

# **MOUNT ROPER**

**(FARM MOUNT ROPER NO. 321, KURUMAN, GA-SEGONYANA LOCAL MUNICIPALITY,  
NORTHERN CAPE PROVINCE)**

## **PROPOSED SOLAR PV PLANT**

**APPLICANT: ROMA ENERGY MOUNT ROPER (PTY) LTD**



## **FINAL BASIC ASSESSMENT REPORT (VOLUME 1 OF 2)**

**DEA REF. NO.: 14/12/16/3/3/1/1753**

**JULY 2017**

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## **environmental affairs**

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

(For official use only)

**File Reference Number:**

**Application Number:**

**Date Received:**


Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2014, promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.

### **Kindly note that:**

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2014 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. This report format is current as of **08 December 2014**. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority
3. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
4. Where applicable tick the boxes that are applicable in the report.
5. An incomplete report may be returned to the applicant for revision.
6. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
7. This report must be handed in at offices of the relevant competent authority as determined by each authority.
8. No faxed or e-mailed reports will be accepted.
9. The signature of the EAP on the report must be an original signature.
10. The report must be compiled by an independent environmental assessment practitioner.
11. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
12. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
13. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.
14. Two (2) colour hard copies and one (1) electronic copy of the report must be submitted to the competent authority.
15. Shape files (.shp) for maps must be included in the electronic copy of the report submitted to the competent authority.

## SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section?

YES ✓	NO
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If YES, please complete the form entitled "Details of specialist and declaration of interest" for the specialist appointed and attach in Appendix I.

**Several specialists were consulted as part of this application. Details of specialists and declarations of interest are included as part of the respective specialists' reports as per Appendix D as well as in Appendix I.**

### 1. PROJECT DESCRIPTION

a) Describe the project associated with the listed activities applied for

#### Activity Overview

The project is the establishment of an array of crystalline solar photovoltaic (PV) modules grouped into tables or panels of 20 modules each, together with associated infrastructure for the generation of 5MW of electricity. The PV tables would form an array covering an area of 20ha, surrounded by a perimeter fire access road and fence. The PV tables will be raised approximately 500mm above ground level and have single axis tracking systems allowing maximisation of solar energy harvesting for conversion to electrical energy. A similar solar PV array is depicted in Figure 1 below.



Figure 1: Single axis solar PV module tables raised 500mm above ground level

Proposed associated infrastructure includes a fenced construction staging area, a maintenance shed, three inverter-transformer stations on concrete pads, one to two office buildings on the 20ha site, a switch panel for connection to the power grid, as well as about 1,0km of 22kV overhead powerline from the southern section of the PV array and approximately 0,9km of 22kV underground powerline to connect or tie-in the proposed development to Eskom's Riries substation which is located about 500m north of the proposed development site, on the opposite side of the R31. Figure 2 below indicates the position of the proposed solar PV array with the nearby Riries substation.

#### Application Rationale

In March 2011, the Department of Energy's (DoE's) Integrated Resource Plan (IRP) 2010-2030 was promulgated with the aim of providing a long-term, cost-effective strategy to meet the electricity demand in South Africa. The IRP 2010-2030 objectives align with Government's in terms of reliable electricity supply, as well as environmental and social responsibilities and economic policies. The study horizon for the IRP was the period from 2010 to 2030.

The short to medium term intentions of the IRP 2010 -2030 are to ascertain the most cost-effective electricity supply option for the country, speak to the opportunities for investment into new power

generation projects and determine security of electricity supply.

The IRP's long-term electricity planning goal is to consider social, technical, environmental and economic constraints, as well as other externalities while ensuring sustainable development in the country.

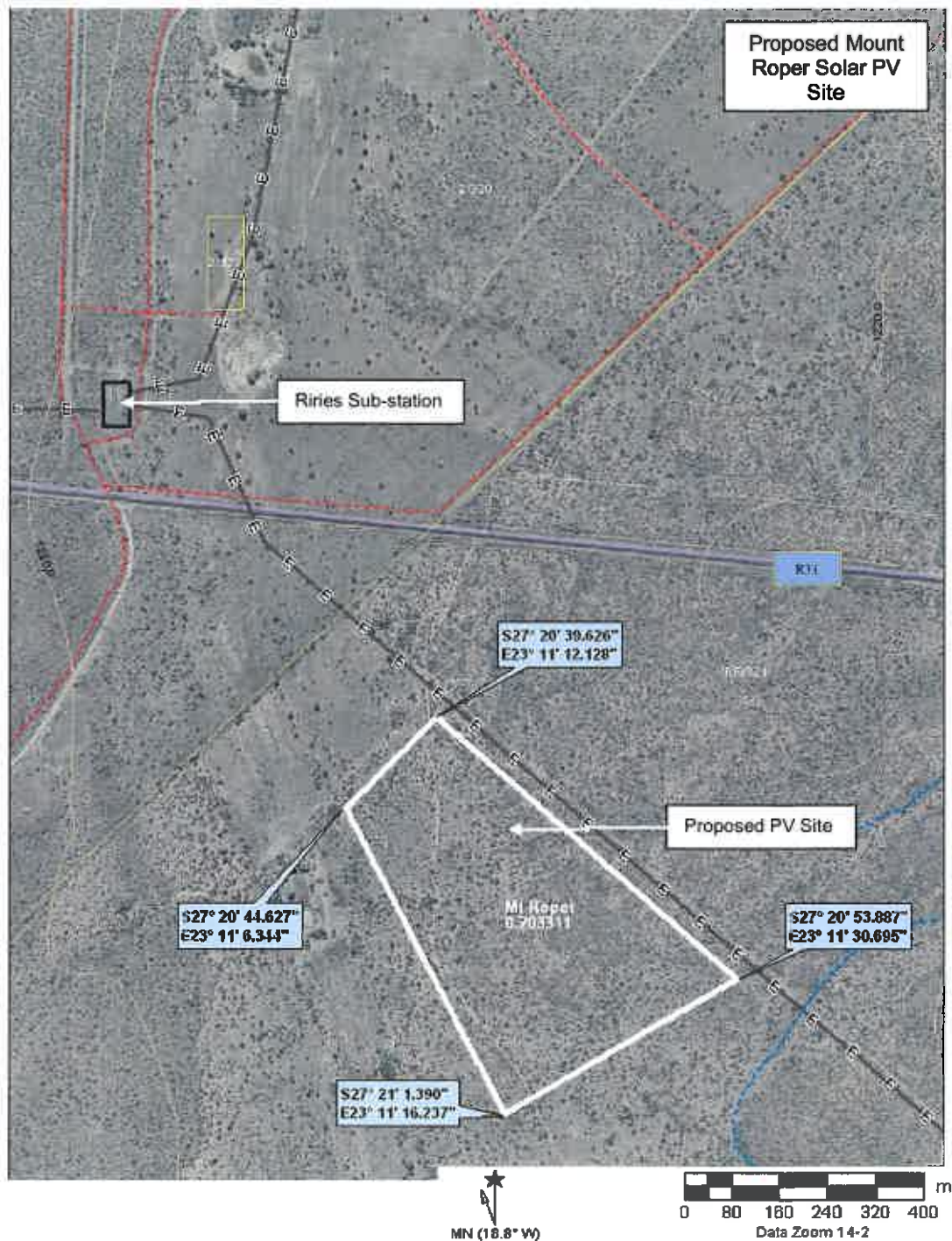


Figure 2: Position of proposed Mount Roper solar PV development

To this end, within the IRP, the DoE set a target electricity supply of 17.8 GW from renewable energy sources by 2030. This target renewable energy capacity would be produced primarily by solar, wind, biomass and small-scale hydro electricity generation (with the bulk being met by wind and solar

energy supplies). In addition, the 2030 target ensures that approximately 42% of the country's total estimated electricity generation capacity would be met by renewable energy sources. This application is in response to the DoE's target and IRP 2010-2030 strategy to expand the South African renewable energy electricity generation capacity.

### **Activity Description**

The proponent, Roma Energy Mount Roper (Pty) Ltd, plans to establish a 'solar farm' which harvests light energy from the sun using solar PV panels and converts the light energy into electrical energy to be fed into the national (Eskom's) electricity grid. The development footprint is an area not exceeding 20ha on the remainder of the Farm Mount Roper No. 321, Kuruman, Ga-Segonyana Local Municipality, Northern Cape Province. This solar farm is, in essence, a solar power station which will form part of the country's renewable energy electricity generation capacity. The solar PV farm is proposed to be established on a site located 28° 19' 06"S, 24° 13' 31"E, along the R31 road, travelling 30km out of Kuruman, in a northwesterly direction (see Figure 3 - Potential cumulative impact radius for proposed solar PV development site relative to other approved renewable energy projects in the region. Proposed site is at centre of green circle as indicated on map. Although this is a reapplication, the original proposed development site which was authorised, was included on the map provided by the DEA but at a slightly closer to Kuruman than it is actually located website: (<https://dea.maps.arcgis.com/apps/webappviewer>).

After considering the entire Farm Mount Roper No. 321, the most suitable 20ha portion in terms of solar energy harvest potential, topography, accessibility, tie-in to the Eskom grid and minimisation of environmental impact, was chosen on which to establish the facility. The proposed development is an array of 18540 poly-crystalline solar photovoltaic (PV) modules grouped into tables or panels of 20 modules each. The PV panels form an array within the total footprint area of 20ha, surrounded by a perimeter fire access road and fence. The actual array of PV panels will not completely fill the 20ha footprint which also needs to cater for infrastructural requirements.

As per Figure 1 above, the PV tables will be raised approximately 500mm above ground level and will have single axis tracking systems allowing the generation of approximately 5MW of direct current which will be alternating current. Proposed associated infrastructure to be built on the 20ha footprint site includes a fenced construction staging area, a 3m x 6m maintenance shed, three inverter-transformer stations on concrete pads, a switch panel for connection to the power grid and an office with septic tank ablutions, as well as a 22kV powerline from the development site to connect to Eskom's Riries substation about 500m north of the proposed development site, on the opposite side of the R31.

The powerline feeding into Eskom's Riries substation will be on three-phase overhead powerlines leading from the development site but will continue as subsurface (underground) powerlines to the Riries substation. It is estimated that the powerline will be approximately 1,9km in length. The maximum generation capacity of the facility is approximately 5MW. Solar PV farms produce electricity in direct current which must be converted into alternating current and transformed into the correct voltage before it can be fed into the national grid. This conversion is done by inverters and transformers which are part of the abovementioned infrastructural development of the project.

### **Description of Development Phases**

#### **Equipment and Material Delivery; Site Preparation:**

The proposed development site is accessible from the R31, using secondary roads. PV modules and steel structures will be transported to site using four interlink trucks. The main transformer, one grader and a 20 ton roller will be delivered to site using abnormal load vehicles. In addition to these vehicles, two drill rigs, two 10m<sup>3</sup> tipper trucks, six tractors and trailers, one waste transport truck, 8 site bakkies, one water tanker truck, a TLB and a trenching machine will also be used on site.

The area will be graded and levelled using a 20 ton roller. Water spray from the water tanker truck will be used to control excessive dust blow off. About three to four temporary access roads will have