Clean Development Mechanism South Africa
Designated National Authority

energy
Department:
Energy
REPUBLIC OF SOUTH AFRICA

Private Bag X 19 , Acardia ,Pretoria, 0007, Tel:012-4444116, Fax: 012 444 4501
Private Bag X9111, Cape Town, 8000, Tel: 021-469 6412, Fax: 021-465 5980

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	Renewable Energy Carbon Programme for Africa (RECPA) – PoA Haverfontein 82.5 MW Wind Power Project (CPA-001) – CPA
Date of Submission of PDD	XX XX 2012

Project Developer	
Name	Carbon Africa (CME for the Program of Activities)
Organizational Category	Private Company
Legal Status	Limited company
Street Address	-
Postal Address (if different from above)	P.O. Box 14938- 00800, Nairobi, Kenya.

Website Address	www.carbonafrica.co.ke
Main Activities	Carbon Africa Ltd. is a carbon asset development and carbon transaction management company headquartered in Nairobi, Kenya with offices and representation in Mozambique, Uganda and Zimbabwe. Carbon Africa is a fully-fledged carbon company providing the essential services to take potential carbon projects from the initial design stages up to the final point of selling the carbon credits. It assists clients in Sub-Saharan Africa to generate and commercialize high quality carbon credits from projects that reduce or remove greenhouse gas emissions.
Summary of Financial Performance in last fiscal year	500,000 USD
Contact Person(s)	Mr. Adriaan Tas
Telephone	Work:+254 731 851 754 Cell:+254 726 385 657
Fax	n/a
Email Address	adriaan@carbonafrica.co.ke
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	Climate Corporation Emissions Trading GmbH
Nature of partner	Project Participant Climate Corporation provides financial support on the development of the PoA's CDM activities.
Organizational Category	Private company
Legal Status (if private company)	Limited Liability Company.
Street Address	Guntramsdorfer Street 103 (SOL4 Center) 2340 Moedling Austria / Europe
Postal Address (if different to Street Address)	-
Website Address	http://climatecorp.eu
Main Activities	Climate Corporation offers EUA and CER spot trading services both on environmental exchanges as well as via OTC partners. Climate Corporation specifically supports project owners with the development of CDM projects, starting from the feasibility study to PDD development all the way to registration of the projects with the CDM EB of the UNFCCC as well as ongoing monitoring with the aim of maximizing the issuance rate of CER from the projects.
Contact Person(s)	Michael Novoszad
Telephone	+43 2236 8002 7000
Fax	+43 2236 8002 7099

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	Terra Wind Energy - Haverfontein (Pty) Ltd
Nature of partner	Terra Wind Energy - Haverfontein (Pty) Ltd wil be the entity responsible for the implementation of Haverfontein 82.5 MW Wind Power Project (CPA-001) CPA
Organizational Category	Private company
Legal Status (if private company)	Limited Company
Street Address	3 Eglin Road, Sunninghill PO Box 2505 Sunninghill West, 2072
Postal Address (if different to Street Address)	-
Website Address	www.terrapower.co.za
Main Activities	Terra Wind Energy – Haverfontein (Pty) Limited is a project company specifically set up for the development and implementation of the proposed project activity. Terra Power Solutions was founded, to supply South Africa and the rest of Africa with renewable & sustainable power sources generated by Mother Nature. The company's wide range of renewable energy products offers suitable, sustainable energy generation & energy storage irrespective of conditions.
Contact Person(s)	Howard Ramsden
Telephone	+27 (0) 11 234 1603
Fax	+27 (0) 86 724 8962
Email Address	howard.ramsden@terrapower.co.za
Contractual Arrangements	
Contractual arrangements between various entities involved	Carbon Africa Ltd. will act as the Coordinating/Managing Entity. Climate Corporation Emissions Trading GmbHwill act as a project participant to the Programme of Activities. Terra Wind Energy - Haverfontein (PTY) Ltd Ltd is the entity responsible for the development of the Toitdale Concentrated Photovoltaic Project (CPA-001). To this effect an agreement has been made between Carbon Africa and the CPA implementer.

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

Technical Summary of the project	
Objective of the Project	The purpose of the Renewable Energy Carbon Programme for Africa (hereafter referred as the PoA) is to support the development and implementation of large-scale renewable energy projects in South Africa in order to displace grid-connected, fossil fuel based electricity generation through the promotion of grid-connected renewable energy based electricity generation, thereby reducing greenhouse gas (GHG) emissions. Technologies included in the Programme of Activities are wind and solar PV. The programme focuses on greenfield renewable

Technical Summary of the project

energy projects.

Project Description

CPAs under the PoA will be located in South Africa and will use grid-connected renewable energy technologies to generate electricity. Renewable energy technologies and measures to be employed by a typical CPA in this PoA will include wind and solar photovoltaic types. Projects using renewable biomass, biomass, geothermal, tidal-wave technologies are excluded from the programme. The renewable energy generation units will either supply electricity to a national or regional grid, or to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling.

The implementation of CPAs under the PoA will involve the installation of a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the CPA (greenfield plant). Capacity additions, retrofits and replacement of existing plants are not included in the PoA.

The first CPA under the PoA is Haverfontein 82.5 MW Wind Power Project (CPA-001) whose purpose of is to build an 82.5 MW wind farm that will supply a total of 140,180 MWh of clean electricity per year to the South African electricity grid. The proposed project will install a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity (greenfield activity). The Haverfontein 82.5 MW Wind Power Project is located in Albert Luthuli Local Municipality, in the Mpumalanga Province, South Africa. The CPA will achieve CO_2 emission reductions by replacing electricity generated by fossil fuel powered plants connected to the national electricity grid. The project is expected to achieve annual emission reductions of about 135,818 tCO_2/ year during the first crediting period.

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.*

Key constraints for the development of large scale projects include regulatory uncertainty and changes as well as higher project development costs as compared to other parts of the world. This makes the financial returns on the project less attractive and therefore the project is seeking CDM accreditation.

Technology to be employed

CPAs under the PoA will use renewable energy technologies to generate electricity. The following CPA types will be included in the PoA:

- Greenfield wind power project
- Greenfield solar PV project

For the case of Haverfontein 82.5 MW Wind Power Project which is the first CPA under this PoA, the project activity will install 33 Goldwind GW100/2500 turbines each with a capacity of 2.5 MW.

The key technology details for the turbines are given in the table below:

Table 1: Turbine specifications

Parameter	Value
Manufacturer	Goldwind
Rotor diameter	100 m

Technical Summary of the project

Area swept	7,854 m^2
Number of blades	3
Hub height	100 m
Cut-in wind speed	Approx.3 m/s
Cut-out wind speed	25 m/s
Rotor speed range	7.6 to 14.5 rpm
Nominal output	2,500 kW
Lifetime	20 years
IEC Class	IIIA

Is the technology one that has been previously tried and tested in South Africa or internationally? If yes, provide details (1 paragraph)

Some of the technology types under this programme have been implemented in South Africa while most of them have been implemented internationally, mostly in Europe, the US and China. In South Africa, two or three small wind projects have been in operation for a number of years. Under the *IPP Procurement Programme,* a number of wind and solar projects are currently being developed.

Have the project operators had any previous experience or expertise with operating the technology?
If yes – provide brief details (1-2 lines)

Terra Power Solutions (TPS) *has had previous experience in the formulation of a number of renewable energy projects. The company has a number of renewable energy projects in the pipeline including wind and solar powered projects.*

Greenhouse Gases Targeted

Identify which greenhouse gas(es) this project will target.

Note: CDM projects must result in a reduction of one of the following greenhouse gases: CO_2/ CH_4/N_20/HFCs/PCFs/SF_6

The project is targeting the reduction of CO2 emissions from fossil fuel power plants that are supplying electricity to the national grid.

Emission reductions

Indicate the expected emission reductions that will occur due to the project.

Note: please provide annual and total emission reductions in tonnes CO2 equivalent

The Haverfontein 82.5 MW Wind Power Project, which is the first CPA under the PoA will achieve CO_2 emission reductions by replacing electricity generated by fossil fuel powered plants connected to the national electricity grid. The project is expected to achieve annual emission reductions of about 135,818 tCO_2/year during the first crediting period.

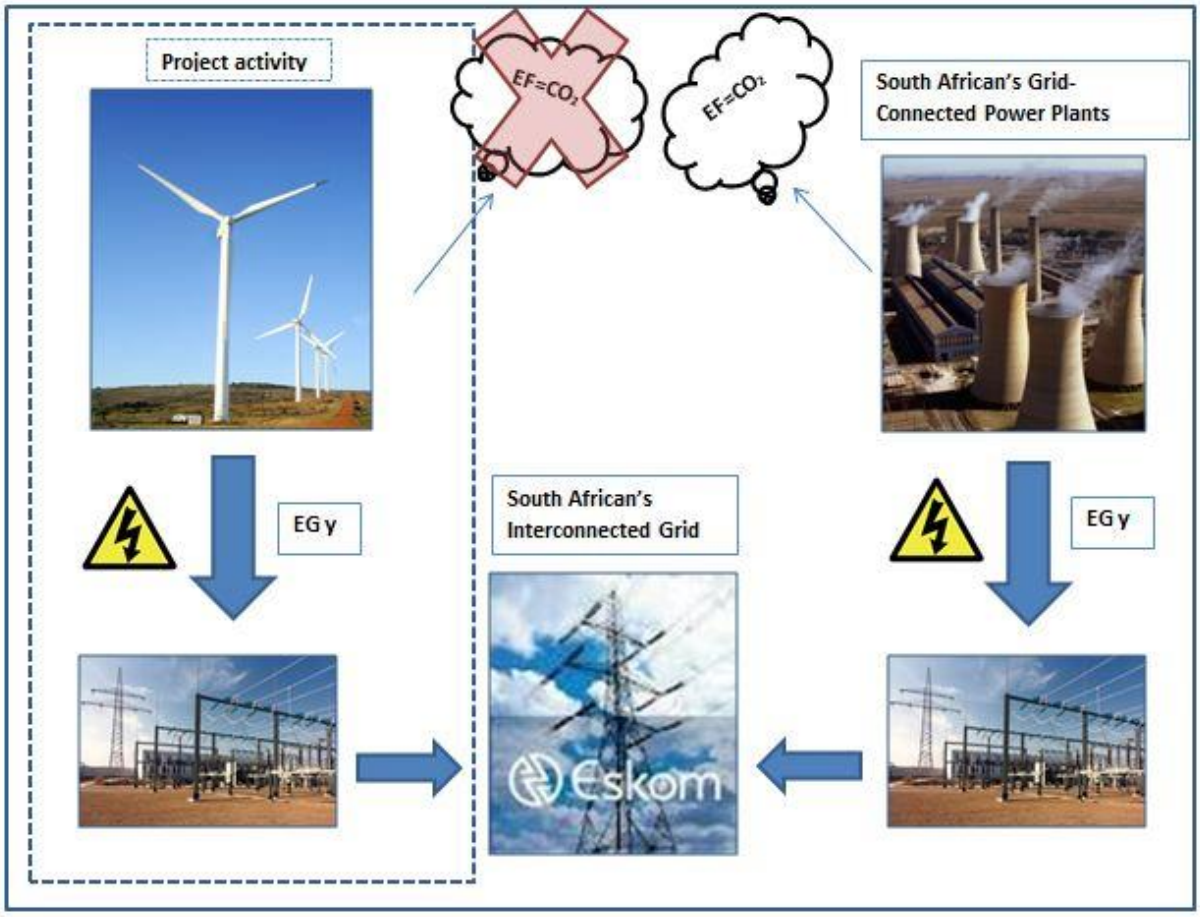
Emission reductions for the PoA will depend on the number of CPAs that will be included in the programme.

Baseline &Additionality

Provide an indication of the baseline and additionality approach to be used, with a brief explanation of why the project is additional as defined under the Kyoto

Technical Summary of the project	
Assessment	*Protocol.* **Baseline** CPAs included in the PoA will apply approved consolidated baseline and monitoring methodology ACM0002 (version 13.0.0) "*Consolidated baseline methodology for grid-connected electricity generation from renewable sources.*" In line with the above mentioned applicable methodology, the baseline is: "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 the "Tool to calculate the emission factor for an electricity system." In South Africa, approximately 85% of the electricity delivered to the grid is generated by coal-fired power plants. This leads to a relatively high grid emission factor of over 0.9 tCO2/MWh **Additionality assessment** CPAs included in the PoA will be refer to the "Tool for the demonstration and assessment of additionality (version 06.0.0)" to demonstrate that the projects are additional. Haverfontein wind power project is applying investment analysis to demonstrate additionality. The benchmark used is the post-tax Weighted Average Cost of Capital (WACC). Based on the calculation of the project IRR, it appears that, without the revenue from the CERs, the IRR would be below the benchmark and therefore it is concluded that the project would not be financially viable without the future revenue from the CERs.
Monitoring	*Describe the parameters that will be used as performance indicators that will be monitored to verify that emissions reductions are taking place.* *Note: parameters may include emissions output, energy production, energy sales, environmental impacts etc.* Since the PoA will entail projects that will supply power to the South African grid system, or to identified consumer facilities via national/regional grid, the key parameter that will be monitored is the *electricity generated and supplied to the grid operator* ($EG_{BL,y}$). Metering of this parameter will be conducted with appropriate measurement equipment according to relevant industry standards and following guidance from the NRS 057 standard provided by the National Energy Regulator of South Africa. This metering equipment will be installed at the point of connection with ESKOM. Since the CPAs will only be using renewable energy sources to generate electricity, the only parameters to be monitored will be the electricity generated. Monitoring for project emissions is not necessary for project activities that employ renewable energy sources. Consequently, for the case of Haverfontein wind power project, the only parameter that will require monitoring is the *electricity generated and supplied to*

Technical Summary of the project	
	the grid operator ($EG_{BL,y}$) This will be metered as described above. For the purpose of calculating the emission reductions, the project will fix the grid emission factor ex ante. Therefore, the project will only monitor the future electricity generation by the project activity. The grid emission factor is currently estimated at 0.95 tCO2/MWh. This figure might increase slightly before the end of validation due to comments from the DOE. Monitoring of electricity generation will take place using main and back up metering systems. The installation and operation of the metering systems will be carried out in line with national regulations and standards.
Type of project/activities	*Identify which type of activity is involved in this project - and for each, provide brief details*
a. Energy Supply	CPAs under this PoA will involve the construction and implementation of wind and solar PV units. The Haverfontein 82.5 MW Wind Power Project involves the construction of a wind power plant at a site where no renewable power plant existed prior to the implementation of the project activity. The project will supply clean electricity to the South African national grid.
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*
Project Boundary *Define the Project Boundary (Approximately 1 paragraph)* Note: a project boundary refers to all emissions which are under the control or directly affected by the project activity. Such a boundary can encompass equipment, processes and process flows. The project boundary applicable to the CPAs to be included in the PoA is In line with the applied methodology, ACM0002.According to ACM0002, the spatial project boundary encompasses the project power plant and all the grid connected power plants in South Africa. The figure below provides a flow chart of the equipment and systems, emissions sources and gases included in the project boundary as well as the monitoring variables in the project boundary:	

Technical Summary of the project	
	
Indicate Emissions outside the Project Boundary	*Note: Significant and measurable net emissions of GHG that are attributable to the project outside of the project boundary* Main emissions outside the project boundary are emissions from the transport of the equipment to the project site. However, these emissions are not measurable and also insignificant according to the consolidated and approved baseline methodology ACM0002.

Location of the Project	
Province	Mpumalanga
Municipality	Albert Luthuli Local Municipality
Nearest city/large town	Carolina
Brief description of the location of the project site	*No more than 3-5 lines* CPAs included in the PoA will be located in South Africa. Exact locations of the specific CPAs will be provided in the CPA DDs. The Haverfontein 82.5 MW Wind Power Project is located in Albert Luthuli Local Municipality, in the Mpumalanga Province, South Africa. The specific site is

	approximately 10 km north from Carolina, the nearest town.

Project Schedule/Timetable	
Earliest Project Start Date	For the PoA 01/01/2013 (For the CPA) Haverfontein Wind power project 1/03/2015
When is the expected first year of CER delivery	For the PoA 2015 (Expected CERs for the first CPA) (For the CPA) Haverfontein Wind power project 2015
Project Lifetime	For the PoA 28 years (For the CPA) Haverfontein Wind power project 20 years
Project End Date	*For the PoA* *Year/month* 2040/12 (For the CPA) Haverfontein Wind power project *2035/07*
Crediting Period	*Has a crediting period for the project been identified?* *If yes – which option has been selected (10 years or X times 7 years, with reassessment of baseline for each 7 year renewal?* *Yes [For the Haverfontein Wind power* Project*]* ***If yes – which option has been selected*** *[For the CPA- Haverfontein Wind power* Project*]* 7-year renewable crediting period that will be twice renewable
Current Status or phase of the project	*Select most applicable:* *Under discussion/ planning/preparation/construction or other actions already commenced/ Other (explain)* *Please provide brief details (1-2 lines)* The *Haverfontein wind power project* is in its preparation stage. The project has received a Record of Decision and is currently preparing for submission under the third bid submission round.
DNA Approval	*Has this project been submitted to the DNA for approval previously?* *If yes – provide date of last submission and brief details of the response from the DNA (1 paragraph)* *Provide details of any other official response by the DNA regarding*

Project Schedule/Timetable	
	this project This project has not been submitted previously to the DNA for approval prior to this submission.
Approval by other bodies	None

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?

Please give details (1 paragraph)

The PoA aims to construct and implement wind and Solar PV power generation units in South Africa.

The Haverfontein wind power project, the first CPA under the PoA purposes to implement a wind power plant in South Africa that will provide electricity to the South African national grid.

The Integrated Resource Plan 2010-2030, published by the Department of Energy (DOE) and the National Energy Regulator of South Africa (NERSA), predicts that by 2030 the power generation capacity of South Africa will double to 89,532MW to meet the rising energy demand. It is expected that wind energy technologies will constitute 10.3% of the future capacity, i.e. approximately 9,200 MW. The proposed project will assist the country to meet its generation requirements.

The project will monitor electricity generation throughout the lifetime of the project. Therefore, this indicator can be objectively monitored and measured on an ongoing basis.

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

Please give details (1 paragraph)

Individual CPAs will demonstrate that the projects contribute to social development in South Africa.

CPAs under the PoA will meet all the requirements for economic development as set out in Volume 5 of the Request for Qualification and Proposals for New Generation Capacity under the IPP Procurement Programme in terms of job creation, local content, ownership, management control, preferential procurement, enterprise development and socio-economic development contributions. Volume 5 of the Request for Qualifications provides quantitative targets for the different elements of the economic development programme. Therefore, the elements can be objectively monitored and measured on an ongoing basis.

For the specific context of the Haverfontein 82.5 MW Wind Power Project, the EIA report has already pointed out that the proposed project will result in social upliftment and contribute to the economic development of the area as follows:

- The local community within the 50km radius of the project will become shareholders in the project

through a Community Trust. The trust will be managed by the trustees both independent and some from the local community. • Creation of both local and permanent employment creation during the construction and operation phase • Skills development • Community Projects – the project has budgeted for R50 0000 per turbine per annum for the life of the wind energy facility to provide for community upliftment programmes.	
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	*(1 paragraph)* All projects under this PoA will comply with appropriate regulations applicable to the environment including the National Environmental Management Act (NEMA) Environmental Impact Assessment regulations wherein is specified the type of projects that require an EIA assessment, either a basic assessment or scoping report. It is expected that the EIA process will address the issue of the specific CPA's possible effect (if any) on ecosystems and biological diversity. Individual CPAs will ensure that the disturbance of ecosystems and loss of biological diversity are avoided, or where they cannot be avoided, are minimised and remedied Based on the Environmental Impact Assessment report prepared for the Haverfontein 82.5 MW Wind Power Project, a number of mitigation measures have been formulated to avoid and minimize the impact on vegetation, birds and bats in particular. Details on the mitigation measures are provided in the Environmental Management Plan.
ii) That **pollution and degradation of the environment** are avoided, or where they cannot be altogether avoided, are minimised and remedied	*(1 paragraph)* According to the National Environmental Management Act, No. 107 of 1998, pollution can be defined as, "Any change in the environment caused by (i) substances; (ii) radioactive or other waves; or (iii) noise, odours, dust or heat emitted from any activity, including the storage or treatment of waste or substances, construction and the provision of services, whether engaged in by any person or an organ of state, where that change has an adverse effect on human health or well-being or on the composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people, or will have such an effect in the future" Individual CPAs will ensure that pollution and degradation of the environment are avoided, or where they cannot be altogether avoided, are minimised and remedied. Haverfontein wind power project shall undertake the following mitigation measures, as recommended in the EIA assessment, against pollution:

	• The contractor will maintain good housekeeping on site to avoid litter and minimise waste. • Lighting will be designed to minimise light pollution without compromising safety during operation phase. Turbines will be lit according to Civil Aviation regulations. • Keep noise levels to 45db around homesteads as a mitigation measure against noise pollution.
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	*(1 paragraph*) Individual CPAs will ensure 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 Haverfontein wind power project consist of a rural area in which the human occupation is made up of a pre-colonial element (Stone Age) as well as a much later colonial (farmer) component with a large variety of heritage sites in the proposed site being Burial sites, Homesteads and Farmsteads Mitigation measures from the heritage specialist point of view include: • Siting turbines away from areas where it can have direct impact on the heritage sites • In cases where the turbines would be erected in close vicinity of sites it is recommended buffer zones of at last 20m from the outer edge of each heritage site is set out prior to construction taking place. • Should the archaeological sites or graves be exposed during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.
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	*(1 paragraph)* Individual CPAs will ensure 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 environmental Impact Assessment report for the Haverfontein 82.5 MW Wind Power Project recommends the contractor to maintain good housekeeping on site in order to avoid litter and minimize waste. This recommendation will be strictly adhered to with close monitoring by the appointed Environmental Control Officer.
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	*(1 paragraph)* The PoA will include CPA's implementing electricity generating projects from wind and solar photovoltaic (PV). These are considered renewable energy projects and as such there will be no exploitation of non-renewable resources.
vi) That the **development, use and**	*(1 paragraph)*

exploitation of renewable resources is responsible and equitable, and takes into account the consequences of the depletion of the resource.	Individual CPAs will ensure 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 Haverfontein wind power project activity involves the exploitation of wind energy, which cannot be depleted as a result of exploitation but is subject to variation in insolation.
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	*(1 paragraph)* Individual CPAs will ensure that a risk averse and cautious approach is applied. Haverfontein wind power project takes a risk averse and cautious approach which is exemplified by the continued monitoring of the impacts of the project on birds, bats and the surroundings during operations. The wind project will also put in place an appropriate environmental management structure, including the appointment of an Environmental Control Officer (ECO) who will be responsible for ensuring that the provisions in the Environmental Management Plan are adhered to. Great emphasis has been placed for the ECO to safeguard the paleontological sites which are fenced, isolated and all the workers informed that those are no-go areas, unless accompanied by the individual or persons representing the Environmental Control Officer.
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	*(1 paragraph)* The Haverfontein Wind Power Project has carried out a detailed Environmental Impact Assessment in line with the requirements under the National Environmental Management Act (Act No. 107 of 1998) (NEMA) and other environmental regulations. As part of the process, seven specialist studies were carried out. The assessments were intended to anticipate potential negative impacts and design mitigation measures to prevent minimize and/or remedy the potential impacts.
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**

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)	Please comment on the impact of the project on local environmental quality. Comment specifically on the indicators of relevance which are given here. (1 paragraph) Individual CPAs involve the construction and implementation of different renewable technologies. Therefore, the impact of the local environmental quality will also be different. Haverfontein wind power project activity is the construction of a wind farm. Therefore, it has no impact on air quality. Haverfontein wind power project will only have limited impact on water resources. The impact of the project on water pollution will be kept to minimal keeping the wind turbines as far away from them as possible. This is exemplified by creation of a buffer zone around The Nooitgedacht Dam which is the most significant water body in the proposed project site. No construction is to take place around the buffer zone Haverfontein wind power project will produce some solid waste during the construction phase. Recommendations from the EIA report suggesting that the contractor to maintain good housekeeping on site to avoid litter and minimise waste will be strictly adhered to. Noise will mostly occur during the construction phase. The EIA report recommends construction during the night in order to minimize effects of noise in the surrounding. Moreover, ambient noise levels will be maintained at 45db. The visual impact of a wind farm will be high for residents and surrounding farms. However, the long visual term impacts to the surrounding is considered to be positive as compared to that of agricultural and mining activities in the region have affected the quality of the landscape and the quality of views, as have the high-voltage power lines and pylons that seem to be visible from everywhere. Other potential environmental impacts including traffic, safety, etc. will mostly occur during the construction phase. Appropriate mitigation measures are described in the Environmental Management Plan.

Indicators in Support of the Project Approval Criteria			
Category		**Indicator**	**Comment**
	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	Please comment on the impact of the project on the usage of natural resources. Comment specifically on the indicators of relevance which are given here. (1 paragraph) Individual CPAs will have different impacts on the change in usage of natural resources. It's therefore impossible to establish the mentioned impacts at the PoA level. Haverfontein wind power project will have no impact on community access to natural resources. Haverfontein wind power project will have no impact on sustainability of use of water, minerals or other non renewable natural resources. Haverfontein wind power project will increase the efficiency of wind resource utilization as a way of generating clean energy.
	Impacts on biodiversity and ecosystems	• Changes in local or regional biodiversity arising from the project	Please comment on the impact of the project on biodiversity and ecosystems. Comment specifically on the indicators of relevance which are given here. (1 paragraph) Individual CPAs will have different impacts on biodiversity and ecosystems, thus, each CPA will conduct an EIA assessment to capture the impacts of the project on biodiversity and ecosystems. Haverfontein wind power project is expected to have some negative impact on avifauna and bats. Specialist studies were carried out to assess the impacts and propose appropriate mitigation measures, which are also included in the Environmental Management Plan. Impacts on birds and bats aside, the project is expected to only have a moderate impact on biodiversity and ecosystems and most impacts can be mitigated through the implementation of appropriate mitigation measures proposed in the Environmental management Plan.

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	Please comment on the economic impacts of the project. Comment specifically on the indicators of relevance which are given here. (1 paragraph) Individual CPAs will have different impacts on the economic impacts. It's therefore impossible to establish the mentioned impacts at the PoA level. Haverfontein wind power project will have no impact on foreign exchange requirements The main economic activity in the area is tourism. Haverfontein wind power project would additionally have extensive potential environmental and socio-economic benefits including the generation of clean energy for Albert Luthuli Local Municipality (ALLM). Some negative impacts can be expected on the tourism sector due to the visual impact of a large wind farm on the natural landscape. However, the negative impacts can be minimized by following the specialist recommendation provided in the EIA report. The impact of Haverfontein wind power project on the cost of energy will be negligible due to the small size of the project as compared to the total installed capacity of the national grid. The total investment cost for Haverfontein wind power project is estimated 1.5 billion ZAR part of which will be financed through foreign direct investment.

Indicators in Support of the Project Approval Criteria			
Category		**Indicator**	**Comment**
	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	Please comment on the impacts of the project on appropriate technology transfer. Comment specifically on the indicators of relevance which are given here. (1 paragraph) Individual CPAs will employ either wind or solar PV technologies thus, they would have different appropriate technology transfer. Implementation of the Haverfontein wind power project will have a positive impact on the transfer of wind energy technology to South Africa, as well as know-how skills for local workers. The transfer of technology and know-how will be directly replicable to other future wind energy projects. Transfer of environmentally safe and sound technology will take place through the introduction of state-of-the-art wind turbine technology. Transfer of know-how will take place through the training of local engineers and other technical staff by the Operations and Maintenance contractor with the support of the turbine manufacturer. The turbine manufactures as well as assuring performance standards for the wind farm will also provide oversight of the maintenance and operation of the turbines during its lifetime. This is also in line with the economic development requirements under Volume 5 of the Request for Qualifications and Proposals for New Generation Capacity under the IPP Procurement Programme.

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)	Please comment on how the project is aligned with national, provincial and local development priorities. Comment specifically the indicators of relevance to the project which are given here. (1 paragraph) Individual CPAs will employ different renewable technologies hence their alignment with the national provincial and local development priorities will also be different. To that effect, the mentioned priorities will be demonstrated at the CPA level. Haverfontein wind power project is aligned with the White Paper on the Energy Policy for South Africa (Energy White Paper) which aims to create energy security by diversifying energy supply and energy carriers and sets out the policy principles, goals and objectives to achieve, "An energy economy in which modern renewable energy increases its share of energy consumed and provides affordable access to energy throughout South Africa, thus contributing to sustainable development and environmental conservation" Haverfontein wind power project is aligned with the following local developmental objectives of community up-liftment and job creation. Haverfontein wind power project will have the following impact on the provision of, or access to, basic services in the area like a more stable electricity supply and funds to enable the municipality to provide essential basic services to the rural community in the area. Haverfontein wind power project will not result in relocation of communities. Haverfontein wind power project will contribute to the Department of Energy's target of having 10.3% of the future installed capacity in 2030 be based on wind energy.

Indicators in Support of the Project Approval Criteria			
Category		**Indicator**	**Comment**
	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	Please comment on the impact of the project on social equity and poverty alleviation. Comment specifically on the indicators of relevance which are given here. (1 paragraph) Individual CPAs have different impacts on social equity and poverty alleviation among them job creation capacities, community social structures,social heritage among others. Haverfontein wind power project is expected to create the following jobs: 1. Approximately 30 full time employment opportunities varying from skilled to semi-skilled. 2. A maintenance team will be established in the area Haverfontein wind power project will have no impact on community social structures. Haverfontein wind power project will have no impact on social heritage. Haverfontein wind power project will implement a socio-economic development plan in line with the economic development requirements under the Request for Qualification and Proposal for New Generation Capacity under the IPP Procurement Programme. The socio-economic development plan will be based on the needs that will have been identified in the surrounding communities (e.g. health, educations, etc.). Similarly, the project will enhance development trust and skills transfer. Haverfontein wind power project will have no impact on the previously underdeveloped areas or specially designated development nodes.

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?	Please comment on whether the benefits occurring from the project due to the contribution of the CDM are reasonable and fair. (1 paragraph) As part of the IPP Procurement Programme, the Department of Energy has formulated specific economic development targets which need to be met by the projects. The economic development targets focus on job creation, local content, fostering rural development, etc. In complying with the targets, Haverfontein wind power project will ensure that the distribution of the benefits from it will be reasonable and fair.

Part D: Finance

Project Costs	
Development Costs (R's)	15 million ZAR
Installed Costs (R's)	1 billion ZAR
Other Costs (R's)	500 million ZAR
Total Project Costs (R's)	1.515 billion ZAR
Sources of Finance	
Equity	*Project has covered the project development costs so far and is currently looking for equity investors.*
Debt (long term)	*Project has engaged in discussions with a number of debt financiers. No term sheets have been signed yet.*
Debt (short term)	*Project has engaged in discussions with a number of debt financiers. No term sheets have been signed yet.*
Amount not identified (R's)	1.5 billion ZAR.
Total CDM Contribution sought	*Amount (R's) and a brief summary of the needs and any outstanding issues* *(1 paragraph or less)* n/a
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)	15 EUR/CER
Indicate the **projected Internal Rate of Return** for the project with and without CER revenues.	*Note: Please indicate assumed price of CER as used in your calculation* Without CERs: 7.94% With CERs : 11.17% (CER price of 15 EUR)
Constraints on tradability of	*Have any commercial arrangements been made that may impact*

carbon credits	*the tradability of the carbon emission reductions? If yes, please define.Note. Examples would be subjection to a mortgage, government tax etc.* No commercial arrangements have been made that impact the tradability of the CERs.
Preliminary discussions with potential purchasers	*Have you had any preliminary discussions with any potential purchasers of the carbon credits (CERs)* *If yes, please give brief details.* No discussions have taken place with potential CER off takers.