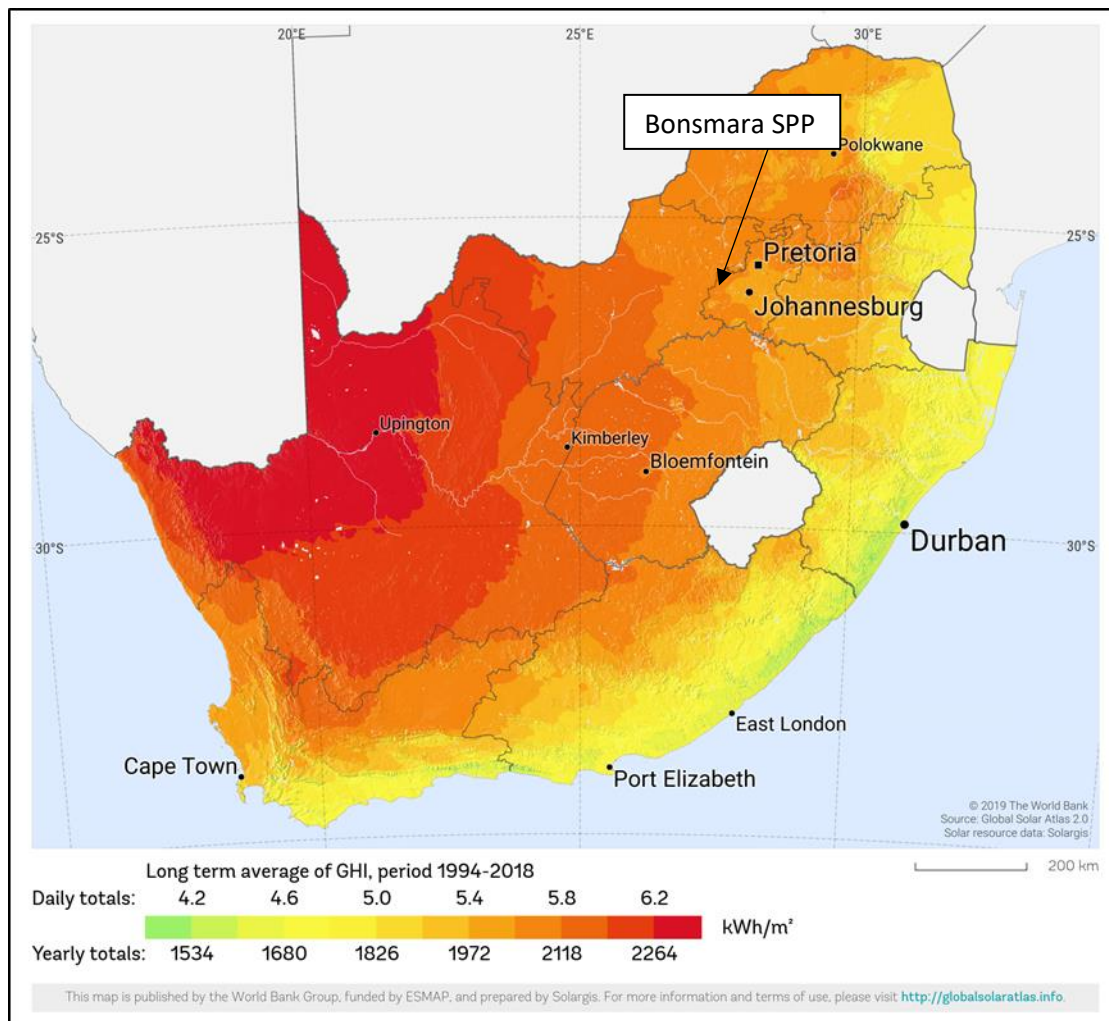


Figure 11: This study falls within an area with a global horizontal irradiation

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 500ha 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 one access route option.

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