



# SUBSOLAR ENERGY (PTY) LTD SITE ASSEMENT OF PORTION 2 OF THE FARM ILLMASDALE NO.70, NORTH WEST PROVINCE, SOUTH AFRICA

SEPTEMBER 2022

<p><b>Prepared for:</b> Environamics Environmental Consultants Dated: 13 September 2022</p>	<p><b>Contact Person:</b> Hermien Slabbert P: P.O. Box 785553, Sandton, 2146  E: slabberth@subsolar.co.za</p>
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## 1. Executive Summary

The town of Lichtenburg is located approximately 13 km south of the proposed farm portion and is owned by Antonie Christoffel Van Dyk. The identified site is located on Portion 5 (Portion of Portion 2) of the Farm Zamenkomst No. 4 and the total size of the farm is approximately 526 hectares (ha) within the North West Province, Registration Division IP, South Africa (Figure 1). The study area falls within Ditsobotla Local Municipality area of jurisdiction.

The landscape consists of level plains with some relief. Access will be obtained via a gravel road off of the R505 regional road to the west of the site. For connection to the grid it is expected that generation from the facility will connect into the WATERSHED 275/132/88 MTS Substation.

The site has medium 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 (i.e. Lichtenburg has good solar radiation levels) 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 such as water sources or other no-go areas.

## 2. Portion 2 of the Farm Illmasdale No. 70

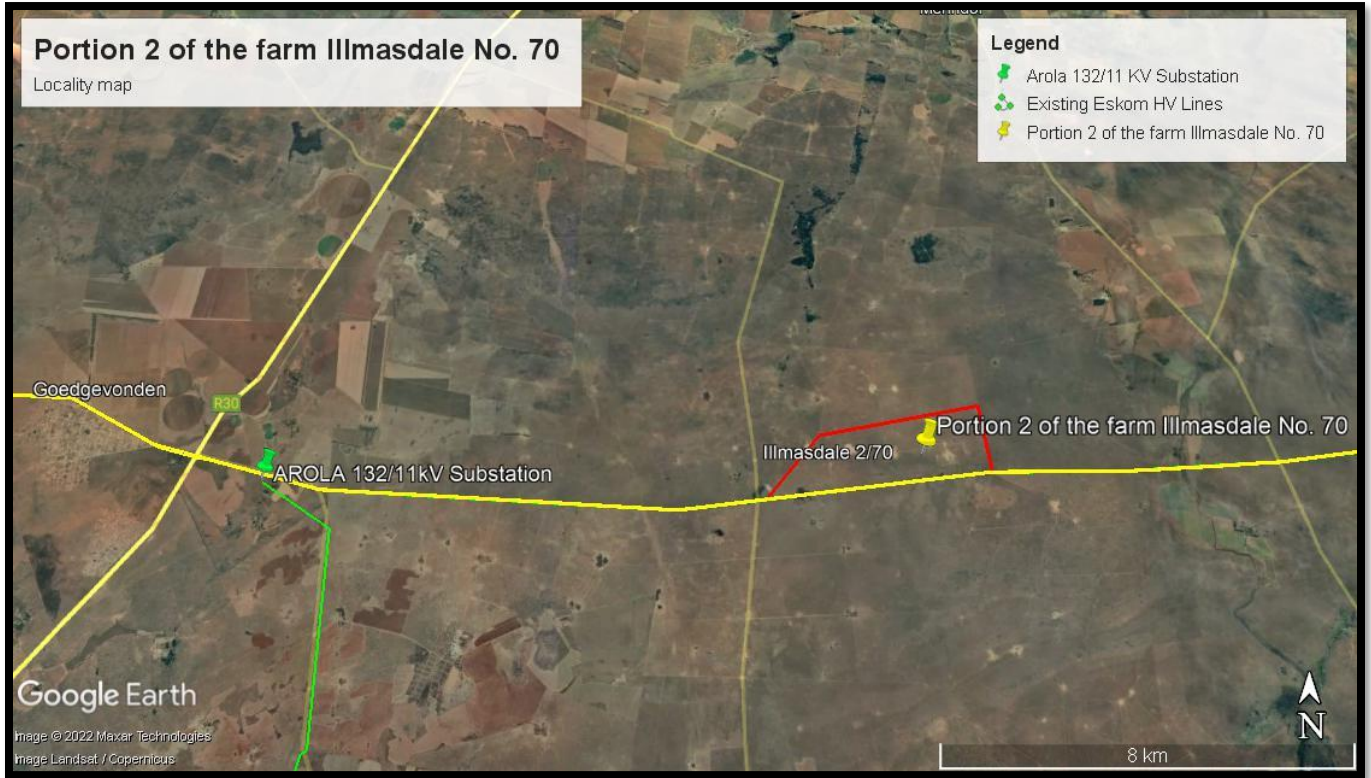
Portion 2 of the Farm Illmasdale No. 70 is located within the North West Province, Registration Division IQ, South Africa and falls within the JB Marks Local Municipality.



Figure 1: Portion 2 of the Farm Illmasdale No. 70 shown by the red pin

### 3. Power lines and substations

Goedgevonden area Eskom Grid:



The Arola 132/11KV Substation (MTS) is located approximately 11 km from the farm portion as illustrated in Figure 2 below.

Figure 2: Portion 2 of the Farm Illmasdale No. 70 shown by the yellow pin and the proximity to the Arola Substation (approximately 11 km)

#### **Arola MTS statistics:**

- Supply Area: North West province
- Local Area: Goedgevonden
- Transformer Voltage:
- Transformers installed:
- REIPPPP Generation allocation to date:
- Load at Watershed MTS:
- Transformer Limit:
- Substation Limit:
- Local Area Limit:
- Supply Area Limit:

Power Lines near site:

- GROMOFONT TRACTION / VENTERSDORP TRACTION 1 132kV HV Feeder Overhead Line
- Pluto/Watershed 1 275kV Overhead Line
- HERA WATERSHED 275KV Overhead Line

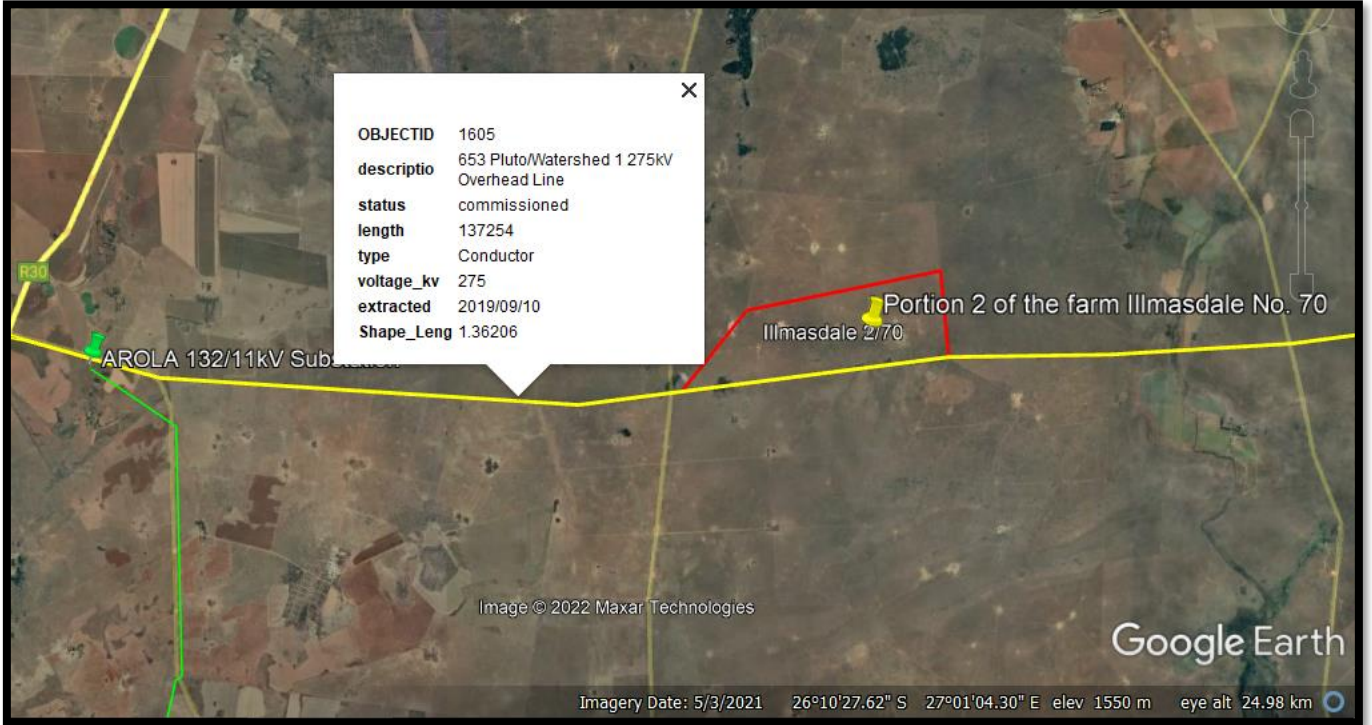


Figure 3: Two 275kv powerlines adjacent to Portion 2 of the Farm Illmasdale No. 70

#### 4. Environmental impact assessments done in the area

EIAs have not been conducted within a 30km radius of the farm portion:

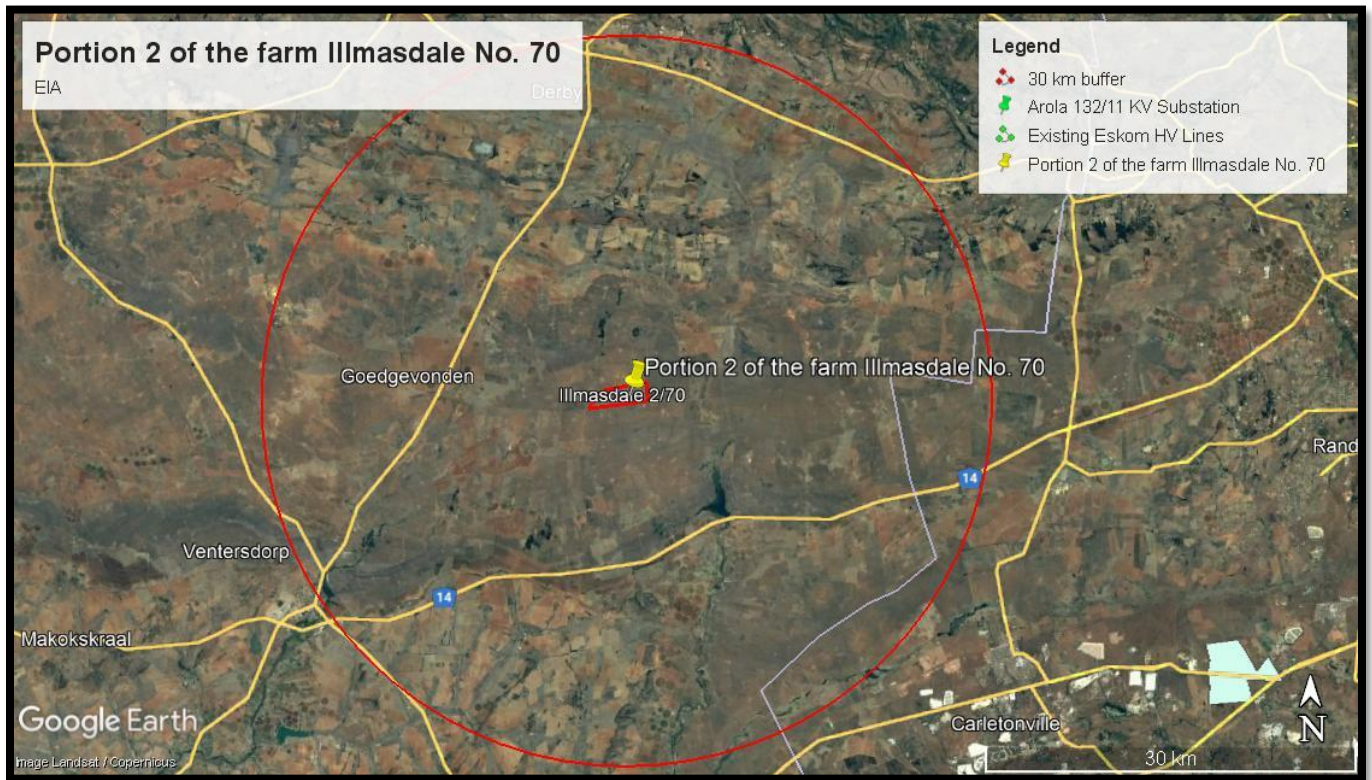
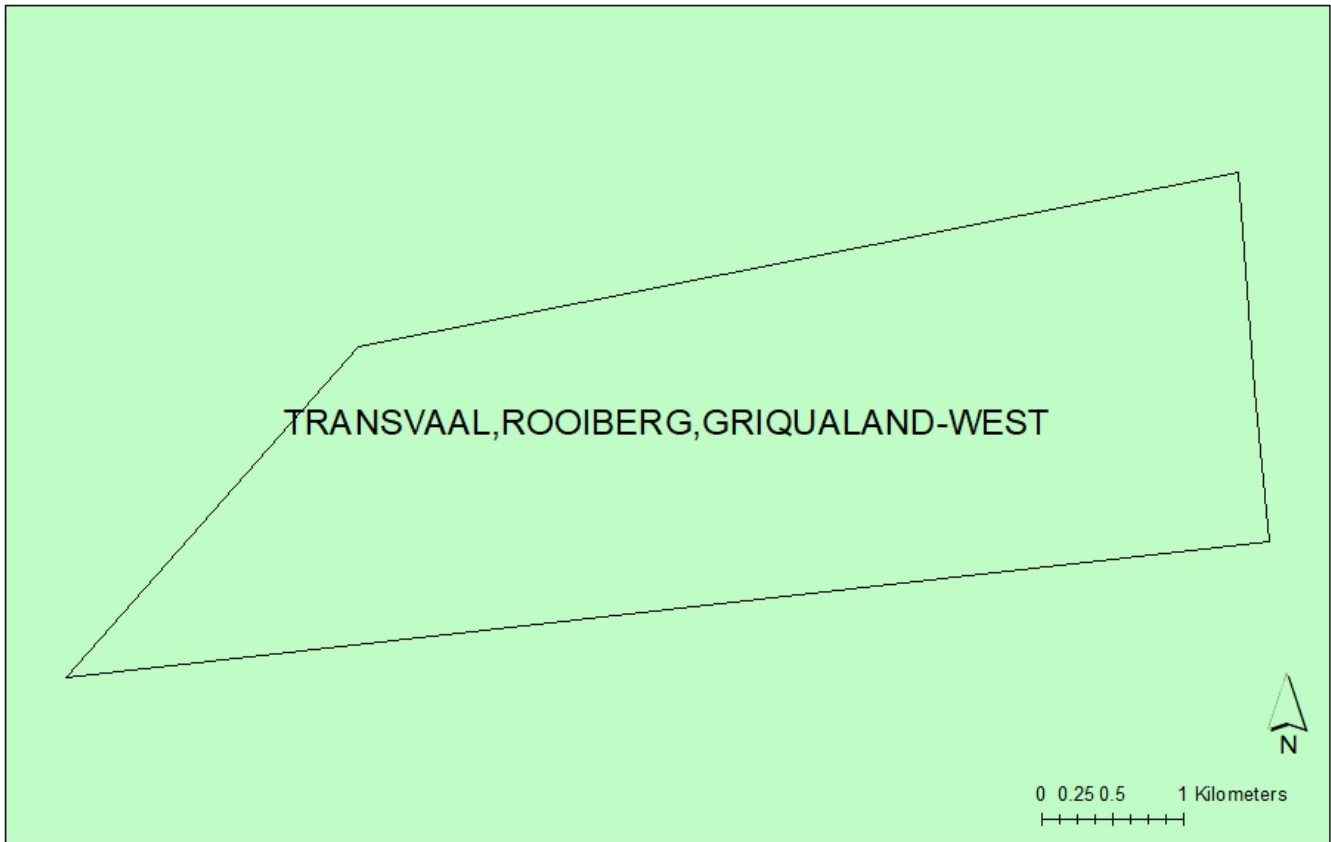


Figure 4: EIA's within 30km of Portion 2 of the Farm Illmasdale No. 70

## 5. Natural resources



### 5.1 Geology

Figure 5: The proposed development is underlain by the Transvaal, Rooiberg, Griqualand-West.

The geological maps 2826 Winburg (Figure 6 below) indicates the site is underlain by the following:

Alluvium, calcified alluvium and river gravel over the southern part and buff-white to white sandstone, blue/grey mudstone and shale and subordinate conglomerate of the Adelaide Subgroup, Beaufort Group along the northern boundary. There is also documented dolerite intrusion on the site.

Figure 6: Geological maps 2826 Winburg, the proposed development is outlined in black.

A more detailed Geotechnical study will be undertaken in conjunction with an Environmental Impact Assessment.



## 6.2. Terrain

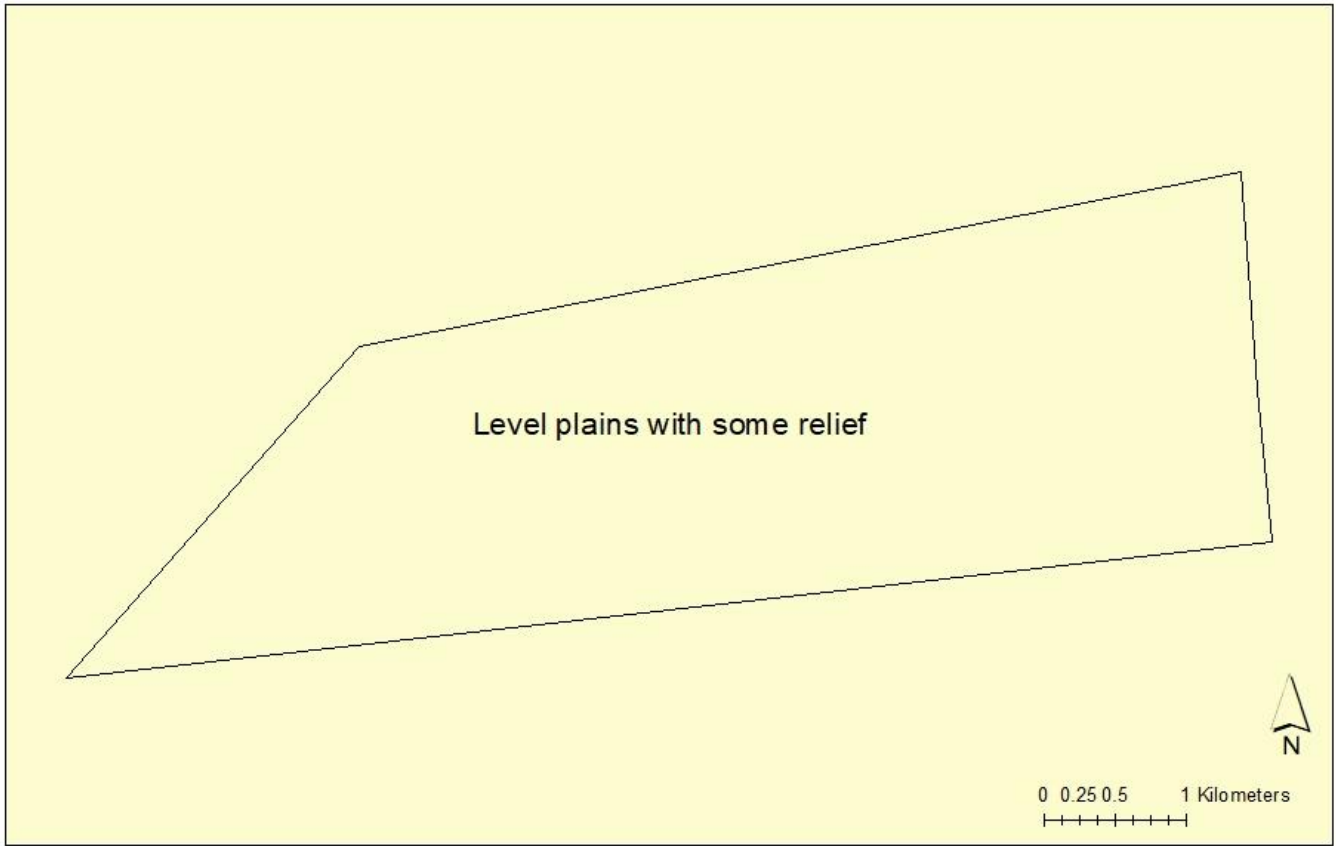


Figure 6: The slope class of the study area consists of the three lowest slope classes: 0-3%, 3-12% and 12-20%. The terrain is therefore considered to be level plains with some relief.

### 6.3 Vegetation:

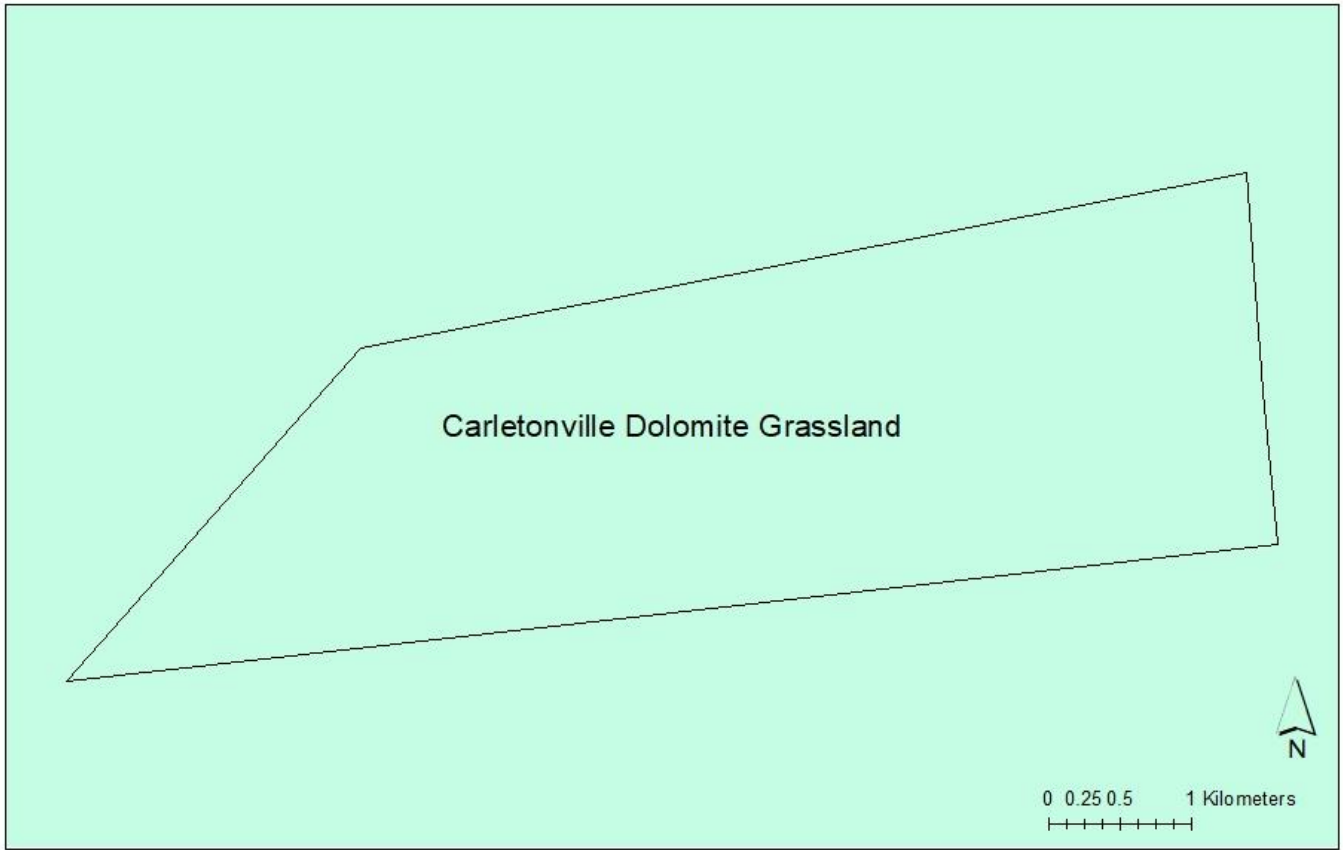


Figure 7: The study area falls within an Ecological Support Area (ESA), the ESA covers the majority of the site.

### 6.4 Water

No water sources such as rivers or dams were identified on site.

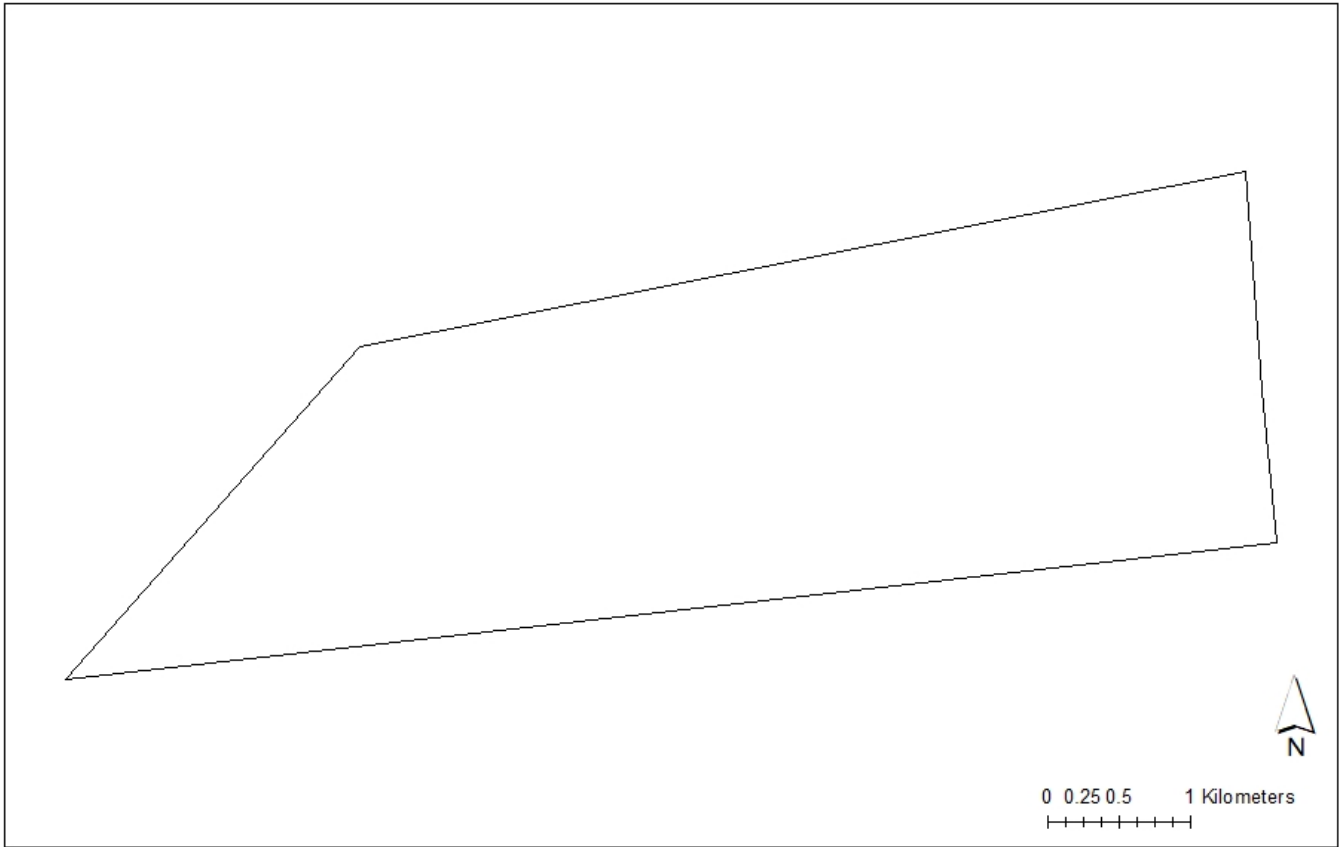


Figure 8: The catchment areas that the site falls under.

## 6.5 Agriculture

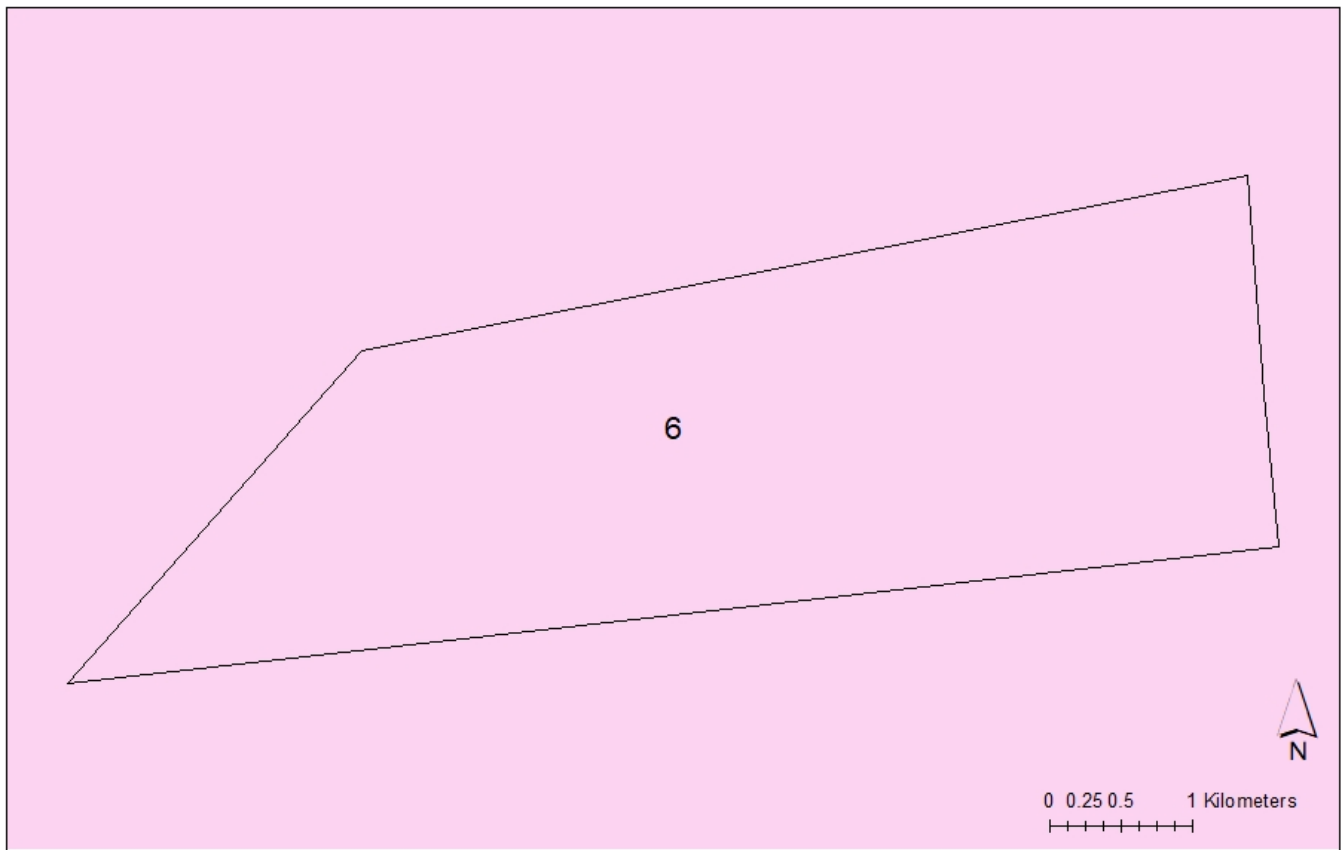


Figure 9: The land capability in the study area of Moderate land capability.

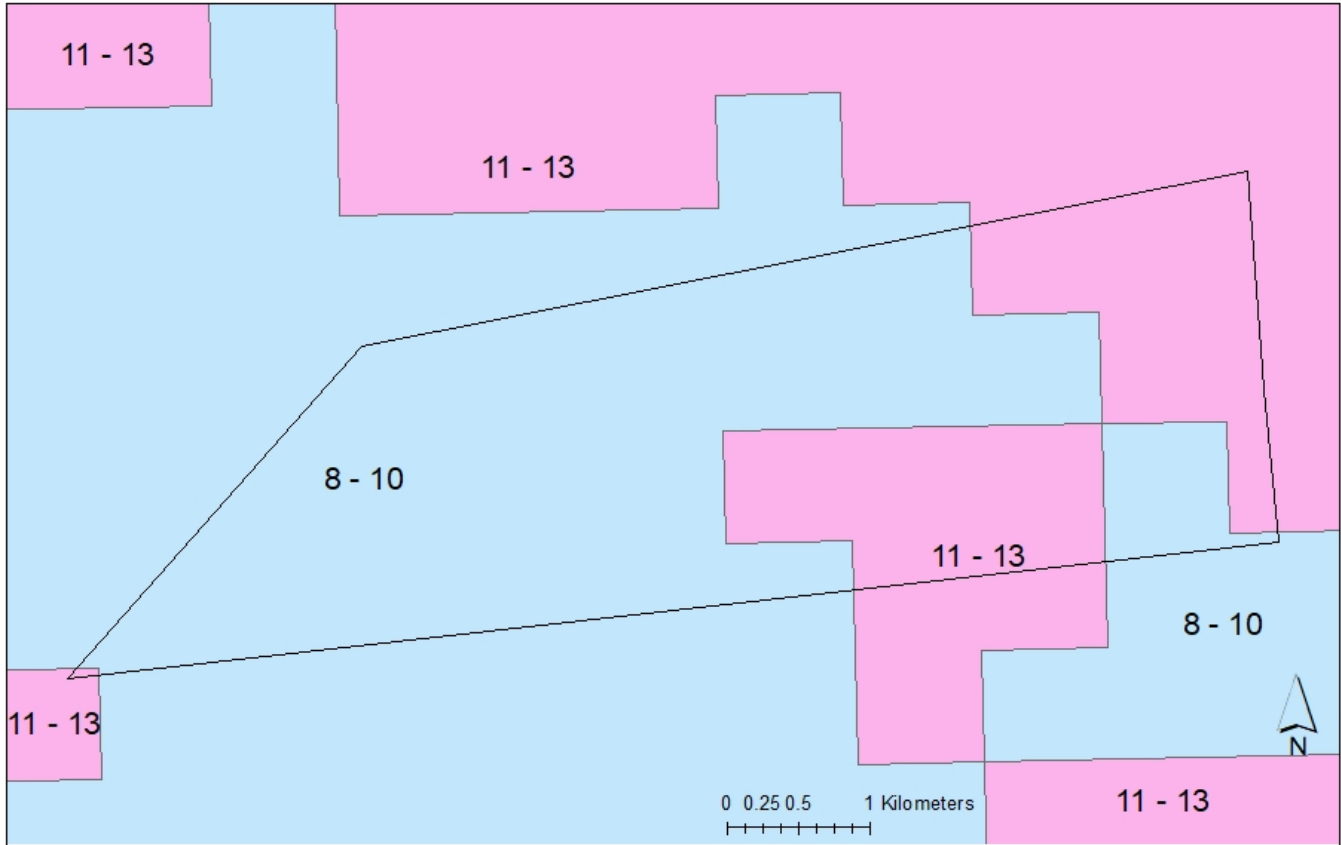


Figure 10: The grazing capability in the study area has a value of 8.

## 7 Global horizontal irradiation (SolarGIS)

The Global Horizontal Irradiation for the area derived from the World Bank Group's Global Solar Atlas is approximately 2118kWh/m<sup>2</sup>. The site falls within a region that is considered to be suitable for solar energy development and the irradiation level is sufficient for the operation of a solar PV facility. This will enable the

proposed project to compete competitively in the Department of Mineral Resources and Energy's (DMREs) Renewable Energy Independent Power Producer Procurement (REIPPP) Programme or any other programmes/opportunities to generate power in South Africa.

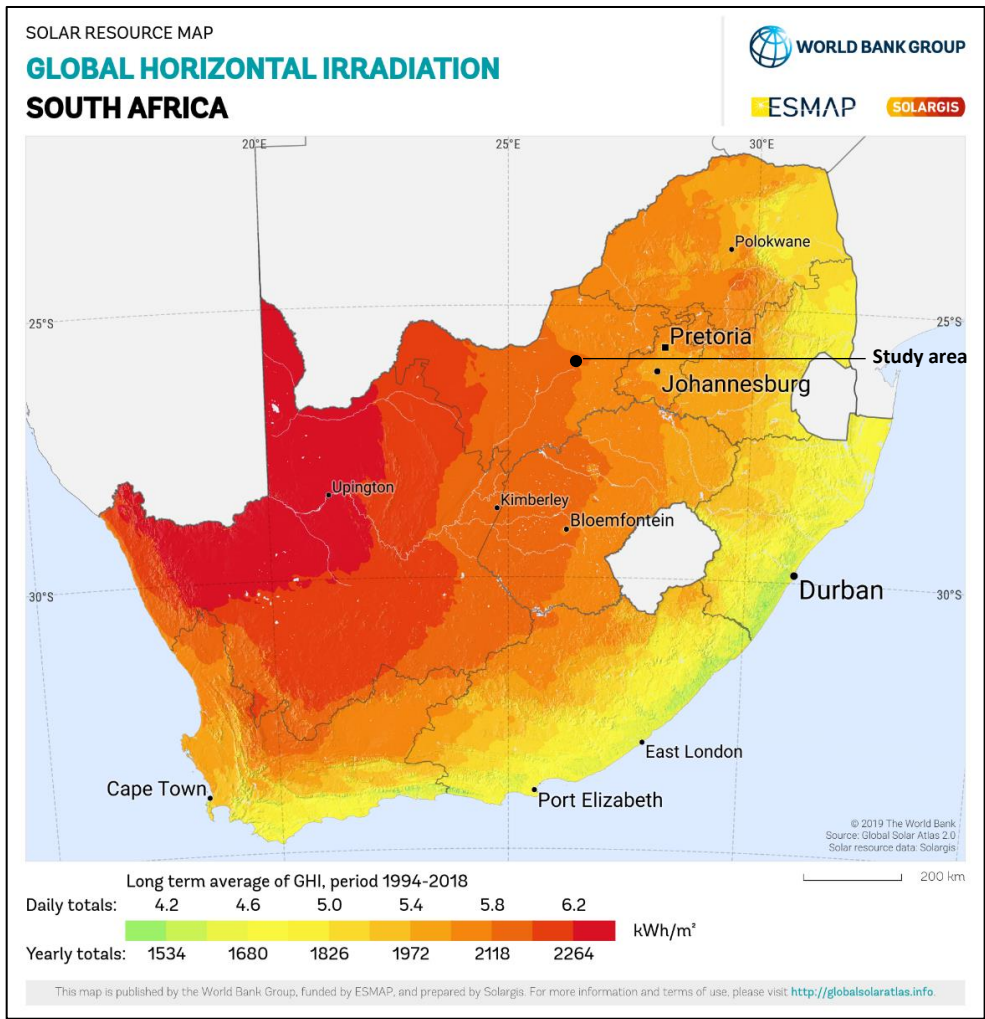


Figure 11: GHI of the study area is approximately 2319.96kWh/m2.

## 8. Possible areas for development

Figure 9: Proposed development area for a solar power plant

A proposed development footprint was identified for a proposed solar plant, this footprint is 300ha 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. This proposed development footprint has a long power line routes to the Arola MTS.

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.

## **9. Reference:**

Natural Agricultural Resources Atlas of South Africa, NAR Atlas Website:  
<https://ndagis.nda.agric.za/portal/apps/webappviewer>

Photovoltaic Geographical Information System Website:  
<https://ndagis.nda.agric.za/portal/apps/webappviewer>