

APPLICATION FOR AMENDMENT OF ENVIRONMENTAL  
AUTHORISATION (DEA REF NO: 12/12/20/913)

CONSTRUCTION OF THE PROPOSED WIND ENERGY FACILITY,  
WESTERN CAPE PROVINCE

MARCH 2013

DEA REF NO.: 12/12/20/913

**Project Background**

An Environmental Impact Assessment for Eskom's largest Wind Energy Facility (Sere), Western Cape, was undertaken in 2007. The Sere wind energy facility proposes to produce up to 200 MW of electricity (an

output of approx. 2MW per turbine). Eskom Holdings Ltd obtained authorisation



- to the electricity grid at the Juno transmission substation;
- An access road to the site from the main R363 road at Koekenaap;
- Internal access roads providing access to each wind turbine site (with a permanent travel surface of approximately 6m in width).
- An office/workshop building and visitors centre at the facility entrance (400m²).

Two amended authorisations have been obtained on 29 October

2010 and 29 August 2011, due to subsequent developments in wind technology to optimise the wind energy capture for the project.

Further advancements in wind technology have since occurred and this forms the basis of this application.

**Project Location**

The project is located in the Western Cape Province falling within the Matzikama Local Municipality and the District Management Area WCMA01

for this wind project (DEA Ref No. 12/12/20/913) on 24 April 2008. This Environmental Authorisation included the following project infrastructure:

- 100 turbine units (80m in height) with a 90m diameter rotor (including 3x45 m blades);
- A concrete foundation (15mx15m) to support each turbine tower;
- Underground electrical cabling between each turbine and substation;
- A substation (80mx80m) to receive generated power via underground distribution cabling from each wind turbine;
- 132kV overhead power line from the wind farm substation

OBJECTIVE OF THE AMENDMENT

Following four years of project planning the Wind Energy Facility, Western Cape project details have been amended and updated as new and improved wind energy technology from the wind industry and turbine suppliers becomes available.

This is to optimise the wind energy capture of the turbines based on the local wind conditions at the proposed site and to finalise the site development plan prior to construction commencing. The change will minimise infrastructure, operation and maintenance costs, and social and environmental impacts.

within the West Coast District Municipality (WCDM) (**Figure 1**). The site is 3700ha in extent of which 70ha will be impacted upon by the proposed wind energy facility.

### **Current Amendment**

The Sere Wind Facility design is continually being updated as new and improved wind energy technology from the wind industry and turbine suppliers becomes available. The proposed changes to the design is as follows:

- From 67 to ~ 50 wind turbine units (each 120m in height)
- From 90m (3 x 45m blades) to 106m diameter rotor (3 x 53m blades); and
- Concrete foundation from 15m x 15m to 20m x 20m to support the extra weight of each tower.

### **Turbine design and energy efficiency**

The benefits of longer blades on the turbine units will increase the MW output of each turbine, therefore reducing the overall number of turbines required for the Sere Wind Facility but achieving the required energy generation.

The first amendment to the EA (29/10/10) was done in response to 18 months of a wind resource assessment (WRA) specific to the Sere wind facility site, resulting in Eskom increasing the turbine height from 80 m to 120 m to improve

the net capacity factor by 16% and production output.

With the current amendment to the EA, the change in turbine blade length from 45 m to 53 m will increase the diameter of the rotor which further improves the energy efficiency of the wind turbines by 21.91%.

### **Building Footprint**

The reduced number of turbines from 100 to approx. 50 will require the site layout to be revised and will include the repositioning of the wind turbine generators on site. The site layout optimization exercise will show the change to 50 turbines with a 25 m x 25 m foundation footprint, the temporary affected areas and each turbine laydown areas will increase to 50 m x 50 m, hence temporarily disturb a larger footprint. However, the overall temporary footprint area will still be less with fewer turbines due to reduced temporary access roads required the best possible positions for the turbines, substation and other infrastructure from a technical perspective, taking into account environmentally sensitive areas (**Figure 2**).

In terms of the project description in the EA(24/4/08), it is stated that an area of 70ha of the total 3700ha will be impacted upon by the

proposed development. The 2008 EIA describes the effective utilized area required to accommodate the infrastructure to be 16km<sup>2</sup>. This area took into account 100 turbine units with the affected area primarily including the turbines, substation and associated access roads. There are both permanent and temporary affected areas.

With the current amendment with the proposed changes to approximately 50 turbines with 53m blades, the concrete foundation will need to be 20 m x 20 m to support the turbines. This will increase the turbine footprint size of permanently disturbed area to 25m x 25m i.e. 625m<sup>2</sup> each.

However, the reduction in the overall number of turbines will reduce the footprint and extent of access roads required, thereby reducing the overall area of disturbance.

### **Environmental Impacts**

The reduction in overall number of turbines required, and subsequent reduction in development footprint size of the wind facility, will further minimise the potential for environmental impact. The revised layout of the turbines takes into account all environmental constraints identified through the EIA process, as well as the

conditions of the environmental authorization granted in 2008.

From the specialist investigations undertaken during the EIA process, key potential negative environmental impacts associated with the wind energy facility on the identified site were: visual impacts and avifauna mortality.

#### **Avifauna sensitivity**

The avifauna specialist (Endangered Wildlife Trust) has confirmed that the proposed change in number of turbines and blade length, of the

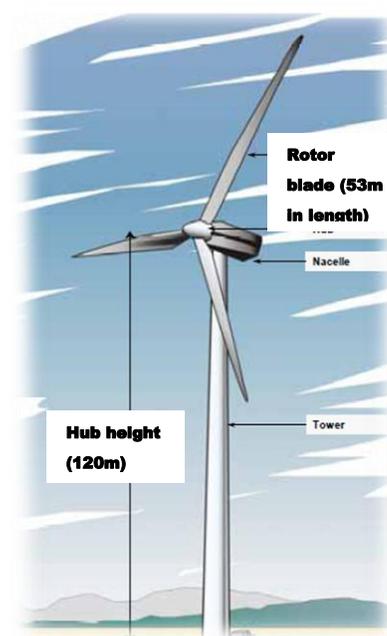
current amendment, does not present any change in the significance of the collision and disturbance impacts on priority species.

The increased turbine size will increase the Rotor Swept Area (RSA) per turbine however this is accompanied by a decrease in number of turbines and therefore “fewer blades” in the sky, therefore balancing out any increased impact.

#### **Visual sensitivity**

The Visual Impact Specialist (MetroGIS) has confirmed that the potential visual impacts

associated with the proposed current amendment should not alter/influence the outcome of the project decision-making. The increase in length of the turbine blades is not expected to greatly influence the general appearance of the wind turbine structures.



## PUBLIC PARTICIPATION PROCESS

In terms of Regulation 56 of the EIA Regulations (2010), an opportunity is being provided for registered interested and affected parties to submit written comment on the amendment application.

The public participation process will include the following:

- On-site notices
- Advertisements in local and regional newspapers
- Notification letters to all registered stakeholders

### PUBLIC COMMENT

Please submit comments by **12 April 2013** to the relevant contact person below:

**Name:** Dr Shael Harris

**Email:** sherq@sebatagroup.com

**Tel:** 010 0600 355

**Fax:** 0862935676

**Website for information on the project:**

[www.eskom.co.za/c/article/368/home-wind-energy-facility-western-cape/](http://www.eskom.co.za/c/article/368/home-wind-energy-facility-western-cape/)

[www.sebataroup.com/environment](http://www.sebataroup.com/environment)



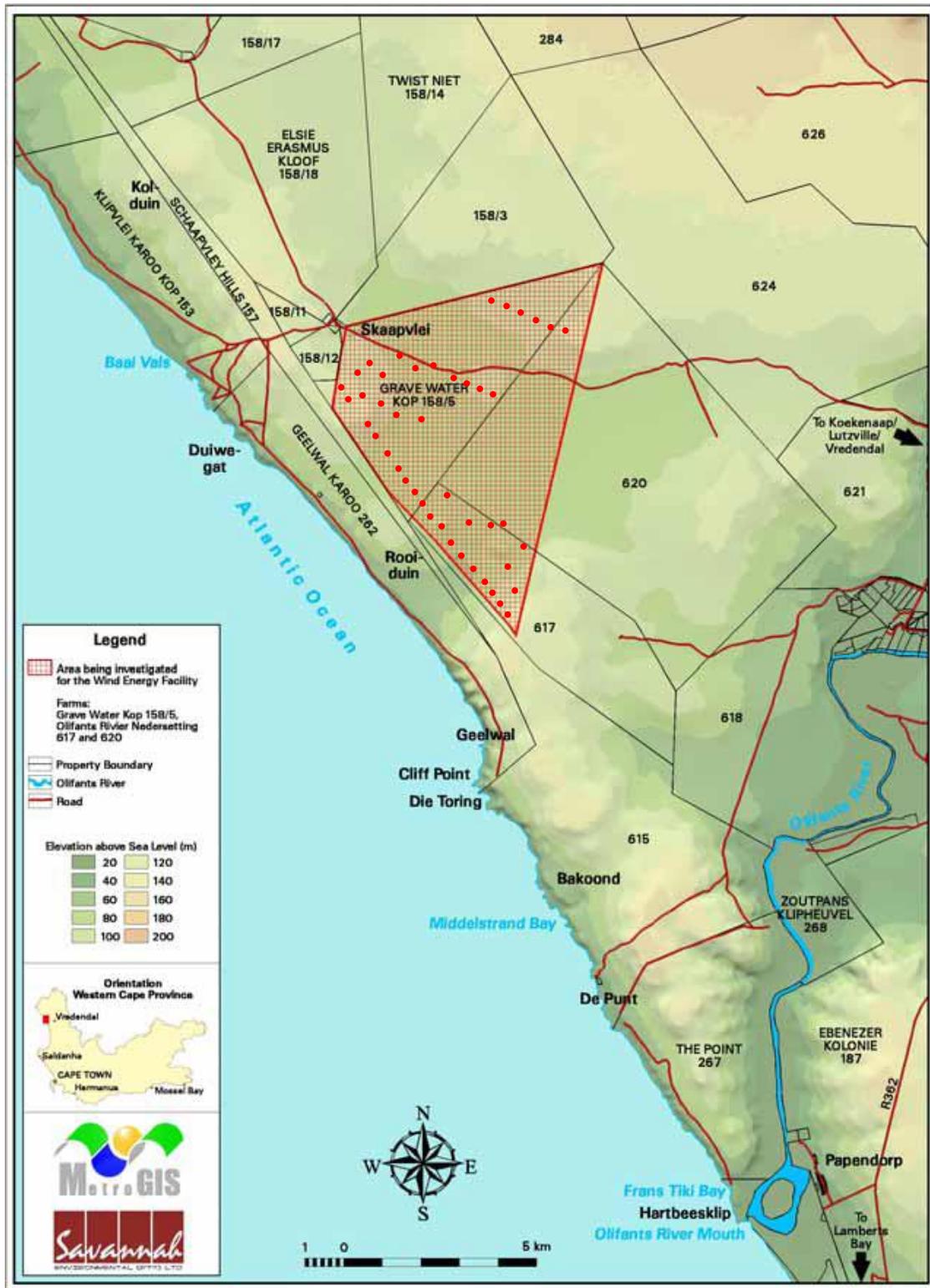


Figure 1: Location of Sere Wind Energy Facility, Western Cape, with proposed new layout of wind turbines.

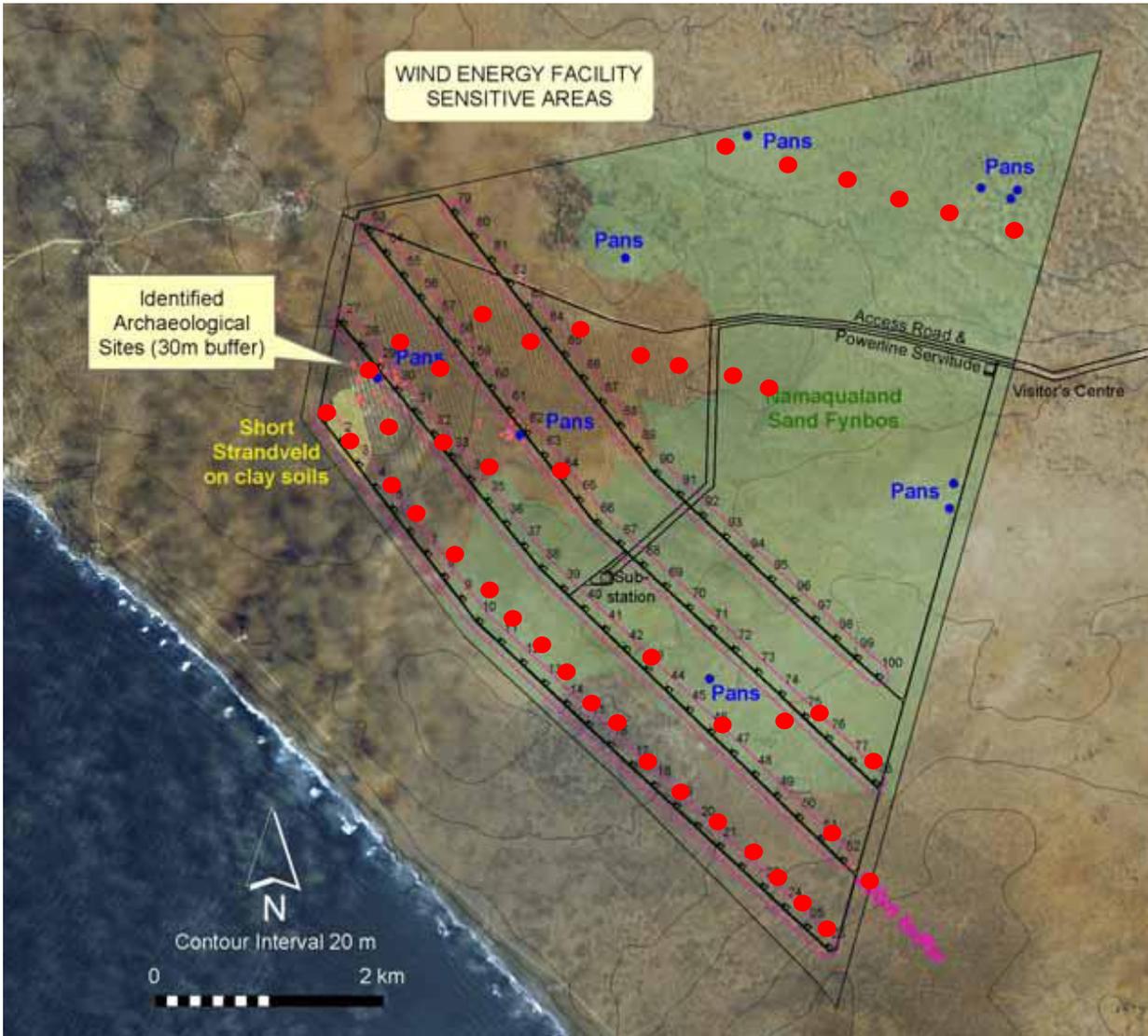


Figure 2: Layout of wind turbines: Numbered = 2008 layout of 100 turbines; Red = proposed new layout of 50 turbines for the current 2013 amendment.

**Application for Amendment to Environmental Authorization for the Proposed Wind Energy Facility and Associated Infrastructure at A site In the Western Cape DEA Project Reference 12/12/20/913**

**PUBLIC INVOLVEMENT PROCESS REPLY FORM**

Please complete the form below and return to Dr. Shael Harris:

**NAME** Dr Shael Harris of Sebata Institute  
**E-MAIL** sherq@sebatagroup.com  
**TEL** 010 0600 355  
**FAX** 0862935676

Please provide your complete contact details

<b>NAME</b>	
<b>ORGANISATION</b>	
<b>ADDRESS</b>	
<b>CONTACT DETAILS</b>	<b>Telephone:</b> <b>Cellphone:</b> <b>Email:</b>

**COMMENTS:**

1. Please state your interest in the project with regards to the proposed amendment:

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2. Do you have any questions, views or concerns regarding the Wind Facility and the proposed amendment?

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3. Do you require any other additional information?

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5. Any other person you feel must be contacted (Please give contact details):

<b>NAME</b>	
<b>ORGANISATION</b>	
<b>ADDRESS</b>	
<b>CONTACT DETAILS</b>	<b>Telephone:</b> <b>Cellphone:</b> <b>Email:</b>

What is your preferred language of correspondence? (Please tick relevant box)

English

Afrikaans

