ENVIRONMENTAL IMPACT ASSESSMENT: PROPOSED PV2-PV7 PHOTOVOLTAIC ENERGY PLANT ON FARM KLIPGATS PAN NEAR COPPERTON, NORTHERN CAPE

APRIL 2013

PLANT	DEA REF. NO	NEAS REF. NO	PLANT	DEA REF. NO	NEAS REF. NO
PV2	14/12/16/3/3/2/486	DEAT/EIA/0001766/2013	PV5	14/12/16/3/3/2/489	DEAT/EIA/0001769/2013
PV3	14/12/16/3/3/2/487	DEAT/EIA/0001767/2013	PV6	14/12/16/3/3/2/490	DEAT/EIA/0001770/2013
PV4	14/12/16/3/3/2/488	DEAT/EIA/0001768/2013	PV7	14/12/16/3/3/2/491	DEAT/EIA/0001771

EXECUTIVE SUMMARY: SCOPING REPORT

Background

Mulilo Renewable Energy (Pty) Ltd (Mulilo) proposes to construct six (6) additional photovoltaic (PV) solar energy plants on a farm, near Copperton in the Northern Cape. Aurecon South Africa (Pty) Ltd (Aurecon) has been appointed to undertake the requisite environmental process as required in terms of the National Environmental Management Act (No. 107 of 1998) (NEMA), as amended, on behalf of Mulilo.

The proposed projects would take place on the farm Klipgats Pan (Portion 4 of Farm No. 117) near Copperton in the Northern Cape (see **Figure 1**). The site lies approximately 9 km to the south of Copperton and borders to the Kronos substation.

Proposed project

Mulilo proposes to construct six additional PV solar energy plants of 75 MW AC each (preferred alternative). Alternatively three PV plants with generation capacities of 225 MW AC (Alternative PV2), 150 MW AC (Alternative PV3) and 300 MW AC (Alternative PV4) are proposed.

Each of the proposed PV plants would consist of the following:

- **Solar energy plant:** A photovoltaic component comprising of numerous arrays of PV panels and associated support infrastructure to generate up to 75 MW AC per plant, through the photovoltaic effect.
- **Transmission lines:** 132 kV overhead transmission lines to connect each facility to the central onsite substation or an existing Eskom substation (i.e. Kronos or Cuprum).
- **Substations:** An onsite 132 kV, 3 bay substation.
- **Boundary fence:** Each 75 MW AC facility will have an electrical fence for safety and security reasons.

Purpose of this document

This document provides a summary of the Draft Scoping Report (DSR) and Plan of Study for EIA for the proposed PV plants on Klipgats Pan near Copperton, Northern Cape. It provides a brief background and overview of the proposed projects, the list of project alternatives and potential impacts (together with proposed specialist studies where applicable) that are proposed to be investigated further in the EIA phase.

You are invited to comment on the DSR for the proposed developments. The DSR has been lodged at the Prieska (Elizabeth Vermeulen) Public Library, Ietznietz Guest House in Copperton and on the Aurecon website (**www.aurecongroup.com** - indicate "Current Location" as "South Africa" and follow the Public Participation link).

Please review this Executive Summary, and, preferably, the full Scoping Report, and submit your comments on the proposed project by **Monday 10 June 2013.** To comment, write a letter, call or e-mail the Public Participation office.

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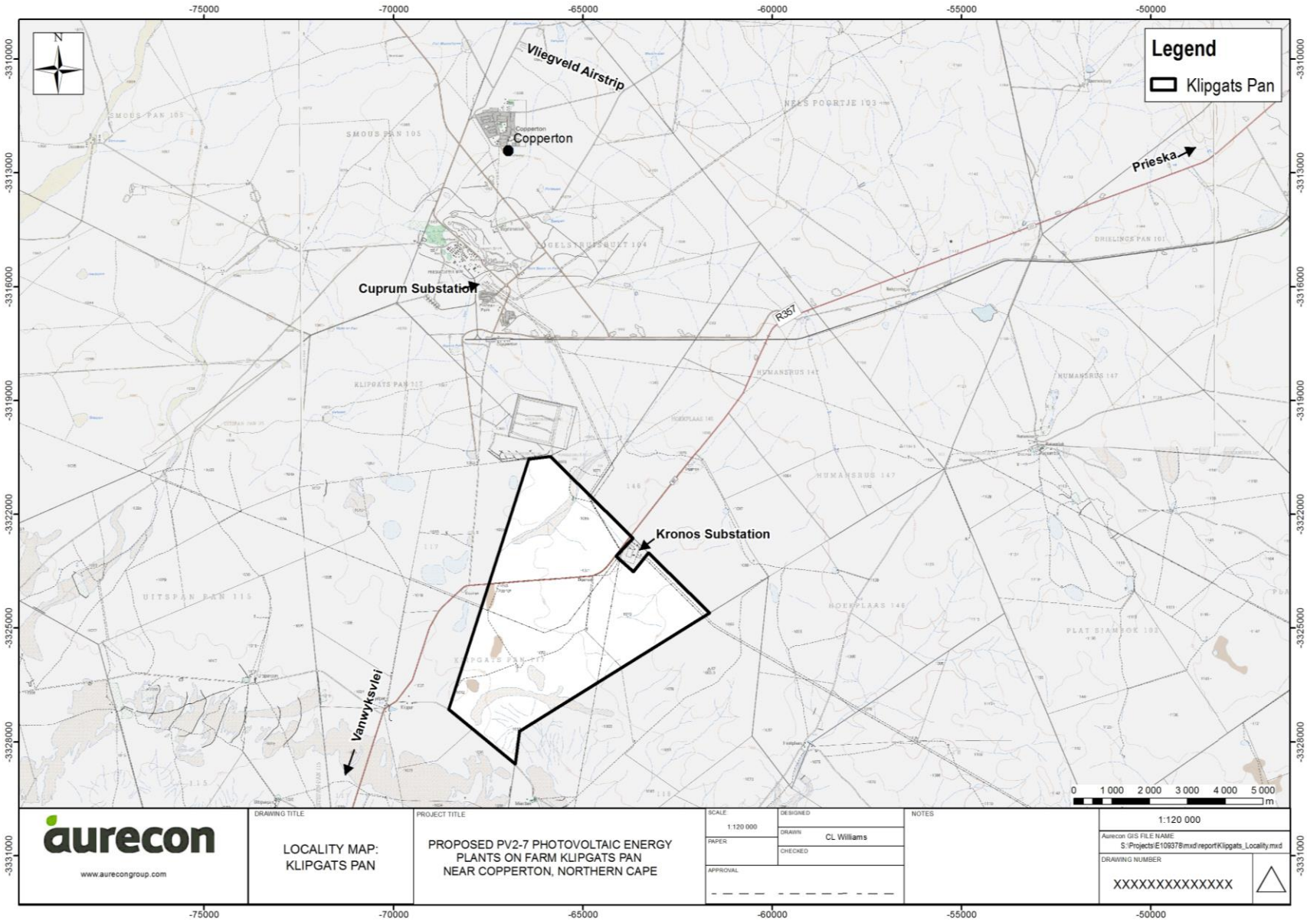

Figure 1 Location of farm Klipgats Pan near Copperton, Northern Cape (2922 CD)

The proposed PV plants would convert shortwave radiation (sunlight) directly into electricity via cells through a process known as the Photovoltaic Effect. The PV cells are made of silicone which acts as a semi-conductor. The cells absorb light energy which energizes the electrons to produce electricity. Individual solar cells can be connected and packed into standard modules behind a glass sheet to protect the cells from the environment while obtaining the desired currents and voltages. These modules are grouped together to form a panel and can last up to 25 years due to the immobility of parts, as well as the sturdiness of the structure. However, the Power Purchase Agreement (PPA) is only valid for a period of 20 years after which the plant would most likely be decommissioned and the site rehabilitated.

Construction phase

The construction phase of each 75 MW AC PV plant would last approximately 12 to 24 months. Employment opportunities created by the construction phase equates to approximately 2,800 man months of which 80% would be allocated to South African citizens. These employment opportunities can be divided into the following employment categories:

- 50% will be for black citizens.
- 15% will be skilled employees.
- 8% will be black skilled employees.
- 20% of the jobs created will be from the local community.

Approximately 1,400 *kℓ* of water would be required per facility during the duration of the construction phase. This water would be sourced via the Alkantpan pipeline.

Operational phase

It is anticipated that the PV plants would last the full period of the Power Purchase Agreement which is approximately 20 years. The remainder of the farm will continue to be used as grazing fields.

Employment opportunities to be created during the operational phase equates to approximately 35 man months of which 80% would be allocated to South African citizens. These employment opportunities can once again be divided into the following employment categories:

- 50% will be for black citizens
- 45% will be skilled employees
- 14% will be black skilled employees

Decommissioning phase

The PV plants would be decommissioned at the end of the Power Purchase Agreement (20 years from the date of commissioning). The decommissioning is expected to take between 6 to 12 months per 75 MW AC PV plant. After disconnecting the PV infrastructure from the electricity network, the module components would be removed and recycled as far as possible. The structures would be dismantled and the concrete pile foundations would be removed. All underground cables would be excavated and removed. The buildings will be demolished and removed by an authorised company.

Site description

The site consists of the farm Klipgats Pan (Farm 117/4). This portion is privately owned by Mrs J.J. Bernard, who has entered into a long term agreement with Mulilo for the proposed project. Klipgats Pan lies approximately 9 km to the south of Copperton and borders to the Kronos substation. The farm is approximately 2 620 ha in size and split into two portions by the R357.

The surrounding land uses are mainly agricultural, consisting mostly of sheep grazing. An abandoned Copperton mine is located approximately 5 km to the northwest of Farm Klipgats Pan. Further west of the farm is Alkantpan, a weapons testing range, used by many countries for weapons testing. A large number of wind and solar energy facilities are being proposed in the Copperton area (see **Figure 2**) and are in various stages of gaining environmental authorisation. Currently, Mulilo has four approved solar energy facilities in the area, of which one includes the 100 MW PV1 plant on Farm Klipgats Pan

A 1.7 km airstrip (owned by the Alkantpan weapon testing facility) is also located to the north of the site and is used by a number of aeroclubs (e.g. Aeroclub SA). Copperton town, consisting of a few dwellings and a small shop is also located immediately west of the site. It is proposed to move this airstrip approximately 7 km east of its current location as part of the Plan 8 wind energy facility. The site itself is used for agriculture (grazing).

Scoping Process in terms of EIA Regulations

EIA Regulations (Government Notice (GN) No. 544, 545 and 546) promulgated in terms of NEMA, identify certain activities, which "could have a substantial detrimental effect on the environment". These listed activities require environmental authorisation from the competent environmental authority, i.e. the Department of Environmental Affairs (DEA) in the case of energy applications, prior to commencing.

This proposed project triggers a number of listed activities (see **Table 1**) in terms of NEMA and accordingly requires environmental authorisation from DEA via the EIA process outlined in GN No. 543 of NEMA.

Table 1 Listed activities in terms of NEMA GN No. 544, 545 and 546, 18 June 2010, to be authorised for the proposed PV plants

No.	Listed Activity
	GN No. R544, 18 June 2010
10	The construction of facilities or infrastructure for the transmission and distribution of electricity - • outside urban areas or industrial complexes with a capacity of more than 33 , but less than 275 kilovolts; or • inside urban areas or industrial complexes with a capacity of 275 kilovolts or more.
11	The construction of - (x) buildings exceeding 50 square metres (m^2) in size; or (xi) infrastructure or structures covering 50m^2 or more where such construction occurs within a watercourse or within 32m of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.
15	Physical alteration of undeveloped, vacant or derelict land for residential retail, commercial, recreational, industrial or institutional use where the total area to be transformed is 20 hectares or more.
	GN No. R545, 18 June 2010
1	The construction of facilities or infrastructure for the generation of electricity where the electricity output is 20 megawatts or more.
	GN No. R546, 18 June 2010
14	The clearance of an area of 5 hectares or more of vegetation where 75 % or more of the vegetation cover constitutes indigenous vegetation (a) in the Northern Cape (i) All areas outside urban areas.

Aurecon has been appointed to undertake the required environmental processes on Mulilo's behalf.

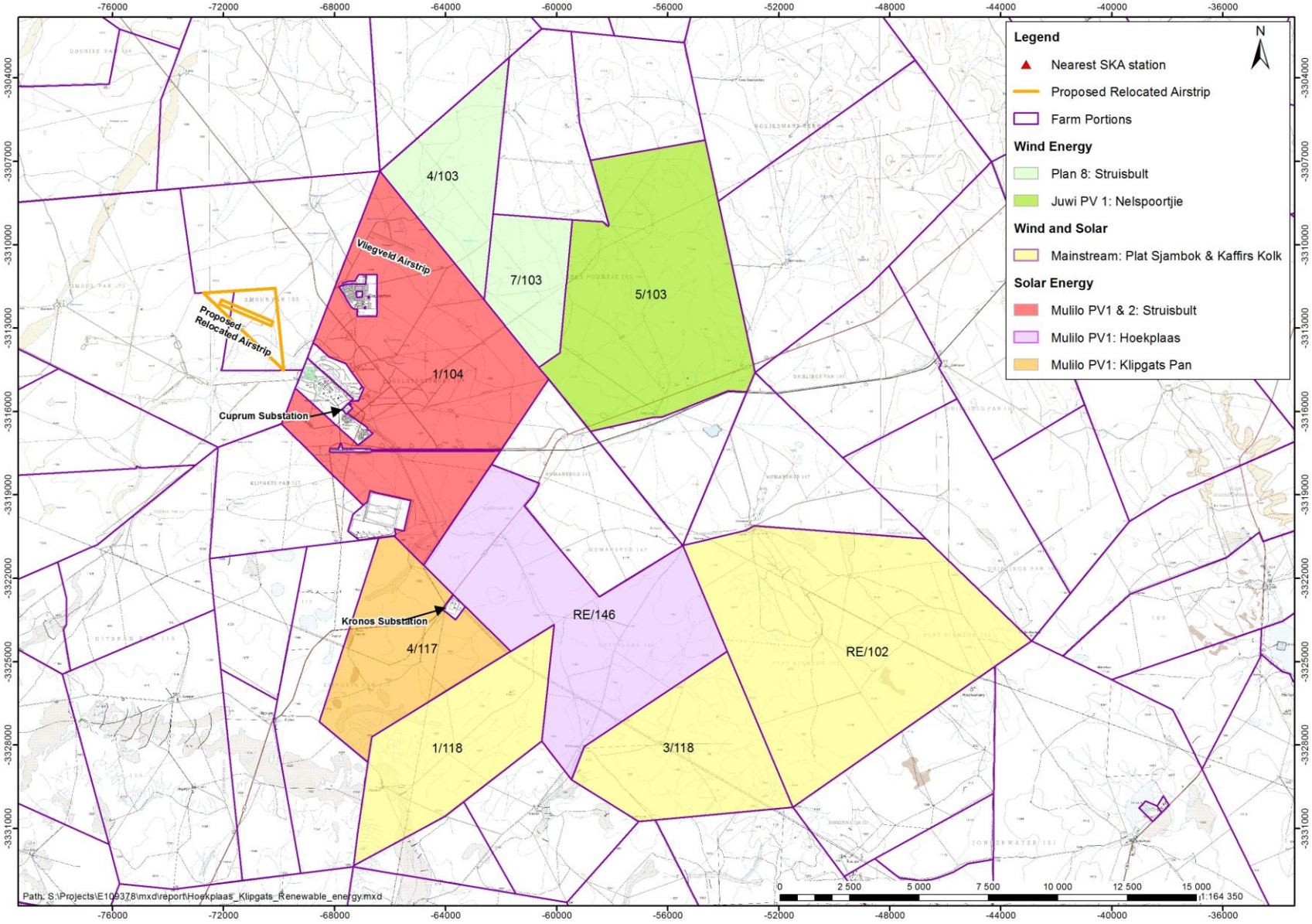

Figure 2 Other renewable energy projects (solar and wind) proposed for the Copperton area

EIA Process

The EIA process consists of an Initial Application Phase, a Scoping Phase and an EIA Phase. The purpose of the Initial Application Phase is to commence the project *via* the submission of the relevant department's application forms. The purpose of the Scoping Phase is to identify and describe potential positive and negative environmental impacts, (both biophysical and socio-economic), associated with the proposed project and to screen feasible alternatives to consider in further detail.

The purpose of the EIA Phase is to comprehensively investigate and assess those alternatives and impacts identified in the Scoping Report and propose mitigation to minimise negative impacts.

The acceptance of the Scoping Report and the Plan of Study for EIA by DEA would allow the process to continue to the EIA Phase.

Project alternatives

The following feasible alternatives have been identified for further consideration in the Environmental Impact Assessment Report (EIAR):

Alternative Type	Description
Location alternatives	• One location for the proposed Klipgats Pan PV plants
Activity alternatives	• Solar energy generation via a PV plant • No-go" alternative to solar energy production
Site layout alternatives	• Six 75 MW PV plants (Layout Alternative 1) • Three (3) PV plants of 225 MW, 150 MW and 300 MW, respectively (Layout Alternative 2)
Technology alternatives	• Conventional PV vs CPV technology • Single Axis vs Fixed Axis PV tracking technology

Identified impacts

The proposed PV plants could impact on a range of biophysical and socio-economic aspects of the environment. Impacts can result from the construction phase as well as the operational phase. While the construction phase impacts are usually short term, some may have longer lasting effects. A construction phase Environmental Management Programme (EMP) will be compiled to be implemented during the construction phase to manage these aspects.

The operational phase impacts are usually considered to be the long term impacts associated with the project and these will be considered by a suite of specialists during the Environmental Impact Assessment Report (EIAR) Phase. The specialists will also consider ways to manage these potential impacts and these mitigation measures will be included in an operational phase EMP.

Specifically the following potential environmental impacts have been identified for further consideration in the EIAR:

- Operational phase impacts on the biophysical environment:
    - Impact on flora;
    - Impact on fauna (including avifauna); and
    - Impact on freshwater resources.
- Operational phase impacts on the socio-economic environment:
    - Impact on heritage resources (including palaeontology);
    - Visual impacts;
    - Impact on energy production;
    - Impact on local economy (employment) and social conditions;

  - Impact on agricultural land; and
  - Impact on surrounding land uses.
- Construction phase impacts on the biophysical and socio-economic environments:
  - Disturbance of flora and fauna;
  - Sedimentation and erosion of water ways;
  - Impact on traffic;
  - Storage of hazardous substances on site;
  - Noise pollution; and
  - Dust impact.

The following specialist studies and specialists will be commissioned to provide more detailed information on those environmental impacts which have been identified as potentially being of most concern, and/or where insufficient information is available, namely:

Study	Consultant and Organisation
Botanical assessment	Dr Dave McDonald of Bergwind Botanical Tours and Surveys
Agriculture potential assessment	Mr Kurt Barichievy of SiVEST
Aquatic assessment	Mr James Mackenzie of Mackenzie Ecological & Development Services
Hydrology assessment	Mr Richard Hirst of SiVEST
Avifauna assessment	Dr Andrew Jenkins of Avisense Consulting
Heritage assessment:	
Archaeology / Cultural	Mr Jayson Orton of ACO Associates
Palaeontology	Dr John Almond of Natura Viva
Visual assessment	Mr Steven Stead of VRM Africa cc

Public Participation

Public participation is a key component of this EIA process and will take place at various stages throughout the project. The approach adopted for the current investigation was to identify as many I&APs as possible initially, through a suite of activities, as follows:

- Placing advertisements in local newspapers on 26 April 2013 (the Gemsbok);
- Placing a notice board at the site (19 April 2013);
- Providing written notice and an Executive Summary to potential I&APs, including surrounding landowners, organs of state, ward councillors and relevant authorities (23 April 2013); and
- Requesting potential I&APs to recommend other potential I&APs to include on the database (chain referral process).

Way forward

All registered I&APs will be notified of the commenting period by means of a letter sent by post, fax or e-mail on 23 April 2013. The notification letters also included a copy of the Executive Summary of the DSR in English and Afrikaans. Copies of this DSR will be lodged in Prieska (Elizabeth Vermeulen) Public Library, Ietznietz in Copperton and on the Aurecon website (**www.aurecongroup.com** - indicate "Current Location" as "South Africa" and follow the Public Participation link).

I&APs have 40 days, i.e. from **30 April 2013** until **10 June 2013** to submit their written comments on the DSR. Cognisance will be taken of all comments in compiling the final report, and the comments, together with the project team and proponent's responses thereto, will be included in the final report. Where appropriate, the report will be updated to the Final Scoping Report (FSR).

Once the FSR has been completed and all I&AP comments have been incorporated into the report, as necessary, and the proponent has approved the report, the FSR will be submitted to DEA and the Northern Cape DEANC for their review and comment, respectively. DEA will either reject the application

or instruct the applicant to proceed to the EIA Phase, either as proposed in the Plan of Study for EIAR, or direct that amendments are made before continuing.

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List of Acronyms

DEA	Department of Environmental Affairs
DSR	Draft Scoping Report
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EMP	Environmental Management Programme
ha	Hectare
I&AP	Interested and Affected Party
km	Kilometer
kV	Kilovolt
MW	Megawatts
NEMA	National Environmental Management Act