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

CONTENTS

Annexes

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:

Copperton Wind Farm (Mabanaft-SA-Wind-001)
Version of CPA-DD: 3
Date: 06/07/2012

A.2. Description of the CPA:

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The proposed Copperton Wind Farm (CPA), consists of 20 wind turbine generators (WTGs) of 2.5 MW rated capacity each, totalling to 50 MW of installed capacity. However, given the current nature of the government tender conditions, the tariff bidding process in South Africa, the local substation capacity and plans for subsequent expansion, the land available for the installation of turbines and the intent of the CPA developer, the final capacity of the proposed CPA can vary from a minimum of 30 MW up to a maximum of 140 MW. The following table provides a description of the potential scenarios:

Table 1: Potential scenarios for proposed CPA

Capacity	Description	Net electricity generation
50 MW	"Base scenario" (based on existing substation capacity and cost estimates available for the financial analysis)	20 WTGs of 2.5 MW each, expected to generate 94,871 MWh/year
30 MW	"Minimum Scenario" (based on potentially reduced substation capacity available for CPA)	12 WTGs of 2.5 MW each, expected to generate 56,922 MWh/year
140 MW	"Maximum Scenario" (based on the intent of the CPA developer)	56 WTGs of 2.5 MW each, expected to generate 265,638 MWh/year

The PDD has been drafted considering any potential scenario with an installed capacity between 30 MW to 140 MW for the proposed CPA.

This CPA will be located on Struisbult Farm (Farm No. 103 Portions 4 and 7 and Farm No. 104 Portion 5), located approximately 5km east of the town of Copperton in the Northern Cape province of the Republic of South Africa (RSA). The electricity generated will be evacuated to the South African national electricity grid owned and operated by public utility company 'Eskom'. Electricity in South Africa is heavily reliant on coal fired power plants; hence the CPA would result in reduction of greenhouse gas (GHG) emissions over a period of 20 years.

All pre-feasibility studies, namely feasibility study report (FSR), wind assessment (based on software analysis), preliminary site study and land use consent concerning the CPA have been undertaken. As per the Request for Proposal (RFP) issued by the Dept of Energy on 3rd Aug 2011, the CPA is expected to start operation by end of 2014.

Project's contribution to sustainable development in South Africa

The project will contribute to the economic and social development in South Africa by supplying renewable energy to the grid, therefore, assisting in meeting the national energy demand.

As per the "request for proposal" laid out by the Department of Energy, South Africa, wind projects such as the proposed CPA is expected to be reviewed based on several criteria ranging from legal, financial, technical and economic development. Each and every aspect of each bid is expected to be reviewed by a panel of experts. The scoring for the tender process is divided into 70% price and 30% economic development.

With regards to the 30% for economic development, bidders are required to comply with different minimum thresholds per technology for "BEE ownership, job creation, local content and socio-economic development"[3].

The CPA will contribute to increase local employment, as 19 personnel (for the base scenario of 50 MW) are expected to be hired during the construction of the proposed CPA and an additional 17 jobs are expected to be created for the operation and maintenance. Additional jobs will be created should the final installed capacity be higher than 50 MW.

Indirect and induced jobs will also result from the proposed project activity. This job creation will improve the living conditions and skill transfer of the people in the area. Furthermore, the CPA developer will be designing local social upliftment schemes that will operate throughout the life of the wind farm. They will focus on the provision of water services, education, jobs and supply of renewable energy.

A.3. Entity/individual responsible for CPA:

CPA Developer: Plan 8 Infinite Energy (Pty) Ltd
(Hereafter referred as Plan 8 or "CPA Developer"),
Contact Details:
Mr. Zuben Jessa (Engineering Manager)

Plan 8 Infinite Energy (Pty) Ltd
100 New Church Street
Cape Town - 8001
South Africa

Phone: +27 21 801 7272
Email: zuben.jessa@plan-8.co.za
Web: http://www.plan-8.co.za/

[3] Dept of Energy, SA website: http://www.ipp-renewables.co.za/index.php/press/detail/media-statement-14nov20111

A.4. Technical description of the CPA:

The WTGs proposed for the CPA are Nordex-100 supplied and installed by Nordex, a well known manufacturer of WTGs headquarted in Hamburg, Germany.

Table 2: General specifications of the WTG[4]

Model of WTGs proposed	Nordex N100
Number of turbines	20 WTGs for 50 MW (Base scenario) Actual number of turbines will be dependent on final installed capacity of CPA
Generator	
Rated power	2,500 kW
Rotor	
Rotor Diameter	99.8 m
Swept area	7,823 m²
Speed	9.6 – 14.8 rpm
Speed Control	Variable via microprocessor
Overspeed Control	Pitch angle
Gearbox	
Construction	Combined spur/platery gear or differential gearbox
Generator	
Construction	Double fed asynchronus generator
Cooling system	Liquid / air cooling
Voltage	660 V
Control	
Control center	PLC controlled
Grid connection	Via IGBT controller
Distance control	Remote controlled surveillance system
Speed Control	Variable via microprocessor
Brake System	
Main brake	Pitch angle
Secondary brake	Disc brake

There is electricity distribution infrastructure adjacent to the farm which is designed for 132 kilovolt (kV) distribution. This line could be used by the proposed project to evacuate the power generated and hence a new line, other than the existing 2 km long connection, would not be required. However, Eskom may require that the electricity is evacuated via the Cuprum substation, which is located on the site of the disused copper mine rock crushing facility approximately 6.5 km to the south west. The final connection will be dependent on the technical requirements and cost set out by Eskom.

[4] Specifications: http://www.nordex-online.com/fileadmin/MEDIA/Gamma/Nordex_Gamma_en.pdf

A.4.1. Identification of the CPA:

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A.4.1.1. Host Party:

Republic of South Africa

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

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The proposed site for the CPA (Copperton Wind farm) is Struisbult Farm (Farm No. 103 Portions 4 and 7 and Farm No.104 Portion 5), near the town of Copperton in the Northern Cape. Struisbult Farm is located approximately 5 km east of Copperton and the two portions cover approximately 3,000 ha.

Province	Northern Cape
Municipality	Siyathemba
Nearest city/large town	Copperton

Figure 1: Location of the town of Copperton in Northern Cape province of South Africa

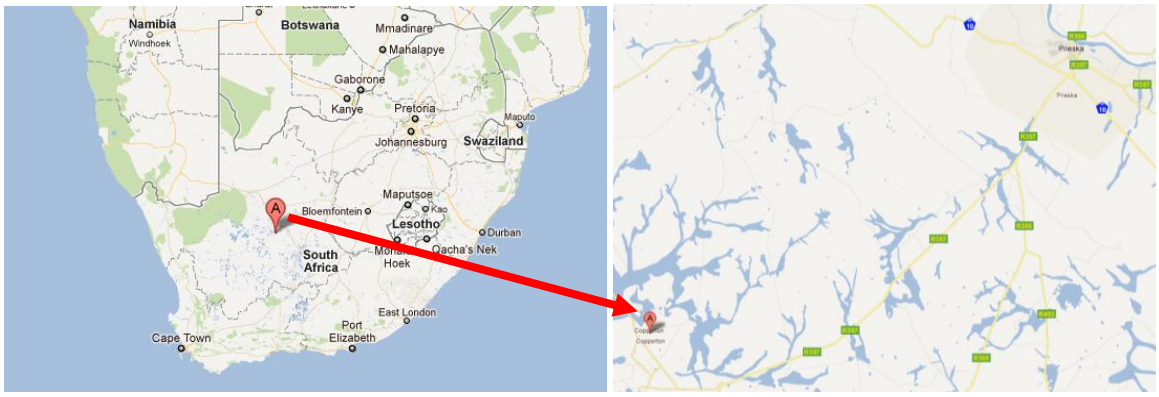
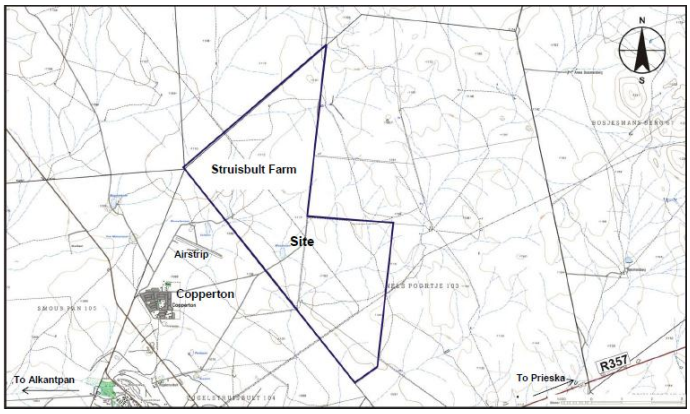


Figure 2: Location of the proposed wind energy facility near Copperton, Northern Cape



Site Coordinates: 29°53’50.65” South and 22°20’55.93” East

A.4.2. Duration of the CPA:

A.4.2.1. Starting date of the CPA:

The CPA is expected to reach financial closure by second half of 2013.

A.4.2.2. Expected operational lifetime of the CPA:

20 years

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

7 years x 3 (Renewable crediting period)

A.4.3.1. Starting date of the crediting period:

>>
01/01/2016

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

>>
7 years

NOTE: Please note that the duration of crediting period of any *CPA* shall be limited to the end date of the *PoA* regardless of when the CPA was added.

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

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Considering 50 MW (base scenario) of installed capacity, the table provides the expected annual emission reduction.

Years	Annual estimation of emission reductions in tonnes of CO_2e
2016	93,647
2017	93,647
2018	93,647
2019	93,647
2020	93,647
2021	93,647
2022	93,647
Total estimated reductions (tonnes of CO_2e)	655,529
Total number of crediting years	7
Annual average over the crediting period of estimated reductions (tonnes of CO_2e)	93,647

Maximum scenario: The estimated annual emission reduction for 140 MW installed capacity is 262,212 tCO_{2e}/year and a total of 1,836,481 tCO_{2e} over 7 years (first crediting period) at an annual average of 262,212 $tCO_{2e.}$

Minimum Scenario: Should the capacity be lowered to 30 MW, the estimated annual emission reduction will be 56,188 tCO_{2e}/year totalling 393,317 tCO2e for the 7 year period at an annual average of 56,188 tCO_{2e}

(Refer Table 1, page 2 of CPA-DD for an explanation of potential scenarios).

A.4.5. Public funding of the CPA:

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The CPA will not make use of any public funding or ODA.

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

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The PoA monitoring database maintained by the CME contains for each CPA the following information.

Name of the CPA	Copperton Wind Farm
Name of the CPA developer ;	Plan 8 Infinite Energy (Pty) Ltd
Contact details of the developer including contact person, address, telephone and email address	100 New Church Street, Cape Town, 8001, South Africa Contact person: Mr. Zuben Jessa – Engineering Manager Contact information: Work: +27 21 801 7272 Cell: +27 765 922 786 Email: zuben.jessa@plan-8.co.za
Installed capacity and other relevant technical specifications of each CPA	20 WTGs of 2.5MW rated capacity for base scenario (50 MW), actual number of turbines will be dependent on final capacity. (Refer section A.2 and A.4 for specific information)
Location of the CPA (e.g. GPS coordinates)	29°53’50.65” South 22°20’55.93” East
Verification status and monitoring reports of each CPA	Project is currently in validation. No monitoring reports available yet.

Based on the data contained in the above table, the UNFCCC CDM database and South African DNA database of CDM projects[5] was crosschecked for identical projects and it is concluded that CPA is neither registered as an individual CDM project activity nor is part of another registered PoA.

[5] http://www.energy.gov.za/files/esources/kyoto/2012/CDM_Projects_Portfolio_19_June%202012.pdf

SECTION B. Eligibility of CPA and Estimation of emissions reductions

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

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'South Africa Wind Energy'
Version: 3.0
Date: 06/07/2012

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

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Table 1: Definition of eligibility criteria for inclusion of a project activity as a CPA under the PoA

General eligibility criteria for enrolling	Comments
(a) The geographical boundary of the CPA including any time-induced boundary consistent with the geographical boundary set in the PoA, namely the Republic of South Africa. The CPA shall comply with the latest guidelines for inclusion as defined by the host country DNA.	The CPA is the province of Northern Cape about 5 km east from the town of Copperton in South Africa. Coordinates can be found under section A.4.6 The CPA complies with the latest guidelines as specified in "Green Book[6]" issued by the DNA.
(b) The CPA under the PoA is neither registered as an individual CDM project activity nor included in another registered CDM PoA.	The CPA is unique and there are no CDM projects registered containing wind turbines located in the stated coordinates. Please refer to A.4.1.2 and A.4.6.
(c) To avoid double counting of emission reductions each CPA-DD shall be uniquely identified and defined in an unambiguous manner by providing geographic information (e.g. coordinates), a unique CPA identification number, and the exact start date and end date of the crediting period. The following data must be provided to the CME prior to inclusion in the PoA: • Name of the CPA; • Name of the CPA developer • Contact details of the developer including contact person, address, telephone and email address • Installed capacity and other relevant technical specifications of each CPA; • Location of the CPA (e.g. GPS coordinates); • Unique Identification Number;	Please refer to A.4.1.2, A.4.3.1 and A.4.6. Unique Identification Number: Mabanaft-SA-Wind-001

[6] Green Book: http://www.energy.gov.za/files/esources/kyoto/Web%20info/DNA%20guideline%2020111.pdf

(d) Start date of the CPA shall be provided through documentary evidence and shall comply with latest CDM guidelines and standards. The start date is defined as the date when the CPA developer / owner makes a payment of 30% or more towards the purchase of wind turbines.	The start date will be known after finalization of the tender documents for the proposed CPA
(e) Each CPA involves the construction and operation of a wind power project connected to the national/sub-national power grid.	The CPA is located in the province of Northern Cape in South Africa and the power shall be evacuated to the national electricity grid owned and operated by the national utility company, Eskom.
(f) The CPA needs to sign an inclusion agreement with the CME	Documentary evidence shall be provided to the DOE at the time of site visit.
(g) Applicability conditions in version 12.3.0 of ACM0002: The methodology is not applicable to following: • Project activities that involve switching from fossil fuels to renewable energy at the site of the project activity • Biomass fired power plants • Hydro power plants that result in new reservoirs or in the increase in existing reservoirs where the power density of the power plant is less than 4 W/m^2	The CPA is a Greenfield wind energy project.
(h) Only additional projects can be enrolled. Additionality is proven on the CPA level for each CPA separately.	The project proves additionality by using the investment analysis according to the "Tool for the demonstration and assessment of additionality". Please see B.3 for details.
(i) The CPAs must have undertaken an environmental analysis as per requirements of the National Environmental Management Act (No. 107 of 1998) (NEMA) and CDM modalities and procedures as outlined in Section C.	An official EIA assessment has been carried out and a "Final Scoping Report" is available. The EIA will be finalized once the actual installed capacity is known.
(j) The CPAs must have undertaken a local stakeholder consultation as outlined in Section D.	Local stakeholder consultation was conducted on the 1st of November 2011. The findings of the LSC are included in section D of this PDD.
(k) The CPAs must provide an affirmation that funding from Annex I parties, if any, does not result in a diversion of official development assistance.	A copy of this affirmation will be submitted to the DOE at the time of validation.

(l) Only projects applying new energy generating equipment are eligible for inclusion. No equipment is transferred from another activity, located in a non-annex I party and no existing equipment is transferred from the project to another activity.	The project shall use new equipment only. An affirmation from Plan 8 stating the use of new turbines for the project has been provided as evidence.

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

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As described in the POA-DD, the proposed CPA falls under the Sectoral Scope 1, 'Energy industries (renewable - / non-renewable sources)' and the additionality of the proposed CPA is demonstrated and assessed by the approved set of methodologies and tools:

Applied methodology:

- Version 12.3.0 of ACM0002: "Consolidated baseline methodology for grid-connected electricity generation from renewable sources"

Related tools:

- Version 2.2.1 of the "Tool to calculate the emission factor for an electricity system"
- Version 6.0.0 of the "Tool for the demonstration and assessment of additionality"

Identification of the baseline scenario

The baseline scenario for each CPA will be identified among the alternatives described in the methodology, ACM0002 version 12.3.0

The CPA is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following:

Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system".

Assessment and demonstration of additionality for the CPA

According to ACM0002, version 12.3.0., the additionality shall be demonstrated and assessed using the latest version of the "Tool for the demonstration and assessment of additionality" agreed by the Board, which is available on the UNFCCC CDM website. Version 6.0.0 of the additionality tool includes the following steps:

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

Sub-step 1a*: *Define alternatives to the project activity

According to the CDM Validation and Verification Manual (EB 55 – Report – Annex 01 – Version 01.2 - clause 105), "the PDD shall identify credible alternatives to the project activity in order to determine the most realistic baseline scenario, unless the approved methodology that is selected by the proposed CDM project activity prescribes the baseline scenario and no further analysis is required" [7].

According to methodology ACM0002 version 12.3.0, in cases where the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is defined as follows:

> "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"."

Hence, in accordance with methodology ACM0002, version 12.3.0, and the "Tool to calculate the emission factor for an electricity system", version 2.2.1, baseline emissions are equal to power generated by the project activity and delivered to the grid, multiplied by the baseline emission factor. The baseline emission factor is equal to the combined margin (CM): a weighted average of the operating margin (OM) emission factor and the build margin (BM) emission factor. Therefore, no further analysis of the alternatives to the project activity is required.

Sub-step 1b: Consistency with mandatory laws and regulations

The alternative, electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants, is in compliance with all existing applicable legal and regulatory requirements.

This step will determine whether the proposed project activity is economically and/or financially feasible, or not.

Step 2: Investment analysis

Sub-step 2a: Determine appropriate analysis method

Three options can be applied for the investment analysis: the simple cost analysis, the investment comparison and the benchmark analysis.

The latest version of the "*Tool for the demonstration and assessment of additionality"* states:

> "If the CDM project activity and the alternatives identified in Step 1 generate no financial or economic benefits other than CDM related income, then apply the simple cost analysis (Option I). Otherwise, use the investment comparison analysis (Option II) or the benchmark analysis (Option III)".

[7] http://cdm.unfccc.int/Reference/Manuals/accr_man01.pdf

The simple cost analysis is not applicable for the proposed project because the project activity will produce economic benefit other than the CDM related income, notably from electricity sale. Instead, the Benchmark Analysis (Option III) will be used. The project Internal Rate of Return (IRR) of total investment is the financial indicator used to analyse the project's economic viability and it will be compared with a benchmark as explained below.

Sub-step 2b: Option III. Apply benchmark analysis

The financial internal return rate of the project (project IRR) is compared to a pre-tax benchmark. This benchmark represents the minimal required IRR of the project to be economically attractive.

For the purpose of this analysis project IRR is calculated and compared to a weighted average benchmark calculated based on commercial lending rate and required return on equity as below:

S.no.	Item	Value	Source
a.	Commercial lending rate	5.50%	SARB repo rate[8]
b.	Share of loan	50.00%	
c.	Required ROE (real, post-tax)	10.90%	EB62 Annex 5 pg 11
d.	Income tax rate	28.00%	SA-IT Rates[9]
e.	Required ROE (real, pre-tax)	13.95%	c*(1+d)
f.	Inflation	5.70%	SA-CPI[10]
g.	Required ROE (nominal, pre-tax)	20.45%	(1+e)*(1+f)
h.	Share of equity	50.00%	
i.	Benchmark	12.97%	a*b+g*h

Refer financial analysis spreadsheet for actual calculation of benchmark.

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

The 'Copperton Wind Farm' project has opted to pursue the Government based Power Purchase Agreement (PPA) scheme. To be conservative the calculations are based on the ceiling feed in tariff price of 1.15 ZAR /kWh[11].

The "base case" considered for the financial analysis is 50MW which is the current substation capacity. The following scenarios have been analyzed as below:

S.no	MW	Description
1.	50 MW	"Base scenario" based on current substation capacity
2.	30 MW	"Scenario Minimum" assuming that 3rd party RE projects are connected to the substation.

[8] Source: http://www.global-rates.com/interest-rates/central-banks/central-bank-south-africa/sarb-interest-rate.aspx (accessed 15/11/2011)

[9] Source: http://www.ftomasek.com/rates.html

[10] Source: http://www.global-rates.com/economic-indicators/inflation/consumer-prices/cpi/south-africa.aspx

[11] Source: http://www.energy.gov.za/IPP/BNEF_RN_Southafrica_2011_09_15.pdf (page 5)

3.	140 MW	"Scenario Maximum" capacity of proposed CPA
Note: Scenarios between 30 and 140 MW (other than 50 MW which is the base scenario) have not been considered as the project IRR for any intermediary value shall lie between the 2 extreme scenarios.		

The primary assumptions for the financial analysis (Base scenario) are as follows:

Item	Value	Unit	Source/Comment
Operation			
Installed generation capacity	50	MW	Internal analysis by Plan 8
Total investment cost (CAPEX)	857,903,843	ZAR	Internal analysis by Plan 8
Expected net energy generation	94,870.8	MWh/year	Internal analysis by Plan 8
Expected commissioning	01 Jan 2016	Date	Internal assumption by Plan 8
Operational lifetime	20	Year	Industry average

Item	Value	Unit	Source/Comment
Cost & Income Assumption			
O&M Cost	78,000	USD per 2.5 MW WTG/year	Estimate provided by turbine supplier (Nordic)
Land Lease	2% of gross income	ZAR	Land lease agreement
Feed-in tariff	1.15	ZAR/kWh	See source 8 below

For the multiple scenario analysis, the total capital expenditure is considered directly proportional (straight line) to the installed capacity. The cost of turbines constitutes 70% of the total CAPEX. Moreover all turbines are required to be imported as there are no known manufacturers of WTGs in South Africa. Together with related expenses such as transportation of turbines, port charges, customs and civil works that are directly proportional to the number of turbines, constitute about 85% of the CAPEX, hence the straight line proportionality is considered most appropriate.

Through the economic and financial evaluation of the project activity without considering the sale of CERs, a project IRR of 8.66% (base scenario) is obtained compared to a benchmark of 12.97%. As the CAPEX is considered in straight line proportionality the project IRR remains identical irrespective of the final installed capacity. Any variation to the straight line proportionality is further tackled in the sensitivity analysis (see subs-step 2d below).

This shows that the IRR of the CPA is below the benchmark and the project is consequently financially unattractive.

Project / equity IRR < Benchmark	Proceed with step 2d: Sensitivity analysis
Project / equity IRR > Benchmark	~~Proceed to step 3: Barrier analysis~~

Sub-step 2d: Sensitivity analysis

The objective of the sensitivity analysis is to quantify the impact of reasonable variations of critical variables in the financial indicator (e.g. IRR) of the proposed project activity:

According to the UNFCCC "Guidance on the Assessment of Investment Analysis" (version 5)[12] variables that constitute more than 20% of either total project costs or total project revenues should be subjected to reasonable variation. The main variables considered in the sensitivity analysis are:

1. CAPEX
2. Feed-in tariff
3. Net electricity generated.

The Guidance requires the financial analysis be performed by modifying each of the parameters by at least up to +/-10%, and assessing the impact on the financial indicator (without revenues from selling CERs). If the project IRR for any of the above variables is above the benchmark, the activity is deemed to be economically feasible without the sale of CERs.

Sensitivity	-10%	0%	10%
CAPEX	10.06%	8.66%	7.46%
Feed-in tariff	7.18%	8.66%	10.07%
Net electricity	7.18%	8.66%	10.07%

To account for a further variation to the straight line proportionality of the CAPEX, the sensitivity analysis for the CAPEX was subject to an additional stress and the sensitivity is carried out for +/-20%. The project IRR with the CAPEX decreased by 20% is 11.72% and when increased by 20% reduces to 6.42%. In both the circumstances the IRR does not exceed the stated benchmark.

It is therefore concluded that for all 3 scenarios for the final installed capacity; base scenario, minimum scenario and maximum scenario the project IRR does not exceed the benchmark. (Refer Table 1, page 2 of CPA-DD for an explanation of potential scenarios).

An analysis was carried out to determine the values for CAPEX, feed-in tariff and net electricity generation, where the project activity meets the benchmark. The CAPEX needs to be lowered by 26.5% than the current estimates for the project to meet the benchmark. Given that the actual project will be implemented between 2-3 years from the time of project documentation, the cost of turbines can only be expected to increase over time. Similarly the feed-in tariff must be increased by 32% to 1.525 ZAR/kWh for the project to meet the benchmark. This situation is not possible as the feed-in tariff of 1.15 ZAR/kWh assumed for the calculation is the highest possible tariff made available by the South African government for renewable energy projects. The current plant load factor estimated on the project site is based on on-site wind measurement data. For the benchmark to be met the PLF needs to go up from 21.66% to 28.7 % and there are currently no supporting documents or estimations to support that this PLF value can be possible consistently over the project life span.

Considering revenues from CDM, the project IRR increases to 9.90%.

[12] http://cdm.unfccc.int/Reference/Guidclarif/reg/reg_guid03.pdf

Step 3: Barrier Analysis

As the project IRR is lower than the benchmark, a barrier analysis is not required to be carried out.

Step 4. Common Practice Analysis

The common practice analysis has been carried based on the official Eskom database[13] that provides a list of all power plants currently operational in South Africa based on type of fuel and capacity.

Step 1: Calculate applicable output range as +/-50% of the design output or capacity of the proposed project activity.

The proposed activity is considered at 50 MW. The applicable output range at +/- 50% is defined as energy projects with an installed capacity ranging from 25 MW to 75 MW.

Step 2: In the applicable geographical area, identify all plants that deliver the same output or capacity, within the applicable output range calculated in Step 1, as the proposed project activity and have started commercial operation before the start date of the project. Note their number N_{all}. Registered CDM project activities shall not be included in this step;

The geographical area is defined as all regions in the republic of South Africa which is also the scope of the PoA. The table below proves a list of projects falling in the applicable output range:

Name of Project	Fuel / Technology Type	Capacity, MW
Colley Wobbles Power Station	Hydro Project	42 MW

From the above table, it can be concluded that $N_{all} = 1$

Step 3: Within plants identified in Step 2, identify those that apply technologies different that the technology applied in the proposed project activity. Note their number N_{diff}.

Since Colly Wobbles project is a hydro project, therefore applies a different technology. Hence $N_{diff} = 1$.

Step 4: Calculate factor $F=1-N_{diff}/N_{all}$ representing the share of plants using technology similar to the technology used in the proposed project activity in all plants that deliver the same output or capacity as the proposed project activity.

The proposed project activity is a common practice within a sector in the applicable geographical area if the factor F is greater than 0.2 and $N_{all}-N_{diff}$ is greater than 3.

F = 1- (1/1)
F = 0

[13] Source: http://financialresults.co.za/2011/eskom_ar2011/fact_sheets_11.php
(Table 2: Power station commercial capacities at 31 March 2011

N_{all}-N_{diff}
= 1-1
= 0

As F is neither greater than 0.2 and N_{all}-N_{diff} is less than 3, the proposed activity is not a common practice in South Africa.

If the common practice analysis is carried out for other capacities, i.e 30 MW or 140 MW, the applicable range varies from 15 MW to 210 MW. (Refer Table 1, page 2 of CPA-DD for the potential scenarios). The power projects in the applicable range as listed in the Eskom database can be summarized as:

Name of Project	Fuel / Technology Type	Capacity, MW
Acacia	Gas turbine	171 MW
Port Rex	Gas Turbine	171 MW

As both projects apply different technology, it is concluded that irrespective of the final capacity of the proposed wind project, i.e 30 MW, 50 MW or 140 MW, the values for F and $N_{all} - N_{diff}$ will be zero and the proposed activity is not a common practice in South Africa. (Refer Table 1, page 2 of CPA-DD for an explanation of potential scenarios).

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.

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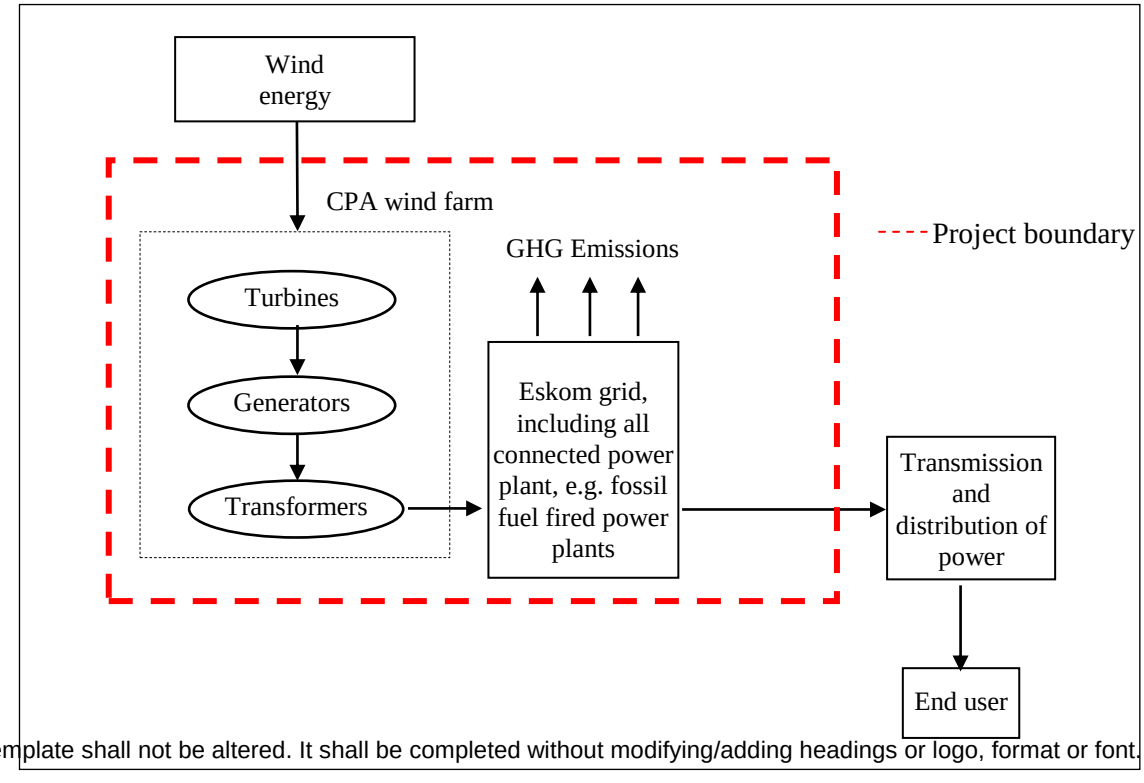
According to version 12.3.0 of ACM0002, the spatial extent of the project boundary includes the project activity and all power plants connected physically to the same grid to which the proposed projects (CPAs) are also connected. There is presently one transmission electricity grid in South Africa that is owned and operated by the public utility company Eskom. The national grid spans all across the country.

Figure 2: Project boundary of the CPA



The GHGs and emission sources included in the project boundary are shown in the table below:

Source		Gas	Included?	Justification / Explanation
Baseline	CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity	CO_2	Yes	Main emission source
		CH_4	No	Minor emission source
		N_2O	No	Minor emission source
CPA	Wind power generation	CO_2	No	Minor emission source. As a zero emission grid connected wind power project no emissions will result.
		CH_4	No	Minor emission source. As a zero emission grid connected wind power project no emissions will result.
		N_2O	No	Minor emission source. As a zero emission grid connected wind power project no emissions will result.

B.5. Emission reductions:

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

Data / Parameter:	**$EF_{grid,OM,y}$**
Data unit:	tCO_2/MWh
Description:	Operating margin emission factor of the grid
Source of data used:	Calculated based on latest published data by utility, Eskom
Value applied:	0.9541
Justification of the choice of data or description of measurement methods and procedures actually applied :	This value is determined ex-ante and applied to the CM with a weighting of 0.75 for the first crediting period according to the "Tool to calculate the emission factor for an electricity system" (version 2..2.1). Once for each crediting period using the most recent three historical years for which data is available at the time of submission of the CPA-DD to the DOE for validation/inclusion (*ex ante* option) according to the "Tool to calculate the emission factor for an electricity system" (version 2.2.1).
Any comment:	

Data / Parameter:	$\mathbf{EF}_{grid,BM,,y}$
Data unit:	tCO_2/MWh
Description:	Build margin emission factor of the grid
Source of data used:	Calculated based on latest published data by utility, Eskom
Value applied:	1.0858
Justification of the choice of data or description of measurement methods and procedures actually applied :	This value is determined ex-ante and applied to the CM with a weighting of 0.25 for the first crediting period according to the "Tool to calculate the emission factor for an electricity system" (version 2.2.0).
Any comment:	

Data / Parameter:	$\mathbf{EF}_{grid,CM,,y}$
Data unit:	tCO_2/MWh
Description:	Combined margin CO_2 emission factor for grid connected power generation in year *y* calculated using the latest version of the "Tool to calculate the emission factor for an electricity system"
Source of data used:	Weighted average based on $\mathbf{EF}_{grid,OM,y}$ and $\mathbf{EF}_{grid,BM,,y}$
Value applied:	0.9871
Justification of the choice of data or description of measurement methods and procedures actually applied :	This value is determined ex-ante and applied for the first crediting period according to the "Tool to calculate the emission factor for an electricity system" (version 2.2.0).
Any comment:	

Data / Parameter:	$\mathbf{FC_{i,m,y}}$ / $\mathbf{FC_{i,,y}}$
Data unit:	tons/year
Description:	Amount of fossil fuel type *i* consumed by power plant / unit *m* (or in the project electricity system in case of $FC_{i,y}$) in year y
Source of data used:	Published data by utility, Eskom
Value applied:	124,778,882 (Vintage: 2010-2011) 122,960,688 (Vintage: 2009-2010) 121,422,536 (Vintage: 2008-2009)
Justification of the choice of data or description of measurement methods and procedures actually applied :	• Simple OM, simple adjusted OM, average OM: Once for each crediting period using the most recent three historical years for which data is available at the time of submission of the CPA-DD to the DOE for validation (*ex ante* option) • BM: For the first crediting period, once *ex ante*, following the guidance included in Step 5 of the "Tool to calculate the emission factor for an electricity system" (Version 2.2.1). For the second and third crediting period, once *ex ante* at the start of the second crediting period.
Any comment:	Values denoted are the total sum values of all power plants. Fuel consumption of individual power plants for the respective vintage has been considered for calculation of the OM. See annex 3 for specific information.

Data / Parameter:	$EG_{m,y}$ / EG_y
Data unit:	MWh/yr
Description:	Net electricity generated and delivered to the grid by power plant/unit *m* (or in the project electricity system in case of EG_y) in year *y*
Source of data used:	Published data by utility, Eskom
Value applied:	237,430,603 (Vintage: 2010-2011) 221,599,341 (Vintage: 2009-2010) 228,693,925 (Vintage: 2008-2009) 63,378,772 (2010-2011, most recent power plants accounting for 20% of total generation)
Justification of the choice of data or description of measurement methods and procedures actually applied :	Simple OM, simple adjusted OM, average OM: Once for each crediting period using the most recent three historical years for which data is available at the time of submission of the CPA-DD to the DOE for validation (*ex ante* option)
Any comment:	The values denoted are the total sum values of all power plants. Electricity generation of individual power plants for the respective vintage have been considered for calculation of the OM. See annex 3 for specific information.

Data / Parameter:	$EF_{CO2,i,y}$ and $EF_{CO2,m,i,y}$
Data unit:	tCO_2/ton of fuel
Description:	CO_2 emission factor of fossil fuel type *i* used in power unit *m* in year *y*
Source of data used:	Published data by utility, Eskom
Value applied:	1.428 (Vintage: 2010-2011) 1.431 (Vintage: 2009-2010) 1.314 (Vintage: 2008-2009)
Justification of the choice of data or description of measurement methods and procedures actually applied :	• Simple OM, simple adjusted OM, average OM: Once for each crediting period using the most recent three historical years for which data is available at the time of submission of the CPA-DD to the DOE for validation (*ex ante* option) • BM: For the first crediting period, once *ex ante*, following the guidance included in Step 5 of the "Tool to calculate the emission factor for an electricity system" (Version 2.2.1). For the second and third crediting period, once *ex ante* at the start of the second crediting period.
Any comment:	The values denoted are the average values of all power plants for the respective vintage considered for calculation of the OM. See annex 3 for individual values considered for respective power plants.

Data / Parameter:	$EF_{CO2,i,y}$ and $EF_{CO2,m,i,y}$
Data unit:	tCO_2/TJ of natural gas
Description:	CO_2 emission factor of fossil fuel type *i* used in power unit *m* in year *y*

Source of data used:	IPCC data[14]
Value applied:	54.3
Justification of the choice of data or description of measurement methods and procedures actually applied :	• Simple OM, simple adjusted OM, average OM: Once for each crediting period using the most recent three historical years for which data is available at the time of submission of the CPA-DD to the DOE for validation (*ex ante* option) • BM: For the first crediting period, once *ex ante*, following the guidance included in Step 5 of the "Tool to calculate the emission factor for an electricity system" (Version 2.2.1). For the second and third crediting period, once *ex ante* at the start of the second crediting period.
Any comment:	This value is applicable for gas based power plants only. See annex 3 for more information.

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

>>

The emissions reductions are calculated in accordance with the approved consolidated baseline methodology version 12.3.0 of ACM0002 along with the "Tool to calculate the emission factor for an electricity system" (version 02.2.0), as follows:

Project emissions (PE_y)

For most renewable power generation project activities, incl. wind power, applies $PE_y = 0$.

Baseline emissions (BE_y)

Baseline emissions include only CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are to be calculated as follows:

$$BE_y = EG_{PJ,y} \cdot EF_{grid,CM,y} \quad \textbf{(1)}$$

Where:

BE_y = Baseline emissions in year y (tCO_2e/yr)

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

$EF_{grid,CM,y}$ = Combined margin CO_2 emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (tCO_2/MWh)

Calculation of $EG_{PJ,y}$

The calculation of $EG_{PJ,y}$ is different for (a) greenfield plants, (b) retrofits and replacements, and (c) capacity additions. For this CPA methodology (a) is used.

[14] Source: http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf Pg 1.24.

(a) Greenfield renewable energy power plants

Since the typical CPA is the installation of a new grid-connected renewable power plant/unit at a site where no renewable power plant was operated prior to the implementation of the project activity, $EG_{PJ,y}$ is calculated as follows:

$$EG_{PJ,y} = EG_{facility,y} \quad \textbf{(2)}$$

Where:

$EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year *y* (MWh/yr)

$EG_{facility,y}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y* (MWh/yr)

Calculation of $EF_{grid,CM,y}$

According to the "Tool to calculate the emission factor for an electricity system" (version 02.2.0) the baseline emission factor ($EF_{grid,CM,y}$) is calculated as combined margin (CM), consisting of the combination of the operating margin (OM) and the build margin (BM) factors. OM and BM are calculated ex-ante based on official data source as public available and will be fixed during the first crediting period. See calculation below and presented in Annex 3.

Application of procedures provided in "Tool to calculate the emission factor for an electricity system" (version 02.2.0) for determining the grid emission factor are as follows:

STEP 1. Identify the relevant electricity systems.
STEP 2. Choose whether to include off-grid power plants in the project electricity system (optional).
STEP 3. Select a method to determine the operating margin (OM).
STEP 4. Calculate the operating margin emission factor according to the selected method.
STEP 5. Calculate the build margin (BM) emission factor.
STEP 6. Calculate the combined margin (CM) emissions factor.

Step 1: Identify the relevant electricity systems

For determining the electricity emission factors, a **project electricity system** is defined by the spatial extent of the power plants that are physically connected through transmission and distribution lines to the project activity (e.g. the renewable power plant location or the consumers where electricity is being saved) and that can be dispatched without significant transmission constraints.

The South African grid is managed by a state-owned utility, Eskom, which is in charge of generation, transmission and distribution of electricity to end-users. Eskom dominates the electricity supply market, and only a few municipal and private generators exist. There is public information available for Eskom power plants, while for "private generators the information available is only partial and ends in 2005. It is considered to be acceptable that the Eskom represent the electricity production industry in South Africa, as it produces over 95% of electricity in South Africa. Only less than 5% comes from private and municipal generators.

Step 2: Choose whether to include off-grid power plants in the project electricity system (optional)

The option "Only grid power plants are included in the calculation" has been chosen and corresponds to the procedure contained in earlier versions of the tool.

Step 3: Select a method to determine the operating margin (OM)

The calculation of the operating margin emission factor ($EF_{grid,OM,y}$) is based on option of Average OM.

For the Average OM the emissions factor is calculated using the following data vintage:

> • *Ex ante* option: If the *ex ante* option is chosen, the emission factor is determined once at the validation stage, thus no monitoring and recalculation of the emissions factor during the crediting period is required. For grid power plants, use a 3-year generation-weighted average, based on the most recent data available at the time of submission of the CDM-PDD to the DOE for validation. For off-grid power plants, use a single calendar year within the 5 most recent calendar years prior to the time of submission of the CDM-PDD for validation.

For the CPA the ex-ante data vintage 2008-2009, 2009-2010 and 2010-2011 has been chosen and applied for the Simple OM calculation.

Step 4: Calculate the operating margin emission factor according to the selected method

(a) Average OM

Refer Annex 3 "Baseline Information" for information on how Average OM calculation was undertaken.

Step 5: Calculate the build margin (BM) emission factor

In terms of data vintage, there are two options according to "Tool to calculate the emission factor for an electricity system" (version 02.2.0):

Option 1: For the first crediting period, calculate the build margin emission factor *ex ante* based on the most recent information available on units already built for sample group *m* at the time of CDM-PDD submission to the DOE for validation. For the second crediting period, the build margin emission factor should be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period to the DOE. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used. This option does not require monitoring the emission factor during the crediting period.

Option 2: For the first crediting period, the build margin emission factor shall be updated annually, *ex post*, including those units built up to the year of registration of the project activity or, if information up to the year of registration is not yet available, including those units built up to the latest year for which information is available. For the second crediting period, the build margin emissions factor shall be calculated *ex ante*, as described in Option 1 above. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used.

Option 1 has been chosen. So the calculation of the Build Margin (BM) emission factor $EF_{grid,BM,y}$ *ex-ante* based on the most recent information available 2010-2011 on plants already built for sample group *m* at the time of CPA-DD submission has been carried out.

Refer Annex 3 "Baseline Information" for information on how the BM calculation was undertaken.

Step 6: Calculate the combined margin (CM) emissions factor

The calculation of the combined margin (CM) emission factor ($EF_{grid,CM,y}$) is based on the following method: (a) Weighted average CM.

The combined margin emissions factor is calculated as follows:

$$EF_{grid,CM,y} = EF_{grid,OM-adj,y} \times w_{OM} + EF_{grid,BM,y} \times w_{BM}$$

Where:

$EF_{grid,BM,y}$	= Build Margin CO_2 emission factor in year y (t CO_2/MWh)
$EF_{grid,OM,y}$	= Operating Margin CO_2 emission factor in year y (t CO_2/MWh)
w_{OM}	= Weighting of operating margin emissions factor (%)
w_{BM}	= Weighting of build margin emissions factor (%)

The following default values should be used for w_{OM} and w_{BM}: ("Tool to Calculate the Emission Factor for an Electricity System", Ver.2.1 (pg 14)

- Wind and solar power generation project activities: w_{OM} = 0.75 and w_{BM} = 0.25 (owing to their intermittent and non-dispatchable nature) for the first crediting period and for subsequent crediting periods.

As the CPA is a wind power generation project the weight applied to the operating and build margin emissions factors are w_{OM} = 0.75 and w_{BM} = 0.25 for calculating of the CM.

Operating Margin:

	2010-2011	2009-2010	2008-2009	Average
EF, tCO_{2e}/MWh	0.9333	0.9623	0.9669	0.9541

Build Margin: 1.0858 tCO_{2e}/MWh

Combined Margin: = (0.75 * 0.9541) + (0.25 * 1.0858)
= 0.9871 tCO_{2e}/MWh

Leakage (LE_y)
As it is stated in ACM0002 version 12.3.0 no leakage emissions are considered.

Emissions reduction (ER_y)

Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y$$

Where:

ER_y = Emission reductions in year *y* (t CO_2e/yr)
BE_y = Baseline emissions in year *y* (t CO_2e/yr)
PE_y = Project emissions in year *y* (t CO_2/yr)

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

>>

Considering 50 MW of installed capacity, the table provides the expected ex-ante estimation of emission reduction.

Year	Estimation of project activity emissions (tonnes CO_2e)	Estimation of baseline emissions (tonnes CO_2e)	Estimation of leakage (tonnes CO_2e)	Estimation of overall emission reductions (tonnes CO_2e)
2016	0	93,647	0	93,647
2017	0	93,647	0	93,647
2018	0	93,647	0	93,647
2019	0	93,647	0	93,647
2020	0	93,647	0	93,647
2021	0	93,647	0	93,647
2022	0	93,647	0	93,647
Total (tonnes of CO_2e)	0	655,529	0	655,529

The estimated ex-ante emission reduction for 140 MW of installed capacity is 262,212 tCO_{2e}/year and a total of 1,836,481 tCO_{2e} over 7 years (first crediting period).

Should the installed capacity be lowered to 30 MW, the estimated ex-ante emission reduction will be 56,188 tCO_{2e}/year totalling 393,317 tCO2e for the 7 year period.

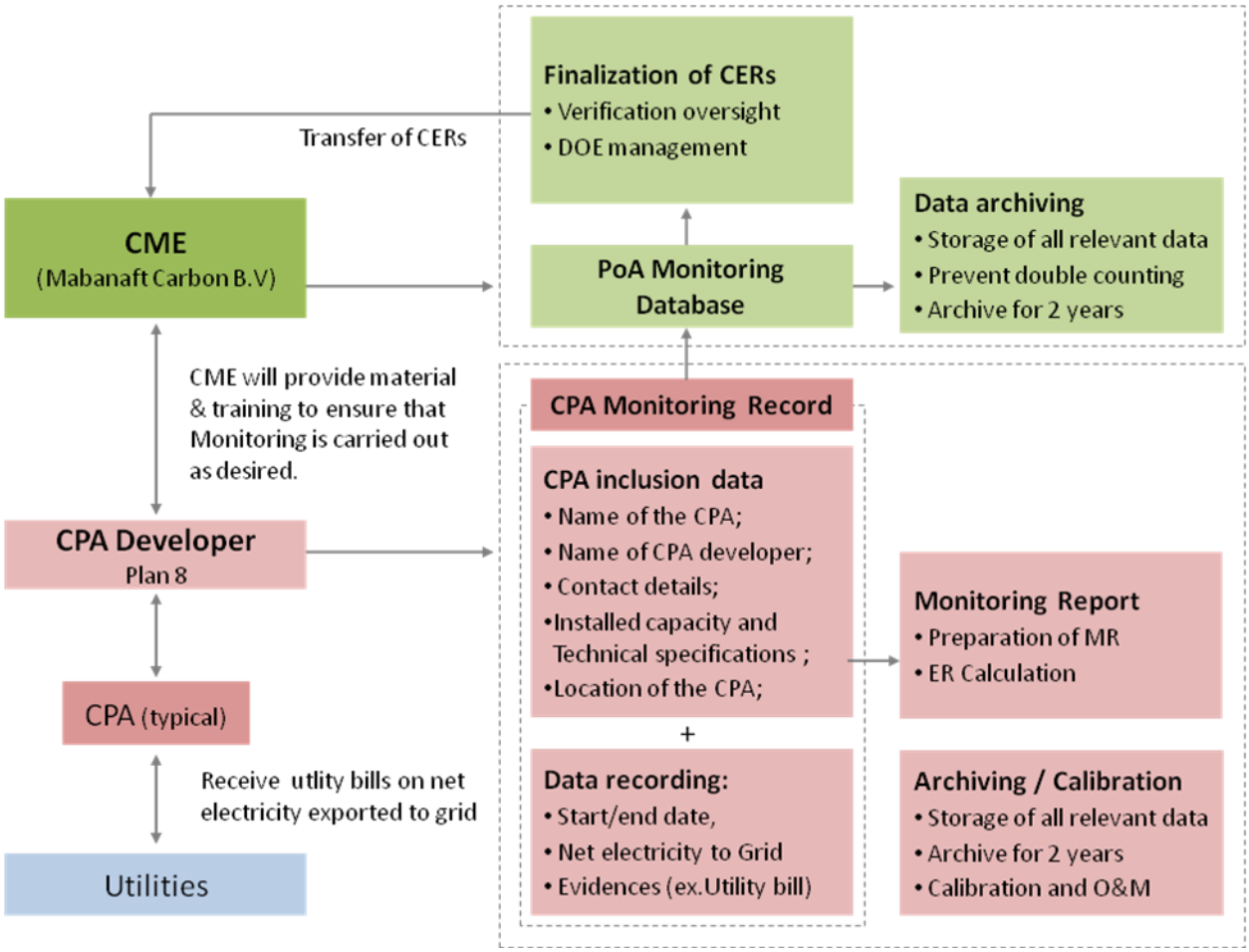
(Refer Table 1, page 2 of CPA-DD for an explanation of potential scenarios).

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

B.6.1. Description of the monitoring plan:

>>

The purpose of the monitoring plan will be to measure and record the net electricity delivered to the electrical grid.



Management structure and responsibilities:

The CME will implement a monitoring protocol consolidating all individual monitoring reports allowing the Designated Operational Entity (DOE) to verify all CPAs in the PoA. Monitoring will be carried out by the CPA. The main measure for the PoA and CPA is the measurement of net electricity supplied to the grid and assuring the correct operation and maintenance of the measuring equipment.

Data collection

The CME will establish and maintain a PoA Monitoring Database for each and every CPA wherein the following data will be recorded:

Name of the CPA	Copperton Wind Farm
Name of the CPA developer	Plan 8 Infinite Energy (Pty) Ltd
Contact details of the developer including contact person, address, telephone and email address	100 New Church Street, Cape Town, 8001, South Africa Contact person: Mr. Zuben Jessa – Engineering Manager Contact information:

	Work: +27 21 801 7272 Cell: +27 765 922 786 Email: zuben.jessa@plan-8.co.za
Installed capacity and other relevant technical specifications of each CPA	50MW (20 WTGs of 2.5MW rated capacity) (The final capacity for the CPA is yet to be determined. Refer section A.2 and A.4 for specific information)
Location of the CPA (e.g. GPS coordinates)	29°53'50.65" South 22°20'55.93" East
Verification status and monitoring reports of each CPA	Project is currently in validation. No monitoring reports available yet.

The net energy generation data will be monitored directly at the CPA project site. Each CPA will comprise a single project activity, and hence the data will be monitored directly at that CPA project site. Monitoring will be carried out by each CPA developer and recorded in the CPA monitoring records. The CME will provide guidance to the CPA developer on how the monitoring should be conducted and data should be collected with regards to emission reduction calculations. The start and end dates of each monitoring period for each individual CPA, together with the CPA monitoring records to that monitoring period will be recorded in the PoA monitoring database.

Data recording

The net generation of the CPA, $EG_{facility,y}$, will be monitored by the CPA developer and recorded electronically. The CPA developer will provide the CPA monitoring records to the CME. The CME will document and store all data included in the CPA monitoring record provided by CPA developer in an electronic PoA monitoring database, while primary data will be stored by each CPA developer.

Data calibration

Data calibration will be done considering the calibration frequency as per manufacturer's requirements. The CME will store all the data in the PoA monitoring database. Primary data will be stored by the CPA developer.

Data reporting

The CPA developer will be responsible for the preparation of the monitoring report and the CME will be responsible communication with the DOE during verification activities. The monitoring report will compile all required monitoring information, in order to allow the DOE to verify the emission reductions for each monitoring period of each individual CPA. The monitoring report will unambiguously set out the data on emission reductions generation by each CPA during the monitoring period consistent with the requirements of this PoA-DD and the corresponding CPA-DD. Record keeping procedures for the PoA monitoring database undertaken by the CME will ensure that the data attributed to a monitoring period can be clearly attributed to an individual CPA and will furthermore prevent double counting of emission reduction data.

Data archiving

The CME will be responsible for the management of all CPA monitoring records associated with each CPA and the consolidated PoA monitoring database comprising of CPA specific data. All CPA

monitoring records will be stored for a period of two years after the end of the relevant crediting period of the CPA. The CPA developer is responsible to keep a copy of the raw monitored data and the CPA monitoring record also for a period of two years after the end of the relevant crediting period of the CPA.

Parameter to be monitored:

Data / Parameter:	**$EG_{facility,y}$ / $EG_{PJ,y}$**
Data unit:	MWh/yr
Description:	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y
Source of data to be used:	Project activity site: Direct, physical measurements as recorded by metering equipment (electricity meter) at CPA project site
Value of data applied for the purpose of calculating expected emission reductions in section B.5	94,871 (for 50 MW - Base scenario) 56,922 (for 30 MW - Scenario Minimum) 265,638 (for 140 MW – Scenario Maximum) (Refer Table 1, page 2 of CPA-DD for an explanation of potential scenarios).
Description of measurement methods and procedures to be applied:	Direct, physical measurements as recorded by metering equipment (electricity meter). Continuous measurement and at least monthly recording.
QA/QC procedures to be applied:	Meters shall be calibrated periodically according to local standards. The calibration shall take place at least every 2 years. Generation data of the CPA shall be cross checked to ensure data reliability.
Any comment:	

Data quality control
The data on $EG_{facility,y}$ and reports provided by the CPA developer to the CME will be checked internally to ensure the accuracy and completeness of data. In case of mistakes, corrective action will be applied to avoid future similar mistakes.

Training and monitoring personnel

The CME will ensure that all persons that participate in the monitoring process will be suitably qualified and trained in the operation and maintenance of the CPA project activity. These persons will also receive training on the application of the monitoring plan.

Leakage
No leakage emissions are considered.

SECTION C. Environmental analysis

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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:

☐ Please tick if this information is provided at the PoA level. In this case sections C.2. and C.3. need not be completed in this form.

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

Aurecon South Africa (Pty) Ltd (Aurecon) has been appointed to undertake the requisite Environmental Impact Assessment (EIA) process as required in terms of the National Environmental Management Act (No. 107 of 1998) (NEMA) on behalf of Plan 8.

A 'Field Study Report' is currently available and is a pre-requisite for the final EIA. The EIA will be finalized once the actual design capacity of the wind project is confirmed.

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),:

Environmental Impact Assessment (EIA) process as required in terms of the National Environmental Management Act (No. 107 of 1998) (NEMA). A draft copy of the EIA was submitted to the Ministry of Environment in January 2012 and an acknowledgement was received for the same. The final version of the EIA was submitted in March 2012 and receipt of the "Record of Decision" (ROD) will signal successful compliance and acceptance of the EIA by the host country.

SECTION D. Stakeholders' comments

>>

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

☐ Please tick if this information is provided at the PoA level. In this case sections D.2. to D.4. need not be completed in this form.

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

>>

The LSC was held at the Ietz Nietz Conference Room in Copperton, Northern Cape, Republic of South Africa at 14:00 Central African Time on 01 November 2011 and conducted by an independent, experienced and professional entity, Global carbon Exchange.

Invitations to the LSC were sent to interested and affected Parties by Aurecon. A public announcement was placed in the Gemsbok Local Newspaper. This advertisement appeared in the Gemsbok on 26 October 2011 in both English and Afrikaans language. The invitation was also erected on the door to the room allocated at the venue for the LSC. Members of staff at the venue were also instructed to direct any parties to the allocated room.

The meeting was concluded with no stakeholders attending the meeting. As a further follow-up, Aurecon sent out a letter to the residents of Prieska, the nearest urban settlement located 70 km from the project site and to government officials inviting them to send comments by mail. As no comments were received, the LSC was concluded without any further action.

The host country regulations require that the DNA upload the PDD for public comments.

D.3. Summary of the comments received:

>>

As no comments were received either verbally or through written feedback, hence it is concluded that no comments of any significance were received during the conduction of the LSC. At this point of time, the documentations have not been uploaded by the country DNA.

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

>>

No further action was required as no comment was received. If any additional comments are received, the DNA will request for additional information and recommendation which will then be provided by the project participants.

Annex 1

CONTACT INFORMATION ON ENTITY/INDIVIDUAL RESPONSIBLE FOR THE CPA

Organization:	Plan 8 Infinite Energy (Pty) Ltd
Street/P.O.Box:	100 New Church Street
Building:	
City:	Cape Town
State/Region:	
Postfix/ZIP:	8001
Country:	South Africa
Telephone:	
FAX:	
E-Mail:	
URL:	http://www.plan-8.co.za/
Represented by:	
Title:	Engineering Manager
Salutation:	Mr.
Last Name:	Jessa
Middle Name:	
First Name:	Zuben
Department:	
Mobile:	+27 765 922 786
Direct FAX:	
Direct tel:	+27 21 801 7272
Personal E-Mail:	zuben.jessa@plan-8.co.za

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

The CPA will not make use of any public funding or ODA.

Annex 3

BASELINE INFORMATION

Average OM Calculation:

OM emission factor	0.9541

		2010/2011				2009/2010				2008/2009			
Power Plant	Fuel Type	Total Power Generated (MWh)	Fuel Consumption (tons/year)	tCO_2/tfuel	Emissions (tCO_2)	Total Power Generated (MWh)	Fuel Consumption (tons/year)	tCO_2/tfuel	Emissions (tCO_2)	Total Power Generated (MWh)	Fuel Consumption (tons/year)	tCO_2/tfuel	Emissions (tCO_2)
Arnot	Coal	12,194,878	6,525,670	2.042	13,325,418	13,227,864	6,794,134	2.069	14,057,063	11,987,281	6,395,805	2.041	13,053,838
Duvha	Coal	20,267,508	10,639,393	1.953	20,778,735	22,581,228	11,744,606	1.882	22,103,348	21,769,489	11,393,553	1.901	21,659,144
Hendrina	Coal	11,938,206	7,139,198	1.978	14,121,334	12,143,292	6,905,917	1.957	13,514,880	12,296,687	7,122,918	1.969	14,025,026
Kendal	Coal	25,648,258	15,174,501	1.741	26,418,806	23,307,031	13,866,514	1.832	25,403,454	23,841,401	15,356,595	1.731	26,582,266
Kriel	Coal	18,204,910	9,527,185	1.986	18,920,989	15,906,816	8,504,715	2.070	17,604,760	18,156,686	9,420,764	2.042	19,237,200
Lethabo	Coal	25,500,366	17,774,699	1.434	25,488,918	25,522,698	18,170,227	1.383	25,129,424	23,580,232	16,715,323	1.367	22,849,847
Matimba	Coal	28,163,040	14,596,842	1.171	17,092,902	27,964,141	14,637,481	1.719	25,161,830	26,256,068	13,991,453	1.929	26,989,513
Majuba	Coal	24,632,585	13,020,512	2.004	26,093,106	22,340,081	12,261,833	1.970	24,155,811	22,676,924	12,554,406	1.938	24,330,439
Matla	Coal	21,504,422	12,155,421	1.878	22,827,881	21,954,536	12,438,391	1.788	22,239,843	21,863,400	12,689,387	1.712	21,724,231
Tutuka	Coal	19,067,501	10,191,709	1.972	20,098,050	19,847,894	10,602,839	1.979	20,983,018	21,504,122	11,231,583	1.956	21,968,976
Acacia	Gas	992	Not available	N/A	646		Not available	N/A			Not available	N/A	
Port Rex	Gas	5,507	Not available	N/A	3,588	49,000	Not available	N/A	31,928	143,000	Not available	N/A	93,179
Ankerlig	Gas	190,501	Not available	N/A	124,130		Not available	N/A			Not available	N/A	
Gourikwa	Gas		Not available	N/A			Not available	N/A			Not available	N/A	
Camden	Coal	7,490,836	4,629,763	2.009	9,301,842	7,472,070	4,732,163	2.011	9,517,700	6,509,079	3,876,211	1.898	7,355,986
Grootvlei	Coal	3,546,952	2,132,979	2.062	4,398,576	2,656,230	1,637,371	1.732	2,835,460	1,249,556	674,538	1.847	1,246,100
Komati	Coal	2,060,141	1,271,010	2.049	2,604,419	1,016,023	664,497	1.935	1,285,498	0	0	0.000	0
Hydro-electric		1,960,000	N/A	0.000	0	1,274,000	N/A	0.000	0	1,082,000	N/A	0.000	0
Pumped storaged		2,953,000	N/A	0.000	0	2,742,000	N/A	0.000	0	2,772,000	N/A	0.000	0
Nuclear		12,099,000	N/A	0.000	0	12,806,000	N/A	0.000	0	13,004,000	N/A	0.000	0
Wind		2,000	N/A	0.000	0	1,000	N/A	0.000	0	2,000	N/A	0.000	0
Total year		237,430,603			221,599,341	232,811,904			224,024,018	228,693,925			221,115,744

	2010/2011	2009/2010	2008/2009
EF (tCO_2/MWh)	0.9333	0.9623	0.9669

Note: A reporting year for ESKOM starts on April 1st and finnishes on May 31st.
Source: http://www.eskom.co.za/live/click.php?u=%2Fcontent%2FCEF_CalculatorFINAL2010-2011%7E1.xls&o=Item%2B236&v=454b33
http://financialresults.co.za/2011/eskom_ar2011/fact_sheets_11.php
http://financialresults.co.za/2011/eskom_ar2011/fact_sheets_11.php (accessed on 28/09/2011)

BM Calculation:

Capacity additions inculded in the Build Margin emission factor calculation.

TOTAL GENERATION IN 2010/2011 [GWh]	237,431
20% of total generation [GWh]	47,486

Plant	Type	Commissioning Date	Energy 2010/2011 (GWh)	% of Total Generation	Cumulative
Komati[2]	Coal	05/01/2009	2,060.141	0.87%	0.87%
Grootvlei[1]	Coal	31/03/2008	3,546.952	1.49%	2.36%
Camden	Coal	01/06/2005	7,490.836	3.15%	5.52%
Majuba	Coal	01/04/1996	24,632.585	10.37%	15.89%
Kendal	Coal	01/10/1988	25,648.258	10.80%	26.69%

Notes: [1] Re-commissioned power plant, Eskom Annual Report 2010, page 126.
http://financialresults.co.za/2010/eskom_ar2010/downloads/eskom_ar2010.pdf
[2] Re-commissioned power plant, Eskom Annual Report 2010, page 127.
http://financialresults.co.za/2010/eskom_ar2010/downloads/eskom_ar2010.pdf

BM emission factor	1.0858

Plant	Type	Energy 2010/2011 (MWh)	Emissions (tCO_2)
Komati	Coal	2,060,141	2,604,419
Grootvlei	Coal	3,546,952	4,398,576
Camden	Coal	7,490,836	9,301,842
Majuba	Coal	24,632,585	26,093,106
Kendal	Coal	25,648,258	26,418,806
Total		**63,378,772**	**68,816,749**

Annex 4

MONITORING INFORMATION

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