CLEAN DEVELOPMENT MECHANISM
PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD)
Version 03 - in effect as of: 22 December 2006

CONTENTS

Annexes

Revision history of this document

Version Number	Date	Description and reason of revision
01	21 January 2003	Initial adoption
02	8 July 2005	• The Board agreed to revise the CDM SSC PDD to reflect guidance and clarifications provided by the Board since version 01 of this document. • As a consequence, the guidelines for completing CDM SSC PDD have been revised accordingly to version 2. The latest version can be found at <http://cdm.unfccc.int/Reference/Documents>.
03	22 December 2006	• The Board agreed to revise the CDM project design document for small-scale activities (CDM-SSC-PDD), taking into account CDM-PDD and CDM-NM.

SECTION A. General description of small-scale project activity

A.1 Title of the small-scale project activity:

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Omnia Steam Turbine Project
Version 3: 7 May 2009

A.2. Description of the small-scale project activity:

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Purpose:

Omnia Fertiliser uses process steam in the production of fertiliser at its factory in Sasolburg in South Africa. Part of the steam is raised from waste heat recovery in the nitric acid plant. As this is not sufficient to cover the steam demand, the shortfall is imported from the neighbouring Sasol factory. High pressure steam from the two sources at about 40.5 bar from Sasol and 40.3 bar from the nitric acid plant is expanded through a pressure reducing valve to a lower pressure of 10.5 bar for use as process steam.

The purpose of this project is to generate energy from the wasted pressure release. This will be done by replacing the pressure reducing valves with a steam turbine which will generate electricity.

Time frame:

In 18 November 2008 Omnia placed the order for the steam turbine. In accordance with EB41 report Annex 46 regarding guidance on the demonstration and assessment of prior consideration of the CDM, Omnia gave notice on 16 March 2009 that it is currently considering implementing an electricity co-generation project at its existing factory in Sasolburg. In the communication to the UNFCCC CDM Registration Omnia noted that it intends to construct this project in accordance with the regulatory requirements of the Clean Development Mechanism (CDM) as stipulated by the Kyoto Protocol and the South African Designated National Authority (DNA).

Greenhouse gas reduction:

The electricity generated will displace other electricity sources. Currently all electricity is sourced from the national grid. Eskom (South Africa's electricity generator and supplier) makes mention of the fact that the majority of the coal, used to produce the grid electricity, is low quality with a low heat value and a high ash content. Owing to the use of coal and, more specifically, low quality coal, the emission factor for electricity sourced from the national grid is 1.02 tons CO_2/MWh. This emission factor was calculated using the "Tool to calculate the emission factor for an electricity system" (Version 01.1).

Contribution to Sustainable Development:

The project makes positive contributions to sustainable development. The South African Designated National Authority (DNA) evaluates sustainability in three categories: Economic, environmental and social. The contribution of the project towards sustainable development is discussed in terms of these three categories:

- **Economic:**
  By contributing towards a reliable supply of electricity, the steam turbine will result in fewer unplanned shutdowns at the Omnia facility. This will result in higher revenues (due to increased

periods of uninterrupted manufacture) and lower costs (associated with shutting down and starting up a large manufacturing facility).

The project will contribute to foreign reserve earnings for South Africa via the carbon credit sales revenue.

- **Social:**
  In the early months of 2008, Eskom carried out planned electricity supply interruptions. These interruptions were caused by the demand for electricity exceeding the supply of electricity. During the interruptions, grid electricity was not accessible. The generation of electricity from the steam turbine project will help to provide a steady electricity supply to the Omnia production facility and therefore reduce risks associated with the production facility and thus lead to job preservation.

- **Environmental:**
  Overall GHG emissions will be reduced.

  The project will have a positive environmental impact by displacing electricity from the South African national grid. These positive impacts relate to a reduction in the generation of coal-based electricity and its associated environmental consequences. These consequences include: the impact of coal mining, the utilisation of scarce water resources, SO_2 emissions and the impacts associated with the disposal of coal ash.

  The proposed project will not change current water availability, quality or access. Neither will the project have an impact on the current water quality. The current soil condition at Omnia will not be affected by the project activity. The project will be located within an existing built up area at the Omnia manufacturing facility on already disturbed land. Therefore, the project will not have an impact on the biodiversity of the area. The project will, however, encourage more efficient use of natural resources and energy.

A.3. Project participants:

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Name of Party involved (*) ((host) indicates a host Party)	Private and/or public entity(ies) project participants (*) (as applicable)	Kindly indicate if the Party involved wishes to be considered as project participant (Yes/No)
Republic of South Africa (host)	Omnia Fertilizer Limited	No
(*) In accordance with the CDM modalities and procedures, at the time of making the CDM-PDD public at the stage of validation, a Party involved may or may not have provided its approval. At the time of requesting registration, the approval by the Party(ies) involved is required.		
Note: *When the PDD is filled in support of a proposed new methodology (forms CDM-NBM and CDM-NMM)*, at least the host Party(ies) and any known project participant (e.g. those proposing a new methodology) shall be identified.		

A.4. Technical description of the small-scale project activity:

A.4.1. Location of the small-scale project activity:

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A.4.1.1. Host Party(ies):

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The host party is the Republic of South Africa

A.4.1.2. Region/State/Province etc.:

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Free State Province

A.4.1.3. City/Town/Community etc:

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Sasolburg in the municipality of Metsimaholo

A.4.1.4. Details of physical location, including information allowing the unique identification of this small-scale project activity :

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The project site is located in the industrial town of Sasolburg in Free State Province. This town, founded in 1954 to provide housing and facilities to employees of Sasol (South African Coal, Oil, and Gas), lies in the heart of South Africa's chemical industry and is located about 80 km south of Johannesburg .

Free State is the 3rd largest province in South Africa.

Figure 1 shows the Free State Province in relation to the rest of South Africa. The province is amplified in Figure 2 with Sasolburg circled. The last map, Figure 3, shows Sasolburg in relation to Johannesburg, South Africa's largest city.

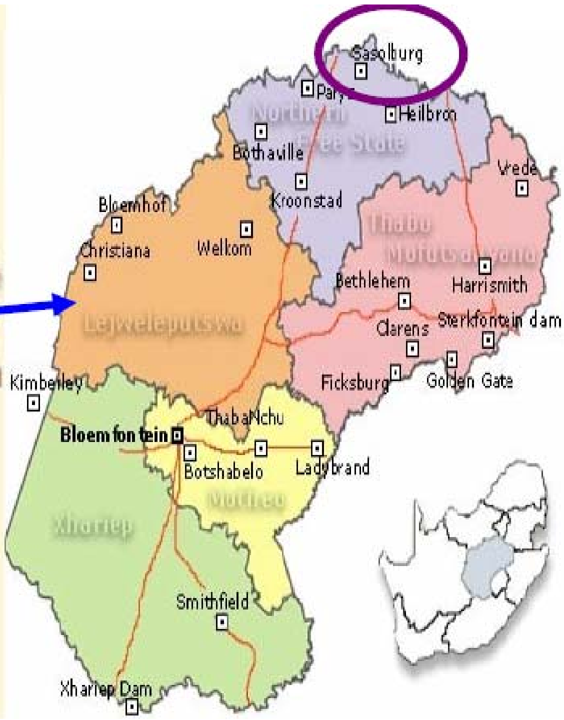

Figure 1: Map of South Africa Figure 2: Free State Province

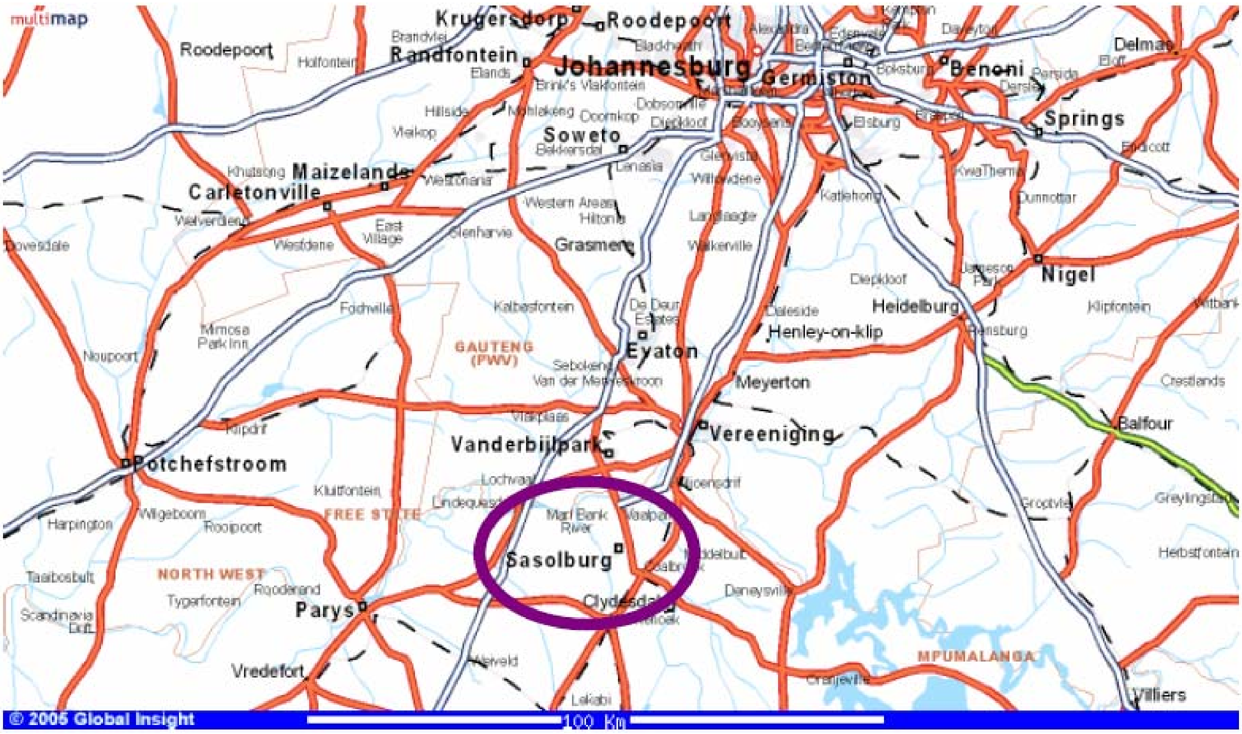

Figure 3: Map of Sasolburg Relative to Johannesburg

A.4.2. Type and category(ies) and technology/measure of the small-scale project activity:

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The project is of type III.Q.: Waste energy recovery (gas/heat/pressure) projects, Version 02, Scope 04.

The technology employed involves the installation of a steam turbine with a maximum capacity of 1.92MW to generate electricity. This will use energy previously wasted in the process of converting 40.5 and 40.3 bar steam to 10.5 bar using a pressure reducing valve. As the two streams must be combined before the steam turbine inlet, the pressure must be the same. This is achieved by means of control valves on each of the two lines which reduce the pressure slightly such that the inlet pressure to the turbine will be around 39 bar. Depending on the steam flow, the minimum is around 38 bar and maximum is around 40 bar.

The positive environmental impact of this switch is not only limited to a reduction in greenhouse gasses, but have added environmental spin-offs in the reduction of SO_2, particulate emissions as well as a reduction in the environmental impacts associated with the mining and transportation of coal.

Steam turbine technology has not been used by the project participant prior to the implementation of the project activity. There is no local manufacturing of steam turbines. Omnia purchased its turbine directly from the vendor in India.

A.4.3 Estimated amount of emission reductions over the chosen crediting period:

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The estimated amount of emission reduction over the chosen crediting period is:

Years	**Annual estimation of emission reductions in tonnes of CO2e**
2010	14,765
2011	14,765
2012	14,765
2013	14,765
2014	14,765
2015	14,765
2016	14,765
Total estimated reductions (tonnes of CO2e)	**103,352**
Total number of crediting years	**7 (renewable twice)**
Annual average over the crediting period of estimated reductions (tonnes of CO2e)	**14,765**

A.4.4. Public funding of the small-scale project activity:

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No public funding will be used.

A.4.5. Confirmation that the small-scale project activity is not a debundled component of a large scale project activity:

This project is not a debundled large scale project since it does not meet the criteria for a debundled component of a large project activity. This is illustrated in the table below. The text in italics is from the Compendium of guidance on the debundling for SSC project activities (Annex 27, EB 36).

A proposed small-scale project activity shall be deemed to be a debundled component of a large project activity if there is a registered small-scale CDM project activity or an application to register another small-scale CDM project activity:	**Project activity**	**Was the applicability criteria for a debundled large scale project met?**
(a) With the same project participants	There is no registered small-scale CDM project activity with the same project participants.	No
(b) In the same project category and technology/measure; and	There is no registered small-scale CDM project activity in the same project category and technology/measure.	No
(c) Registered within the previous 2 years, and	There is no registered small-scale CDM project activity that was registered within the previous two years.	No
(d) Whose project boundary is within 1 km of the project boundary of the proposed small-scale activity at the closest point.	There is no registered small-scale CDM project activity whose project boundary is within 1km of the Sasolburg facility.	No

SECTION B. Application of a baseline and monitoring methodology

B.1. Title and reference of the approved baseline and monitoring methodology applied to the small-scale project activity:

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AMS III.Q.: Waste energy recovery (gas/heat/pressure) projects
Version 02, Sectoral Scope: 04, EB 42

B.2 Justification of the choice of the project category:

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Criteria as described in AMS III.Q

	Technology/measure	*In the project activity*
1.	*The category is for project activities that utilize waste gas and/or waste heat at existing facilities as an energy source*	A steam turbine will be used to generate electricity.

	for: *(a) Cogeneration; or* *(b) Generation of electricity; or* *(c) Direct use as process heat; or* *(d) For generation of heat in elemental process*[1] *(e.g. steam, hot water, hot oil, hot air).* *(e) For generation of mechanical energy*	
2.	*The category is also applicable to project activities that use waste pressure to generate electricity at existing facilities.*	Previously wasted steam pressure will be utilised to generate electricity.
3.	*The recovery of waste gas/heat may be a new initiative or an incremental gain in an existing practice.*	The recovery of waste pressure will be a new initiative.
4.	*In case the project activity is an incremental gain, the difference between the technology used before project activity implementation and the project technology should be clearly shown. It should be demonstrated why there are barriers for the project activity that did not prevent the implementation of the technology used before the project activity implementation.*	The recovery of waste pressure will be a new initiative.
5.	*Measures are limited to those that result in emission reductions of less than or equal to 60 kt CO_2 equivalent annually.* *Wherever the measures lead to waste heat recovery which is incremental to an existing practice of waste heat recovery, only the incremental gains in GHG mitigation should be taken into account and such incremental gains shall result in emission reductions of less than or equal to 60 kt CO_2 equivalent annually.*	In this project activity the resulting emission reduction will be about 14 kt CO2 equivalent annually. There is no incremental waste heat recovery.
6.	*The category is applicable under the following conditions:* *(a) The energy produced with the recovered waste gas/heat or waste pressure should be measurable.* *(b) Energy generated in the project activity shall be used within the facility where the waste gas/heat or waste pressure is produced. An exception is made for the electricity generated by the project activity which may be exported to the grid.* *(c) The waste gas/heat or waste pressure utilized in the project activity would have been flared or released into the atmosphere in the absence of the project activity.* *This shall be proven by one of the following options:* *(i) By* ***direct measurements*** *of energy content and amount of the waste gas/heat or waste pressure for at least three years prior to the start of the project activity.* *(ii)* ***Energy balance*** *of relevant sections of the plant to prove that the waste gas/heat or waste pressure was not a source of energy before the implementation of the project activity. For the energy balance the representative process parameters are required. The energy balance shall demonstrate that the waste gas/heat or waste pressure was not used and also*	(a) The energy, in this case electricity, produced by the steam turbine will be measurable. (b) The energy will be used within the facility where the wasted steam pressure is produced. (c) The waste pressure utilized in the project activity would have been released into the atmosphere in the absence of the project activity. This shall be proven by (iv) process plant manufacturers original specifications.

	provide conservative estimations of the energy content and amount of waste gas/heat or waste pressure released. *(iii)* ***Energy bills*** *(electricity, fossil fuel) to demonstrate that all the energy required for the process (e.g. based on specific energy consumption specified by the manufacturer) has been procured commercially. Project participants are required to demonstrate through the financial documents (e.g. balance sheets, profit and loss statement) that no energy was generated by waste gas/heat or waste pressure and sold to other facilities and/or the grid. The bills and financial statements should be audited by competent authorities.* *(iv)* ***Process plant*** *manufacturer's original specification/information, schemes and diagrams from the construction of the facility could be used as an estimate of quantity and energy content of waste gas/heat produced for rated plant capacity per unit of product produced.*	
7.	*For the purpose of this category waste energy is defined as: a by-product gas/heat/pressure from machines and industrial processes having potential to provide usable energy, for which it can be demonstrated that it was wasted. For example gas flared or released into the atmosphere, the heat or pressure not recovered (therefore wasted). Gases that have intrinsic value in a spot market as energy carrier or chemical (e.g. natural gas, hydrogen, liquefied petroleum gas, or their substitutes) are not eligible under this category.*	The waste pressure is from steam which is used in an industrial process. There is no flaring of gases into the atmosphere. There are no gases with intrinsic value (eg natural gas, hydrogen or their substitutes).

The project meets all the conditions set forth in the approved small-scale methodology III.Q. Hence, the selected methodology is appropriate for the project activity.

B.3. Description of the project boundary:

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In line with the guidance in AMS-III.Q. the project boundary is delineated by the physical, geographical site of the facility where the waste gas/heat/ pressure is produced and transformed into useful energy. The project boundary is illustrated in Figure 4:

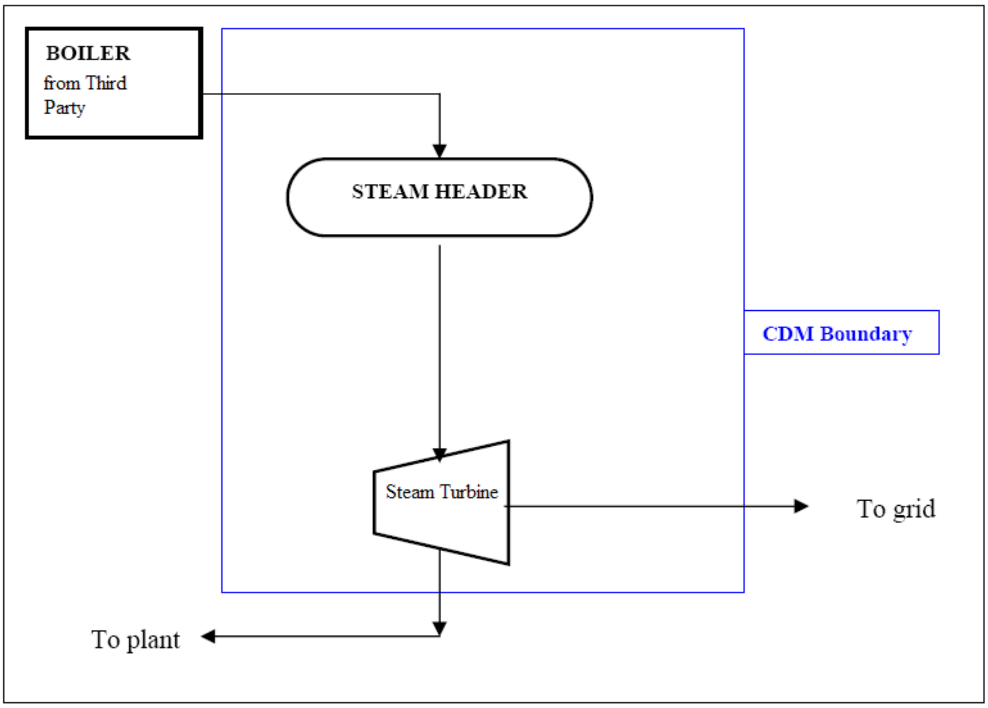

Figure 4: Illustration of the project boundary of the CDM project activity

The project boundary is drawn around the steam turbine and electricity generating equipment. Using steam for electricity generation is standard procedure. The generation of electricity is a result of the project activity and a distinct boundary can be drawn around this activity.

The gases considered within the boundary are limited to carbon dioxide since the grid electricity displaced due to the project activity would have been generated mainly using coal. The boundary for the calculation of the grid carbon emissions factor is South Africa.

B.4. Description of baseline and its development:

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The development of an appropriate baseline scenario is done through the identification of alternative scenarios and barrier analysis on those scenarios.

Step 1: Alternative scenarios for power generation in the absence of the project activity:

1.1. Import electricity from the grid (continuation of business as usual);
1.2. Proposed project activity not undertaken as a CDM project;
1.3. On-site or off-site new fossil fuel based power plant; or
1.4. On-site or off-site renewable energy power plant.

All these alternatives meet legal and regulatory requirements.

Step 2: Barrier analysis

Step 2a: Identification of barriers to the alternative scenarios

The barriers are identified in the table below:

Alternative Scenario	Barriers		
	Investment	**Technological**	**Prevailing Practice**
1.1. Import electricity from the grid	No barriers	No barriers	No barriers
1.2. Proposed project activity not undertaken as a CDM project	Will require capital investment to install steam turbine.	Omnia has no experience in power generation.	It is not current practice to produce electricity from waste steam due to the low cost of electricity available from the grid.
1.3. On-site or off-site new fossil fuel based power plant	Will require large capital investment to set up a new fossil fuel based power plant.	Omnia has no experience in power generation.	It is not current practice for manufacturing facilities to establish power generation facilities due to the low cost of electricity available from the grid.
1.4. On-site or off-site renewable energy power plant	Will require large capital investment to set up a new renewable based power plant.	Omnia has no experience in renewable power generation.	It is not current practice for manufacturing facilities to establish power generation facilities due to the low cost of electricity available from the grid.

Step 2b: Eliminate alternative baseline scenarios which are prevented by the identified barriers
Options (1.2), (1.3) and (1.4) face substantial barriers to their implementation. These options are not common practice and will require capital investment to be implemented.

Option (1.1) does not face any barriers and is the business-as-usual scenario. Hence, option (1.1) is the baseline scenario: the continuation of the current scenario. **The waste pressure of the steam is released to the atmosphere.**

B.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered small-scale CDM project activity:

Step 1: Alternatives to the project activity
1.1. Import electricity from the grid (continuation of business as usual);
1.2. Proposed project activity not undertaken as a CDM project;
1.3. On-site or off-site new fossil fuel based power plant; or
1.4. On-site or off-site renewable energy power plant.

Step 2: Investment analysis

An investment analysis was performed on the proposed project activity. The financial indicator used was the IRR for the project.

Alternatives	**IRR (%)**
Proposed project activity not undertaken as a CDM project	7.5
Proposed project activity undertaken as a CDM project	13.2

As can be seen from the table above, the proposed project activity only becomes financially viable once the revenue from carbon credits is included.

Sensitivities for the IRR over the life of the project were done using the price escalation of electricity from Eskom, the capex (susceptible to changes in exchange rates and price escalations) and the availability of the turbine. The sensitivity analysis is for the proposed project activity undertaken as a CDM project. The results of the sensitivity analysis are as follows:

Electricity price

Increase in electricity price (%)	IRR illustrative (%)
0	5.1
15	13.2
25	19.3

Capital expenditure

Increase in capex (%)	IRR illustrative (%)
0	13.2
15	10.5
25	9.0

Steam turbine

Turbine availibility (%)	IRR illustrative (%)
91	13.2
86	12.3
80	11.3

The financial model and asumptions used in this investment analysis will be made available at validation.

Step 3: Barrier analysis
The table in Section B.4 lists the alternative scenarios and the barriers that they face. In addition, the project activity faces the following barriers:

Investment barriers:
The capital investment needed for the project activity is much higher than that required in the baseline scenario (zero capital investment). Omnia can only implement this project if CDM revenue is available.

Technological barriers:

In a chemical manufacturing facility, the processes are sensitive to changes in the steam pressure. A key technical challenge will be to replace the existing steam pressure reduction valve with a steam turbine while keeping the steam pressure balance undisturbed to maintain the plant efficiency. This is a big risk for the company.
In addition, there are no skilled and experienced persons at the Omnia plant with regard to installing and running a power generation plant.

Barrier due to prevailing practice:
The project is the first of its kind at an Omnia facility. Omnia will be exposing itself to technical and financial risk in order to implement this project rather than simply continuting to purchase power from the national grid. The carbon credit revenue is necessary for Omnia to install the steam turbine.

Step 4: Common practice analysis
It is not common practice for chemical manufacturers in South Africa to generate electricity using steam turbines.

As a result of the above analysis it can be concluded that the project activity is additional.

B.6. Emission reductions:

B.6.1. Explanation of methodological choices:

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In the project activity, the electricity is obtained from the grid. Baseline emissions, project emissions and emissions reductions were calculated as follows:

Baseline emissions from electricity ($BE_{elec,y}$) generated by waste energy (e.g. waste pressure):

$$BE_{elec,y} = f_{cap} * f_{wcm} * \sum_j \sum_i \left(EG_{i,j,y} * EF_{elec,i,j,y} \right) \quad (1)$$

Where:

$BE_{elec,y}$ Baseline emissions due to displacement of electricity during the year *y* in tons of CO_2

$EG_{i,j,y}$ The quantity of electricity supplied to the recipient j by generator, that in the absence of the project activity would have been sourced from i_{th} source (*i* can be either grid or identified source) during the year *y* in MWh

$EF_{elec,i,j,y}$ The CO_2 emission factor for the electricity source *i* (*i*=gr (grid) or *i*=is (identified source)), displaced due to the project activity, during the year *y* in tons CO_2/MWh

f_{wcm} Fraction of total electricity generated by the project activity using waste energy. This fraction is 1 if the electricity generation is purely from use of waste energy. If the boiler providing steam for electricity generation uses both waste and fossil fuels, this factor is estimated using equation (5). If the steam used for generation of the electricity is produced in dedicated boilers but supplied through common header, this factor is estimated using equation (5)/(7).
Note: For project activity using waste pressure to generate electricity, electricity generated from waste pressure use should be measurable and this fraction is 1

f_{cap} Capping factor to exclude increased waste energy utilization in the project year y due to increased level of activity of the plant, relative to the level of activity in the base years before project start. The ratio is 1 if the waste energy generated in project year *y* is same or less than that generated in base years.

f_{cap} shall be estimated according to the corresponding section of ACM0012.

Due to the lack of historical data on the energy released by the steam, Method 1 to calculate f_{cap} cannot be used. Method 2 cannot be used as manufacturing data cannot be obtained for the steam purchased from Sasol. Therefore Method 3 is used to determine f_{cap}. In Method 3, f_{cap} is thus taken as the ratio of actual energy recovered under the project activity (direct measurement) divided by the maximum theoretical energy recoverable using the project activity waste heat recovery equipment.

The value of f_{cap} is 1 if the amount of power generated in year *y* is equal or less than the maximum theoretical energy recoverable as specified in Method 3.

As per the methodology, project emissions are determined using the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption".

By setting $PE_y = PE_{EC,y}$ equation 1 of the tool becomes:

$$PE_y = \sum_j EC_{PJ,j,y} \times EF_{EL,j,y} \times (1 + TDL_{j,y}) \qquad (1.2)$$

Where:

PE_y	Project emissions from electricity consumption in year *y* (tCO2/yr)
$EC_{PJ,j,y}$	Quantity of electricity consumed by the project electricity consumption source *j* in year *y* (MWh/yr)
$EF_{EL,j,y}$	Emission factor for electricity generation for source *j* in year *y* (tCO2/MWh)
$TDL_{j,y}$	Average technical transmission and distribution losses for providing electricity to source *j* in year *y*

Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y - LE_y \qquad (8)$$

Where:

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

There is no leakage associated with this project. Hence, LE_y=0

B.6.2. Data and parameters that are available at validation:

Data / Parameter:	$EF_{elec,i,j,y}$
Data unit:	CO2/MWh
Description:	The CO2 emission factor for the electricity source i (i=gr (grid) or i=is (identified source)), displaced due to the project activity, during the year y
Source of data used:	The combined margin emission factor, determined according to the latest approved version of the “Tool to calculate emission factor for an electricity system”

Value applied:	1.02
Justification of the choice of data or description of measurement methods and procedures actually applied :	This emission factor was calculated ex post.
Any comment:	

Data / Parameter:	f_{wcm}
Data unit:	Fraction
Description:	Fraction of total electricity generated by the project activity using waste energy. For project activity using waste pressure to generate electricity, electricity generated from waste pressure use should be measurable and this fraction is 1.
Source of data used:	Waste pressure is used to generate electricity as per project description
Value applied:	1
Justification of the choice of data or description of measurement methods and procedures actually applied :	As described in methodology
Any comment:	

B.6.3 Ex-ante calculation of emission reductions:

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Baseline emissions

Equation 1 from the methodology:

$$BE_{elec,y} = f_{cap} * f_{wcm} * \sum_j \sum_i \left(EG_{i,j,y} * EF_{elec,i,j,y} \right)$$

Year	$BE_{elec,y}$	$EG_{i,j,y}$	$EF_{elec,i,j,y}$	f_{cap}	f_{wcm}
2010	15440	15137	1.02	1	1
2011	15440	15137	1.02	1	1
2012	15440	15137	1.02	1	1
2013	15440	15137	1.02	1	1
2014	15440	15137	1.02	1	1
2015	15440	15137	1.02	1	1
2016	15440	15137	1.02	1	1

Equation 1 from the tool:

$$PE_y = \sum_j EC_{PJ,j,y} \times EF_{EL,j,y} \times (1 + TDL_{j,y})$$

Year	PE_y	$EC_{PJ,j,y}$	$EF_{EL,j,y}$	$TDL_{j,y}$
2010	676	552	1.02	0.2
2011	676	552	1.02	0.2
2012	676	552	1.02	0.2
2013	676	552	1.02	0.2
2014	676	552	1.02	0.2
2015	676	552	1.02	0.2
2016	676	552	1.02	0.2

Equation 8 from the methodology:

$$ER_y = BE_y - PE_y - LE_y$$

Year	ERy	BEy	PEy	LEy
2010	14,765	15,440	676	0
2011	14,765	15,440	676	0
2012	14,765	15,440	676	0
2013	14,765	15,440	676	0
2014	14,765	15,440	676	0
2015	14,765	15,440	676	0
2016	14,765	15,440	676	0

B.6.4 Summary of the ex-ante estimation of emission reductions:

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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)**
2010	676	15,440	0	14,765
2011	676	15,440	0	14,765
2012	676	15,440	0	14,765
2013	676	15,440	0	14,765
2014	676	15,440	0	14,765
2015	676	15,440	0	14,765
2016	676	15,440	0	14,765
Total (tonnes of CO_2 e)	**4,729**	**108,080**	**0**	**103,352**

B.7 Application of a monitoring methodology and description of the monitoring plan:

B.7.1 Data and parameters monitored:

Data / Parameter:	$EG_{i,j,y}$
Data unit:	MWh
Description:	The quantity of electricity supplied to the recipient j by generator, that in the absence of the project activity would have been sourced from ith source (i can be either grid or identified source) during the year y
Source of data to be used:	Electricity produced by steam turbine and measured by calibrated electricity meters
Value of data	15,137
Description of measurement methods and procedures to be applied:	The meter to be used is a Schneider-Electric Power Meter Model PM720MG. Accuracy Class: 0.5%. Batch calibrated by certified laboratories. Readings will be stored on a PC and possibly also a Distributed Control System.
QA/QC procedures to be applied:	As meters are completely electronic and contain no moving parts their accuracy does not have to be recertified.
Any comment:	

Data / Parameter:	$EC_{PJ,j,y}$
Data unit:	MWh
Description:	Quantity of electricity consumed by the project electricity consumption source j in year y
Source of data to be used:	As measured by calibrated electricity meters
Value of data	552
Description of measurement methods and procedures to be applied:	The meter to be used is a Schneider-Electric Power Meter Model 210. Accuracy Class: 1% Batch calibrated by certified laboratories. Readings will be stored on a PC and possibly also on a Distributed Control System.
QA/QC procedures to be applied:	As meters are completely electronic and contain no moving parts their accuracy does not have to be recertified.
Any comment:	

Data / Parameter:	$EF_{elec,i,j,y}$
Data unit:	tCO_2/TJ
Description:	Emission factor for electricity generation for source j in year y CO_2 emission factor for the fossil fuel
Source of data to be used:	The combined margin emission factor, determined according to the latest approved version of the “Tool to calculate emission factor for an electricity system”
Value of data	1.02
Description of measurement methods	This emission factor was calculated ex post and will be updated annually. Eskom has committed to update the relevant information required for the calculation

and procedures to be applied:	annually. Changes to the “Tool to calculate emission factor for an electricity system” will be monitored.
QA/QC procedures to be applied:	
Any comment:	

Data / Parameter:	$EF_{EL,j,y}$
Data unit:	tCO_2/TJ
Description:	Emission factor for electricity generation for source j in year y CO_2 emission factor for the fossil fuel
Source of data to be used:	The combined margin emission factor, determined according to the latest approved version of the “Tool to calculate emission factor for an electricity system”
Value of data	1.02
Description of measurement methods and procedures to be applied:	This emission factor was calculated ex post and will be updated annually. Eskom has committed to update the relevant information required for the calculation annually. Changes to the “Tool to calculate emission factor for an electricity system” will be monitored.
QA/QC procedures to be applied:	
Any comment:	

Data / Parameter:	$TDL_{j,y}$
Data unit:	Factor
Description:	Average technical transmission and distribution losses for providing electricity to source j in year y
Source of data to be used:	Default value from "Tool to calculate baseline, project and/or leakage emissions from electricity consumption".
Value of data	0.2
Description of measurement methods and procedures to be applied:	Default value from "Tool to calculate baseline, project and/or leakage emissions from electricity consumption".
QA/QC procedures to be applied:	
Any comment:	

Data / Parameter:	LE_y
Data unit:	tCO_2
Description:	Leakage emissions in year y
Source of data to be used:	From "Tool to calculate baseline, project and/or leakage emissions from electricity consumption".
Value of data	0
Description of measurement methods and procedures to be applied:	From "Tool to calculate baseline, project and/or leakage emissions from electricity consumption". Net increase in electricity consumption of source l in year y as a result of leakage ($EC_{LE,l,y}$) is zero. This will be monitored.

QA/QC procedures to be applied:	
Any comment:	

Data / Parameter:	f_{cap}
Data unit:	Factor
Description:	Capping factor to exclude increased waste energy utilization in the project year y due to increased level of activity of the plant, relative to the level of activity in the base years before project start.
Source of data to be used:	The ratio of actual energy recovered under the project activity (direct measurement) divided by the maximum theoretical energy recoverable using the project activity waste heat recovery equipment as described in Method 3 page 26 of ACM0012.
Value of data	1
Description of measurement methods and procedures to be applied:	The actual energy recovered by the electricity generating equipment will be measured. The continuous monitored data will be logged electronically. The maximum theoretical energy is taken from supplier documentation.
QA/QC procedures to be applied:	As meters are completely electronic and contain no moving parts their accuracy does not have to be recertified.
Any comment:	

B.7.2 Description of the monitoring plan:

>>

The project activity will be operated and managed by the project proponent. The monitoring will be performed by the project proponent. Quality control and subsequent calculations will be done by the project proponent. Development of the monitoring report and verification audits will be the responsibility of the project proponent. The electronic records will be kept by the project proponent for the duration of the project.

B.8 Date of completion of the application of the baseline and monitoring methodology and the name of the responsible person(s)/entity(ies)

>>

Date: 28 May 2009

Entity: Promethium Carbon (Pty) Ltd

SECTION C. Duration of the project activity / crediting period

C.1 Duration of the project activity:

C.1.1. Starting date of the project activity:

>>

1 October 2009

C.1.2. Expected operational lifetime of the project activity:

>>
21 years

C.2 Choice of the crediting period and related information:

C.2.1. Renewable crediting period

C.2.1.1. Starting date of the first crediting period:

>>
1 October 2009

C.2.1.2. Length of the first crediting period:

>>
7 years, renewable twice

C.2.2. Fixed crediting period:

C.2.2.1. Starting date:

>>
Not applicable

C.2.2.2. Length:

>>
Not applicable

SECTION D. Environmental impacts

>>

D.1. If required by the host Party, documentation on the analysis of the environmental impacts of the project activity:

>>
The project has positive environmental impacts. According to national and local legislation, the project will not need an environmental impact assessment (EIA).

D.2. If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party:

>>
There will be no significant environmental impacts due to this project activity.

SECTION E. Stakeholders' comments

>>

E.1. Brief description how comments by local stakeholders have been invited and compiled:

>>

An advertisement was placed in two local newspapers in English. The advertisement was placed in the Vaal Ster and Vaalweekblad newspapers on the 3 March 2009. Interested parties were invited to attend a stakeholder meeting with a project presentation on 20 March 2009.

E.2. Summary of the comments received:

>>

Three interested parties attended the stakeholder meeting. Only positive comments were received. The stakeholders are enthusiastic about the project.

E.3. Report on how due account was taken of any comments received:

>>

Not required as the comments provided only positive sentiment.

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

Organization:	Omnia Fertilizer Limited
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Annex 2

INFORMATION REGARDING PUBLIC FUNDING

No public funding was used in either the development or implementation of this project.

Annex 3

BASELINE INFORMATION

Annex 4

MONITORING INFORMATION

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