

ENVIRONMENTAL IMPACT ASSESSMENT PROCESS



MARCH 2010

BACKGROUND INFORMATION DOCUMENT

WIND ENERGY FACILITY DEVELOPMENT ON TWO SITES NEAR BOONJTIESKRAAL IN THE OVERBERG AREA OF THE WESTERN CAPE PROVINCE



BioTherm Energy (Pty) Ltd is proposing to establish a commercial wind energy facility, (known as the Klipheuvel/Dassiesfontein Wind Energy Facility) and associated infrastructure on two sites in the Overberg area within the Western Cape Province. The wind farm is proposed to accommodate up to **30 turbines**, spaced to make use of the wind resource on the sites. The area in which the wind turbines would be situated is an area of approximately 602 hectares (ha). Associated infrastructure proposed includes a substation, access roads and a power line.

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 project.
- » 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 proposed development is known as the Klipheuvel/Dassiesfontein Wind Energy Facility. The proposed development site was identified through a technical feasibility study which considered wind resource, access to the electricity grid, accessibility of the site and local site topography. Through a Regional Assessment study undertaken, the environmental constraints to such developments were mapped and the potential environmental acceptability for development of the identified sites at a regional level was confirmed.

The proposed wind energy facility at the **Klipheuvel** wind farm is proposed on the farm portions Klip Heuvel no. 410/5 (Remaining Extent) & 410/9; Klip Heuvel no: 410/8 (also known as Kruis Vley) & 410/10 (also known as Haasjes Kop); Boontjieskraal no. 417/0 and Farm 418 no. 418/0 (Remaining Extent).

The proposed wind energy facility at the **Dassiesfontein** is proposed on the farm portions 1 (Remaining Extent) & 5 Huveltjes Kraal 426; Heuwelkraal a portion of the farm Pampoenkraal 843/0.

These properties are indicated on the attached map.

The wind farm is proposed to accommodate up to **30 turbines**, spaced to make use of the wind resource on the sites. Up to 18 wind turbines are proposed to be constructed for the facility at Klipheuvel within an area of approximately 350 ha. Up to 12 wind turbines are proposed to be constructed for the facility at Dassiesfontein within an area of approximately 252 ha.

Other infrastructure associated with the wind energy facility is proposed to include:

- » **foundations** to support the turbine towers
- » underground **cables** between turbines
- » a **substation**
- » overhead **power lines** (132 kV distribution lines) feeding into the electricity distribution network/grid
- » an **access road** to the site from the main road/s within the area
- » **internal access roads** to each wind turbine

As **Local level issues** were not assessed through the Regional Assessment undertaken, these issues are now being considered within **site-specific studies** and assessments through the EIA in order to delineate areas of sensitivity within the broader area. Once environmental

constraining factors have been determined through the EIA process, the layout of the wind turbines and associated infrastructure can be appropriately planned.

TURNING WIND INTO ELECTRICITY

The principles of the modern wind turbine are the same as those of windmills which have been in use since ancient times. Wind turbines use the energy from the wind to generate electricity. In essence, the blades of the turbine are turned by the wind and the energy captured is converted into electrical energy and supplied to the electricity grid for use in homes and elsewhere.

A wind turbine consists of four large main components (refer to Figure 1):

- » Rotor, comprising 3 blades
- » Nacelle
- » Tower
- » Monitoring System

This diagram shows the main components of a modern wind turbine

1 The **Blades** use the latest advances in aeronautical engineering materials science to be more efficient. The greater the number of turns the more electricity is produced. The blades turn slowly in light winds and when they are turning at their maximum rate, typically 24rpm, they are producing their maximum output. In very high winds the blades are locked automatically to prevent damage.

2 The **Nacelle** houses the gearbox and generator and a wind sensor which identifies the direction of the wind. The nacelle turns automatically to ensure that the blades always face into the wind to maximise the amount of electricity generated by the turbine.

3 The **Tower** is a hollow structure which allows access to the nacelle. The height of the tower is a key determinant of the amount of electricity a turbine will generate, because wind strength increases with height. The tower also houses the transformer, which converts the electricity to the correct voltage for onward transmission to the grid.

4 The **Monitoring System** records and measures the performance of the turbine measuring output, highlighting any inefficiencies and signalling any work which is required. This is linked by computer to the Operations and Maintenance department and can be accessed remotely.

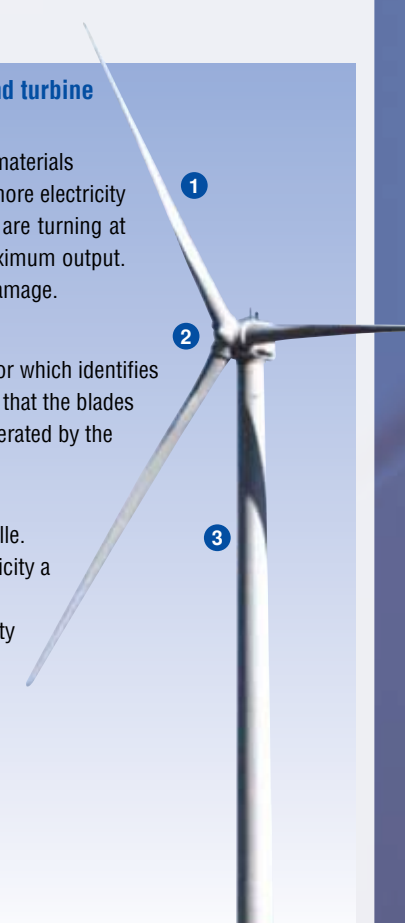


Figure 1: Illustration of the main components of a wind turbine

Turbines are able to operate at varying speeds and begin generating power at wind speeds of between 10 to 15 km/hour, with nominal wind speeds required for full power operation varying between ~45 and 60 km/hour. In a situation where wind speeds are excessive, the turbine automatically shuts down to prevent damage. The amount of energy a turbine can harness depends on both the wind velocity and the length of the rotor blades. The turbines being considered for use at this wind energy facility will be up to 3.3 MW in capacity. The turbines will have a hub height of 100m, and a rotor diameter of up to 104m (i.e. each blade up to 52m in length).

A facility consisting of up to 30 turbines will take approximately 1 year to construct and commission, and requires the expertise of skilled staff. A turbine is designed to operate continuously, with low maintenance for more than 20 years.

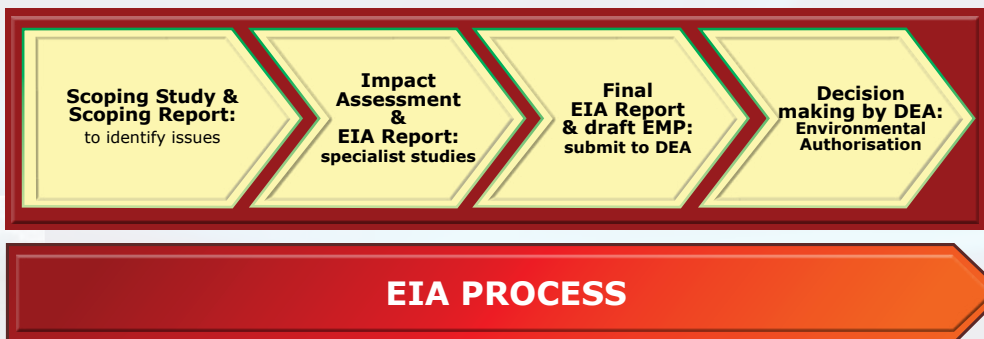
ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

In terms of the EIA Regulations published in terms of Section 24(5) of the National Environmental Management Act (NEMA, No 107 of 1998), it is a legal requirement that environmental impacts be investigated and assessed for any activity which may have a potentially detrimental impact on the environment. The construction of a wind energy facility and associated infrastructure is listed as such an activity. Therefore, BioTherm Energy (Pty) Ltd (the project proponent) requires authorisation from the National Department of Environmental Affairs (DEA) (in consultation with the Western Cape Department of Environmental Affairs and Development Planning (DEA&DP) as a commenting authority) 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 **12/12/20/1746**.

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.

BioTherm Energy (Pty) Ltd 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, interested and affected parties (I&APs) will be actively involved through the public involvement process.

The phases of an EIA are:



POTENTIAL ENVIRONMENTAL IMPACTS ASSOCIATED WITH A WIND ENERGY FACILITY

Although a wind energy facility utilises a renewable resource to generate electricity, the construction and operation of the facility has the potential to impact on the environment.

The following potential impacts are typically associated with wind energy developments:

- » **Visual impacts:** due to their size, wind turbines have the potential to have a visual impact on the surrounding area.
- » **Noise impacts:** the rotation of the blades may result in noise emissions which could impact on nearby residents.
- » **Impacts on avifauna:** birds and bats may be impacted through collision with the blades during operation of the wind energy facility.
- » **Habitat disturbance and transformation:** habitat disturbance and transformation may result during the construction and operation of the wind energy facility.
- » **Impacts on biodiversity:** the construction of the wind energy facility and the associated disturbance of vegetation may result in impacts on biodiversity.
- » **Impacts on the social environment:** the construction and operation of the facility may result in limited job opportunities and could impact on local land use; the generation of electricity will have a positive impact. The footprint of the completed facility will not utilise the entire area under consideration and will therefore not result in the loss of significant amounts of land for agricultural purposes. In addition, crops can be grown and animals can graze up to the base of each turbine.

These potential impacts will be assessed through the specialist studies which will be undertaken in two phases as follows:

1. A Scoping Study, wherein potential issues associated with the proposed project will be identified, described and evaluated. Sensitive environmental features on the development site will be identified and mapped.
2. A detailed assessment of potentially significant impacts identified in the Scoping Phase. Practical and achievable mitigation measures will be recommended in order to minimise potentially significant impacts identified. These recommendations will be included within a draft Environmental Management Plan (EMP).

Specialist studies will be informed by existing information, field observations and input from the public participation process. As an I&AP, your input is considered an important part of this process, and we urge you to become involved.

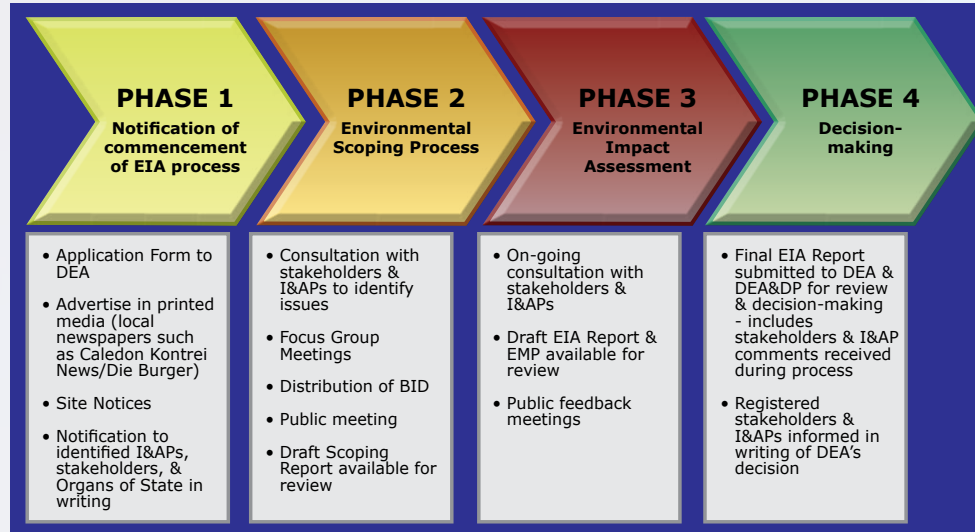
PUBLIC INVOLVEMENT PROCESS

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 phases:



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 project.

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 & QUERIES

Direct all comments, queries or responses to:

Sustainable Futures ZA
Contact: Shawn Johnston
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To view project documentation, visit

www.savannahSA.com/projects

