

MARCH 2010

ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

# BACKGROUND INFORMATION DOCUMENT

A WINDLAB DEVELOPMENTS SOUTH AFRICA INITIATIVE



CONSTRUCTION OF THE PROPOSED  
**AMAKHALA EMOYENI WIND ENERGY FACILITY**  
EASTERN CAPE PROVINCE



SUSTAINABLE  
FUTURES ZA



Windlab Developments South Africa Pty Ltd is proposing to establish a commercial wind energy facility on a site between Cookhouse and Bedford in the Eastern Cape Province. It is proposed for a cluster of up to 350 wind turbines (described as a wind energy facility) to be constructed over an area of approximately 273 km<sup>2</sup> in extent. This project is known as the Amakhala Emoyeni Wind Energy Facility. The nature and extent of this facility is explored in more detail in this document.

## AIM OF THIS BACKGROUND INFORMATION DOCUMENT

This document aims to provide you, as an interested and/or affected party (I&AP), with:

- » an overview of the proposed Wind Energy Facility.
- » an overview of the Environmental Impact Assessment (EIA) process and studies being undertaken to assess the project.
- » details of how you can become involved in the EIA process, receive information, or raise issues, which may concern and/or interest you.

## OVERVIEW OF THE PROPOSED PROJECT

The overall aim of the design and layout of the facility is to maximise electricity production through exposure to the wind resource, while minimising infrastructure, operation and maintenance costs, and social and environmental impacts. The wind energy facility proposed by Windlab Developments South Africa is proposed to accommodate up to 350 turbines. The performance of the turbines is also determined by disturbances to the wind resource, which requires that they are appropriately spaced, and turbines would, therefore, be positioned over an area of approximately 273 km<sup>2</sup>. Once constraining factors have been determined, the layout of the wind turbines and infrastructure can be planned. Specialist software is available to assist developers in selecting the optimum position for each turbine before the project is constructed.

The proposed wind energy facility would include:

- » Up to 350 wind turbines and foundations to support them
- » Cabling between the turbines, to be laid underground where practical
- » Up to 3 substations to facilitate the connections between the Wind Energy Facility and the grid
- » Internal access roads to each turbine
- » Overhead power lines either feeding into the Poseidon Substation or tying directly into existing transmission lines
- » Workshop area for maintenance and storage

The site proposed for the Amakhala Emoyeni Wind Energy Facility area falls within the Blue Crane Route Local Municipality. The wind energy facility is proposed on the following farms:

Portion 1, 2 and remainder of Farm 222, Portion 3 of Farm 203 (Platt House), Remainder of Farm 205 (Kop Leegte), Portion 1 of Farm 206 (Normandale), Remainder of Farm 168 (Stompstaart Fontein), Remainder of Farm 224 (Taai Fontein), Remainder

of Farm 221 (Leeuw Fontein), Portion 2 and Remainder of Farm 223 (Paarde Kloof), Remainder of Farm 227 (Wilgem Bush), Remainder of Farm 225, Portion 1, 2 and remainder of Farm 218 (Brakke Fonteyn), Remainder of Farm 259, Remainder of Farm 260, Portion 5 of Farm 149 (Great Knoffel Fonteyn), Remainder of Farm 242, Portion 1 and Remainder of Farm 220 (Brak Fontein), Remainder of Farm 219 (Vogel Fonteyn), Remainder of Farm 169 (Olive Woods Estate), Portion 3 of Farm 141 (Brakfontein), Portion 1 of Farm 187 (Kleine Knoffel Fonteyn).

## WHAT IS A WIND TURBINE AND HOW DOES IT WORK?

A Wind Energy Facility consist of multiple wind turbines which are used to capture the kinetic energy of the wind and generate electricity. This captured kinetic energy is used to drive a generator located within the wind turbine and the energy is subsequently converted into electrical energy. A typical wind turbine consists of four primary components:

- » The foundation unit upon which the turbine is anchored to the ground.
- » The tower which typically between 80m and 100m in height.  
*The tower is a hollow structure allowing access to the nacelle. The height of the tower is key in determining the amount of electricity a turbine can generate. The tower houses the transformer which converts the electricity to the correct voltage for transmission into the grid.*
- » The nacelle (generator / turbine housing)  
*The nacelle houses the gearbox and generator as well as a wind sensor to identify wind direction. The nacelle turns automatically ensuring the blades always face into the wind to maximise the amount of electricity generated.*
- » The rotor which is comprised of three rotor blades (each up to 60 m in length).  
*The rotor blades use the latest advances in aeronautical engineering materials science to maximise efficiency. The greater the number of turns of the rotor the more electricity is produced.*

The amount of energy a turbine can harness is dependent on the wind velocity and the length of the rotor blades. Wind turbines start generating power at wind speeds of between 10-15 km/hour, with speeds between 45-60 km/hour required for full power operation. In a situation where wind speeds are excessive, the turbine automatically shuts down to prevent damage.

A turbine is designed to operate continuously, unattended and with low maintenance for more than 20 years or >120 000 hours of operation. Once operating, a wind farm can be monitored and controlled remotely, with a mobile team for maintenance, when required.

A facility consisting of up to 350 turbines could take up to 5 years to construct and commission, and requires the expertise of skilled staff.

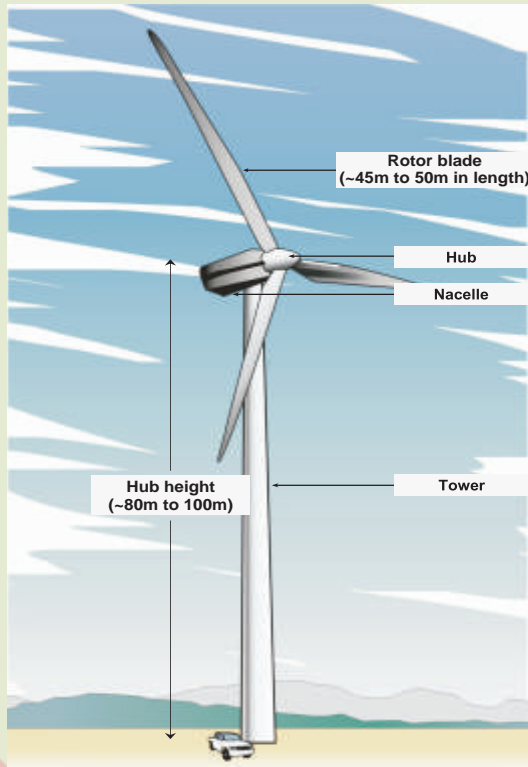


Figure 1: Illustration of the components of a typical wind turbine

## ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

In terms of the EIA Regulations published in terms of Section 24(5) of the National Environmental Management Act (NEMA, No 107 of 1998), Windlab Developments South Africa requires authorisation from the National Department of Environmental Affairs (DEA) (in consultation with the Eastern Cape DEDEA) for the undertaking of the proposed project. In order to obtain authorisation for this project, comprehensive, independent environmental studies must be undertaken in accordance with the EIA Regulations. This project has been registered with National DEA under Application Reference number 12/12/20/1754.

An EIA is an effective planning and decision-making tool. It allows the environmental consequences resulting from a technical facility during its establishment and its operation to be identified and appropriately managed. It provides the opportunity for the developer to be fore-warned of potential environmental issues, and allows for resolution of the issue(s) reported on in the EIA report as well as dialogue with affected parties.

Windlab Developments South Africa has appointed Savannah Environmental, as independent consultants, to undertake a Scoping and Environmental Impact

Assessment to identify and assess all potential environmental impacts associated with the proposed project for the area as identified, and propose appropriate mitigation measures in an Environmental Management Plan (EMP). As part of these environmental studies, I&APs will be actively involved through the public involvement process being undertaken by Sustainable Futures.

The phases of an EIA are:



## EIA PROCESS

### WHAT ARE THE POTENTIAL ENVIRONMENTAL IMPACTS ASSOCIATED WITH THE PROPOSED PROJECT?

A number of potential environmental impacts associated with the proposed project have been identified. These potential impacts will be assessed through the following specialist studies:

#### Biophysical Studies

Impacts on agricultural potential:  
Impacts on agricultural areas and potential, and land capability.

Impacts associated with geology:  
Impacts associated with geology relating to underlying soil condition and erosion potential.

Impact on avifauna:  
Birds and bats may be impacted through collision with the blades during operation of the wind energy facility.

Impacts on ecology, fauna and flora:  
The construction of the wind energy facility and the associated disturbance of vegetation may result in impacts on ecology.

#### Social Studies

Impacts on the social environment:  
The construction and operation of the facility may result in limited job opportunities and can impact on local land use.

Noise impacts:  
The rotation of their blades may result in noise emissions which could impact on nearby residents.

Impacts on heritage sites and fossils / paleontology:  
Disturbance to or destruction of heritage sites and fossils/paleontology may result during the construction of the wind energy facility.

Visual quality and aesthetics:  
Due to their size wind turbines have the potential to have a visual impact on the surrounding area.

The specialist studies will assess potentially significant impacts and recommend practical and achievable mitigation measures in order to minimise the significance of the impacts. These recommendations will be included within a project-specific EMP.

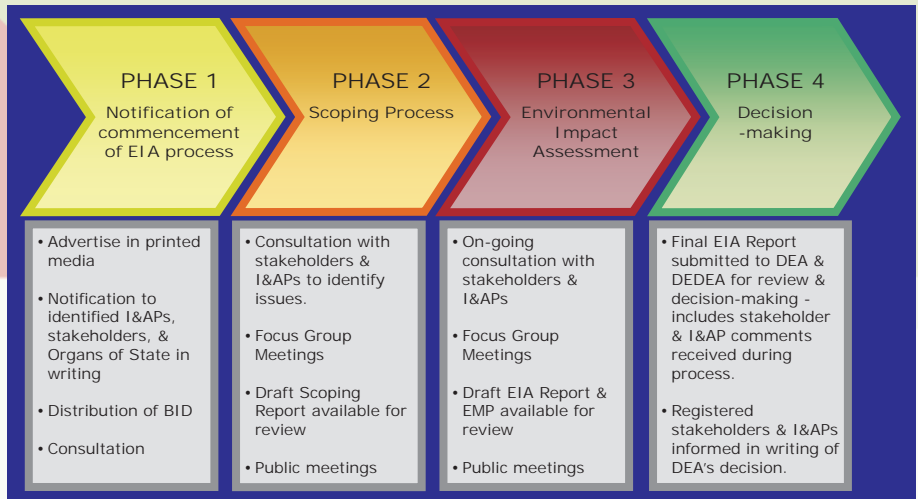
## PUBLIC INVOLVEMENT PROCESS

The sharing of information forms the basis of the public involvement process and offers you the opportunity to become actively involved in the EIA from the outset. Comments and inputs from I&APs during the EIA process are encouraged in order to ensure that potential impacts are considered within the ambit of the study.

The public involvement process aims to ensure that:

- » Information containing all relevant facts in respect of the application is made available to I&APs for review.
- » Participation by potential I&APs is facilitated in such a manner that I&APs are provided with a reasonable opportunity to comment on the application.
- » Adequate review periods are provided for I&APs to comment on the findings of the draft Scoping and EIA reports.

In order to ensure effective participation, the public involvement process includes the following steps:



## YOUR RESPONSIBILITIES AS AN I&AP

In terms of the EIA Regulations, your attention is drawn to your responsibilities as an I&AP:

- » In order to participate in this EIA process, you must register yourself on the project database.
- » You must ensure that any comments regarding the proposed project are submitted within the stipulated timeframes.
- » You are required to disclose any direct business, financial, personal or other interest which that you may have in the approval or refusal of the application for the proposed Wind Energy Facility.

## HOW TO BECOME INVOLVED

1. By responding (by phone, fax or e-mail) to our invitation for your involvement which has been advertised in local and national newspapers.
2. By returning the attached Reply Form to the relevant contact person.
3. By attending the meetings to be held during the course of the project. As a registered I&AP you will automatically be invited to attend these meetings. Dates for public meetings will also be advertised in local and regional newspapers.
4. By contacting the consultants with queries or comments.
5. By reviewing and commenting on the draft Scoping and EIA Reports within the stipulated 30-day review periods.

If you consider yourself an I&AP for this proposed project, we urge you to make use of the opportunities created by the public involvement process to provide comment, or raise those issues and concerns which affect and/or interest you, and about which you would like more information. Your input into this process forms a key element of the EIA process.

By completing and submitting the accompanying Reply Form, you automatically register yourself as an I&AP for this project, and are ensured that your comments, concerns or queries raised regarding the project will be noted.

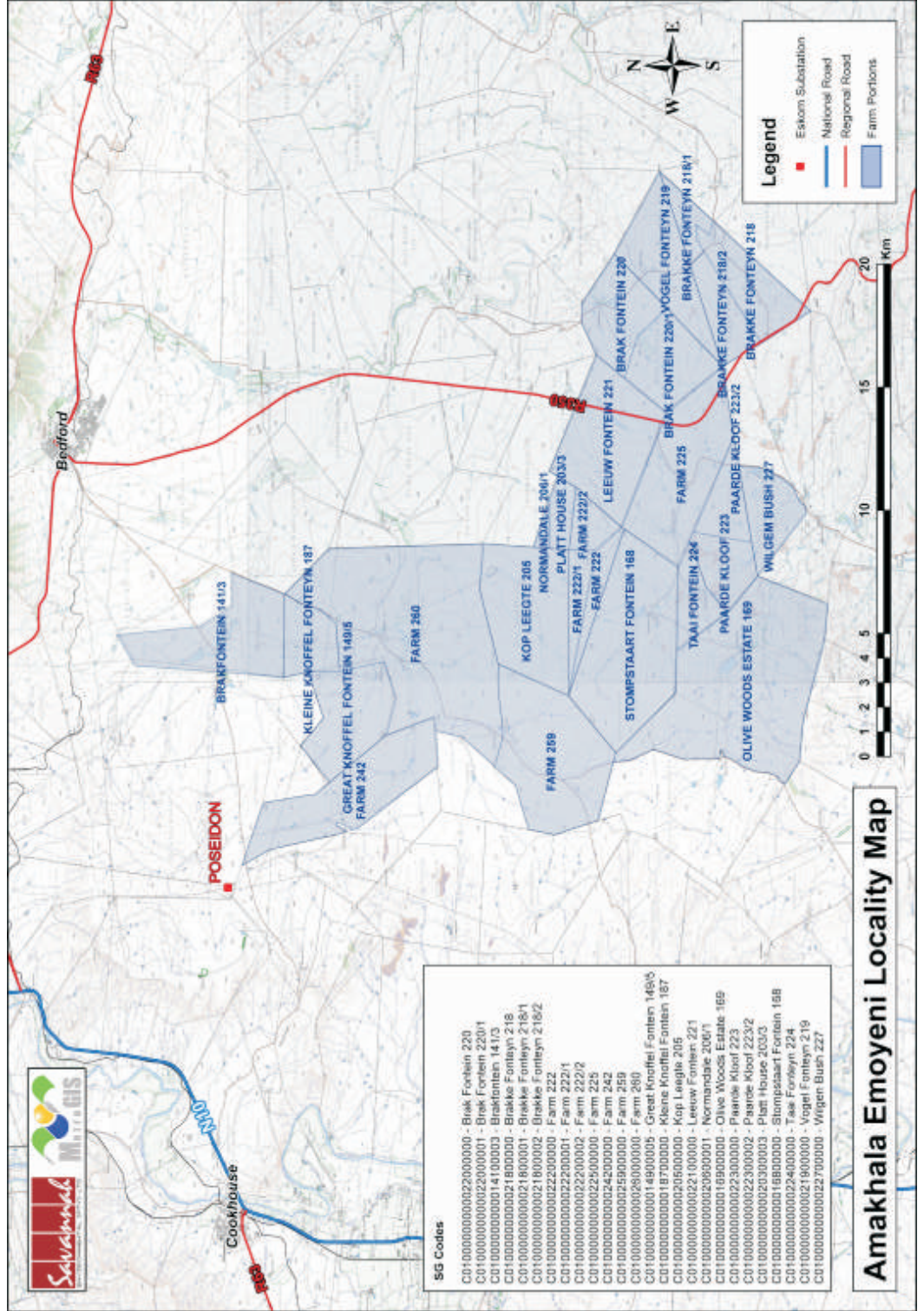
## COMMENTS AND QUERIES

Direct all comments, queries or responses to:

Shawn Johnston of Sustainable Futures ZA  
PO Box 749, Rondebosch, CAPE TOWN, 7701  
Phone: 083 325 9965  
Fax: 086 510 2537  
E-mail: [swjohnston@mweb.co.za](mailto:swjohnston@mweb.co.za)

To view project documentation, visit

[www.savannahSA.com](http://www.savannahSA.com)



**POSEIDON**

BRARFONTEYN 141/3

KLEINE KNOFFEL FONTEYN 187

GREAT KNOFFEL FONTEYN 149/5  
FARM 242

FARM 260

FARM 258

KOP LEEGTE 205

NORMANDALE 200/1

PLATT HOUSE 203/3

FARM 222

FARM 222/1 FARM 222/2

STOMPSTAART FONTEYN 188

FARM 225

TAAL FONTEYN 224

PAARDE KLOOF 223

PAARDE KLOOF 223/2

WILGEM BUSH 227

OLIVE WOODS ESTATE 169

BRAK FONTEYN 220

BRAK FONTEYN 220/1

BRANKE FONTEYN 218/1

BRANKE FONTEYN 218/2

BRANKE FONTEYN 218

**SG Codes**

C01000000000022000000	-	Blak Fonteyn 220
C01000000000022000001	-	Brak Fonteyn 220/1
C01000000000041000003	-	Brakfonteyn 141/3
C01000000000021800000	-	Brakke Fonteyn 218
C01000000000021800001	-	Brakke Fonteyn 218/1
C01000000000021800002	-	Brakke Fonteyn 218/2
C01000000000022000000	-	Farm 222
C01000000000022000001	-	Farm 222/1
C01000000000022000002	-	Farm 222/2
C01000000000022500000	-	Farm 225
C01000000000024200000	-	Farm 242
C01000000000025900000	-	Farm 259
C01000000000028000000	-	Farm 280
C01000000000014900005	-	Great Knoffel Fonteyn 149/5
C01000000000018700000	-	Kleine Knoffel Fonteyn 187
C01000000000020500000	-	Kop Leegte 205
C010000000000221000001	-	Leeuw Fonteyn 221
C01000000000020950001	-	Normandale 200/1
C01000000000016900000	-	Olive Woods Estate 169
C01000000000022300002	-	Paarde Kloof 223
C01000000000022300000	-	Paarde Kloof 223/2
C010000000000203000003	-	Platt House 203/3
C01000000000016800000	-	Stompstaart Fonteyn 168
C01000000000022400000	-	Taal Fonteyn 224
C010000000000021800000	-	Vogel Fonteyn 218
C010000000000022700000	-	Wigen Bush 227

# Amakhala Emoyeni Locality Map



**Legend**

- Eskom Substation
- National Road
- Regional Road
- Farm Portions

