

Environmental Impact Assessment for the proposed Caledon Wind Farm, Western Cape Province (DEA Ref: 12/12/20/1701)

BACKGROUND INFORMATION DOCUMENT

WHAT DOES THIS DOCUMENT TELL YOU?

The purpose of this Background Information Document (BID) is to provide you with background information about the proposed Caledon Wind Farm and the EIA process to be undertaken.

This BID document will help you to:

- Better understand the project in order to be able to provide comment;
- Determine if you are an interested in and/or affected party (I&AP) in the project; and
- Understand the environmental authorisation process so that you are able to participate effectively.

YOUR OPPORTUNITY TO GET INVOLVED

If you consider yourself an I&AP for this proposed project, we urge you to make use of the following opportunities to become involved in the process:

1. By responding (by phone, fax or e-mail) to our invitation for your involvement which has been advertised in local newspapers.
2. By mailing, faxing or e-mailing the attached comment form to Arcus GIBB.
3. By attending the meetings to be held during the course of the project. Should you register as an I&AP you will be invited to attend these meetings.
4. By telephonically contacting Arcus GIBB if you have a query, comment or require further project information.
5. By reviewing the draft Scoping and EIA Reports within the 30-day review periods and sending your comments to Arcus GIBB.

By completing and submitting the accompanying response form, you automatically register yourself as an I&AP for this project. As a registered I&AP your comments, concerns or queries raised regarding the project will be captured and addressed accordingly through the EIA process. For further information, the contact person below can be contacted at any stage.

Contact:

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PROJECT BACKGROUND/OVERVIEW

Epispan (Pty) Ltd, trading as 'Caledon Wind' is proposing to establish a commercial Wind Farm and associated infrastructure on a site near Caledon in the Western Cape Province. This project will be registered with the United Nations Framework Convention for Climate Change (UNFCCC) as part of the Clean Development Mechanism (CDM) Programme.

A study area of approximately 3700 ha is being considered within in which the proposed wind farm and associated infrastructure will be established.

The proposed sites are situated within the Theewaterskloof Municipality. The land leased for the project is all private owned farms that have been identified as prime spots for wind energy generation. The farms in question are:

Farm Name	Parcel No.	Owners Name
Warmoeskraal	1/259	Klipfontein Trust
Riet Fontein	3/259	Klipfontein Trust
Riet Fontein	7/259	Klipfontein Trust
Riet Fontein	8/259	Klipfontein Trust
Farm	9/259	G Le Roux Pty Ltd
De Vleytjes	261	G Le Roux Pty Ltd
Lang Road	3/263	G Le Roux Pty Ltd
Warmoeskraal	1/263	Klipfontein Trust
Warmoeskraal	Re/263	Klipfontein Trust
Goedvertrouw	4/264	J S Maree Trust
Hawston View	1/271	J S Maree Trust
Hawston View	3/271	J S Maree Trust
Windheuwel	1/354	Klipfontein Trust
Farm	744	G Le Roux Pty Ltd
Farm	749	Klipfontein Trust

A detailed map illustrating the farm positions is provided in Figure 3 on page 5.

The wind farm is expected to be 300 MW and will comprise of up to 150 wind turbines, 2 MW each in size. The hub height will be 80 m and the turbine blade length 40 m. A typical wind turbine, illustrating the hub height and blade length, is depicted in **Figure 1 on page 2**

Associated infrastructure will include:

- Turbine tower foundations,
- Underground cable between towers,
- Powerlines linking to the existing electricity network,
- Internal access road to the wind turbines.

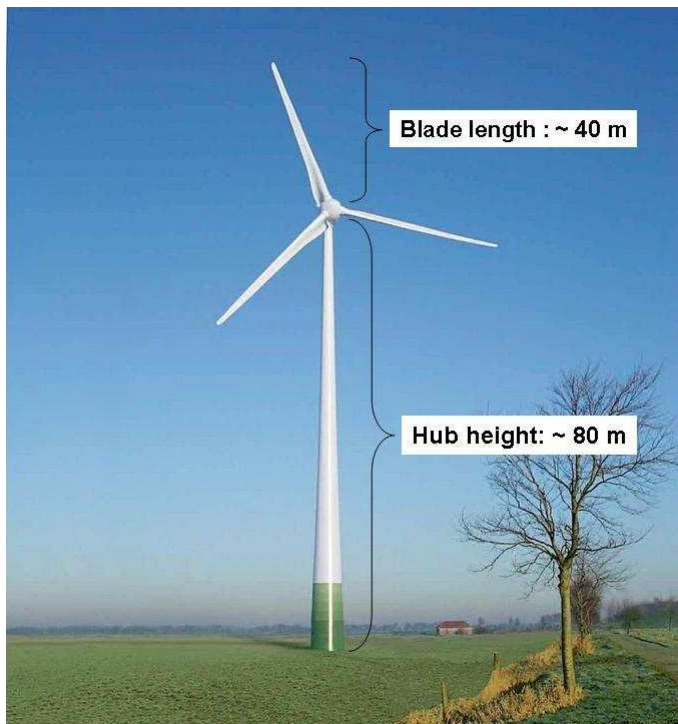


Figure 1: Typical 2 MW wind turbine structure

WHY IS A WIND FARM NEEDED?

Electricity is a strategic sector of the South African economy underpinning growth and developmental objectives set out by the Government. Over the next few years, the country is expected to experience continued growth in electricity demand, driven by growth in the industrial, mining, commercial and domestic consumer sectors.

Several key policies, departments and institutions are responsible for energy planning in South Africa. Firstly, the South African Energy Policy (Dec 1998) published by the Department of Energy (DE) identifies five key objectives:

- Increasing access to affordable energy services;
- Improving energy sector governance;
- Stimulating economic development;
- Managing energy-related environmental impacts; and
- Securing supply through diversity.

In order to meet these objectives as well as the developmental and socio-economic objectives in South Africa, the country needs to make optimal use of available energy resources. Secondly, the DE performs Integrated National Energy Planning (INEP) to identify future energy demand and supply requirements. Thirdly, the National Energy Regulator of South Africa (NERSA) performs National Integrated Resource Planning to

identify future electricity demand and supply requirements.

Demand for electricity varies spatially (geographic) and temporally (time). Spatially, South Africa's land surface area of 1,1 million km consists of urban and rural development, each with different electricity requirements. Areas of high electricity demand are not correlated with power generation centres. Coal resources, from which 90 % of South Africa's electricity is generated, are primarily located in the east of the country. Demand for electricity, however, is throughout the country with the mining and industrial sectors accounting for approximately 40 % of the electricity demand.

Approximately 70 % of the Western Cape's electricity is imported from Mpumalanga Province via transmission lines, with resultant line (energy) losses. Energy losses arise as power flows through the electrical network to meet customer load demands. Greater distances between the power generation centres and the customer mean greater energy losses. These losses on the transmission and distribution systems increase both the cost of production of energy as well as the delivery cost of energy. Therefore, more generation and system capacity is required to serve the system load, which increases capital costs. ⁽¹⁾

Losses are estimated to add 6-8 % to the cost of electricity and some 25 % to the cost of delivery. Lower technical losses provide for cheaper electricity and lower production costs which will in turn have a positive influence on economic growth.

The recent demand for electricity in South Africa has grown, on average, at more than 4 % per year, with an associated reduction in the surplus generating capacity. The recent increase in oil prices, the exhaustibility of fossil fuels and the urgent need for stable, reliable, non-polluting sources of electrical energy that are indispensable to a modern industrial economy focuses attention on alternative energy, such as renewable energy sources.

Renewable forms of electricity generation are highly desirable in terms of minimising the impact on the environment. The White Paper on Renewable Energy (2004) set a target for the implementation of renewable energy in South Africa. With this goal, renewable energy options have since been included into the INEP as complementary supply-technologies.

Wind energy is plentiful, renewable, widely distributed, clean and reduces greenhouse gas emissions when it displaces fossil-fuel derived electricity. It is thus attractive to many governments, organizations, and individuals. The location of the proposed wind farm in the Western Cape will also mean a reduction in line losses as it will be located close to the customer load demand.

(1) – Source: *A Tale of Two Winters* (http://www.eskom.co.za/live/content.php?Item_ID=4040)

TECHNICAL INFORMATION

Simply stated, a wind turbine works the opposite of a fan. Instead of using electricity to make wind, like a fan, wind turbines use wind to make electricity. The wind turns the blades, which spin a shaft, that connects to a generator and generates electricity.

The wind turbine generator converts mechanical energy to electrical energy. Wind turbine generators are different from other generating units you ordinarily find attached to the electrical grid. One reason is that the generator has to work with a power source (the wind turbine rotor) which supplies very fluctuating mechanical power (torque).

Activities that will be required for the construction phase of the project will include the abstraction of water and the storage of fuels for construction vehicles and machinery. Construction is proposed to be phased, with 50 MW being constructed at one time. The first 50 MW will take approximately 12 months to complete and the remaining 250 MW will take approximately an additional 36 months. Once complete, the wind farm can operate continuously for approximately 20 years or more.

THE NEED FOR AN EIA (LISTED ACTIVITIES)

In terms of the EIA Regulations published in Government Notice R385 of 21 April 2006 in terms of Section 24 (5) of the National Environmental Management Act (Act No. 107 of 1998), certain listed activities as set out in Government Notices R386 (activities that trigger Basic Assessments) and R387 (activities triggering Scoping and Environmental Impact Assessment processes or full EIAs) require environmental authorisation before they can proceed.

This proposed wind farm development comprises several activities listed in terms of the EIA Regulations (2006), which should be covered in a single application for authorisation.

These listed activities are:

- Government Notice 387, 1:** *The construction of facilities or infrastructure, including associated structures or infrastructure, for*
- (a) *The generation of electricity where –*
 - (i) *the electricity output is 20 megawatts or more;*
 - or
 - (ii) *the elements of the facility cover a combined area in excess of 1 hectare;*
 - (b) *The transmission and distribution of above ground electricity with a capacity of 120 kilovolts or more.*

Government Notice 387, 2: *Any development activity, including associated structures and infrastructure, where the total area of the developed area is, or is intended to be, 20 hectares or more.*

Government Notice 386, 7: *The above ground storage of a dangerous good, including petrol, diesel, liquid petroleum gas or paraffin, in containers with a combined capacity of more than 30 cubic metres but less than 1000 cubic metres at any one location or site.*

Government Notice 386, 12: *The transformation or removal of indigenous vegetation of 3 hectares or more or of any size where the transformation or removal would occur within critically endangered or an endangered ecosystem listed in terms of section 52 of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).*

Government Notice 386, 13: *The abstraction of groundwater at a volume where any general authorization issued in terms of the National Water Act, 1998 (Act No. 36 of 1998) will be exceeded.*

Government Notice 386, 14: *The construction of masts of any material or type and of any height, including those used for telecommunication broadcasting and radio transmission, but excluding*

- (a) *masts of 15 metres and lower exclusively used*
 - (i) *by radio amateurs; or*
 - (ii) *for lighting purposes.*

Government Notice 386, 15: *The construction of a road that is wider than 4 metres or that has a reserve wider than 6 metres, excluding roads that fall within the ambit of another listed activity or which are access roads of less than 30 metres long.*

THE EIA PROCESS

The EIA can be divided into 4 distinct phases:

1. Application and initial notification

- Submit an EIA application to the National Department of Environmental Affairs (DEA).
- DEA acknowledgement of the EIA application (within 14 days),
- Notify the public of the proposed development through *inter alia*, newspaper adverts, notification letters, BIDs and notice boards.

2. Scoping phase

- Investigate and gather information on the proposed study area in order to establish an understanding of the area;

- Establish how the proposed project will potentially impact on the surrounding environment;
- Identify Interested and Affected Parties (I&APs) and relevant authorities by conducting a Public Participation Process (PPP);
- Identify potential environmental impacts through investigation and PPP; and
- Describe and investigate the alternatives that may be considered.

3. EIA phase

- Detailed specialist assessment of all issues and proposed alternatives identified in the scoping phase
- Identify mitigation measures and recommendations to reduce the significance of potential impacts.

- Compile an Environmental Management Plan (EMP) which will prescribe environmental specifications to be adhered to during the construction and operational phases of the project
- As with the scoping phase, the PPP is an integral and important part of the assessment phase.

4. Environmental Authorisation

- Environmental Authorisation (EA) issued to Caledon Wind once DEA has made a decision regarding the proposed project.
- Decision may be positive or negative based on *inter alia*, information received in the Scoping and EIA phases.

The EIA process is represented diagrammatically in **Figure 2** below.

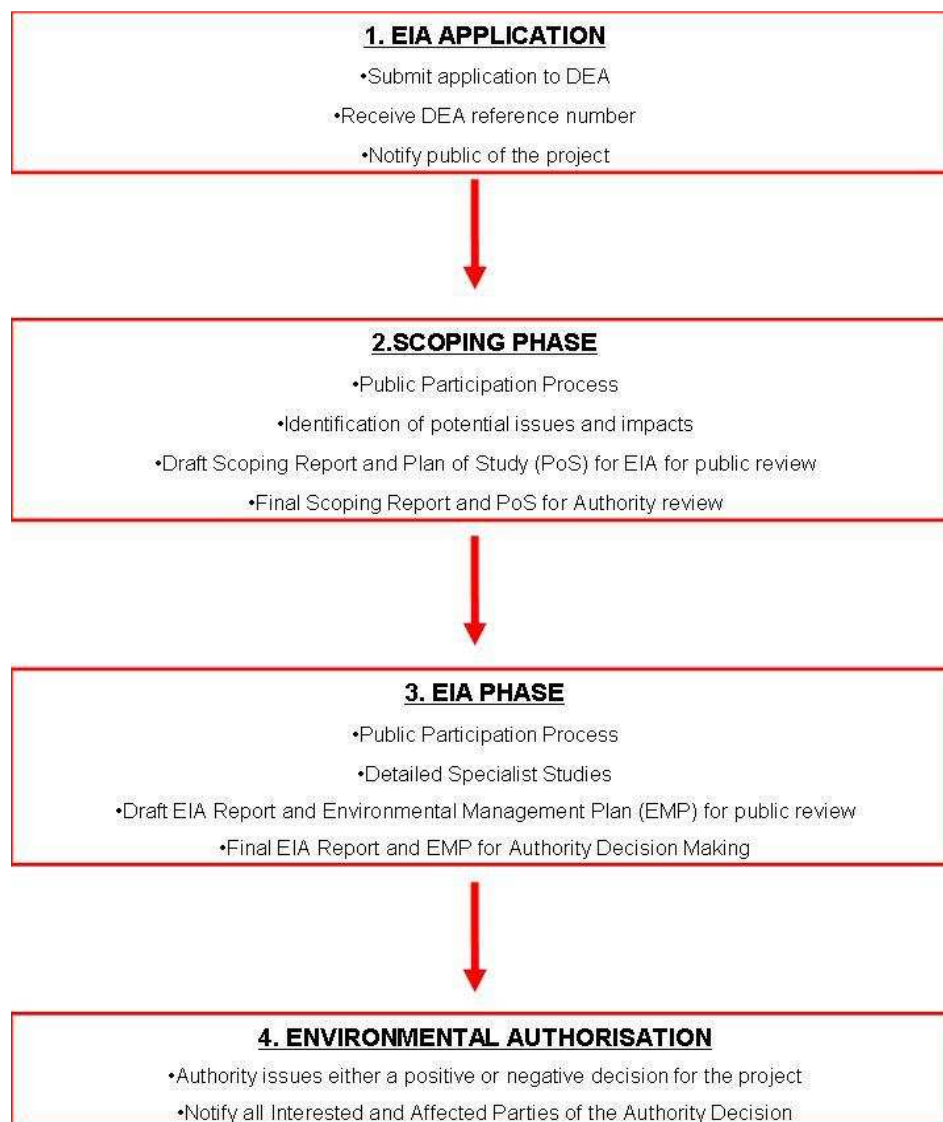


Figure 2: Flow diagram illustrating the EIA Process

TYPICAL IMPACTS ASSOCIATED WITH WIND FARMS

Positive environmental and social impacts that are typically associated with wind farms are:

- Wind energy is renewable, clean and non-polluting, as it does not produce any by-products (atmospheric contaminants or thermal pollution) that could be harmful to the environment;
- Wind energy can be generated during the day and at night;
- It is well suited to rural areas and therefore has a reduced impact on agriculture compared to other electricity generating options. They can also contribute to economic growth in these regions;
- Wind turbines make use of simple technology in terms of design and building;
- Wind energy is competitive compared to other renewable energy sources; and
- It is safe if properly maintained.

Wind farms also have the following impacts:

- Visual – due to their size, these machines are highly visible from virtually anywhere. They may also reflect light due to their large reflective surface area.
- Noise – the rotating blades are known to create a whooshing sound.
- Impacts on avifauna – collisions with the rotor blades and barotraumas¹ (especially in bats) are the main causes of injury and death.
- Habitat transformation – there will be an increase in hardened and unnatural surfaces.
- Air traffic obstacles – the wind turbines are extremely tall and may cause problems to air traffic, depending on flight routes and proximity of airports.

As part of the EIA, these potential impacts will be assessed through the following specialist studies:

- Fauna and Flora Assessment
- Avifauna Impact Assessment
- Heritage Impact Assessment
- Noise Impact Assessment
- Visual Impact Assessment
- Agricultural Impact Assessment
- Social Impact Assessment
- Traffic Impact Assessment
- Baseline Geotechnical Study

As part of these environmental studies, all I&APs are invited to become actively involved through a public participation process.

¹ Trauma caused by rapid or extreme changes in air pressure, especially affecting enclosed cavities within the body such as the middle ear, the sinuses and the lungs.

PUBLIC PARTICIPATION PROCESS AND HOW TO REGISTER AS AN I&AP

It is important that relevant I&APs are identified and involved in the public participation process from the outset of the proposed project. The inputs received from I&APs form an integral part of the EIA process and will also assist the decision-making authority, DEA, with their decision-making. To ensure effective public participation, the process includes the following steps:

- STEP 1: Advertise the EIA Process (national, regional and local newspapers)
- STEP 2: Register I&APs and key stakeholders on the database (on-going)
- STEP 3: Consultation with, and transfer of information to, I&APs through consultation, public meetings, focus group meetings and key stakeholder workshops
- STEP 4: Record all comments, issues and concerns raised by I&APs within an issues trail, which will form an integral part of EIA Reports
- STEP 5: Invite I&AP comment and input on the draft Scoping and EIA reports (30-day comment period)

REMINDER: HOW TO GET INVOLVED?

A registration and comments form is supplied at the back of this notice for your convenience and can be used to express your views regarding this proposed development. Please feel free to add comments on a separate page should the space provided on this notice not be enough. The names of all registered I&APs, together with the comments received will be incorporated into the Scoping and Environmental Impact Reports and will be submitted to DEA.

Please submit your name, contact information (address, telephone number, e-mail address, postal address) and written comments to contact person indicated on the registration sheet.



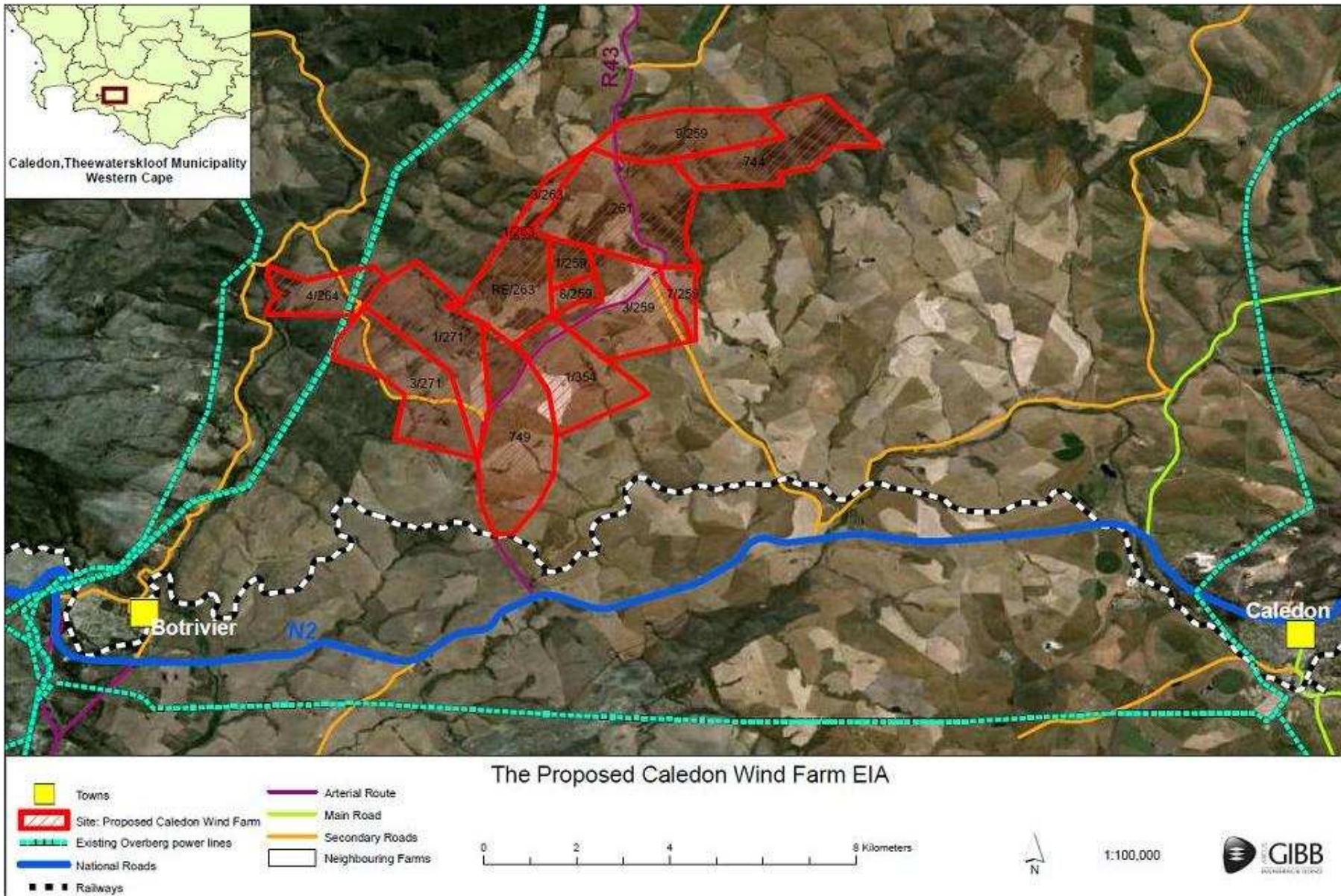


Figure 3: Locality map for the proposed Caledon wind farm within the Theewaterskloof Municipality.

