Clean Development Mechanism South Africa
Designated National Authority

energy
Department:
Energy
REPUBLIC OF SOUTH AFRICA

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Project Design Document (PDD)

Project reference number (office use only)	
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	West Coast 1 Wind Farm in South Africa
Date of Submission of PDD	6 June 2012

Project Developer	
Name	The project developer Moyeng Energy (Pty) Ltd is (together with Macawber 862 (Pty) Ltd listed below – approval is sought for both companies) proposing to establish a commercial Wind Energy Facility and associated infrastructure on a site located near the town of Vredenburg in the Western Cape Province of South Africa.
Organizational Category	Private Company
Legal Status	Limited liability company
Street Address	6-10 Woodlands Drive Lincolnwood Office Park Block E, First floor, Woodmead, Sandton
Postal Address (if different from above)	N/a
Website Address	www.Gdfsuez.com
Main Activities	Moyeng is a developer of renewable energy projects in Southern Africa.

Summary of Financial Performance in last fiscal year	Not available as yet
Contact Person(s)	Sanjith Mungroo
Telephone	Work: +27 (0) 11 209 9225
Fax	+27 (0) 11 209 9229
Email Address	sanjith.mungroo@iprplc-gdfsuez-meta.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	Micawber 862 (Pty) Ltd **(Approval is sought for both companies Moyeng Energy (Pty) Ltd and Micawber 862 (Pty) Ltd to jointly to participate in the Project)**
Nature of partner	*Special Purpose Vehilce (Project Company)*
Organizational Category	Private company
Legal Status (if private company)	Incorporated
Street Address	6 – 10 Woodlands Drive, Lincolnwood Office Park, Block E, First floor, Woodmead, Sandton
Postal Address (if different to Street Address)	N/a
Website Address	N/a
Main Activities	*Ownership of West Coast 1 project*
Contact Person(s)	Sanjith Mungroo
Telephone	Work: +27 (0) 11 209 9225
Fax	+27 (0) 11 209 9229
Email Address	
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	CDM Africa Climate Solutions (Pty) Ltd
Nature of partner	CDM Africa is Moyeng's CDM consultant for the West Coast 1 Wind Farm.
Organizational Category	Private Company
Legal Status (if private company)	Limited company
Street Address	83 MacKay Avenue, Blairgowrie Randburg, 2194 Johannesburg South Africa
Postal Address (if different to Street Address)	
Website Address	http://www.cdmafrica.com/
Main Activities	CDM Africa's understanding of the carbon market structure and design, regulatory incentives and the economic instruments relevant to the policies in question can form a key component of industry strategies for developing the potential of additional income for small and large capital projects. We assist project developers analyze the marginal costs or benefits of emissions reductions, determine optimal allocation mechanisms, examine program design issues, assess market position as a buyer or seller and design trading strategies.

Contact Person(s)	Name: Ciska Terblanche
Telephone	Cell: +27 (0)82 898 5750
Fax	0866908482
Email Address	Ciska@cdmafrica.com
Contractual Arrangements	
Contractual arrangements between various entities involved	CDM Africa contracted to develop the CDM component of the project.

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

Technical Summary of the project	
Objective of the Project	Purpose of the project activity The proposed project activity is an initiative to export renewable electricity produced by the West Coast 1 Wind Farm to the national grid, which is currently mostly derived from coal. The wind power generated from the project site will be replacing electricity from the national grid.

Project Description

The scope of activities/measures that are being implemented within the project activity: The proposed project is the installation of a new grid-connected zero-emission renewable (wind) power generation activity. The purpose of the proposed project is to generate electricity using wind power resources in the project region and replace the same amount of power generation in South African Power Grid.

A list of the equipment(s) and systems that will be installed and/or modified within the project activity:

- Up to 47 wind turbine units of 2 megawatts each with concomitant towers and nacelles
- Concrete foundations (approximately 15m x 15m x 2m) to support the turbine towers;
- Underground electrical distribution cabling between the turbines;
- Overhead power lines linking to the Eskom Substation located near the site;
- An access road to the site from the main road/s within the area;
- Internal access roads to each wind turbine to link the turbines on site (approximately 3-5 m in width).

Project Constraints

Are there any constraints affecting project operations or commissioning? *(Brief description: 1 paragraph or less) Note: these may be due to energy supply, infrastructure, other resources etc.*
No constraints to project development, commissioning and implementation have been identified, other than the usual risks associated with this type of project.

Technology to be employed	Vestas V90 2.0MW The proposed project activity will contribute to technology transfer to the host country South Africa, since it utilises wind power technology (Vestas) developed in Denmark. Vestas is one of the world's top five wind turbine suppliers, with an installed capacity in excess of 50,000MW across a number of developed and developing countries. Wind energy technology is deemed to be a safe

<table>
<tr><th colspan="2">Technical Summary of the project</th></tr>
<tr><td></td><td>and relatively mature technology, and is established in countries worldwide with approximately 197GW of wind capacity installed globally as at the end of 2010.[1]</td></tr>
<tr><td>Greenhouse Gases Targeted</td><td>Identify which greenhouse gas(es) this project will target.

CO_2</td></tr>
<tr><td>Emission reductions</td><td>Average over one year: 280,754 tonnes CO_2e

Total over 10 years: 2,875,400 tonnes CO_2e</td></tr>
<tr><td>Baseline & Additionality Assessment</td><td>Methodology Applied:
Version 12.3.0 of the Approved consolidated baseline and monitoring methodology ACM0002: “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”
Tools Applied
Version 06.0.0 of tool for the demonstration and assessment of additionality
Version 02.2.1 of tool to calculate the emission factor for an electricity system

According to the ACM0002, if the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following:
Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in Version 02.2.1 of the “Tool to calculate the emission factor for an electricity system”.

Additionality
There are at present (November 2011) no large scale, grid connected wind farms exporting electricity to the grid[2] and the penetration of wind power into the grid is less than 0.025% of installed capacity.

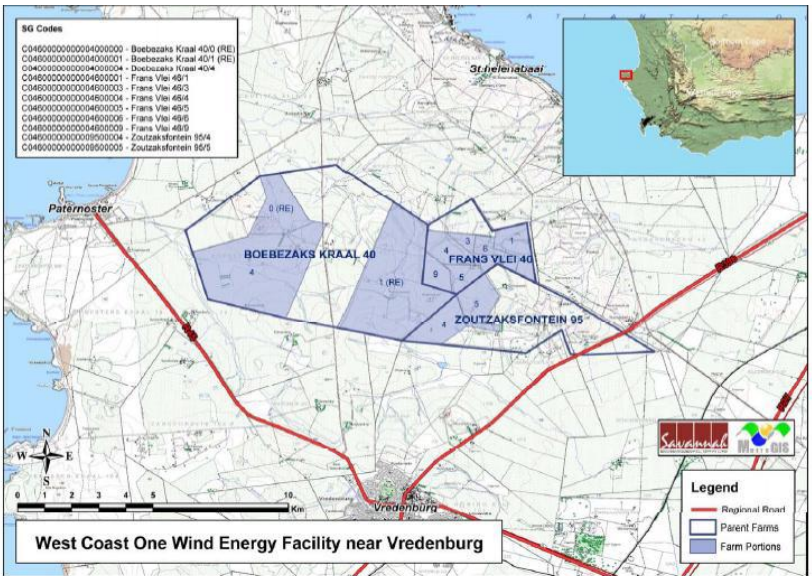
Barriers due to prevailing practice
The project activity is the “first of its kind”.</td></tr>
<tr><td>Monitoring</td><td>
<table>
<tr><td colspan="2">B.7.1 Data and parameters monitored:</td></tr>
<tr><td colspan="2">(Copy this table for each data and parameter)</td></tr>
<tr><td>Data / Parameter:</td><td>$EG_{facility,y}$</td></tr>
<tr><td>Data unit:</td><td>MWh/yr</td></tr>
</table>
</td></tr>
</table>

[1] http://www.gwec.net/fileadmin/images/Publications/GWEC_annual_market_update_2010_-_2nd_edition_April_2011.pdf

[2] http://en.wikipedia.org/wiki/List_of_power_stations_in_South_Africa. As appears from the list, there are only three installations of which the largest is a 5,2 MW wind farm. The total installed capacity for wind power in the country is 10.16 MW out of approximately 45,000 MW installed in the grid, meaning that the penetration in terms of installed capacity is presently under 0.025%.

Technical Summary of the project		
	Description:	Quantity of net electricity generation supplied by the project to the grid in year *y*.
	Source of data to be used:	Measured at the project activity site
	Value of data applied for the purpose of calculating expected emission reductions in section B.5	293,400
	Description of measurement methods and procedures to be applied:	The net electricity supplied to the grid from the project will be continuously measured using energy meters and recorded at least monthly. The precision of the energy meters is class 0.5s or better.
	QA/QC procedures to be applied:	The electricity meters measuring electricity supplied to the grid will be calibrated according to the relevant national standard (or manufacturer's recommendation where there is no national standard) by an accredited entity. The calibration frequency for the energy meters is at least once a year. The recorded data will be cross-checked against records for electricity sold.
	Any comment:	Data will be archived electronically for at least two years after the end of the last crediting period.
Type of project/activities		
a. Energy Supply	Yes	
b. Energy Demand	*N/a*	
c. Industrial Process	*N/a*	
d. Transport	*N/a*	
e. Waste Management	*N/a*	
f. Forestry/ land use	*N/a*	
g. Other	*N/a*	

Technical Summary of the project	
Project Boundary Define the Project Boundary (Approximately 1 paragraph) As per ACM0002 / Version 12.3.0 and the tool, the spatial extent of the project boundary includes the project site and all the power plants connected physically to the electricity system. The project electricity system is defined by the spatial extent of the power plants that can be dispatched without significant transmission constraints.	
Indicate Emissions outside the Project Boundary	There are no net emissions attributable to the proposed project activity outside the project boundary.

Location of the Project	
Province	Western Cape
Municipality	Local Municipal area of Saldanha
Nearest city/large town	Vredenburg
Brief description of the location of the project site	The proposed wind energy facility is located on agricultural land north of the road between Vredenburg and Paternoster 

Project Schedule/Timetable	
Earliest Project Start Date	6 June 2012 according to the definition of the CDM. Construction will only start early in 2013.
When is the expected first year of CER delivery	2015
Project Lifetime	20 years, but the crediting period is only 10 years
Project End Date	2025
Crediting Period	10 years
Current Status or phase of the	Preferred bidder status was acquired. Now approaching financial close.

Project Schedule/Timetable	
project	
DNA Approval	The PIN was submitted to the DNA on 12/07/2011. A positive letter of no objection was issued on 11/08/2011.
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.

1. Economic: Does the project contribute to national economic development?

While most of the South African energy demand is likely to be covered by energy from fossil fuels, rising oil prices, and the need to complement current supply with additional electricity and environmental and climate stability concerns present a need and opportunity to develop wind (and other) renewable energy facilities in order to secure the needed levels of energy to drive macro development.

This project will assist to supply the growing electricity demand within South Africa and the need for diversifying Eskom's energy mix. Renewable energy is considered one of the 'clean sources of energy' with the potential to contribute greatly to a more ecologically, socially and economically sustainable future. In addition to its environmental and sustainable development credentials, the project is contributing to the Foreign Direct Investment (FDI) in South Africa and development enhancing technology transfer as well as providing investment opportunities for local entities with an offering of capital growth. Furthermore the project is enhancing interdisciplinary Renewable Energy project development skills domestically, having a multiplicative effect on development as the sector grows.

The local community will have an equity shareholding in the project of 2.5%. In the construction phase the project will generate a total of 5123 person months of work. During the operations and maintenance phase, 1980 person months of work will be created. The project company itself will create 720 person months of work.

The project company will make contributions to various social causes namely schooling, enterprise development and skills development 2% of the project revenues will go towards social economic development for the full period of the power purchase agreement.

2. Social: Does the project contribute to social development in South Africa?

Impacts on the social environment as a result of the wind turbines are expected to occur during both the construction and operation phases.

The key social issues associated with the *construction phase* include:

* Creation of employment and business opportunities, and the opportunity for skills development and onsite training. The details are as per paragraph 1 above.In terms of business opportunities for local companies, the expenditure of well over ZAR 1billion during the construction phase will create business opportunities for the regional and local economy. The sector of the local economy that is most likely to benefit from the proposed development is e the local service industry.

The key social issues affecting the *operational phase* include:

» Potential positive impacts * Creation of employment and business opportunities. The operational phase will also create opportunities for skills development and training * * The promotion of clean energy as an alternative energy source and establishment of Clean Development Mechanism (CDM) project. The proposed development also represents an investment in clean, renewable energy, which, given the challenges created by climate change, represents a positive High social benefit for society as a whole.	
3. Environmental: Does the project conform to the National Environmental Management Act principles of sustainable development? Please provide brief comment for each of these below.	
i) That the **disturbance of ecosystems and loss of biological diversity** are avoided, or where they cannot be avoided, are minimised and remedied	The project is taking place on disturbed land. The EIA did not find unacceptable impacts on biodiversity
ii) That **pollution and degradation of the environment** are avoided, or where they cannot be altogether avoided, are minimised and remedied	The project will avoid environmental degradation through electricity generation from coal that includes coal mining, often iin open pits, and often causing acid mine water pollution problems. It will also avoid the emissions of other pollutants from power stations like sulphur.
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	No adverse impact is expected – this was fully assessed in the EIA
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	The project avoids waste from fossil fuel plants that would have generated coal based electricity in the absence of the project. Solid waste from the site during the operational phase of the project is foreseen to be minimum. Any waste products (e.g. oil) will be disposed of in accordance with relevant waste management legislation.
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	Wind power consumes no non-renewable fuel for continuing operation.
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.	Wind power is the conversion of wind energy into a useful form, such as electricity, using wind turbines. The use of wind for electricity generation is a non-consumptive use of a natural resource, and therefore does not deplete the resource. The electricity generated will be exported to the national grid from where it will be distributed to all South Africans for consumption.
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	Adherence to the conditions of the Environmental Authorisation for the project ensure that a risk averse and cautious approach is adopted. This will be enhanced further by the use of established and internationally-recognized technologies, control systems and procedures.
vii) That **negative impacts on the environment and on people's**	The project will be implemented in such a manner that any potential social negative impacts will be anticipated and prevented wherever possible..

environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied	Interested and Affected Parties (I&APs) participated in the stakeholder process and were given the opportunity to learn about the project, raise questions, and provide input into the project at the planning stage.
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	Impact on local environmental quality	• 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)	The use of renewable energy for power generation will avoid the emission of air pollutants such as Suspended Particulate Matter (SPM), Sulphur Dioxide (SO2) and Nitrogen Oxides (NOx) thereby improvising the surrounding air quality. The project will not impact on water and will not cause any water pollution. The project will not result in significant disposal of solid waste. Visual/noise impacts: These were investigated in the EIA and found to be acceptable
	Change in usage of natural resources	• 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	The project is to make use of a renewable resource as a fuel being wind. As such, no effect on community access to natural resources will take place. The project activity will reduce the use of finite fossil fuel resources by substituting coal-derived grid electricity with renewable energy. The project will in no way negatively impact on the surrounding community's access to natural resources. Additionally, the project will have no impacts on any non-renewable resources at local level. On a wider national level, the project will have a positive impact on non-renewable resources by replacing fossil-fuel based power from the national grid. This will reduce in particular coal and water consumption and improve the efficiency of resource utilization overall.
	Impacts on biodiversity and ecosystems	• Changes in local or regional biodiversity arising from the project	The project will have no negative impacts on local or regional biodiversity. The environmental assessment addressed the environment impacts including those on biodiversity in its assessment and found it to be acceptable.

Indicators in Support of the Project Approval Criteria			
Category		**Indicator**	**Comment**
Economic	Economic impacts	• 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	· The project will have an impact on Foreign Exchange Requirements which will be identified upon the finalization of the project financing structure. · Owed to the additional employment opportunities created from the implementation of the project, employees from the Vredenburg/Saldanha area will benefit from the increased spending power. · The Project will not have an impact on the cost of energy to the consumer in the local Municipal area. · The Project will result in the injection of an amount of foreign exchange into the South African economy through the sale of carbon credits (CERs).
	Appropriate technology transfer	• 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	Significant benefits exist in the transfer of state-of-the-art technology to South Africa since this type of technology has only limited applications currently in the energy industry as yet. It is believed that lessons learnt and systems developed during its implementation will be highly replicable in other potential projects throughout the country. As such it will have significantly high demonstration potential.

Indicators in Support of the Project Approval Criteria		
Category	**Indicator**	**Comment**

Indicators in Support of the Project Approval Criteria			
Category		**Indicator**	**Comment**
Social	Alignment with national provincial and local development priorities	• 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)	Firstly, South African Government has recognised the country's high level of renewable energy potential and presently has in place a target in the Integrated Resource Plan 2010 of about 8,700 MW of wind power installed by 2030. The electricity supply to the grid will increase and therefore will contribute to the provision of basic electricity supply services to the country as a whole. The project will contribute towards the provincial economy; create sustainable employment opportunities; enhance profitability; ensure sustainable development and poverty eradication - in line with ASGI-SA. · There will be no impact in terms of relocation of communities. · The project will positively impact on the provision of alternative energy to the country's national grid and will support the Government's objectives for the supply of electricity from renewable sources such as wind.
	Social equity and poverty alleviation	• 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	As mentioned above, the construction phase will create approximately 5,139 person months of work. This will assist in poverty alleviation. After commissioning a total number of further employment opportunities equaling 2,680 person months will be created. . The project company will make contributions to various social causes namely schooling, enterprise development and skills development (how much is in the pot?). The project will enhance the development of the Municipal region and surrounding areas.

Indicators in Support of the Project Approval Criteria			
Category		**Indicator**	**Comment**
General	General Project Acceptability	• Are the distribution of project benefits deemed to be reasonable and fair?	It is submitted that the division of the benefits are reasonable and fair

Part D: Finance

Figure 1

Capital Expenditure Costs (R's)	Financial figures are not available in the public domain at present but the capital expense will comfortably exceed ZAR 1 billion
Other Costs (R's)	Financial figures are not available in the public domain at present
Total Project Costs (R's)	Financial figures are not available in the public domain at present
Sources of Finance	
Equity	The West Coast 1 Wind Farm is owned by: Micawber 862 (Pty) Ltd
Senior Debt (long term)	Nedbank and Investec Bank have been appointed as joint-Mandated Lead Arrangers and will provide the Senior Debt to the West Coast 1 Wind Farm.
Subordinated Debt (long term)	Financial figures are not available in the public domain at present
Total CDM Contribution sought	The project relies on a barrier analysis and the contribution sought has thus not been quantified
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)	A contract to purchase does not exist at this stage. It is believed that the price of CERs could vary between €3 and €15 over the next 10 years.
Indicate the **projected Internal Rate of Return** for the project with and without CER revenues.	*The project relies on a barrier analysis and the contribution sought has thus not been quantified*
Constraints on tradability of carbon credits	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. NA

Preliminary discussions with potential purchasers	Have you had any preliminary discussions with any potential purchasers of the carbon credits (CERs) No specific discussions have been held.