SUBSOLAR ENERGY PTY (Ltd) SITE ASSESSMENT OF CHAMPIONS KLOOF 731 PORTION 5, NORTH WEST PROVINCE, SOUTH AFRICA

NOVEMBER 2015

Subsolar

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1. Executive Summary

The farm Champions Kloof 731 portion 5, located near Vryburg is owned by the Meyer trust. The farm is approximately 397.3009 hectares (ha), within the North West Province, Registration Division HN, South Africa (Figure 1). The study area falls within the Dr Ruth Segomotsi Mompati District Municipality, located in the Naledi Local Municipality.

The landscape consists of rolling or irregular plains with low hills or ridges. The farm is in situated between the N18 and the R34. For connection to the grid, the site is situated close to the Mookodi substation. The site has moderate agricultural potential as well as low potential grazing capacity. From a hydrological perspective, there is one river on the site as well as a small pan toward the south of the site. This site has favourable conditions for a solar power plant due to its environmental conditions, weather conditions (i.e. Vryburg has solar radiation levels of 1780 kwh/kwp) as well as site access.

The site is larger than 300 ha; has good solar radiation, ecology and relative flat terrain (refer to Figures below). Given its moderate potential grazing capacity, possible problems may arise with environmental authorisation. Three EIA's have been conducted within 5 km of the site.

Some parts of this site may not be suitable due to issues found on it namely structures, rivers, pans, etc.

2. The farm Champions Kloof 731 portion 5

The farm Champions Kloof 731 portion 5 is located within the North West Province, Registration Division HN, South Africa and falls within the Dr Ruth Segomotsi Mompati District Municipality, located in the Naledi Local Municipality.

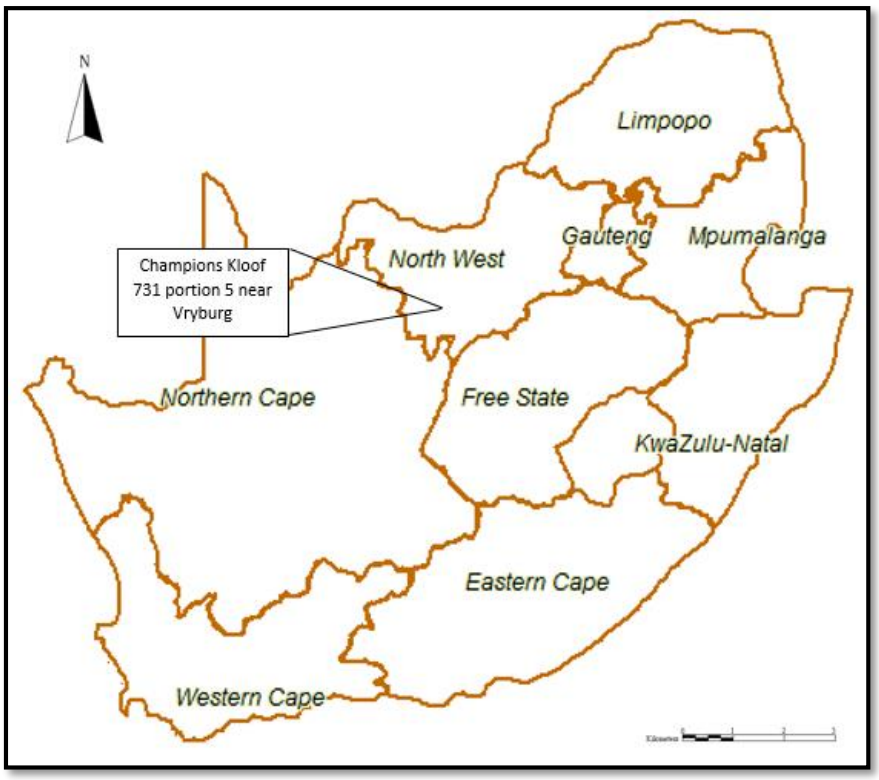


Figure 1: Location of the site

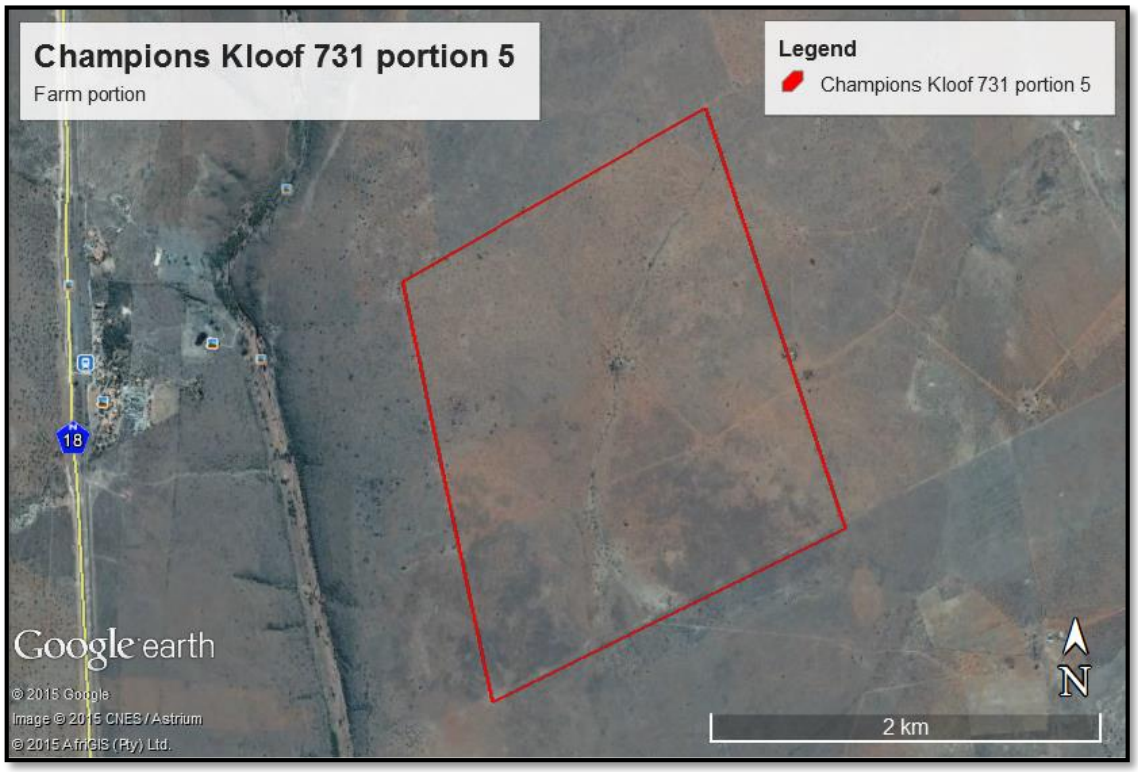


Figure 2: Land Portion of farm

3. Power lines and Substations

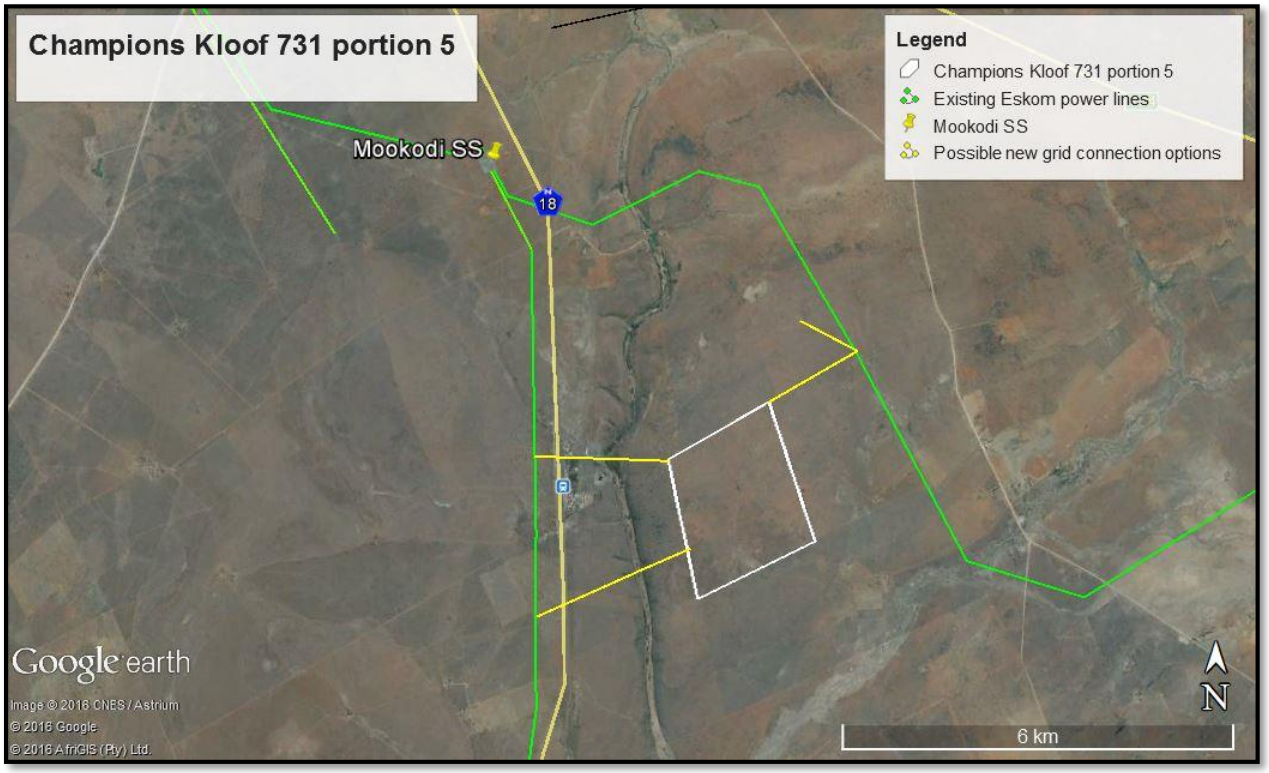


Figure 3: Power lines and substations

3.1. Substations near sites

DESCRIPTIO: MOOKODI SUBSTATION
VOLTAGE: 132.0 [kV]

3.2. Power Lines near site

DESCRIPTION: MOOKODI-
MECURY
VOLTAGE: 400[kV]

4. Farm portions and size

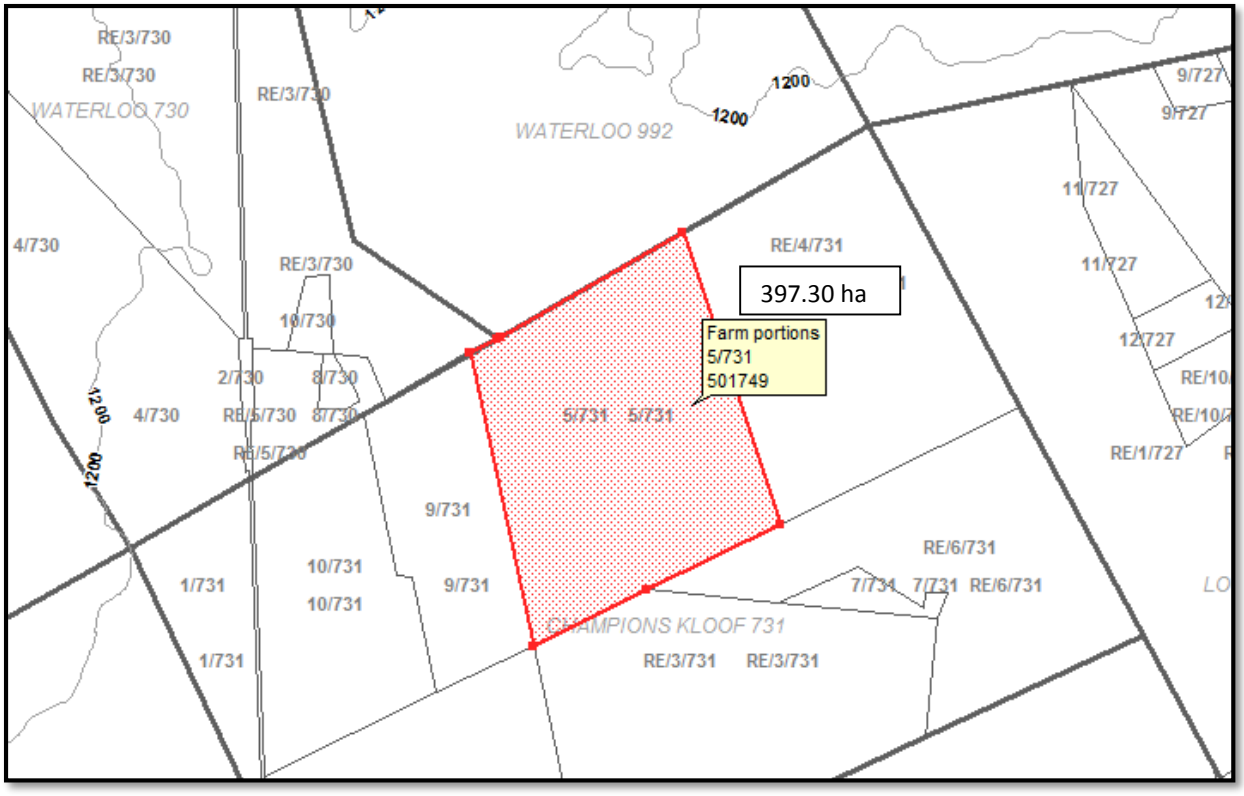


Figure 4: Farm portion (Planet GIS) Farm Portion and size

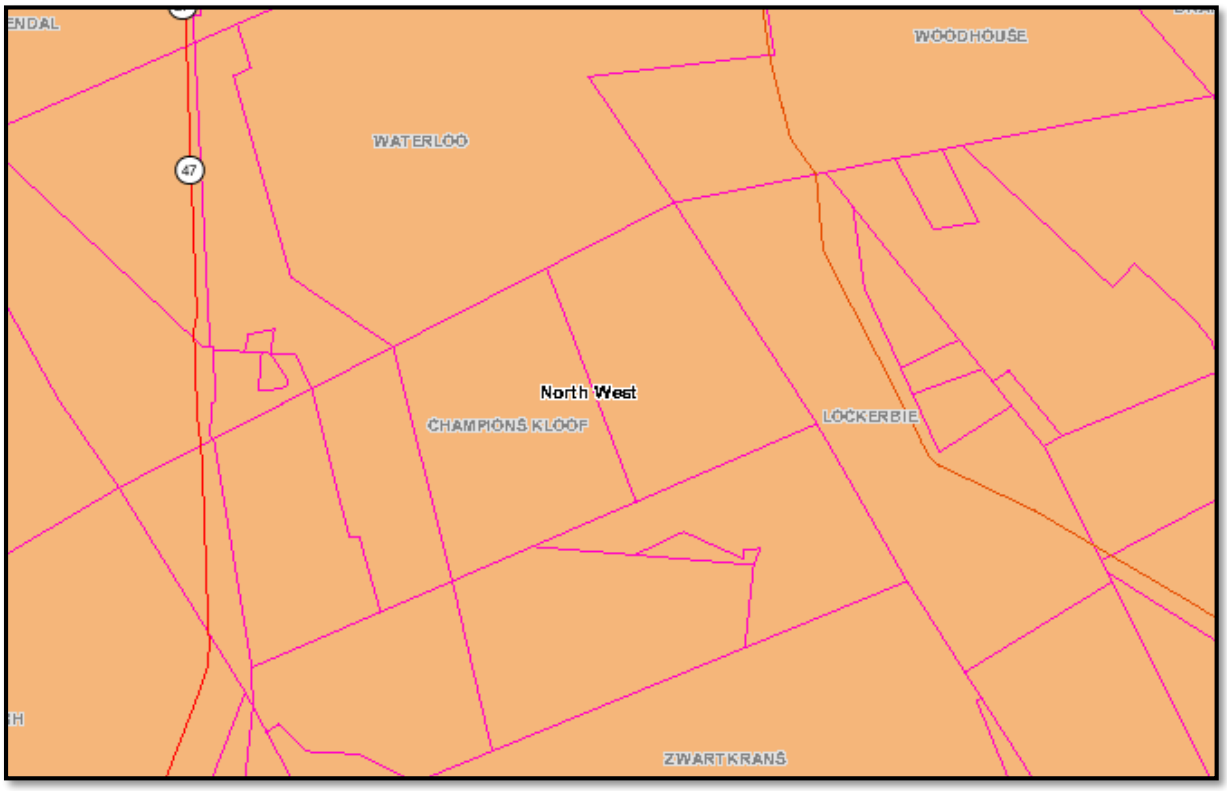


Figure 5: Land Portions (Agis)

5. Environmental impact assessments done in the area:

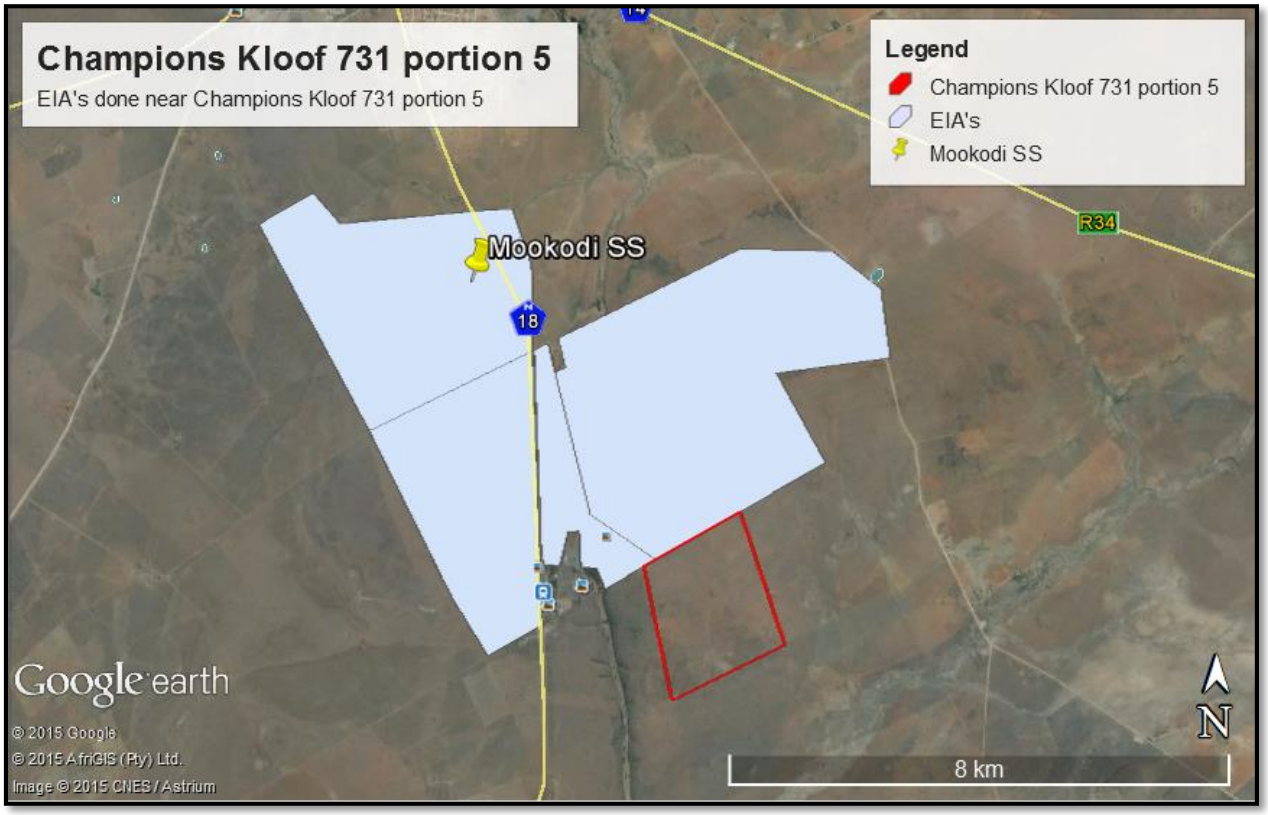


Figure 6: EIA's done in the area

Proposed Tiger Kloof Solar Photovoltaic energy facility:

14/12/16/3/3/2/535	
PRJ_REF	14/12/16/3/3/2/535
ARCHIVE	Active
PROVINCE	North West
LOCAL_MUNI	Naledi Local Municipality
DISTRICT_M	Dr Ruth Segomotsi Mompati
TOWN	Naledi Rural
AMEND_COMM	
APP_DATE	2013/08/01
EA_DATE	
PRJ_TITTLE	Proposed Tiger Kloof Solar Photovoltaic energy facility near Vryburg, North West Province
EA_HOLDER	Kabi Solar Pty Ltd
MEGA_WATT	75
TECHNOLOGY	Solar PV
PRJ_STATUS	IN PROCESS
EA_PROCESS	Scoping and EIA
VERIFIED	YES

Subsolar

Sediba Solar Power Plant

14/12/16/3/3/2/390	
PRJ_REF	14/12/16/3/3/2/390
ARCHIVE	Active
PROVINCE	North West
LOCAL_MUNI	Naledi Local Municipality
DISTRICT_M	Dr Ruth Segomotsi Mompati
TOWN	Naledi Rural
AMEND_COMM	
APP_DATE	2012/07/16
EA_DATE	2013/05/31
PRJ_TITTLE	Construction of the 75MW Photovoltaic facility and associate infrastructure in Naledi
EA_HOLDER	Sediba Solar Power Plant Pty Ltd
MEGA_WATT	75
TECHNOLOGY	Solar PV
PRJ_STATUS	APPROVED
EA_PROCESS	Scoping and EIA
VERIFIED	YES

DPS79 Solar Energy Pty Ltd

14/12/16/3/3/2/308	
PRJ_REF	14/12/16/3/3/2/308
ARCHIVE	Active
PROVINCE	North West
LOCAL_MUNI	Naledi Local Municipality
DISTRICT_M	Dr Ruth Segomotsi Mompati
TOWN	Naledi Rural
AMEND_COMM	Amend: contact details and associated infrastructure
APP_DATE	2013/04/05
EA_DATE	2013/05/26
PRJ_TITTLE	The Proposed Construction Of The 75mw Photovoltaic Solar Plant And Associated Infrastructure On A Portion Of The Farm Waterloo 992 In, Naledi Local Municipality Of The North West Province
EA_HOLDER	DPS79 Solar Energy Pty Ltd
MEGA_WATT	75
TECHNOLOGY	Solar PV
PRJ_STATUS	APPROVED
EA_PROCESS	Scoping and EIA
VERIFIED	YES

6. Natural Resources

6.1. Geology

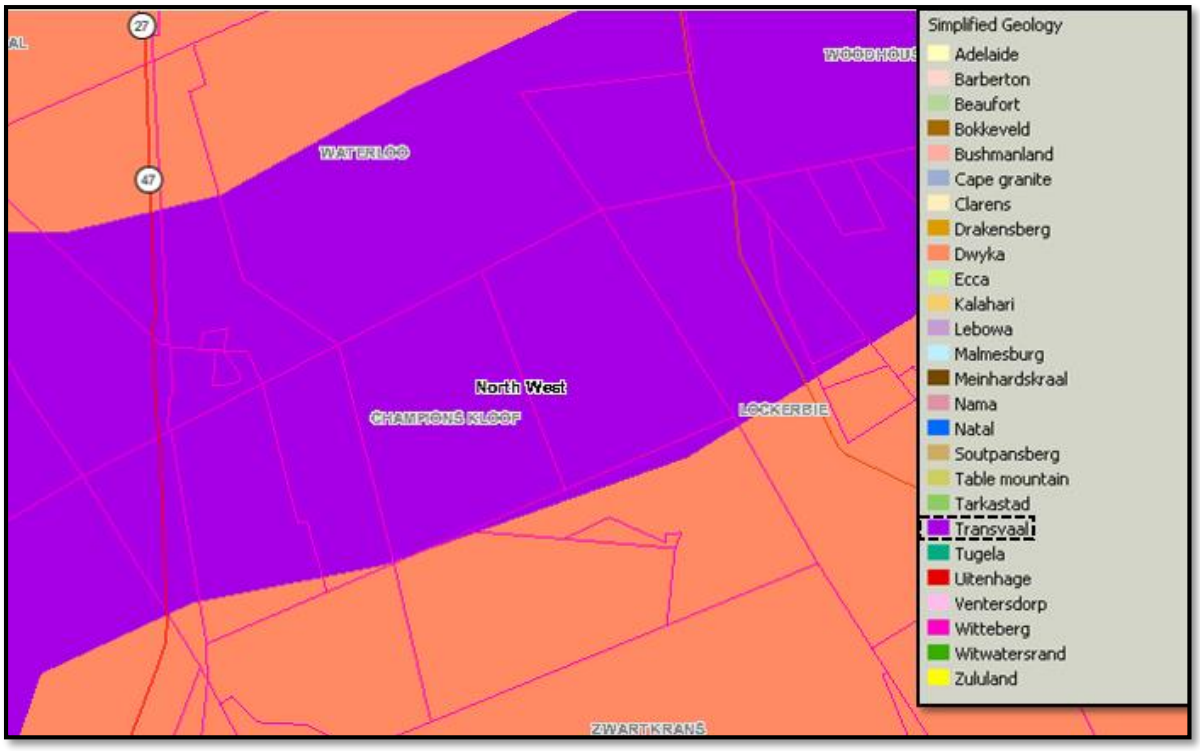


Figure 7: Simplified Geology (Agis)

6.2. Terrain

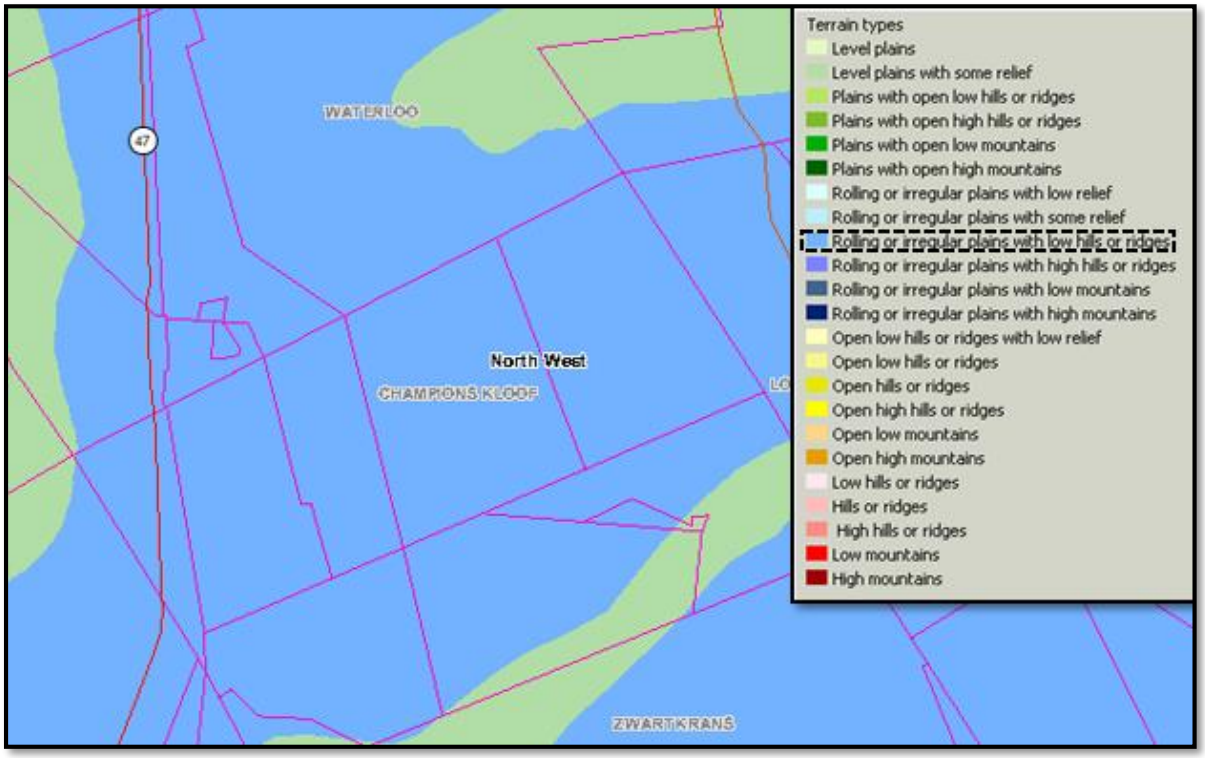


Figure 8: Terrain type (Agis)

6.3. Vegetation:

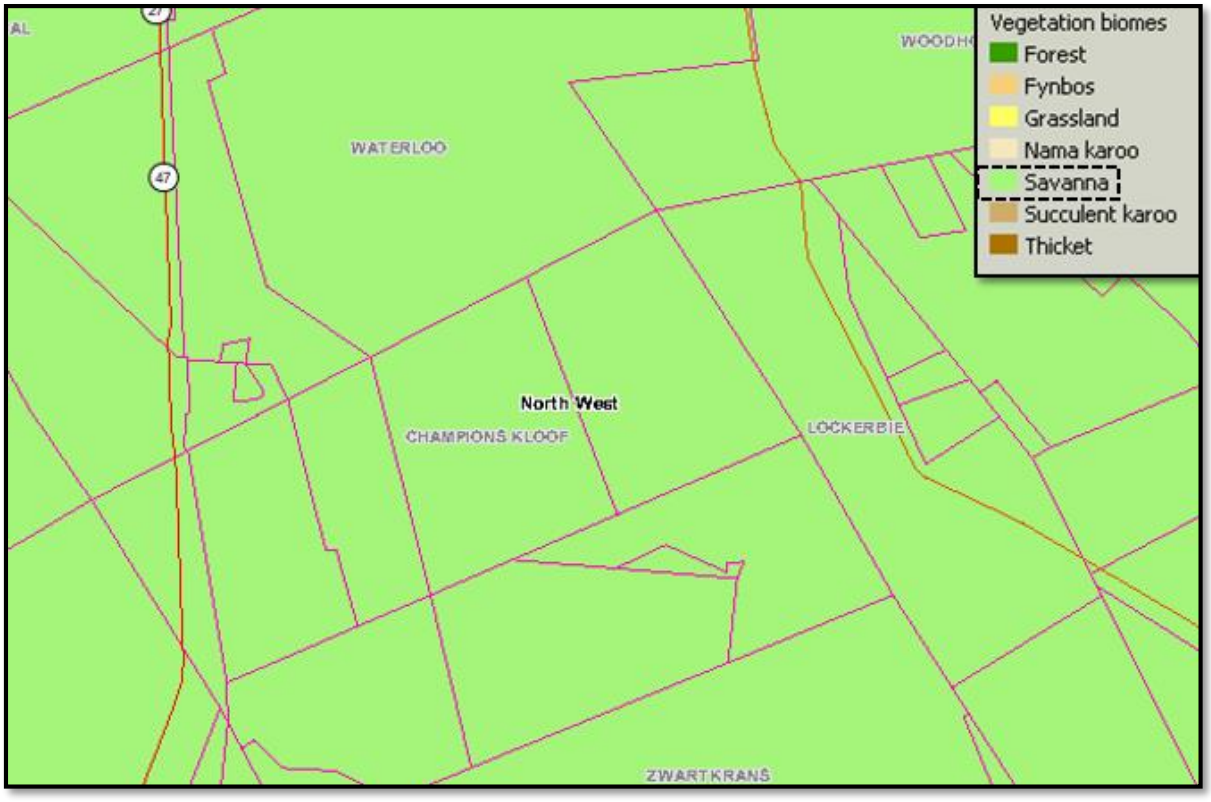
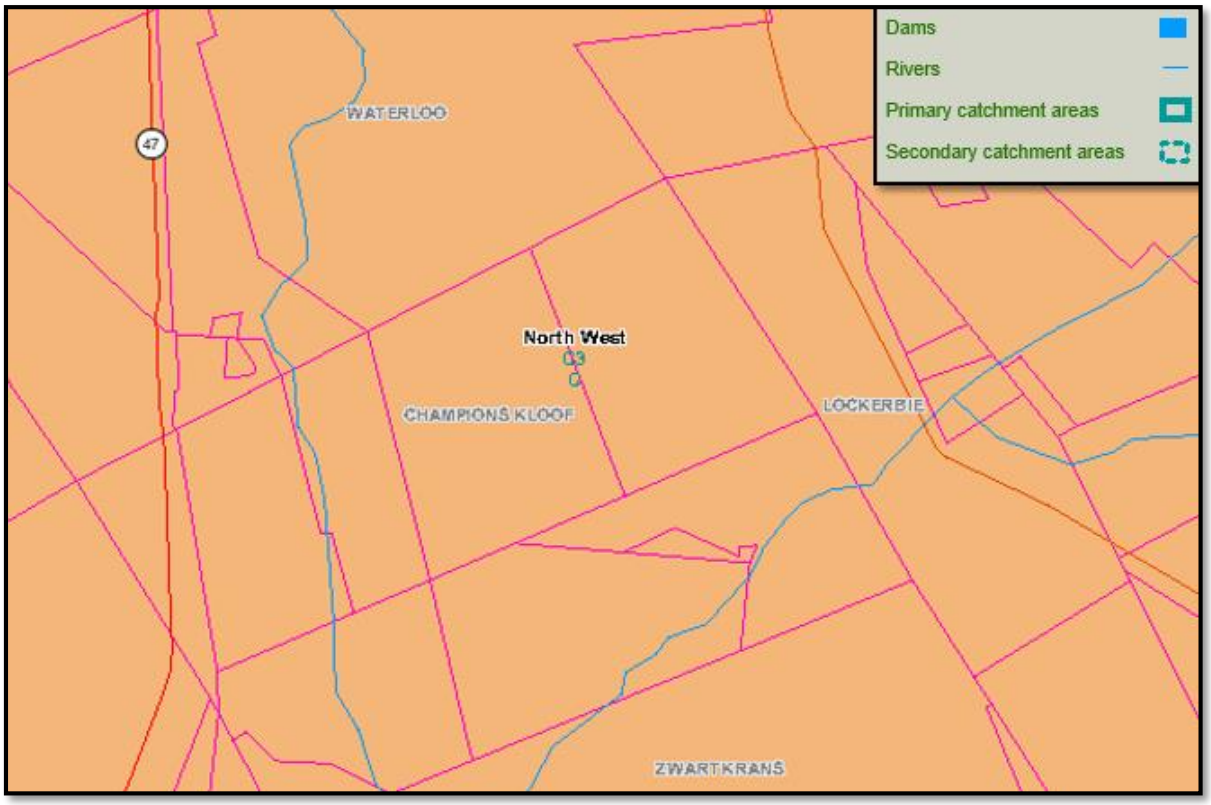


Figure 9: Vegetation biome (Agis)

6.4. Water

Figure 10: Dams and rivers (Agis)



7. Agricultural Potential

7.1. Land capability

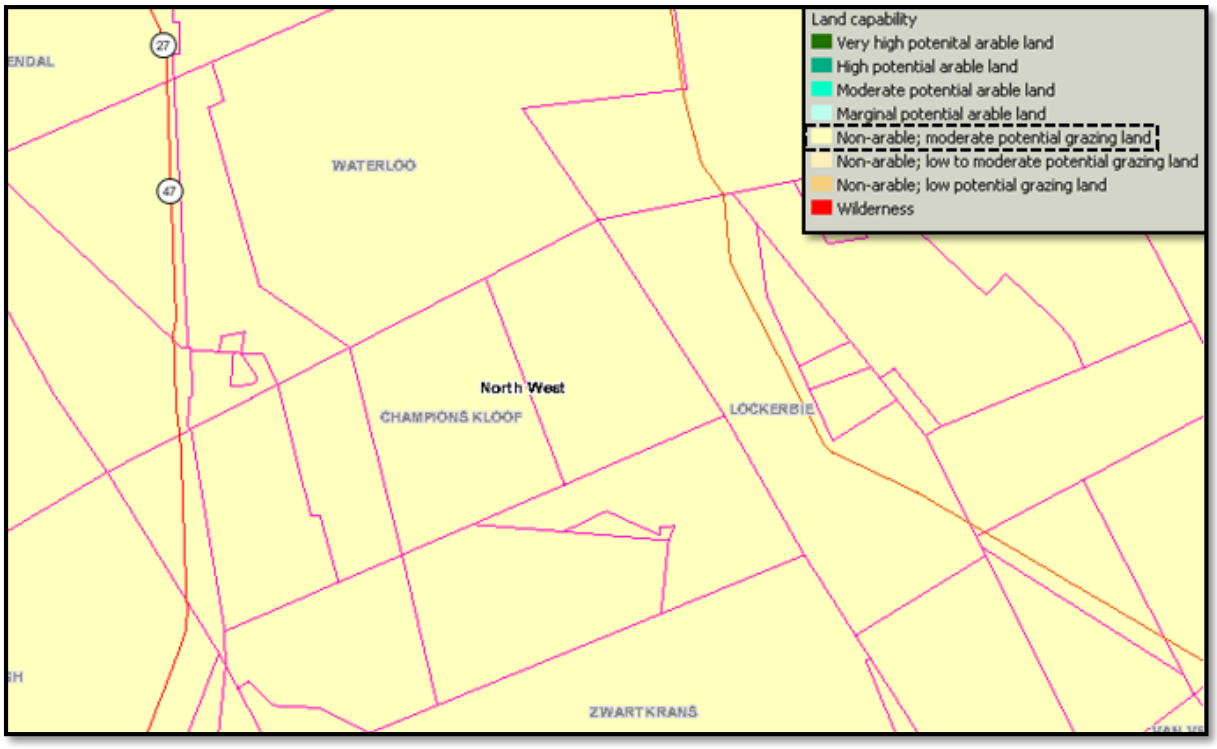


Figure 11: Land Capability (Agis)

7.2. Livestock

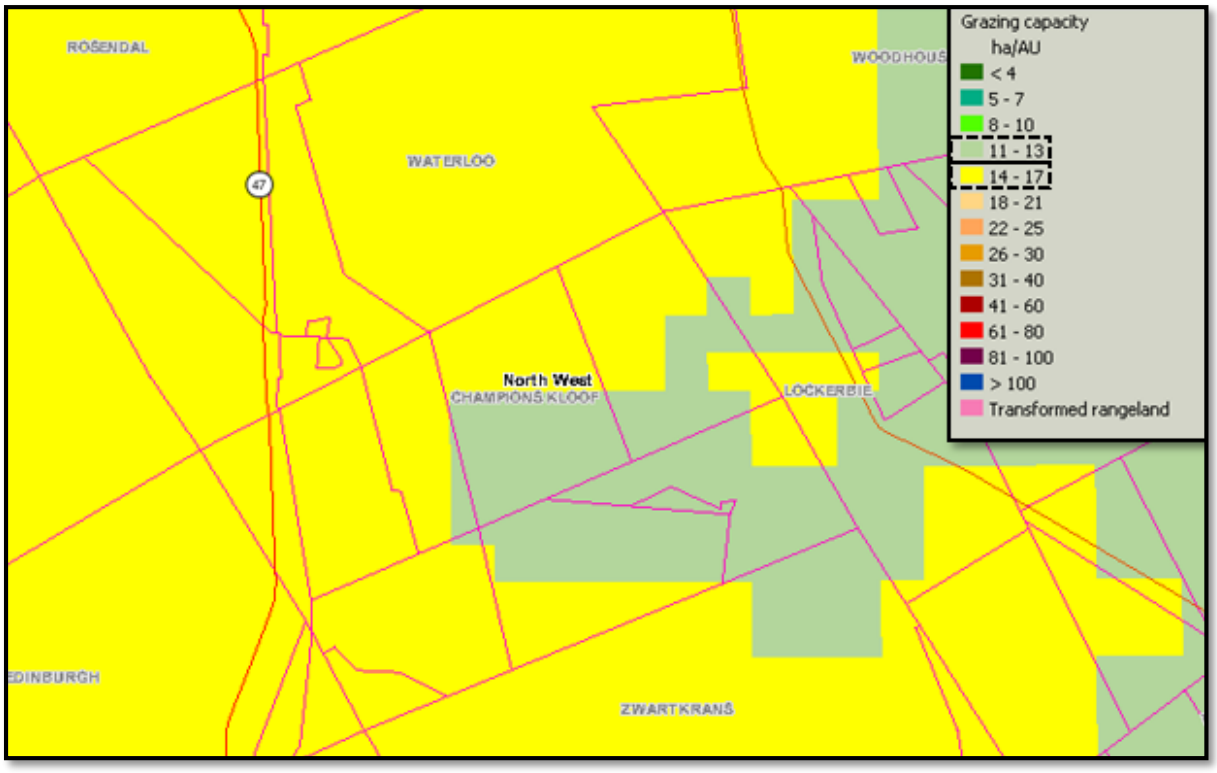


Figure 12: Grazing Capacity (Agis)

8. Land cover and Land use

8.1. Land use

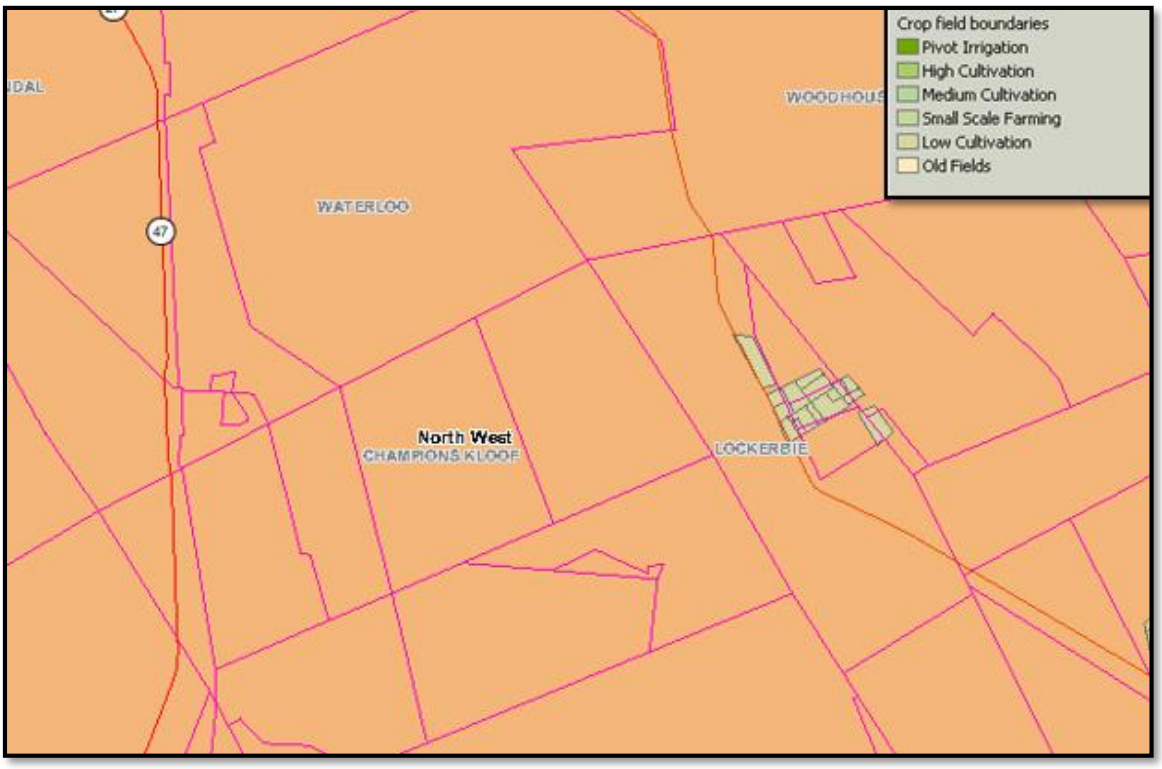


Figure 13: Crop field boundaries

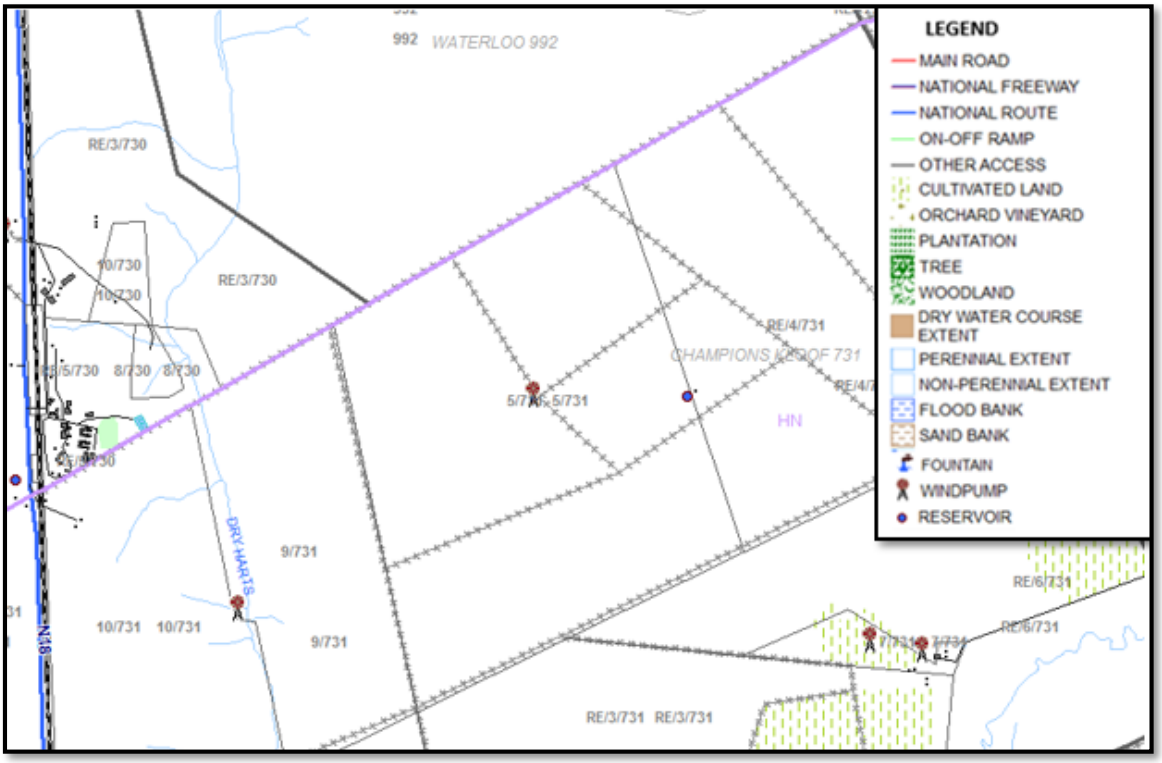


Figure 14: Vegetation and structures (PlanetGIS)

9. Solar Resource

The E_m is 1780 yearly with an inclination of 30 degrees, and -177 degrees orientation. Estimated losses due to temperature and low irradiance: 12.4%.

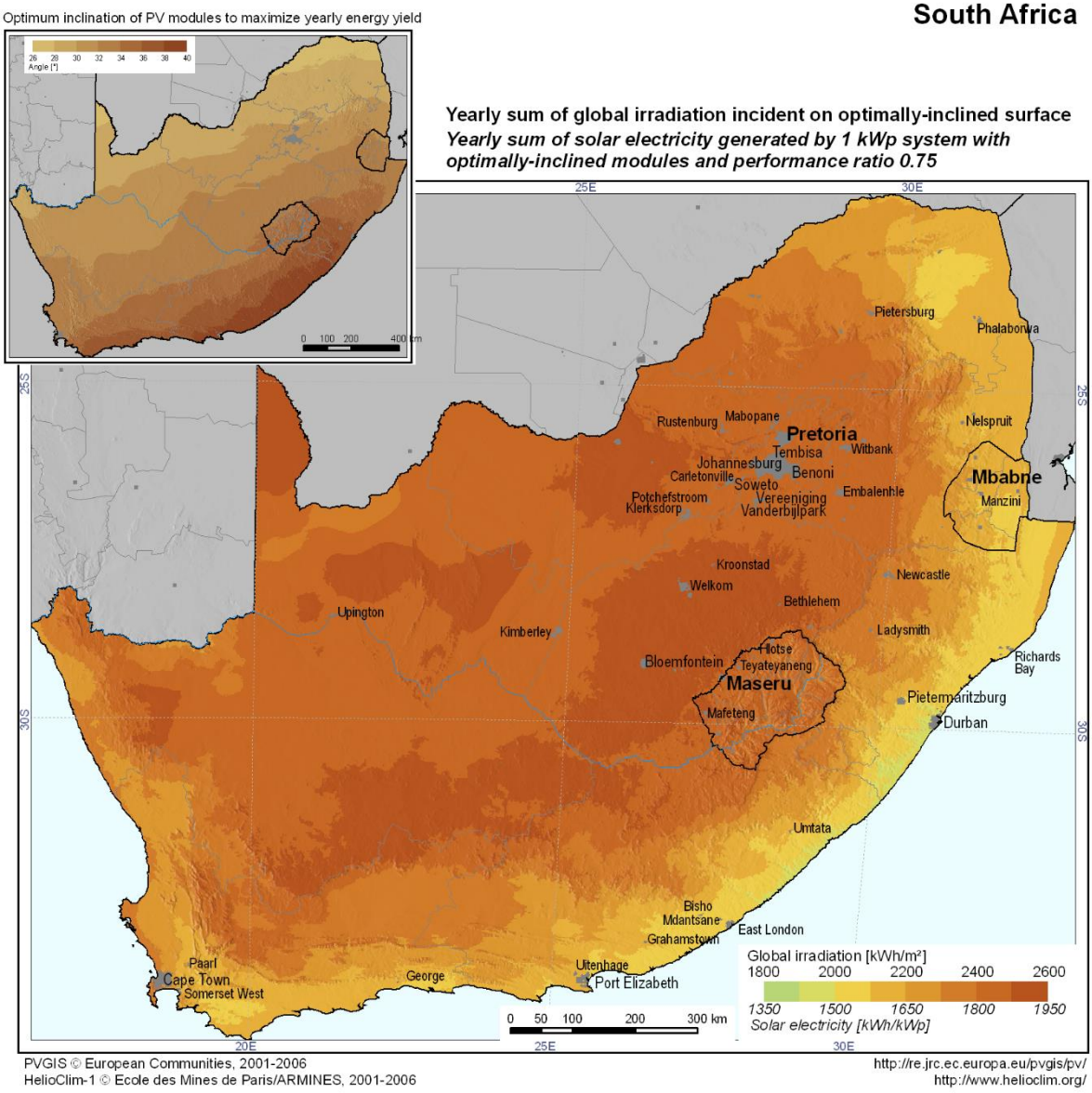


Figure 15: Global irradiation

10. Possible areas for development

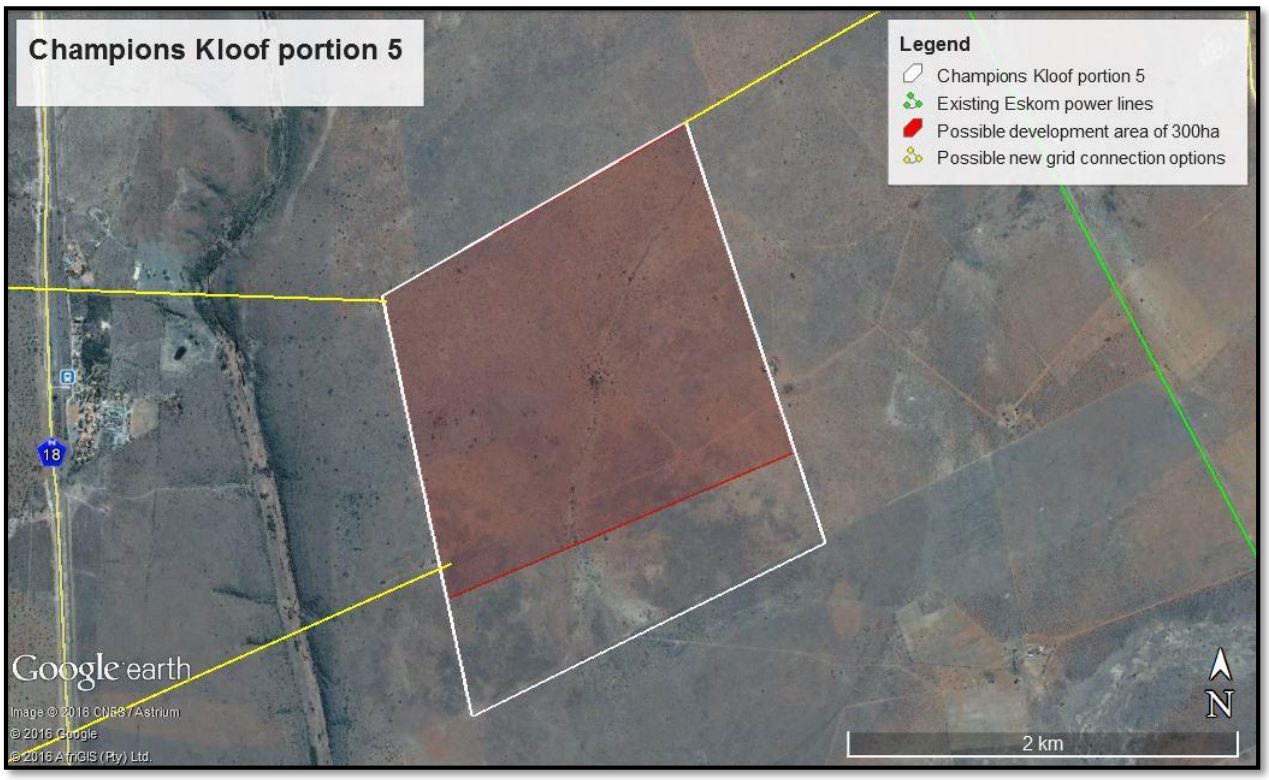


Figure 16: Proposed development area for a solar power plant

Keeping all the above information into consideration, 1 area was identified for a proposed solar plant. These areas were identified due to the low impact on the environment and infrastructure of the land portion.