



**CLEAN DEVELOPMENT MECHANISM
PROGRAM ACTIVITY DESIGN DOCUMENT FORM (CDM-CPA-DD)
Version 01**

CONTENTS

- A. General description of CDM programme activity (CPA)
- B. Eligibility of CPA Estimation of Emission Reductions
- C. Environmental Analysis
- D. Stakeholder comments

Annexes

Annex 1: Contact information on entity/individual responsible for the CPA

Annex 2: Information regarding public funding

Annex 3: Baseline information

Annex 4: Monitoring plan

NOTE:

(i) This form is for the submission of CPAs that apply a large scale methodology using provisions of the proposed PoA.

(ii) The coordinating/managing entity shall prepare a CDM Programme Activity Design Document (CDM-CPA-DD)^{1,2} that is specified to the proposed PoA by using the provisions stated in the PoA DD. At the time of requesting registration the PoA DD must be accompanied by a CDM-CPA-DD form that has been specified for the proposed PoA, as well as by one completed CDM-CPA-DD (using a real case). After the first CPA, every CPA that is added over time to the PoA must submit a completed CDM-CPA-DD.

¹ The latest version of the template form CDM-CPA-DD is available on the UNFCCC CDM web site in the reference/document section.

² At the time of requesting validation/registration, the coordinating managing entity is required to submit a completed CDM-POA-DD, the PoA specific CDM-CPA-DD, as well as one of such CDM-CPA-DD completed (using a real case).

**SECTION A. General description of CDM programme activity (CPA)****A.1. Title of the CPA:**

CPA 001 under PoA ‘South African Grid Connected Wind Farm Programme’

Version number: 01.0

Date: 10 October 2011

A.2. Description of the CPA:

CPA 001 envisages the installation of a new grid connected wind farm at a site where no wind farm was operated prior to the implementation of the activity.

The installed capacity of the wind farm is up to 10 MW. Produced electricity will be supplied to the Eskom electricity network.

The wind farm is located near Bedford in the Eastern Cape Province of the Republic of South Africa (RSA). Windlab Developments South Africa (Pty) Ltd is the wind farm developer. Construction is expected to commence in January 2013, and the commissioned plant is expected to be operational in January 2014. This project forms part of a series of wind farms that are proposed to be constructed as part of the Amakhala Emoyeni Wind Energy Facility.

A.3. Entity/individual responsible for CPA:

Windlab Developments South Africa (Pty) Ltd

A.4. Technical description of the CPA:

CPA 001 comprises only one activity. A single wind farm will be constructed close to the town of Bedford in the Eastern Cape Province of the RSA. Construction is expected to commence in January 2013, and the commissioned plant is expected to be operational in January 2014.

The present CPA uses wind power to drive a series of wind turbines thereby generating electricity, resulting in a maximum electricity production of 10 MW and an annual electricity production of 23 652 MWh³. The generated renewable electricity is then distributed to the national grid of the RSA.

A.4.1. Identification of the CPA:**A.4.1.1. Host Party:**

The Republic of South Africa (RSA)

³ The load factor 0.27 should be used for wind power electricity generation plant (South Africa Renewable Energy Feed-in Tariff (REFIT), 2009, p20). Consequently the electricity production is calculated as follows: 10 MW x 0.27 x 8 760 h = 23 652 MWh



A.4.1.2. Geographic reference of other means of identification allowing the unique identification of the CPA (maximum one page):

CPA 001 is located on Farm ‘Barkfontein’ 141/3 which is approximately 10 km South-West of the town of Bedford in the Eastern Cape Province of the RSA.

The location of the wind farm within the RSA is shown on Figure A.4-1. On Figure A.4-2 the regional map indicating the proposed wind farm site is shown.

The GPS co-ordinates of the location are 32°45'53" S and 25°58'45" E and it falls in the UTC+2 time zone.



Figure A.4-1: CPA location within the RSA

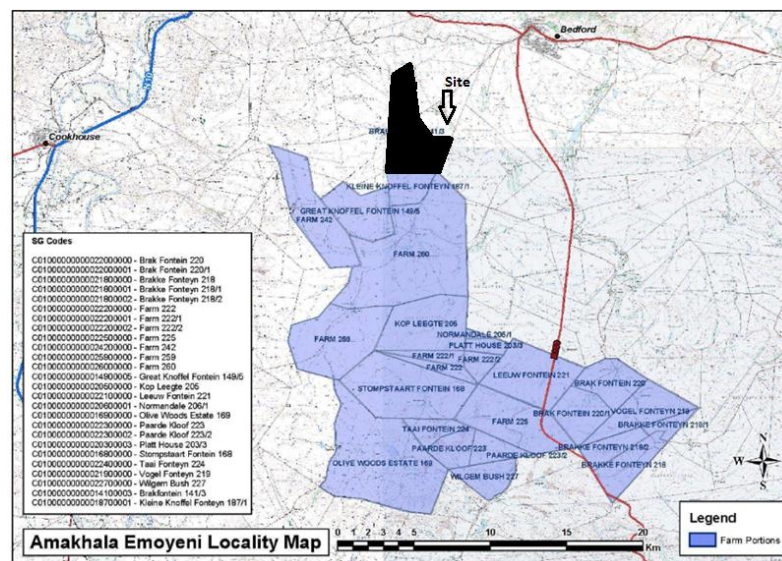


Figure A.4-2: The proposed wind farm site indicated in black



A.4.2. Duration of the CPA:

A.4.2.1. Starting date of the CPA:

01/01/2013 (the expected start of construction)

A.4.2.2. Expected operational lifetime of the CPA:

25 years (the expected operation lifetime of the wind farm)

A.4.3. Choice of the crediting period and related information:

Fixed crediting period

A.4.3.1. Starting date of the crediting period:

01/01/2014 or the date of inclusion of the CPA in the PoA; whichever is later

A.4.3.2. Length of the crediting period, first crediting period if the choice is renewable CP:

10 years

**A.4.4. Estimated amount of emission reductions over the chosen crediting period:**

Years	Annual estimation of emission reductions in tonnes of CO₂ e
2014 (From 1 January to 31 December)	23 368
2015	23 368
2016	23 368
2017	23 368
2018	23 368
2019	23 368
2020	23 368
2021	23 368
2022	23 368
2023	23 368
Total estimated reductions (tonnes of CO₂ e)	233 680
Total number of crediting years	10
Annual average over the crediting period of estimated reductions (tonnes of CO₂ e)	23 368

A.4.5. Public funding of the CPA:

This CPA does not receive public funding.

A.4.6. Confirmation that CPA is neither registered as an individual CDM project activity nor is part of another Registered PoA:

CPA 001 is not registered as an individual CDM project activity or as part of another registered PoA.



SECTION B. Eligibility of CPA and Estimation of emissions reductions

B.1. Title and reference of the Registered PoA to which CPA is added:

South African Grid Connected Wind Farm Programme (hereinafter “the PoA”)

B.2. Justification of the why the CPA is eligible to be included in the Registered PoA :

CPA 001 is eligible to the PoA because it complies with the eligibility criteria as defined in section A.4.2.2 of the PoA-DD:

1. CPA 001 is the installation of a new wind farm at a site where no wind farm was operated prior to the implementation of the activity; and
2. Each activity under the CPA 001 is connected to the national grid of the RSA.

B.3. Assessment and demonstration of additionality of the CPA, as per eligibility criteria listed in the Registered PoA:

The additionality of the CPA is demonstrated and assessed using the procedures described in the PoA-DD.

Step 1: Identification of alternatives to the project activity⁴ consistent with current laws and regulations

For CPA 001 the following alternatives are considered, which complies with all applicable mandatory legal and regulatory requirements:

Alternative 1	<p>The proposed CPA is undertaken without CDM revenue</p> <p>This alternative envisages the construction and operation of a grid connected wind farm with an installed capacity of up to 10 MW. The produced electricity is supplied to the grid.</p>
Alternative 2	<p>The proposed CPA is not undertaken</p> <p>The electricity delivered to the grid by the activities under CPA 001 would have otherwise been generated by the operation of grid-connected Eskom power plants and by the addition of new generation sources.</p> <p>This alternative is a business as usual scenario and corresponds to the baseline scenario.</p>

Step 2: Investment analysis

Sub-step 2a: Determine appropriate analysis method

It has to be determined whether to apply simple cost analysis (Option I), investment comparison analysis (Option II) or benchmark analysis (Option III).

The benchmark analysis (Option III) is chosen.

⁴ The ‘Tool for the demonstration and assessment of additionality’ refers to a “project activity”. In the case of a PoA the “project activity” is referred to as a CDM Programme Activity (CPA).

**Sub-step 2b: Apply benchmark analysis (Option III)**

For the benchmark analysis, the project Internal Rate of Return (project IRR) before tax is used to determine the project financial viability.

The lowest rate of interest at which money may be borrowed commercially in the RSA is a prime rate provided by South African Reserve Bank. At present the prime rate in the RSA is 9.0%⁵. This rate can be considered as a conservative benchmark for project IRR post tax. As the CPA developer calculates the project IRR before tax, the benchmark should be adjusted properly: $9.0\% \times 1/(1 - 0.28) = 12.5\%$.⁶

Thus, 12.5% benchmark for project IRR before tax is assumed for wind power projects in the RSA.

Sub-step 2c: Calculation and comparison of financial indicators

The activities under CPA 001 will obtain revenue by selling electricity at a contractually determined price according to a Government PPA.

The produced electricity will be sold via specially determined Renewable Energy Feed-In Tariff (REFIT) for wind power generation projects, which has a higher value compared to the market values. The REFIT value is established due to national and/or sectoral policies or regulations that give comparative advantages to less emissions-intensive technologies (RE technologies) over more emissions-intensive technologies (see Section E.5.1 of the PoA-DD for details).

Table B.3-1 shows the input data used to calculate the project IRR before tax.

⁵ www.reservebank.co.za

⁶ Income tax in the RSA is 28%, www.sars.gov.za/home.asp?pid=289#Incometa



Table B.3-1: Input data to calculate project IRR

Parameter	Unit	Value	Data source
Capacity of the wind farm	MW	10	Wind farm developer
Load factor of the wind farm	ratio	0.27	South Africa Renewable Energy Feed-in Tariff (REFIT), 2009, p 20. ⁷
The period of assessment	years	20	
Electricity tariff	ZAR/kWh	0.6585	The CPA will apply a government PPA. The E- policy is applied and a hypothetical electricity price is used. Media statement “NERSA’s decision on Eskom’s required revenue application – multi-year price determination 2010/11 to 2012/13 (MYPD 2)” 24 February 2010, page 2, paragraph 1 ⁸
Total investment cost	ZAR/kW	15480	South Africa Renewable Energy Feed-in Tariff (REFIT), 2009, p 20.
Fixed O&M costs	ZAR/kW	165	
Variable O&M costs	ZAR/kW	0	
ZAR exchange rate	ZAR/USD	6.86	http://www.x-rates.com/d/ZAR/USD/hist2011.html

The Project IRR before tax is equal to 6.39%. The IRR calculation is displayed in Annex 3.

Outcome of Sub-step 2c:

Project IRR of the activity < Benchmark	The proposed activity under the CPA is not economically feasible without the revenue from the sale of CERs. This serves as a strong argument in favour of additionality. Proceed to Sub-step 2d (Sensitivity analysis)
---	--

⁷ www.remtproject.org/FileDownload.aspx?FileID=44

⁸ www.eskom.co.za/content/MediaStatementMYPD2~1.pdf



Sub-step 2d: Sensitivity analysis

The following variables are included in the sensitivity analysis:

- Income from electricity sale;
- Investment cost; and
- Operations and Maintenance (O&M) costs.

The results of the sensitivity analysis are shown in Table B.3-2.

Table B.3-2: Sensitivity analysis of the project IRR

Variable	Variation				
	-10%	-5%	0%	+5%	+10%
Electricity Price	4.95%	5.68%	6.39%	7.08%	7.76%
Investment Cost	7.75%	7.04%	6.39%	5.79%	5.23%
O&M Cost	6.54%	6.46%	6.39%	6.32%	6.24%

Outcome of Sub-step 2d:

All IRR values presented in the Table for the activity < Benchmark	The investment analysis provides a valid argument in favour of additionality. Proceed to Step 4 (Common practice analysis). (Step 3 is optional)
--	--

Step 3: Barrier analysis

The barrier analysis is optional.

Skip Step 3	The barrier analysis is not applied, proceed to Step 4 (Common practice analysis)
-------------	---

Step 4: Common practice analysis

Sub-step 4a: Analyse other activities similar to the proposed project activity

The list of power plants servicing RSA’s grid is presented in Annex 3-2 of the PoA-DD. Only one pilot wind farm situated at Klipheuwel in the Western Cape is currently being operated in the RSA and is owned by Eskom. Klipheuwel Wind Farm consists of only three different wind turbines with the total power capacity of 3.16 MW which is used as a wind power research facility⁹. CPA 001 is developed by an independent power producer and consists of many wind turbines with total power capacity of 10 MW. CPA 001 forms part of a series of wind farms that are proposed to be constructed as part of the Amakhala Emoyeni Wind Energy Facility that seeks to install up to 350 turbines (or up to 750 MW installed capacity). Thus, the Klipheuwel Wind Farm cannot be considered a similar project to CPA 001 because of the different scales of these projects.

⁹ http://www.eskom.co.za/content/RW_0002KliphWindfRev5~2.pdf



Outcome of Sub-step 4a:

There are no activities similar to the activities under the CPA in the RSA	The proposed CPA is additional
--	--------------------------------

Outcome of Step 4:

There are no activities similar to the activities under the CPA in the RSA as per <i>Sub-step 4a</i>	<i>The proposed CPA undertaken without being registered under this PoA is not a baseline scenario; the proposed activities are additional.</i>
--	--

B.4. Description of the sources and gases included in the project boundary and proof that the CPA is located within the geographical boundary of the registered PoA.

The spatial extent of the CPA boundary includes the proposed renewable energy power plant and all power plants physically connected to the grid of the Republic of South Africa.

The greenhouse gases and emission sources that are included in or excluded from the CPA boundary are shown in Table B.4-1.

Table B.4-1: Emissions sources included in or excluded from the CPA boundary

<u>Source</u>		<u>Gas</u>	<u>Included?</u>	<u>Justification / Explanation</u>
Baseline	CO ₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the CPA	CO ₂	Yes	Main emission source
		CH ₄	No	Minor emission source, which is not included in the baseline
		N ₂ O	No	
CPA	GHG emissions from the proposed CPA	CO ₂	No	GHG emissions for wind power generation projects are equal to zero.
		CH ₄	No	
		N ₂ O	No	

All activities under CPA 001 are located within the boundaries of the Republic of South Africa as shown in Section A.4.1.2.

B.5. Emission reductions:

B.5.1. Data and parameters that are available at validation:

Data / Parameter:	$P_{i,y}$
Data unit:	MW
Description:	Power capacity of the <i>i</i> activity under the CPA in year <i>y</i>
Source of data used:	Wind farm developer
Value applied:	10
Justification of the	Evaluated by the wind farm developer



choice of data or description of measurement methods and procedures actually applied :	
Any comment:	The value reflects the expected maximum power output of the activity.

Data / Parameter:	LF_i
Data unit:	Ratio
Description:	Load factor of the i activity under the CPA
Source of data used:	South Africa Renewable Energy Feed-in Tariff (REFIT), 2009, p 20.
Value applied:	0.27
Justification of the choice of data or description of measurement methods and procedures actually applied :	This value was presented by the National Energy Regulator of South Africa for electricity production at wind farms.
Any comment:	This value will be used for the initial estimation of the amount of electricity that will be delivered to the grid by the CPA.

B.5.2. Ex-ante calculation of emission reductions:

The total emission reductions of the CPA are calculated on the basis of the equations and parameters presented and explained in Section E.6 of the PoA-DD and B.5.1 of this document.

Emission reduction calculation

Emission reductions in year y are calculated as follows:

$$ER_y = EG_{CPA,y} \times EF_{grid,CM} \tag{B.5-1}$$

Where:

- ER_y = Emission reductions in year y (tCO₂e/yr)
- $EG_{CPA,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CPA in year y (MWh)
- $EF_{grid,CM}$ = Combined margin CO₂ emission factor for grid connected power generation calculated ex ante (tCO₂/MWh)

Combined margin CO₂ emission factor for grid connected power generation calculated ex ante is fixed for all CPAs of the PoA (see Section E.6 of the PoA-DD) and equal to 0.988 tCO₂/MWh.

Total quantity of electricity delivered by CPA 001 in year y ($EG_{CPA,y}$) is calculated as follows:



$$EG_{CPA,y} = \sum P_{i,y} \times LF_i \times 365 \left(\frac{days}{year} \right) \times 24 \left(\frac{h}{day} \right) \quad (B.5-2)$$

Where:

$EG_{CPA,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CPA in year y (MWh)

$P_{i,y}$ = Power capacity of the i activity under the CPA in year y (MW)

LF_i = Load factor of the i activity under the CPA

There is only one activity under CPA 001 and $P_{i,y}$ remains constant throughout the crediting period; therefore:

$$EG_{CPA,y} = 10(MW) \times 0.27 \times 365 \left(\frac{day}{year} \right) \times 24 \left(\frac{h}{day} \right) = 23652 \left(\frac{MWh}{year} \right);$$

and

$$ER_y = 23652 \left(\frac{MWh}{year} \right) \times 0.998 \left(\frac{tCO_2}{MWh} \right) = 23368 \left(\frac{tCO_2}{year} \right)$$

B.5.3. Summary of the ex-ante estimation of emission reductions:

Year	Estimation of project activity emissions (tonnes of CO ₂ e)	Estimation of baseline emissions (tonnes of CO ₂ e)	Estimation of leakage (tonnes of CO ₂ e)	Estimation of overall emission reductions (tonnes of CO ₂ e)
2014 (From 1 January to 31 December)	0	23 368	0	23 368
2015	0	23 368	0	23 368
2016	0	23 368	0	23 368
2017	0	23 368	0	23 368
2018	0	23 368	0	23 368
2019	0	23 368	0	23 368
2020	0	23 368	0	23 368
2021	0	23 368	0	23 368
2022	0	23 368	0	23 368
2023	0	23 368	0	23 368
Total (tonnes of CO ₂ e)	0	233 680	0	233 680

B.6. Application of the monitoring methodology and description of the monitoring plan:

B.6.1. Description of the monitoring plan:



The monitoring plan of CPA 001 is devised as per approved consolidated baseline and monitoring methodology ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”. The following monitoring procedures shall be applied to:

1. Monitoring period

The monitoring period starts from the date of commissioning of the first activity under the CPA or the date of registration of the proposed CPA under the PoA (whichever is later). At the end of each reporting year, monitored data shall be aggregated to a monitoring report.

2. Data monitored and sources

Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CPA in year y shall be determined as a sum of the quantities of net electricity generation by each activity under the CPA in year y that are produced and fed into the grid. The quantity of net electricity generation that is produced and fed into the grid by each activity under the CPA in year y shall be determined on the basis of electricity meters. The metering instruments shall be installed in accordance with the requirements of the Grid and the Distribution Metering Codes at the point of supply which defines the commercial boundary between the wind farm owner and the grid. Readings of the electricity meters shall be cross-checked with records for sold electricity. Data on electricity supply shall be digitally archived on a regular basis.

The sources of data for calculation of GHG emission reductions in the course of monitoring shall be the internal reports of the wind farms.

The emission reductions shall be calculated using the Formula (B.5-1).

3. The monitoring team

The power plant staff shall undergo the necessary training related to operation and maintenance of the wind farm and all of the installed equipment. The maintenance personnel of the wind farm are responsible for daily control over the monitoring plan implementation.

The Chief Engineer of the wind farm is responsible for timely calibration of all instrumentation in accordance with the manufacturer’s requirements. The management of Windlab Developments South Africa (Pty) Ltd is fully responsible for the project implementation and overall control as well as collection of all data required for calculation of GHG emission reductions.

Specialists of BWC will calculate GHG emission reductions with data that will be provided by Windlab Developments South Africa (Pty) Ltd.

In case of any doubts as to the accuracy of the data, the specialists of Windlab Developments South Africa (Pty) Ltd shall check and correct the data. The preliminary version of the monitoring report shall be submitted to the specialists of Windlab Developments South Africa (Pty) Ltd for review. In case any mistakes are found in the calculations of GHG emission reductions, the specialists of BWC shall correct these calculations accordingly.

Specialists of BWC shall regularly (at least annually) carry out “test verifications” with a view to ensure that the monitoring plan at Windlab Developments South Africa (Pty) Ltd is applied correctly.

4. Data storage

All data collected as part of monitoring plan should be archived electronically and be kept at least for 2 years after the end of the crediting period.



5. Instrumentation calibration

The instrumentation calibration and check-out shall be carried out by contracted specialized organisations that are licenced for this type of activity, according to the requirements of the manufacturing company and to the schedule developed by Windlab Developments South Africa (Pty) Ltd.

6. Emergency situations

If any instrument that is used in the monitoring process fails, Windlab Developments South Africa (Pty) Ltd shall remedy the situation as soon as possible and if necessary shall replace the instrument. In case of breakdown of any of the wind turbines the electricity generation will go down, and amount of electricity supplied to the grid by the wind farm will be reduced. All accidents that may occur at the wind farm shall be recorded by Windlab Developments South Africa (Pty) Ltd. Information on major accidents shall be included in the monitoring report.

The parameter to be monitored is:

Data / Parameter:	$EG_{CPA,y}$	
Data unit:	MWh	
Description:	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CPA in year y	
Source of data to be used:	On-site measurement by electricity meters	
Value of data	Estimated values for the purpose of calculating emission reductions:	
	Year	MWh
	2014	23 652
	2015	23 652
	2016	23 652
	2017	23 652
	2018	23 652
	2019	23 652
	2020	23 652
	2021	23 652
	2022	23 652
	2023	23 652
Description of measurement methods and procedures to be applied:	Measurement by means of electricity meters installed for each activity at the point of supply which defines the commercial boundary between the national grid and the wind farm owners. Data on electricity supply shall be digitally archived on a regular basis.	
QA/QC procedures to be applied:	Electricity meters are regularly calibrated; readings are cross-checked with records for sold electricity.	
Any comment:		



SECTION C. Environmental analysis

C.1. Please indicate the level at which environmental analysis as per requirements of the CDM modalities and procedures is undertaken. Justify the choice of level at which the environmental analysis is undertaken:

The environmental analysis is undertaken at the CPA level. The environmental impact of wind farms depends on the particular location, size, how the plant is embedded in its environment as well as its uptake in the local community.

C.2. Documentation on the analysis of the environmental impacts, including transboundary impacts:

The Environmental Impact Assessment (EIA)¹⁰ of the proposed wind farm was carried out in accordance with the South African legislation by Savannah Environmental (Pty) Ltd. The Final EIA Report was submitted to the Department of Environmental Affairs for a decision in November 2010. Environmental authorisation was obtained by means of a Record of Decision (ROD) that was issued by the department on 2 September 2011.

The possible negative impacts with and without mitigation are discussed in Table C.1-1. The EIA report concluded that no fatal environmental flaws are created by the proposed development. The wind power is one of the cleanest sources of renewable energy, with no associated emissions and waste products. It should be noted that the proposed CPA falls under the Amakhala Emoyeni Wind Energy Facility that seeks to construct up to 350 wind turbines (or up to 750 MW installed capacity). Therefore, instead of conducting a Basic Assessment for the present CPA, a full EIA was conducted which covers the entire region of the Amakhala Emoyeni Wind Energy Facility.

Table C.1-1: Summary of Impacts and Mitigation Schemes

Impact	Negative Impact Before Mitigation	Negative Impact After Mitigation
Impact on ecology	<p>Moderate local and regional impact.</p> <p>1) Impacts potentially on natural vegetation and watercourses/wetlands due to underground cables between turbines. 2) Disturbances due to construction could lead to the spread of alien plants</p>	<p>Moderate - low local and regional impact.</p> <p>1) Impacts can be contained to some degree within construction area, as well as re-positioning some turbines and infrastructure away from sensitive areas. 2) This may be effectively controlled with suggested measures.</p>

¹⁰ Final EIA Report: Proposed Amakhala Emoyeni Wind Energy Facility and Associated infrastructure, Eastern Cape Province, November 2010



Impact	Negative Impact Before Mitigation	Negative Impact After Mitigation
<p>Impact on avifauna</p>	<p>High significance</p> <p>May have impact on rare, red-listed and/or endemic species through construction of facility, lose foraging habitat from construction footprint, displacement from area from operating turbines or collision with turbine blades. The most important negative impacts are likely to be on the Cape Vulture, Denham’s Bustard and Blue Crane.</p>	<p>Moderate significance</p> <p>Careful and responsible development and management of the facility, with sensitivity to potential negative impacts and preparedness to adjust operating procedures.</p>
<p>Impact on geology and soils</p>	<p>Moderate</p> <p>Impacts occur due to removal of topsoil for construction, degradation of soil and parent rock from constructions, increased erosion on slopes due to removal of vegetation.</p>	<p>Low</p> <p>Due to the nature that the project activity is scattered and that there will be a limited extent of proposed earthworks, impact will be reduced. The proposed layouts for the turbines have been designed to avoid areas of unfavorable topography and this bodes well for erosion.</p>
<p>Impact on heritage sensitivity</p>	<p>Moderate</p> <p>No fatal flaws have been identified. Change of character and public memory.</p>	<p>Moderate – Low</p> <p>Mark buffer zones around sensitive sites and undertake periodic inspection of listed sites during construction and operation.</p>
<p>Impact on paleontology</p>	<p>Moderate</p> <p>It is difficult to determine where all fossils are as they are only observable from geological outcrops. Excavation due to construction may destroy these fossil records in the ground.</p>	<p>Low</p> <p>Outcrops with observed fossils have been identified and mapped. Construction around these buffer zones is therefore possible. In the case of fossils being identified within the ground during excavation and construction, operations are to cease and reported to the geological society for the removal of these fossils.</p>



Impact	Negative Impact Before Mitigation	Negative Impact After Mitigation
Visual impact	<p>Very high within the 5 km core area. Very high within the 10 km area.</p> <p>The facility is visible in a large area which is generally seen as having a special landscape and tourism value.</p>	<p>Very high within the 5 km core area. High within the 10 km area.</p> <p>Since it is impossible to hide the wind turbines, the only other alternative is to promote the area as an attraction or landmark.</p>
Noise Impact	<p>Low for surrounding areas. Moderate within the proposed energy facility footprint.</p> <p>The wind turbines emit sound power levels at a level that does impact areas at some distance away.</p>	<p>Low within the proposed energy facility footprint.</p> <p>When potential sensitive receptors are nearby, care must be taken to ensure that operations at the facility to not unduly cause annoyance or otherwise interfere with the quality of life of the receptors. Wind turbines are positioned in a 1 000 m radius away from any potentially sensitive receptors.</p>
Impact on social environment as a result of construction	<p>-</p> <p>The negative impacts are associated with the presence of construction workers, increased risk of stock theft and poaching, impact of heavy vehicles, and loss of agricultural land</p>	<p>Moderate to low</p> <p>Windlab will employ no less than 80% of their low-skilled workers from the local area. They will also create a monitoring forum to prevent poaching and theft. Many mitigation strategies are suggested for each impact.</p>
Impact on natural resources	<p>There is no sign of any arable agriculture on the land, therefore the impact on the natural resources show very little effect on the loss of arable agricultural land due to the low rainfall.</p>	<p>The soils are suited for extensive grazing at best which will still be possible between the structures.</p>
Impact on the atmosphere	<p>The main impact is related to formation of dust during the construction period from land excavation and transportation vehicles.</p>	<p>It should be mentioned that combustion of fossil fuels (mostly coal) at the Eskom power stations and hereby emissions of the harmful substances into the atmosphere, such as flue ash, oxides of sulphur and nitrogen will be reduced due to the project implementation.</p>



C.3. Please state whether in accordance with the host Party laws/regulations, an environmental impact assessment is required for a typical CPA, included in the programme of activities (PoA);

This section is addressed in the PoA-DD.

**SECTION D. Stakeholders' comments****D.1. Please indicate the level at which local stakeholder comments are invited. Justify the choice:**

Stakeholder's comments are invited at CPA level. Project specific information is required for assessing the environmental impact and therefore this process is conducted at CPA level. Since stakeholders comments forms part of the EIA process, it will therefore also be conducted at CPA level in order to include essential project specific information.

D.2. Brief description how comments by local stakeholders have been invited and compiled:

The project owner appointed Savannah Environmental (Pty) Ltd to undertake the Scoping and Environmental Impact Assessment. As part of these environmental studies, the public involvement process was undertaken by Sustainable Futures ZA in terms of the NEMA EIA Regulations and CDM requirements based on the Kyoto protocol.

The public involvement process was initiated at the start of the EIA process and has continued throughout the Scoping and EIA Phases. The aim of the public participation process is primarily to ensure that:

- Information containing all relevant facts in respect of the proposed project was made available to potential stakeholders and Interested and Affected Parties (I&APs)
- Participation by potential I&APs was facilitated in such a manner that all potential stakeholders and I&APs were provided with a reasonable opportunity to comment on the proposed project
- Comment received from stakeholders and I&APs was recorded, considered, and incorporated into the EIA process

Through on-going consultation with key stakeholders and I&APs, issues raised through the Scoping Phase for inclusion within the EIA study were confirmed. All relevant stakeholder and I&AP information have been recorded within a database of affected parties. While I&APs were encouraged to register their interest in the project from the onset of the process, the identification and registration of I&APs has been on-going for the duration of the EIA process and the project database has been updated on an on-going basis¹¹.

The following Organs of State which may have jurisdiction over certain aspects of the CPA were also consulted:

- Department of Economic Development and Environmental Affairs
- Department of Energy
- Department of Water Affairs
- South African Heritage Resources Agency

¹¹ The list of stakeholders is presented in Appendix C of the final EIA report for Amakhala Emoyeni Wind Energy Facility



- Conservation Authorities
- Department of Transport and Public Works and various District Roads Departments
- South African National Road Agency
- Department of Land Affairs
- Civil Aviation Authority
- Cacadu District Municipality
- Blue Crane route Local Municipality

In order to accommodate the varying needs of stakeholders and I&APs, as well as ensure the relevant interactions between stakeholders and the EIA specialist team, the following opportunities have been provided for I&APs issues to be recorded and verified through the EIA phase, including:

- Focus group meetings (pre-arranged and stakeholders invited to attend)
- One-on-one consultation meetings and telephonic consultation sessions(consultation with various parties, for example with directly affected landowners and local municipalities, by the project participation consultant as well as specialist consultants)
- Written, faxed or e-mail correspondence
- Public meeting and stakeholder meetings (during the review period of the draft EIA Report)
- Site meetings for key stakeholders and authorities

A summary of the activities to inform stakeholders and I&APs is provided in Table D.2-1.

Table D.2-1: Summary of activities undertaken and proposed during public consultation

Activity	Date
Scoping phase	
Public review period for Draft Scoping Report (DSR)	21 May – 21 June 2010
Advertisement of EIA process in local newspapers: <ul style="list-style-type: none"> • The Herald • Somerset Budget & Pearston Advocate 	
Site notices: <ul style="list-style-type: none"> • R350 regional road • R63 – R350 Bedford – Grahamstown crossing • Farms: Leeufontein and Brakke Fonteyn 	
The DSR was made available at: <ul style="list-style-type: none"> • Bedford Library • Cookhouse Library • www.savanahSA.com • Cookhouse Farmers Association 	
EIA Phase	
Public feedback meeting before release of draft EIA report.	7 October 2010



Activity	Date
Public review period for Draft EIA Report (DSR)	18 October – 16 November 2010
The DSR was made available at: <ul style="list-style-type: none"> • Bedford Library • Cookhouse Library • www.savanahSA.com 	
Submission of EIA to the Department of Environmental Affairs	25 November 2010
Environmental authorisation for the project was obtained from the Department of Environmental Affairs by means of a Record of Decision (ROD).	2 September 2011

D.3. Summary of the comments received:

Issues and comments raised by I&APs over the duration of the EIA process have been synthesized into Comments and Response Reports (Appendix E of the Final EIA report). All stakeholders' comments and concerns were taken into account and considered in the EIA and environmental management plan.

Due to the large scale of the Amakhala Emoyeni wind energy facility numerous comments were received from various stakeholders. Comments were mostly precautionary and included the typical environmental concerns associated with the birds and bats, as well as visual and sound impacts which are generally associated with wind farms.

D.4. Report on how due account was taken of any comments received:

Most of the comments were raised by the stakeholders were precautionary, and no serious negative comments were raised. Responses to comments are included in the Comments and Response Reports (Appendix E of the Final EIA report).



Annex 1

CONTACT INFORMATION ON ENTITY/INDIVIDUAL RESPONSIBLE FOR THE CPA

Organization:	Windlab Developments South Africa (Pty) Ltd.
Street/P.O.Box:	Green Building, 9B Bell Crescent Close
Building:	Westlake Business Park
City:	Cape Town
State/Region:	
Postcode/ZIP:	7945
Country:	Republic of South Africa
Telephone:	+27 (0)21 701 1292
FAX:	0800 981 222 (within SA only)
E-Mail:	
URL:	www.windlab.com
Represented by:	
Title:	Director
Salutation:	
Last name:	Degenaar
Middle name:	-
First name:	Katherine
Department:	
Mobile:	+27 (0)73 819 4870
Direct FAX:	
Direct tel:	
Personal e-mail:	katherine.degenaar@windlab.com



Annex 2

INFORMATION REGARDING PUBLIC FUNDING



Annex 3

BASELINE INFORMATION

Annex 3-1. Calculation of project IRR before tax for the proposed project activity

Calculation of the net cash flow in ZAR

	Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Investment cost	mZAR	-154.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Income from electricity sale	mZAR		15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
Cost of electricity generation	mZAR		-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6
Total income from the project implementation	mZAR		13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9
Net cash flow	mZAR	-154.8	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9

Pre-tax Project IRR

Parameter	Unit	Value
Pre-tax Project IRR	%	6.39%



Annex 4

MONITORING INFORMATION
