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:

CCE Solutions Biomass to Electricity Project

Version 02

01/06/2009

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

The CCE Solutions Biomass to Electricity Project, developed by Carbon and Environmental Options (Pty) Ltd (hereafter CEO) and CEF (Pty) Ltd (previously known as the Central Energy Fund), will produce renewable electricity through combustion of wood waste in George, the Western Cape, South Africa.

The project activity will reduce greenhouse gas (GHG) emissions by supplying clean electricity into the national grid and replacing electricity generated from fossil fuel sources. The project will apply the pin hole spreader boiler system with an installed capacity of 8.4 MW to combust 85,000 tonne/annum of wood waste to generate electric power. The wood waste comes mainly from local sawmill industries as well as from the Working for Water program. The portfolio of the biomass suppliers is diverse. The sawmills can provide a stable and continual biomass supply, compared to Working for Water, which is a government program to clean the invasive alien species that threat biological diversity[1].

The electricity generated is fed into the George local municipal grid, which is a part of the national grid system. In South Africa, where large resources of coal and uranium reserves exist, 93% of the energy used in electricity generation comes from coal and 5% comes from nuclear power[2]. South Africa has developed a large-scale, coal-based power generation system that provides low-cost electricity to the national grid system. Coal is currently - and from a financial viewpoint is likely to remain - an attractive source of energy for South Africa.

The project fulfils the national sustainable development criteria laid down by the Department of Minerals and Energy of South Africa and contributes to sustainable development as follows[3]:

Economic: The project will make a positive contribution to national economic development in three ways: job generation, foreign investment through sale of CERs and transfer of clean technologies. Besides, the success of this project will encourage other investors to consider CDM opportunities in

[1] http://www.dwaf.gov.za/wfw/

[2] Electricity supply statistic for South Africa 2005, 2007, NERSA, p. P4

[3] Sustainable development criteria for approval of clean development mechanism projects by the designated national authority of the CDM, 2004, Department of mineral and energy, p. 3, available under:

South Africa, since the country is developping local infrastructure to support CDM projects. It is estimated that 80% of the contract value will be locally manufactured, with the other core equipment imported.

Social: The project promotes sustainable society and increases the long-term sustainability of energy production by decreasing dependency on fossil fuels. This project will generate job postions and create opportunities to develop capacities for alternative and renewable energy generation. It will also advance society's thinking about mitigating climate change. The project owner, CEO (Pty) Ltd, has formed a strategic partnership with Open Access Industrial Training College (OAITC) and the University of South Africa. OAITC has developed a range of short learning programmes as well as a further education and training education that has been registered with the Health and Wellfare Seta. The leadership targets learners from Grade 10 to Grade 12, with graduate and post-graduate qualifications being offered by the University of South Africa. Furthermore, the project enhances skills development, as local employees are trained to operate and maintain the new technology.

Environmental: The project will positively affect all the relevant indicators provided for within environmental protection legislation[45], without any significant detriment to the ecosystem or biodiversity. In absence of the project, these wood waste are landfilled or burn illegally (see picture 1). The project helps mitigate climate change by reducing CO_2 emissions through substitution of fossil fuels and avoidance of methane emissions from decay of organic matter in dumpsites. Furthermore, the project has a positive impact on local air quality, as it will decrease fossil fuel use and lead to a reduction in levels of sulphur dioxide.

Picture 1. Desposal of wood waste in George

http://www.dme.gov.za/dna/pdfs/sustainable_criteria.pdf

[4] Atmospheric Pollution Prevention Act 45 of 1965 (last amendment in 1997) , p.14-26, available under: http://www.capetown.gov.za/en/EnvironmentalResourceManagement/publications/Documents/Atmosph_Poll_Prev_Act.pdf

[5] National Environmental Management Act, 1998, available under: http://www.capetown.gov.za/en/EnvironmentalResourceManagement/publications/Documents/NEMA_1998.pdf

A.3. Project participants:

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
The Republic of South Africa (host)	Carbon and Environmental Options (Pty) Ltd	No
The Republic of South Africa (host)	CEF (Pty) Ltd	No

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

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

A.4.1.1. Host Party(ies):

Republic of South Africa

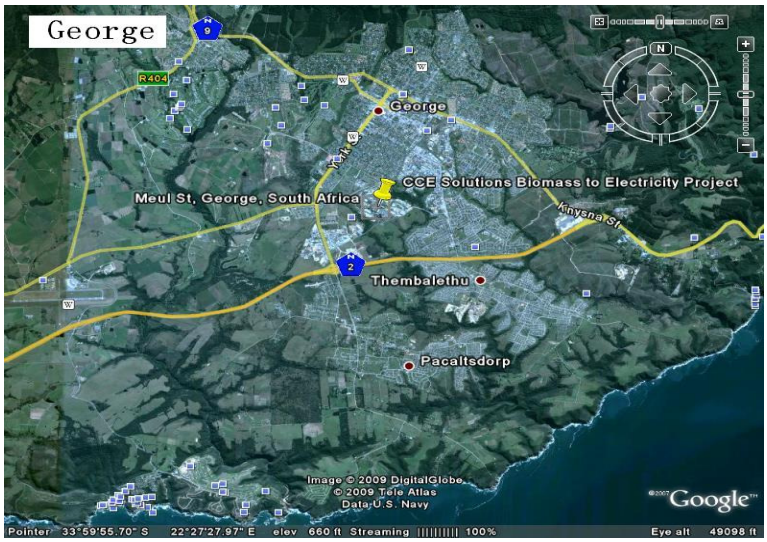
A.4.1.2. Region/State/Province etc.:

Western Cape

A.4.1.3. City/Town/Community etc:

City of George

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



The CCE Solutions plant is located in the idustraial area of George in the old site of Sonae Novobord. Sonae Novobord did belong to the Portuguese company Sonae Industria (SONI) which is the second-largest wood panel maker in the world. Sonae Novobord shut down its operations in February 2009. The plant makes use of the exsited infrastructure. The geographical coordinates of the plant are 33° 58' 59.77" south, 22° 27' 21.10" East. Please see picture 2.

The exact address of the site is:

Meul Street, George Industria,
Eden district, South Africa.

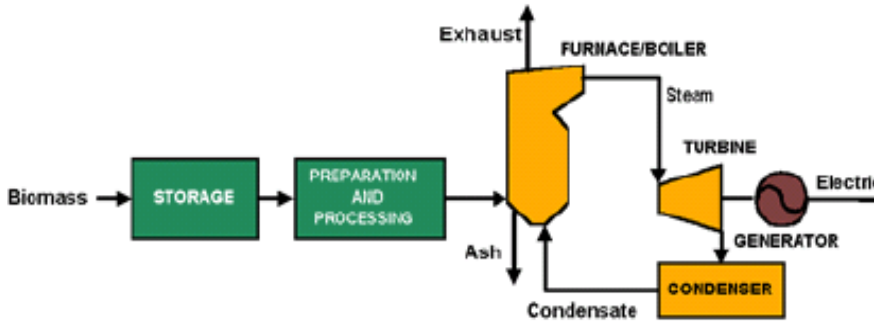
Picture 2. The project location

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

The project falls under sectoral scope 1 "Energy industries (renewable - / non-renewable sources)" and conforms to the small-scale CDM methodology AMS-I.D. "Grid connected renewable energy sources".

The project will apply advanced technologies and measures to guarantee environmentally safe and sound technology as described in Chart 1. The preparation of the biomass includes crushing. A Saalasti type wood crusher with 90 kW electric moter is able to crush 15 tonne of wood waste per hour. The maximum dimension of the feed material is 100 mm by 300 mm. The crusher uses a high wearing rotating drum with knifes that cut the wood to below an overall size of 50 mm. The cutting knifes can be easily removed and sharpened. As the water ratio in the wood waste is at the acceptable level, there is no need for drying process. After the preparation process the wood waste is transferred into the spreader stoker boiler where wood wastes are converted into energy-rich stream. The energy in the high-pressure superheated steam drives the steam turbine to generate electricity in the generator. The electrical power output from the generator is at 11 kV and 50 Hz. The pin-hole spreader stoker boiler with an installed capacity of 45 tonnes/h steam at 42 bar pressure and 430°C will supply steam to the 8.4MW turbine. The spreader stoker is the core section of the system and combusts the wood waste on a grate in a rising column of air, which allows oxygen to reach the combustible material much more readily and increases the rate and efficiency of the combustion process. This technique results in a significant improvement in the combustion efficiency of high-moisture-content fuels and a reduction in nitrogen oxide emissions. The moisture content of the wood waste is about 26%, and the NCV varies between 12 and 15 TJ/Gg, since the project is accepting bark, peelings and other woody biomass from several wood waste supplier. The wood waste will be mixed prior to feedin the boilder.

Chart 1. Technology applied



The plant will run on a 24 hour basis, with an estimated annual maintenance need of 3 weeks and estimated efficiency of approxmatly 90% (i.e. 7.56 MW). The auxiliary power need is estimated to be 1 MW. The residual condensate flows back to the steam recirculation system as part of the Rankine cycle. In the whole process, only combustion gases and ash are released which will comply with relevant national and local environmental requirements.

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

Year	Annual estimation of emission reductions in tonnes of CO_2e
2010 (01/03/2010-31/12/2010)	45,127
2011	54,153
2012	54,153
2013	54,153
2014	54,153
2015	54,153
2016	54,153
2017	54,153
2018	54,153
2019	54,153
2020 (01/01/2020-29/02/2020)	9,025
Total estimated reductions (t CO_2e)	**541,529**
Total number of crediting years	**10**
Annual average over the crediting period of estimated reductions (tCO_2e)	**54,153**

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

No public funding from parties included in Annex I is involved in this project.

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

According to paragraph 2 of Appendix C of the "Simplified modalities and procedures for small scale CDM project activities", a small-scale project is considered as a debundled component of a large project activity if there is a registered small-scale activity or an application to register another small-scale activity:

- with the same project participants;
- in the same project category and technology;
- registered within the previous two years; and
- whose project boundary is within 1 km of the project boundary of the proposed small-scale activity.

The project participants confirm that there are no other registered small scale CDM project activities registered within the previous two years or an application to register another small-scale CDM project activity, either under their name or within the same project category and technology/measure. Hence, the CCE Solutions project is not a debundled component of a large project activity, and the project activity is eligible to use the simplified modalities and procedures for small-scale CDM project activities.

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:

From Appendix B of the "Simplified modalities and procedures for small scale CDM projects", the following methodology applies to project activity:

Project Type: Type I – Renewable energy projects
Project Category: AMS- I.D. - Grid connected renewable electricity generation, Version 13

The "Tool to calculate the emission factor for an electricity system, Version 01.1" and the "General guidance on leakage in biomass project activities, Version 03" have also been applied in combination with the methodology.

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

The proposed project activity conforms to project category "AMS-I.D.–Grid connected renewable electricity generation" defined in Appendix B of the "Simplified modalities and procedures for small scale CDM project activities" since:

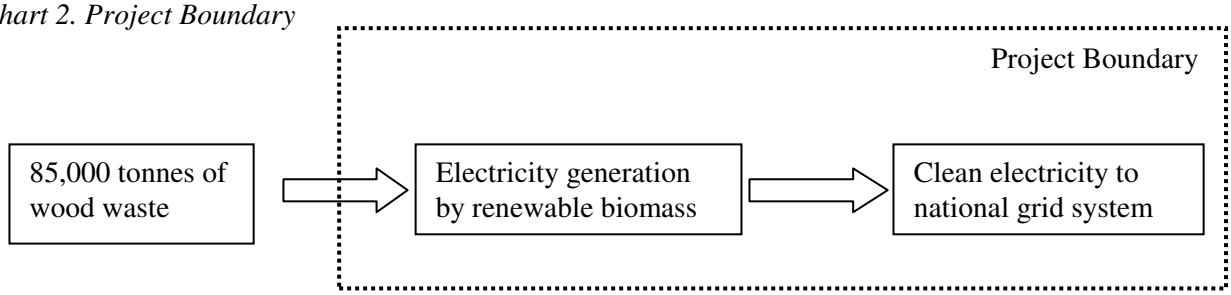
1) The project activity is a renewable energy project as it uses renewable biomass to generate energy. The biomass used by this project is wood waste from forestry and forestry related industries and does not involve a decrease of carbon pools. Hence, the project fulfillis the definition of renewable biomass given in Annex 18 of EB23.
2) The project activity generates electric energy, which will be used to displace energy from an electricity distribution system that is supplied with fossil fuel fired power plants.

3) The total electric capacity of the plant is 8.4 MW, which is within the eligible limit of 15 MW for type I small-scale project activities.

B.3. Description of the project boundary:

For the category SSC type AMS-I.D, the project boundary encompasses the physical, geographical site of the renewable generation plant. Furthermore, the baseline determination accounts for project-activity-based reductions in CO_2 emissions released due to electricity generation from fossil fuel power plants. Thus, the spatial extent of the project boundary includes the project site and all the power plants physically connected to the electricity system where the proposed power plant is connected (see Chart 2.)

Chart 2. Project Boundary



B.4. Description of baseline and its development:

According to the paragraph 9 of AMS-I.D., the baseline is: "…the kWh produced by the renewable generating unit multiplied by an emission coefficient (measured in kg CO_2e/kWh) calculated in a transparent and conservative manner". Referring to the "Tool to calculate the emission factor for an electricity system Version 01.1", the emission coefficient is to be calculated using the operating margin (OM), the build margin (BM) as well as the combined margin (CM) for the grid system of South Africa. The salient project parameters are presented below in Table 1.

Table 1. The salient project parameters

Power plant	**Unit**	**Values**
Combustion boiler type	-	Pin-hole spreader stoker fired boiler
Number of engines	-	1
Total installed capacity	MW	8.4
Efficiency (load factor)	%	90
Generating capacity	MW	7.6
Auxiliary power need	MW	1
Annual runtime (full load)	h	8,256
Electricity generated	MWh	54,159
Grid emission factor	tCO_2/MWh	0.9999

The calculation of the grid emission factor is presented in Appendix I.

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:

In accordance with paragraph 28 of the "Simplified modalities and procedures for small scale CDM project activities", the small-scale project activity must demonstrate at least one of the barriers listed in Attachment A to Appendix B of the Simplified modalities and procedures, due to which the project activity would not have occurred in any case. In this respect, the project participants have identified the following barriers:

a) Investment analysis

The investment analysis is bases on a comparison of the internal rate of return (IRR) of the project and the benchmark returns on equity. The benchmark selected is the repurchase interest rate of the South African Reserve Bank[6]. This value results in a benchmark of 12%, which is considered to be very conservative as the repurchase rate is the deposit rate reflecting the interest a customer receives when depositing money. An equity benchmark would result in a markedly higher value.

The results of the investment analysis are summarised in Table 2. For more detailed information, please see Appendix II. The financial analysis was undertaken using assumptions that are conservative from the point of view of analysing the sum total. Under these conditions, the IRR of the project activity neutralising all CDM positions amounts to 3,76 % and the NPV is negative (-29,916,396 ZAR). The

[6] Repurchase interest rate of the South African Reserve Bank: http://www.reservebank.co.za/ [13/06/08]

analysis clearly shows that the project activity undertaken without CDM revenues is not an economically attractive course of action for the project developer.

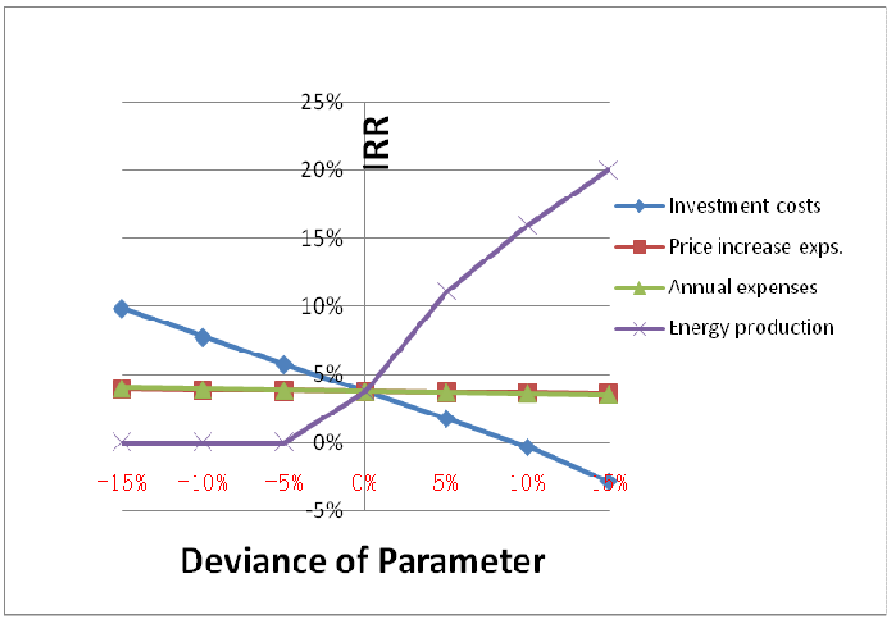
Table 2. Investment analysis

Investment costs	*ZAR*
Pin-hole spreader stoker fired boiler	101,326,012
Civils, Installation & Commissioning	20,165,650
Implementation Cost - EIA - RoD, Permits, Licenses	3,644,750
Financing	
Subsidies (expected) [7]	6.4%
Equity	28.1%
Loan	65.5%
Annual Expenses	22,837,858
Annual Price Increase	10%
Income Stream	46,099,200
Power Product (kWh/a)	66,048000
Fed-In tariff (ZAR/KWh)[8]	0.70 (annual increasment of 5.5%
IRR	3.76%
NPV	-29,916,396

To prove the robustness of the financial analysis, a sensitivity analysis with variation in the critical assumptions was conducted. The four parameters chosen for this analysis are price increase on expenses, investment costs, annual expenses as well as energy production. The results are shown in Chart 3. The analysis was performed on each of the four parameters with a deviance range from -15% to +15% compared to their reference values in the financial model. Decreasing all parameters down to 85% of their reference values leads to an increase in IRR, bu this is not sufficient to reach a 12% benchmark rate of return on equity. Only an increase in electricity production with more than 10% of the reference value would lead to an IRR highter than the benchmark. However, an increase of energy production on this order of magnitude is virtually impossible, since the CHP unit is determined to operate at maximum capacity. The sensitivity analysis clearly shows that the conclusions derived with regard to financial unattractiveness are very robust.

[7] REFSO (Renewable Energy Finance and Subsidy Office) is a one-off-capital grant that will be made available only after implementation or financial legal closure. For purposes of the analysis, an estimated maximum grant has been applied.
[8] Price agreed in the Power Purchase Agreement between the project owner and George local municipality. The tariff has been approved by the NER.

Chart 3. Sensitivity analysis



b) Prevailing barriers

It is a common practice in South Africa to produce electricity from fossil sources. As South Africa is rich in coal resources, electricity generation can be expected to remain coal-based in future. Wood waste is usually dumped or illegally burned. The applicable national legislation does not require any natural person or private entity in South Africa to utilize wood residues. It is very unlikely that regulations will change in future in a way that would make utilization mandatory. Currently there are approximately 10 facilities operating in South Africa utilising renewable biomass. However, these are integrated within industrial faclilities (i.e. sugar cane production). As the Goverments Withe Paper on renewable Energy states: "Co-generation of electricity in the industrial sector from biomass in the bagasse and pulp and paper industries is currently taking palce, but this is used on-site and not exported to the national electricity grid…"[9]. Comfired by the Department of Minerals and Energy of South Africa, the CCE Power Station in George will be the first power station dedicated to generate power from renewable biomass for the sole purpose of selling power to the power grid.

The barriers identified above clearly show that the planned project activity is additional to business-as-usual. The project is very unlikely to move forward without additional financial support from the CDM.

[9] "White Paper on Renewable Energy South Africa" P.17: http://www.dme.gov.za/pdfs/energy/renewable/white_paper_renewable_energy.pdf

As the project is anticipated to generate 541,529 t CO_2 credits in its ten-year crediting period, the carbon sales would be sufficient to alleviate the hurdles and push the project forward.

According the Annex 46 of EB 41 "Guidance on the demonstration and assessement of prior consideration of the CDM", the project starting before August 2, 2008 is requested to demonstrate that the CDM was seriously considered in the decision to implement the project activity. At November 15, 2006 the two project participants (CEF and CEO) signed the "Memoradum of Understading", which clearly stated that the parties are interested in promoting the project under the Clean Development Mechanism. Following with it, a feasibility study was conducted during 2007. Early 2007 the Project Idea Note was drafted and the Letter of No-Objection by the DNA was received on February 15, 2007. May 27, 2008 was a milestone for the project as the purchase contract of power island with MBH Energy (Pty) Ltd was signed on this date. The construction of the project is expected to start at July of 2009. The clean electiricy will be produced and fed into grid at March of 2010.

B.6. Emission reductions:

B.6.1. Explanation of methodological choices:

According to the Attachment C to Appendix B of the "Simplified modalities and procedures for small scale project activities", the emission reduction of this project is the difference between baseline emissions, and the sum of project emissions and leakage emissions.

Baseline emission

With respect to AMS-I.D, baseline emissions are calculated according to paragraph 10 as follows:

$$BE_y = EG_y * EF_{grid} \quad (1)$$

Where,

BE_y = The annual baseline emissions from fossil fuels displaced by the project activity, tCO_2e;

EG_y = The electricity supplied by the project activity to the grid, MWh;

EF_{grid} = Grid emission factor, tCO_2/MWh.

In regard to paragraph 9 of AMS-I.D the grid emission factor is calculated according to the "Tool to calculate the emission factor for an electricity system". In South Africa the electricity supply consists of Eskom, municipal generators and private generators. The information of electricity production of municipal sector and private sector is only available untill 2005. For Eskom power plants newer information exists. It is considered to be acceptable that the Eskom represent the electricity production

industry in South Africa, as it produces over 96 % of electricity in South Africa. Only less than 4 % comes from private and municipal generators. [10]

As the grid system in question is part of the national grid system, and fuel consumption as well as net electricity generation data are available for all Eskom systems, the simple operating margin has been selected (option A, equation 1 of the tool). The method is applicable as the low-cost/must-run resources constitute less than 50% of total grid generation in South Africa (please see Appendix 1). Hence, the operating margin has been calculated ex-ante based on 3-year generation-weighted average on the most recent publicly available data. As the newest power plants where build over 10 years a go the build margin is calculated based on the four power plants built most recently (option B, equation 12 of the tool). Finally, the combined margin, i.e. grid emission factor, is calculated applying equation 13 of the tool.

Project emission

With respect to AMS-I.D, project emissions are caused by the consumption of fossil fuels, either directly or indirectly, i.e. the energy consumed by the project itself. As stated in section A 4.2, the auxiliary energy need is 1 MW taken directly from own production of electricity. Besides, as the process of initiating combustion in the boiler applies the electronic heating system, the project avoids using any other fossil sources. Hence, no emissions are generated by the project energy use. Therefore, there is no project emission from the project activities.
Taking into account the requestment from DOE, the emission from transportation have been anticipated in Annex 3.

Leakage emission

With respect to AMS-I.D., no leakage occurs, as the equipment of the project is not transferred to or from another activity. As the project activity uses biomass, the "General guidance on leakage in biomass project activities, Version 03" has been applied. According to the guidance, leakage may occur in regards to the type of wood waste that will be applied in the project activity only through "competitive use", unless it can be demonstrated that the quantity of available biomass in the region is at least 25% larger than the quantity of biomass that is utilised by the project. However, the biomass applied – predominantly wood waste from sawmills - is currently left to decay in wood yards or dumpsites. There is occasional use of the wood waste as cover material on countryside roads. However, it applies only a minor part of the wood waste and the sawmills are struggling with the placement of the wood waste. The minor part of the wood waste applied comes from invasive alliance species from the Working for Water

[10] Electricity supply statistics of South Africa, 2005 (the latest one), page 6, 14. Available under: http://www.nersa.org.za/documents/ArchivedESSDocuments.aspx

program and it is also currently mainly left to decay in forests, in lack of better options. The leakage effect is estimated to be insignificant[11].

Emission reduction

The emission reduction (ER_y) achieved by the project activity will be measured as the difference between the baseline emission (BE_y), and the sum of the leakage (*Leakage*) and the project emission (PE_y):

$$ER_y = BE_y - PE_y - Leakage \quad (2)$$

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

Data / Parameter:	**$FC_{i,m,y}$**
Data unit:	Tonnes
Description:	Amount of fuel type *i* consumed by power plant/unit *m* in year *y*
Source of data used:	Eskom Websites for General Power Plant Data, 2005, 2006/7, 2007/8 (*http://www.eskom.co.za/live/content.php?Item_ID=4226&Revision=en/3*)
Value applied:	

Fuel type i	2005	2006/7	2007/8
Bituminous coal (t)	111,015,246	146,044,383	125,279,258
Kerosine (Litre)	28,487,801	-	-

Justification of the choice of data or description of measurement methods and procedures actually applied :	Tool to calculate the emission factor for an electricity system, Version 01.1
Any comment:	Please see appendix 1 for more detailed information.

Data / Parameter:	**$NCV_{i,y}$**
Data unit:	MJ/T
Description:	Net calorific value of fossil fuel type *i* in year *y*
Source of data used:	NCV of Coal: Eskom annual report 2008, p.216 (http://www.eskom.co.za/annreport08/) NCV of Kerosine: IPCC 2006 , Guidelines for National Greenhouse Gas Inventory, Volume 2, p1.18

[11] Supporting documents have been submitted to the DOE.

Value applied:	<table><tr><td>Fuel type i</td><td>2004</td><td>2005</td><td>2006</td><td>2007</td><td>2008</td><td>Average</td></tr><tr><td>NCV (MJ/T) Coal</td><td>19,420</td><td>19,360</td><td>19,580</td><td>19,060</td><td>18,510</td><td>19,186</td></tr></table> <table><tr><td>Fuel type *i*</td><td>NCV (MJ/T)</td></tr><tr><td>Kerosine</td><td>43,800</td></tr></table>
Justification of the choice of data or description of measurement methods and procedures actually applied :	Tool to calculate the emission factor for an electricity system, Version 01.1
Any comment:	

Data / Parameter:	**$EF_{CO2,i,y}$**
Data unit:	Kg CO_2/TJ
Description:	CO_2 emission factor of fossil fuel type *i* in year *y*
Source of data used:	IPCC 2006, Guidelines for National Greenhouse Gas Inventory, Volume 2, p.1.23
Value applied:	<table><tr><td>Fuel</td><td>EF (Kg CO_2/TJ)</td></tr><tr><td>Bituminous Coal</td><td>94,600</td></tr><tr><td>Kerosine</td><td>71,900</td></tr></table>
Justification of the choice of data or description of measurement methods and procedures actually applied :	Tool to calculate the emission factor for an electricity system, Version 01.1
Any comment:	Accoring the BP Statistical Review of World Energy 2008 the coal type is either Anthracite or Bituminous coal: http://www.bp.com/liveassets/bp_internet/globalbp/globalbp_uk_english/reports_and_publications/statistical_energy_review_2008/STAGING/local_assets/downloads/spreadsheets/statistical_review_full_report_workbook_2008.xls Considerring the NCV of the coal utilized in the Eskom facilites, the coal can be gategorised under Bituminous coal, which is a conservative assumption.

Data / Parameter:	**$EG_{m,y}$**
Data unit:	MWh
Description:	Net electricity generated and delivered to the grid by power plant/unit *m* in year *y*
Source of data used:	Eskom Websites for General Power Plant Data for the years 2005, 2006/7, 2007/8 .(*http://www.eskom.co.za/live/content.php?Item_ID=4226&Revision=e*

	n/3)
Value applied:	

	2005	2006/7	2007/8
$\sum EG_{m,y}$	208,334,257	267,140,785	222,906,667

Justification of the choice of data or description of measurement methods and procedures actually applied :	Tool to calculate the emission factor for an electricity system, Version 01.1
Any comment:	Please see appendix 1 for more detailed information.

Data / Parameter:	**EF_{grid}**
Data unit:	tCO2e/MWh
Description:	The emission factor for the electricity system.
Source of data used:	Eskom Websites for General Power Plant Data, 2005, 2006/7, 2007/8 (*http://www.eskom.co.za/live/content.php?Item_ID=4226&Revision=en/3*) NCV of Coal: Eskom annual report 2008,p.216, http://www.eskom.co.za/annreport08/ NCV of Kerosine: IPCC default values (2006, Guidelines for National Greenhouse Gas Inventory, Volume 2, p.1.18, p.1.23
Value applied:	0.9999 tCO_2e/MWh
Justification of the choice of data or description of measurement methods and procedures actually applied :	The factor is calculated according the guidance given in the Tool to calculate the emission factor for an electricity system, Version 01.1.
Any comment:	Please see appendix 1 for more detailed information.

B.6.3 Ex-ante calculation of emission reductions:

Based on the justifications given in section B 6.1 and 6.2, the *ex-ante* emission reductions are calculated as follows:

Baseline emission

BE_y = 54,159 MWh * 0.9999 tCO_2/MWh = 54,153 tCO_2e

For more detailed information please see Appendix 1. Note that the grid emission factor calculation is presented in Appendix 1.

Project emissions

Due to the above justifications (section 6.1) the total project emissions are considered to be zero, thus *PE = 0*.
For more detailed calculation of emission from transportation please see Appendix 1 and Annex 3.

Leakage emission

No leakage emission occurs as justified under section 6.1. Hence, *Leakage* = 0.

Emission reduction

ER_y = 54,153 tCO_2e - 0 - 0 = 54,153 t CO_2e

The project is anticipated to reduce 541,529 t CO_2 equivalents in its 10-year crediting period. A summary of the emission reductions is presented under section B.6.4.

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

Years	Estimation of project activity emissions (t CO2 e)	Estimation of baseline emissions (t CO2 e)	Estimation of leakage (t CO2 e)	Estimation of overall emission reductions (t CO_2 e)
2010 (01/03/2010-31/12/2010)	0	45,127	0	48,154
2011	0	54,153	0	57,785
2012	0	54,153	0	57,785
2013	0	54,153	0	57,785
2014	0	54,153	0	57,785
2015	0	54,153	0	57,785
2016	0	54,153	0	57,785
2017	0	54,153	0	57,785
2018	0	54,153	0	57,785
2019	0	54,153	0	57,785
2020 (01/01/2020-29/02/2020)	0	9,025	0	9,631
Total (tCO_2 e)	**0**	**541,529**	**0**	**541,529**

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

B.7.1 Data and parameters monitored:

Data / Parameter:	**EG_y**
Data unit:	MWh/annum
Description:	Annual amount of electricity fed into grid by the project and.
Source of data to be used:	Siemens electronic power meter on the facility.
Value of data	54,159 MWh/a (applied for *ex-ante* calculation)
Description of measurement methods and procedures to be applied:	The data is measured continuously. The proportion of the data to be monitored is 100%. The monitored data recorded automatically in electric form.
QA/QC procedures to be applied:	All electronic measuring meters will be calibrated by Siemens on a monthly basis or as otherwise required.
Any comment:	As quality control measure, municipal electricity meters, which will be regularly calibrated, are checked against the power station meters.

Data / Parameter:	**$W_{j,y,}$**
Data unit:	t/a
Description:	Annual amount of different types of biomass *i* from the biomass supplier *k* applied in the project activity.
Source of data to be used:	Electronic weighbridge and weigh belts.
Value of data	85,000 Tonne/annum (*ex-ante*)
Description of measurement methods and procedures to be applied:	The wood waste delivered to the power station by tipper trucks will pass over an electronic weighbridge where the net weight of wood is determined after weighing the truck full and empty. Furthermore the wood waste is weighed by electronic weigh belts before the wood is dropped into the boiler feed hoppers. The proportion of the data to be monitored is 100%. The monitored data recorded automatically in electric form.
QA/QC procedures to be applied:	The weighbridge and weigh belts will be calibrated on a monthly basis.
Any comment:	

Data / Parameter:	**$FC_{spesific,y}$**
Data unit:	t_i/MWh
Description:	Specific fuel consumption (tonnes of biomass type *i* per MWh generated)

Source of data to be used:	Calculated based on $W_{j,y}$ and EG_y
Value of data	
Description of measurement methods and procedures to be applied:	Calculated by dividing the annual amount of different types of consumed fuel *i* by the annual amount of electricity generated by the project.
QA/QC procedures to be applied:	
Any comment:	AMS-I.D para 15 requires monitoring of the specific fuel consumption.

B.7.2 Description of the monitoring plan:

The emission reduction achieved by the project activity in the credit period will be assessed ex-post through direct measurement. The amount of the electricity generated and consumed by the project activity and will be monitored following the requirements of the methodology AMS-I.D. The amount and type of wood waste consumed by the project will also be monitored. Taking into account the project emission from transportation, relative parameters will be included into the monitoring list.

The monitoring system of the project consists of a supervisory computer and a PLC (Proportional Logic Control) power plant controller that receives information from all field instruments and controls the overall operation of the power station based on a control algorithm. This enables the power station to monitor power load demand called by the municipality by automatically adjusting biomass consumption, steam output from the boiler, and power output from the generator set. Alarms and set points are displayed on live MIMIC process flow diagrams on LCD display screens that allow operators the opportunity to locate problem areas and react to alarms. Integral to the PLC Control System algorithm is the ability of automatic shutdown of the entire power station if corrective action is not taken by the operators within a prescribed period of time, or if certain operating parameters have been exceeded beyond allowable safe values. The PCL control system is supervised by a computer that records operating parameters on an ongoing basis. This information is used to prepare monthly reports and/or assist operators with reporting to the municipality and government departments. As a supplementation of the PLC controller, a system consisting of the weighbridge and weigh belts is crucial too. The data recorded will be archived two years over the ten-year crediting period.

Additional to the parameters in section B7.1, the monitoring system will also record:

- Steam boiler output;
- Air flow and gas flow measurements;
- Temperatures across the entire plant;

- Atmospheric emissions measured at the stack after the bag filter;
  - Oxygen
  - Carbon Dioxide
  - Carbon Monoxide

Additional to the computer-archived data, operators keep a manual log book where they record incidents and maintenance schedules, along with operator concerns that operators in follow up shifts need to be aware of.

The monitoring structure is designed to offer information at three levels:

- Plant manager and operators, who are responsible for ensuring the operational integrity of the power station and reporting regularly to George municipality and higher government offices,
- The George municipality, that requires at all times to know:
  - The projected availability of the power station.
  - The amount of power sent to the grid system as well as amount of power consumed by the power station. In this way, instant electronic readings and cumulative monthly power output and power consumption will form the basis of the sale of power between the power station and the municipality.
- The provincial and central government, which need to monitor environmental-impact assessment indicators to ensure that project performance complies with government health, safety and environmental laws.

The plant manager and operators, as the key persons operating the project, will be trained in record-keeping and reporting, overall maintenance, and emergency reaction. They will also be trained with environmental, health and safety issues. Their main responsibilities are:

- Operation of the biomass power station
- Online recording of operating parameters including biomass throughput, steam production, power output from the facility and online monitoring of emissions
- Reports on analysis on water use in the boiler and quality of ash generated
- Maintenance of the log book showing scheduled maintenance, emergencies and other incidents
- Compliance with statutory requirements and boiler certification
- Motivation for upgrades and replacement of boiler equipment
- Submission of reports on the state of the plant to Management
- Training and self-learning in relevant regulations, i.e. adherence to a site quality assurance plan; adherence to an environmental management plan and other conditions prescribed by the relevant government departments; south african occupational health and safety act (OHS Act); wearing of protective equipment (PPE); government regulations relating to the operation of high pressure vessels and boilers.

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 of completing the final draft of the baseline: 01/06/2009.

Name of person/entity determining the baseline:

Organization	GreenStream Network GmbH
Address	Grosser Burstah 31
Postal Zip/city	20457 Hamburg
Country	Germany
Represented by:	
Salut. / First Name /Last Name	Ms Laura Lahti Mr Xiadong Jia
Telephone	+ 49 40 158164513 + 49 33 158164512
Email	laura.lahti@greenstream.net xiaodong.jia@greenstream.net

Note: The above party is not a project participant.

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:

27th of May 2008

The purchase contract of power island with MBH Energy (Pty) Ltd was signed on this date and long lead items were ordered.

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

> 20 years

The project lifetime is dependent on the lifetime of the boiler plant. Pin-hole spreader stoker fired boilers have an operating lifetime of over 20 years when maintained according manufacturers' specifications. This type of boiler plant has been applied in industry for more than 30 years. In the project power plant, redundancy has been allowed in the design of the boiler to prolong the operating life of the facility.

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:

Not applicable.

C.2.1.2. Length of the first crediting period:

Not applicable

C.2.2. Fixed crediting period:

C.2.2.1. Starting date:

01/03/2010

C.2.2.2. Length:

10 years

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 National Environmental Management Act 107 of 1998, effective from 1 July 2006, governs environmental impact assessments (EIA) and requires a positive Record of Decision (RoD) from Department of Environment and Development Planning and Western Cape Provincial Government for project activity of this kind. A full EIA was deemed necessary by the authorities and the project developer carried out a so-called scoping report, submitted by HINDOC, an eligible environmental consultant in South Africa. The RoD process is currently under way. The scoping report, which included description of environmental issues and potential impacts, along with details of the public participation process, was finalized and submitted to the competent authority, the Western Cape Provincial Government, on 1 June 2009. A positive Record of Decision is expected by the end of July 2009 at the very latest.

In the scoping report and submitted Environmental Impact Assasment Report, risk rating system is introduced to evaluate the impacts on items of social, economic and environmental relevance (see Table 3). For all items assessed as of moderate or high risk, mitigation measures are provided.

Table 3. Impacts and risk rating

Item	*Risk rating*	*Mitigation measures*
Assessment of the social and economic risks:		

Economic and occupational status	L	
Social pattern or lifestyle	L	
Social amenities and relationships	L	
Psychological factors	L	
Physical amenities – intellectual, cultural, aesthetic and sensual	L	
Personal security	L	
Health	M	Staff training, control measures, work procedures and adherence to occupational health, safety and environmental legislation.
Cultural	L	
Political	L	
Statutory laws and acts	M	The project has identified applicable legislation and has planned budgets for the management of environmental risks.
Business opportunities	L	
Assessment of the environmental risks:		
Transportation of biomass	L	
The offloading of biomass	M	Compliance with international, local and national health and safety regulations; operation and maintenance routines in place; training of staff.
The storage of biomass waste	H	Effective fire fighting systems; fire fighting training for stafMif; insurance; fire prevention measures in place, etc.
The drying of biomass	M	There need not special measures to control the water ratio of the biomass. The biomass will dry naturally.
The crushing of biomass	M	Staff training; compliance with relevant regulations.
The loading of biomass into the plant	L	
The combustion of biomass in the plant	L	
Conversion of hot gases to steam and energy	M-H	Staff training; fire fighting; compliance with occupational health and safety legislation.
Storage of generated electricity	M-H	Staff training; fire fighting; compliance with occupational health and safety legislation.
The transfer of electricity to the municipal grid	M-H	Staff training; fire fighting; compliance with occupational health and safety legislation.
The disposal of combustion residues	M-H	This ash will be analyzed and will either be used as aggregate for concrete manufacture or will be disposed to a landfill site.

Specification: L = low/no risk potential, M= moderate risk potential, H= high risk potential

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:

The project activity dose not pose significant adverse effects to the environment. The project will make use of an existing industrial infrastructure. All the potential pollutants - e.g. solid waste, particles, and noise - have been carefully reviewed and will be monitored according to local environmental requirements. The environmental effects gained from the project implementation are of a positive nature.

SECTION E. Stakeholders' comments

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

Local stakeholder participation was regulated and carried out within the environmental impact assessment process. The local stakeholders interested and affected by the project were invited to join the participation process in different ways. Neighbours within 100 meters of the proposed site as well as local councillors were given hand-delivered notices of the project. The competent authority was notified via e-mail. Other interested and affected parties where informed by means of posters and signboards in the streets and with an advertisement in the local Herald and Star newspapers in October 2008. Some of the key stakeholders were invited orally. The copies of the EIA report could be viewed at the George public library and reguested free from the HINDOC before the meeting. All stakeholders participating the public meeting are required to fill the Registration and Comment sheet, within which basic information of the participant and their comment could be got by the project developer. This could help project developer give the detailed and prepared feedback.

On May 28, 2009, the second public meeting of stakeholders was held at the Loerie Guest Lodge in George. The 23 participants came from nearby communities, local NGOs and George municipal government. The verification sources for the stakeholder process and list of participants are presented in Annex 5. The summary of the project activity was published in English, Afrikaans and Xhosa.

The public meeting included three steps:

- First, the Environmental Impact Assessment was presented by Karolina van Hulst on behalf of HINDOC. After this, some key findings and recommendations were given by her, indicated in table 3. The hard copies with introduction and details about the project had been handed out to attendees before the seminar.
- This presentation was followed by questions and feedback, listed in table 4. Karolina van Hulst and other representatives of the project developers gave positive feedback to the comments and questions from interested and affected parties.

- L Hodge on behalf of HINDOC thanked all the attention from the participants and sumarried the comments and feedback. In addition to the public meeting, all the interested parites have 30 days to comment on the documents of EIA. The environmental impact report will be submitted to the authorities for final comment.

E.2. Summary of the comments received:

A summary of comments and queries received is presented in Table 4. The project developer offered some positive feedback in response to the queries.

Table 4. Comments, queries and feedback

Queries and Comments	*Responder*	*Feedback*
Who will fund the project?	M Saner of CCE solution	CEF is a private company totally owned by the DME. The project will be funded by equity from the founders and debt funding from the IDC and DBSA. Tax payers money will not be used.
Moisture content	J Kohary of MBH Energy	The average moisture content of the material will be 26%: material will stored inside and dried naturally. The technology can take moisture content up to 55% and extensive research has been done on the subject . Bark, sawdust and chips can be accommodated: ultimately a mix will be used to generate a consistent supply of electricity. Material will be shredded before being stored.
Will the facility create nosie pollution?	M Saner of CCE solution	Perimeter noise survey will be conducted prior to operations. CCE will ensure that the maximum 65dba for industrial area in George. The equipment is electronic therefore there will be a maximum 85dba for the operator. CCE will not use the existing Sonae debarking and chipping machines which are purported to have cause noise pollution in the past.
How much water that will be used by the facility considering that George is subject to water restriction?	J Kohary of MBH Energy	CCE will use 3-5m^3 of water per hour. The plant will be air-cooled not water on a closed cycle. Thus, the project would not make negative influence on the local water reservation.
Why has the site location been changed to the Sonae site?	L Hodge of HINFOC	A site ranking study was undertaken and the survey releaved that the Tamsui site is unfortunately not zoned correctly and changing the zoning would cause massive time delays. In addition the geography of the site would necessitate massive structural implication which would be

		extremely costly.
How much trucks will come in and out of the facitlity?	J Kohary of MBH Energy	It is estimated that the truck load is 40 tonne. The total anticipated amount of wood waste would be 85,000 tonne/annum. Thus, it is assumed that there would be maximum 2125 truck-times/annum. It was noted that this is a smaller quantity compared to the quantity of trucks entering the site during Sonae operations.
How will the ash be disposed?	M Saner of CCE solution	The ash will be analysed on a regular basis and will be disposed according to the legislation. Ash will either be dumped on landfill sites or will be used in the construction industry.
Will animal or human material be used as feedstock?	L Hodge of HINFOC	Only wood waste will be used in the facility. CCE Solutions will not use medical or hazardous waste
How many jobs will be create pollution?	M Saner of CCE solution	Indirect and direct jobs will be created. About 69 operational and administration staff will be employed. Many more jobs will be created through indirect industries: CCE Solutions is looking at.
Will the boiler create pollution?	J Kohary of MBH Energy M Saner of CCE solution	Bag filter will be used. Emissions: 10gm per 1m3. Ash will be watered for transportation purposes. As per legislation CCE will have a Waste Management Monitoring Committee which will include the community.
What is the feedstock price?	M Saner of CCE solution	This depends entirely on where the feedstock comes from. Sawmill waste will be utilised by the plant as well as harvested alien biomass.
What is the long term sustainability of the feedstock?	M Saner of CCE solution	CCE Solutions has done research into this and funders such as the IDC and DBSA require that the initiative be financially sustainable and that more detail on this research is available on request.
What is the progress of the power purchase agreement with the George Local Municipality? M Saner of CCE Solutions responded?	M Saner of CCE solution	The legal documentation is being finalized and the final tariff figure will be released once signature is concluded Noted that biomass has not been included in the Renewable Energy Feed-In tariff structure given by Nersa who is in the process of releasing the final biomass figure.
Notice		In the past the sawmills in the George area did not generate electricity from wood waste.
Notice		CCE Solutions has applied to the Kyoto Protocol to be a Clean Development Mechanism project and must abide by those regulations and constraints.
Rectification		It was noted that the first public participation meeting

		indicated that the facility would supply power on a peak load basis. This is incorrect, the plant will operate on a base load basis which is much more efficient to run.

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

In regard to all the comments and questions from attendees, the project developer not only provided explanations and answers, but also absorbed the valuable suggestions and comments to improve the project. There is no objection from local stakeholders.

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

Organization:	Carbon and Environmental Option (Pty) Ltd (referred to as CEO (Pty) Ltd)
Street/P.O. Box:	1018 Fredenharry Rd, Little Falls
Building:	Oakhurst Building
City:	Roodepoort
State/Region:	Gauteng
Postfix/ZIP:	Roodepoort
Country:	South Africa
Telephone:	
FAX:	
E-Mail:	ceenviro@icon.co.za
URL:	
Represented by:	
Title:	Mr
Salutation:	
Last Name:	Eleftheriades
Middle Name:	
First Name:	Christos
Department:	
Mobile:	
Direct FAX:	+27 11 47531110
Direct tel.:	+27 83 2675185
Personal E-Mail:	ceenviro@icon.co.za

Organization:	CEF (Pty) Ltd
Street/P.O. Box:	158 Jan Smuts Avenue
Building:	
City:	Johannesburg
State/Region:	Gauteng
Postfix/ZIP:	2196
Country:	South Africa
Telephone:	
FAX:	
E-Mail:	
URL:	
Represented by:	
Title:	Ms
Salutation:	
Last Name:	Algio
Middle Name:	
First Name:	Nicole

Department:	
Mobile:	+27 (11) 280 0417
Direct FAX:	+27 (11) 880 9803
Direct tel.:	
Personal E-Mail:	nicolea@cef.org.za

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

Please see section A.4.4.

Annex 3

BASELINE INFORMATION

1. Please see Appendix 1.

2. Emission from Transportation

The project has signed subsequent supply agreements (10 years or more) for the minimum amount of 85,000 t/a wood waste. See details in Table 5. Considering the loss during transportation and feedstock, and other uncertain factors, the contract amount of wood waste is more than the amount consumed by the project. However, the wood waste utilized in the project probably comes from a wider scale of biomass supplier, the information listed here is only used to assume the emission from transportation.

Table 5. Wood waste supply constitence of the project

Supplier	Tonne/annum
African Woodcutters	1,665
Geelhoutvlei	21,250
L&L Transport	20,000
PSP Timber	13,000
Eden District Municipality (from roadside waste and illegally landfill)	25,000
Silicon smelters	15,000

As requested by DOE, the emission from transportation should be considered seriously. The estimation is referred with the Equation 3.2.1 of volume 2 of IPCC. Combining with the practical instance of the project. Hence, project emissions are calculated as follows:

$$PE_y = \sum_{k,n,i} T_{k,n} * AVD_{k,y} * FC_{TR,i} * NCV_i * EF_{CO2,FF,i} \quad (3)$$

Where,

PE_y = Project emission, tCO_2e;

$T_{n,k}$ = Times of the truck type *n* transport wood waste from supplier *k*;

$AVD_{k,y}$ = Return trip distance between the wood waste supplier *k* and the project site in year *y* (km);

$FC_{TR,n,i}$ = Fuel consumption of fuel type *i* by truck type *n* (Tonne/km);

NCV_i = Net calorfic value of fossile fuel type *i* (GJ/Tonne);

$EF_{CO2,FF,i}$ = CO_2 emission factor for fossil fuel type *i* (tCO_2/GJ).

$T_{k,n}$ complies with the following formula:

$$T_{k,n} = \frac{\sum_{k} Q_{T,k,y}}{TL_{n,y}} \quad (4)$$

Where

$Q_{T,k,y}$ = Quantity of wood waste supplier *k* that has been transported to the project site during the years *y* (tonns);

$TL_{n,k,y}$ = Average truck load of the truck type *n* from wood waste supplier *k* during the year *y* (tonns);

In this project, trucks will transport these wood waste from different suppliers to the project. The transportation frequence would be organized by the project developer, depending on the production and feedstock situation. The values of these parameters in formula 3 and 4 are listed in table 6.

Table 6 Parameters of transportation

Parameter	Description	Value		Source of data used
NCV_i	Net calorfic value of gas/diesel oil	43.0 TJ/Gg		IPCC default values (2006, Guidelines for National Greenhouse Gas Inventory, Volume 2, p1.18
$EF_{CO2,FF,i}$	CO_2 emission factor for gas/diesel oil	74,100 kgCO_2/TJ		IPCC default values (2006, Guidelines for National Greenhouse Gas Inventory, Volume 2, p.1.23
$TL_{n,k,y}$	Average truck load of the truck	40 tonnes per truck		Provided by the wood waste supplier
$FC_{TR,n,i}$	Gas/diesel consumption for every 100 km	0.0456 tonne / 48 liter		Estimated by the wood waste supplier
$AVD_{k,y}$	Return trip distance between the wood waste suppliers and the project site	African Woodcutters	30 km	Measured by project participant
		Geelhoutvlei	140 km	
		L&L Transport	30 km	
		PSP Timber	120 km	
		Eden District Municipality (from roadside waste and ingellly landfill)	30 km	
		Silicon smelters	60 km	

Finally, the annual emission from transportation is anticipated to be 233 tCO_2. It is significantly smaller than 1% of the annual emission reduction of the project. Thus, it is eligible that the emission from transportation could be ignored in this project.

Annex 4

MONITORING INFORMATION

Please see section B.7.

Annex 5

STAKEHOLDERS' COMMENTS

Pictures of the signboards:

Newspaper advertisements:

Notice of Environmental Impact Assessment Process

Notice is hereby given in terms of Regulation 387 of the Environmental Impact Assessment (EIA) Regulations, published under section 24 and 24D of the National Environmental Management Act (107 of 1998), of the intent of CCE Solutions (Pty) Ltd to carry out the following:

A renewable energy project: Biomass to Energy in George (Western Cape)

Application for the above activity was made to the Department of Environmental Affairs and Development Planning and Scoping and Environmental Impact Assessment will apply.

- The proponent is CCE Solutions (Pty)Ltd
- The appointed Environmental Assessment Practitioner is Dr. Lorraine Hodge of Health Industrial Occupations cc

Contact details
Health Industrial Occupations cc
Tel: 011 475 3709
Fax: 011 475 1110
Email: hindoc@icon.co.za
Cel: 082 443 4029

A public meeting will be held at the Nelson Mandela Auditorium on 6 November 2008 from 16h00 to 18h00

In order to ensure that you are registered as an Interested and Affected Party, please submit your name, contact information and the nature of your interest in the project to the contact person listed above within 14 days of this notice.

DK029303

Notice of Environmental Impact Assessment Process
Notice is hereby given in terms of Regulation 387 of the Environmental Impact Assessment (EIA) Regulations, published under section 24 and 24D of the National Environmental Management Act (107 of 1998), of the intent of CCE Solutions (Pty) Ltd to carry out the following:
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Application for the above activity was made to the Department of Environmental Affairs and Development Planning and Scoping and Environmental Impact Assessment will apply.
"The proponent is CCE Solutions (Pty)Ltd
"The appointed Environmental Assessment Practitioner is Dr. Lorraine Hodge of Health Industrial Occupations cc
Contact details
Health Industrial Occupations cc
Tel: 011 475 3709
Fax: 011 475 1110
Email: hindoc@icon.co.za
Cel: 082 443 4029
A public meeting will be held at the Nelson Mandela Auditorium on 6 November 2008 from 16h00 to 18h00
In order to ensure that you are registered as an Interested and Affected Party, please submit your name, contact information and the nature of your interest in the project to the contact person listed above within 14 days of this notice.
(STAR 6277619)

HINDOC
Health Industrial Occupations

Tel: 011 475 3161; Fax: 011 475 1110; Cel: 082 443 4029 (Lorraine Hodge)

REGISTRATION FORM: CCE (Pty) Ltd PUBLIC MEETING
NMMU AUDITORIUM (GEORGE CAMPUS YORK STREET)
06 NOVEMBER 2008

NAME & SURNAME	TITLE	ORGANISATION	CONTACT DETAILS	PHYSICAL ADDRESS	SIGNATURE OF ATTENDANCE
PEARCE JOHNSTON	Mr	WRRA	Tel: 044 877 1393 Cel: 082 781 4092 Fax: 044 877 1593 Email: pearcej@54.co.za	1151 LANGVLEI AVE WILDERNESS	
JAN KOHARY	MR	MBHE	Tel: 044 871 3382 Cel: 076 6000 148 Fax: Email:	163 MAYER ST LOERIE PARK GEORGE	
DAVE EDGE	DR	DAVE EDGE & ASSOCIATES	Tel: 044 3810014 Cel: 084 3124927 Fax: 044 3810014 Email: daveedge@xnets.co.za	81 Tulbagh St. Brenton-on-Sea Knysna 6571	
ROB BRUCE-BRAND	MR	P.J. VAN REENEN PTY LTD	Tel: 0445890200 Cel: Fax: 0443890033 Email: robert@pjvanreenen.co.za	MAIN RD RHEENENDAL	
WG van Reenen	Mr	P.S. van Reenen Pty Ltd	Tel: 044 - 3890200 Cel: Fax: 044 3890033 Email: Warwicke@pjvanreenen.co.za	Rheenendal	

NAME & SURNAME	TITLE	ORGANISATION	CONTACT DETAILS	PHYSICAL ADDRESS	SIGNATURE OF ATTENDANCE
Willie Jagers	Mr.	Silicon Smelters (Pty) Ltd	Tel: 043 7262709 Cel: 0824577528 Fax: 043 726 2709 Email: jagersw@gmail.com.	2 Ajax Crescent Cambridge, East London	
Lizelle Saaiman	Mrs	Eden DM	Tel: 044 - 8031560 Cel: 083 678 6544 Fax: 086 555 678 Email: lizelle@edendm.co.za	Box 202 George, 6530	
CHRIS MARSTHLING.	Mr	George Mun	Tel: 044 8730441 Cel: 0728765532 Fax: 044 8730441 Email: gmmeetstng@gmail.com	P.O.Box 2602 George 6530	
Riva MAGOME	Mrs	Private	Tel: 044 - 8751607 Cel: 076 890 4015 Fax: Email:	16 Taurus ST. PARKdale GEORGE	
Farouk Yesufu	Mr.	WESGRO	Tel: 0214878653 Cel: 0727550294 Fax: Email: farouk@wesgro.co.za	80 ST. GEORGE'S MALL WALDORF ARCADE 12TH FLOOR	
Danie de Vries	Mr.	BDE Consulting Engineers	Tel: 044 801 9700 Cel: 082 822 3384 Fax: 044 801 9709 Email: dvries@bdeconsult.co.za	73 Meade St, George 6530	
RAOUL GOOSEN	MR	CEF	Tel: 011 2800334 Cel: 0824581969 Fax: Email: raoulg@cef.org.za	158 Jan Smuts Ave Rosebank Johannesburg	

NAME & SURNAME	TITLE	ORGANISATION	CONTACT DETAILS	PHYSICAL ADDRESS	SIGNATURE OF ATTENDANCE
Kevin Grunewald	Mr	George Municipality	Tel: 044-8743917 Cel: 0836441299 Fax: 044-8743936 Email: Kevin@elec.george.org.za	Brick Rd George	
Johan Möller	Mr.	George Municipality	Tel: Cel: 083 2580771 Fax: Email: Johan@elec.george.org.za	"	
Melissa WAHL		SOLIEN	Tel: 044 877 1733 Cel: 083 266 7055 Fax: Email: info@solien.co.za	ERICA RD WILDERNESS HEIGHTS	
Terry Cockcroft	Mr.	Retired Civil Engineer	Tel: 044-343 2557 Cel: 082-788 2681 Fax: Email: terrycoc@	P.O. Box 253 Sedgefield 6573	
DANE BALDWIN	DR	Waste Management Consultant	Tel: x8@iafrica.com Cel: 044 874 3638 Fax: 0822820169 Email: 0966897896	4 Seminole Close Montagu Pk George	
Margot Sanker	Ms	C&EO.	Tel: 011 475 3161 Cel: 0824434030 Fax: 011 475 6084. Email: margots@ceo.co.za	1982 Main Cole Road Little Falls.	
O Tuchten	Ms	C+EO	Tel: 011 475 3161 Cel: 079 7917857 Fax: 011 475 1110 Email: olivia@ceo.co.za		

NAME & SURNAME	TITLE	ORGANISATION	CONTACT DETAILS	PHYSICAL ADDRESS	SIGNATURE OF ATTENDANCE
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