

ENVIRONMENTAL IMPACT ASSESSMENT: PROPOSED WIND ENERGY FACILITY NEAR COPPERTON, NORTHERN CAPE



FEBRUARY 2010
DEA REF. NO. 12/12/20/2099



SUMMARY DOCUMENT: DRAFT SCOPING REPORT

Background

Plan 8 Infinite Energy (Pty) Ltd (Plan 8) proposes to construct a phased wind energy facility to generate approximately 200 Megawatts (MW) on a farm, near Copperton in the Northern Cape. Aurecon South Africa (Pty) Ltd (Aurecon) has been appointed to undertake the requisite Environmental Impact Assessment (EIA) process as required in terms of the National Environmental Management Act (No. 107 of 1998)(NEMA), as amended, on behalf of Plan 8.

The proposed project would take place on Struisbult Farm (Farm No. 103 Portions 4 and 7 and Farm No. 104 Portion 5), near Copperton in the Northern Cape (see **Figure 1**). Struisbult Farm is located approximately 5 km east of Copperton and the two portions cover approximately 3 000 ha.

Proposed project

Plan 8 proposes to construct a phased wind energy facility to generate approximately 200 MW the farm Struisbult (Farm No. 103 Portions 4 and 7 and Farm No. 104 Portion 5) near Copperton in the Northern Cape. The proposed project would consist of three phases, which would take place over a number of years, depending on Eskom's timelines for purchase of the energy. The proposed phasing is provided in **Table 1**.

Table 1 Phasing of the proposed wind energy facility near Copperton

Phase	No. of turbines (approximate)	MW	Cumulative MW
1	20	50	50
2	20	50	100
3	40	100	200

Each turbine would generate approximately 2.5 MW (rated capacity). A wind turbine is a rotary device that extracts energy from the wind. If the mechanical energy is used directly by machinery, such as for pumping water, cutting lumber or grinding stones, the machine is called a windmill. If the mechanical energy is instead converted to electricity, the machine is called a wind turbine.

Purpose of this document

This document provides a summary of the Draft Scoping Report (DSR) and Plan of Study for EIA for the proposed wind energy facility near Copperton, Northern Cape. It provides a brief background and overview of the proposed project, a description of the public participation process undertaken thus far, 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.

In addition, you are also invited to attend a Public Meeting where the findings of the DSR will be presented and discussed on **Thursday, 10 March 2011, 18h00-20h00** at the **letznietz Conference Room, Copperton**. Should you wish to attend please RSVP for further details.

Please review this Summary Document and, preferably, the full Scoping Report, and submit your comments on the proposed project by **Wednesday, 30 March 2011**. To comment, write a letter, call or e-mail the Public Participation office. All EIA documents will be available on the Aurecon (Pty) Ltd (Aurecon) website (www.aurecongroup.com follow the public participation links).

Aurecon

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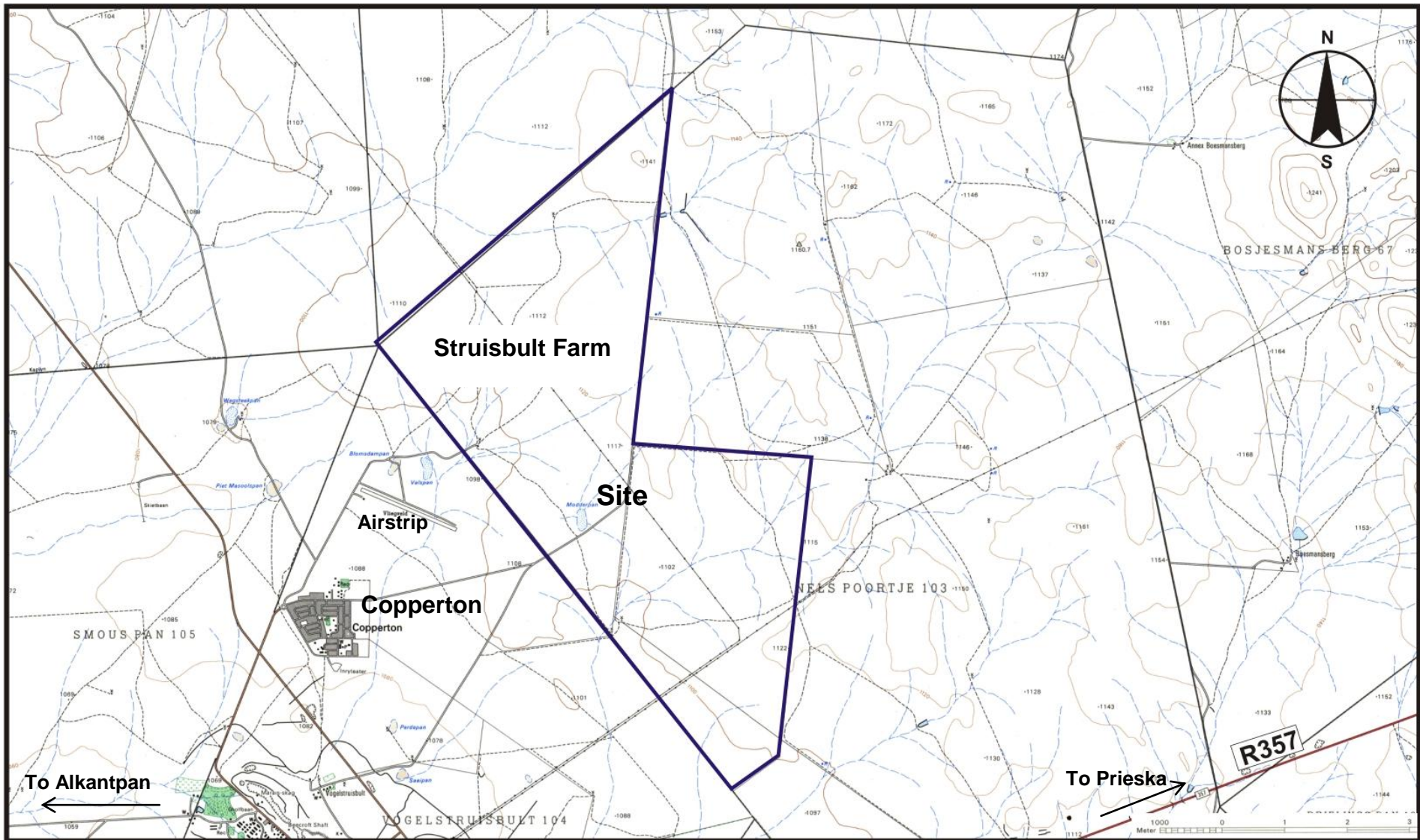


Figure 1. Location of the proposed wind energy facility near Copperton, Northern Cape (2922 CD)

Wind turbines can rotate about either a horizontal or a vertical axis. Turbines used in wind farms for commercial production of electricity are usually horizontal axis, three-bladed and pointed into the wind by computer-controlled motors. These have high tip speeds of over 320 km/hour, high efficiency, and low torque ripple, which contribute to good reliability. The blades are usually coloured light grey and range in length from 20 - 50 m or more. The tubular steel towers range from 60 - 100 m tall. The blades rotate at 10 - 22 revolutions per minute. A gear box is commonly used for stepping up the speed of the generator. Some models operate at constant speed, but more energy can be collected by variable-speed turbines. All turbines are equipped with protective features to avoid damage at high wind speeds, by feathering (turning) the blades into the wind which ceases their rotation, supplemented by brakes.

Horizontal axis wind turbines have the main rotor shaft and electrical generator at the top of a tower in a nacelle. Conventional horizontal axis turbines can be divided into three components.

- The rotor component, which includes the blades for converting wind energy to low speed rotational energy.
- The generator component, which includes the electrical generator, the control electronics, and most likely a gearbox component for converting the low speed incoming rotation to high speed rotation suitable for generating electricity.
- The structural support component, which includes the tower and rotor yaw mechanism (which turns the rotor into the wind).

The final foundation design of the proposed turbines is dependent on geotechnical investigation, however it is likely that for the proposed project foundations would be made of reinforced concrete. The foundations would be approximately 20 m x 20 m and an average of 3 m deep. The foundation would be cast *in situ* and could be covered with top soil to allow vegetation growth around the 6 m diameter steel tower.

A hardstanding for a crane made of an impermeable material such as concrete or tar and approximately 20 m x 6 m, would be constructed adjacent to each turbine. Access roads of 6 m wide would also be required between each turbine.

There is electricity distribution infrastructure adjacent to the farm which is designed for 132 kilovolt (kV) distribution. This line could be used by the proposed project to evacuate the power generated and hence a new line, other than the existing 2 km long connection, would not be required. However, Eskom may require that the electricity is evacuated via the Cuprum substation, which is located on the site of the disused copper mine rock crushing facility approximately 6.5 km to the south west. The final connection will be dependent on the technical requirements and cost set out by Eskom. **Figure 2** shows the two alternative connection points.

Site description

The proposed project would take place on Struisbult Farm (Farm No. 103 Portions 4 and 7 and Farm No. 104 Portion 5), near Copperton in the Northern Cape (see **Figure 1**). Struisbult Farm is located approximately 5 km east of Copperton and the two portions cover 3 000 ha.

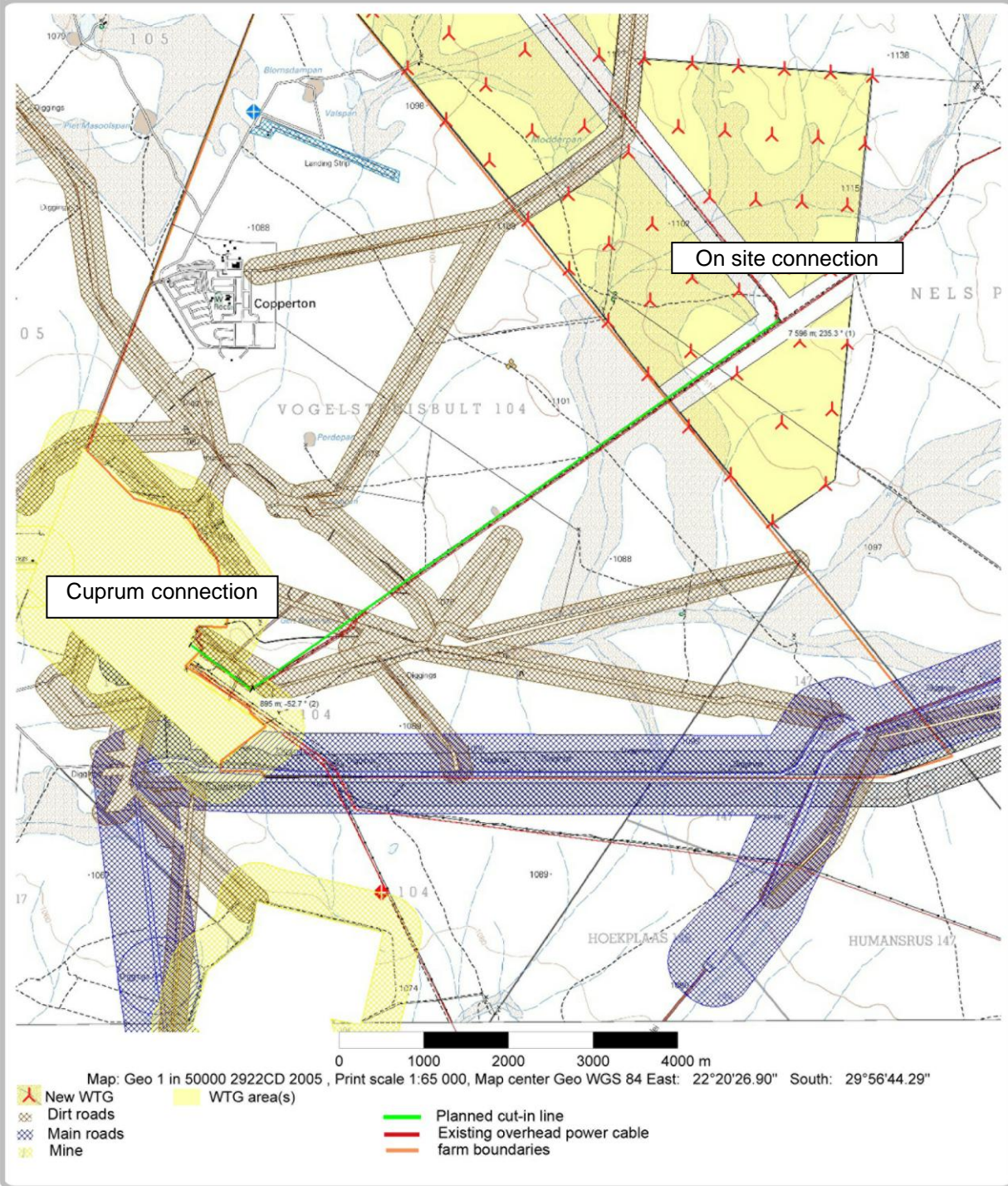
The surrounding land uses are mainly agricultural, consisting mostly of sheep grazing. At the abandoned Copperton mine a photovoltaic power generation facility is proposed by Mulilo Renewable Energy (Pty) Ltd, and this is currently the subject of an EIA process (DEA Ref. No. 12/12/20/1722). Further west of the site is Alkantpan, a weapons testing range, used by many countries for weapons testing.

Closer to the site, a 1.7 km airstrip, owned by the site landowner, is also located immediately west 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. The site itself is used for agriculture (stock grazing).

Project:
Copperton

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BASIS - Map



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Figure 2 Map showing the two alternative distribution connection points (green line indicates off site connection alternative)

Scoping Process in terms of EIA Regulations

EIA Regulations (Regulations 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 in terms of NEMA and accordingly requires environmental authorisation from DEA via the EIA process outlined in Regulation 543 of NEMA.

Aurecon has been appointed to undertake the required environmental authorisation and licencing processes on Plan 8’s behalf.

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 social and biophysical), 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.

How you can get involved

Public participation is a key component of this EIA process and will take place at various stages throughout the project. The public participation process to date has involved the following aspects:

- Distribution of the Background Information Document on 24 November 2010 to inform Interested and Affected Parties (I&APs) of the project and to invite I&APs to register on the database;
- Advertisements were placed in a local newspaper, the Gemsbok, notifying the broader public of the initiation of the EIA and inviting them to register as I&APs from 24 November 2010; and
- A site notice was erected at the entrance to Struisbult Farm on 9 February 2010.

Issues raised during the initial phase include:

1. Aerodrome;
2. Biophysical resources;
3. Cultural and heritage resources;
4. Infrastructure;
5. Public participation;
6. Project alternatives; and
7. Socio-economic aspects.

All written comments received are included as an annexure to the Draft Scoping Report (DSR). All issues raised via written correspondence have been summarised into a Comments and Response Report with responses from the project team and are included as an annexure to the DSR.

Project alternatives

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

- **Location alternatives:**
 - One location for the proposed wind energy facility;
 - Electricity distribution via onsite linkage to the existing grid; and
 - Electricity distribution via a 6.5 km 132 kV connection to Cuprum substation.
- **Activity alternatives:**
 - Wind energy generation via wind turbines; and
 - “No-go” alternative to wind energy production.
- **Site layout alternatives:**
 - One layout alternative.
- **Technology alternatives:**
 - One technology alternatives viz. one turbine type.

Identified impacts

The proposed wind energy facility 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 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; and
 - Impact on fauna (including avifauna and bats).
- Operational phase impacts on the social 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;
 - Impact on surrounding land uses; and
 - Impact of noise.
- **Construction phase impacts on the biophysical and social environments**

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:

- *Botanical assessment:* Dr Dave MacDonald, Bergwind Botanical Tours and Surveys;
- *Avifauna assessment:* Dr Andrew Jenkins of Avisense Consulting;
- *Bat assessment:* Mr Werner Marais of Animalia Zoological and Ecological Consultation;

- *Heritage Impact Assessment:* Mrs Melanie Atwell of Melanie Atwell Associates (cultural heritage component), Mr Jonathan Kaplan of Agency for Cultural Resources Management (archaeology component) and Dr John Almond of Natura Viva cc (palaeontology component); and
- *Visual Impact Assessment:* Mrs Karen Hansen of Viridian Consulting.

Way forward

Copies of this DSR have been lodged in Prieska (Elizabeth Vermeulen) Public Library, letznietz in Copperton and on the Aurecon website.

A Public Meeting will be held on **Thursday, 10 March 2011** to present and discuss the findings of the DSR at the following venue:

Date	Venue	Time
10 March 2011	letznietz Conference Room, Copperton	18h00-20h00

The purpose of the meeting is to present the findings of the DSR and provide the public with an opportunity to comment on the DSR. Should you wish to attend please RSVP for further details.

All registered I&APs were notified of the meetings by means of a letter sent by post, fax or e-mail on 17 February 2011. The notification letters also included a copy of the Executive Summary of the DSR in English and Afrikaans. Copies of the DSR are lodged on Aurecon's website (www.aurecongroup.com follow public participation link) and the Elizabeth Vermeulen Library in Prieska from 17 February 2011.

I&APs have 40 days, until 30 March 2011, 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.

Once the final Scoping Report has been completed and all I&AP comments have been incorporated into the report, and the client has approved the report, it will be submitted to DEA and the Northern Cape Department of Environmental Affairs and Nature Conservation 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.

Public Participation Office

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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
FSR	Final Scoping Report
Ha	Hectare
I&AP	Interested and Affected Party
Km	Kilometer
Kv	Kilovolt
MW	Megawatts
NEMA	National Environmental Management Act