

Clean Development Mechanism South Africa
Designated National Authority



energy

Department:
Energy
REPUBLIC OF SOUTH AFRICA

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Project reference number (office)	
Date received (office use only)	

NOTES ON COMPLETING THIS PROJECT DESIGN DOCUMENT

1. Please provide this PDD in both hard-copy

Part A: Project Proponent Details

Project Name	Caledon Wind Farm in South Africa
Date of Submission of PDD	13 February 2012

Project Developer	
Name	<i>Caledon Wind Energy Trading (Pty) Ltd</i>
Organizational Category	Private Company
Legal Status	Limited company
Street Address	Cnr Papenfus & Stallion Rd Beaulieu Office Park, Block 2 Kyalami Gauteng 1685 South Africa
Postal Address (if different from above)	
Website Address	Not available.
Main Activities	<i>Caledon Wind Energy Trading (Pty) Ltd</i> was established to develop the Caledon Wind Farm.
Summary of Financial Performance in last fiscal year	<i>Caledon Wind Energy Trading (Pty) Ltd</i> is a Special Purpose Vehicle (SPV) established to raise the required funds to develop the Caledon Wind project.

Contact Person(s)	Mr Dion Wilmans
Telephone	+27 82 321 4191
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Email Address	dionw@caledonwind.com
Project Partners	
Provide the following information for all project partners (copy and paste relevant sections of the table if information is to be provided on more than one partner organisation)	
Name	Not applicable
Nature of partner	
Organizational Category	
Legal Status (if private company)	
Street Address	
Postal Address (if different to Street Address)	
Website Address	
Main Activities	
Contact Person(s)	
Telephone	
Fax	
Email Address	
Contractual Arrangements	
Contractual arrangements between various entities involved	

Part B: Project Overview (Technical Summary, Location and Schedule)

Technical Summary of the project	
Objective of the Project	The purpose of the project activity is to generate power from wind energy in the Western Cape, South Africa. The electricity will be sold to Eskom, the national electricity utility, in order to increase the reserve margin, diversify the grid generation mix and reduce greenhouse gas emissions.
Project Description	
The proposed 138.2MW Caledon wind farm will comprise up to 45 wind turbines. Associated infrastructure will include power lines connecting the turbines to the existing overhead transmission lines, a new substation, and access roads to the various turbines. The purpose of the proposed project activity is to generate renewable energy. The electricity will be sold either to Eskom, (the national electricity utility), or to an industrial customer.	

Technical Summary of the project	
Project Constraints Are there any constraints affecting project operations or commissioning? No.	
Technology to be employed	<p>Wind turbines will be used to produce electricity by using the kinetic energy of the wind to drive a generator. When kinetic energy passes over the blades of the wind turbines, it is converted into mechanical energy and rotates the blades. This in turn rotates the generator, thereby producing electricity. The proposed project activity is for the construction of a 138.2MW wind farm, comprising 45 wind turbines.</p> <p>Internal access roads from the R43 to the operations area will be constructed. A transmission line from a point on the proposed wind farm connecting to the national grid through existing Eskom transmission lines must be installed. Turbine foundations, cables to carry electricity from the turbines to the existing overhead transmission lines and a substation at the connection point to the existing transmission lines must be created. A control centre compound will be established in an existing building in Caledon. The Eskom Houwhoek Substation needs to be upgraded to accommodate the additional capacity.</p> <p>Wind turbines from an established manufacturer will be used at the site</p>
Greenhouse Gases Targeted	CO ₂
Emission reductions	413,491 tons CO ₂ e per annum
Baseline & Additionality Assessment	<p>Baseline scenario</p> <p>The baseline scenario is for the Southern African Power Pool to generate the same electricity as the proposed project activity.</p> <p>Additionality Assessment</p> <p>The following barriers have been identified:</p> <p>(a) Barriers due to prevailing practice, <i>inter alia</i>:</p> <p>In accordance with “Guidelines on additionality of first-of-its-kind project activities”, Annex 11 EB 63, (Version 01.0), paragraph 5:</p> <p>“A proposed project activity is the First-of-its-kind in the applicable geographical area if:</p> <p>a) The project is the first in the applicable geographical area that applies a technology that is different from any other technologies able to deliver the same output and that have started commercial operation in the applicable geographical area before the start date of the project; and</p> <p>b) Project participants selected a crediting period for the</p>

Technical Summary of the project

project activity that is a maximum of 10 years with no option of renewal.”

There are currently no commercially operational wind farms in South Africa that contribute to the South African Power Pool. The facilities in South Africa are demonstration wind farms and have a smaller capacity than the proposed wind farm.

Other commercial wind projects under development also require CDM funding. A commercial wind project faces a barrier, due to prevailing practice being coal fired electricity generation.

This project has not yet started commercial operation yet. The first commercial wind project implemented in South Africa, applying for a fixed crediting period of 10 years, would be additional due to being first-of-its-kind.

The CDM alleviates this barrier by making available international finance to enable the implementation of the project. The CDM further increases consumer awareness on the benefits and opportunities of renewable energy.

(b) Technological barriers

The upper limit of wind energy available to be captured in South Africa is estimated at 3 GW (Diab, 1988). This capacity is currently not being realised due to one of the main barriers being little local capacity to manufacture, operate and maintain wind farms in South Africa.

There is a lack of non-discriminatory open access to key energy infrastructure such as the national electricity grid that provides a barrier to project implementation.

Another technological barrier was the fact that there are no local suppliers of the specialist spares, and it affected the wind turbine availability during the start up period. Special agreements had to be negotiated for fast turnaround on providing spares from overseas. The demonstration project also experienced problems with various smaller components regarding the turbine availability.

An IPP related tender from the Department of Energy in South Africa (2011), highlights the need for increased localisation of manufacturing, which further proves the existence of a technological barrier.

The existence of a technical barrier is further linked to the required infrastructure for transportation and construction. Similar commercial wind projects are using CDM to leverage actual implementation of wind projects, lifting renewable energy above the marginal threshold.

The continuation of current practices (Alternative 2) does not pose any technological barriers as it does not require any additional technology (it is the business as usual scenario).

Technical Summary of the project	
	The CDM alleviates this barrier by making available. The CDM further increases consumer awareness on the benefits and opportunities of renewable energy.
Monitoring	<p>Management Structure A CDM Monitoring Team will be responsible for data recording, data management and QA/QC. The Team Leader's role is to ensure that the data to be monitored is accurately recorded, properly archived, QA/QC procedures are carried out and the entire monitoring process is strictly in line with the CDM verification requirements.</p> <p>Monitoring Training All the relevant staff will be trained about the wind energy facility. The training consists of CDM knowledge, operational regulations, quality control (QC), data monitoring requirements and data management regulation.</p> <p>Metering Electricity supplied by the project activity to the grid will be measured by Caledon Wind Farm.</p> <p>Metering will be conducted in accordance with the power purchase agreement requirements.</p>
Type of project/activities	
a. Energy Supply	<i>The proposed project activity is the construction of a greenfield wind power plant.</i>
b. Energy Demand	Not applicable
c. Industrial Process	Not applicable
d. Transport	Not applicable
e. Waste Management	Not applicable
f. Forestry/ land use	Not applicable
g. Other	Not applicable
Project Boundary Define the Project Boundary (Approximately 1 paragraph)	<p>The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to.</p> <p>The wind energy facility (project activity) has a distinctive physical demarcated boundary.</p>
Indicate Emissions outside the Project Boundary	Not applicable

Location of the Project	
Province	Western Cape Province
Municipality	Theewaterskloof Municipality
Nearest city/large town	Caledon
Brief description of the location of the project site	<p>The project site is located at the co-ordinates: S 34° 08'48" and E 19° 18'11".</p> <p>The project activity is situated within the Theewaterskloof Municipality, Western Cape Province. An area of approximately 2756 hectares, approximately 16 km west of Caledon and 7 km east of Botrivier, is being considered within which the proposed wind farm and associated infrastructure will be established.</p>

Project Schedule/Timetable	
Earliest Project Start Date	01/11/2012 (the date when the turbine orders is expected to be placed)
When is the expected first year of CER delivery	30/09/2013 or the date of registration, whichever occurs latest.
Project Lifetime	The life time of the facility exceeds the 10 year period of this project activity.
Project End Date	September 2023
Crediting Period	10
Current Status or phase of the project	<p>Actions already commenced.</p> <p>The project is being implemented.</p>
DNA Approval	No.
Approval by other bodies	No.

Part C: Performance Against the DNA's Sustainable Development Criteria

South Africa has identified the following sustainable development criteria and indicators against which each CDM project will be assessed. Please provide your interpretation of how this project will address each of these criteria and indicators where they are relevant to the project. If the space provided is not sufficient please append additional information as required.

NOTE: For all indicators which are of relevance to the project show how the performance of the project against these indicators can be objectively monitored and measured on an ongoing basis.

<p>1. Economic: Does the project contribute to national economic development?</p> <p>This large renewable energy project provides incremental energy security and financial resources to stimulate sustainable development within the Western Cape. The current electricity crisis in South Africa highlights the significant role that renewable energy can play in terms of supplementing the power available.</p> <p>Local production of energy reduces transmission line losses associated with transmitting electricity over long distances, in this case from the coal fired power stations in the east of the country.</p> <p>The development of renewable energy creates an opportunity to establish a new industry within the South African economy.</p> <p>Wind farms are well suited to rural areas, such as Theewaterskloof, and have a reduced impact on agriculture compared to other electricity generating options, due to their small physical footprint. Wind turbines can also contribute to economic growth in these regions.</p> <p>The project will contribute to foreign reserve earnings for South Africa via carbon credit sales revenue.</p> <p>The project will provide encouragement to other independent power producers to invest in renewable energy sources.</p>	
<p>2. Social: Does the project contribute to social development in South Africa?</p> <p>The establishment of the proposed wind farm will create local job opportunities during the construction and operational phases. During construction it is estimated that 74 workers with various skill levels will be required.¹ In addition, the community will benefit through both critical infrastructure and social upliftment through the creation of a dedicated community trust. The trust will directly hold a stake in the proposed wind-farm, the proceeds (dividends) derived from this stake will be channelled into pre-identified projects to enable sustainable job creation for the planned duration (20 years) of the wind-farm.</p>	
<p>3. Environmental: Does the project conform to the National Environmental Management Act principles of sustainable development?</p> <p>Please provide brief comment for each of these below.</p>	
<p>i) That the disturbance of ecosystems and loss of biological diversity are avoided, or where they cannot be avoided, are minimised and remedied</p>	<p>There is negligible disturbance of ecosystems and loss of biological diversity in this project.</p>
<p>ii) That pollution and degradation of the environment are avoided, or where they cannot be altogether avoided, are minimised and remedied</p>	<p>There are negligible pollution and degradation of the environment in this project.</p>
<p>iii) That the disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied</p>	<p>There will be negligible disturbance of landscapes and sites that constitute the nation's cultural heritage in this project.</p>
<p>iv) That waste is avoided, or where it cannot be altogether avoided, minimised and reused or recycled where possible and otherwise disposed of in a responsible manner</p>	<p>There is negligible waste in this project.</p>
<p>v) That the use and exploitation of non-renewable resources is responsible and equitable, and takes into account the consequences of the depletion of the resource</p>	<p>There is no use of non-renewables in this project, except for a small amount of grid electricity for start up. This amount of electricity is negligible.</p>

¹ Environmental Impact Assessment for the proposed Caledon Wind Farm, p59

vi) That the development, use and exploitation of renewable resources is responsible and equitable , and takes into account the consequences of the depletion of the resource.	The project will reduce electricity consumption from a predominantly coal-fired grid. The use of the wind resource is responsible and equitable.
vii) That a risk averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions	A reputable electrical engineering firm is being used for project implementation.
vii) That negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied	The impacts on the environment are improved by implementing this project.
Other comments Please provide any other comments on how this project contributes to sustainable development in South Africa (optional)	

Indicators in Support of the Project Approval Criteria

Category	Indicator	Comment
Environmental	<ul style="list-style-type: none"> • Impact of the project on air quality • Impact of the project on water pollution • Impact of the project on the generation or disposal of solid waste • Any other positive or negative environmental impacts of the project (such as impacts on noise, safety, visual impacts, or traffic) 	<ul style="list-style-type: none"> • The project will improve air quality by reducing greenhouse gas emissions. • There will be negligible water pollution associated with this project • There will be no generation of solid waste, or disposal thereof in this project • The overall impact of this project on the local environmental quality is positive.
	<ul style="list-style-type: none"> • Impact of the project on community access to natural resources • Impact of the project on the sustainability of use of water, minerals or other non renewable natural resources • Impact of the project on the efficiency of resource utilisation 	<ul style="list-style-type: none"> • The project will reduce coal usage in South Africa.
	<ul style="list-style-type: none"> • Changes in local or regional biodiversity arising from the project 	<ul style="list-style-type: none"> • This project has no influence on the local or regional biodiversity.

Indicators in Support of the Project Approval Criteria		
Category	Indicator	Comment
Economic	Economic impacts	<ul style="list-style-type: none"> Impact of the project on foreign exchange requirements Impact of the project on existing economic activity in the area Impact of the project on the cost of energy Impact of the project on foreign direct investment <ul style="list-style-type: none"> The project will contribute to foreign reserve earnings for South Africa via the carbon credit sales revenue. The project will increase the cost of energy production. Carbon credits revenue will however offset the increased cost.
	Appropriate technology transfer	<ul style="list-style-type: none"> Positive or negative implications for the transfer of technology to South Africa arising from the project Impacts of the project on local skills development Demonstration and replication potential of the project <ul style="list-style-type: none"> The project is replicable. The development of renewable energy offers the opportunity to establish a new industry within the South African economy.

Indicators in Support of the Project Approval Criteria		
Category	Indicator	Comment
Social	Alignment with national provincial and local development priorities	<ul style="list-style-type: none"> How the project is aligned with provincial and national government objectives How the project is aligned with local developmental objectives Impact of the project on the provision of, or access to, basic services to the area Impact of the project on the relocation of communities if applicable Contribution of the project to a any specific sectoral objectives (for example, renewable energy targets) <ul style="list-style-type: none"> The project will increase the use of renewable energy and reduce greenhouse gas emissions. This will help reach the target the South African government committed to; the reduction of the country's emissions by 34% from business as usual.

Indicators in Support of the Project Approval Criteria

Category	Indicator	Comment
	<p style="text-align: center;">Social equity and poverty alleviation</p> <ul style="list-style-type: none"> • Impact of the project on employment levels? (specify the number of jobs created/lost; the duration of time employed, distribution of employment opportunities, types of employment, categories of employment changes in terms of skill levels and gender and racial equity) • Impact of the project on community social structures • Impact of the project on social heritage • Impact of the project on the provision of social amenities to the community in which the project is situated • Contribution of the project to the development of previously underdeveloped areas or specially designated development nodes 	<p>The programme will create jobs in the construction and operations phases of the programme. During construction it is estimated that 74 workers with various skill levels will be required. In addition, the community will benefit through both critical infrastructure and social upliftment through the creation of a dedicated community trust. The trust will directly hold a stake in the proposed wind-farm, the proceeds (dividends) derived from this stake will be channelled into pre-identified projects to enable sustainable job creation for the planned duration (20 years) of the wind-farm.</p>

Indicators in Support of the Project Approval Criteria

Category	Indicator	Indicator	Comment
General	General Project Acceptability	<ul style="list-style-type: none">• Are the distribution of project benefits deemed to be reasonable and fair?	<ul style="list-style-type: none">• This is a green initiative by business and the distribution of benefits are deemed to be fair and reasonable.

Part D: Finance

Project Costs	
Development Costs (R's)	Not currently available
Installed Costs (R's)	Not currently available
Other Costs (R's)	Not currently available
Total Project Costs (R's)	Not currently available
Sources of Finance	
Equity	Not currently available
Debt (long term)	Not currently available
Debt (short term)	Not currently available
Amount not identified (R's)	Not currently available
Total CDM Contribution sought	Not currently available
Expected Price of CER in case of a contract to purchase for: A period of 7 years A period of 10 years A period of 14 years (2x7 years)	Not currently available
Indicate the projected Internal Rate of Return for the project with and without CER revenues.	Not currently available
Constraints on tradability of carbon credits	<p><i>Have any commercial arrangements been made that may impact the tradability of the carbon emission reductions? If yes, please define. Note. Examples would be subjection to a mortgage, government tax etc.</i></p> <p>None</p>
Preliminary discussions with potential purchasers	<p><i>Have you had any preliminary discussions with any potential purchasers of the carbon credits (CERs) If yes, please give brief details.</i></p> <p>This is confidential, however only preliminary discussions were undertaken.</p>