

**SUBSOLAR ENERGY PTY (LTD) SITE ASSESSMENT OF  
THE REMAINING EXTENT OF THE FARM KAMEEL AAR  
315, NORTHERN CAPE PROVINCE, SOUTH AFRICA**

APRIL 2016



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## **1. Executive Summary**

The remaining extent of the farm Kameel Aar 315, located near Hotazel is owned by Saltrim Ranches Pty Ltd. The farm is approximately 1417.73 hectares (ha), within the Northern Cape Province, Registration Division Kuruman, South Africa (Figure 1). The study area falls within the John Taolo Gaetsewe District Municipality, located in the Joe Morolong Local Municipality.

The landscape consists of level plains with some relief. The farm is situated east of the R31. For connection to the grid, the site is situated 6.3km from the Eldoret substation with a power line 1.3km from site. The site has low agricultural potential as well as moderate potential grazing capacity. From a hydrological perspective, no pans were identified on site. This site has favourable conditions for a solar power plant due to its environmental conditions, weather conditions (i.e. Hotazel has high solar radiation levels) as well as good site access.

The site has good solar radiation, ecology and relative flat terrain (refer to Figures below). Three EIA's have been conducted within 12 km of the site. Some parts of this site may not be suitable due to issues found on it namely structures, rock outcrops, etc.

## 2. The remaining extent of the farm Kameel Aar 315

The remaining extent of the farm Kameel Aar 315 is located within the Northern Cape Province, Registration Division Kuruman, South Africa and falls within the John Taolo Gaetsewe District Municipality, located in Joe Morolong Local Municipality.

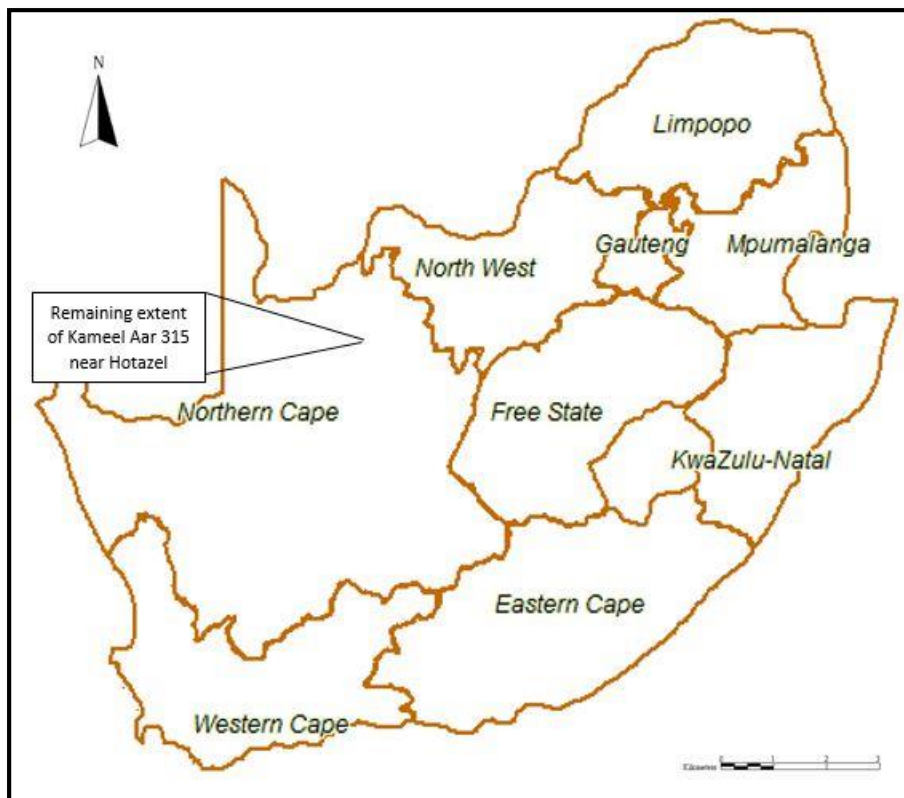


Figure 1: Location of the site

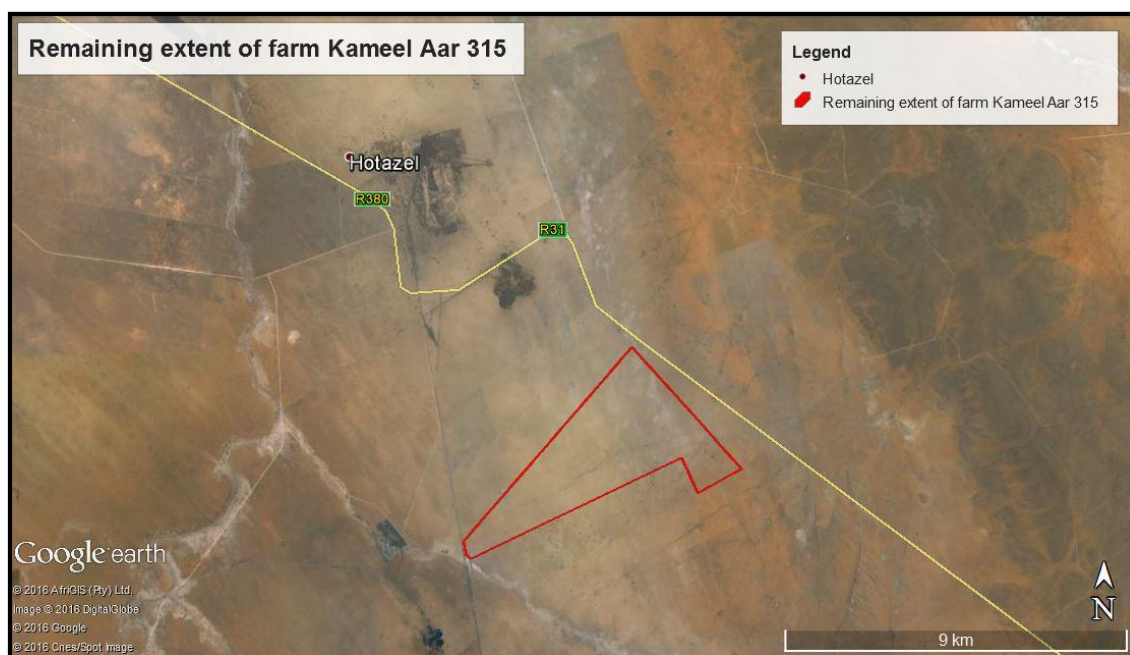


Figure 2: Land Portion of farm (Google Earth)

### 3. Power lines and Substations

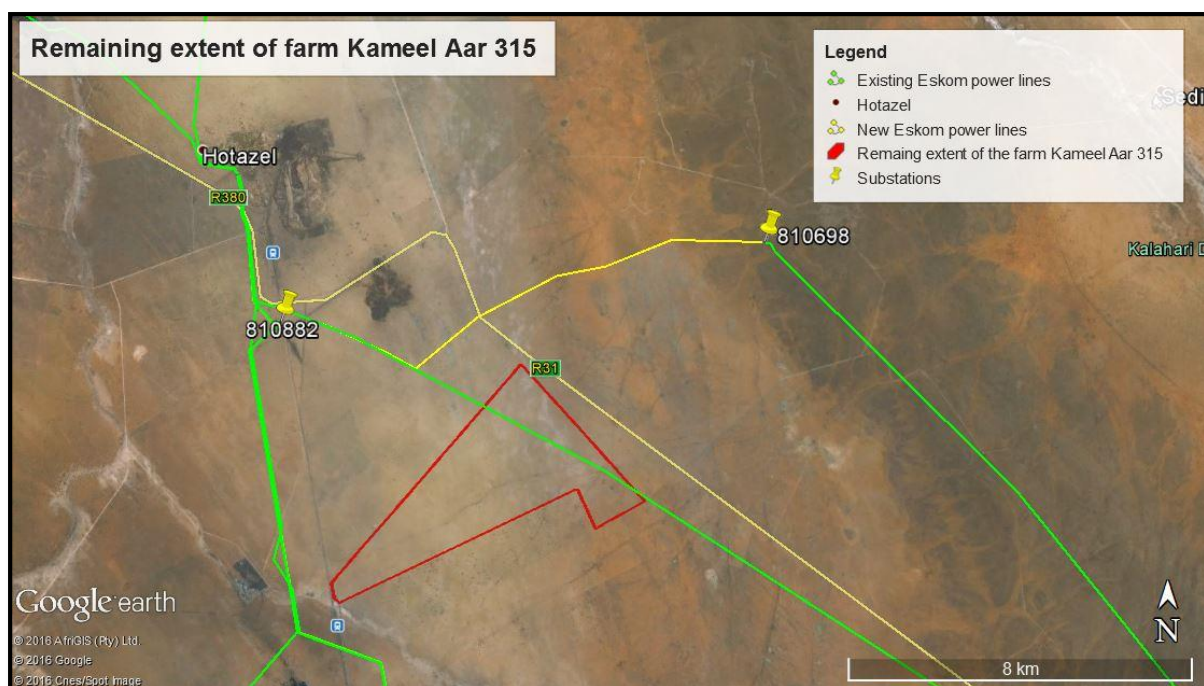


Figure 3: Power lines and substations

#### 3.1. Substations near site

- Hotazel Traction Substation  
Voltage: 132.0 [kV]
- Eldoret Substation  
Voltage: 66/22 [kV]

#### 3.2. Power Lines near site

##### HOTAZEL-RIRIES

Description: Hotazel -Riries  
Voltage: 66.00 [kV]  
Length: 27884.75 m

##### MIDDELPLAATS-HOTAZEL

Description: Middelplaats- Hotazel  
Voltage: 66.00 [kV]  
Length: 18627.89 m

##### HOTAZEL-MILNER

Description: Hotazel -Milner  
Voltage: 132.0 [kV]  
Length: 17920.49 m

##### ELDORET-HOTAZEL

Description: Eldoret-Hotazel  
Voltage: 132 [kV]



#### 4. Farm portions and size

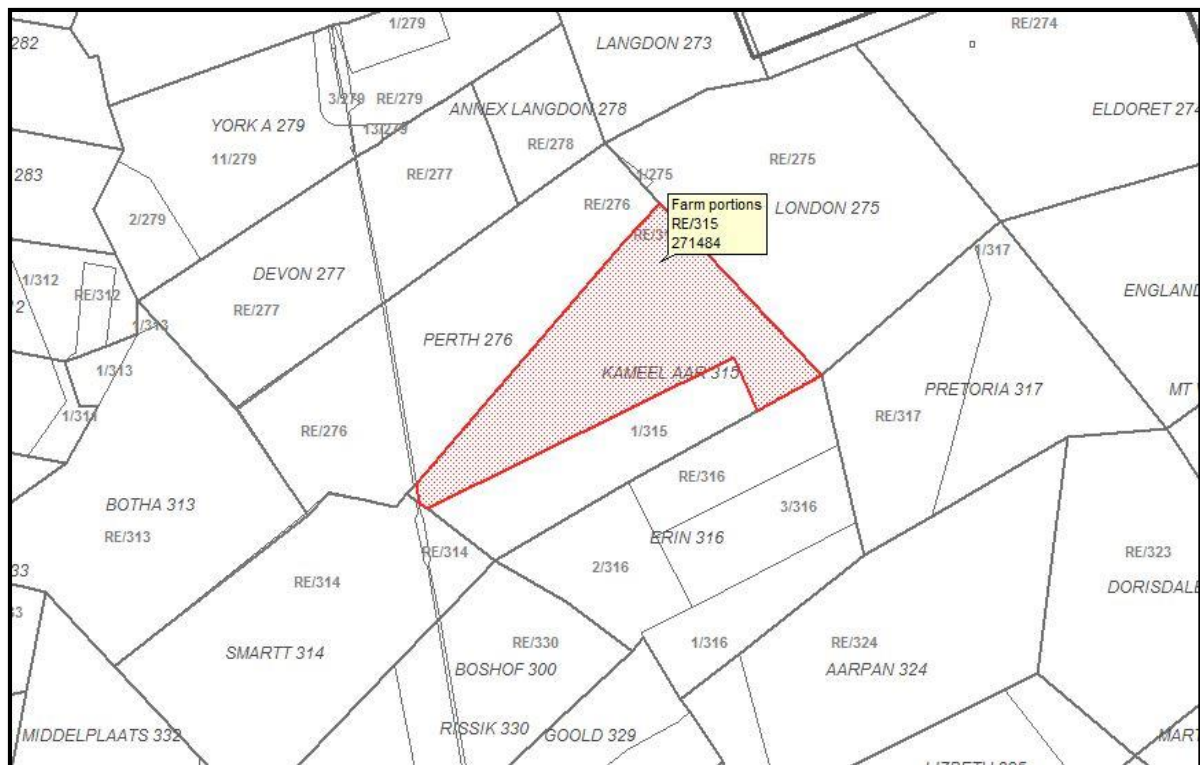


Figure 4: Farm portion (Planet GIS)

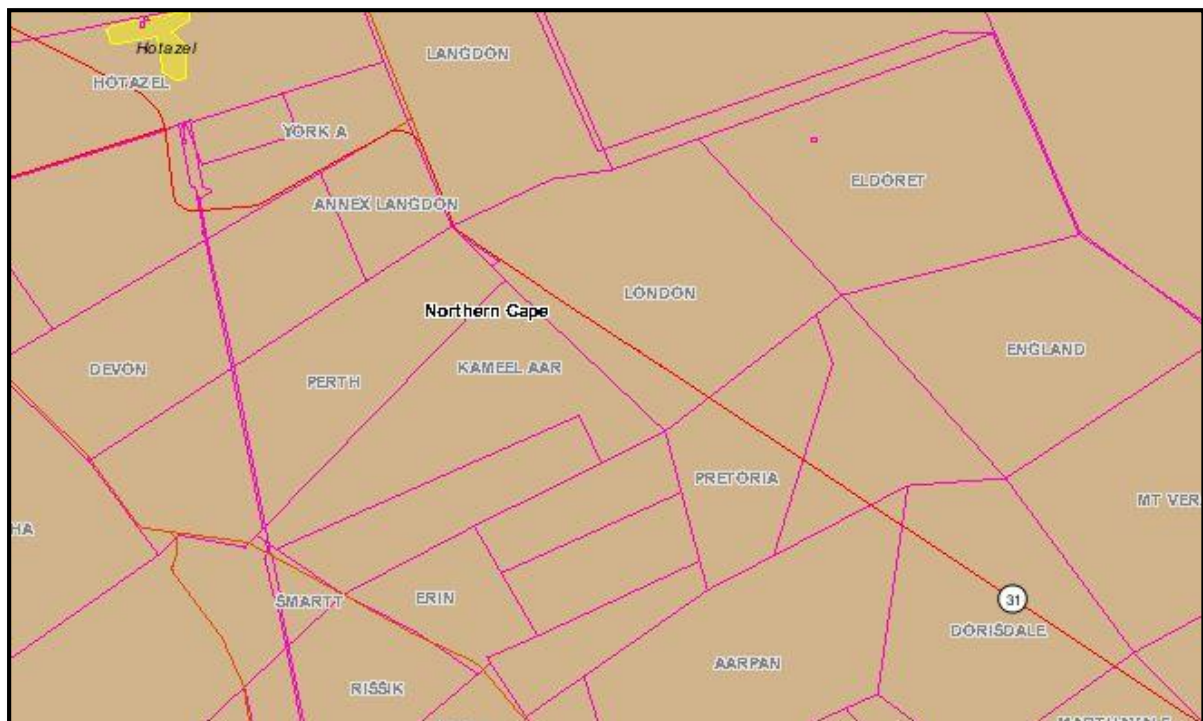


Figure 5: Land Portions (Agis)

## 5. Environmental Impact Assessments conducted in the area

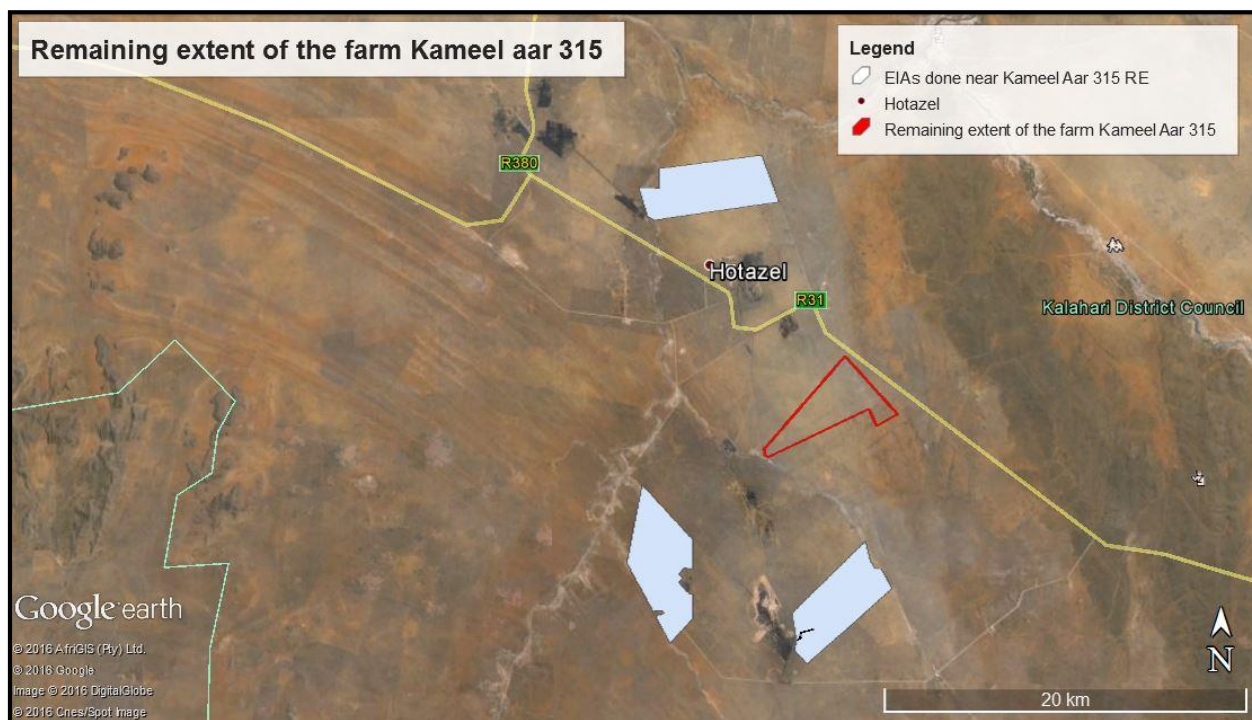


Figure 6: EIA's conducted in the area

### The Proposed Roma Energy Solar Plant Middelplaats, Joe Morolong Local Municipality, Northern Cape

14/12/16/3/3/1/468	
PRJ_REF	14/12/16/3/3/1/468
ARCHIVE	Inactive
PROVINCE	Northern Cape
LOCAL_MUNI	Moshaweng Local Municipality
DISTRICT_M	John Taolo Gaetsewe
TOWN	Moshaweng Rural
AMEND_COMM	
APP_DATE	2012/02/03
EA_DATE	2013/07/11
NEAS_NO	DEA/EIA/0000966/2012
PRJ_TITLE	The Proposed Roma Energy Solar Plant Middelplaats, Joe Morolong Local Municipality, Northern Cape
EA_HOLDER	Roma Energy Middelplaats Pty Ltd
MEGA_WATT	
TECHNOLOGY	Solar PV
PRJ_STATUS	WITHDRAWN/LAPSED
EA_PROCESS	BAR

**A 19MW Photovoltaic Solar Power Generation Plant On the Farm Adams 328 Near Hotazel, Northern Cape Province**

12/12/20/2566/AM2	
PRJ_REF	12/12/20/2566/AM2
ARCHIVE	Active
PROVINCE	Northern Cape
LOCAL_MUNI	Joe Morolong Local Municipality
DISTRICT_M	John Taolo Gaetsewe
TOWN	Moshaweng Rural
AMEND_COMM	Amend: validity period
APP_DATE	2014/12/03
EA_DATE	2015/03/02
NEAS_NO	DEA/EIA/AMEND/0000531/2015
PRJ_TITLE	A 19MW Photovoltaic Solar Power Generation Plant On the Farm Adams 328 Near Hotazel, Northern Cape Province
EA HOLDER	Adams Solar PV Project Pty (Ltd)
MEGA_WATT	19
TECHNOLOGY	Solar PV
PRJ_STATUS	APPROVED
EA_PROCESS	Amendment

**Proposed Renewable Energy Project on the remainder portion and portion 2 of the farm East no. 270, Kuruman RD, Joe Morolong Local Municipality: East Solar Park**

14/12/16/3/3/2/664	
PRJ_REF	14/12/16/3/3/2/664
ARCHIVE	
PROVINCE	Northern Cape
LOCAL_MUNI	Joe Morolong Local Municipality
DISTRICT_M	John Taolo Gaetsewe
TOWN	Kuruman
AMEND_COMM	DEIAr received on 14/10/2014
APP_DATE	2014/02/27
EA_DATE	
NEAS_NO	
PRJ_TITLE	Proposed Renewable Energy Project on the remainder portion and portion 2 of the farm East no. 270, Kuruman RD, Joe Morolong Local Municipality: East Solar Park
EA HOLDER	Osalus Energy (Pty) Ltd
MEGA_WATT	
TECHNOLOGY	In Process
PRJ_STATUS	
EA_PROCESS	Scoping and EIA



## 6. Natural Resources

### 6.1. Geology

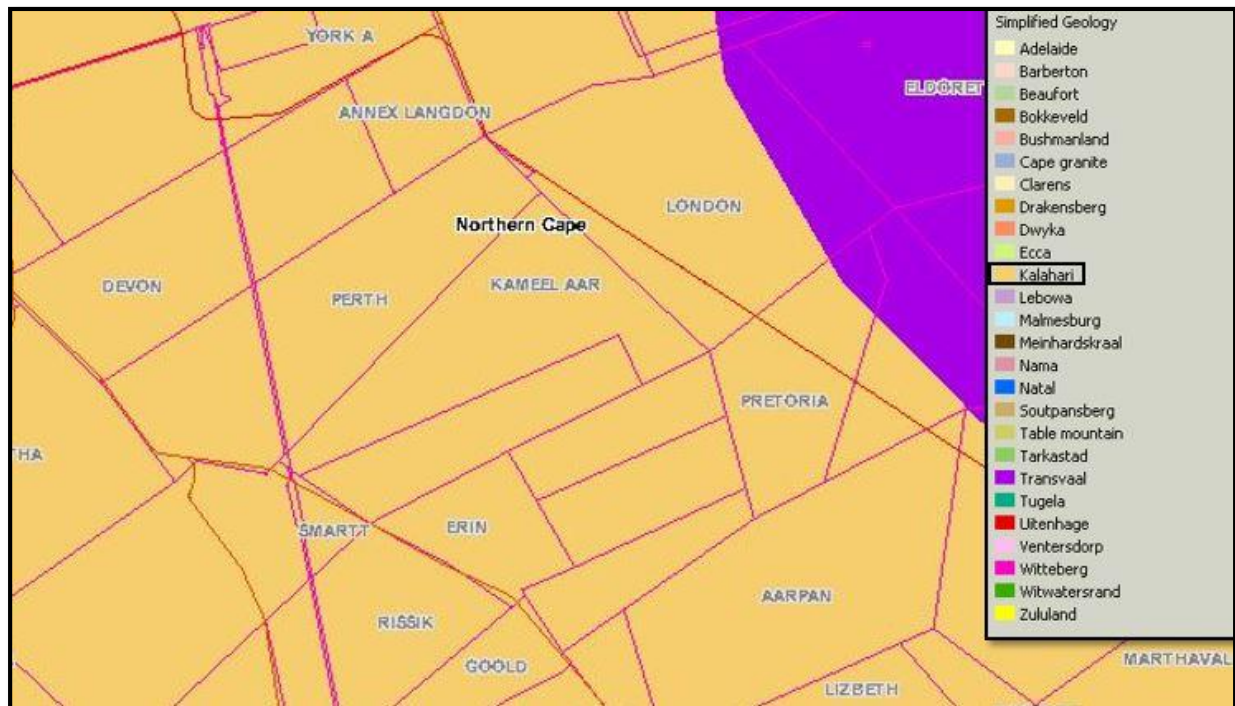


Figure 7: Simplified Geology (Agis)

### 6.2. Terrain

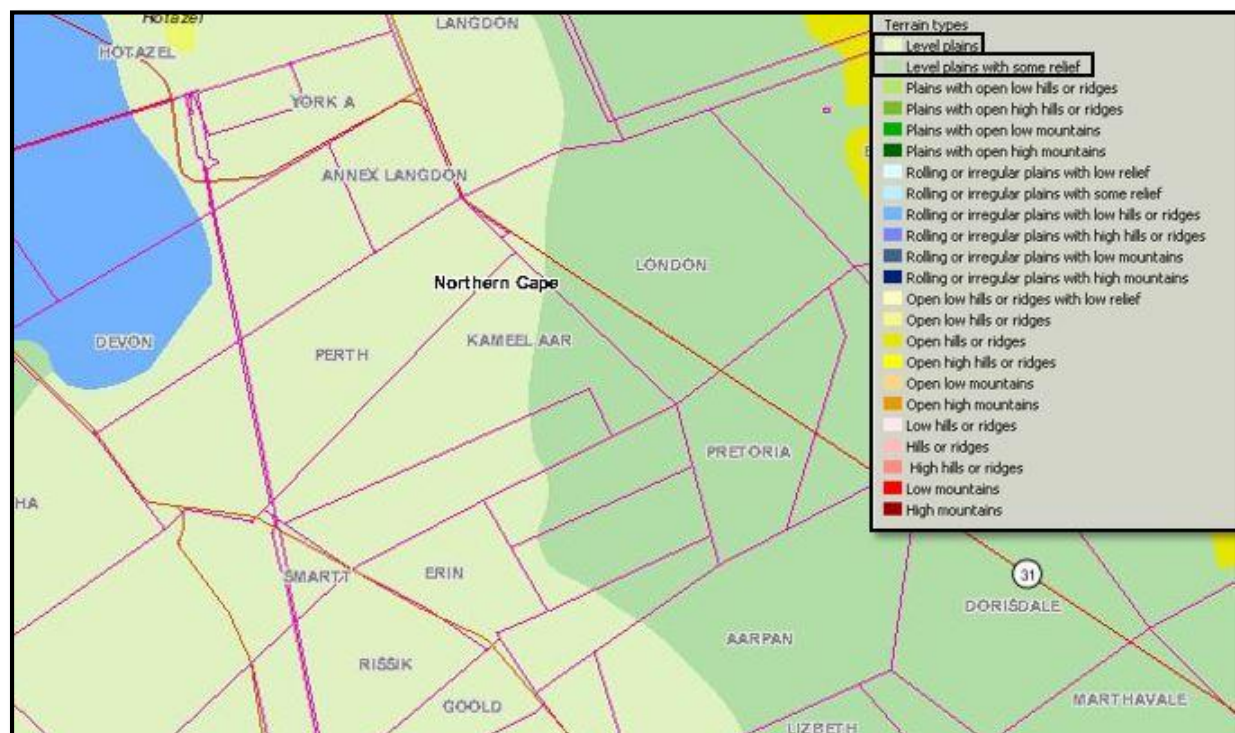


Figure 8: Terrain type (Agis)

### 6.3. Vegetation:

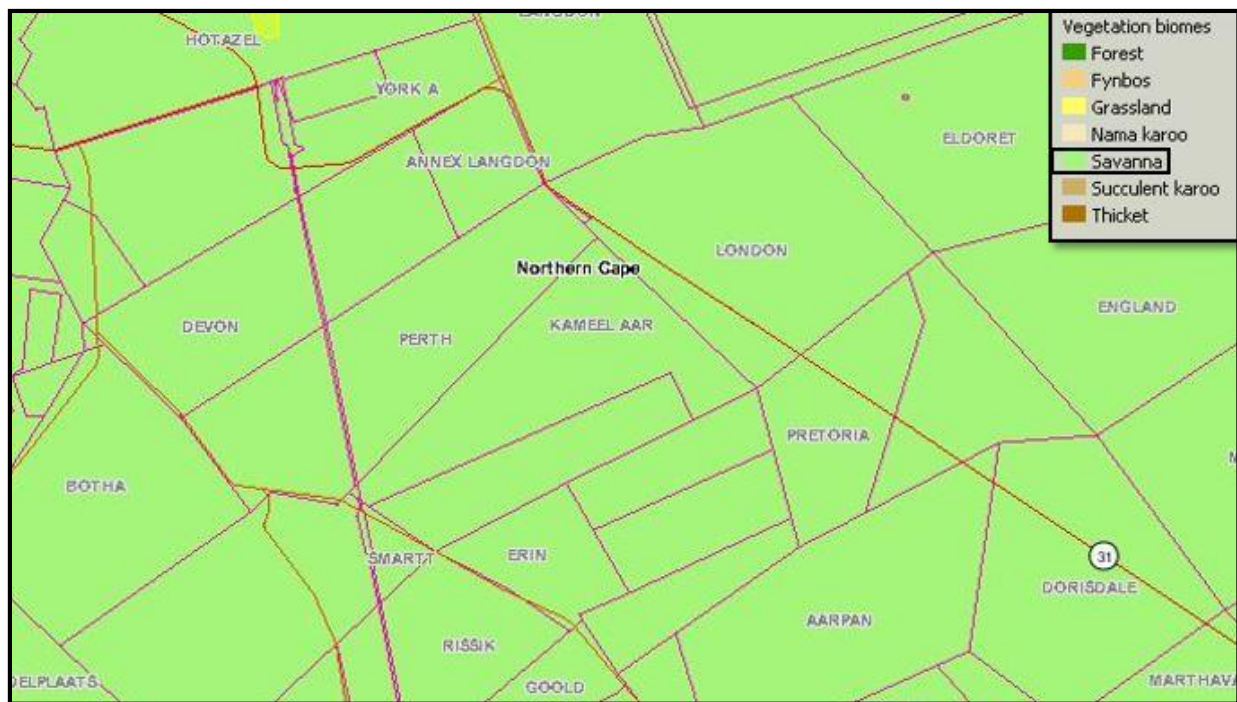


Figure 9: Vegetation biome (Agis)

### 6.4. Water

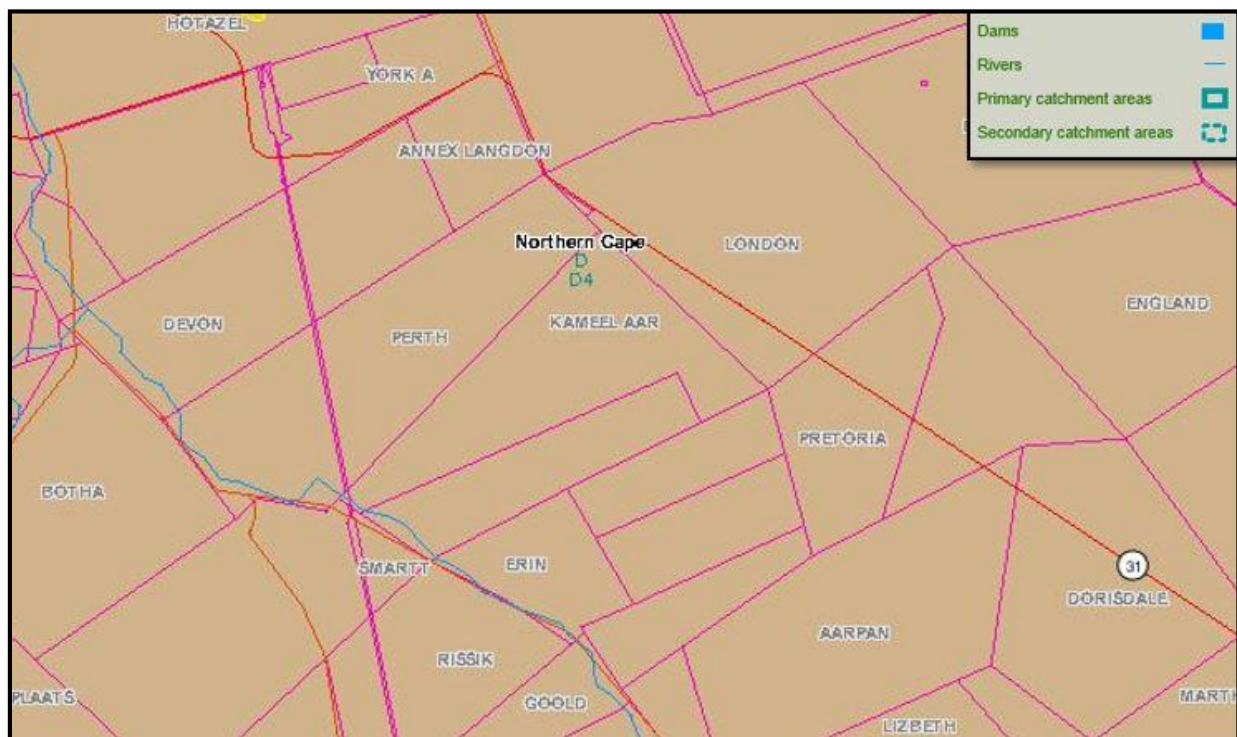


Figure 10: Dams and rivers (Agis)



## 7. Agricultural Potential

### 7.1. Land capability

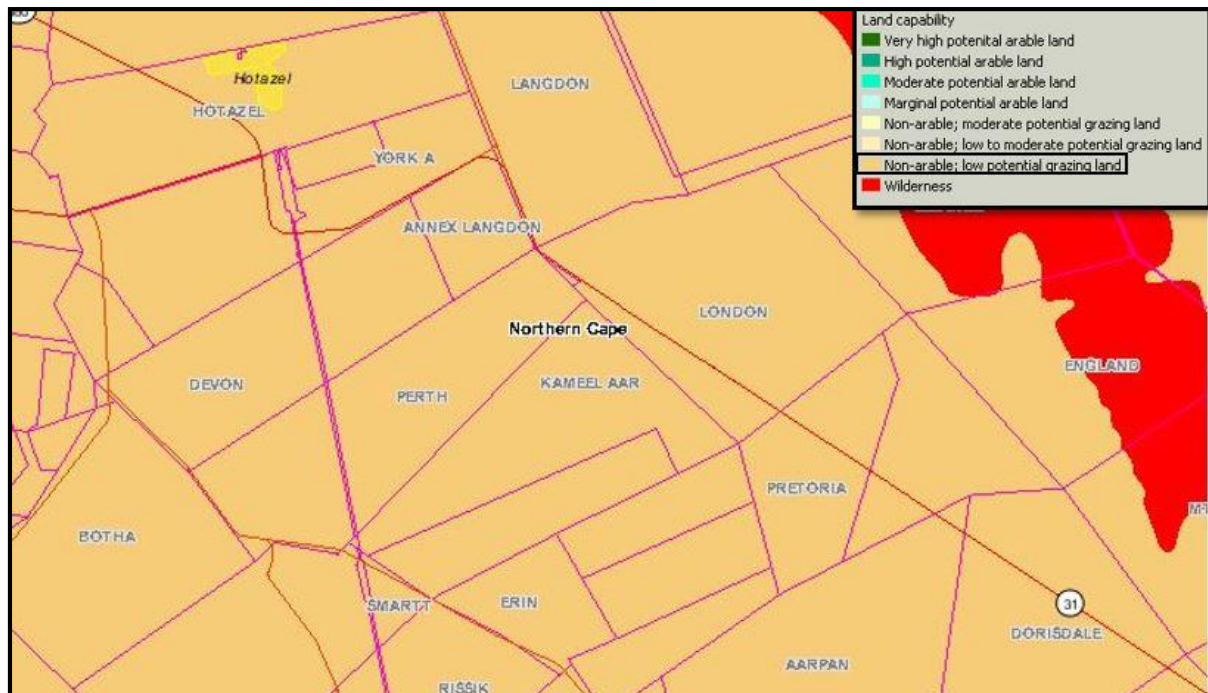


Figure 11: Land Capability (Agis)

### 7.2. Livestock

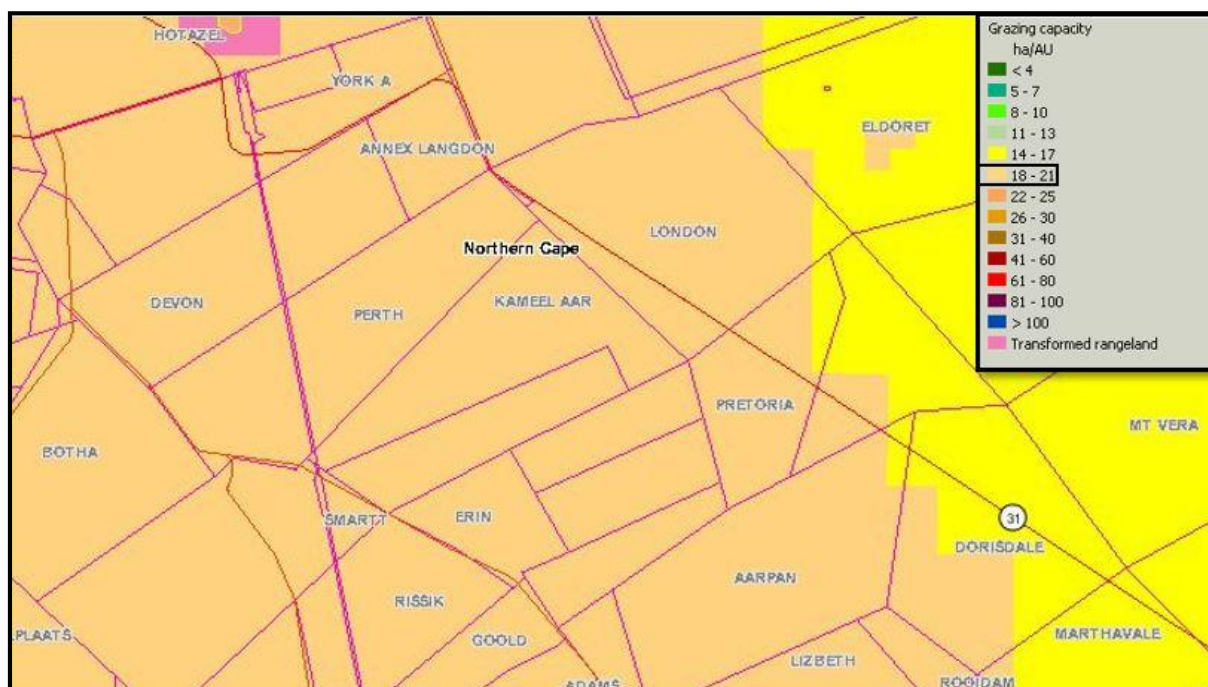


Figure 12: Grazing Capacity (Agis)

## 8. Land cover and Land use

### 8.1. Land use

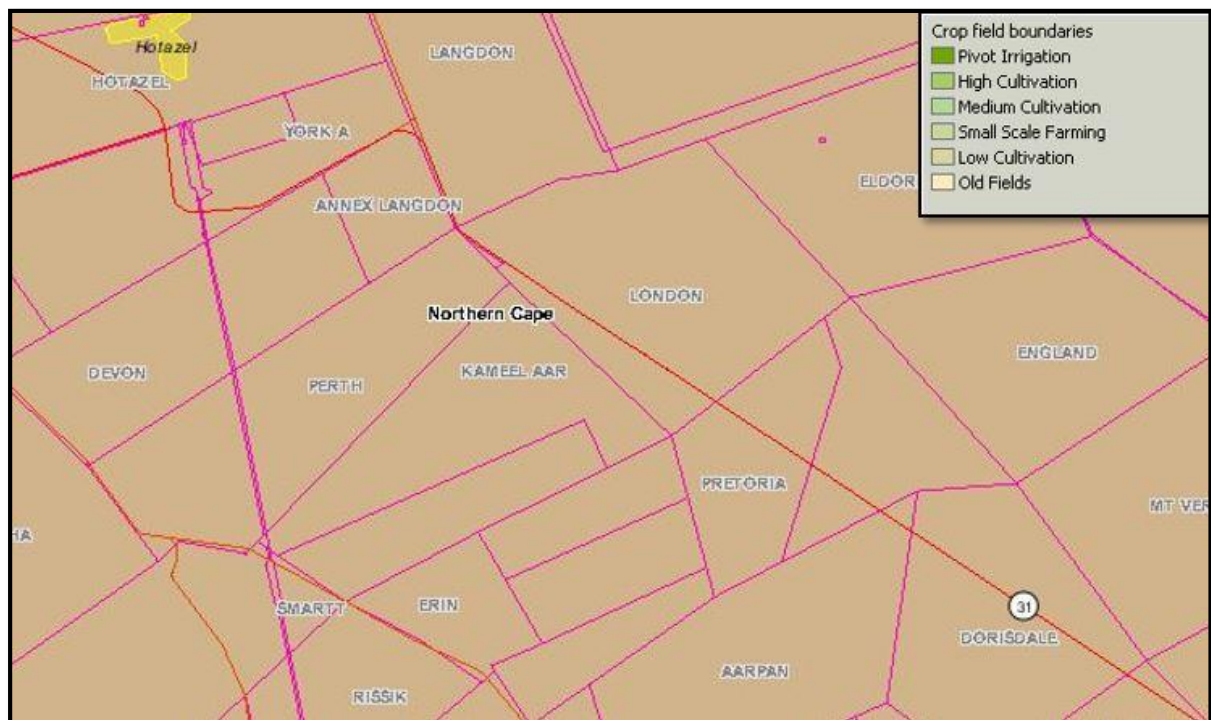


Figure 13: Crop field boundaries (Agis)

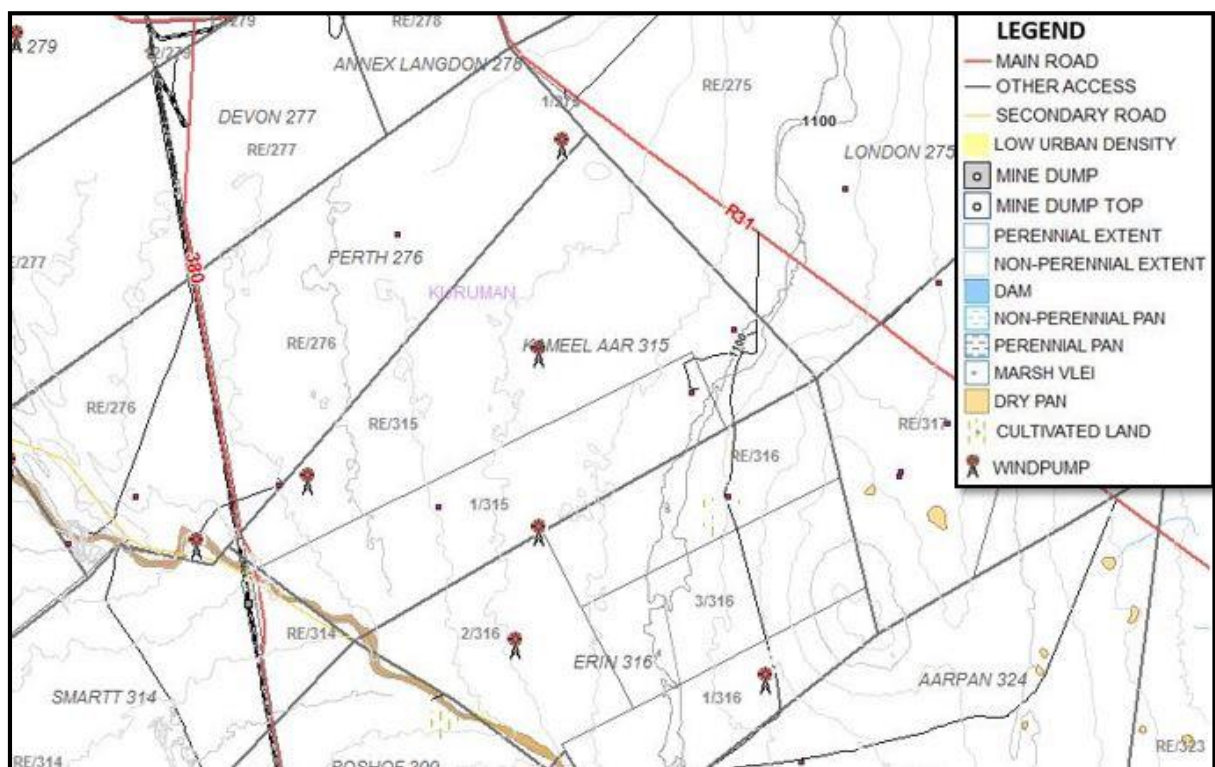


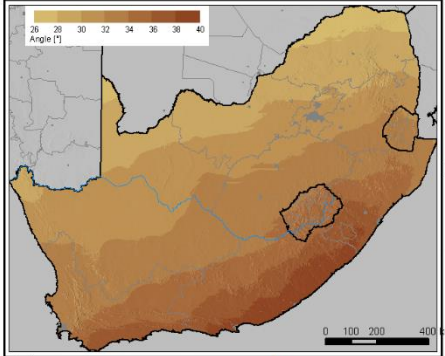
Figure 14: Vegetation and structures (PlanetGIS)



## 9. Solar Resource

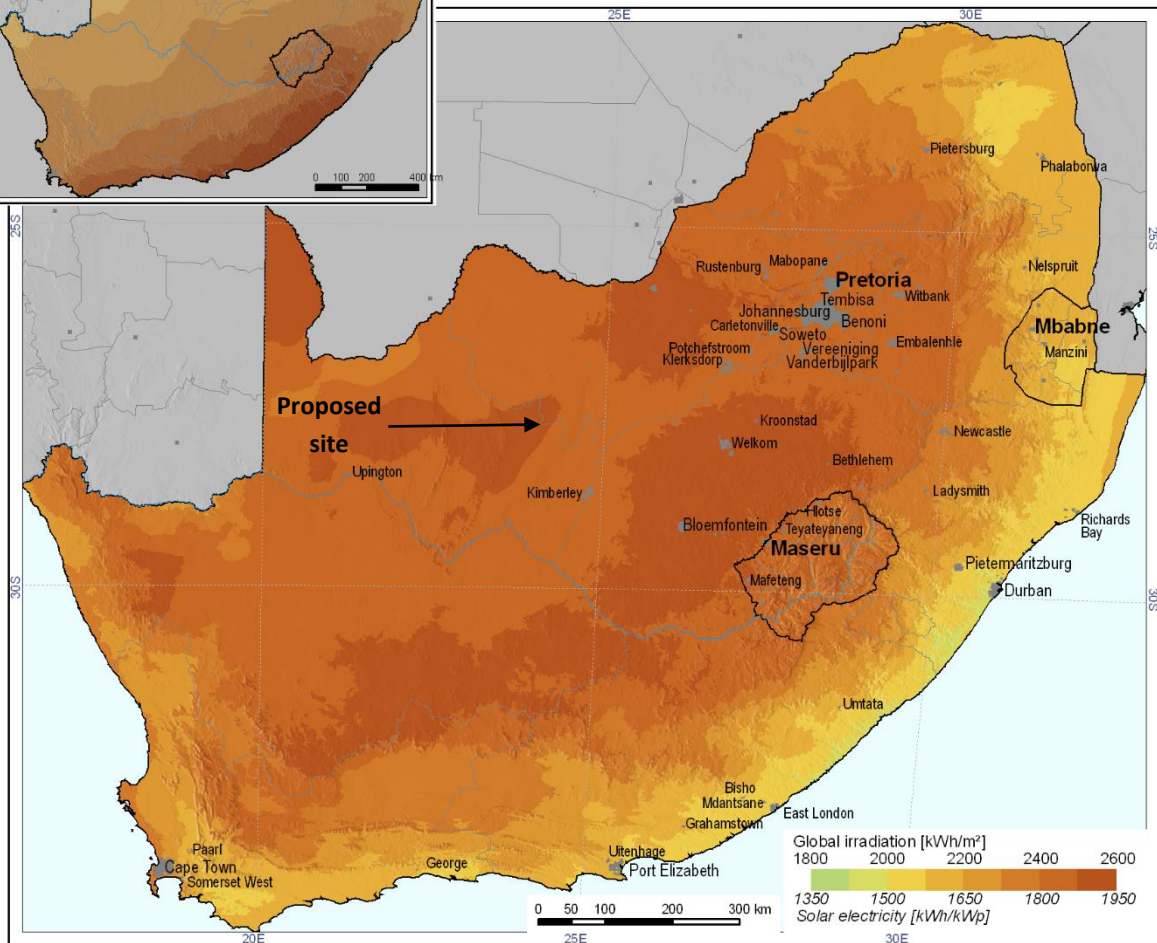
The  $E_m$  for this site is 1885 kWh/kWp (solar panels free standing 1 angle) per year and 2331 kWh/kWp (solar panels on a horizontal North-South Axis) per year.

Optimum inclination of PV modules to maximize yearly energy yield



South Africa

Yearly sum of global irradiation incident on optimally-inclined surface  
Yearly sum of solar electricity generated by 1 kWp system with optimally-inclined modules and performance ratio 0.75



PVGIS © European Communities, 2001-2006  
HelioClim-1 © Ecole des Mines de Paris/ARMINES, 2001-2006

<http://re.jrc.ec.europa.eu/pvgis/pv/>  
<http://www.helioclim.org/>

Figure 15: Global irradiation

## 10. Possible areas for development

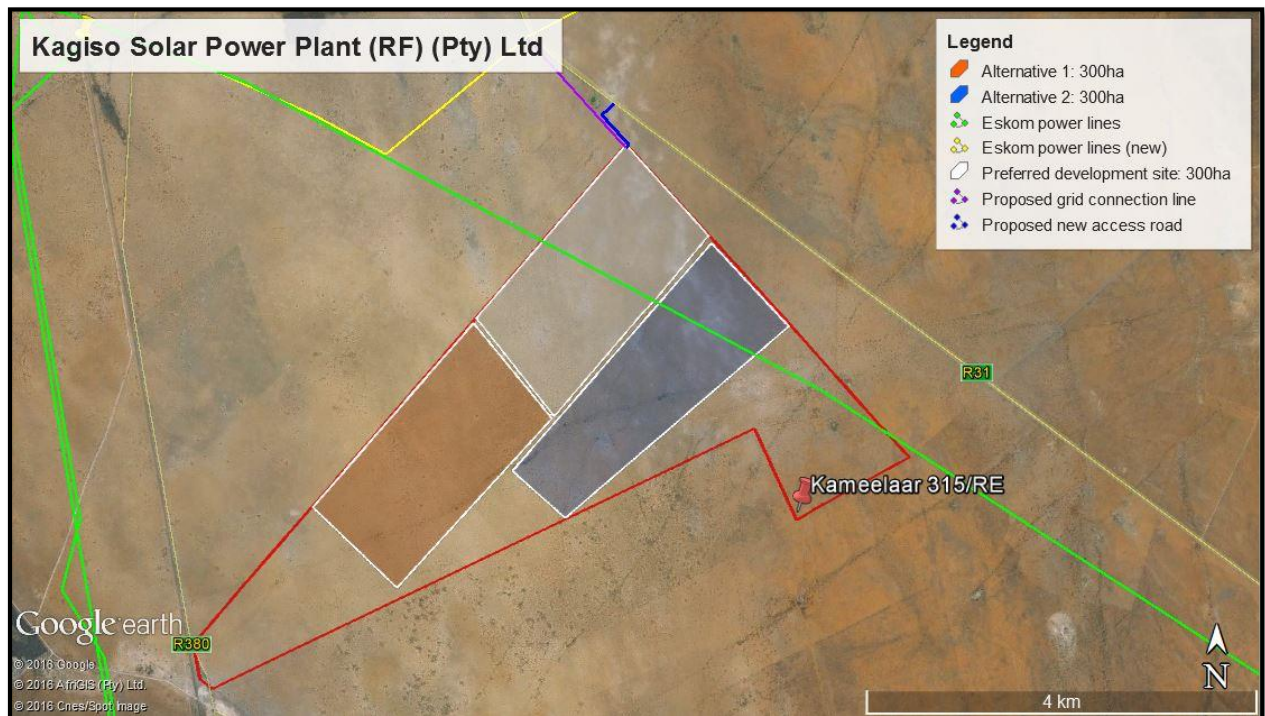


Figure 16: Proposed development area for a solar power plant

Three possible areas were identified for a proposed solar plant. Each of these portions are more than 250ha in extent. The areas identified are as follows:

**Preferred development site (white portion):** This is the preferred option since there are no few small pans on the site and the terrain is flat. This area would also require the shortest power line and access route to be created.

**Alternative 1 (orange portion):** This option also does contain a rock outcrop through the site. This option would also require a much longer power line and access road.

**Alternative 2 (blue portion):** This option contains rock outcrops and this option would also require a longer power line route.

Keeping all the above information into consideration, the white portion 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.

## Reference:

AGIS. 2007. Agricultural Geo-Referenced Information System, accessed from [www.agis.agric.za](http://www.agis.agric.za) on 15-09-2015

SOLARGIS. 2016. SolarGIS GeoModal Solar, accessed from <http://solargis.info/pvplanner/#tl=Google:hybrid&bm=satellite> on 04-04-2016

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