

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)	
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	Red Cap Kouga Wind Farm
Date of Submission of PDD	February 2012

Project Developer	
Name	<i>Red Cap Kouga Wind Farm (Pty) Ltd</i>
Organizational Category	<i>Private Company</i>
Legal Status	<i>Limited Company</i>
Street Address	Unit B5 Mainstream Shopping Centre, Main Road, hout Bay, Cape Town, South Africa
Postal Address (if different from above)	

<b>Website Address</b>	http://www.red-cap.co.za
<b>Main Activities</b>	<i>Red Cap Kouga Wind Farm (Pty) Ltd was established by Red Cap Investment (Pty) Ltd to develop the Kouga Wind Farm.</i>
<b>Summary of Financial Performance in last fiscal year</b>	<i>Currently not available</i>
<b>Contact Person(s)</b>	David Nicol
<b>Telephone</b>	Work: +27 (0) 21 790 1392
<b>Fax</b>	+ 27 (0) 21 790 1392
<b>Email Address</b>	david@red-cap.co.za
<b>Project Partners</b>	
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)	
<b>Name</b>	Not applicable
<b>Nature of partner</b>	
<b>Organizational Category</b>	
<b>Legal Status (if private company)</b>	
<b>Street Address</b>	
<b>Postal Address (if different to Street Address)</b>	
<b>Website Address</b>	
<b>Main Activities</b>	
<b>Contact Person(s)</b>	
<b>Telephone</b>	
<b>Fax</b>	
<b>Email Address</b>	
<b>Contractual Arrangements</b>	
<b>Contractual arrangements between various entities involved</b>	<i>An Emissions Reductions Purchase Agreement is signed between Electrabel SA/NV and Red Cap Kouga Wind Farm (Pty) Ltd.</i>

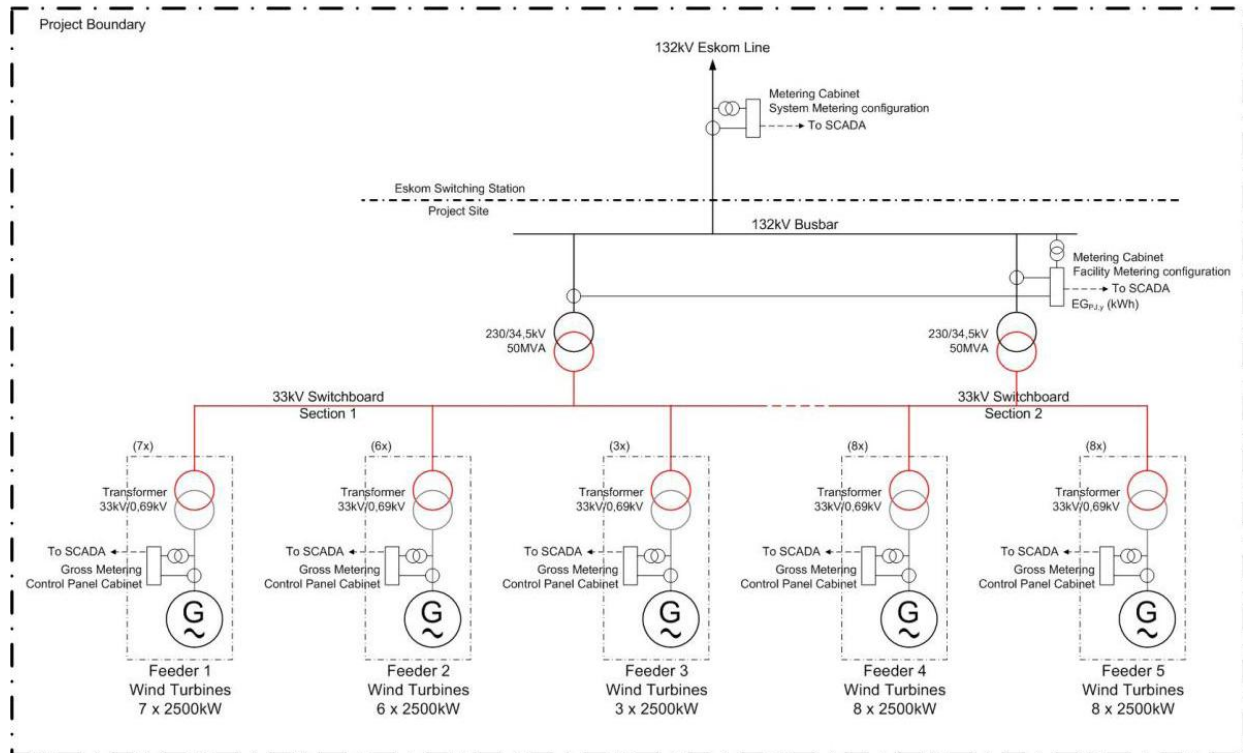
## Part B: Project Overview (Technical Summary, Location and Schedule)

<b>Technical Summary of the project</b>	
<b>Objective of the Project</b>	<i>The project will use wind power to generate renewable electricity, which will be delivered to the national electricity grid of South Africa.</i>
<b>Project Description</b>	
<i>The project will comprise the installation of 32 Nordex N90 2500 HS wind turbines, each turbine of 2.5MW with a total installed capacity of 80 MW.</i>	

## Technical Summary of the project

The project will use wind power to generate renewable electricity, which will be delivered to the national electricity grid of South Africa. The renewable electricity produced by the project will avoid CO<sub>2</sub> emissions from electricity generation in fossil fuelled power plants. Prior to the start of the implementation of the project activity, no power generation had occurred at the project site: this is a greenfield project. Below you may find the project diagram

Project Activity Diagram Kouga Wind Farm - Overview Energy Metering



### Project Constraints

Are there any constraints affecting project operations or commissioning?

No

**Technology to be employed**

The project activity involves the installation of 32 Nordex N90 2500 HS wind turbines, with a rotor hub height of 80 meters, in a Greenfield site. Prior to the start of the implementation of the project activity, no other power generation equipment was installed.

**Greenhouse Gases Targeted**

*This project will reduce CO<sub>2</sub> emissions.*

**Emission reductions**

Year*	Annual estimation of emission reductions in tones of CO <sub>2</sub> e
2014	203,480
2015	305,220
2016	305,220
2017	305,220
2018	305,220
2019	305,220
2020	305,220
2021	305,220

## Technical Summary of the project

	2022	305,220
	2023	305,220
	2024	101,740
	Total estimated reductions (tonnes of CO <sub>2</sub> e)	3,052,200
	Total number of crediting years	10
	Annual average over the crediting period of estimated reductions tonnes of CO <sub>2</sub> e)	305,220
	* From 6 April 2014 to 5 April 2024	
<p><b>Baseline &amp; Additionality Assessment</b></p>	<p>ACM0002 (version 12.3.0) identifies the baseline scenario for a project activity that is a new grid-connected renewable power plant as the following: <i>“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...”</i> as reflected in the combined margin (CM) calculations described in the <i>“Tool to calculate the emissions factor for an electricity system”</i></p> <p>Therefore the baseline scenario for the Kouga Wind Farm is the production of electricity by the existing fossil-fuelled power plants connected to the national grid. This is represented by the combined margin (CM) Grid Emission Factor for the South African electricity grid as calculated when applying the <i>“Tool to calculate the emissions factor for an electricity system”</i> (Version 02.2.1).</p> <p>The additionality approach to used is for this project activity is the Barrier analysis, as this project is the first of its kind, according to the following definition:</p> <p><i>a proposed project activity is the First-of-its-kind in the applicable geographical area if:</i></p> <p style="padding-left: 40px;"><i>(ii) 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</i></p> <p style="padding-left: 40px;"><i>(iii) Project participants selected a crediting period for the project activity that is .a maximum of 10 years with no option of renewal.</i></p> <p>The proposed wind farm is the first of its kind as there is no commercially operational wind project with similar installed capacity.</p>	
<p><b>Monitoring</b></p>	<p>The propose project activity will use the net electricity exported to the grid as performance indicator. The net electricity supplied to the grid multiplied by the grid emission factor (defined ex-ante) will result in the project emission reduction for the period.</p> <p>As a cross check, the electricity invoices may be used.</p>	
<p><b>Type of project/activities</b></p>	<p><i>Identify which type of activity is involved in this project - and for each, provide brief details</i></p>	

<b>Technical Summary of the project</b>	
a. Energy Supply	<i>Renewable energy - as the project is a 80 MW wind farm using 32 Nordex N90 wind turbine</i>
b. Energy Demand	<i>Not applicable</i>
c. Industrial Process	<i>Not applicable</i>
d. Transport	<i>Not applicable</i>
e. Waste Management	<i>Not applicable</i>
f. Forestry/ land use	<i>Not applicable</i>
g. Other	<i>Not applicable</i>
<b>Project Boundary</b>	
The project boundary encompasses the project power plant and all power plants connected physically to the electricity system which in this case is the South African electricity grid.	
Indicate Emissions outside the Project Boundary	Not applicable

<b>Location of the Project</b>	
Province	Eastern Cape Province
Municipality	Kouga
Nearest city/large town	near to the town, Port Elizabeth
Brief description of the location of the project site	<i>The nearest city to the site is Port Elizabeth, located approximately 70 km to the north east and the nearest town is Humansdorp, located approximately 20 km to the north. Site coordinates are: 34.1470 S; 24.7110 E.</i>

<b>Project Schedule/Timetable</b>	
Earliest Project Start Date	<i>2011/November</i>
When is the expected first year of CER delivery	<i>2015</i>
Project Lifetime	<i>20 Years</i>
Project End Date	<i>2034/May</i>
Crediting Period	<i>10 years</i>
Current Status or phase of the project	<i>The project is currently in construction phase. The project COD is April 2014 and it already have been listed as a preferred bidder.</i>
DNA Approval	<i>This project was never submitted to this DNA before.</i>
Approval by other bodies	<i>This project has not been submitted to any other national, provincial or local government departments or agencies for regulatory or legal approval (excluding EIA process - see Part C).</i>

## **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?**

A project of this nature generates new economic activity within the region together with a broad range of employment opportunity. The civil engineering and construction components of the project will take place over a period of three to four years and will result in an additional 360 jobs being created per year. Of these, 326 will be for semi-skilled workers which will be from the surrounding communities, and could possibly be people that are currently unemployed. Approximately 68% of all the jobs will be within the Kouga area with a further 30% within the Eastern Cape.

The development of a renewable energy cluster brings with it the requirement for a wide spectrum of skills needs. Across the phases (manufacture to generation and operation and maintenance), there is the need for such expertise as mechanical, electrical, chemical, materials, structural and civil engineers in addition to other non-engineering professions. Apart from highly trained professions, there is the need for specialist skills, such as heavy transport, crane operation and turbine installation abilities.

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

As mentioned before, project of this nature generates new economic activity within the region together with a broad range of employment opportunity. The civil engineering and construction components of the project will take place over a period of three to four years and will result in an additional 360 jobs being created per year.

In addition, Red Cap will also be implementing a Corporate Social Investment (CSI) initiative which will benefit the local community generally.

**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

During the EIA it was identified one potential impact on the Fauna: potential disturbance to animals and destruction of habitats and their constituents plant and animal species. For that reason, the wind turbines layout was changed to lower the impact and operations will be monitored to minimize this impact. This was deemed appropriate by the department of the environmental affairs.

ii) That **pollution and degradation of the environment** are avoided, or where they cannot be altogether avoided, are minimised and remedied

There are no pollution and degradation of the environment in this project activity.

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

There will be no disturbance of landscapes and sites that constitute the nation's cultural heritage.

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

There is no significant solid waste generation in this project.

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	There is no continuous use of non-renewable resources in this project.
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 use wind to generate power, thus exploiting a renewable resource in a responsible and equitable way.
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	The company hired to the project construction is knowledgeable and experienced in such projects internationally.
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.
<b>Other comments</b> 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	
<b>Environmental</b>	Impact on local environmental quality	<ul style="list-style-type: none"> <li>• Impact of the project on air quality</li> <li>• Impact of the project on water pollution</li> <li>• Impact of the project on the generation or disposal of solid waste</li> <li>• Any other positive or negative environmental impacts of the project (such as impacts on noise, safety, visual impacts, or traffic)</li> </ul>	<ul style="list-style-type: none"> <li>- The project will contribute to national and international efforts to reduce emissions of GHG and other air pollutants through the potential displacement of those created by fossil fuel power sources;</li> <li>- As the project is a wind farm, no potential water pollution is foreseen;</li> <li>- The project owners will have in place a strategy to mitigate the impacts of waste during construction phase. During operation phase, no significant amount of waste is expected;</li> <li>- The overall result of this project is that positive cumulative impacts far outweigh the negative impacts.</li> </ul>
	Change in usage of natural resources	<ul style="list-style-type: none"> <li>• Impact of the project on community access to natural resources</li> <li>• Impact of the project on the sustainability of use of water, minerals or other non renewable natural resources</li> <li>• Impact of the project on the efficiency of resource utilisation</li> </ul>	<p>This project will not impact the community access to natural resources, as it uses wind, a kind of resource which has unrestricted access. The usage of water, minerals or other non renewable natural resource is very limited, thus no significant impact in these regard is foreseen.</p>
	Impacts on biodiversity and ecosystems	<ul style="list-style-type: none"> <li>• Changes in local or regional biodiversity arising from the project</li> </ul>	<p>For this project, the EIA have evaluated the impacts on biodiversity, mainly on bat and birds. Also, the EIA has identified one potential impact on the Fauna: potential disturbance to animals and destruction of habitats and their constituents plant and animal species. For that reason, the wind turbines layout was changed to lower the impact and operations will be monitored to minimize this impact.</p>

Indicators in Support of the Project Approval Criteria		
Category	Indicator	Comment
Economic	Economic impacts	<ul style="list-style-type: none"> <li>Impact of the project on foreign exchange requirements</li> <li>Impact of the project on existing economic activity in the area</li> <li>Impact of the project on the cost of energy</li> <li>Impact of the project on foreign direct investment</li> </ul> <p>According to the project EIA, the project will have several benefits, mainly to the land owners on the site, historically disadvantaged South Africans (HDSA's) residing within the geographic location of the Kouga Local Municipality. The project would result in significant positive economic spin-offs, primarily because of the large expenditure injection associated with it. Also, there is a good chance of positive impact on tourism given its novelty appeal and potential to evoke positive associations with clean energy. This project represents less than 0.2% of the South African total installed capacity. Even though is a significant development towards clean energy, the impact on the cost of energy is marginal. Also, the project will have no negative effects on foreign exchange requirements.</p>
	Appropriate technology transfer	<ul style="list-style-type: none"> <li>Positive or negative implications for the transfer of technology to South Africa arising from the project</li> <li>Impacts of the project on local skills development</li> <li>Demonstration and replication potential of the project</li> </ul> <p>The project main equipments are imported from Denmark/Germany (from Nordex). This is deemed as a positive impact for the transfer of technology as the operations will also be managed by Nordex and, of course the operators are local. Consequently training sections will occur to train operators and local personnel. This is also a positive impact on local skills development. In addition, as any wind project, the project may be replicated in the country.</p>

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"> <li>How the project is aligned with provincial and national government objectives</li> <li>How the project is aligned with local developmental objectives</li> <li>Impact of the project on the provision of, or access to, basic services to the area</li> <li>Impact of the project on the relocation of communities if applicable</li> <li>Contribution of the project to a any specific sectoral objectives (for example, renewable energy targets)</li> </ul> <p>It is clear that the project is aligned with national objectives. In order to produce electricity, an independent power producer shall bid in an auction promoted by Eskom. This auction normally limits the technology scope to renewable thus showing is alignment with local development objectives. It is not expected any relocation of communities due to the project development. Of course this is aligned with the South African target to reduce by 34% its GHG emissions.</p>

## 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"> <li>• 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)</li> <li>• Impact of the project on community social structures</li> <li>• Impact of the project on social heritage</li> <li>• Impact of the project on the provision of social amenities to the community in which the project is situated</li> <li>• Contribution of the project to the development of previously underdeveloped areas or specially designated development nodes</li> </ul>	<p>The project of this nature generates new economic activity within the region together with a broad range of employment opportunities and economic impacts. The civil engineering and construction components of the project will take place over the period of three to four years and will result in an additional 360 jobs being created per year. Of these 326 will be for semi-skilled workers which will be from the surrounding communities, and could possibly be people that are currently unemployed. Approximately 68% of all the jobs will be within the Kouga area with a further 30% within the Eastern Cape.</p> <p>The social heritage will not be impacted by the project activity. Also this activity is expected to have positive impact on the neighborhood areas, such as a potential positive impact on tourism as mentioned before.</p>

### Indicators in Support of the Project Approval Criteria

Category	Indicator	Comment
General	General Project Acceptability <ul style="list-style-type: none"><li>• Are the distribution of project benefits deemed to be reasonable and fair?</li></ul>	In accordance with the EIA developed, when weighing up the residual positive and negative impacts of the project, there is an inherent positive bias and as a conclusion, this document recommends that the development to be authorized to proceed. Consequently, it is reasonable to conclude that the benefits of the project are deemed fair and reasonable.

## Part D: Finance

<b>Project Costs</b>	
<b>Development Costs (R's )</b>	Currently not available
<b>Installed Costs (R's)</b>	Currently not available
<b>Other Costs (R's)</b>	Currently not available
<b>Total Project Costs (R's)</b>	Currently not available
<b>Sources of Finance</b>	
<b>Equity</b>	Currently not available
<b>Debt (long term)</b>	Currently not available
<b>Debt (short term)</b>	NA
<b>Amount not identified (R's)</b>	NA
<b>Total CDM Contribution sought</b>	Currently not available
<b>Expected Price of CER in case of a contract to purchase for:</b> A period of 7 years A period of 10 years A period of 14 years (2x7 years)	Floating price, a subject to market changes
<b>Indicate the projected Internal Rate of Return for the project with and without CER revenues.</b>	Information not available
<b>Constraints on tradability of carbon credits</b>	<i>The ERPA is already signed.</i>
<b>Preliminary discussions with potential purchasers</b>	<i>The ERPA is already signed with a Belgian company - Electrabel SA/NV.</i>

