VALIDATION REPORT

Conestoga-Rovers and Associates

Manaus Landfill Gas Project

SGS Climate Change Programme
SGS United Kingdom Ltd
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United Kingdom

Date of Issue:	**Project Number:**
02/07/2010	CDM.VAL0377
Project Title:	
Manaus Landfill Gas Project	
Organisation:	**Client:**
SGS United Kingdom Limited	Conestoga-Rovers and Associates
Publication of PDD for Stakeholders Consultation	
Commenting Period (First ISHC):	7th December 2005 to 5th January 2006
Commenting Period (Second ISHC):	21st January 2009 to 19th February 2009
Commenting Period (Third ISHC):	26th May 2010 to 24th June 2010
First PDD Version and Date:	Version 1, dated 20th May 2010
Final PDD Version and Date:	Version 2, dated 27th June 2010

Summary:

Conestoga-Rovers and Associates has commissioned SGS to perform the validation of the project: Manaus Landfill Gas Project.

Methodology Used: ACM0001

Version and Date: Version 11, dated 28th May 2009

The scope of the validation is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and applicable CDM requirements.

The report is based on the assessment of the project design document undertaken through stakeholder consultations, application of standard auditing techniques including but not limited to document reviews, follow up actions (e.g site visit, telephone or e-mail interviews) and also the review of the applicable approved methodology and underlying formulae and calculations.

The report and the annexed validation describes a total of 16 findings which include:

- 11 Corrective Action Requests (CARs);
- 4 Clarification Requests (CLs);
- 1 Forward Action Requests (FARs); and

All findings have been closed satisfactorily::

☒ Will be recommended to the CDM Executive Board with a request for registration.

At time of the validation, no Letter of Approval from the host country had been provided. The Letter of Approval will be signed after the DNA of Brazil receive and analyse the validation report.

Subject:		**Document Distribution**
CDM Validation		
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Abbreviations

CAR	Corrective action request
CDM	Clean development mechanism
CDM	EB CDM Executive Board
CER	Certified emission reduction
CL	Clarification request
DOE	Designated operational entity
DNA	Designated national authority
FAR	Forward action request
GHG	Greenhouse gas(es)
IPCC	Intergovernmental Panel on Climate Change
PDD	Project Design Document
UNFCCC	United Nations Framework Convention on Climate Change

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1. Validation Opinion

SGS United Kingdom Ltd has been contracted by Conestoga-Rovers and Associates (CRA) to perform a validation of the project: Manaus Landfill Gas Project in Brazil in Brazil.

The Validation was performed in accordance with the UNFCCC criteria for the Clean Development Mechanism (CDM), Validation and Verification Manual version 1 and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The proposed project activity involves the construction of a landfill gas (LFG) collection and flaring system, and subsequently a power generation facility. Phase 1 of the proposed project activity is the landfill gas collection and flaring system that will be constructed. Phase 2 that will commence approximately one year later is the electrical generation facility to be constructed.

By the construction of a landfill gas (LFG) collection and flaring system, and subsequently a power generation facility the project activity will result in reductions of greenhouse gas (GHG) emissions that are real, measurable and give long-term benefits to the mitigation of climate change.

In our opinion, the project meets all relevant UNFCCC, CDM criteria and all relevant host country criteria. The project correctly applies methodology ACM0001 version 11. It is demonstrated that the project is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

The total emission reductions from the project are estimated to be 7,137,727 t of CO2e over a seven year crediting period during 01/01/2011 to 31/12/2017, averaging 1,019,675 t of CO2e annually. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given the underlying assumptions do not change.

The project will hence be recommended by SGS for registration with the UNFCCC.

At time of the validation, no Letter of Approval from the host country had been provided. The Letter of Approval will be signed after the DNA of Brazil receive and analyse the validation report.

Signed on Behalf of the Validation Body by Authorized Signatory

Signature:

Name:

Date:

2. Introduction

2.1 Objective

Conestoga-Rovers Associates has commissioned SGS to perform the validation of the project: Manaus Landfill Gas Project with regard to the relevant requirements for Clean Development Mechanism (CDM) project activities. The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, the monitoring plan (MP) and the project's compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reduction (CER). UNFCCC criteria refer to the Kyoto Protocol criteria and the CDM rules and modalities and related decisions by the COP/MOP and the CDM Executive Board.

2.2 Scope

The scope of the validation is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. SGS has employed a risk-based approach in the validation, focusing on the identification of significant risks for project implementation and the generation of CERs.

The validation is not meant to provide any consulting towards the Client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

2.3 GHG Project Description

The proposed project activity involves the construction of a landfill gas (LFG) collection and flaring system, and subsequently a power generation facility. Phase 1 of the proposed project activity is the landfill gas collection and flaring system that will be constructed. Phase 2 that will commence approximately one year later is the electrical generation facility to be constructed.

2.4 The Names and Roles of the Validation Team Members

Name	Role	Affiliate
Fabian Gonçalves	Lead Assessor	SGS Brazil
Lucas Engelbrecht	Lead Assessor	SGS Brazil
Pedro Dodsworth	Financial Expert	SGS Brazil
Lorna Saldes	Sectoral Expert (13)	SGS Chile

3. Methodology

3.1 Review of CDM-PDD and Additional Documentation

The validation is performed primarily as a document review of the publicly available project document version 01, dated 20/05/2010 and the subsequent versions dated 02, dated 27/06/2010. The assessment is performed by trained assessors using a validation protocol attached as Annex 2, table 2.

The site visit was performed on the 24/06/2010 – 26/06/2010. The results are summarised in Annex **Erro! Fonte de referência não encontrada.** of this report.

Local staff was also involved to confirm other statements in the PDD through review of documents direct contacts with key stakeholders (including the project developers and Government and NGO representatives in the host country).

3.2 Use of the Validation Protocol

The validation protocol used for the assessment is designed in accordance with the Validation and Verification Manual, Version 1 dated 28 November 2008. It serves the following purposes:

- it organises, details and clarifies the requirements the project is expected to meet; and
- it documents both how a particular requirement has been validated and the result of the validation (reporting).

The validation protocol consists of several tables. The different columns in these tables are described below.

Checklist Question	Ref ID	Means of Verification (MoV)	Comment	Draft and/or Final Conclusion
The various requirements are linked to checklist questions the project should meet.	Lists any references and sources used in the validation process. Full details are provided in the table at the bottom of the checklist.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (Y), or a Corrective Action Request (CAR) due to non-compliance with the checklist question (See below). Clarification Request (CL) is used when the validation team has identified a need for further clarification.

The completed validation protocol for this project is attached as Annex A.1 to this report

3.3 Findings

As an outcome of the validation process, the team can raise different types of findings

A Clarification Request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met

Where a non-conformance arises the Assessor shall raise a **Corrective Action Request (CAR).** A CAR

is issued, where:

I. The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;
II. The CDM requirements have not been met;
III. There is a risk that emission reductions cannot be monitored or calculated.

The validation process may be halted until this information has been made available to the assessors' satisfaction. Failure to address a CL may result in a CAR. Information or clarifications provided as a result of a CL may also lead to a CAR.

A Forward Action Request (FAR) is raised during validation to highlight issues related to project implementation that require review during the first verification of the project activity. FARs shall not relate to the CDM requirements for registration.

Corrective Action Requests and Clarification Requests are raised in the draft validation protocol and detailed in a separate form (Annex A.3). In this form, the Project Developer is given the opportunity to "close" outstanding CARs and respond to CLs and FARs.

3.4 Internal Quality Control

Following the completion of the assessment process and a recommendation by the Assessment team, all documentation will be forwarded to a Technical Reviewer. The task of the Technical Reviewer is to check that all procedures have been followed and all conclusions are justified. The Technical Reviewer will either accept or reject the recommendation made by the assessment team. Findings can be raised at this stage and client must address them within agreed timeline.

4. Validation Findings

4.1 Approval

Host Country

According to Resolution Nº 1 (ref. 39) *"For the purposes of obtaining approval for project activities under the Clean Development Mechanism, project proponents shall submit to the Executive Secretariat of the Interministerial Commission on Global Climate Change, in electronic and printed format…. the project activity validation report prepared by the Designated Operational Entity authorized to operate in the country…. in Portuguese"*

The LoA for Brazil is currently pending DNA approval process in accordance with Resolution Nº 1 (ref. 18)

Annex-I Country

The LoA from Canada is pending.

4.2 Participation Requirements

Host Country

Brazil is the Host Party and has ratified the Kyoto Protocol.

Kyoto Protocol	
Date of Signature	29th April 1998
Date of Ratification	23rd August 2002
Date of Entry into Force	15th February 2005

(Source: Adapted from UNFCCC, Parties and Observer States)

Canada an Annex I Party and has ratified the Kyoto Protocol.

Kyoto Protocol	
Date of Signature	29th April 1998
Date of Ratification	17th December 2002
Date of Entry into Force	16th February 2005

(Source: Adapted from UNFCCC, Parties and Observer States)

4.3 Project Design Document including Project Description

From the information supplied by the PP in the PDD (version 2) (ref. 1b), section A.1. contained the following:

- Project Title: "Manaus Landfill Gas Project"
- Version: 2,
- Dated: 27th June 2010

The proposed project title was considered unique to allow readers to identify this CDM project.

CAR #15 was raised because in the PDD version 2 (ref. 1) there is one project participant that was listed in the PDD version 1 (ref. 1) published at international stakeholder consultation, which now is not included in the PDD version 2. The PP was required to provide a letter with the withdrawn of the project participant.

The PP provided to the DOE assessment team the evidence "394754_1" (ref. 31a) informing who are the people that can response for the company interests and the "Redacted Org Docs re Directors authority

(summit lake)" (ref. 31b) which is a memorandum proving the name of the company and the persons involved. To conclude, the PP provided the letter "2010.07.01 Declaration re Summit Lake as Project Participant [Executed] (ref. 31c)" which states that the Summit Lake Lake is not a currently project participant in the Manaus Landfill Gas Project.

CAR #15 was closed out.

In this way, the project participants listed by the project activity are by

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)**
Brazil (host)	TUMPEX – Empresa Amazonense de Coleta de Lixo Ltda. (Private Entity)	No
	Enterpa Engenharia Ltda. (Private Entity)	No
Canada	Conestoga-Rovers & Associates Capital Limited (Private Entity)	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.		

(source: PDD version 2)

CAR #3 was raised because according to the PDD version 1 (ref. 1), the project activity is under the sectoral scope 1 (energy industry, renewable and non-renewable sources) and 13 (waste handling and disposal). However, according to the approved methodology (ref. 5) the project relies only in the scope 13 (waste handling and disposal).

In the PDD version 2 (ref. 1) section A.4.2 the PP has amended the information regarding to the scope of the project activity as 13 (waste handling and disposal), being in accordance with the latest version of the approved methodology ACM0001.

In this way, **CAR #3 was closed out.**

The information provided in the PDD version 1 (ref. 1) clearly indentifies and allows the localization of the project activity as per the screenshot of the Google Maps website (ref. 2).

During the site visit conducted on the 24th to 26th June 2010 the information was verified in section A.4. of the PDD (ref. 1) and incompliance with the planning/actual situation of the proposed project activity, in addition it was verified on site that there is no public funding. The project participants are private companies which signed a contract with the Municipality of Manaus to operate the landfill and implement the proposed activity (ref. 22).

The PP is required to apply the PDD format and content in accordance with the requirements of EB41 Annex 12 (ref. 8). **CAR #8 was raised.**

The client has updated the format and the content of the PDD version 2 (ref. 1) in accordance with the requirements of the EB41 Annex 12 (ref. 8).

In this way, **CAR #8 was closed out.**

4.4 Applicability of selected methodology to the project activity

From the information supplied by the PP in the PDD (version 2) (ref. 1), the proposed project activity applied the approved methodology ACM0001 version 11 (ref. 5).

According to the latest version of the approved methodology ACM0001 (ref. 5) the methodology is applicable to landfill gas capture project activities, where the baseline scenario is the partial or total atmospheric release of the gas and the project activities include the situations such as:

a) The captured gas is flared; and/or
b) The captured gas is used to produce energy (e.g. electricity/thermal energy). Emission reductions can be claimed for thermal energy generation, only if the LFG displaces use of fossil fuel either in a boiler or in an air heater. For claiming emissions reductions for other thermal energy equipment (e.g. kiln), project proponents may submit a revision to this methodology;
c) The captured gas is used to supply consumers through natural gas distribution network. If emissions reductions are claimed for displacing natural gas, project activities may use approved methodology AM0053.

The information supplied in PDD version 1 (ref. 1) presents that the project activity corresponds to the alternatives a) and b) of the applicability of the methodology. The first phase of the project the landfill gas will be collected and only flared and during the second phase the landfill gas will be used to produce energy.

In this way, as it was presented in the PDD version 1 and version 2(ref. 1) the project follows the applicability of the methodology. A site visit was conducted on 24th to 26th June 2010 and had confirmed the information supplied.

4.5 Project Boundary

According to the PDD version 1 (ref. 1) section B.3., the information provided in the table regarding to the emissions sources and gases related to the baseline and project activity is not in accordance with the approved methodology (ref. 5).

CAR #4 was raised to require the project participant to apply the summary of the gases and sources in the project boundary in accordance with the applied methodology.

In the PDD version 2 (ref. 2) section B.3 the table presented regarding to the summary of gases and sources included in the project boundary are in accordance with the approved methodology ACM0001.

Thus, **CAR #4 was closed out** and all the sources and GHG required by the methodology have been included within the project boundary in the PDD version 2 (ref. 1).

Furthermore, **CAR #5 was raised** because according to the information supplied by the PP in the PDD (version 1) (ref. 1) section B.3. did not included a delineation of the proposed project activity as set out in EB 41, Annex 12 (ref. 8).

According to the information provided in the PDD version 2 (ref. 1) the project participant has included a delineation of the proposed project activity in accordance with the requirements set out by the EB 41, Annex 12 (ref. 8).

CAR #5 was closed out.

The PP also stated in the PDD version 1(ref. 1), that the grid connected for the project activity was the Manaus Electricity Grid in accordance with the applicable grid for the city of Manaus and the project activity.

The information was checked through the map of the National Operator of the System (ONS) (ref. 7), which presents the Brazilian interconnected system without a connection to the state of Amazonas and the city of Manaus. In addition, the project participant presented in the PDD the use of the “Tool to calculate the emission factor for an electricity system”, which is applicable to obtain the EF for the project activity.

4.6 Baseline Selection and Additionality

To discuss the identification of the most likely baseline scenario the PDD follow the steps determined in the applied methodology (ref. 5):
Procedure for the selection of the most plausible baseline scenario.
Step 1: Identification of alternative scenarios

Two alternatives were identified, LFG1 - the project activity (i.e. capture of landfill gas and its flaring and/or its use) undertaken without being registered as a CDM project activity and LFG 2 - atmospheric release of the landfill gas.
The partial capture of landfill gas and destruction to comply with regulations or contractual requirements is not required. Verified during site visit that there is no legal requirement to capture the landfill gas. The baseline scenario is the total release of LFG with electricity supplied from grid connected power plants.

Considering that the proposed project uses LFG for generating electricity, according to ACM0001 Version 11 realistic and credible alternatives also may include the following:
P1: Power generated from landfill gas undertaken without being registered as CDM project activity;
P2: Existing or construction of a new on-site or off-site fossil fuel fired cogeneration plant;
P3: Existing or construction of a new on-site or off-site renewable based cogeneration plant;
P4: Existing or construction of a new on-site or off-site fossil fuel fired captive power plant;
P5: Existing or construction of a new on-site or off-site renewable based captive power plant;
P6: Existing and/or new grid-connected power plants.

The proposed project will not make use of heat in the landfill and there is no consumer nearby the landfill.The heat generation was not considered a realistic alternative to the project participants. Thus alternatives P2 and P3 were not considered. There is no need for power in the landfill and no captive power plant is required. Thus alternatives P4 and P5 were not considered realistic.

Four realistic and credible alternative scenarios to the project activity were identified.
Alternatives LFG1 and P1 which comply with applicable laws and regulations.
Alternatives LFG2 and P6, a continuation of the current situation (partial or total release of LFG to the atmosphere) represents the business as usual practice for most of the landfills in Brazil, according to "Sistema Nacional de Informações sobre Saneamento: diagnóstico do manejo de resíduos sólidos urbanos – 2007" (ref. 23).

Step 2: Identify the fuel for the baseline choice of energy source taking into account the national and/or sectoral policies as applicable.

The baseline choice of the energy source identified is available in Brazil and there is no supply constraint. The grid emission factor defined by the Manaus electricity grid is representative of the fuel mix used in the baseline.

Step 3 – Provided under the additionality discussion.

Step 4 – Only one credible and plausible scenario remained, which is: *the baseline is the atmospheric release of landfill gas to the atmosphere. The electricity will be supplied by the Manaus grid.*

4.6.1 Additionality

From the information provided in the PDD version 1 and 2 (ref. 1) the PP has correctly followed the steps of the approved methodology (ref. 5) and the additionality tool (ref. 9).

CL #13 was raised because in the PDD version 1 (ref. 1) section B.5 sub-step 1b, it is informed that "there are no existing or pending regulatory requirements requiring the landfill site to implement any form of LFG emission reduction program", however there is no evidence regarding the assumption made.

The PP presented to the DOE assessment team the evidences of the National system of Information on Sanitation (SNIS - ref. 23) and the weblinks to assess the information regarding to the Integrated Management of Solid Waste (GIRS – ref. 28) and the Study of the proposal of the New National Solid Waste Policy Proposal (ref. 30) that were checked by the DOE. Furthermore, the PP has referred to the evidences provided in PDD version 2 (ref. 1).

Thus, **CL #13 was closed out.**

In addition, according to the PDD version 2 (ref. 1) section B.5. correctly follows the steps identified by the latest version of the "Tool for the demonstration and Assessment of Additionality", version 5.2 (ref. 9) and the ACM0001, version 11 (ref. 5). Furthermore, the information provided clearly follows the steps required by the approved methodology and additionality tool.

Step 1: Identification of alternatives to the project activity consistent with current laws and regulations.
Sub-step 1a. Define alternatives to the project activity:
Two alternatives were identified for the waste disposal and two alternatives for the power generation.
The project activity (capture of landfill gas and power generation) undertaken without being registered as a CDM project activity (LFG1), and atmospheric release of the landfill gas (LFG2).
Power generated from landfill gas undertaken without being registered as CDM project activity (P1), and existing and/or new grid-connected power plants (P6).

Sub-step 1b. Consistency with mandatory laws and regulations:
Verified through the Ministry of Environment and Ministry of Cities (ref. 28), Ministry of Cities – SNIS (ref. 23) and Brazilian parliament (New National Solid Waste Policy Proposal) that there is no regulation or policy that obliges the landfill to burn the LFG generated in the landfill. The PP will monitor the relevant regulation at the beginning of each crediting period and adjust the baseline accordingly.
The identified alternatives are credible and realistic and are in compliance with legislation and regulations.

Step2. Investment analysis.
Sub-step2a. Determine appropriate analysis method:
The proposed project will generate financial benefits other than CDM, Option III (benchmark) was chosen.

Sub-step2b. Option III. Apply benchmark analysis:
The benchmark (Net Present Value) used is consistent with generally accepted practices for projects of this nature, since it uses a Brazilian government bond rate of similar maturity to the project as risk-free rate. The market risk premium applied is suitable because it uses the historical average of the difference between the gains in US Stock Markets and profitability of T-bonds in United States of America, and the Unlevered Beta used is consistent, because refers to the companies of the same industry. The discount rate of 11.94% used is quite reasonable (ref. 19i).

Sub-step 2c. Calculation and comparison of financial indicators:
CAR#2 was raised related to the investment analysis evidences require more clarification and/or not in accordance with Manaus landfill investment analysis spreadsheet:

-Condensate Management (source of data and explain the 5 condensers);
-OC-CRA 1117 06 Koch (source of data, not in accordance with investment spreadsheet);
-Declaração de fiscalização compressor (data not in accordance with investment spreadsheet);
-15% of contingency for all expenses (explain the use of the contingency for this project);
-Evidence for the 25 years lifetime from the engine manufacturer;
-Operations Maintenance (source of data BRL 26.36/MW);
-Exchange rate is inconsistent with the link provided and date of the investment analysis.

With the information provided by the PP and what was verified during the site visit it was possible to confirm that five condensate management is necessary to the project activity and that one of the five condensates are already installed on site (ref. 19h).
In addition, the PP explained the source of data and presented more transparent in the financial analysis spreadsheet version 2 (ref. 20) of the following evidences: OC-CRA 1 117 06 Koch (ref. 19e); "Declaração de Fiscalização" (ref. 19f); Operations Maintenance (ref. 19b) and the Exchange Rate (ref. 19a).
The PP has presented the evidence "Landfill full cost Accounting Guide for New Zealand" (ref. 19d) which presents a contingency for landfill projects between 5 to 25%, for conservativeness in the financial analysis spreadsheet version 2 (ref. 20), the PP applied 5% of contingency. Regarding to the 25 years of the lifetime of the engine manufacturer, the PP applied the value presented in the "Tool to determine the remaining lifetime of equipment". In this way, **CAR #2 was closed out.**

Furthermore, **CL #6 was raised** because according to the information provided the project participant is required to clarify the following information:

- Regarding to the investment analysis the item "necessidade de capital de giro" the signals are inverted. This mean that the FCF is inflated of US$ 882,978.42, please clarify;
- In the PDD version 1 (ref. 1a) page 20, the sum of the final FCF in the year 2033 is not correct because does not consider the return of the working capital;
- The PP is required to provide the source of data for the PIS/COFINS.

From the information provided in the PDD version 2 (ref.1) and in the investment analysis spreadsheet (ref. 19) the signals were corrected, the sum of the final FCF in the year 2033 was corrected and the sources of PIS/COFINS included. In this way, **CL#6 was closed out.**

The analysis method used is appropriate for this type of project. The calculations are presented in accordance "Guidance on the Assessment of Investment Analysis". The spreadsheet calculations (ref. 20) are correct and the rates of depreciation and taxation are the usual ones used in the projections of cash flows in Brazil and are in accordance with Brazilian law.
The sensitivity analysis presented is consistent and demonstrate that the project is not feasible with acceptable variations in its main accounts.
The exchange rate used to convert revenues from Real to US Dollars is consistent with the date of preparing the work, according data from the Central Bank of Brazil.

The following data presented in the investment analysis and PDD were checked through documented evidence (LFG1):

Parameter	Value	Unit	Reference
Asset's Life time	25	Years	Engine Manufacturer, ref. 36
Installed capacity for each engine	1.6	MW	Ref. 17
Total installed capacity	19.2	MW	Calculated
Load factor	99.06%	%	Ref. 26b
Exchange Rate	1.57	R$/US$	Ref. 19a
Electricity price	156.78	R$/MWh	Ref. 18
Price per MW installed	2,637,433.98	US$/MW installed	Ref. 19c
Power plant operation cost	26.36	US$/MWh	Ref. 19b
Tax (PIS)	1.65%	%	(http://www.receita.fazenda.gov.br/principal/Ingles/SistemaTributarioBR/Taxes.htm)
Tax (Confins)	7.60%	%	(http://www.receita.fazenda.gov.br/principal/Ingles/SistemaTributarioBR/Taxes.htm)
Tax (income tax)	29%	%	(http://www.receita.fazenda.gov.br/legislacao/ins/Ant2001/Ant1997/1995/insrf05195.htm)
Tax (social contribution)	5%	%	(http://www.planalto.gov.br/ccivil_03/LEIS/L7689.htm)
Contingency	5%	%	Ref. 19d

The Project NPV is USD - 20,530,849.37. With this scenario the proposed project is not attractive.
The alternative LFG2 is the continuation of the current practice, which is in compliance with all applicable regulations.

Sub-step 2d. Sensitivity analysis:

The following data presented in the investment analysis and PDD were checked. The sensitivity analysis was performed varying -10% and +1-% the electricity tariff, the capital expenses and operational expenses, which are the main parameters that can impact in the project NPV.

	Variation	NPV
CapEx	-10%	$ -16,738,147.77
	10%	$ -24,424,732.36
O&M	-10%	$ -18,270,469.70
	10%	$ -22,864,648.05
Revenues	-10%	$ -24,789,072.07
	10%	$ -16,563,869.08
Base Case	0%	$ -20,530,849.37

In all scenarios the NPV remains negative, representing the proposed project activity is not financial attractive.

Step 3 – Barrier Analysis: Not applicable.

Step 4. Common practice analysis:
Refer to section 4.6.4 below for common practice detail.
The assessment team confirms that the proposed project activity is not common practice.

4.6.2 Prior Consideration of the Clean Development Mechanism

The start date of the proposed project activity is 25/07/2008 based on the contract (includes CDM consideration, ref. 22) signed between CRA, Tumpex (landfill operator), Manaus City Hall and Enterpa to develop the proposed project.
The evidences provided are consistent with the starting date of the project.

The project activity start date is not prior to the validation however the PP presented some evidences related to the CDM consideration independent of the validation process.

Events	Date
PDD submitted to SGS for validation	2 December 2005
PDD in Global Stakeholder Consultation (GSC) for the first time	07 December 2005 to 06 January 2006
SGS issues validation report	29 May 2006
Host country approval submitted	2 June 2006
CRA signed a contract (including CDM consideration) with Tumpex (landfill operator), Manaus City Hall and Enterpa to develop the proposed project (starting date of the project activity) (ref. 22).	25 July 2008
Construction works started (ref. 16)	October 2008
PDD in GSC for the second time	21 January 2009 to 19 February 2009

From February 2009 to now the validation process was ongoing. In the mean time the DOE requested to re-start the validation process with a new version 1 of the PDD taking into consideration the most recent version of the methodology ACM0001 and related tools.

The start date of the proposed project activity is 25/07/2008 based on the contract (includes CDM consideration, ref. 22) signed between CRA, Tumpex (landfill operator), Manaus City Hall and Enterpa to develop the proposed project.

The project activity start date is not prior to the validation however the PP presented some evidences related to the CDM consideration independent of the validation process.
In the PDD version 1 (ref. 1) section B.5 the timeline table is inconsistent with the dates presented. In addition the PP is required to provide the document for the construction work started, presented in the timeline table.
CAR #10 was raised.

In the PDD version 2 (ref. 1) the project participant has amended the date of the construction starts in accordance with the evidence provided "Chronogram and Chart (ref. 16)", the date presented in the evidence is October of 2008.
In this way, **CAR #10 was closed out.**

4.6.3 Identification of alternatives

Refer to section 4.6 above for the identification of alternatives.

The PDD identified the most credible alternatives to the project activity to establish the baseline scenario. The list of alternatives is considered complete and in accordance with project scenario and applied methodology. The list includes the option that the project activity is undertaken without being registered as a CDM project activity. The list contains the plausible alternatives according to the sectoral knowledge and the alternatives comply with applicable legislation.

4.6.4 Investment analysis

Refer to section 4.6.1 for investment analysis detail.

The parameters used in the investment analysis have been validated. The benchmark has been applied correctly to the proposed project activity. The assumptions made are appropriate and the investment analysis calculated correctly. The support data was provided.

4.6.5 Barrier analysis

Not applicable.

4.6.6 Common practice analysis

CL #12 was raised, because according to the information provided in the PDD version 1 (ref. 1) section B.5, step 4 "common practice analysis" the PP shall rephrase the sub-steps 4a and 4b of the additionality tool, in order to be in accordance with the requirements of the additionality tool.

With the information provided in the PDD version 2 (ref. 1) section B.5, step 4 was rephrased in order to be in accordance with the requirements of the additionality tool, presenting the information in the sub-steps 41 and 4b.
CL#12 was closed out.

The geographical scope applied for the common practice analysis is the whole country (Brazil). In the assessment of the existence of similar projects and the essential distinctions between the proposed project activity and any similar projects that are widely observed and commonly carried out the PP presented the following documents:

- SNIS (2007) - Secretaria Nacional de Informações sobre Saneamento Sistema Nacional de Informações sobre Saneamento: diagnóstico do manejo de resíduos sólidos urbanos (ref. 23). Which contain the information about the services of urban solid waste management in Brazil (Ministry of Cities);

- Brazilian Greenhouse Gases Emissions Inventory Report for Waste Sector (ref. 38). Which discuss that there is no landfill site with flaring system or electricity generation, in fact the inventory mention that if there is some methane recuperation it is insignificant;

- Brazilian Country Profile for waste sector by Methane to Markets (ref. 37). Which discuss that in the past five years in the country there were less than ten initiatives related with biogas use, including

laboratorial experiments in landfills, wastewater treatment plants and farms. In the last two years, between opportunities of trade of Carbon Credits, according the Kyoto Protocol, the Clean Development Mechanism (CDM) projects that were approved by Designated National Authority.

Using the above documents and the knowledge expertise of the assessment team, there is no similar operational projects other than CDM project activities been undertaken in the host country (Brazil).

The assessment team confirms that the proposed project activity is not common practice.

4.7 Application of Baseline Methodology and Calculation of Emission Factors

From the information supplied from the Client in the PDD (version 1) (ref. 1) the approved methodology (ref. 5) has been applied correctly to determine baseline emissions.

$$BE_y = (MD_{project,y} - MD_{BL,y}) \times GWP_{CH4} + EL_{LFG,y} \times CEF_{elec,BL,y}$$

From the information supplied by the Client in the PDD (version 1) (ref. 1) section B.6.1 the approved methodology (ref. 5) has been applied correctly for determining project emissions.
$PE_y = PE_{EC} + PE_{FC,j,y}$
There is no consumption of heat by this project activity ($PE_{FC,j,y}=0$)
$PE_y = PE_{EC}$

During the period when the project is not generating electricity, the electricity will be consumed from the grid. The PDD follows scenario A: Electricity consumption from the grid of the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption", version 1.
Option A1: calculated the combined margin emission factor of the Manaus electricity grid ($EF_{EL,j/k/l,y} = EF_{grid,CM,y}$).

$$PE_{EC,y} = EC_{PJ,y} \times EF_{grid,CM,y} \times (1 + TDL_y)$$

And,

$$PE_{FC,j,y} = \sum_i FC_{i,j,y} \times COEF_{i,y}$$

No leakage effects need to be accounted under this methodology ACM0001 version 11.

In the PDD version 1 (ref. 1), the information presented in the section B.6.2 is not in accordance with the requirements of the approved methodology ACM0001 v.11 (ref. 5), regarding to the following parameters:

- Regulatory requirements relating to landfill gas;
- $EF_{grid,OM}$ – Operating margin of CO_2 emission factor;
- K_j – Decay rate for waste j;
- Waste composition;
- $BE_{CH4,SWDS,y}$ – Methane generation in the landfill in the absence of the project activity.

CAR#7 was raised.
According to the PDD version 2 (ref. 1) section B.6.2 the PP has amended the information regarding to the Regulatory requirements relating to landfill gas; $EF_{grid,OM}$ – Operating margin of CO2 emission factor; Kj – Decay rate for waste j; Waste composition and $BE_{CH4,SWDS,y}$ – Methane generation in the landfill in the absence of the project activity, being in accordance with the approved methodology ACM0001 v.11 (ref. 5).
In this way, **CAR #7 was closed out.**

The following parameters were verified as ex-ante in the PDD:

- Combined margin CO_2 emission factor for the project electricity system = 0.7160 tCO_2/MWh (ref. 10);
- Build margin CO_2 emission factor for the project electricity system = 0.6992 tCO_2/MWh (ref. 10);
- Operating margin CO_2 emission factor for the project electricity system = 0.7329 tCO_2/MWh (ref. 10);
- Regulatory requirements relating to landfill gas (ref. 23, 28);
- Model correction factor to account for model uncertainties = 0.9 (Default value used);
- Oxidation factor (reflecting the amount of methane from SWDS that is oxidized in the soil or other material covering the waste) = 0.1 (Default value used for managed solid waste disposal sites);
- Fraction of methane in the SWDS gas = 0.5 (default value of 0.5 is recommended by IPCC);
- Fraction of degradable organic carbon that can decompose = 0.5 (default value 2006 IPCC);

- Methane correction factor = 1.0 (IPPC default value for anaerobic managed solid waste disposal site is applied);
- Fraction of degradable organic carbon (by weight) in the waste type j = (IPCC default value for anaerobic managed solid waste disposal site is applied)

Waste type j	DOCj (% wet waste)
Wood and wood products	43%
Pulp, paper and cardboard (other than sludge)	40%
Food, food waste, beverages and tobacco (other than sludge)	15%
Textiles	24%
Garden, yard and park waste	20%
Glass, plastic, metal, other inert waste	0%

- Decay rate for waste type j = (IPCC default value for anaerobic managed solid waste disposal site is applied and Instituto Nacional de Meterologia (INMET) ref. 27)

Waste type j		Tropical (MAT > 20 ℃) Wet (MAP>1000mm)
Slowly degrading	Pulp, paper, cardboard (other than sludge), textiles	0.07
	Wood, wood products and straw	0.035
Moderately degrading	Other (non-food) organic putrescible garden and park waste	0.17
Rapidly degrading	Food, food waste, sewage sludge, beverages and tobacco	0.4

- Waste composition (ref. 24)

Composition of the waste	
A) Wood and wood products	1.92%
B) Pulp, paper and cardboard (other than sludge)	21.18%
C) Food, food waste, beverages and tobacco (other than sludge)	35.84%
D) Textiles	1.39%
E) Garden, yard and park waste	2.99%
F) Glass, plastic, metal, other inert waste	36.68%
TOTAL	100.0%

- Global warming Potential (GWP) of methane = 21 tCO_2e/tCH_4 (Decisions under UNFCCC and the Kyoto Protocol, default value for the first commitment period);
- Methane density = 0.0007168 tCH_4/m^3CH_4 (ACM0001 – version 11, ref. 5);
- Methane generation from the landfill in the absence of the project activity at year y = several data used only for the estimative (ref. 25).

From the information supplied by the Client in the PDD (version 2) (ref. 1) section B.6.2 and B.6.3, all data is derived from official data sources or replicable records and has these been correctly quoted. The vintage of the baseline data is considered correct. All data is considered appropriate and has been correctly applied to

the proposed CDM project activity. All data and parameters that are not being monitored and remained fixed throughout the crediting period are considered correct, and will result in conservative estimates.

From the information supplied by the Client in the PDD (version 1) (ref. 1) section A.4.4 and B.6.4 the approved methodology (ref. 5) been applied correctly for determining emission reductions (ref. 25).
The PDD clearly state the equations that will be used in calculating emission reductions. The required steps/calculations have been followed.

According to the PDD version 1 (ref. 1) the reported value regarding to the flare efficiency (99%) used to estimate the emissions reductions is not in accordance with the evidence provided (ref. 12).
CAR #9 was raised.
The PP presented the PDD version 2 (ref. 1) applying the correct value of the flare destruction efficiency used in the estimative as 98% (ref. 12). In this way, **CAR #9 was closed out.**

4.8 Application of Monitoring Methodology and Monitoring Plan

From the information supplied by the Client in the PDD (version 2) (ref. 1) section B.7 all parameters and data that is available at validation is consistent with the approved methodology (ref. 5). All data have been interpreted and applied correctly.

According to the PDD version 1 (ref. 1) section B.7.1 the information presented regarding to the monitored parameters shall be revised to be in accordance with the requirements of the approved methodology and all applicable tools.
CAR#11 was raised.
From the PDD version 2 (ref. 1) the PP informed that the parameters were amended to conform with the approved methodology and all applicable tools and the parameters NCV and EFco2,ij were included in section B.7.1 of the PDD.
CAR#11 was closed out.

The following parameters will be monitored according to the applied methodology and tools:

- Total amount of landfill gas captured at normal temperature and pressure (Nm^3);
- Amount of landfill gas flared at Normal Temperature and Pressure (During Phase 1 (flaring) the data will be collected continuously using 1 on-line mass-compensated flow meter located in the piping leading to the flare. Upon completion of Phase 2 (electricity generation) an additional 2 mass-compensated flow meters will be installed with one being in the piping leading to the engine and the other in the piping right after the blowers measuring the total collected landfill gas (Nm^3);
- Amount of LFG combusted in power plant at Normal Temperature and pressure (Nm^3);
- Methane fraction in the landfill gas (m^3CH_4/m^3LFG);
- Project emissions from flaring of the residual gas stream in year y (tCO_{2e}). Annual data will be recorded as per the most current version of the *"Tool to determine project emissions from flaring gases containing Methane";*
- Net amount of electricity generated using LFG (MWh);
- Operation of the energy plant (hours);
- Weighted average net calorific value of diesel in year y (GJ per mass (GJ/ton));
- Weighted average CO_2 emission factor of diesel in year y (tCO_2/GJ);
- Project emissions from electricity consumption by the project activity during the year y (tCO_2). Calculated as per the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" ver. 1;
- Fraction of methane captured at the SWDS and flared, combusted or used in another manner (80%, ref. 14);
- Total amount of organic waste prevented from disposal in year x (t);
- Volumetric fraction of O_2 in the exhaust gas of the flare in the hour h ($t_{O2,h}$);
- Concentration of methane in the exhaust gas of the flare in dry basis at normal conditions in the hour h (mg/m^3);
- Temperature on the exhaust gas of the flare (ºC);
- Volumetric flow rate of the residual gas in dry basis at normal conditions in the hour h (m^3/h);
- Volumetric fraction component i of the residual gas in dry basis at normal conditions in the hour h, where i = CH_4 and N_2;

- Average technical transmission and distribution losses in the grid in year *y* for the voltage level at which electricity is obtained from the grid at the project site (6%, ref. 29);
- Quantity of fuel type i combusted in process j during year y (Mass or volume unit per year);
- Consumption of LPG by the project activity (kg).

From the information supplied by the Client in the PDD (version 2) (ref. 1) section B.7 the choices of project GHG indicators are reasonable and in conformance with the requirements set by the approved methodology (ref. 5) applied. The parameters are according to the required by the methodology (ref. 5) and the monitoring plan is verifiable for each parameter which requires to be monitored by the PP.

The information provided in the PDD (version 2) (ref. 1) for each monitoring parameter is sufficient to ensure quality data. All parameters that require continuously measurement will be recorded electronically.
The project site operator will provide all requested data logs which will be stored over the duration of the reporting period.

Verified during site visit, the following quality control procedures will be implemented to ensure high quality data: Calibration of equipment as per manufacturer specifications to ensure validity of data measured, the gas analyzer should be subject to a regular maintenance and testing regime to ensure accuracy, reliable sources will be used among others. The selection of data is undergoing quality control and quality assurance procedures complete ensuring that data provisions will be free of potential conflicts of interests resulting in a tendency of overestimating emission reductions.

From the information supplied by the Client in the PDD (version 1) (ref. 1) the authority and responsibility of the project management was clearly described.

According to the PDD it will be the responsibility of the Site Operator to provide all requested data logs which will be stored over the duration of the reporting period at the Site office. The data logs will be summarized into emission reduction calculation summaries prior to each verification. This task will be completed by CRA and reported directly to the DOE.

The information provided in the PDD version 1 (ref. 1) Annex 4 is duplicated from the section B.7.2 and shall be revised in the PDD.

CAR#14 was raised.

According to the information provided in the PDD version 2 (ref. 1) the PP is referring to section B.7.2 in the Annex 4 – Monitoring Information, in this way the information is not duplicated anymore.

Thus, **CAR #14 was closed out.**

The monitoring plan describes the measures to monitor the required parameters. The monitoring plan states that a specific monitoring plan will be designed to reflect actual technology selected for the system. The calibration table is available and it was verified during site visit (ref. 35). From the information supplied by the Client in the PDD (version 1) (ref. 1) mention is made to Conestoga-Rovers conducting a training and quality control program before the O&M phase of the project (ref. 32).
Data collected from each of the parameter sensors is transmitted directly to an electronic database from which the emission reductions volume calculations may be carried out. Hard copy backup or reports of the data may be printed as required or recorded. Backup of the electronic data is conducted on a 2-3 minute intervals.
The Landtec system in the project is plugged to a battery-based uninterruptible power supply to avoid data loss due to power failures. Backup will be produced and stored off-site from the main recording system, no more than 2 to 3 minutes of data at a time would ever be lost due to a system malfunction.
The periodic monitoring report will contain the data required for the verification of the emission reductions, additionally may contain operational data from the collection system and flaring system to illustrate that the system is well maintained and operating. Records of regular maintenance performed will also be a component of the annual report.
The DOE opinion is that the monitoring plan described in the PDD are feasible within the project design. The monitoring plan, data management, quality assurance and quality control procedures, are sufficient to ensure that the emission reductions achieved from the proposed project activity can be reported and verified if implemented as described and required in the applied methodology and tools.

From the information provided by the Client in the PDD (version 1) (ref. 1) section B.8 states that the baseline was determined on 12/05/2010.

From the information provided by the Client in the PDD (version 2) (ref. 1) section C the start date stated is the date which occurs later between 01/01/2011 and the date of registration.

4.9 Environmental Impacts

The landfill site (Manaus landfill) and the proposed project activity have no Operation Environmental License. However PP provided the following documents:

Installation License Nº069/06, dated 26/04/2006 issued by IPAAM for the gas system to capture and flare the landfill gas (ref. 3a);

Protocol Nº8611/09, dated 08/07/2009 requesting Operation License to IPAAM (ref. 3ai);

Letter Nº009/2010 – DIR, dated 14/06/2010 (Protocol Nº 3942, 16/06/2010) submitted to SEMMAS (Secretaria Municipal de Meio Ambiente e Sustentabilidade) requesting Operation License of Manaus landfill (ref. 3b).

PP shall provide the real evidence of legal conformity (Operation license) in the first verification of the project activity.

FAR#16 was raised.

The environmental agency is responsible to check the environmental impacts. It is not expected any significant environmental impacts due to the project activity. The requirement of an environmental impact assessment will verified by the environmental agency at the time of issuing the operation license.

4.10 Local Stakeholder Comments

From the information provided by the Client in the PDD (version 1) (ref. 1) section E the local stakeholders meeting was held on 26th January 2006 and complies with Resolution Number 1, dated 11th September 2003.

To comply with Resolution Number 7, dated 26th May 2006 letters were sent to the following stakeholders:

- Prefeitura Municipal de Manaus (Municipal administration of Manaus);
- Câmara Municipal de Manaus (Municipal Chamber of Manaus);
- SEMMAS - Secretaria Municipal de Meio Ambiente e Sustentabilidade de Manaus (Municipal Administration of Environment and Sustainability of Manuaus);
- IPAAM - Instituto de Proteção Ambiental do Amazonas (Environmental Protection Institute of Amazonas);
- FBOMS-Forum Brasileiro de ONG's e Movimentos Sociais para o Meio Ambiente e o Desenvolvimento (Brazilian Forum of Non-Governmental Organizations and Social Movements for Environment and Development);
- Ministério Público do Estado do Amazonas (Amazonas Prosecutor´s office);
- Ministério Público Federal (Federal Prosecutor´s office);
- ARPA - Associação de Reciclagem e Preservação Ambiental (Recycling and Environmental Preservation Association);
- ACR -Associação de Catadores de Resíduos (Residues Collectors Association);
- Associação Manauense de Recicláveis (Recycling Association of Manaus).

Letters were sent to local stakeholders in the local language according to Resolution Number 7, dated 26th May 2006. From the information provided by the Client in the PDD (version 1) (ref. 1) section E the undertaken local stakeholder process has been described in a complete and transparent manner. From the information provided by the Client in the PDD (version 1) (ref. 1) section E.3 takes into due account the comments received throughout the local stakeholder process held on 26th January 2006. Regarding the letters sent, no comments have been received.

5. Comments by Parties, Stakeholders and NGOs

In accordance with sub-paragraphs 40 (b) and (c) of the CDM modalities and procedures, the project design document of a proposed CDM project activity shall be made publicly available and the DOE shall invite comments on the validation requirements from Parties, stakeholders and UNFCCC accredited non-governmental organizations and make them publicly available. This chapter describes this process for this project.

5.1 Description of how and when the PDD was made publicly available

The Project Design Document for this project was made available on the SGS website *http://cdm.unfccc.int/Projects/Validation/DB/UU28PRXBOC4Z6WHEUG6OM1EXXDBOW2/view.html* and was open for comments from 26th May 2010 – 24th June 2010. Comments were invited through the UNFCCC CDM homepage.

5.2 Compilation of all comments received

Comment Number	Date Received	Submitter	Comment
1	26th May 2010	Eloi Marcondes	As in the case of other few landfill gas project activities implemented in Brazil in a public landfill, information about the tendering process for the concession of the rights to explore biogas from our public landfill by involved project participants is unclear and not transparent. While the municipal administration of some cities in Brazil where LFG capture and destruction/utilization CDM projects were implemented in public landfill (e.g. São Paulo, Rio de Janeiro) managed to take financial benefits of associated carbon revenues, the case of this landfill in Manaus in unclear. While the city of São Paulo has been regularly promoting public auctions for the sale of their significant share of carbon credits (CERs), no information is available at the official webpage of the municipal administration (city hall) of Manaus regarding the deal our muni has with the project participants. As a citizen of Manaus, I would appreciate if it could be clarified whether we citizens of Manaus will benefit from the exploration under a concession agreement of biogas in our public landfill. I hope this is not one more example of a not transparent and fair deal between a public entity and private parties which harm the interest of the citizens like me.

5.3 Explanation of how comments have been taken into account

The PP is required to address the comments received during the International Stakeholder Consultation of the PDD version 1 (ref. 1). **CL #1 was raised.**

In response to the clarification the PP presented to the DOE assessment team and to the citizen (ref. 21), a response clarifying that how the benefits of the CDM project activity will benefit the city of Manaus.
In this way, **CL #1 was closed out.**

Response submitted to Sir Eloi Marcondes on 23rd June 2010.

As a result of this Project Activity, the operation in Manaus landfill was significantly improved, reducing the risk of environmental contamination and proliferation of disease-carrying animals. Also, the odor was reduced considerably and in the future the city of Manaus shall benefit from some additional electricity generation from renewable source.

The Project Activity is being implemented with private investment only. Nonetheless, according to an agreement signed on 25 July 2008 between the city of Manaus and the private companies engaged in the implementation of the Project, the city of Manaus will receive 10% of the CERs generated by the Project.

6. List of Persons Interviewed

Date	Name	Position	Short Description of Subject Discussed
24/06/2010 to 26/06/2010	Alessandro Peixoto	CRA	Project implementation chronogram, project planning and plants. Monitoring data.
24/06/2010 to 26/06/2010	Diego Sabetta	CRA	Subjects related to the PDD development, location, and other relevant information.
24/06/2010 to 26/06/2010	Carlos Eduardo Ferreira	CRA	Subjects related to the PDD development, location, and other relevant information. Project implementation chronogram, project planning and plants. Monitoring data. Social contracts of the PPs, Investment Analysis and all financial information.
24/06/2010 to 26/06/2010	Olga Corona	CRA	Subjects related to the PDD development, location, and other relevant information. Social contracts of the PPs, Investment Analysis and all financial information.
24/06/2010 to 26/06/2010	Francisco Espírito Santo	Econergy	Subjects related to the PDD development and its parameters, baseline, location, and other relevant information.

7. Document References

Category 1 Documents (documents provided by the Client that relate directly to the GHG components of the project, (i.e. the CDM Project Design Document, confirmation by the host Party on contribution to sustainable development and written approval of voluntary participation from the designated national authority):

/1/ Project Design Document (PDD):

a - PDD version 1, Dated 20/05/2010

b - PDD version 2, Dated 27/06/2010

/2/ Screenshot of the physical location of the project

/3/ Environmental Licenses:

a - Installation License, dated 26th April 2006

ai - Protocolo - LO planta de biogás

ai - Protocolo - LO planta de biogás

/4/ Letter of Approval:

a – Pending LoA from Brazil

b – Pending LoA from Canada

Category 2 Documents (background documents used to check project assumptions and confirm the validity of information given in the Category 1 documents and in validation interviews):

/5/ Methodology ACM0001 v.11

/6/ Screenshot of the references presented in the UNFCCC website

/7/ ONS Brazilian Interconnected System

/8/ EB41, Annex 12, v. 7, dated 2nd August 2008

/9/ Tool for the demonstration and assessment of additionality

/10/ EF Spreadsheet d. v

/11/ Tool to calculate baseline, project and leakage emissions from electricity consumption

/12/ Flare Specification

/13/ Uptime of the grid

/14/ Collection Efficiency of 80%

/15/ Characterization of Waste

/16/ Chronogram and Chart

/17/ Gas engine technical data

/18/ Technical notes of Manaus

/19/ Investment analysis

/20/ Financial Spreadsheet

/21/ Response to Stakeholder Comment

/22/ Contract between the parties involved

/23/ Sistema Nacional de Informações sobre saneamento

/24/ Waste Composition

/25/ CERs Spreadsheet:

a - AterroManausCER_2010.04.14_FES.

b - AterroManausCER_v2_2010.06.27_FES

/26/ Uptime of energy and load factor

/27/ Climate data from Manaus

/28/ Gestão integrada de resíduos sólidos - GIRS

/29/ Balanço Energético Nacional (BEN) 2006

/30/ Solid waste obligations

/31/ Project Participant withdraw

/32/ Training certificates

/33/ Waste Received at landfill since 1986

/34/ Energy Consumed in the Project

/35/ Calibration Table

/36/ Tool to determine the remaining lifetime of equipment

/37/ Methane to Markets Partnership

/38/ CETESB - Emissões de Metano no Tratamento e na Disposição de Resíduos

/39/ Resolution Nº 1, dated 11th September 2003

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A.1 Annex 1: Local Assessment

This checklist is designed to provide confirmation of in-country data and information provided in the Project Design Document for Manaus Landfill Gas Project.

It serves as a "**reality check**" on the project that is completed by a local assessor from SGS Brazil.

Issue	**Findings**	**Source/Means of Verification**	**Further Action / Clarification / Information Required?**
Project Participant	The PP presented the PDD version 2 (ref. 1) with the withdraw of the project participant "Summit Lake Limited". The PP needs to provide a declaration of voluntary exclusion of the "Summit Lake Limited".	Ref. 1 - PDD version 2	Refer to CAR #15
Is all information provided consistent and in compliance with the actual situation or planning	During the site visit the information was verified in section A.2. of the PDD (ref. 1) and in compliance with the planning/actual situation of the proposed project activity. The assumptions provided in the PDD version 2 (ref. 1) with relevance on the baseline and projections are consistent with verified during site visit and with the evidence Chronogram and Chart (Cronograma e Organograma – ref. 16);	Ref. 1 - PDD version 1 and 2; Ref. 16 – Cronograma e Organograma	No
Does the information on public funding provided conform to the actual situation or planning as presented by the project participants?	Confirmed during site visit that there is no public funding. The project participants are private companies which signed a contract with the Municipality of Manaus to operate the landfill and implement the proposed activity (ref. 22).	Ref. 22 - Contract between the parties involved	No

Issue	Findings	Source/Means of Verification	Further Action / Clarification / Information Required?
Investment analysis evidences: -Costs table (source of data); - Check why the items B and C in the investment spreadsheet are replied in the 25 years in the "Capex" analysis; -LFG utilization system (check source of data, price per MW installed); -Nota tecnica Manaus (check the energy tariff, why the Ponta Negra tariff was used instead of the other power plants);	The PP explained the source of data referent to the "LFG utilization system (ref. 19c)" and the "Nota tecnica Manaus". In addition, the PP amended the correct information and has presented more transparent in the financial analysis spreadsheet version 2 (ref. 20), allowing a clear understanding of the points raised during the desk review.	Ref. 19c – LFG utilization system; Ref. 18 – Nota tecnica Manaus Ref. 20 – Financial analysis spreadsheet version 2	No
Emission factor: CGE was not included in 2007. In the OM spreadsheet missing the Electron and Bloco V Mauá in the year of 2008 and Electron in the year of 2009.	During the site visit the PP explained that the CGE power plant, Electron and Mauá Bloco V power plants were not included in the calculations of the emission factor because the capacity of the power plant reported in the evidence "Operating Program for Isolated Systems (ref. 10c)" was not used for that year or period of time.	Ref. 10c – Operating Program for Isolated Systems	No

Issue	Findings	Source/Means of Verification	Further Action / Clarification / Information Required?
Is there a verifiable description of the baseline scenario? Does this include a description of the technology that would be employed and/or the activities that would take place in the absence of the proposed CDM project activity?	The PP presented to the DOE assessment team the evidences of the National system of Information on Sanitation (SNIS - ref. 23) and the weblinks to assess the information regarding to the Integrated Management of Solid Waste (GIRS – ref. 28) and the Study of the proposal of the New National Solid Waste Policy Proposal (ref. 30) that were checked by the DOE. Furthermore, the PP has referred to the evidences provided in PDD version 2 (ref. 1).	Ref. 23 - National system of Information on Sanitation Ref. 28 - Integrated Management of Solid Waste Ref. 30 - New National Solid Waste Policy Proposal	No
Does the PDD clearly demonstrate the additionality using the approach as specified in the methodology and by following all the required steps?	During the site visit the DOE assessment team could verify that the information provided in the PDD (ref. 1) was in compliance with the situation observed on site.	Site Visit	No
Operational and Management Structure: Is the authority and responsibility of project management clearly described?	During the site visit the DOE assessment team was able to verify that the authorities and responsible for the project management are clearly described in accordance with the evidence provided Chronogram and Chart (Cronograma e Organograma – ref. 16);	Ref. 16 – Cronograma e Organograma	No

Issue	Findings	Source/Means of Verification	Further Action / Clarification / Information Required?
Does the project comply with environmental legislation in the host country?	The landfill site (Manaus landfill) and the proposed project activity have no Operation Environmental License. However PP provided the following documents: Installation License Nº069/06, dated 26/04/2006 issued by IPAAM for the gas system to capture and flare the landfill gas (ref. 3a); Protocol Nº8611/09, dated 08/07/2009 requesting Operation License to IPAAM (ref. 3ai); Letter Nº009/2010 – DIR, dated 14/06/2010 (Protocol Nº 3942, 16/06/2010) submitted to SEMMAS (Secretaria Municipal de Meio Ambiente e Sustentabilidade) requesting Operation License of Manaus landfill (ref. 3b). PP shall provide the real evidence of legal conformity (Operation license) in the first verification of the project activity.	Ref. 3a – LI from IPAAM N°069/06, dated 26/04/2006 Ref. 3ai – Protocol N°8611/09, dated 08/07/2009 requesting the Operation License to IPAAM; Ref. 3b – Letter N°009/2010 – DIR, dated 14/06/2010 – Protocol N° 3942 dated 16/06/2010;	FAR #16

A.2 Annex 2: Validation Checklist

Table 1 Participation Requirements for Clean Development Mechanism (CDM) Project Activities (Ref PDD, Letters of Approval and UNFCCC website)

Requirement	Reference	Comments	Conclusion/CARs/ CLs
1. All Parties involved have approved the project activity 1.1. Has the DNA of each Party involved in the proposed CDM project activity in section A.3 of the PDD provided a written letter of approval which confirms 1.1.1. The country is a Party to the Kyoto Protocol 1.1.2. Participation is Voluntary 1.1.3. The Host Party confirming that the proposed CDM project activity contributes to sustainable development of the country Non-Annex 1 Party shall submit a letter of approval 1.1.4. It refers to the precise proposed CDM project activity title in the PDD being submitted for registration	Annex 3, Clean Development Mechanism, Validation and Verification Manual, Version 01.1 (from this point forwarded referenced as VVM) - 49a-d /54a-b/125 Paragraph 37 CDM Modalities and procedures	Brazil is listed as the non-Annex-I Party, has ratified the protocol on 23rd August 2002 and is allowed to participate http://maindb.unfccc.int/public/country.pl?country=BR Canada is listed as Annex-I Party, has ratified the protocol on 17th December 2002 and is allowed to participate http://maindb.unfccc.int/public/country.pl?country=CA There is no letter of approval from DNA Brazil and DNA Canada at this phase (just after submission of validation report). Pending the LoA from Brazil and Canada.	Pending

Requirement	Reference	Comments	Conclusion/CARs/ CLs
2. Please state the project participants listed in the PDD and check with which of these project participants does SGS have a contract for the projects validation	Para 37 CDM M & P Para 7 EB 50 Annex 48	In the PDD version 2 (ref. 1) the project participants listed are: ▪ TUMPEX – Empresa Amazonense de Coleta de Lixo Ltda. (Private Entity); ▪ Enterpa Engenharia Ltda. (Private Entity); ▪ Conestoga-Rovers & Associates Capital Limited (Private Entity); SGS has contract for the project validation with Conestoga-Rovers & Associates Capital Limited.	Y

Requirement	Reference	Comments	Conclusion/CARs/ CLs
2.1. If the project participant(s) listed in the PDD published at international stakeholder[1] consultation are not included in the PDD submitted with request for registration, a letter should be obtained from the withdrawn project participant(s) confirming its voluntary withdrawal from the proposed project activity.	EB 30 Para. 41. EB50 Annex 48 Para. 8	In the PDD version 2 (ref. 1) there is one project participant that was listed in the PDD version 1 (ref. 1) published at international stakeholder consultation, which now is not included in the PDD version 2. The PP is required to provide a letter with the withdrawn of the project participant. **CAR #15 was raised.** The PP provided to the DOE assessment team the evidence "394754_1" (ref. 31a) informing who are the people that can response for the company interests and the "Redacted Org Docs re Directors authority (summit lake)" (ref. 31b) which is a memorandum proving the name of the company and the persons involved. To conclude, the PP provided the letter "2010.07.01 Declaration re Summit Lake as Project Participant [Executed] (ref. 31c)" which states that the Summit Lake Lake is not a currently project participant in the Manaus Landfill Gas Project. **CAR #15 was closed out.**	~~CAR#15~~ Y
2.2. Confirm while submitting a request for registration – all of the project participants with a contractual relationship are still listed in the PDD.	EB50 Annex 48 Para.7-9	Conestoga-Rovers & Associates Capital Limited, with which SGS has a contract, is still listed in the PDD (ref. 1).	Y

[1] Stakeholders mean the public, including individuals, groups or communities affected, or likely to be affected, by the proposed CDM project activity or actions leading to the implementation of such an activity

Requirement	Reference	Comments	Conclusion/CARs/ CLs
2.3. Project participants who are listed in the PDD (submitted for global stakeholder consultation) but who do not have a contractual relationship with SGS for the purposes of the validation activity may be removed from the PDD which is submitted for registration	EB50 Annex 48 Para.7-9	Not applicable, Conestoga-Rovers & Associates Capital Limited with which SGS has a contract, is still listed in the PDD (ref. 1).	Y
2.4. SGS may restart the validation activity through the new or revised contract with a different set of project participants by; a. Indicating that the first validation contract has been terminated and; b. Republishing the PDD or revised PDD for global stakeholder consultation.	EB50 Annex 48 Para.7-9 (If applicable)	Not applicable.	N/A
2.5. The letter/s of approval are unconditional with respect to 1.1.1 to 1.1.4 above	VVM Para. 49/54	There is no letter of approval from DNA Brazil at this phase (just after submission of validation report).	Pending
3. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof, and be entered into voluntarily	VVM Para. 54 Marrakech Accords, CDM Modalities §29 and §30 Kyoto Protocol Art. 12.2, Marrakech Accords, CDM Modalities §40a	There is no letter of approval from DNA Brazil at this phase (just after submission of validation report).	Pending

Requirement	Reference	Comments	Conclusion/CARs/ CLs
4. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for a minimum of 30 days, and the project design document and comments have been made publicly available	VVM Para. 128 Marrakech Accords, CDM Modalities, §40	The PDD (version 1) (ref. 1) is published at the UNFCCC website: http://cdm.unfccc.int/Projects/Validation/DB/UU28PRXBOC4Z6WHEUG6OM1EXXDBOW2/view.html ▪ Starting Date: 26th May 2010 ▪ Closing Date: 24th June 2010 ▪ Number of comments received: 1 - **CL #1 was raised** regarding to the PP to address the comments received during the International Stakeholder Consultation of the PDD version 1 (ref. 1). In response to the clarification the PP presented to the DOE assessment team and to the citizen (ref. 21), a response clarifying that how the benefits of the CDM project activity will benefit the city of Manaus. In this way, **CL #1 was closed out.**	~~CL #1~~ Y
5. The project design document is in accordance with the applicable CDM requirements for completing PDDs.	VVM Para. 57 Marrakech Accords, CDM Modalities, Appendix B, EB Decisions	From the PDD version 1the PP is required to apply the PDD format and content in accordance with the requirements of EB41 Annex 12 (ref. 18). **CAR#8 was raised.** The PDD (version 2) is in accordance with the latest template of "Clean Development Mechanism Project Design Document Form (CDM-PDD)" (version 03.2 – 28 July 2006). **CAR#8 was closed out.**	~~CAR#8~~ Y

Table 2 - PDD

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
A. General Description of Project Activity				
A.1. Project Title				
A.1.1. Does the used project title clearly enable the reader to identify the unique CDM activity?	VVM Para.56 Guidelines for completing a CDM-PDD (PDD) section A.1	DR	The title "Manaus Landfill Gas Project" indentifies the unique CDM project activity.	Y
A.1.2. Is there an indication of a revision number and the date of the revision?	VVM Para.56 PDD section A.1	DR	The project activity PDD was published three times in the UNFCCC website for ISHC, this due the changes in the versions of methodology and the applicable tools, the dates of publications are: ▪ Manaus Landfill Gas Project – 07/12/2005 to 06/01/2006; ▪ Manaus Landfill Gas Project – 21/01/2009 to 19/02/2009; ▪ Manaus Landfill Gas Project – 26/05/2010 to 24/06/2010; In this third assessment the validation process re-started and the PP supplied the PDD version 1 (ref. 1), which contains in the section A.1. the following information: ▪ Version: 1; ▪ Dated: 20/05/2010;	Y

A.2. Description of the Project Activity					
A.2.1.	Does the description of the proposed CDM project activity as contained in the PDD sufficiently cover all relevant elements accurately?	VVM Para.59 PDD section A.2 see also A.4, A.4.3 and B.3	DR	According to the PDD version 1 (ref. 1) in the section A.2 it clearly describes the purpose of the project activity along with its contribution of the project to the sustainable development and the type of technology used.	Y
A.2.2.	Does the information provide the reader with a clear understanding of the proposed CDM activity?	VVM Para.60 PDD section A.2 see also A.4, A.4.3 and B.3	DR	According to the PDD version 1 (ref. 1), the information provide to the reader a clearly understanding of the project activity, which consists in reducing the GHG emissions through the collection of the landfill gas to be flared and/or to generate electricity energy.	Y
A.2.3.	Is all information provided consistent and in compliance with the actual situation or planning?	VVM Para.64 PDD section A.2 see also A.4, A.4.3 and B.3	DR	During the site visit the information was verified in section A.2. of the PDD (ref. 1) and in compliance with the planning/actual situation of the proposed project activity. The assumptions provided in the PDD version 2 with relevance on the baseline and projections are consistent with verified during site visit. Refer to Annex I for more detail.	Y
A.2.4.	Is all information provided consistent with details provided in further chapters of the PDD?	VVM Para.64 PDD section A.2	DR	The proposed project activity consists of two phases. The first for the construction of a LFG collection and flaring system and the second for the construction of a LFG-fired power in a landfill. The PDD version 1 presents the relevant overview of the project. The proposed project does not involve the alteration of an existing installation or process and clearly state the difference resulting from the project activity (landfill gas collection and flaring and power) compared to the pre project situation which is landfill with minimal control of surface water and leachate and no control of landfill gas.	Y

A.3. Project Participants					
A.3.1.	Is the table required for the indication of project participants correctly applied?	VVM Para. 51 PDD section A.3	DR	The table provided in the PDD version 2 (ref. 1) is in accordance with the required by the EB 41 Annex 12. In addition, the project participants provided in the table are: ▪ TUMPEX – Empresa Amazonense de Coleta de Lixo Ltda. (Private Entity); ▪ Enterpa Engenharia Ltda. (Private Entity); ▪ Conestoga-Rovers & Associates Capital Limited (Private Entity);	Y
A.3.2.	Is all information provided in consistency with details provided by further chapters of the PDD (in particular Annex 1)?	VVM Para. 51 PDD section A.3	DR	The project participants provided in the section A.3 of the PDD version 1 (ref. 1) is consistency with the details provided in the Annex 1 of the PDD and with the other sections/chapters.	Y
A.4. Technical Description of the Project Activity					
A.4.1.	Does the information provided on the location of the project activity allow for a clear identification of the site(s)? Are the latitude and longitude of the site indicated (decimal points)	VVM Para.64 PDD section A.4	DR	The information provided in the PDD version 1 (ref. 1) clearly indentifies and allows the localization of the project activity as per the screenshot of the Google Maps website (ref. 2).	Y
A.4.2.	Does the proposed CDM project activity involve the alteration of existing installations or process?	VVM Para.64 PDD section A.4	DR	According to the information supplied in the PDD version 1 (ref. 1) the CDM project activity involve the installations and process in the existing landfill. However, a site visit is required to confirm the information supplied. During the site visit conducted on the 24th to 26th June 2010 the information was verified in section A.4. of the PDD (ref. 1) and incompliance with the planning/actual situation of the proposed project activity.	Y

A.4.3.	Do the project participants possess ownership or licenses which will allow the implementation of the project at that site / those sites?	VVM Para.64 PDD section A.4	DR	Pending Site Visit. During the site visit the information was verified in section A.4. of the PDD (ref. 1) and in compliance with the planning/actual situation of the proposed project activity. Documentation pertaining to the ownership of the project was also verified (ref. 22) containing the follow: • TUMPEX – Empresa Amazonense de Coleta de Lixo Ltda (project participant) • Conestoga-Rovers & Associates Capital Limited (project participant) • Enterpa Engenharia Ltda (project participant) This is document is the contract between project participants and the Municipality of Manaus to operate the landfill and implement the proposed project activity.	Y
A.4.4.	Is the category(ies) of the project activity correctly identified?	VVM Para.64 PDD section A.4	DR Ref. 1 Ref. 5	According to the PDD version 1 (ref. 1), the project activity is under the sectoral scope 1 (energy industry, renewable and non-renewable sources) and 13 (waste handling and disposal). However, according to the approved methodology (ref. 5) the project relies only in the scope 13 (waste handling and disposal). In this way, **CAR #3 was raised** for the PP to apply the approved methodology and its category in accordance with the requirements by the ACM0001 (ref. 5) - Pending CAR #3. In the PDD version 2 (ref. 1) section A.4.2 the PP has amended the information regarding to the scope of the project activity as 13 (waste handling and disposal), being in accordance with the latest version of the approved methodology ACM0001. In this way, **CAR #3 was closed out.**	~~CAR #3~~ Y
A.4.5.	Is all information provided in compliance with actual situation or planning as available by the project participants?	VVM Para.64 PDD section A.4 EB 52 Para. 13	DR	Pending Site Visit. During the site visit the information was verified in section A.4. of the PDD (ref. 1) and incompliance with the planning/actual situation of the proposed project activity. See Annex 1, for more details.	Y
A.4.6.	Is the table required for the indication of projected emission reductions correctly applied?	VVM Para.64 PDD section A.4	DR Ref. 1	The table required for the indication of the project activity presented in section A.4.4 of the PDD version 1(ref. 1), is in accordance with the information presented in the EB 41 Annex 12.	Y

A.5. Public Funding					
A.5.1.	Does the information on public funding provided conform to the actual situation or planning as presented by the project participants?	PDD section A.4.5	DR	In the information provided in the PDD version 1, section A.4.5 (ref. 1) the project activity has no Annex I public funding involved in the Manaus Landfill Gas Project. However, a site visit is required to confirm the information provided. - Pending site visit. Confirmed during site visit that there is no public funding. The project participants are private companies which signed a contract with the Municipality of Manaus to operate the landfill and implement the proposed activity (ref. 22).	Y
A.5.2.	Is all information provided consistent with details provided by further chapters of the PDD (in particular annex 2)?	PDD section A.4.5	DR	The information provided in the PDD version 1 (ref. 1) section A.4.5 is in accordance with the other sections/chapters presented in the PDD.	Y
A.5.3.	In case of public funding from Annex I Parties is it confirmed that such funding does not result in a diversion of official development assistance	PDD section A.4.5	DR	Not applicable There is no public funding from Annex I parties.	Y
B. Baseline and Monitoring Methodology					
B.1. Choice and Applicability					
B.1.1.	Is the baseline methodology previously approved by the CDM Methodology Panel?	VVM Para.68 PDD section B.1	DR	In the PDD version 1 (ref. 1) the methodology used in the project activity is “ACM0001 Version 11 – Consolidated baseline and monitoring methodology for landfill gas project activities”, which is the latest version of the approved methodology according to the UNFCC website (ref. 4).	Y
B.1.2.	Has the methodology (incl. the tools) been altered from the original version as referenced in the PDD?	VVM Para.69 PDD section B (B.1-B.2)	DR	According to the PDD version 1 section B.1 (ref. 1), the versions presented by the methodology and the tools are applied in accordance with the UNFCCC website (ref. 6).	Y

B.1.3.	Is the selected approved methodology applicable to the project activity in the PDD?	VVM Para.75/66a/68/73 PDD section B (B.1-B.2)	DR	According to the latest version of the approved methodology ACM0001 (ref. 5) the methodology is applicable to landfill gas capture project activities, where the baseline scenario is the partial or total atmospheric release of the gas and the project activities include the situations such as: d) The captured gas is flared; and/or e) The captured gas is used to produce energy (e.g. electricity/thermal energy). Emission reductions can be claimed for thermal energy generation, only if the LFG displaces use of fossil fuel either in a boiler or in an air heater. For claiming emissions reductions for other thermal energy equipment (e.g. kiln), project proponents may submit a revision to this methodology; f) The captured gas is used to supply consumers through natural gas distribution network. If emissions reductions are claimed for displacing natural gas, project activities may use approved methodology AM0053. The information supplied in PDD version 1 (ref. 1) presents that the project activity corresponds to the alternatives a) and b) of the applicability of the methodology. The first phase of the project the landfill gas will be collected and only flared and during the second phase the landfill gas will be used to produce energy. In this way, as it is presented in the PDD version 1 (ref. 1) the project follows the applicability of the methodology. A site visit was conducted on 24th to 26th June 2010 to confirm the information supplied.	Y
B.1.4.	Is the discussion in the PDD in conformance with all applicability criteria of the applied methodology?	VVM Para.75/66b/68 PDD section B (B.1-B.2)	DR	From the information supplied by the Client in the PDD (version 1) (ref. 1) section B.2. is in conformance with all applicable criteria of the applied methodology A site visit was conducted on 24th to 26th June 2010 to confirm that the proposed project comply with applicability criteria of the applied methodology which are the captured gas is flared and/or captured gas is used to produce energy.	Y

B.2. Project Boundary					
B.2.1.	Are all emission sources and gases related to the baseline scenario, project scenario and leakage clearly identified and described in a complete and transparent manner? Is there information on GHG emissions in proposed CDM project activity boundary as a result of the implementation of the proposed CDM project activity which are expected to contribute more than 1% of the overall expected average annual emissions reductions, which are not addressed by the applied methodology.	VVM Para.79/76 /67a PDD section B.3	DR	According to the PDD version 1 (ref. 1) section B.3., the information provided in the table regarding to the emissions sources and gases related to the baseline and project activity is not in accordance with the approved methodology (ref. 5). In this way, **CAR #4 was raised** requiring to the project participant to apply the summary of the gases and sources in the project boundary in accordance with the applied methodology. - Pending CAR #4. In the PDD version 2 (ref. 2) section B.3 the table presented regarding to the summary of gases and sources included in the project boundary are in accordance with the approved methodology ACM0001. In this way, **CAR #4 was closed out.**	~~CAR #4~~ Y
B.2.2.	In case of grid connected electricity projects: Is the relevant grid correctly identified in accordance with the tool to calculate emission factor of electricity system version 2 (wherever applicable) and the underlying methodology?	VVM Para.79 PDD section B.3 EB 50 Annex 14	DR Ref. 1, 7	According to the PDD version 1(ref. 1), the grid connected for the project activity is the Manaus Electricity Grid in accordance with the applicable grid for the city of Manaus. The information was checked through the map of the National Operator of the System (ONS) (ref. 7), which presents the Brazilian interconnected system without a connection to the state of Amazonas and the city of Manaus. In addition, the project participant presented in the PDD the use of the “Tool to calculate the emission factor for an electricity system”, which is applicable to obtain the EF for the project activity.	Y

B.2.3.	Does the project boundary include the physical delineation of the proposed CDM project activity?	VVM Para.78/79 PDD section B.3 also see section A.4.3	DR	According to the information supplied by the PP in the PDD (version 1) (ref. 1) section B.3. does not include a delineation of the proposed project activity as set out in EB 41, Annex 12 (ref. 8). Thus, CAR #5 was raised requiring to PP to update the PDD in accordance with EB 41 Annex 12. - Pending CAR #5. According to the information provided in the PDD version 2 (ref. 1) the project participant has included a delineation of the proposed project activity in accordance with the requirements set out by the EB 41, Annex 12 (ref. 8). **CAR #5 was closed out.**	~~CAR #5~~ Y
B.2.4.	Are the project's geographical boundaries and the project's system boundaries (components and facilities used to mitigate GHGs) clearly defined?	VVM Para.76/79 PDD section B.3 also see section A.4.3	DR	Refer to section B.2.1 and CAR #4 of the findings overview. - **CAR #4 was closed out.** All the sources and GHG required by the methodology have been included within the project boundary.	~~CAR #4~~ Y

B.3. Identification of the Baseline Scenario

B.3.1.	Does the PDD discuss the identification of the most likely baseline scenario? Does the PDD follow the steps to determine the baseline scenario required by the methodology and is the application of the methodology and the discussion and determination of the chosen baseline transparent?	VVM Para.67b.80/82/86 PDD Section B.4/B.5	DR	According to the PDD version 1 (ref. 1), the information supplied regarding to the alternatives scenarios are in accordance with the reported by the approved methodology and tool. However, a site visit is required to confirm the information provided in the PDD version 1. - Pending Site visit. To discuss the identification of the most likely baseline scenario the PDD follow the steps determined in the applied methodology (ref. 5): Procedure for the selection of the most plausible baseline scenario. Step 1: Identification of alternative scenarios Two alternatives were identified, LFG1 - the project activity (i.e. capture of landfill gas and its flaring and/or its use) undertaken without being registered as a CDM project activity and LFG 2 - atmospheric release of the landfill gas. The partial capture of landfill gas and destruction to comply with regulations or contractual requirements is not required. Verified during site visit that there is no legal requirement to capture the landfill gas. The baseline scenario is the total release of LFG with electricity supplied from grid connected power plants. Considering that the proposed project uses LFG for generating electricity, according to ACM0001 Version 11 realistic and credible alternatives also may include the following: P1: Power generated from landfill gas undertaken without being registered as CDM project activity; P2: Existing or construction of a new on-site or off-site fossil fuel fired cogeneration plant; P3: Existing or construction of a new on-site or off-site renewable based cogeneration plant; P4: Existing or construction of a new on-site or off-site fossil fuel fired captive power plant; P5: Existing or construction of a new on-site or off-site renewable based captive power plant; P6: Existing and/or new grid-connected power plants. The proposed project will not make use of heat in the landfill and there is no consumer nearby the landfill. The heat generation was not considered a realistic alternative to the project participants. Thus alternatives P2 and P3 were not considered. There is no need for power in the landfill and no captive power plant is required. Thus alternatives P4 and P5 were not considered realistic.	Y

Cont. B.3.1			Four realistic and credible alternative scenarios to the project activity were identified. Alternatives LFG1 and P1 which comply with applicable laws and regulations. Alternatives LFG2 and P6, a continuation of the current situation (partial or total release of LFG to the atmosphere) represents the business as usual practice for most of the landfills in Brazil, according to "Sistema Nacional de Informações sobre Saneamento: diagnóstico do manejo de resíduos sólidos urbanos – 2007" (ref. 23). Step 2: Identify the fuel for the baseline choice of energy source taking into account the national and/or sectoral policies as applicable. The baseline choice of the energy source identified is available in Brazil and there is no supply constraint. The grid emission factor defined by the Manaus electricity grid is representative of the fuel mix used in the baseline. Step 3 – Provided under the additionality discussion. Step 4 – Only one credible and plausible scenario remained, which is: the baseline is the atmospheric release of landfill gas to the atmosphere. The electricity will be supplied by the Manaus grid.	
B.3.2. Are all tools/procedures in the methodology correctly applied to identify the most reasonable baseline scenario? This includes all potential realistic and credible baseline scenarios in the discussion taking into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	VVM Para.81/82/86a-d/83/84 PDD Section B.4/B.5	DR	According to the information provided in the PDD version 1 (ref. 1) section B.4. the baseline scenario and the applicable tools are correctly identified in accordance with the approved methodology (ref. 5). Refer to CL#13 for more detail.	Y

B.3.3.	Is the choice of the baseline compatible with the available data?	VVM Para.86b-c/95 PDD Section B.4/B.5	DR	The information provided in the PDD version 1 (ref. 1) section B.4 it is identified the possible scenarios for the project activity in accordance with the approved methodology (ref. 5) and the tool.	Y
B.3.4.	Is conservativeness addressed in the way of identifying the baseline?	VVM Para.90 PDD Section B.4/B.5	DR	According to the information supplied in the PDD version 1 (ref. 1) section B.4 the PP clearly follows the baseline requirements of the approved methodology (ref. 5) and the "Tool for the demonstration and assessment of additionality" (ref. 9). A site visit was required to confirm the information provided in the PDD version 1(ref. 1).	Y
B.3.5.	Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	VVM Para.90/91 PDD Section B.4/B.5	DR	The scenarios identified in the PDD version 1 (ref. 1) section B.4 represents the most likely baseline scenarios among other possible scenarios contained in the approved methodology (ref. 5) and the additionality tool (ref. 9).	Y
B.3.6.	Is there a verifiable description of the baseline scenario? Does this include a description of the technology that would be employed and/or the activities that would take place in the absence of the proposed CDM project activity?	VVM Para.86e/85 PDD Section B.4/B.5	DR	According to the information provided in the PDD version 1 (ref. 1) sections B.4 and B.5 and verified during site visit, the PP clearly describes the identified baseline scenario and the description of the activities that would take place in case of the absence of the proposed CDM project activity.	Y

B.4. Additionality					
B.4.1.	Does the PDD clearly demonstrate the additionality using the approach as specified in the methodology and by following all the required steps?	VVM Para.67d/95 PDD Section B.1/B.4/B.5	DR	From the information provided in the PDD version 1 (ref. 1) the PP has correctly followed the steps of the approved methodology (ref. 5) and the additionality tool (ref. 9). Refer to section B.4.3.	Y
B.4.2.	For small scale project activities is the additionality assessed in accordance with specific requirements for such projects?	VVM Para. 135	DR	Not applicable, this project activity is a large scale project activity.	Y

B.4.3. In case of using the additionality tool: Is the 'Additionality Tool' used in the PDD latest version? If an earlier version has been used, do the changes impact the discussion in the PDD? Are all steps followed in a transparent manner?	PDD Section B.1/B.4/B.5	DR	In the PDD version 1 (ref. 1) section B.5 sub-step 1b, it is informed that "there are no existing or pending regulatory requirements requiring the landfill site to implement any form of LFG emission reduction program", however there is no evidence regarding the assumption made. **CL#13 was raised.** The PP presented to the DOE assessment team the evidences of the National system of Information on Sanitation (SNIS - ref. 23) and the weblinks to assess the information regarding to the Integrated Management of Solid Waste (GIRS – ref. 28) and the Study of the proposal of the New National Solid Waste Policy Proposal (ref. 30) that were checked by the DOE. Furthermore, the PP has referred to the evidences provided in PDD version 2 (ref. 1). Thus, **CL #13 was closed out.** According to the PDD version 2 (ref. 1) section B.5. correctly follows the steps identified by the latest version of the "Tool for the demonstration and Assessment of Additionality", version 5.2 (ref. 9) and the ACM0001, version 11 (ref. 5). In addition, the information provided clearly follows the steps required by the approved methodology and additionality tool. Step 1: Identification of alternatives to the project activity consistent with current laws and regulations. Sub-step 1a. Define alternatives to the project activity: Two alternatives were identified for the waste disposal and two alternatives for the power generation. The project activity (capture of landfill gas and power generation) undertaken without being registered as a CDM project activity (LFG1), and atmospheric release of the landfill gas (LFG2). Power generated from landfill gas undertaken without being registered as CDM project activity (P1), and existing and/or new grid-connected power plants (P6). Sub-step 1b. Consistency with mandatory laws and regulations: Verified through the Ministry of Environment and Ministry of Cities (ref. 28), Ministry of Cities – SNIS (ref. 23) and Brazilian parliament (New National Solid Waste Policy Proposal) that there is no regulation or policy that obliges the landfill to burn the LFG generated in the landfill. The PP will monitor the relevant regulation at the beginning of each crediting period and adjust the baseline accordingly.	~~CL#13~~ Y

Cont. B.4.3			The identified alternatives are credible and realistic and are in compliance with legislation and regulations. Step2. Investment analysis. Sub-step2a. Determine appropriate analysis method: The proposed project will generate financial benefits other than CDM, Option III (benchmark) was chosen. Sub-step2b. – Option III. Apply benchmark analysis: Refer to B.4.8 for benchmark analysis. Sub-step 2c. Calculation and comparison of financial indicators: Refer to B.4.7 for investment analysis. Sub-step 2d. Sensitivity analysis: Refer to B.4.7 for investment analysis. Step 3 – Barrier Analysis: Not applicable. Step 4. Common practice analysis: Refer to B.4.13 for common practice analysis.	
B.4.4. Has all information been backed up with references, sources and certification? Is the data presented credible and reliable with complete transparency to all available data and documentation?	VVM Para.93/91 PDD Section B	DR	Pending site visit to receive and check the evidences to the information presented in the PDD version 1 (ref. 1). - All evidences were provided for the data presented in the additionality discussion. The data presented was considered credible and reliable (refer to B.4.7, B.4.8).	Y

<table>
<tr>
<td>B.4.5. Is the discussion on additionality and the evidence provided consistent with the starting date of the project?
If the project activity start date is prior to the validation is it discussed how the CDM was taken into account in the decision to go ahead with the project activity</td>
<td>VVM Para.102b
PDD Section B.5</td>
<td>DR</td>
<td>The start date of the proposed project activity is 25/07/2008 based on the contract (includes CDM consideration, ref. 22) signed between CRA, Tumpex (landfill operator), Manaus City Hall and Enterpa to develop the proposed project.
The evidences provided are consistent with the starting date of the project.

The project activity start date is not prior to the validation however the PP presented some evidences related to the CDM consideration independent of the validation process.
<table>
<tr><th>Events</th><th>Date</th></tr>
<tr><td>PDD submitted to SGS for validation</td><td>2 December 2005</td></tr>
<tr><td>PDD in Global Stakeholder Consultation (GSC) for the first time</td><td>07 December 2005 to 06 January 2006</td></tr>
<tr><td>SGS issues validation report</td><td>29 May 2006</td></tr>
<tr><td>Host country approval submitted</td><td>2 June 2006</td></tr>
<tr><td>CRA signed a contract (including CDM consideration) with Tumpex (landfill operator), Manaus City Hall and Enterpa to develop the proposed project (starting date of the project activity) (ref. 22).</td><td>25 July 2008</td></tr>
<tr><td>Construction works started (ref. 16)</td><td>October 2008</td></tr>
<tr><td>PDD in GSC for the second time</td><td>21 January 2009 to 19 February 2009</td></tr>
</table>
From February 2009 to now the validation process was ongoing. In the mean time the DOE requested to re-start the validation process with a new version 1 of the PDD taking into consideration the most recent version of the methodology ACM0001 and related tools.</td>
<td>Y</td>
</tr>
</table>

B.4.6.	For an existing project activity with a start date before 2 August 2008, for which the start date is prior to the date of publication of the PDD for global stakeholder consultation, is the real documented evidence for an assessment of real and continuing actions available for validation and is this evidence authentic?	EB 49, annex.22	DR	The start date of the proposed project activity is 25/07/2008 based on the contract (includes CDM consideration, ref. 22) signed between CRA, Tumpex (landfill operator), Manaus City Hall and Enterpa to develop the proposed project. The project activity start date is not prior to the validation however the PP presented some evidences related to the CDM consideration independent of the validation process. In the PDD version 1 (ref. 1) section B.5 the timeline table is inconsistent with the dates presented. In addition the PP is required to provide the document for the construction work started, presented in the timeline table. **CAR #10 was raised.** In the PDD version 2 (ref. 1) the project participant has amended the date of the construction starts in accordance with the evidence provided “Chronogram and Chart (ref. 16)”, the date presented in the evidence is October of 2008. In this way, **CAR #10 was closed out.**	~~CAR#10~~ Y

	B.4.7. If an investment analysis has been used, has it been demonstrated that the proposed project activity is economically or financially less attractive than at least one other alternative without the revenue from the sale of CERs?	VVM Para. 106, 107, 108 109 112a-c PDD Section B.5	DR	**CAR#2 was raised** related to the investment analysis evidences require more clarification and/or not in accordance with Manaus landfill investment analysis spreadsheet: -Condensate Management (source of data and explain the 5 condensers); -OC-CRA 1117 06 Koch (source of data, not in accordance with investment spreadsheet); -Declaração de fiscalização compressor (data not in accordance with investment spreadsheet); -15% of contingency for all expenses (explain the use of the contingency for this project); -Evidence for the 25 years lifetime from the engine manufacturer; -Operations Maintenance (source of data BRL 26.36/MW); -Exchange rate is inconsistent with the link provided and date of the investment analysis. With the information provided by the PP and what was verified during the site visit it was possible to confirm that five condensate management is necessary to the project activity and that one of the five condensates are already installed on site (ref. 19h). In addition, the PP explained the source of data and presented more transparent in the financial analysis spreadsheet version 2 (ref. 20) of the following evidences: OC-CRA 1 117 06 Koch (ref. 19e); "Declaração de Fiscalização" (ref. 19f); Operations Maintenance (ref. 19b) and the Exchange Rate (ref. 19a). The PP has presented the evidence "Landfill full cost Accounting Guide for New Zealand" (ref. 19d) which presents a contingency for landfill projects between 5 to 25%, for conservativeness in the financial analysis spreadsheet version 2 (ref. 20), the PP applied 5% of contingency. Regarding to the 25 years of the lifetime of the engine manufacturer, the PP applied the value presented in the "Tool to determine the remaining lifetime of equipment". In this way, **CAR #2 was closed out.**	~~CAR#2~~ ~~CL#6~~ Y

Cont. B.4.7			According to the information provided the project participant is required to clarify the following information: ▪ Regarding to the investment analysis the item "necessidade de capital de giro" the signals are inverted. This mean that the FCF is inflated of US$ 882,978.42, please clarify; ▪ In the PDD version 1 (ref. 1a) page 20, the sum of the final FCF in the year 2033 is not correct because does not consider the return of the working capital; ▪ The PP is required to provide the source of data for the PIS/COFINS. **CL#6 was raised.** From the information provided in the PDD version 2 (ref.1) and in the investment analysis spreadsheet (ref. 19) the signals were corrected, the sum of the final FCF in the year 2033 was corrected and the sources of PIS/COFINS included. **CL#6 was closed out.** The analysis method used is appropriate for this type of project. The calculations are presented in accordance “Guidance on the Assessment of Investment Analysis”. The spreadsheet calculations (ref. 20) are correct and the rates of depreciation and taxation are the usual ones used in the projections of cash flows in Brazil and are in accordance with Brazilian law. The sensitivity analysis presented is consistent and demonstrate that the project is not feasible with acceptable variations in its main accounts. The exchange rate used to convert revenues from Real to US Dollars is consistent with the date of preparing the work, according data from the Central Bank of Brazil.	

Cont. B.4.7

The following data presented in the investment analysis and PDD were checked through documented evidence (LFG1):

Parameter	Value	Unit	Reference
Asset's Life time	25	Years	Engine Manufacturer, ref. 36
Installed capacity for each engine	1.6	MW	Ref. 17
Total installed capacity	19.2	MW	Calculated
Load factor	99.06%	%	Ref. 26b
Exchange Rate	1.57	R$/US$	Ref. 19a
Electricity price	156.78	R$/MWh	Ref. 18
Price per MW installed	2,637,433.98	US$/MW installed	Ref. 19c
Power plant operation cost	26.36	US$/MWh	Ref. 19b
Tax (PIS)	1.65%	%	(http://www.receita.fazenda.gov.br/principal/Ingles/SistemaTributarioBR/Taxes.htm)
Tax (Confins)	7.60%	%	(http://www.receita.fazenda.gov.br/principal/Ingles/SistemaTributarioBR/Taxes.htm)
Tax (income tax)	29%	%	(http://www.receita.fazenda.gov.br/legislacao/ins/Ant2001/Ant1997/1995/insrf05195.htm)
Tax (social contribution)	5%	%	(http://www.planalto.gov.br/ccivil_03/LEIS/L7689.htm)
Contingency	5%	%	Ref. 19d

<table>
<tr>
<td>Cont. B.4.7</td>
<td></td>
<td></td>
<td>The Project NPV is USD - 20,530,849.37. With this scenario the proposed project is not attractive.
The alternative LFG2 is the continuation of the current practice, which is in compliance with all applicable regulations.

The following data presented in the investment analysis and PDD were checked. The sensitivity analysis was performed varying -10% and +1-% the electricity tariff, the capital expenses and operational expenses, which are the main parameters that can impact in the project NPV.
<table>
<tr><th></th><th>Variation</th><th>NPV</th></tr>
<tr><td rowspan="2">CapEx</td><td>-10%</td><td>$ -16,738,147.77</td></tr>
<tr><td>10%</td><td>$ -24,424,732.36</td></tr>
<tr><td rowspan="2">O&M</td><td>-10%</td><td>$ -18,270,469.70</td></tr>
<tr><td>10%</td><td>$ -22,864,648.05</td></tr>
<tr><td rowspan="2">Revenues</td><td>-10%</td><td>$ -24,789,072.07</td></tr>
<tr><td>10%</td><td>$ -16,563,869.08</td></tr>
<tr><td>Base Case</td><td>0%</td><td>$ -20,530,849.37</td></tr>
</table>
In all scenarios the NPV remains negative, representing the proposed project activity is not financial attractive.</td>
<td></td>
</tr>
<tr>
<td>B.4.8. If a benchmark is used, is it ensured that it is selected in accordance with the requirements of the tool /methodology and it represents standard returns in the market (not linked to the subjective profitability expectation or risk profile of a particular project developer).</td>
<td>VVM Para. 110
PDD Section B.5</td>
<td>DR</td>
<td>Financial Expert comment:
The benchmark (Net Present Value) used is consistent with generally accepted practices for projects of this nature, since it uses a Brazilian government bond rate of similar maturity to the project as risk-free rate. The market risk premium applied is suitable because it uses the historical average of the difference between the gains in US Stock Markets and profitability of T-bonds in United States of America, and the Unlevered Beta used is consistent, because refers to the companies of the same industry. The discount rate of 11.94% used is quite reasonable (ref. 19i).</td>
<td></td>
</tr>
</table>

B.4.9.	If a barrier analysis has been used, has it been shown that the proposed project activity faces barriers that prevent the implementation of this type of proposed project activity but would not have prevented the implementation of at least one of the alternatives?	VVM Para. 114 115a-b/116 PDD Section B.5	DR	Not applicable. According to the PDD version 1 (ref. 1) the PP is applies the Option III, benchmark analysis.	Y
B.4.10.	Is the discussion on additionality consistent with the identification of all plausible and credible baseline scenarios?	VVM Para. 105 PDD Section B.5	DR	All steps of the Tool and the ones required by the methodology were followed. The additionallity discussion is consistent with potential baseline scenarios.	Y
B.4.11.	If a barrier analysis has been used have the 'guidelines for objective demonstration and assessment of barriers' been followed? Have all applicable steps been considered and substantiated with objective evidence?	VVM Para 113 EB 50 Annex 13	DR	Not applicable. According to the PDD version 1 (ref. 1) the PP is applies the Option III, benchmark analysis.	Y

B.4.12. Do the identified baseline scenarios include technologies and practices that include outputs or services comparable with the proposed CDM project activity? Do they also abide by the same applicable laws and legislations?	VVM Para. 105 PDD Section A.4.3/B.5	DR	The baseline scenario does not include the outputs or services comparable with the proposed project activity because it does not capture and burn the landfill gas produced. There are no existing or pending regulatory requirements requiring the landfill site to implement any form of LFG emission reduction program.	Y

B.4.13. Has it been shown that the project is not common practice?	VVM Para. 119a/b PDD Section B.5	DR	According to the information provided in the PDD version 1 (ref. 1) section B.5, step 4 "common practice analysis" the PP shall rephrase the sub-steps 4a and 4b of the additionality tool, in order to be in accordance with the requirements of the additionality tool. **CL#12 was raised.** According to the information provided in the PDD version 2 (ref. 1) section B.5, step 4 was rephrased in order to be in accordance with the requirements of the additionality tool, presenting the information in the sub-steps 41 and 4b. **CL#12 was closed out.** The geographical scope applied for the common practice analysis is the whole country (Brazil). In the assessment of the existence of similar projects and the essential distinctions between the proposed project activity and any similar projects that are widely observed and commonly carried out the PP presented the following documents: - SNIS (2007) - Secretaria Nacional de Informações sobre Saneamento Sistema Nacional de Informações sobre Saneamento: diagnóstico do manejo de resíduos sólidos urbanos (ref. 23). Which contain the information about the services of urban solid waste management in Brazil (Ministry of Cities); - Brazilian Greenhouse Gases Emissions Inventory Report for Waste Sector (ref. 38). Which discuss that there is no landfill site with flaring system or electricity generation, in fact the inventory mention that if there is some methane recuperation it is insignificant; - Brazilian Country Profile for waste sector by Methane to Markets (ref. 37). Which discuss that in the past five years in the country there were less than ten initiatives related with biogas use, including laboratorial experiments in landfills, wastewater treatment plants and farms. In the last two years, between opportunities of trade of Carbon Credits, according the Kyoto Protocol, the Clean Development Mechanism (CDM) projects that were approved by Designated National Authority. Using the above documents and the knowledge expertise of the assessment team, there is no similar operational projects other than CDM project activities been undertaken in the host country (Brazil). The assessment team confirms that the proposed project activity is not common practice.	~~CL#12~~ Y

B.4.14. What are the key distinctions between the project activity and any similar projects that are widely used as common practice?	VVM Para. 118, 119c/d PDD Section B.5	DR	The geographical scope used in the common practice analysis was the entire host country (Brazil). There is no similar and operational projects other than CDM project activities comparable to the proposed project.	Y
B.5. Application of the Baseline Methodology				
B.5.1. Has the approved methodology been applied correctly for determining **baseline emissions**?	VVM Para. 91d PDD Section B (B.6.1 -B.71)	DR	From the information supplied from the Client in the PDD (version 1) (ref. 1) the approved methodology (ref. 5) has been applied correctly to determine baseline emissions. $BE_y = (MD_{project,y} - MD_{BL,y}) \times GWP_{CH4} + EL_{LFG,y} \times CEF_{elec,BL,y}$	Y
B.5.2. Has the approved methodology been applied correctly for determining **project emissions**?	VVM Para. 90/91d PDD Section B (B.6.2-B.71)	DR	From the information supplied by the Client in the PDD (version 1) (ref. 1) section B.6.1 the approved methodology (ref. 5) has been applied correctly for determining project emissions. $PE_y = PE_{EC} + PE_{FC,j,y}$ There is no consumption of heat by this project activity ($PE_{FC,j,y}=0$) $PE_y = PE_{EC}$ During the period when the project is not generating electricity, the electricity will be consumed from the grid. The PDD follows scenario A: Electricity consumption from the grid of the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption", version 1. Option A1: calculated the combined margin emission factor of the Manaus electricity grid ($EF_{EL,j/k/l,y} = EF_{grid,CM,y}$). $PE_{EC,y} = EC_{PJ,y} \times EF_{grid,CM,y} \times (1 + TDL_y)$ And, $PE_{FC,j,y} = \sum_i FC_{i,j,y} \times COEF_{i,y}$	Y

B.5.3.	Has the approved methodology been applied correctly for determining **leakage**?	VVM Para. 91d PDD Section B (B.6.2 -B.71)	DR	No leakage effects need to be accounted under this methodology ACM0001 version 11.	Y
B.5.4.	Where applicable, has the approved methodology been applied correctly for the **direct calculation of emission reductions?**	VVM Para 88/91d PDD Section B (B.6.2 -B.71)	DR	From the information supplied by the Client in the PDD (version 1) (ref. 1) section B.6.1 the approved methodology (ref. 5) been applied correctly for the direct calculation of emission reductions (ref. 25).	Y
B.5.5.	Where there is an option between different equations or parameters, has the methodological choices for the project been explained, have they been properly justified and are they correct?	VVM Para.89/90/91 PDD Section B (B.6.2 -B.71)	DR	From the information supplied by the Client in the PDD (version 1) (ref. 1) section B.6.1 where there is an option between different equations or parameters in the methodological (ref. 5) choices for the project they have been explained and been properly justified and correct.	Y
B.5.6.	Are uncertainties in the GHG emissions estimates properly addressed in the documentation?	PDD Sections B.5-C	DR	From the information supplied by the Client in the PDD (version 1) (ref. 1) section B.6 all uncertainties in the GHG emissions estimates have been properly addressed in the documentation.	Y

B.6. Ex-ante Data and Parameters Used

B.6.1.	Are the data provided in compliance with the methodology?	VVM Para. 91/67c PDD Section B.6.3B.6.4	DR	In the PDD version 1 (ref. 1), the information presented in the section B.6.2 is not in accordance with the requirements of the approved methodology ACM0001 v.11 (ref. 5), regarding to the following parameters: ▪ Regulatory requirements relating to landfill gas; ▪ $EF_{grid,OM}$ – Operating margin of CO_2 emission factor; ▪ K_j – Decay rate for waste j; ▪ Waste composition; ▪ $BE_{CH4,SWDS,y}$ – Methane generation in the landfill in the absence of the project activity. **CAR#7 was raised.** According to the PDD version 2 (ref. 1) section B.6.2 the PP has amended the information regarding to the Regulatory requirements relating to landfill gas; $EF_{grid,OM}$ – Operating margin of CO2 emission factor; Kj – Decay rate for waste j; Waste composition and $BE_{CH4,SWDS,y}$ – Methane generation in the landfill in the absence of the project activity, being in accordance with the approved methodology ACM0001 v.11 (ref. 5). In this way, **CAR #7 was closed out.** The following parameters were verified as ex-ante in the PDD: • Combined margin CO_2 emission factor for the project electricity system = 0.7160 tCO_2/MWh (ref. 10); • Build margin CO_2 emission factor for the project electricity system = 0.6992 tCO_2/MWh (ref. 10); • Operating margin CO_2 emission factor for the project electricity system = 0.7329 tCO_2/MWh (ref. 10); • Regulatory requirements relating to landfill gas (ref. 23, 28); • Model correction factor to account for model uncertainties = 0.9 (Default value used); • Oxidation factor (reflecting the amount of methane from SWDS that is oxidized in the soil or other material covering the waste) = 0.1 (Default value used for managed solid waste disposal sites); • Fraction of methane in the SWDS gas = 0.5 (default value of 0.5 is recommended by IPCC); • Fraction of degradable organic carbon that can decompose = 0.5 (default value 2006 IPCC); • Methane correction factor = 1.0 (IPPC default value for anaerobic managed solid waste disposal site is applied); •	~~CAR#7~~ Y

Cont. B.6.1

- Fraction of degradable organic carbon (by weight) in the waste type j = (IPCC default value for anaerobic managed solid waste disposal site is applied)

Waste type j	DOCj (% wet waste)
Wood and wood products	43%
Pulp, paper and cardboard (other than sludge)	40%
Food, food waste, beverages and tobacco (other than sludge)	15%
Textiles	24%
Garden, yard and park waste	20%
Glass, plastic, metal, other inert waste	0%

- Decay rate for waste type j = (IPCC default value for anaerobic managed solid waste disposal site is applied and Instituto Nacional de Meterologia (INMET) ref. 27)

Waste type j		Tropical (MAT > 20 ℃) Wet (MAP>1000mm)
Slowly degrading	Pulp, paper, cardboard (other than sludge), textiles	0.07
	Wood, wood products and straw	0.035
Moderately degrading	Other (non-food) organic putrescible garden and park waste	0.17
Rapidly degrading	Food, food waste, sewage sludge, beverages and tobacco	0.4

<table>
<tr><td>Cont. B.6.1</td><td></td><td></td><td>• Waste composition (ref. 24)
<table><tr><th colspan="2">Composition of the waste</th></tr><tr><td>A) Wood and wood products</td><td>1.92%</td></tr><tr><td>B) Pulp, paper and cardboard (other than sludge)</td><td>21.18%</td></tr><tr><td>C) Food, food waste, beverages and tobacco (other than sludge)</td><td>35.84%</td></tr><tr><td>D) Textiles</td><td>1.39%</td></tr><tr><td>E) Garden, yard and park waste</td><td>2.99%</td></tr><tr><td>F) Glass, plastic, metal, other inert waste</td><td>36.68%</td></tr><tr><td>TOTAL</td><td>100.0%</td></tr></table>• Global warming Potential (GWP) of methane = 21 tCO_2e/tCH_4 (Decisions under UNFCCC and the Kyoto Protocol, default value for the first commitment period);
• Methane density = 0.0007168 tCH_4/m^3CH_4 (ACM0001 – version 11, ref. 5);
• Methane generation from the landfill in the absence of the project activity at year y = several data used only for the estimative (ref. 25).</td><td></td></tr>
<tr><td>B.6.2. Is all the data derived from official data sources or replicable records and have these been correctly quoted?</td><td>VVM Para.
91a/b
PDD Section B.6.3/B.6.4</td><td>DR</td><td>From the information supplied by the Client in the PDD (version 2) (ref. 1) section B.6.2 and B.6.3, all data is derived from official data sources or replicable records and has these been correctly quoted.</td><td>Y</td></tr>
<tr><td>B.6.3. Is the vintage of the baseline data correct?</td><td>PDD Section B.6.3/B.6.4</td><td>DR</td><td>From the information supplied by the Client in the PDD (version 2) (ref. 1) section B.6.2 and B.6.3 the vintage of the baseline data is considered correct.</td><td>Y</td></tr>
<tr><td>B.6.4. Is all the data appropriate and correctly applied to the CDM project activity?</td><td>VVM Para.
91c
PDD Section B.6.3/B.6.4</td><td>DR</td><td>From the information supplied by the Client in the PDD (version 2) (ref. 1) section B.6.2 and B.6.3 all data is considered appropriate and has been correctly applied to the proposed CDM project activity.</td><td>Y</td></tr>
</table>

	B.6.5. Are data and parameters that are not being monitored and remained fixed throughout the crediting period appropriately assessed, correct, and will they result in conservative estimates?	VVM Para. 90 PDD Section B.6.3/B.6.4	DR	From the information supplied by the Client in the PDD (version 2) (ref. 1) section B.6.2 and B.6.3 all data and parameters that are not being monitored and remained fixed throughout the crediting period are considered correct, and will result in conservative estimates.	Y
	B.6.6. Is sampling approach used for any parameters?	EB 50 Annex 30 Para. 30	DR	From the information supplied by the PP in the PDD (version 2) (ref. 1), section B.6.2 no sampling approach in used.	Y
	B.6.7. Where applicable, the plant load factor shall be defined ex-ante in the CDM-PDD according to one of the following three options: (a) The plant load factor provided to banks and/or equity financiers while applying the project activity for project financing, or to the government while applying the project activity for implementation approval; (b) The plant load factor determined by a third party contracted by the project participants (e.g. an engineering company)	EB 48 Annex 11	DR	Not applicable.	Y

B.7. Calculation of Emissions Reductions					
B.7.1.	Has the approved methodology been applied correctly for determining **emission reductions**?	VVM Para. 91d PDD Section A.4.4/B.6	DR	From the information supplied by the Client in the PDD (version 1) (ref. 1) section A.4.4 and B.6.4 the approved methodology (ref. 5) been applied correctly for determining emission reductions (ref. 25). The PDD clearly state the equations that will be used in calculating emission reductions. The required steps/calculations have been followed.	Y
B.7.2.	Are the emission reduction calculations documented in a complete and transparent manner?	VVM Para. 91e PDD Section B.6	DR	According to the PDD version 1 (ref. 1) the reported value regarding to the flare efficiency (99%) used to estimate the emissions reductions is not in accordance with the evidence provided (ref. 12). **CAR #9 was raised.** The PP presented the PDD version 2 (ref. 1) applying the correct value of the flare destruction efficiency used in the estimative as 98% (ref. 12). In this way, **CAR #9 was closed out.**	~~CAR#9~~ Y
B.7.3.	Is the projection based on same procedures as used for later monitoring or acceptable alternative models?	PDD Section B.6	DR	From the information supplied by the Client in the PDD (version 1) (ref. 1) section B.6 the projection is based on same procedures as used for later monitoring.	Y
B.7.4.	Is the calculation of the emission reduction correct?	VVM Para. 91e PDD Section B.6	DR	From the information supplied by the Client in the PDD (version 1) (ref. 1) section B.6.3 and B.6.4 the calculation of the emission reduction (ref. 25) are considered correct.	Y
B.8. Emission Reductions					
B.8.1.	Is the form/table required for the indication of projected emission reductions correctly applied?	PDD Section A.4.4/ Section B.6	DR	From the information supplied by the Client in the PDD (version 1) (ref. 1) the table required for the indication of projected emission reductions (ref. 25) has been correctly applied.	Y

B.8.2.	Is the projection in line with the envisioned time schedule for the project's implementation and the indicated crediting period?	PDD Section A.4.4/ Section B.6	DR	From the information supplied by the Client in the PDD (version 1) (ref. 1) section B.6.4 the assumed crediting period is stated as 1st January 2011 to 31st December 2017. The projection presenting in the PDD is inline with the crediting period.	Y
B.9. Monitoring Methodology					
B.9.1.	Does the monitoring methodology provide a consistent approach in the context of all parameters to be monitored and further information provided by the PDD? Are all parameters and data that are available at validation consistent with the approved methodology. Has this data been interpreted and applied correctly?	VVM Para. 67e PDD Section B.7-B.8 see also Annex 4	DR	From the information supplied by the Client in the PDD (version 2) (ref. 1) section B.7 all parameters and data that is available at validation is consistent with the approved methodology (ref. 5). All data been interpreted and applied correctly.	Y
B.9.2.	Does the monitoring methodology apply consistently the choice of the option selected for monitoring both of project and baseline emissions?	PDD Sections B and C	DR	From the information supplied by the Client in the PDD (version 2) (ref. 1) section B.7 regarding the monitoring methodology has applied consistently the choice of the option selected for monitoring both of project and baseline emissions.	Y

B.10. Data and Parameters Monitored

B.10.1. Does the monitoring plan in the PDD comply with the approved methodology provided for the collection and archiving of all relevant data necessary for estimation or measuring the emission reductions within the project boundary during the crediting period?	VVM Para. 91a/91d/121/79 PDD Section B.7-B.7.2	DR	According to the PDD version 1 (ref. 1) section B.7.1 the information presented regarding to the monitored parameters shall be revised to be in accordance with the requirements of the approved methodology and all applicable tools. **CAR#11 was raised.** From the PDD version 2 (ref. 1) the PP informed that the parameters were amended to conform with the approved methodology and all applicable tools and the parameters NCV and EFco2,ij were included in section B.7.1 of the PDD. **CAR#11 was closed out.** The following parameters will be monitored according to the applied methodology and tools: • Total amount of landfill gas captured at normal temperature and pressure (Nm^3); • Amount of landfill gas flared at Normal Temperature and Pressure (During Phase 1 (flaring) the data will be collected continuously using 1 on-line mass-compensated flow meter located in the piping leading to the flare. Upon completion of Phase 2 (electricity generation) an additional 2 mass-compensated flow meters will be installed with one being in the piping leading to the engine and the other in the piping right after the blowers measuring the total collected landfill gas (Nm^3); • Amount of LFG combusted in power plant at Normal Temperature and pressure (Nm^3); • Methane fraction in the landfill gas (m^3CH_4/m^3LFG); • Project emissions from flaring of the residual gas stream in year y (tCO_{2e}). Annual data will be recorded as per the most current version of the *"Tool to determine project emissions from flaring gases containing Methane";* • Net amount of electricity generated using LFG (MWh); • Operation of the energy plant (hours); • Weighted average net calorific value of diesel in year y (GJ per mass (GJ/ton)); • Weighted average CO_2 emission factor of diesel in year y (tCO_2/GJ); • Project emissions from electricity consumption by the project activity during the year y (tCO_2). Calculated as per the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" ver. 1; • Fraction of methane captured at the SWDS and flared, combusted or used in another manner (80%, ref. 14);	~~CAR#11~~ Y

Cont. B.10.1			• Total amount of organic waste prevented from disposal in year x (t); • Volumetric fraction of O_2 in the exhaust gas of the flare in the hour h ($t_{O2,h}$); • Concentration of methane in the exhaust gas of the flare in dry basis at normal conditions in the hour h (mg/m^3); • Temperature on the exhaust gas of the flare (ºC); • Volumetric flow rate of the residual gas in dry basis at normal conditions in the hour h (m^3/h); • Volumetric fraction component i of the residual gas in dry basis at normal conditions in the hour h, where i = CH_4 and N_2; • Average technical transmission and distribution losses in the grid in year *y* for the voltage level at which electricity is obtained from the grid at the project site (6%, ref. 29); • Quantity of fuel type i combusted in process j during year y (Mass or volume unit per year); • Consumption of LPG by the project activity (kg).	
B.10.2. Are the choices of project GHG indicators reasonable and in conformance with the requirements set by the approved methodology applied?	PDD Section B.7-B.7.2/B.6.2	DR	From the information supplied by the Client in the PDD (version 2) (ref. 1) section B.7 the choices of project GHG indicators are reasonable and in conformance with the requirements set by the approved methodology (ref. 5) applied.	Y
B.10.3. Will it be possible to determine the specified project GHG indicators?	PDD Section B.6.2-B.8	DR	From the information provided by the Client in the PDD (version 2) (ref. 1) parameters are according to the required by the methodology (ref. 5) and the monitoring plan is verifiable for each parameter which requires to be monitored by the PP.	Y
B.10.4. Is the information given for each monitoring variable by the presented table sufficient to ensure the verification of a proper implementation of the monitoring plan?	PDD Section B.6.2-B.7.1	DR	The information provided in the PDD (version 2) (ref. 1) describes properly the implementation of the monitoring plan. The parameters, units, description, and the quality procedure are presented as required by the methodology.	Y

B.10.5. Is the information given for each monitoring variable by the presented table sufficient to ensure the delivery of high quality data free of potential for biases or intended or unintended changes in data records?	PDD Section B.6.2-B.7.1	DR	The information provided in the PDD (version 2) (ref. 1) for each monitoring parameter is sufficient to ensure quality data.	Y
B.10.6. Is the monitoring approach in line with current good practice, i.e. will it deliver data in a reliable and reasonably acceptable accuracy?	PDD Section B.5-B.7.2	DR	All parameters that require continuously measurement will be recorded electronically. The project site operator will provide all requested data logs which will be stored over the duration of the reporting period.	Y
B.10.7. Are all formulae used to determine project emission clearly indicated and in compliance with the monitoring methodology.	PDD Section B.6.2-B.7.1	DR	From the information supplied by the Client in the PDD (version 2) (ref. 1) section B.7 all formulae used to determine project emission are clearly indicated and in compliance with the monitoring methodology.	Y
B.11. Quality Control (QC) and Quality Assurance (QA) Procedures				
B.11.1. Is the selection of data undergoing quality control and quality assurance procedures complete?	VVM Para. 121 Refer to all data within the PDD Inc. B.6.2-B.7.1	DR	From the information supplied by the Client in the PDD (version 2) (ref. 1) section B.7 the selection of data is undergoing quality control and quality assurance procedures complete.	Y
B.11.2. Is the belonging determination of uncertainty levels done correctly for each ID in a correct and reliable manner?	Refer to all data within the PDD Inc. B.4/B.7.2/Annex 4	DR	From the information supplied by the Client in the PDD (version 2) (ref. 1) section B.7 the belonging determination of uncertainty levels done correctly for each parameter in a correct and reliable manner.	Y

B.11.3. Are quality control procedures and quality assurance procedures sufficiently described to ensure the delivery of high quality data?	VVM Para 121	DR	According to the PDD version 1 (ref. 1) and verified during site visit, the following quality control procedures will be implemented to ensure high quality data: Calibration of equipment as per manufacturer specifications to ensure validity of data measured, the gas analyzer should be subject to a regular maintenance and testing regime to ensure accuracy, reliable sources will be used among others.	Y
B.11.4. Is it ensured that data will be bound to national or internal reference standards?	VVM Para. 86d	DR	From the information supplied by the Client in the PDD (version 2) (ref. 1) section B.7 the selection of data is undergoing quality control and quality assurance procedures complete ensuring that data will be bound to national or internal reference standards.	Y
B.11.5. Is it ensured that data provisions will be free of potential conflicts of interests resulting in a tendency of overestimating emission reductions?	VVM Para. 19	DR	From the information supplied by the Client in the PDD (version 2) (ref. 1) section B.7 the selection of data is undergoing quality control and quality assurance procedures complete ensuring that data provisions will be free of potential conflicts of interests resulting in a tendency of overestimating emission reductions.	Y
B.12. Operational and Management Structure				
B.12.1. Is the authority and responsibility of project management clearly described?	PDD Section B.8/Annex 1	DR	From the information supplied by the Client in the PDD (version 1) (ref. 1) the authority and responsibility of the project management was clearly described. According to the PDD it will be the responsibility of the Site Operator to provide all requested data logs which will be stored over the duration of the reporting period at the Site office. The data logs will be summarized into emission reduction calculation summaries prior to each verification. This task will be completed by CRA and reported directly to the DOE.	Y
B.12.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	PDD Section B.8/Annex 1	DR	From the information supplied by the Client in the PDD (version 1) (ref. 1) mention is made to Conestoga-Rovers conducting a record keeping, equipment calibration, maintenance program before the O&M phase of the project (ref. 16).	Y

B.12.3. Are procedures identified for training of monitoring personnel?	PDD Section B.8/Annex 1	DR	From the information supplied by the Client in the PDD (version 1) (ref. 1) mention is made to Conestoga-Rovers conducting a training and quality control program before the O&M phase of the project (ref. 32).	Y
B.13. Monitoring Plan (Annex 4)				
B.13.1. Is the monitoring plan developed in a project specific manner clearly addressing the unique features of the CDM activity?	VVM Para. 122a	DR	The information provided in the PDD version 1 (ref. 1) Annex 4 is duplicated from the section B.7.2 and shall be revised in the PDD. **CAR#14 was raised.** According to the information provided in the PDD version 2 (ref. 1) the PP is referring to section B.7.2 in the Annex 4 – Monitoring Information, in this way the information is not duplicated anymore. Thus, **CAR #14 was closed out.**	~~CAR#14~~ Y
B.13.2. Does the monitoring plan completely describe all measures to be implemented for monitoring all parameter required, including measures to be implemented for ensuring data quality?	VVM Para. 122b	DR	The information related to the monitoring plan is presented in section B.7.1 and B.7.2 of the PDD (Annex 4 refers to section B.7.2). The monitoring plan describes the measures to monitor the required parameters.	Y
B.13.3. Does the monitoring plan provide information on monitoring equipment and respective positioning in order to safeguard a proper installation?	VVM Para. 122b	DR	The monitoring plan states that a specific monitoring plan will be designed to reflect actual technology selected for the system.	Y
B.13.4. Are procedures identified for calibration of monitoring equipment?	VVM Para. 122a-c	DR	The calibration table is available and it was verified during site visit (ref. 35).	Y

B.13.5. Are procedures identified for maintenance of monitoring equipment and installations?	VVM Para. 122a-c	DR	From the information supplied by the Client in the PDD (version 1) (ref. 1) mention is made to Conestoga-Rovers conducting a training and quality control program before the O&M phase of the project (ref. 32).	Y
B.13.6. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	VVM Para. 122a-c	DR	Data collected from each of the parameter sensors is transmitted directly to an electronic database from which the emission reductions volume calculations may be carried out. Hard copy backup or reports of the data may be printed as required or recorded. Backup of the electronic data is conducted on a 2-3 minute intervals.	Y
B.13.7. Are procedures identified for dealing with possible monitoring data adjustments and missing data allowing redundant reconstruction of data in case of monitoring problems?	VVM Para. 122a-c	DR	The Landtec system in the project is plugged to a battery-based uninterruptible power supply to avoid data loss due to power failures. Backup will be produced and stored off-site from the main recording system, no more than 2 to 3 minutes of data at a time would ever be lost due to a system malfunction.	Y
B.13.8. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	VVM Para.122a-c	DR	The monitoring plan states that a specific monitoring plan will be designed to reflect actual technology selected for the system.	Y
B.13.9. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	VVM Para. 122a-c	DR	The periodic monitoring report will contain the data required for the verification of the emission reductions, additionally may contain operational data from the collection system and flaring system to illustrate that the system is well maintained and operating. Records of regular maintenance performed will also be a component of the annual report.	Y

B.13.10. Describe the ability of the project participants to implement the monitoring plan.	VVM Para. 122c	DR	The DOE opinion is that the monitoring plan described in the PDD are feasible within the project design. The monitoring plan, data management, quality assurance and quality control procedures, are sufficient to ensure that the emission reductions achieved from the proposed project activity can be reported and verified if implemented as described and required in the applied methodology and tools.	Y
B.14. Baseline Details				
B.14.1. Is there any indication of a date when determining the baseline?	PDD Section B.8/Annex 3	DR	From the information provided by the Client in the PDD (version 1) (ref. 1) section B.8 states that the baseline was determined on 12/05/2010.	Y
B.14.2. Is this consistent with the time line of the PDD history?	Also see revision history of the PDD	DR	From the information provided by the Client in the PDD (version 2) (ref. 1) the determination of baseline is consistent with the PDD history. PDD version 2: 27/06/2010 Baseline: 12/05/2010.	Y
B.14.3. Is all data required provided in a complete manner by annex 3 of the PDD?	PDD Annex 3	DR	From the information provided by the Client in the PDD (version 2) (ref. 1) Annex 3 states the key elements that were used in the estimation of the baseline emission.	Y
B.14.4. What is the documented crediting period of the project? Is this inline with available data?		DR	From the information provided by the Client in the PDD (version 2) (ref. 1) section C the start date stated is the date which occurs later between 01/01/2011 and the date of registration.	Y
B.14.5. In cases where the methodology specifies, has the '*Tool to determine the remaining lifetime of equipment'* been correctly applied?	EB 50 Annex 15	DR	Not applicable.	Y

	B.14.6. In cases where the *'Tool to determine the remaining lifetime of equipment'* has been used the project participants may use one of the following options to determine the remaining lifetime of the equipment: i. Use manufacturer's information on the technical lifetime of equipment and compare to the date of first commissioning; ii. Obtain an expert evaluation; iii. Use default values.	EB 50 Annex 15	DR	Not applicable.	Y
C.	**Duration of the Project / Crediting Period**				
	C.1.1. Are the project's starting date and operational lifetime clearly defined and reasonable?	VVM Para. 102a-c PDD Section C.1.1/C.1.2	DR	From the information provided by the Client in the PDD (version 1) (ref. 1) section C the start date stated is the date which occurs later between 01/01/2011 and the date of registration. The operational lifetime is 25 years (ref. 36).	Y
	C.1.2. Is the assumed crediting time clearly defined and reasonable (renewable crediting period of max 7 years with potential for 2 renewals or fixed crediting period of max. 10 years)?	VVM Para. 102a PDD Section C.2/C.2.1/C.2.2	DR	From the information provided by the Client in the PDD (version 1) (ref. 1) section C the assumed crediting time is defined as a renewable, first crediting period of 7 years.	Y

C.1.3.	Does the project's operational lifetime exceed the crediting period	VVM Para. 102a PDD Section C.1.2/C.2.1.1/C.2.1.2	DR	From the information provided by the Client in the PDD (version 1) (ref. 1) section C the operational lifetime exceed the crediting period.	Y
C.1.4.	Does the start date indicate whether this is a new project activity or a pre-existing project activity?	VVM Para. 102a/ 98 PDD Section C.1.1/C.2.1.1	DR	From the information supplied by the Client in the PDD (version 1) (ref. 1) section C the start date indicates the proposed project activity as a new project activity.	Y
D.	**Environmental Impacts**				
D.1.1.	Does the project comply with environmental legislation in the host country?	VVM Para. 131 PDD section D	DR	The landfill site (Manaus landfill) and the proposed project activity have no Operation Environmental License. However PP provided the following documents: Installation License Nº069/06, dated 26/04/2006 issued by IPAAM for the gas system to capture and flare the landfill gas (ref. 3a); Protocol Nº8611/09, dated 08/07/2009 requesting Operation License to IPAAM (ref. 3ai); Letter Nº009/2010 – DIR, dated 14/06/2010 (Protocol Nº 3942, 16/06/2010) submitted to SEMMAS (Secretaria Municipal de Meio Ambiente e Sustentabilidade) requesting Operation License of Manaus landfill (ref. 3b). PP shall provide the real evidence of legal conformity (Operation license) in the first verification of the project activity. **FAR#16 was raised.**	FAR#16
D.1.2.	Has an analysis of the environmental impacts of the project activity been sufficiently described?	VVM Para. 131 PDD section D	DR	The environmental agency is responsible to check the environmental impacts. It is not expected any significant environmental impacts due to the project activity.	Y

D.1.3.	Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	VVM Para. 131 PDD section D	DR	The requirement of an environmental impact assessment will verified by the environmental agency at the time of issuing the operation license.	Y
D.1.4.	Will the project create any adverse environmental effects?	VVM Para. 131 PDD section D	DR	It is not expected any significant environmental impacts due to the project activity.	Y
D.1.5.	Are trans-boundary environmental impacts considered in the analysis?	VVM Para. 131 PDD section D	DR	The requirement of an environmental impact assessment will verified by the environmental agency at the time of issuing the operation license.	Y
D.1.6.	Have identified environmental impacts been addressed in the project design?	VVM Para. 131 PDD section D	DR	The requirement of an environmental impact assessment will verified by the environmental agency at the time of issuing the operation license.	Y

E. Stakeholder Comments				
E.1.1. Have relevant stakeholders been consulted?	VVM Para. 128a PDD Section E.1	DR	From the information provided by the Client in the PDD (version 1) (ref. 1) section E the local stakeholders meeting was held on 26th January 2006 and complies with Resolution Number 1, dated 11th September 2003. To comply with Resolution Number 7, dated 26th May 2006 letters were sent to the following stakeholders: • Prefeitura Municipal de Manaus (Municipal administration of Manaus); • Câmara Municipal de Manaus (Municipal Chamber of Manaus); • SEMMAS - Secretaria Municipal de Meio Ambiente e Sustentabilidade de Manaus (Municipal Administration of Environment and Sustainability of Manuaus); • IPAAM - Instituto de Proteção Ambiental do Amazonas (Environmental Protection Institute of Amazonas); • FBOMS-Forum Brasileiro de ONG's e Movimentos Sociais para o Meio Ambiente e o Desenvolvimento (Brazilian Forum of Non-Governmental Organizations and Social Movements for Environment and Development); • Ministério Público do Estado do Amazonas (Amazonas Prosecutor´s office); • Ministério Público Federal (Federal Prosecutor´s office); • ARPA - Associação de Reciclagem e Preservação Ambiental (Recycling and Environmental Preservation Association); • ACR -Associação de Catadores de Resíduos (Residues Collectors Association); • Associação Manauense de Recicláveis (Recycling Association of Manaus).	Y
E.1.2. Have appropriate media been used to invite comments by local stakeholders?	VVM Para. 128a PDD Section E.1	DR	Letters were sent to local stakeholders in the local language according to Resolution Number 7, dated 26th May 2006.	Y

E.1.3.	Is the undertaken stakeholder process described in a complete and transparent manner?	VVM Para. 128b PDD Section E.1	DR	From the information provided by the Client in the PDD (version 1) (ref. 1) section E the undertaken local stakeholder process has been described in a complete and transparent manner.	Y
E.1.4.	Is a summary of the stakeholder comments received provided?	VVM Para. 128b PDD Section E.2	DR	From the information provided by the Client in the PDD (version 1) (ref. 1) section E.2 provides a summary of the local stakeholder comments received from the process.	Y
E.1.5.	Has due account been taken of any stakeholder comments received?	VVM Para. 128b PDD Section E.3	DR	From the information provided by the Client in the PDD (version 1) (ref. 1) section E.3 takes into due account the comments received throughout the local stakeholder process held on 26th January 2006. Regarding the letters sent, no comments have been received.	Y

References

Reference ID	Title / Description	Comments
1	Project Design Document (PDD): a - PDD version 1, Dated 20/05/2010 b - PDD version 2, Dated 27/06/2010	Project Design Document (PDD): a - PDD version 1, Dated 20/05/2010 b - PDD version 2, Dated 27/06/2010
2	Screenshot of the physical location of the project	Screenshot of the physical location of the project
3	Environmental Licenses: a - Installation License, dated 26th April 2006 ai - Protocolo - LO planta de biogás ai - Protocolo - LO planta de biogás	Environmental Licenses: a - Installation License, dated 26th April 2006 ai - Protocolo - LO planta de biogás ai - Protocolo - LO planta de biogás
4	Letter of Approval: a – Pending LoA from Brazil b – Pending LoA from Canada	Letter of Approval: a – Pending LoA from Brazil b – Pending LoA from Canada
5	Methodology ACM0001 v.11	Methodology ACM0001 v.11
6	Screenshot of the references presented in the UNFCCC website	Screenshot of the references presented in the UNFCCC website
7	ONS Brazilian Interconnected System	ONS Brazilian Interconnected System
8	EB41, Annex 12, v. 7, dated 2nd August 2008	EB41, Annex 12, v. 7, dated 2nd August 2008
9	Tool for the demonstration and assessment of additionality	Tool for the demonstration and assessment of additionality
10	EF Spreadsheet d. v	EF Spreadsheet d. v
11	Tool to calculate baseline, project and leakage emissions from electricity consumption	Tool to calculate baseline, project and leakage emissions from electricity consumption
12	Flare Specification	Flare Specification
13	Uptime of the grid	Uptime of the grid

Reference ID	Title / Description	Comments
14	Collection Efficiency of 80%	Eficiencia de 80%
15	Characterization of Waste	Characterization of Waste
16	Chronogram and Chart	Cronogramas e Organograma
17	Gas engine technical data	Gas engine technical data
18	Technical notes of Manaus	Nota Tecnica Manaus
19	Investment analysis	Investment analysis
20	Financial Spreadsheet	Financial Spreadsheet
21	Response to Stakeholder Comment	Response to Stakeholder Comment
22	Contract between the parties involved	Contract between the parties involved
23	Sistema Nacional de Informações sobre saneamento	Sistema Nacional de Informações sobre saneamento (SNIS)
24	Waste Composition	Waste Composition
25	CERs Spreadsheet: a - AterroManausCER_2010.04.14_FES. b - AterroManausCER_v2_2010.06.27_FES	CERs Spreadsheet: a - AterroManausCER_2010.04.14_FES. b-AterroManausCER_v2_2010.06.27_FES
26	Uptime of energy and load factor	Uptime da energia e load factor
27	Climate data from Manaus	Climate data from Manaus
28	Gestão integrada de resíduos sólidos - GIRS	Gestão integrada de resíduos sólidos - GIRS
29	Balanço Energético Nacional (BEN) 2006	Balanço Energético Nacional (BEN) 2006
30	Solid waste obligations	Solid waste obligations
31	Project Participant withdraw	PP of the Summit Lake Limited withdraw
32	Training certificates	Training certificates
33	Waste Received at landfill since 1986	Waste Received at landfill since 1986
34	Energy Consumed in the Project	Energy Consumed in the Project

Reference ID	Title / Description	Comments
35	Calibration Table	Calibration Table
36	Tool to determine the remaining lifetime of equipment	Tool to determine the remaining lifetime of equipment
37	Methane to Markets Partnership	Methane to Markets Partnership
38	CETESB - Emissões de Metano no Tratamento e na Disposição de Resíduos	CETESB - Emissões de Metano no Tratamento e na Disposição de Resíduos
39	Resolution Nº 1, dated 11th September 2003	Resolution Nº 1, dated 11th September 2003

A.3 Annex 3: Overview of Findings

Findings Overview

Findings from validation of Manaus Landfill Gas Project.
Each Table below represents a finding from the validation assessment. The findings are numbered consecutively, approximately in the order that they have been identified and irrespective of the nature of the findings, for eg.: CAR #1, CAR #2, CL #3, FAR #4 etc.
Description of Table:

Type	Findings are either Corrective Action Requests (CARs), Clarification Requests (CLs), and Forward Action Request (FARs). A corrective action request (CAR) is raised if one of the following occurs: I. The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions; II. The CDM requirements have not been met; III. There is a risk that emission reductions cannot be monitored or calculated. A clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met A forward action request (FAR) is raised during validation to highlight issues related to project implementation that require review during the first verification of the project activity. FARs shall not relate to the CDM requirements for registration.
Lead Assessor Comments	Details the content of the finding
Ref	Refers to the item number in the Validation Protocol
Response	Please insert response to finding, starting with the date of entry.

Please Note: This is an open list and more findings may be added as validation progresses.
Responses to each Finding and relevant associated documentation should be recorded in this form by the Client and send back to the Lead Assessor in one submission to SGS (exception of finding linked to Letter of Approval, which can be submitted separately).
SGS reserves the right to review the associated fees and timeline if:

- more than one response submission is received from the Client
- a finding (CL/CAR), raised by the Lead Assessor prior to Technical Review stage, is not closed within 30 days of notification to the Client by SGS.

Rows for comments and further response will be appended to the table until the Findings has been addressed to the satisfaction of the Lead Assessor.

Findings Overview Summary

	CARs	CLs	FARs
Total Number raised 26/06/2010	11	4	1

Date:	28/05/10		Raised by:	Lucas Engelbrecht/Fabian Gonçalves	
Type:	CL	Number:	#1	Reference:	Table 1 – Item 4
Lead Assessor Comment:					
The PP is required to address the comments received during the International Stakeholder Consultation of the PDD version 1 (ref. 1).					
Project Participant Response:			**Date:** *27/06/2010*		

The PP made available to DOE the response about the International Stakeholder Consultation. In this response, the PPs explain the benefits to Manaus citizens from the Manaus Landfill Gas Project. The same response to DOE was sent to Manaus citizen by email.
Documentation Provided by Project Participant:
• *Response to DOE (Response for Global stakeholder consultation_FES.doc)* • *Email to citizen (Manaus Landfill Gas.msg)*
Information Verified by Lead Assessor:
Response to DOE (Response for Global stakeholder consultation_FES.doc) *Email to citizen (Manaus Landfill Gas.msg)* *Contract between the parties involved*

Reasoning for not Acceptance or Acceptance and Close Out:	**Date:** 29/06/10
In response to the clarification the PP presented to the DOE assessment team and to the citizen (ref. 21), a response clarifying that how the benefits of the CDM project activity will benefit the city of Manaus. In this way, CL #1 was closed out.	
Acceptance and Close out by Lead Assessor:	**Date:** 30/06/2010

Date:	31/05/2010		Raised by:	Lucas Engelbrecht/Fabian Gonçalves	
Type:	CAR	Number:	#2	Reference:	B.4.7
Lead Assessor Comment:					
Investment analysis evidences require more clarification and/or not in accordance with Manaus landfill investment analysis spreadsheet: -Condensate Management (source of data and explain the 5 condensers); -OC-CRA 1117 06 Koch (source of data, not in accordance with investment spreadsheet); -Declaração de fiscalização compressor (data not in accordance with investment spreadsheet); -15% of contingency for all expenses (explain the use of the contingency for this project); -Evidence for the 25 years lifetime from the engine manufacturer; -Operations Maintenance (source of data BRL 26.36/MW); -Exchange rate is inconsistent with the link provided and date of the investment analysis.					
Project Participant Response:			**Date:** *27/06/2010*		

The following below the response of the PPs:

- Condensate Management: Based on the project design, the project will have 4 phases. Each phase will have a condensate trap, plus the compound intake condensate trap. The total of 5 condensate traps is needed due the high moisture content of the landfill gas (rain forest weather).
- OC-CRA 1117 06 Koch: The source is Koch Tecnologia Quimica Ltda. The value of this invoice is a component of the sum of mechanical and electrical costs.
- Declaração de fiscalização compressor: The value was based on another landfill power plant which belongs CRA (Canabrava landfill).
- 15% of contingency for all expenses: The value was amended to 5% based on “Landfill Full Cost Accounting Guide” (http://www.mfe.govt.nz/publications/waste/landfill-full-cost-accounting-guide-mar04/html/page7.html).
- Evidence for the 25 years lifetime from the engine manufacturer: The information was based on the “Tool to determine the remaining lifetime of equipment (EB 50 - Annex 15)”
- Operations maintenance: Source attached to the data sheet, and cost calculated per MWh, based on our generation plant, Ontario Canada power plant (installed capacity 2MW)
- Exchange rate is inconsistent with the link provided and date of the investment analysis: The mistake was corrected regarding to link and date of the investment analysis.

Documentation Provided by Project Participant:

- *43441-BSN-01-0.DWG.pdf*
- *"OC-CRA1117 06 Koch.pdf" and "Manaus landfill Investment analysis_v2_2010.06.27_FES.xls";*
- *Declaração fiscalização.pdf;*
- 15% of contingency for all expenses: The value was amended to 5% based on "Landfill Full Cost Accounting Guide" (http://www.mfe.govt.nz/publications/waste/landfill-full-cost-accounting-guide-mar04/html/page7.html).
- *Tool to determine the remaining lifetime of equipment (EB 50 - Annex 15);*
- *Operations and Maintenance.pdf;*
- *"Manaus landfill Investment analysis_v2_2010.06.27_FES.xls" and http://www4.bcb.gov.br/?TXCONVERSAO*

Information Verified by Lead Assessor:

43441-BSN-01-0.DWG.pdf
"OC-CRA1117 06 Koch.pdf" and "Manaus landfill Investment analysis_v2_2010.06.27_FES.xls";
Declaração fiscalização.pdf;
15% of contingency for all expenses: The value was amended to 5% based on "Landfill Full Cost Accounting Guide" (http://www.mfe.govt.nz/publications/waste/landfill-full-cost-accounting-guide-mar04/html/page7.html).
Tool to determine the remaining lifetime of equipment (EB 50 - Annex 15);
Operations and Maintenance.pdf;
"Manaus landfill Investment analysis_v2_2010.06.27_FES.xls" and http://www4.bcb.gov.br/?TXCONVERSAO

Reasoning for not Acceptance or Acceptance and Close Out:	**Date:** 30/06/2010

With the information provided by the PP and what was verified during the site visit it was possible to confirm that five condensate management is necessary to the project activity and that one of the five condensates are already installed on site (ref. 19h).
In addition, the PP explained the source of data and presented more transparent in the financial analysis spreadsheet version 2 (ref. 20) of the following evidences: OC-CRA 1 117 06 Koch (ref. 19e); "Declaração de Fiscalização" (ref. 19f); Operations Maintenance (ref. 19b) and the Exchange Rate (ref. 19a).
The PP has presented the evidence "Landfill full cost Accounting Guide" (ref. 19d) which presents a contingency for landfill projects between 5 to 25%, for conservativeness in the financial analysis spreadsheet version 2 (ref. 20), the PP applied 5% of contingency. Regarding to the 25 years of the lifetime of the engine manufacturer, the PP applied the value presented in the "Tool to determine the remaining lifetime of equipment".
In this way, CAR #2 was closed out.

Acceptance and Close out by Lead Assessor:	**Date:** 30/06/2010

Date:	01/06/2010		Raised by:	Lucas Engelbrecht/Fabian Gonçalves	
Type:	CAR	Number:	#3	Reference:	A.4.4.

Lead Assessor Comment:

According to the PDD version 1 (ref. 1), the project activity is under the sectoral scope 1 (energy industry, renewable and non-renewable sources) and 13 (waste handling and disposal).
However, according to the approved methodology (ref. 5) the project relies only in the scope 13 (waste handling and disposal).
In this way, the PP is required to apply the approved methodology and its category in accordance with the requirements by the ACM0001 (ref. 5).

Project Participant Response:	**Date:** *27/06/2010*

The PPs corrected the mistake in the Section A.4.2

Documentation Provided by Project Participant:

PDD – version 2 date of 27/06/2010

Information Verified by Lead Assessor:

PDD – version 2 date of 27/06/2010

Reasoning for not Acceptance or Acceptance and Close Out:	**Date:** 29/06/2010

In the PDD version 2 (ref. 1) section A.4.2 the PP has amended the information regarding to the scope of the project activity as 13 (waste handling and disposal), being in accordance with the latest version of the approved methodology ACM0001. In this way, CAR #3 was closed out.
Acceptance and Close out by Lead Assessor: **Date:** 30/06/2010

Date:	01/06/2010		Raised by:	Lucas Engelbrecht/Fabian Gonçalves	
Type:	CAR	Number:	#4	Reference:	B.2.1
Lead Assessor Comment:					
According to the PDD version 1 (ref. 1) section B.3., the information provided in the table regarding to the emissions sources and gases related to the baseline and project activity is not in accordance with the approved methodology (ref. 5). The project participant is required to apply the summary of the gases and sources in the project boundary in accordance with the applied methodology.					
Project Participant Response:			**Date:** *27/06/2010*		
It was included in Section B.3 of the PDD – version 2 dated of 27/06/2010, the summary of the gases and sources in the project boundary in accordance with ACM0001 – version 11 as requested.					
Documentation Provided by Project Participant:					
PDD – version 2 date of 27/06/2010					
Information Verified by Lead Assessor:					
PDD – version 2 date of 27/06/2010					
Reasoning for not Acceptance or Acceptance and Close Out:			**Date:** 29/06/2010		
In the PDD version 2 (ref. 2) section B.3 the table presented regarding to the summary of gases and sources included in the project boundary are in accordance with the approved methodology ACM0001. In this way, CAR #4 was closed out.					
Acceptance and Close out by Lead Assessor:			**Date:** 30/06/2010		

Date:	01/06/2010		Raised by:	Lucas Engelbrecht/ Fabian Gonçalves	
Type:	CAR	Number:	#5	Reference:	B.2.3
Lead Assessor Comment:					
According to the information supplied by the PP in the PDD (version 1) (ref. 1) section B.3. does not include a delineation of the proposed project activity as set out in EB 41, Annex 12 (ref. 8). Thus, the PP is required to update the PDD in accordance with EB 41 Annex 12.					
Project Participant Response:			**Date:** *27/06/2010*		
In Section B.3 of the PDD – version 2 dated of 27/06/2010, the delineation of the proposed project activity was amended in accordance EB41 Annex 12.					
Documentation Provided by Project Participant:					
PDD – version 2 date of 27/06/2010					
Information Verified by Lead Assessor:					
PDD – version 2 date of 27/06/2010					
Reasoning for not Acceptance or Acceptance and Close Out:			**Date:** 29/06/2010		
According to the information provided in the PDD version 2 (ref. 1) the project participant has included a delineation of the proposed project activity in accordance with the requirements set out by the EB 41, Annex 12 (ref. 8). CAR #5 was closed out.					
Acceptance and Close out by Lead Assessor:			**Date:** 30/06/2010		

Date:	10/06/2010		Raised by:	Pedro Dodsworth/Lucas Engelbrecht/ Fabian Gonçalves	
Type:	CL	Number:	#6	Reference:	B.4.7
Lead Assessor Comment:					

According to the information provided the project participant is required to clarify the following information: ▪ Regarding to the investment analysis the item "necessidade de capital de giro" the signals are inverted. This mean that the FCF is inflated of US$ 882,978.42, please clarify; ▪ In the PDD version 1 (ref. 1a) page 20, the sum of the final FCF in the year 2033 is not correct because does not consider the return of the working capital; ▪ The PP is required to provide the source of data for the PIS/COFINS;

Project Participant Response:	**Date:** *27/06/2010*
The cash flow was amended as follows: • The signals of the item "necessidade de capital de giro" were inverted, as requested; • The sum of the final FCF in the year 2033 was correct and it was considered the return of the working capital; • The sources of data for the PIS/COFINS were included in investment analysis.	
Documentation Provided by Project Participant:	
- PDD – version 2 date of 27/06/2010 - CERs estimtive date of 27/06/2010	
Information Verified by Lead Assessor:	
PDD version 2, dated 27/06/2010; Financial spreadsheet dated 27/06/2010.	
Reasoning for not Acceptance or Acceptance and Close Out:	**Date:** 01/07/2010
From the information provided in the PDD version 2 (ref.1) and in the investment analysis spreadsheet (ref. 19) the signals were corrected, the sum of the final FCF in the year 2033 was corrected and the sources of PIS/COFINS included. CL#6 was closed out.	
Acceptance and Close out by Lead Assessor:	**Date:** 01/07/2010

Date:	24/06/2010		Raised by:	Lucas Engelbrecht/Fabian Gonçalves	
Type:	CAR	Number:	#7	Reference:	B.6.1
Lead Assessor Comment:					
In the PDD version 1 (ref. 1), the information presented in the section B.6.2. is not in accordance with the requirements of the approved methodology ACM0001 v.11 (ref. 5), regarding to the following parameters: ▪ Regulatory requirements relating to landfill gas; ▪ $EF_{grid,OM}$ – Operating margin of CO_2 emission factor; ▪ K_j – Decay rate for waste j; ▪ Waste composition; ▪ $BE_{CH4,SWDS,y}$ – Methane generation in the landfill in the absence of the project activity;					
Project Participant Response:			**Date:** *27/06/2010*		
In section B.6.2 of the PDD – version 2 dated of 27/06/2010 the parameters were amended to conform to ACM0001 v.11.					
Documentation Provided by Project Participant:					
• *PDD – version 2 date of 27/06/2010*					
Information Verified by Lead Assessor:					
PDD – version 2 date of 27/06/2010					
Reasoning for not Acceptance or Acceptance and Close Out:			**Date:** 29/06/2010		

According to the PDD version 2 (ref. 1) section B.6.2 the PP has amended the information regarding to the Regulatory requirements relating to landfill gas; $EF_{grid,OM}$ – Operating margin of CO2 emission factor; Kj – Decay rate for waste j; Waste composition and $BE_{CH4,SWDS,y}$ – Methane generation in the landfill in the absence of the project activity, being in accordance with the approved methodology ACM0001 v.11 (ref. 5). In this way, CAR #7 was closed out.
Acceptance and Close out by Lead Assessor: **Date:** 30/06/2010

Date:	25/06/10		Raised by:	Lucas Engelbrecht / Fabian Gonçalves	
Type:	CAR	Number:	#8	Reference:	Table 1 – Item 5
Lead Assessor Comment:					
The PP is required to apply the PDD format and content in accordance with the requirements of EB41 Annex 12 (ref. 8).					
Project Participant Response: **Date:** *27/06/2010*					
The PDD – version 2 dated of 27/06/2010 was amended to conform the requirements of EB41 Annex 12.					
Documentation Provided by Project Participant:					
• *PDD – version 2 date of 27/06/2010*					
Information Verified by Lead Assessor:					
PDD – version 2 date of 27/06/2010					
Reasoning for not Acceptance or Acceptance and Close Out: **Date:** 29/06/2010					
The client has updated the format and the content of the PDD version 2 (ref. 1) in accordance with the requirements of the EB41 Annex 12 (ref. 8). In this way, CAR #8 was closed out.					
Acceptance and Close out by Lead Assessor: **Date:** 30/06/2010					

Date:	25/06/10		Raised by:	Lucas Engelbrecht / Fabian Gonçalves	
Type:	CAR	Number:	#9	Reference:	B.7.2
Lead Assessor Comment:					
According to the PDD version 1 (ref. 1) the reported value regarding to the flare efficiency (99%) used to estimate the emissions reductions is not in accordance with the evidence provided (ref. 12).					
Project Participant Response: **Date:** *27/06/2010*					
The flare efficiency (99%) was amended to 98% according to manufacturer specification.					
Documentation Provided by Project Participant:					
• *Destruction Efficiency of Flare and Engines.pdf*					
Information Verified by Lead Assessor:					
Destruction Efficiency of Flare and Engines.pdf *PDD – version 2 date of 27/06/2010*					
Reasoning for not Acceptance or Acceptance and Close Out: **Date:** 29/06/2010					
The PP presented the PDD version 2 (ref. 1) applying the correct value of the flare destruction efficiency used in the estimative as 98% (ref. 12). In this way, CAR #9 was closed out.					
Acceptance and Close out by Lead Assessor: **Date:** 30/06/2010					

Date:	25/06/10		Raised by:	Lucas Engelbrecht / Fabian Gonçalves	
Type:	CAR	Number:	#10	Reference:	B.4.6
Lead Assessor Comment:					
In the PDD version 1 (ref. 1) section B.5. the timeline table are inconsistent with the dates presented. In addition the PP is required to provide the document for the construction work started, presented in the timeline table.					
Project Participant Response: **Date:** *27/06/2010*					
The document providing the construction work started was present to DOE and the corrected date was included (October/2008).					
Documentation Provided by Project Participant:					

• *PDD – version 2 date of 27/06/2010*	
Information Verified by Lead Assessor:	
Chronogram and Chart	
Reasoning for not Acceptance or Acceptance and Close Out:	**Date:** 29/06/2010
In the PDD version 2 (ref. 1) the project participant has amended the date of the construction starts in accordance with the evidence provided "Chronogram and Chart (ref. 16)", the date presented in the evidence is October of 2008. In this way, CAR #10 was closed out.	
Acceptance and Close out by Lead Assessor:	**Date:** 30/06/2010

Date:	25/06/10		Raised by:	Lucas Engelbrecht / Fabian Gonçalves	
Type:	CAR	Number:	#11	Reference:	B.10.1
Lead Assessor Comment:					

According to the PDD version 1 (ref. 1) section B.7.1 the information presented regarding to the monitored parameters shall be revised to be in accordance with the requirements of the approved methodology and all applicable tools.
Parameters:

- $LFG_{total,y}$ - (Data unit and Value of data applied for the purpose of calculating expected emission reductions in section B.5);
- $LFG_{flare,y}$ - (Data unit);
- $LFG_{electricity,y}$ - (Data unit);
- T – (Revise the applicability of this parameter);
- P – (Revise the applicability of this parameter);
- $PE_{flare,y}$ – (Value of data applied for the purpose of calculating expected emission reductions in section B.5; Description of measurement methods and procedures to be applied and Any comment);
- Operational of the Energy Plant – (Value of data applied for the purpose of calculating expected emission reductions in section B.5);
- $PE_{EC,y}$ – (Value of data applied for the purpose of calculating expected emission reductions in section B.5 and Description of measurement methods and procedures to be applied);
- $PE_{FCj,y}$ – (Value of data applied for the purpose of calculating expected emission reductions in section B.5 and Description of measurement methods and procedures to be applied);
- $W_{C,I,y}$ - (Revise the applicability of this parameter);
- $p_{i,y}$ - (Revise the applicability of this parameter);
- $p_{n,j,x}$ - (Revise the applicability of this parameter);
- z - (Revise the applicability of this parameter);
- $EG_{,y}$ - (Revise the applicability of this parameter);
- $fv_{CH4,FG,h}$ – (Value of data applied for the purpose of calculating expected emission reductions in section B.5 and any comment);
- $FV_{RG,h}$ – (Value of data applied for the purpose of calculating expected emission reductions in section B.5);
- $fv_{i,,h}$ – (QA/QC procedures to be applied);
- Other flare operational parameters – (Revise the applicability of this parameter);

Also the following parameters shall be included:

- NCV_{ij}
- $EF_{CO2,ij}$

Project Participant Response:	**Date:** *27/06/2010*
The parameters were amended to conform of the approved methodology and all applicable tools and the parameters NCV and $EF_{CO2,ij}$ were included in Section B.7.1 of the PDD – version 2 dated of 27/06/2010.	
Documentation Provided by Project Participant:	
• *PDD – version 2 date of 27/06/2010*	
Information Verified by Lead Assessor:	
PDD – version 2 date of 27/06/2010	
Reasoning for not Acceptance or Acceptance and Close Out:	**Date:** 29/06/2010

The PP presented the PDD version 2 (ref. 1) with the supportive information in order to correct apply the following parameters:

- $LFG_{total,y}$ – The data unit and Value of data applied for the purpose of calculating expected emission reductions in section B.5, was amended in accordance with the approved methodology;
- $LFG_{flare,y}$ – The data unit was amended in accordance with the approved methodology;
- $LFG_{electricity,y}$ - The data unit was amended in accordance with the approved methodology;
- T – As the project is using flow meters that automatically measure temperature and pressure the PP did not need to separate monitor this parameter, in this way it was excluded in the PDD version 2 (ref. 1);
- P – As the project is using flow meters that automatically measure temperature and pressure the PP did not need to separate monitor this parameter, in this way it was excluded in the PDD version 2 (ref. 1);
- $PE_{flare,y}$ – The value of data applied for the purpose of calculating expected emission reductions in section B.5; the description of measurement methods and procedures to be applied and the any comment presented in the PDD version 2 (ref. 1) is now in accordance with the evidence provided Flare Specification (ref. 12);
- Operational of the Energy Plant – The value of data applied for the purpose of calculating expected emission reductions in section B.5 was amended in the PDD version 2 (ref. 1) in accordance with the evidence provided Uptime of energy plant and load factor (ref. 26);
- $PE_{EC,y}$ – In the PDD version 2 (ref. 1) the value of data applied for the purpose of calculating expected emission reductions in section B.5 and the description of measurement methods and procedures to be applied were applied in accordance with the approved methodology and applicable tool;
- $PE_{FCj,y}$ – In the PDD version 2 (ref. 1) the value of data applied for the purpose of calculating expected emission reductions in section B.5 and the description of measurement methods and procedures to be applied were applied in accordance with the approved methodology and applicable tool;
- $W_{C,l,y}$ – The PP has revised the applicability of this parameter and has excluded it from the PDD version 2 (ref. 1) in accordance with the option choose in the "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion" ver. 2.;
- $p_{i,y}$ - The PP has revised the applicability of this parameter and has excluded it from the PDD version 2 (ref. 1) in accordance with the option choose in the "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion" ver. 2.;
- $p_{n,j,x}$ - The PP revised the applicability of this parameter in the PDD version 2 (ref. 1) in accordance with the approved methodology and applicable tools;
- z - The PP revised the applicability of this parameter in the PDD version 2 (ref. 1) in accordance with the approved methodology and applicable tools;
- $EG_{,y}$ – This parameter is not applicable for the approved methodology and was excluded by the PP in the PDD version 2 (ref. 1);
- $fv_{CH4,FG,h}$ – In the PDD version 2 (ref. 1) the value of data applied for the purpose of calculating expected emission reductions in section B.5 and the any comment were correctly amended in accordance with the applicable tools;
- $FV_{RG,h}$ – The value of data applied for the purpose of calculating expected emission reductions in section B.5 was revised in the PDD version 2 (ref. 1);
- $fv_{i,,h}$ – The QA/QC procedures to be applied was amended in the PDD version 2 (ref. 1);
- Other flare operational parameters – This parameter was excluded from the PDD version 2 (ref. 1);

In addition, the parameters regarding to the NCV_{ij} and $EF_{CO2,ij}$ were included in the PDD version 2 (ref. 1) being in accordance with the applicable tool and approved methodology.

In this way, CAR #11 was closed out.	
Acceptance and Close out by Lead Assessor:	**Date:** 30/06/2010

Date:	25/06/10		Raised by:	Lucas Engelbrecht / Fabian Gonçalves	
Type:	CL	Number:	#12	Reference:	B.4.13
Lead Assessor Comment:					
According to the information provided in the PDD version 1 (ref. 1) section B.5, step 4 "common practice analysis" the PP shall rephrase the substeps 4a and 4b of the additionality tool, in order to be in accordance with the requirements of the additionality tool.					
Project Participant Response:			**Date:** *27/06/2010*		
In Section B.5 of the sub-step 4a and 4b were amended to prove the common practice in Brazil.					
Documentation Provided by Project Participant:					
• *PDD – version 2 date of 27/06/2010*					
Information Verified by Lead Assessor:					
PDD version 2 dated 27/06/2010; Ref. 23 - Sistema Nacional de Informações sobre saneamento; Ref. 37 - Methane to Markets Patnership; Ref. 38 - CETESB - Emissões de Metano no Tratamento e na Disposicao de Residuos.					
Reasoning for not Acceptance or Acceptance and Close Out:			**Date:** 01/07/2010		
According to the information provided in the PDD version 2 (ref. 1) section B.5, step 4 was rephrased in order to be in accordance with the requirements of the additionality tool, presenting the information in the sub-steps 41 and 4b. CL#12 was closed out.					
Acceptance and Close out by Lead Assessor:			**Date:** 01/07/2010		

Date:	25/06/10		Raised by:	Lucas Engelbrecht / Fabian Gonçalves	
Type:	CL	Number:	#13	Reference:	B.4.3
Lead Assessor Comment:					
In the PDD version 1 (ref. 1) section B.5 substep 1b, it is informed that *"there are no existing or pending regulatory requirements requiring the landfill site to implement any form of LFG emission reductions program",* however there is no evidence regarding to the assumptions made.					
Project Participant Response:			**Date:** *27/06/2010*		
The PPs provide evidences about this statement in Section B.5 of sub-step 1b pf the PDD – version 2 dated of 27/06/2010.					
Documentation Provided by Project Participant:					
• *PDD – version 2 date of 27/06/2010*					
Information Verified by Lead Assessor:					
PDD – version 2 date of 27/06/2010; *Sistema de Informação sobre saneamento (SNIS);* *Gestão integrada de resíduos sólidos (GRI);*					
Reasoning for not Acceptance or Acceptance and Close Out:			**Date:** 30/06/2010		
The PP presented to the DOE assessment team the evidences of the National system of Information on Sanitation (SNIS - ref. 23) and the weblinks to assess the information regarding to the Integrated Management of Solid Waste (GIRS – ref. 28) and the Study of the proposal of the New National Solid Waste Policy Proposal (ref. 30) that were checked by the DOE. Furthermore, the PP has referred to the evidences provided in PDD version 2 (ref. 1). Thus, CL #13 was closed out.					
Acceptance and Close out by Lead Assessor:			**Date:** 30/06/2010		

Date:	25/06/10		Raised by:	Lucas Engelbrecht / Fabian Gonçalves	
Type:	CAR	Number:	#14	Reference:	B.13.1
Lead Assessor Comment:					

The information provided in the PDD version 1 (ref. 1) Annex 4 is duplicated from the section B.7.2 and shall be revised in the PDD.	
Project Participant Response:	**Date:** *27/06/2010*
The information was withdrawn in Section B.7.1 of the PDD – version 2 dated of 27/06/2010	
Documentation Provided by Project Participant:	
• *PDD – version 2 date of 27/06/2010*	
Information Verified by Lead Assessor:	
PDD – version 2 date of 27/06/2010	
Reasoning for not Acceptance or Acceptance and Close Out:	**Date:** 29/06/2010
According to the information provided in the PDD version 2 (ref. 1) the PP is referring to section B.7.2 in the Annex 4 – Monitoring Information, in this way the information is not duplicated anymore. Thus, CAR #14 was closed out.	
Acceptance and Close out by Lead Assessor:	**Date:** 30/06/2010

Date:	29/06/10		Raised by:	Lucas Engelbrecht / Fabian Gonçalves	
Type:	CAR	Number:	#15	Reference:	Section 1.2
Lead Assessor Comment:					
In the PDD version 2 (ref. 1) there is one project participant that was listed in the PDD version 1 (ref. 1) published at international stakeholder consultation, which now is not included in the PDD version 2. The PP is required to provide a letter with the withdrawn of the project participant.					
Project Participant Response:			**Date:** 30/06/2010		
The PPs sent a Letter with the withdrawn of the project participant (Summit).					
Documentation Provided by Project Participant:					
• *394754_1.pdf;* • *Redacted Org Docs re Directors authority (summit lake).pdf;* • *2010.07.01 Declaration re Summit Lake as Project Participant [Executed].pdf*					
Information Verified by Lead Assessor:					
394754_1.pdf; *Redacted Org Docs re Directors authority (summit lake).pdf;* *2010.07.01 Declaration re Summit Lake as Project Participant [Executed].pdf*					
Reasoning for not Acceptance or Acceptance and Close Out:			**Date:** 31/06/2010		
The PP provided to the DOE assessment team the evidence "394754_1" (ref. 31a) informing who are the people that can response for the company interests and the "Redacted Org Docs re Directors authority (summit lake)" (ref. 31b) which is a memorandum proving the name of the company and the persons involved. To conclude, the PP provided the letter "2010.07.01 Declaration re Summit Lake as Project Participant [Executed] (ref. 31c)" which states that the Summit Lake Lake is not a currently project participant in the Manaus Landfill Gas Project. Thus, CAR #15 was closed out.					
Acceptance and Close out by Lead Assessor:			**Date:** 01/07/2010		

Date:	29/06/2010		**Raised by:**	Fabian Goncalves / Lucas Engelbrecht	
Type:	FAR	**Number:**	16	**Reference:**	D.1.1
Lead Assessor Comment:					
The landfill site (Manaus landfill) and the proposed project activity have no Operation Environmental License. However PP provided the following documents: Installation License Nº069/06, dated 26/04/2006 issued by IPAAM for the gas system to capture and flare the landfill gas (ref. 3a);					

Protocol Nº8611/09, dated 08/07/2009 requesting Operation License to IPAAM (ref. 3ai); Letter Nº009/2010 – DIR, dated 14/06/2010 (Protocol Nº 3942, 16/06/2010) submitted to SEMMAS (Secretaria Municipal de Meio Ambiente e Sustentabilidade) requesting Operation License of Manaus landfill (ref. 3b). PP shall provide the real evidence of legal conformity (Operation license) in the first verification of the project activity.

A.4 Annex 4: Team Members Statements of Competency

Statement of Competence

Name: Goncalves, Fabian. SGS Affiliate: SGS Brazil

Status

-	Lead Assessor	x	-	Expert	
-	Assessor	x	-	Financial Expert	
-	Local Assessor	x	-	Technical Reviewer	

Scopes of Expertise

1. Energy Industries (renewable / non-renewable)
Sub scope(s):
2. Energy Distribution
Sub scope(s):
3. Energy Demand
Sub scope(s):
4. Manufacturing
Sub scope(s):
5. Chemical Industry
Sub scope(s):
6. Construction
Sub scope(s):
7. Transport
Sub scope(s):
8. Mining/Mineral Production
Sub scope(s):
9. Metal Production
Sub scope(s):
10. Fugitive Emissions from Fuels (solid, oil and gas)
Sub scope(s):
11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride
Sub scope(s):
12. Solvent Use
Sub scope(s):
13. Waste Handling and Disposal
Sub scope(s):
14. Afforestation and Reforestation
Sub scope(s):
15. Agriculture
Sub scope(s):

Approved Member of Staff by: Siddharth Yadav Date: 25/10/2009

Statement of Competence

Name: Engelbrecht, Lucas SGS Affiliate: SGS Brazil

Status

-	Lead Assessor		-	Expert	
-	Assessor		-	Financial Expert	
-	Local Assessor	x	-	Technical Reviewer	

Scopes of Expertise

1. Energy Industries (renewable / non-renewable)
Sub scope(s):

2. Energy Distribution
Sub scope(s):

3. Energy Demand
Sub scope(s):

4. Manufacturing
Sub scope(s):

5. Chemical Industry
Sub scope(s):

6. Construction
Sub scope(s):

7. Transport
Sub scope(s):

8. Mining/Mineral Production
Sub scope(s):

9. Metal Production
Sub scope(s):

10. Fugitive Emissions from Fuels (solid, oil and gas)
Sub scope(s):

11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride
Sub scope(s):

12. Solvent Use
Sub scope(s):

13. Waste Handling and Disposal
Sub scope(s):

14. Afforestation and Reforestation
Sub scope(s):

15. Agriculture
Sub scope(s):

Approved Member of Staff by: Siddharth Yadav Date: 05/10/2009

Statement of Competence

Name: Saldes, Lorna SGS Affiliate: SGS Chile

Status

-	Lead Assessor		-	Expert	x
-	Assessor		-	Financial Expert	
-	Local Assessor		-	Technical Reviewer	

Scopes of Expertise

1. Energy Industries (renewable / non-renewable)	
Sub scope(s):	
2. Energy Distribution	
Sub scope(s):	
3. Energy Demand	
Sub scope(s):	
4. Manufacturing	
Sub scope(s):	
5. Chemical Industry	
Sub scope(s):	
6. Construction	
Sub scope(s):	
7. Transport	
Sub scope(s):	
8. Mining/Mineral Production	
Sub scope(s):	
9. Metal Production	
Sub scope(s):	
10. Fugitive Emissions from Fuels (solid, oil and gas)	
Sub scope(s):	
11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride	
Sub scope(s):	
12. Solvent Use	
Sub scope(s):	
13. Waste Handling and Disposal	**x**
Sub scope(s): Landfill gas and Wastewater and sludge treatment	
14. Afforestation and Reforestation	
Sub scope(s):	
15. Agriculture	
Sub scope(s):	

Approved Member of Staff by: Siddharth Yadav Date: 28/10/2009