Validation Report

Report for:

EcoUrbis Ambiental S/A

Validation of CDM project for

CTL Landfill Gas Project

LRQA Reference	:	TCOCT100098_ECURB_C Report Version 03
Date	:	September 5th 2011
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1 Executive Summary

Lloydôs Register Quality Assurance Limited has been contracted by Ecourbis Ambiental S/A, representing the project participants (PP), to undertake validation of the proposed project activity ñCTL Landfill Gas Projectò The validation has been performed through a process of document review based on the project design document, Version 1 dated 31/01/2011initially submitted for validation and the subsequent revisions, follow-up interviews with the stakeholders, resolution of outstanding issues and issuance of the validation report.

The proposed Project Activity has the objective of capturing and flaring/combusting the landfill gas produced at the landfill ñCentral de Tratamentos de Resíduos Lesteò located in the city of São Paulo, São Paulo State, Brazil. The Project Activity includes two phases; the first phase (2012) will be the implementation of the collection and flaring system and the flaring of the landfill gas. The second phase (2013 to 2036) will be the implementation of a power generation plant of an expected 19.2MW that will use LFG to generate electricity. The Project Activity will reduce GHG emissions by avoiding CH4 release directly to atmosphere by flaring and combusting the landfill gas. The project will also use the captured gas to generate electricity, displacing electricity produced from fossil fuels in the Brazilian National Interconnected Grid.

The fulfilment of the requirements as set forth in Article 12 of the Kyoto Protocol of the United Nations Framework Convention on Climate Change (UNFCCC), the modalities and procedures for a CDM (CDM M&P) and relevant decisions of the Conference of the Parties, serving as meeting of the Parties to the Kyoto Protocol (COP/MOP) and the Executive Board of the CDM (CDM-EB) have been evaluated and conformance to the validation requirements were confirmed based on the given information. A risk based approach was taken to conduct the validation and corrective action requests (CARs) and clarifications (CLs) were raised for relevant actions by the PP.

The validation team has found through the validation process 13 CARs and 1 CLs. The PP has taken actions and submitted to LRQA revisions 2, 3, 4 and 5 of the PDD, revisions 2, 3, 4 and 5 of the financial analysis and revisions 2 and 3 of the ERs calculations spreadsheets together with the evidence listed in the section called ñFindingsòof this report. The validation team is of the opinion that the proposed project activity as described in the project design document version 5 dated 2nd September 2011 meets all the relevant UNFCCC requirements for the CDM, as well as the host countryôs national requirements and if implemented as designed, is likely to achieve the emission reductions and contribute to the sustainable development of the host country. LRQA therefore will request the registration of ñCTL Landfill Gas Projectòto the CDM Executive Board as a CDM project activity once the LoA by the Brazilian DNA is issued.

Abbreviations

BE	Baseline emissions
CARs	Corrective action requests
CDM	Clean development mechanism
CDM-EB	Executive board of clean development mechanism
CDM M&P	Modalities and procedures for a clean development mechanism
CERs	Certified emission reductions
CLs	Clarification requests
COP/MOP	Conference of the Parties serving as meeting of the Parties to the Kyoto Protocol
CTL	Central de Tratamentos de Resíduo Leste
DNA	Designated national authority
DOE	Designated operational entity
EF	Emission factor
EIA	Environmental impacts assessment
ERPA	Emissions reduction purchase agreement
FAR	Forward action requests
GHG	Greenhouse gas
GSP	Global stakeholdersô consultation process
IPCC	Intergovernmental panel on climate change
IRR	Internal rate of return
KP	Kyoto Protocol of the United Nations Framework Convention on Climate Change
kW / kWh	Kilowatt / Kilowatt hour
LE	Leakage emissions
LoA	Letter of approval
LR	Lloydôs Register
LRQA	Lloydôs Register Quality Assurance Limited
MW / MWh	Mega watt / Mega watt hour
NCV	Net calorific value
NGO	Non governmental organization
ODA	Official development aid
PDD	Project design document
PE	Project emissions
PP	Project participant
tCO_2e	Tonnes of carbon dioxide equivalent
UNFCCC	United Nations Framework Convention on Climate Change
CDM VVM	CDM Validation and Verification Manual

2 Introduction

The project participant (PP) represented by Ecourbis Ambiental S/A has contracted with Lloydôs Register Quality Assurance Limited (LRQA) to undertake validation of the proposed project activity ñCTL Landfill Gas Projectò. This report summarizes the findings of the validation process that has been conducted on the validation requirements of the CDM.

The validation has been undertaken by the team formed of the qualified personnel of LRQA as follows:

Talita Beck	LRQA Brazil	CDM Lead Validator (from August 13th 2011) CDM Lead Validator UT (till August 12th 2011)
Claudia Virginia Freitas	LRQA Brazil	CDM Lead Validator (until July 20th 2011)
Melina Uchida	External Individual	CDM Sector expert
Javier Vallejo Drehs	LRQA UK	Technical reviewer
Steve Ross	External Individual	Technical reviewer (UT)
Diego Verdasca	External Individual	Sector expert to technical reviewer
Alejandro Carazo	External individual	Sector expert to technical reviewer
Javier Vallejo Drehs	LRQA UK	Decision maker

Personnel being engaged in a CDM project validation are qualified based on the established procedures of LRQA to assure the resource requirements satisfy all the requirements of competence criteria for an AE/DOE under CDM (CDM-Accreditation Standard version 02). LRQA is designated as an operational entity and holds the full responsibility of decision-making regarding the validation, in accordance with the accreditation requirements of the CDM-EB. The certificate of appointment of the team personnel is attached to this report.

2.1 Objective

Validation is the process of an independent third party evaluation of a project activity on the basis of the PDD, against the requirements of the CDM as set out in Article 12 of the Kyoto Protocol, the CDM M&P, the present annex, subsequent decisions made by the COP/MOP and CDM-EB, and other rules applicable to the proposed project activity including the host country's legislation and its specific requirements for sustainable development. The validation follows the requirements of the current version of the CDM validation and verification manual (CDM VVM) to ensure the quality and consistency of the validation work and the report.

2.2 Scope

The scope of validation is an independent and objective review of the project design. Review of the PDD is conducted against the requirements of the Kyoto Protocol, the CDM M&P and relevant decisions of the COP/MOP and the CDM-EB. LRQA follows a risk-based approach in the validation focusing on the identification of significant risks for project implementation and generation of CERs. Validation is not meant to provide any consulting towards the PP, however, the corrective actions requests (CARs) and clarifications (CLs) might provide input for improvement of the project design. A validation conclusion shall become final subject to the decision maker's review by LRQA Ltd.

2.3 GHG Project Description

The proposed Project Activity has the objective of capturing and flaring/combusting the landfill gas produced at the landfill "Central de Tratamentos de Resíduos Leste" located in the city of São Paulo, São Paulo State, Brazil. The Project Activity includes two phases, the first phase (2012) will be the implementation of the collection and flaring system and the flaring of the landfill gas. The second phase (2013 to 2036) will be the implementation of a power generation plant of an expected 19.2MW that will use LFG to generate electricity. The Project Activity will reduce GHG emissions by avoiding CH4 release directly to atmosphere by flaring and combusting the landfill gas. The project will also generate electricity with the captured gas and when thus it will also displace electricity produced with fossil fuels from the Brazilian National Interconnected Grid.

The estimated GHG emission reductions are 767,497 tCO_2e per annum during the crediting period of 7 years. The ERs have been estimated using a first order decay model from the "Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site" version 5.1 and based in the waste collected by Ecourbis Ambiental S/A in the East and South regions of São Paulo, of which Ecourbis Ambiental S/A has a 20 year concession, and from historical data of waste disposed in CTL landfill site (ref.7.2-A.14).

3 Methodology

3.1 Review of documents

The validation is performed primarily based on the review of the project design document (PDD) and the other supporting documentation.

The PDD Version 1 dated 31/01/2011 was initially reviewed. LRQA requested the PP to present supporting information and documents relating to the project design and such additional information and documents were also reviewed by LRQA.

Through the process of the validation, the PDD and the supporting documents of the same were evaluated to confirm the actions taken by the PP to the CARs and CLs issued by LRQA. The documents reviewed by LRQA are listed in Appendix B. LRQA reviewed the final version of the PDD version 5 dated 02/09/2011 to confirm that all changes agreed had been incorporated.

3.2 Site Visit & Follow-up interviews

A site visit and follow-up interviews with the stakeholders were conducted as detailed in the schedule as below:

Date	Location/ Address	Party Interviewed	Subjects Covered	Team Members on Site
14/05/2011 On site visit	CTL Landfill, Av. Sapopemba, 22254 ï km 32, São Paulo, Brazil.	Ecourbis Ambiental S/A CRA Engenharia Ltda. Econergy Brasil Ltda.	1) Tour of facility and landfill site 2) Interviews with operators 3) Verification of project planning and situation of the landfill since start of operation 4) To validate project starting date 5) ER Calculations spreadsheet walk through 6) Applicability conditions of the methodology 7) Licenses to operate 8) Monitoring Plan	Talita Beck Melina Uchida
16/05/2011 Interview to check financial data in the PDD	EcoUrbis South Unit, Rua João Francisco Delmas, 117 - Campo Limpo - 05781-320 - São Paulo ï SP - Brazil	Ecourbis Ambiental S/A CRA Engenharia Ltda. Econergy Brasil Ltda.	1) Financial analysis spreadsheet walk through 2) Source of funding and project ownership 3) Sustainable Development claims and local stakeholder consultation 4) To validate project starting date	Talita Beck

A full list of persons interviewed is shown in Appendix C.

For details of all the findings of the desk review and site visit, please refer to the Validation Protocol and Findings in Appendix F.

3.3 Resolution of clarification and corrective action requests

LRQA applies the risk based approach aimed at focusing on high risk issues to the validation results whilst not omitting any part of the mandatory processes.

Findings identified in the process are indicated under the titles corrective action requests (CARs) and clarification requests (CLs) and forward action requests (FARs). CARs and CLs require the PP to take relevant actions. Criteria for judging items as CAR or CL are as follows:

Corrective action request (CAR):

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

Clarification request (CL):

- information is insufficient or not sufficiently clear to determine whether the applicable CDM requirements have been met.

FARs are to be raised to highlight issues related to project implementation that require review during the first verification of the project activity. FARs do not relate to CDM requirements for registration.

CARs and CLs are to be resolved or closed out if the PP modifies the project design, rectifies the PDD or provides adequate additional explanations or evidence that satisfies the concerns. If this is not completed, the project activity cannot be recommended for registration to the CDM Executive Board.

For details of the nature of the issues raised, the nature of the responses provided, the means of validation of such responses and the resulting changes in the PDD or supporting annexes please refer to the Validation Protocol and Findings in appendix F.

3.4 Internal quality control

A technical review by a qualified person independent from the validation team and a review by an authorized decision maker were conducted prior to the submission of the validation report to the PP and prior to requesting the registration of the project activity.

4 Validation protocol and conclusions

This section provides an overview of the validation activities undertaken by LRQA in order to arrive at the final validation conclusions and opinion. It includes general conclusions based on the Clean Development Mechanism Validation and Verification Manual version 01.2. Further details in relation to each element of the protocol and each finding are shown in the Validation Protocol and Findings ï Appendix F.

The protocol is structured based on the main validation requirements as follows:

- Approval by the Parties involved
- Participation requirements
- Project design document
- Project description
- Baseline and monitoring methodology
  - Applicability of the selected methodology
  - Project boundary

- Baseline identification
- Algorithms and/or formula used to determine emission reductions

- Additionality of a project activity
  - Prior consideration of the CDM
  - Identification of alternatives
  - Investment analysis
  - Barrier analysis
  - Common practice analysis
- Monitoring plan
- Local stakeholder consultation
- Environmental impacts.

4.1 Approval

A CDM project shall be approved by the Parties involved.

The host Party of the proposed project is Brazil. Brazil ratified the Kyoto Protocol on August 23rd 2002. The Designated National Authority (DNA) is the Comissão Interministerial de Mudança Global do Clima (from the Portuguese Interministerial Comission of Global Climate Change).

A letter of approval from the host country DNA has not yet been received as the Brazilian DNA process requires a review of the Validation Report prior to issuance of the LoA. This Validation Report will be updated to reflect the receipt of the LoA when this is issued and to confirm that this is the only change that has been made to the version referred to in the letter of approval.

For details relating to this section, please refer to the Validation Protocol in Appendix F

4.2 Participation requirements

Ecourbis Ambiental S/A is a private entity having its registered office in Brazil.

There is no Annex 1 country participant.

The contact details of the PPs are correctly provided in Annex 1 of the PDD.

Participation of the PPs in the project activity has yet to be authorized and confirmed in the LoAs issued by the DNAs of the Parties concerned. The team confirmed that no entities other than the authorized entities are indicated as project participants in the PDD.

For details relating to this section, please refer to the Validation Protocol in Appendix F

4.3 Project design document

The PDD was checked and confirmed as complete against the:

Guidelines for completing the project design document (CDM-PDD) and the proposed new baseline and monitoring methodologies (CDM-NM) version 7.

Version 3 of the CDM-PDD was used and it is the current form available on the CDM

website.

For details relating to this section, please refer to the Validation Protocol in Appendix F

4.4 Project description

The proposed Project Activity has the objective of capturing and flaring/combusting the landfill gas produced at the landfill ñCentral de Tratamentos de Resíduos Lesteò located in the city of São Paulo, São Paulo State, Brazil. The Project Activity includes two phases, the first phase (2012) will be the implementation of the collection and flaring system and the flaring of the landfill gas. The second phase (2013 to 2036) will be the implementation of a power generation plant of an expected 19.2MW that will use LFG to generate electricity. The Project Activity will reduce GHG emissions by avoiding CH4 release directly to atmosphere by flaring and combusting the landfill gas. The project will also use the captured gas to generate electricity, displacing electricity produced from fossil fuels in the Brazilian National Interconnected Grid.

LRQA confirms that the project description included in the PDD is accurate and complete. This description provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation

The project description was validated by document review including the preliminary study for the Executive Project by CRA to Ecourbis Ambiental S/A (ref.7.2 ï A.11), the chronogram for the project activity (ref. ref.7.2 ï A.12a), project plants (references 7.2-A ï 34, 36 to 39), interview, and the on site visit.

Sustainable development

The host Partyôs DNA is expected to confirm the contribution of the project activity to the sustainable development of the host Party.

For details relating to this section, please refer to the Validation Protocol in Appendix F

4.5 Baseline and monitoring methodology

Applicability of the selected methodology to the project activity

The project activity applied the approved baseline and monitoring methodologies: ACM0001, version 11 and Consolidated baseline and monitoring methodology for landfill gas project activities. The methodology is valid for seeking registration from 11th June 2009 onwards.

LRQA confirms unambiguously that the selected methodology is applicable to this project activity. The project applicability was confirmed against each condition in the approved methodology selected. Appendix F includes the list of each applicability condition, the steps taken to validate each one and the conclusions about its applicability to the proposed project activity.

For details relating to this section, please refer to the Validation Protocol in Appendix F

Project boundary

The project boundary has been validated through documentation review on preliminary study for the Executive Project by CRA to Ecourbis Ambiental S/A (ref.7.2 ï A.11), the chronogram for the project activity (ref. ref.7.2 ï A.12a), project plants (references 7.2-

A ï 34, 36 to 39), the report by Ecourbis Ambiental S/A to the Municipality of São Paulo on the amount of waste transported by the company and received by CTL Landfill (ref.7.2-A.14), interview and field survey that included physical site visit of CTL Landfill. This information was substantiated via cross check with ACM0001 version 11. Through the processes taken, the validation team confirmed that the identified project boundary, the selected sources and the gases were justified for the project activity and they meet the requirements of the approved methodology.

For details of whether any discrepancy was identified, and the processes taken, e.g. issued CAR or requested clarification of, revision to or deviation from the approved methodology for approval by the CDM-EB before completion of the validation, please refer to the Validation Protocol in Appendix F.

Baseline identification

The baseline scenario identified in the PDD has been assessed against the requirements in the approved methodology ACM0001 version 11. LRQA can confirm that the procedure included in this methodology to identify the most reasonable baseline scenario, has been correctly applied.

The steps taken to assess the baseline identification are described in the Validation protocol in Appendix F.

LRQA confirms that:

- All the assumptions and data used by the project participants are listed in the PDD, including their references and sources;
- All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the PDD;
- Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable;
- Relevant national and/or sectoral policies and circumstances are considered and listed in the PDD;
    - The approved baseline methodology has been correctly applied to identify the most reasonable baseline scenario and the identified baseline scenario reasonably represents what would occur in the absence of the proposed CDM project activity.

Algorithms and/or formula used to determine emission reductions

LRQA has confirmed that the steps taken and the equations applied to calculate project and baseline emissions and emission reductions comply with the requirements of the approved methodology ACM0001 version 11

The steps taken to assess the algorithms and/or formula used to determine emission reductions are described in the Validation protocol in Appendix F.

LRQA confirms that:

- All assumptions and data used by the project participants are listed in the PDD, including their references and sources;
- All documentation used by project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PDD;
- All values used in the PDD are considered reasonable in the context of the proposed CDM project activity;
- The baseline methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions;

- All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PDD.

4.6 Additionality of a project activity

The project additionality was demonstrated by the PP using the Tool for the demonstration and assessment of additionality Version 05.2.

Prior consideration of CDM

The project starting date will be after November 11th 2011 (the PPs forecasted date for receipt of the LoA from the Brazilian DNA). As no equipment will be purchased until this approval and as this date is after the start of the validation of the project activity and after the publication of the PDD for Global Stakeholder Consultation, prior consideration is demonstrated and complies with the requirements in the Guidelines on the demonstration and assessment of prior consideration of the CDM version 4.

The steps taken to assess the prior serious consideration of the CDM are described in the Validation protocol in Appendix F.

Identification of alternatives

The list in the Validation Protocol – Appendix F section 6.b, shows the alternatives given in the PDD, and clearly states how LRQA has validated whether these alternatives are credible and complete.

It is the opinion of LRQA that the list of alternatives provided in the PDD are credible and complete considering the technology and circumstances of the proposed Project activity as well as the investor business.

Investment analysis

The Investment analysis option has been used to demonstrate the additionality of the proposed project activity. LRQA confirms that the PDD provides evidence that this project activity would not be economically or financially feasible, without the revenue from the sale of CERs.

The PPs have shown that the project activity is additional by demonstrating that the financial returns of the proposed CDM project activity would be insufficient to justify the required investment.

For assessing the additionality of this project activity LRQA has complied with the latest version of the "Guidance on the Assessment of Investment Analysis" as provided by the CDM Executive Board and with other relevant guidance including the latest guidelines on plant load factors "Guidelines for the reporting and validation of plant load factors".

For details about the validation of the parameters used in the financial calculations and assessment of the benchmark applied, please refer to the Validation protocol in Appendix F.

LRQA confirms that the underlying assumptions for the investment analysis are appropriate and that the financial calculations are correct.

Common practice analysis

LRQA confirms that the proposed CDM project activity is not widely observed and commonly carried out in Brazil without being registered as a CDM Project Activity.

For details about the validation of the geographical scope, the assessment of the

existence of similar projects and also the assessment of the essential distinctions between the proposed project activity and any similar projects, please refer to the Validation protocol in Appendix F.

4.7 Monitoring Plan

The PDD includes a Monitoring Plan based on the approved monitoring methodology ACM0001 version 11.

LRQA confirms that the Monitoring Plan described in the PDD complies with the requirements in the Monitoring Methodology and that the PPs will be able to apply this Monitoring Plan following the monitoring arrangements described in it.

For details about the validation of the Monitoring Plan, please refer to the Validation protocol in Appendix F

4.8 Local stakeholder consultation

The PPs invited Local Stakeholders to comment on the proposed project activity on the February 15th 2011 prior to the publication of the PDD on the UNFCCC website. The local stakeholder consultation process was held was carried out according to Resolution no7 of the Brazilian DNA, that is, a Portuguese version of the PDD was published in the website http://www.econergy.com.br/Ecourbis/CTLLSP.pdf and the letter of invitation sent to the stakeholders also mentioned that hard copies could be sent to those without access to internet. The stakeholders invited were:

Municipality of São Paulo
Legislative Chamber of São Paulo
Municipal Secretary for the Green and Environment of São Paulo City
CETESB ï The Environmental Agency of the State of São Paulo
São Paulo State Environmental Secretariat
Brazilian Forum of Non-Governmental Organisations
Public Ministry of the State of São Paulo
Federal Public Ministry
Local Associations:
Cooperativa de Trabalho com Materiais Reaproveitáveis Chico Mendes
CEMAIS ï Centro de Estudos de Meio Ambiente & Integração Social
Ofea
Sociedade Amigos do Bairro Vila Leme e Jardim dos Marianos
Sociedade Ambientalista Leste ï SAL.

LRQA confirms that the stakeholder consultation process targeted stakeholders and was appropriate for identifying stakeholdersô opinions about the project and collecting their views.

For details about the steps taken to assess the adequacy of the Stakeholder consultation, please refer to the Validation protocol in Appendix F. .

4.9 Environmental impacts

LRQA has confirmed that the PPs have undertaken an environmental impact assessment as required by the host country.

The PPs have submitted documentation to LRQA on the analysis of the environmental impacts of this project activity in accordance with paragraph 37 (c) of the CDM modalities and procedures.

For details about the document review and determination of whether the PPs have undertaken the analysis of environmental impacts, please refer to the Validation protocol in Appendix F.

5 Comments by parties, stakeholders and NGOs

In accordance with the requirement of the Procedures for Processing and Reporting on Validation of CDM project activities, the PDD is to be made publicly available for 30 days subject to confidentiality provisions agreed with the PP, to enable comments to be received from Parties, stakeholders and UNFCCC accredited NGOs on the validation and registration requirements.

The PDD was made publicly available in accordance with the requirements of the procedure for the period of 1 month from 08/03/2011 as per http://cdm.unfccc.int/Projects/Validation/DB/T08Y3HJJ196EWJA1QVNCLJR4LQCDV6/view.html.

No comment was received during this period.

6 Validation Opinion

LRQA has undertaken the validation of the proposed project activity "CTL Landfill Gas Project" based on the requirements of CDM as set out in Article 12 of the Kyoto Protocol, the CDM M&P, the present annex, subsequent decisions made by the COP/MOP and CDM-EB, and the other rules applicable to the proposed project activity including the host country's legislation and its specific requirements for sustainable development.

The proposed Project Activity has the objective of capturing and flaring/combusting the landfill gas produced at the landfill "Central de Tratamentos de Resíduos Leste" located in the city of São Paulo, São Paulo State, Brazil. The Project Activity includes two phases; the first phase (2012) will be the implementation of the collection and flaring system and the flaring of the landfill gas. The second phase (2013 to 2036) will be the implementation of a power generation plant of an expected 19.2MW that will use LFG to generate electricity. The Project Activity will reduce GHG emissions by avoiding CH4 release directly to the atmosphere by flaring and combusting the landfill gas. The project will also capture gas to generate electricity, displacing electricity produced with fossil fuels from the Brazilian National Interconnected Grid.

In order to arrive at the final validation conclusions and opinion, LRQA carried out a site visit to assess project plants (references 7.2-A ï 34, 36 to 39), feasibility studies (ref.7.2 ï A.11) and Project's chronogram (ref. ref.7.2 ï A.12a) and validate the Project Description in the PDD version 1, project boundary, the applicability of the baseline methodology, choice of baseline scenarios, as well as parameters in the ERs calculations and financial spreadsheet, local stakeholder consultation (ref.7.2-A.49) and environmental licenses (ref.7.2-A.22). The assessment team concluded that the description of the project activity in the PDD version 5 is accurate and complete; that all applicability criteria of the ACM0001 version 11 are met; baseline scenarios have been correctly identified as a) the Project Activity (capture of LFG and power generation) undertaken without being registered as a CDM project activity and b) the atmospheric release of the LFG; the Project Activity is additional as demonstrated by the financial analysis and common practice analysis; all parameters used in the ERs calculations were evidenced, were correctly interpreted and are either conservative choices or reasonable estimates when these are to be monitored ex-post; and finally all licenses were checked and local stakeholder consultation completed.

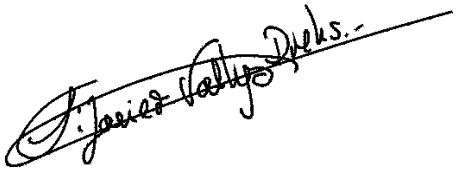
The following project components/issues have not been subject to the validation process:
(a) The LoA from the Brazilian DNA is still pending

Through the validation process, the validation team identified 13 CARs and 1 CLs. The PP has taken action on the raised issues and submitted to LRQA the revised PDD and other supporting evidences. Further details of this can be found in Appendix F section called "Findings" of this report.

The validation team is of the opinion that the proposed project activity conforms to all the relevant UNFCCC requirements for the CDM as well as the host country's national requirements, and if implemented as designed, is likely to achieve the validated emission reductions of 5,372,476 of tCO_2 and contribute to the sustainable development of the host country. Therefore LRQA requests the registration of "CTL

Landfill Gas Projectòto the CDM Executive Board as a CDM project activity once the LoA by the Brazilian DNA is issued.

Decision Maker



Javier Vallejo Drehs
CDM Quality Manager
05/09/2011

7 Appendices

7.1 Appendix A: Letter of approval for the project by the host and investing country DNA

Letter of Approval from <insert name of host DNA> dated <insert date>

7.2 Appendix B: List of documents reviewed

Category A documents (documents prepared by the PP)

- 1. Users Manual of the Computer Programme ï Biogas generation and energetic use ï Landfills version 1.0.
  (from the portuguese Manual do Usuário do Programa de Computador - Biogás geração e uso energético - Aterros versão 1.0)
  Governo do Estado de São Paulo ï Secretaria do Meio Ambiente
  São Paulo State Government ï Environmental Secretariat
  Companhia de Tecnologia e Saneamento Ambiental ï CETESB (2006)
  Environmental Sanitary and Technology Comany ï CETESB (2006)
- 2. Ensinas, Adriano Viana (December 2003)
  Study of biogas generation in the Delta de Campinas landfill ï SP (from the Portuguese Estudo de geração de biogás no aterro sanitário Delta de Campinas ï SP)
  State University of Campinas ï Faculty of Mechanical Engineering
  In Moreira, Felipe Fernandes (2010)
  Estudo do Potencial Energético de Aproveitamento de Biogás ASMOC
  Study of the Energetic Pontential for Utilisation of Biogas ASMOC
  Federal University of the State of Ceará ï Department of Structural Engineering and Civil Construction
- 3. Flare John Zink ï proposal dated 19/07/2010.
- 4. Contrato de Concessão ï Agrupamento Sudeste do dia 06/10/2004
  (Concession Contract ï South East Group dated 06/10/2004)
  Celebrated by Ecourbis Ambiental S/A and the Municipality of São Paulo.
- 5. Term of transfer of the landfill site ï CTL
  (Termo de entrega e recebimento de imóvel ï CTL)
- 6. Ata da Assembléia Geral Extraordinária 31.07.2010
  (Minutes of the General Assembly 31.07.2010)
- 7. CTL Declaração de fundo ODA 2011 05 19
  (CTL Declaration about funds from ODA 2011 05 19)
- 8. MAGALHÃES, G.HC.; ALVES, J.W.S.; SANTO FILHO. F.; COSTA, R.M.; KELSON. M. (2010). Reducing the uncertainty of methane recovered (R) in greenhouse gas inventories from waste sector and of adjustment factor (AF) in landfill gas projects under the clean development mechanism. Page 174. http://ghg.org.ua/fileadmin/user_upload/book/Proceedengs_UncWork.pdf (last accessed 28/05/2011).
- 9.a. EcoUrbis_CER_v1_2011.01.31_FES.xlsx
  9.b. EcoUrbis CER v2 2011 06 07 FES.xls
  9.c. EcoUrbis CER v3 2011 07 19 FES.xls
- 10.a. CTL Cash Flow_2011.01.31_FES.xls
  10.b. CTL Cash Flow v2 2011 06 10 FES.xls
  10.c. CTL Cash Flow v3 2011 06 29 MR.xls
  10.d. CTL Cash Flow v4 2011 07 19 FES.xls
  10.e. CTL Cash Flow v5 2011 09 02 JAS.xls
- 11a. Proposal from Engineering company (CRA). File 10290-001 RevC.pdf (dated 13/01/2011)
  11.b. Proposal from Engineering company (CRA). File 10290-001 RevD.pdf (dated 06.06.2011)
- 12. a Cronograma CTL (Initial)

12.b CTL Cronograma 2011 06 06

- 13.a CTL PDD version 1 dated 31/01/2011
  http://cdm.unfccc.int/Projects/Validation/DB/T08Y3HJJ196EWJA1QVNCLJR4LQCDV6/view.html (last accessed 18/06/2011)
  13.b CTL PDD version 2 dated 10/06/2011
  13.c CTL PDD v3 2011_06_30_JAS
  13.d CTL PDD v4 2011 07 19 FES
  13.e CTL PDD v5 2011 09 02 JAS
- 14. Quantitativos Resíduos Domiciliares.pdf
- 15. 2011-06-03 Demanda de resíduos - CTL rev01
- 16. Modalities of communication Form - CTL Landfill Gas Project.pdf
- 17. Venda de energia a longo prazo.msg
  (email from CPFL with price estimate for purchase of energy for the years between 2011-2023 and 2024-2036)
- 18. Notification of CDM Consideration to the Brazilian DNA (06/12/2010).
- 19. 2009-01-15 CONTRATO Projeto Executivo CRA (ECO TEC 647-09) 3-7.pdf
  Contract of Executive Project CRA (between Conestoga-Rovers e Associados Engenharia Ltda. and Ecourbis Ambiental S/A ï dated 15/01/2009).
- 20. Proposta _O&M - Catterpilar- Arquivo Rev00.pdf ï datada 23/12/2010.
  O&M Proposal ï Catterpilar ï File Rev00.pdf ï dated 23/12/2010.
- 21. CTL RIMA- Volume Unico.pdf
  CTL Environmental Impact Report ï Only volume.pdf
- 22. CETESB - 2010-11-23 - Licença de Operação - LO - CTL.pdf
  CETESB ï 2010-11-23 ï Operational License ï CTL dated 23.11.2010.
- 23. Gravimetric Analysis results ï 2010
- 24. Res Obrigatoriedade de queima de biogás em aterros.msg CTESB email 26/04/2011
  Res Obrigatoriety of biogas flaring in landfill ï CETESB email 26/04/2011
- 25. Temperatura e indice pluviométrico - 1972 - 2010_FES.xls
  Temperature and pluviometric index -1972 ï 2010_FES.xls
- 26. Engine-Datasheet_G3520C_1600ekW@1200rpm_DM5860-01-M.pdf
- 27. 10AR12676T - UTE CTL ECOURBIS-G3520C - Rev00.pdf
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  Brazilian Treasury Department
  http://www.receita.fazenda.gov.br (last accessed 03/07/2011).
- 31. LEI N^{o} 7.689, DE 15 DE DEZEMBRO DE 1988
  Law N7.689 of Dezember 15 1988
  http://www.planalto.gov.br/ccivil_03/LEIS/L7689.htm (last accessed 03/07/2011).
- 32. Proposta Licenciamento Ambiental - 281-01042-10-A REV A.pdf (09/12/2010)
  Proposal for Environmental Licensing Services (09/12/2010)
- 33. Contrato Licenciamento Ambiental.pdf (07/01/2011)
  Contract for Environmental Licensing Services (07/01/2011)
- 34. Project Design of earth moving/escavation (Estação de queima de Gás Planta de Terraplenagem) Dated 25/11/2010
  by Conestoga-Rovers & Associates
- 35. Guia da Construção No 112; ano 63; Novembro 2010
  Construction Guide No 112; year 63; November 2010

www.construcaomercado.com.br
- 36. Project engineering design Landfill Gas Flaring Operators Room (Estação de queima de Gás sala operador, s. geradores e s. elétrica-plantas). Date 25/11/2010.
- 37. Project design Gas Flaring station base for flare ï shapes-cuts and details (Estação de queima de gás base para flare- formas-cortes e detalhes). Dated 10/11/2010.
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- 39. Project design plant called Gas Flaring Station ï General Plant "Estação de queima de gás - Planta Geral" 24.11.2010.
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- 41. ECOURBIS BIOGAS ENG 97411.doc (Engecor Added Proposal ï 10/01/2011).
- 42. Proposta Técnica-Comercial - FAT-HSI-058.10 (Fama Air Technologies).pdf
- 43. Sistema Monitoramento - BR 18310 CRA - CTLeste - AEMS rev. 0 120710.pdf (Monitoring System Proposal Landtec)
- 44. Analisador de Gases LandTec - BR 18510 CRA - CTLeste - FEA rev. 0 120710.pdf (Gas analyser LandTec proposal)
- 45. Proposal Brastubo - BQ-1265 - ECOURBIS (CRA).doc
- 46. Estimativa de Investimento - Captação e Coleta 21-01-11- Reviisao PDD_rev.xls (Capture and Collection system investment estimates by CRA)
- 47. Proposal Gaflon No G10-02572010 .pdf
- 48. Collection Gas System Plant - General Layout.pdf
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Category B documents (other documents referenced)

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- 3. Clean Development Mechanism Validation and Verification Manual (Version 01.2) http://cdm.unfccc.int/Reference/Manuals/index.html (last accessed on13/04/2011).
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- 6. Tool to calculate baseline, project and/or leakage emissions from electricity consumption Version 01 http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-05-v1.pdf

(last accessed 12/05/2011)

- 7. Tool to calculate the emission factor for an electricity system Version 02.2 http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v2.2.0.pdf/history_view (last accessed 26/07/2011)
- 8. Tool to calculate project or leakage CO2 emissions from fossil fuel combustion http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-03-v2.pdf (last accessed 12/05/2011)
- 9. Tool to determine project emissions from flaring gases containing methane http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-06-v1.pdf (last accessed 12/05/2011)
- 10. Guidelines on the assessment of investment analysis ï Version 03.1 http://cdm.unfccc.int/EB/051/eb51_repan58.pdf (last accessed 24/05/2011)
  10.b Guidelines on the assessment of investment analysis ï Version 04 http://cdm.unfccc.int/Reference/Guidclarif/reg/reg_guid03.pdf (last accessed 29/06/2011).
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- 12. CTL Landfill Gas Project Prior Consideration of CDM notification to UNFCCC Dated 06/12/2010 http://cdm.unfccc.int/Projects/PriorCDM/notifications/index_html (last accessed on 26/05/2011)
- 13. Turning a Liability into an Asset: A Landfill Gas-To-Energy Project Development Handbook EPA ï September 1996 http://www.epa.gov (last accessed 16/06/2011)
- 14. Glossary of CDM Terms (Version 05) http://cdm.unfccc.int/Reference/Guidclarif/glos_CDM.pdf (last accessed 18/06/2011)
- 15. LRQA Service Agreement with Ecourbis Ambiental S/A dated 27/11/2009 but signed on 20/12/2010.
- 16. UNFCCC website with initial PDD for CTL Landfill Gas Project International Stakeholder Consultation http://cdm.unfccc.int/Projects/Validation/DB/T08Y3HJJ196EWJA1QVNCLJR4LQCDV6/view.html (last accessed 18/06/2011)
- 17. Ministério da Ciência e Tecnologia (2010) Segunda Comunicação Nacional do Brasil à Convenção-Quadro das Nações Unidas Sobre Mudanças do Clima ï Parte 2 ï Capítulo 3 Emissões Antrópicas por Fontes e Remoções por Sumidouros de GEE por Setor, 3.6 Tratamento de Resíduos, página 253.
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  Second National Communication from Brazil to the UNFCCC about Climate Change ï Part 2 ï Chapter 3 Anthropogenic Emissions by Source and Reductions by Sinks of GHGs per sector, 3.6 Waste Treatment, page 253.
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  São Paulo State Greenhouse Gas Emissions Inventory for the Waste and Effluent Sector 1990 ï 2008, page 62.
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  Sistema Nacional de Informações sobre Saneamento
  Diagnóstico do Manejo de Resíduos Sólidos Urbanos ï 2007
  Ministry of Cities ï Nacional Secretariat for Environmental Sanitation (2007)
  National System of Sanitary Information
  Diagnosis of Solid Urban Waste Management ï 2007
- 20. Exploitation of the biogas from Controlled Landfill in Solid Waste Management Central ï CTRS / BR.040 (CDM Project 3464 at the UNFCCC website)
  http://cdm.unfccc.int/Projects/DB/SGS-UKL1267696608.78/view
- 22. Ministério da Sciencia e Tecnologia (Brazilian Ministry of Science and Technology)
  http://www.mct.gov.br/index.php/content/view/74689.html
- 23. CCEE Website with the sale prices obtained in the Second Auction of Alternative Sources of Energy (2010)
  http://www.ccee.org.br/StaticFile/Arquivo/biblioteca_virtual/Leiloes/2_F_A/Resulta_Completo_2_LFA_site.xls
- 24. CPFL contract template
  http://www.cpfl.com.br/LinkClick.aspx?fileticket=%2F7MeJxW53EM%3D&tabid=333&mid=1247
- 25. BNDES (National Bank for Development)
  http://www.bndes.gov.br/SiteBNDES/bndes/bndes_pt/Institucional/Apoio_Financeiro/Produtos/FINEM/energias_alternativas.html
- 26. ABNT NBR 10004 Resíduos Sólidos ï Classificação (31/05/2004)
  ABNT (Brasilian Association of Technical Norms) NBR 10004 Solid Waste ï Classification (31/05/2004)
  http://www.aslaa.com.br/legislacoes/NBR%20n%2010004-2004.pdf
- 27. Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site version 5.1.0 (last accessed 27/07/2011)
  http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-04-v5.1.0.pdf/history_view
- 28. Exploitation of the biogas from Controlled Landfill in Solid Waste Management Central ï CTRS / BR.040
  http://cdm.unfccc.int/Projects/DB/SGS-UKL1267696608.78/view (last accessed 27/07/2011)
- 29. SIGRH Banco de Dados Pluviométricos do Estado de São Paulo
  SIGRH Precipitation Data Bank for the State of São Paulo
  http://www.sigrh.sp.gov.br/cgi-bin/bdhm.exe/plu?qwe=qwe
- 30. CIIAGRO ï Monthly Temperatures Framework
  http://www.ciiagro.sp.gov.br/ciiagroonline/Quadros/QTmedPeriodo.asp

- 31. Balanço Energético Nacional (National Energy Balance) https://ben.epe.gov.br/downloads/BEN2006_Versao_Completa.pdf (last accessed 29/07/2011)
- 32. Tool to determine the remaining lifetime of equipment version 01 http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-10-v1.pdf/history_view (last accessed 27/07/2011)
- 33. Guidelines for the reporting and validation of plant load factors http://cdm.unfccc.int/Reference/Guidclarif/meth/meth_guid35.pdf (last accessed 27/07/2011)
- 34. Brazilian Central Bank webpage http://www4.bcb.gov.br/pec/conversao/conversao.asp
- 35. IPCA - National Index of Comprehensive Consumer Prices IBGE ï Brazilian Institute of Geography and Statistics http://www.portalbrasil.net/ipca.htm
- 36. IGPM ï General Index of Market Prices FGV ï Getúlio Vargas Foundation http://www.portalbrasil.net/igpm.htm
- 37.Guidelines on the demonstration and assessment of prior consideration of CDM version 4 http://cdm.unfccc.int/Reference/Guidclarif/reg/reg_guid04.pdf
- 38. São João Landfill Gas to Energy Project (SJ) http://cdm.unfccc.int/Projects/DB/DNV-CUK1145141778.29/view (last accessed 23/08/2011)
- 39. Bandeirantes Landfill Gas to Energy Project (BLFGE) http://cdm.unfccc.int/Projects/DB/DNV-CUK1134130255.56/view (last accessed 23/08/2011)
- 40. Landfill Gas to Energy Project at Lara Landfill, Mauá, Brazil http://cdm.unfccc.int/Projects/DB/DNV-CUK1138957573.9/view (last accessed on 23/08/2011).
- 41. Brazil MARCA Landfill Gas to Energy Project http://cdm.unfccc.int/Projects/DB/DNV-CUK1132565688.17/view (last accessed on 23/08/2011)
- 42. Brazil NovaGerar Landfill Gas to Energy Project http://cdm.unfccc.int/Projects/DB/DNV-CUK1095236970.6/view (last accessed on 23/08/2011)
- 43. Feira de Santana Landfill Gas Project http://cdm.unfccc.int/Projects/DB/DNV-CUK1203743009.45/view (last accessed on 23/08/2011)

7.3 Appendix C: List of persons interviewed

Ecourbis Ambiental S/A

- Leonardo Tavares, Superintendent
- Travis Tooley, Technical Supervisor
- Ludmila Ferreira, Environmental Technician

CRA Engenharia Ltda.

- Olga Corona, Engineer
- Flávia Pileggi, CRA

Econergy Brasil Ltda

- Maurício Rovea Consultant
- Francisco Santo Consultant

7.4 Appendix D: How due account has been taken to the public input made to the validation requirements

The PDD was made publicly available in accordance with the requirements of the Procedures for processing and reporting on validation of a CDM project activity for the period of 1 month from 08/03/2011to 06/04/2011 as per http://cdm.unfccc.int/Projects/Validation/DB/T08Y3HJJ196EWJA1QVNCLJR4LQCDV6/view.html.

No comment was received during this period.

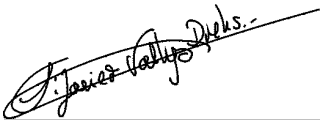
7.5 Appendix E: Certificate of Appointment

Validation of ñCTL Landfill Gas Projectò

We hereby certify that the following personnel have engaged in the validation process that has fully satisfied the competence requirements of the validation of the CDM project activity.

Name of Person	**Assigned Roles**
Talita Beck	Team Leader from August 13th 2011 Team Leader UT till August 12th 2011
Cladia Freitas	Team Leader until 20th July 2011
Melina Uchida	Sector Expert (scope 1 and 13)
Javier Vallejo Drehs	Technical Reviewer
Steve Ross	Technical Reviewer (UT) subsequently approved as Technical Reviewer
Diego Verdasca	Sector Expert (scope 13)
Alejandro Carazo	Sector Expert (scope 1)
Javier Vallejo Drehs	Decision Maker

Signed by



Javier Vallejo Drehs
CDM Quality Manager

05/09/2011

Appendix F: Validation Protocol and findings log

LLOYDS REGISTER QUALITY ASSURANCE
Clean Development Mechanism
Validation Protocol and Findings

Project : CTL Landfill Gas Project

This document has been produced by the LRQA Validation Team following the completion of the desk review and the site visit.
It outlines the validated situation in relation to a number of criteria, including those defined in the Validation and Verification Manual (VVM) produced by the CDM Executive Board.

The questions within this document must be completed in full and in your own words. The purpose of this protocol is to record LRQAôs opinion and LRQAôs findings.

Where LRQA has identified issues requiring corrective action or clarification, a reference is made in the ôConclusionô column, and details are stated in the section marked ôFindingsô

	Validated situation	Conclusion
SECTION 1. Approval		
Host Country Approval		
1. Has the Host country DNA provided a written approval?	Yes ☐ No ☐ NA☐ [1] According to page 4 of version 1 of the PDD dated 31st January 2011, Brazil is the host country and the only Party involved in the Project. At the time of validation, no LoA is provided. The letter of approval will be signed when the DNA of Brazil receives and analyses the Validation Report. This is the Brazilian DNA procedure. Brazil has ratified the Kyoto Protocol on 23rd August 2002 (see ref.7.2-B.1). **Pending** LoA from Brazilian DNA.	Pending LoA
2. Confirm that the letter has been issued by the Partyôs DNA and is valid for the proposed CDM project activity under validation	Yes ☐ No ☐ NA☐ See above	Pending LoA
3. Mention the means of validation employed to assess the authenticity of the Letter of Approval. Indicate the source of the LoA (e.g. PP or directly from the DNA)	See above	Pending LoA

[1] For each section and question where a YES/NO/NA answer is required, explain your choice.

	Validated situation	Conclusion
4. Does the written Letter of Approval confirm the following: (a) The Party is a Party to the Kyoto Protocol (including ratification); (b) Participation is voluntary; (c) The proposed CDM project activity contributes to the sustainable development of the country; (d) It refers to the precise proposed CDM project activity title in the PDD being submitted for registration.	Yes ☐ No ☐ NA☐ See above	Pending LoA
5. Is the letter of approval unconditional with respect of (a) to (d) above	Yes ☐ No ☐ NA☐ See above	Pending LoA
6. Does the LoA from the host party acknowledge the bundle activity (if applicable)	Yes ☐ No ☐ NA☐ See above	Pending LoA
Annex I Party Approval		
7. Has the Annex I country DNA provided a written approval?	Yes ☐ No ☐ NA☒	OK
8. Confirm that the letter has been issued by the Partyôs DNA and is valid for the proposed CDM project activity under validation	Yes ☐ No ☐ NA☒	OK
9. Mention the means of validation employed to assess the authenticity of the Letter of Approval Indicate the source of the LoA (e.g. PP or directly from the DNA)	N/A	OK

	Validated situation	Conclusion
10. Does the written Letter of Approval confirm the following: (e) The Party is a Party to the Kyoto Protocol (including ratification); (f) Participation is voluntary; (g) It refers to the precise proposed CDM project activity title in the PDD being submitted for registration.	Yes ☐ No ☐ NA☒	OK
11. Is the letter of approval unconditional with respect of (a) to (c) above	Yes ☐ No ☐ NA☒	OK
Host Country and Annex I Party Approval		
12. Do any of the Letters of Approval contain additional specification of the project activity? Like: - PDD Version number - Validation report version number Make sure that the request for registration is made on the basis of the documents specified in any of the letters.	Pending LoA Brazilina DNA	Pending LoA

		Validated situation		Conclusion
SECTION 2. Participation				
1	Confirm that the PPs are listed in a tabular form in section A.3 of PDD and that this information is consistent with the contact details provided in Annex 1 of the PDD and with the contact details in the MoC.	Host Party PP name in PDD/ A.3	EcoUrbis Ambiental S/A	OK
		Host Party PP name in PDD/ Annex 1	EcoUrbis Ambiental S/A	
		Host Party PP name in MoC	EcoUrbis Ambiental S/A	
		Annex 1 Party PP name in PDD/ A.3	N/A	
		Annex 1 Party PP name in PDD/ Annex 1	N/A	
		Annex 1 Party PP name in MoC	N/A	
2	Confirm that each of the PPs has been approved by at least one Party involved	Yes ☐ No ☐ NA☐ Pending LoA		Pending LoA
3	Confirm that no entities other than those approved as PPs are included in section A.3 of PDD.	Yes ☐ No ☐ NA☐ Pending LoA		Pending LoA
4	Ensure that the approval of participation has been issued from the relevant DNA and if in doubt verify this with the corresponding DNA.	Pending LoA		Pending LoA

	Validated situation	Conclusion
5 Has the MoC been completed as per the latest ñProcedures for MoC between the project participants and the Executive Boardò? - No modifications to the template/form should be made and each document should be clearly dated - Title of the project and names of project participants and focal points should be fully consistent with those indicated in all other project documentation - Focal point scopes should be clearly and correctly indicated - Contact details and specimen signatures of focal point entities including those of project participants in Annex 1 should be correctly entered. Only one telephone, fax, e-mail contact should be entered per authorized signatory. In cases where additional contact details are included, only the first indicated information will be taken into account and only the official business address of the proposed entity should be provided on the F-CDM-MOC form. - The Statement of Agreement in Section 3 should be signed by one authorized signatory for each project participant; signatures made available in Section 3 should correspond to those indicated in the related Annex 1 document; focal point entities who are not designated as project participants should not sign Section 3.	Yes ☒ No ☐ NA☐ The PP did not provide a MoC with the initial documentation provided for desk review or in the site visit. The assessment team therefore opened CAR12. **CAR12-** Provide the MoC for the project activity with relevant evidence of power of attorney as per paragraph 4 of the Procedures for Modalities of Communication Between Project Participants and the Executive Board. To answer to CAR12 the PP sent the document (MoC) to DOE (ref.7.2-A.16). The assessment team verified the MoC sent and it has been correctly filled in. The assessment team also validated the corporate identity of Mr. Nelson Domingues Pinto Júnior and its signature through the contract of concession between Ecourbis Ambiental S.A and the Municipality of São Paulo (ref.7.2-A.4). **CAR12** was closed out.	~~CAR12~~ OK

	Validated Situation	Conclusion
SECTION 3. Project design document		

	Validated Situation	Conclusion
1. Is the project activity Small Scale or Normal Scale	Normal Scale ☒ Small Scale ☐ Bundled Small Scale ☐ (cross as appropriate)	OK
2. Has the PDD used the latest template and guidance from the CDM Executive Board available on the UNFCCC CDM Website? Check outputs from the completeness check.	Yes ☒ No ☐ CAR01 and CAR02 were closed (for details see below Findings Section of this protocol).	~~CAR01~~ ~~CAR02~~ OK

	Validated situation	Conclusion
SECTION 4. Project description		
1. Describe the process undertaken to validate that the description of the proposed CDM project activity as contained in the PDD sufficiently covers all relevant elements, is accurate and that it provides the reader with a clear understanding of the nature of the proposed CDM project activity.	The description in the PDD version 1 states that the proposed project activity has the objective to capture and to flare the landfill gas produced in the new landfill called ñCentral de Tratamento de Resíduos Leste _CTLò The project activity includes two phases: The first phase (2012) will be to capture and to flare the landfill gas. The second phase (2013 to 2036) will be the implementation of a power generation plant that will use LFG to generate electricity. The power generation plant will be implemented and the LFG power plant will have an expected 19.2 MW upon completion. The PDD also says that ñHowever, the final equipments that will be chosen (as well as the final installed capacity) may vary depending on the availability of the generation equipments on the market at the time of actual implementation of the second phase.ò The first phase of the project will be to construct an efficient capture, collection and flaring system to burn CH4. During the second phase the project will install generators that will combust the LFG to produce electricity for self consumption and the grid. The flares will however be kept in operation for excess LFG, periods when electricity will not be produced or other operational considerations. The landfill began its operation in November 24th 2010. The assessment team visited CTL landfill site on May 14th 2011 to assess the projectôs planning according to VVM version 01.2. During the site visit it was evidenced through field observation that the landfill gas at the moment is released to the atmosphere and that the project activity has not started. The majority of technical aspects of the planning (i.e Executive Project) and support in the implementation of the biogas capture, flaring and electricity generation will be carried out by the engineering company CRA (Conestoga-Rovers and Associates). The services contract between CRA and Ecourbis Ambiental S/A (dated 15/01/2009) can be found in ref.7.2-A.19. It is important to note that this contract was considered by the assessment team as a minor pre-project expense since it only represents 0.6% of the total CAPEX (excluding	~~CAR02~~ ~~CAR05~~ OK

	Validated situation	Conclusion
	OPEX) and only part of this contract has been paid for, for the executive project (what represents 0.33% of the total CAPEX). The rest of the payment represents very little risk to the PP since there is a clause that allows PP to withdraw from contract with no penalties by giving a 15 day notice. The assessment team also examined the details of the preliminary study for the Executive Project by CRA to Ecourbis Ambiental S/A (ref.7.2 ï A.11a), dated 13/01/2011, which contained details of the planed capacity of electricity generation throughout the life time of the project as estimated by CRA, as well as the initial chronogram for the project activity (ref. ref.7.2 ï A.12a). The preliminary study estimated the start up of the biogas plant (phase I) for 2012 and the start up of the electricity generation plant (phase II) in 2013. The study also estimated total electricity generation capacity of 19.2MW upon completion of installations in 2016. All of which support statements made in section A.2 (Description of the project activity) of the PDD version 1. It was also seen in the study by CRA that 4 flares were planned for the project activity, this was not clear in the PDD version 1. **CAR02** The PDD version 1 provides a good summary of project scenario, including a summary of scope of activities and measures that are being implemented. However, it does not explicitly mentions: 1)How many flares will be installed and their capacities so that the DOE can confirm compliance of the PDD with paragraph 59 of the VVM version 01.2 (ref.7.2-B.3). 2)Whether any of the landfill gas capturing and flaring systems is in place, that is what is the situation of the landfill since November 24th 2010, pre-project activity situation or baseline scenario as required by the Guidelines for Completing the Project Design Document (CDM-PDD) ï ref.7.2-B.2. 3)How the proposed project activity reduces greenhouse gas emissions making reference to all scenarios and sources described in sections A.4.3 and B.3 (i.e. CO2 emissions from baseline scenario of the national grid) as required by the Guidelines for Completing the Project Design Document (CDM-PDD) ï ref.7.2-B.2. The PP responded to CAR02 in the following way: 1) As explained in PDD and validation visit to DOE, the decision-making of	

	Validated situation	Conclusion
	the project activity will be only after the project receives the Letter of Approval (LoA). Therefore, at this moment there is no a detailed engineering study regarding the configuration of the flares. It is important to note that the project activity will have flares to burn all biogas captured by a collection system, even if the electricity generating plant stops on special events such as overhaul times, downtimes of equipment and exchange of equipment. 2) Prior to the implementation of the project activity the landfill gas would be released to atmosphere. This information was included in Section A.2 of the PDD ï version 2. 3) This information was included in Section A.2 of the PDD ï version 2. The conclusion by the assessment team was: 1) The assessment team validated the estimates of the ERs spreadsheets version 2 of the 07/06/2011 (ref. 7.2-A.9.b) and confirms that the estimated amount of biogas collected in the year of 2019 (the year with the highest estimate of biogas collected for the 1st crediting period) is 13,753m3/h. According to this estimate and the capacity of the flares in the proposal by John Zink (10,200 Std m3/h) the project would need approximately 2 flares operating at approximately 1 and a 1/3 of its capacity to burn all biogas captured. In the financial analysis sent by the PP to the DOE, and discussed in CL01, the PP informed that they have accounted for a third flare in the financial analysis in order to accommodate possible future variations in the delivery of waste and generation of biogas. Actually they consider that a possible 4th flare might be installed along the lifetime of the project, even though this was not considered in the financial analysis spreadsheet version 2 (ref.7.2-A.9.b). It is of the understanding of the assessment team that variations with the generation of biogass are extremely high. The study by EPA (1996) (ref.7.2-B.13) for example states that estimates using first order decay model should take a + or - 50% uncertainty in their estimates because of the uncertainties of estimates of methane generation potential from a mass of waste and uncertainties related to rate of methane generation. It is therefore acceptable that the PP	

	Validated situation	Conclusion
	wishes to allow some flexibility to the system with regards to the specific number of flares and thus restricted the description of this equipment in section A.2 of the PDD to a more general one (i.e. ñThe LFG capture and collection system and flaring station will consist on a LFG pipeline grid and a flaring station, equipped with flares, centrifugal blower(s), and all other supporting mechanical and electrical subsystems and appurtenances necessary to run the systemò). Suffice to say that they plan in installing enough flares that will capture and burn all the landfill gas produced even in if the electricity generation plant is not operating. Also suffice to say that only 3 flares were taken into account in the financial analysis and that even if the costs of the 3rd flare is not accounted for in the financial analysis the project remains with a negative NPV and less financially attractive than one of the options to the project (atmospheric release of the landfill gas). 2) The assessment team checked and confirms that the information about the situation pre-project activity (the release of landfill gas to the atmosphere) is now explicitly stated in section A.2 of the PDD version 2. 3) The PDD version 2 now explicitly explains that emissions will be reduced by burning CH4 in flares and or group generators and by displacement of energy produced by fossil fuel in the Brazilian national grid. **CAR02** was closed out. The PP has provided the assessment team with evidence that EcoUrbis Ambiental S.A. has the concession of waste collection and disposal for 20 years for the East and South regions of São Paulo as stated in the PDD. The assessment team reviewed and confirms that the contract of concession between EcoUrbis Ambiental S.A (ref.7.2-A.4) and the Municipality of São Paulo is for 20 years with possibility of extension for another 20 years. Also provided to the assessment team were evidences of EcoUrbis Ambiental S.A. ownership of the CTL landfill and contracts showing its responsibility for the implementation and operation of the landfill as well as contracts between Construtora Queiroz Galvão S.A., Heleno & Fonseca Construtécnica S.A. and Construtora Marquise S.A.. The assessment team verified the document ñTermo de entrega e recebimento	

	Validated situation	Conclusion
	de imóvel ï CTLò(ref.7.2 ï A.5) which is the term of transfer of the landfill site from the Municipality of São Paulo to EcoUrbis Ambiental S.A. and which, together with the document above confirms that EcoUrbis Ambiental S.A. has the concession of the Landfill site named Central de Tratamento de Resíduos Leste - CTL and the ownership of the project. Ref. 7.2 ï A.6 (Minutes of the General Assembly 31.07.2010) states that the 3 main shareholders for CTL are Construtora Queiroz Galvão S.A., Heleno & Fonseca Construtécnica S.A. and Construtora Marquise S.A. (with 99.99% of shares) amongst other minor shareholders. Also checked was the statement on the size of the areas of the landfill of 1,123,590m2 (page 8, ref.7.2 ï A.21) and the date of start of operations by the landfill 24/11/2010 from the environmental operational license N° 30006398, issue by CETESB on 23/11/2010 and from annex III of the Declaration from CTL to the São Paulo Municipality showing the quantity of residues arriving in CTL from November 2011 (ref.7.2-A.14). With regards to sustainable development declarations in the PDD version 1, the assessment team evidenced the service contract with the engineering company CRA (ref.7.2 ï A.19), which employs a local engineer and environmental analyst to carry out the executive project and to give technical assistance for the implementation of the system of capturing and burning (including energy generation) of landfill gas until commissioning of the CTL Landfill Gas Project. The engineer (Olga B. Z. Corona) and environmental analyst (Flávia Gonzaga Pileggi) were interviewed during site visit. Furthermore, the PP explained that the actual implementation and operation of the Project activity has not started yet, as the PP will wait for the LoA from the Brazilina DNA, there is therefore no evidence of other contracts but the creation of new jobs for the next phases of the project are obviously necessary from the estimates of operational and maintenance costs for the project activity and evidenced in the proposals by the manufacturers of the generator groups (Catterpilar ï ref.7.2 ï A.20) and in the proposal by CRA for the capture and collections system operation and maintenance costs (ref.7.2 ï A.11). The assessment team therefore confirms the statement made in the PDD version 1 that ñew local jobs will be created during the implementation and operation of	

	Validated situation	Conclusion
	the project activityò A few issues were identified in the PDD version 1 with regards to sustainable development claims. These are: 1) The PDD version 1 stated that the implementation of the project activity would ñcontribute for sustainable development through the improvement of local environmental conditions (as for instance, the destruction of volatile compositions)ò It was not transparent in PDD version 1 what type of volatile compositions would be destroyed as a result of the project activity. 2) The PDD version 1 stated that Ecourbis had been carrying out a program called ñPrograma de Educação Ambientalò(Environmental Education Program) which had been put into practice since it´s planning phase and would be extended for all the operational period. The program actions had already reached more than 6,837 children, teachers and local communities around the landfill, highlighting issues related to the municipal solid waste (MSW), from waste generation to final disposal. It also stated that it had carried out formative activities along with teachers and the general community and the ñPrograma Ver de Pertoò(Close Look Program) where teachers and children took part in monitored visits as well as participated in educational speeches and discussions around environmental issues focused on solid waste and involving the waste generation in the of São Paulo and the waste management from the first operation to the final closing of the landfill. It was not transparent how the landfill gas to energy project would contribute to the above programs since the programs had already started (i.e. before the implementation of the project activity) and since most of the issues highlighted by the programs seemed to be around generation and disposal of MSW (and the landfill site would be there regardless of the implementation of the project activity). 3) Some of the contributions described in PDD version 1 could also be interpreted as being a legislative requirement (i.e. inclusion of handicap people into the job market). It was also not transparent in this case how the project itself will contribute to those issues. **CAR 05** was raised to address the issues above. The answer by the PPs to the	

	Validated situation	Conclusion
	issues above were: Part 1: The landfill started the operation in the November/2010 (at moment, only 7 months) and there is no volatiles compositions (VOCs) report at the moment. To avoid misunderstandings, the information about VOCs was withdrawn from PDD ï version 2. Part 2: The ñPrograma Ver de Pertoò(in English, Close Look Program) it will be included an informative topic concerning the environmental impacts of Greenhouse Gases. This program will inform the community of the importance of Landfill Gas Projects and why such projects which collect LFG are being viewed as having two benefits. The first is reducing methane emissions from landfills and the second is using the LFG as a renewable energy source. Also, this program will provide an in-site of a Landfill Gas-to-Energy project in their community and the benefits of this project. This information was included in PDD version 2. Part 3: The information about handicap people was withdrawn from PDD - version 2. The assessment team observation with regards to the above answers to CAR05 were: 1) The assessment team verified the PDD version 2 and confirms that the statements made about VOCs were removed. 2) The assessment team verified the PDD version 2 and confirms that the statement now includes a clear description of how the project activity will contribute to the ñPrograma Ver de Pertoò(in English, Close Look Program), which is aimed at raising peoples awareness of the benefits of MSW management, by adding to it information and insight of Landfill Gas-to-Energy project and its benefits to the community. 3) The assessment team checked and confirms that the information about the inclusion of people with handicap into the job market as a	

	Validated situation		Conclusion
	result of the project activity was excluded. **CAR05** was closed out.		
2. Confirm that the physical site inspection reflects the description in the PDD of the proposed CDM project activity.	It is not possible to physicaly measure the exact landfill area or quantities of residues arriving. However, the landfill area of 1,123,590m2 (page 8, ref.7.2 ï A.21) and the date of start of operations by the landfill 24/11/2010 was validated against the environmental operational license N° 30006398, issue by CETESB on 23/11/2010 (ref.7.2-A.22). The residue quantities were validated against Annex III of the Declaration from CTL to the São Paulo Municipality showing the quantity of residues arriving in CTL from November 2011 (ref.7.2-A.14).		OK
3. If the team did not undertake a physical site inspection, describe the justification as approved by the CDM Quality Manager. (VVM 01.2: 60-61) Describe briefly the physical site inspection: Travel details and installations, facilities and buildings visited.	The assessment team visited the CTL Landfill site at Av. Sapopemba, 22254 ï km 32, São Paulo (State), Brazil on May 14th 2011. During this the assessment team validated that the implementation of the project had not started (only the operation of the landfill and that the gas is indeed being released to the atmosphere at this point). Besides the documentation and interviews carried out and cited above in section 4.1 of this protocol, the assessment team also carried out ERs spreadsheet walkthroughs and went through the evidence for each of the parameters used in the estimates of the baseline and project emissions, examined the applicability conditions of the methodology against documentation. On May 16th 2011 the assessment team visited the office of EcoUrbis South Unit, Rua João Francisco Delmas, 117 - Campo Limpo - 05781-320 - São Paulo ï SP ï Brazil. During this visit the assessment team carried out the Financial analysis spreadsheet walk through and validated all financial input parameters as well as details about source of funding and project ownership, sustainable development claims and local stakeholder consultation.		OK
4. If the proposed CDM project activity involves the	Pre-project	Project activity	OK

	Validated situation		Conclusion
alteration of an existing installation or process, ensure that the project description clearly states the differences resulting from the project activity compared to the pre-project situation.	The PDD version 2 clearly described that pre-project (or prior to its implementation) the landfill gas is being released to the atmosphere.	The PDD version 2 clearly describes that with the project activity the landfill gas in the first phase will be captured flared and in the second phase will be mainly captured and burnet in group generators to produce energy for export to the grid.	
5. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance (ODA).	Section A.4.5 of the PDD states that there is no public funding from Annex I parties involved in the CTL Landfill Gas Project. This will be checked during site visit. During the site visit the assessment team requested evidence from the PP for the source of funding. The PP explained that source of funding will be decided when the LoA from the Brazilian DNA is issued. The PP has however provided a statement from its Financial and Administrative Director (ref. ref.7.2 ï A.7), that the CTL Landfill Gas Project will not benefit from public funds from Annex I countries, from ODA (Official Development Assistance) or any kind of grants. During the site visit the only contract reviewed and validated was the one with CRA. None of the proposals looked at mentioned source of funding. It is important to note that, as explained above in section 4.1, the contract between Ecourbis and CRA was considered by the assessment team as a minor pre-project expense since it only represents 0.6% of the total CAPEX (excluding OPEX) and only part of this contract has been paid for, for the executive project (what represents 0.33% of the total CAPEX). The rest of the payment represents very little risk to the PP since there is a clause that allows PP to withdraw from contract with no penalties by giving a 15 day notice.		OK
6. If the project activity is a small scale one, confirm that it is not a debundled component of a large scale project, in accordance with appendix C of the simplified M&P for SSC CDM project activities and the Guidelines for assessment of de-bundling for SSC project activities.	N/A it is not a small scale project activity.		OK

	Validated situation	Conclusion
SECTION 5. Baseline and monitoring methodology		
1. Has the baseline and monitoring methodologies selected by the project participants been previously approved by the CDM Executive Board, i.e. does it appear on the methodologies page of the UNFCCC website?	Yes ☒ No ☐ NA☐	OK
2. If the project activity is a Small Scale one; does it qualify within the threshold of the three possible types of small scale projects? Confirm information provided in the PDD.	N/A	OK
3. If the project activity is a Small Scale one; which approved small scale methodology does the project apply? Confirm that the SSC meth is applied in conjunction with the general guidelines to SSC CDM methodologies.	N/A	OK
4. Determine whether the methodology selected is applicable to the project activity including that the used version is valid Describe steps taken to assess the relevant information contained in the PDD in the table below	Version 11 of the methodology ACM0001 is valid from 11 June 09 onwards.	OK

No.	Applicability conditions in the ACM0001 Version 11 and Tools (as required by applied methodology).	Information in the PDD	Steps taken to assess PDD information	Conclusion
1	Landfill gas capture project activities, where the baseline scenario is the partial or total atmospheric release of the gas.	According to the PDD version 1 page 18 the baseline scenario is LFG2: Atmospheric release of the landfill gas. The PDD p. 36 also states that a 1% AF will be adopted for the calculations of the baseline scenario estimates as a conservative approach.	During the site visit the assessment team validated through field observation, from the concession contract between the Municipality of São Paulo and Ecourbis Ambiental S/A (ref. 7.2-A.4) and through the operational license (ref.7.2-A.22) that there is no contractual or regulatory obligations for flaring landfill gas and the situation pre-project activity is the total	OK

			atmospheric release of the landfill gas to the atmosphere. Furthermore, it was concluded that by using a 1% AF (from the recent study carried out on a sample of Brazilian landfill sites and presented to the Scientific Committee of the 3rd International Workshop on Uncertainty in Greenhouse Gas Inventories ï of which one of the members is the UNFCCC secretariat - ref. 7.2-A.8) the PP is being conservative in its estimates of the amount of landfill gas being release to the atmosphere in the baseline scenario.	
2	The Project activity includes situations such as: a) The captured gas is flared; and/or	Section B.2 of the PDD version 1 states that the project activity applies to this scenario. Section A.2 of the PDD version 1 explains that this will be the sole scenario in the first phase of the project activity and that in the second phase the project will produce electricity but the flares will be kept in operation for LFG excess, periods when electricity is not produced and other operational considerations.	The majority of technical aspects of the planning (i.e. Executive Project) and support in the implementation of the biogas capture, flaring and energy generation will be carried out by the engineering company CRA (Conestoga-Rovers and Associates). The service contract between CRA and Ecourbis Ambiental S/A can be found in ref.7.2-A.19. The assessment team also examined the details of the preliminary study for the Executive Project by CRA to Ecourbis Ambiental S/A (ref.7.2 ï A.11a), dated 13/01/2011, which contained details of the planed capacity of electricity generation throughout the life time of the project as estimated by CRA, as well as the initial chronogram for the project activity (ref. ref.7.2 ï A.12a). The proposal estimated the start up of the biogas plant (phase I) for 2012 and the start up of the energy plant (phase II) in 2013.	OK

3	The Project activity includes situations such as: 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 emission reductions for other thermal energy equipment (e.g. kiln), project proponents may submit a revision to this methodology;	Section B.2 of the PDD version 1 states that the project activity applies to this scenario. Section A.2 of the PDD version 1 states that in the second phase of the project activity, the LFG will be used to generate electricity. According to PDD version 1 the Project Activity will not claim emission reductions for thermal energy generation so this part of the applicability criteria does not apply to the Project activity.	The majority of technical aspects of the planning (i.e. Executive Project) and support in the implementation of the biogas capture, flaring and electricity generation will be carried out by the engineering company CRA (Conestoga-Rovers and Associates). The service contract between CRA and Ecourbis Ambiental S/A can be found in ref.7.2-A.19. The assessment team also examined the details of the preliminary study for the Executive Project by CRA to Ecourbis Ambiental S/A (ref.7.2 ï A.11a), dated 13/01/2011, which contained details of the estimated costs for the capture and flaring system as well as the initial chronogram for the project activity (ref. ref.7.2 ï A.12a). The proposal estimated the start up of the biogas plant (phase I) for 2012 and the start up of the electricity generation plant (phase II) in 2013. There was no provision for thermal energy generation in any of the documents examined.	OK
4	The Project activity includes situations such as: c) The captured gas is used so supply consumers through natural gas distribution network. If emission reductions are claimed for displacing natural gas, project activities may use approved methodology AM0053.	The PDD version 1 states that the LFG will be flared or used for electricity generation for self consumption and export to the grid. There is no mention of supply of LFG to consumers through natural gas distribution network and thus this applicability condition does not apply to Project Activity.	The documents examined during site visit (the preliminary study for the Executive Project by CRA to Ecourbis Ambiental S/A (ref.7.2 ï A.11a) dated 13/01/2011, and the initial chronogram for the project activity (ref. ref.7.2 ï A.12a)) confirmed that there is no planning for the capture and supply of LFG to consumers through natural gas distribution network.	OK
5	The applied methodology also states that:	The PDD section B.2 states the following for		OK

	ñIn addition, the applicability conditions included in the tools referred to above applyò These are: 1) Tool for the demonstration and assessment of additionality. The methodology states that PPs shall use the latest version of the Tool in order to identify all the realistic and credible baseline alternatives in conjunction with steps given in the applied methodology itself and to demonstrate additionality. 2) Tool to determine project emissions from flaring gases containing methane. This tool states that it is applicable under the following conditions: • The residual gas stream to be flared contains no other combustible gases than methane, carbon monoxide and hydrogen • The residual gas stream to be flared shall be obtained from decomposition of organic material (through landfillsé) or from gases vented in coal minesé 3) Tool to calculate baseline, project and/or leakage emissions from electricity consumption. This tool states that it is only applicable if one of the following three scenarios applies to the sources of electricity consumption: a) Electricity consumption from the grid. The electricity is purchased from the grid only. Either no captive power plant	each of the tools cited: 1) Tool for the demonstration and assessment of additionality is applicable to the project activity, as it is included in the ACM0001 methodology. 2) Tool to determine project emissions from flaring gases containing methane is applicable to this project because: • The residual gas stream to be flared contains no other combustible gases than methane, carbon monoxide and hydrogen • The residual gas stream to be flared is obtained from decomposition of organic material (through landfill). 3) Tool to calculate baseline, project and/or leakage emissions from electricity consumption because electricity will be consumed from the grid. 4) Tool to calculate project or leakage CO2 emissions from fossil fuel combustion is applicable to the project activity because electricity can be occasionally generated using a standby diesel generator located on site. 5) Combine tool to identify the baseline scenario and demonstrate additionality could be applied as all alternatives are available options of the project participants. However, for	1) The assessment team verified that the PPs have used the latest ñTool for the demonstration and assessment of additionalityò version 05.2, in order to identify all the realistic and credible baseline alternatives in conjunction with the steps in the methodology itself and demonstrated additionality. For more details on the identification of the realistic and credible baseline alternatives and demonstration of additionality see section 5b and 6 of this protocol. 2) a) Page 199, of the EIA report for CTL landfill states that the landfill gas is composed by approximately 60% CH4 and 40% CO2 (ref.7.2-A.21) which is a non-combustible gas. There fore this applicability condition of the ñTool to determine project emissions from flaring gases containing methane is attended by the project activity. b) The residual gas stream to be flared will be obtained from the decomposition of organic material through a landfill as seen in site visit inspection and the gravimetric analysis results (ref.7.2-A.23) shown in the ERs spreadsheets too (composition of waste ï Baseline emissions tab). 3) According to page 34 of the PDD version 04, in the case of CTL	

	is installed at the site of electricity consumption or, if any onsite captive power plant exists, it is not operating or it can physically not provide electricity to the source of electricity consumption. b) Electricity consumption from (an) off-grid fossil fuel fired captive power plant(s). One or more fossil fuel fired captive power plants are installed at the site of the electricity consumption source and supply the source with electricity. The captive power plant(s) is/are not connected to the electricity grid. c) Electricity consumption from the grid and (a) fossil fuel fired captive power plant(s). One or more fossil fuel fired captive power plants operate at the site of the electricity consumption source. The captive power plant(s) can provide electricity to the electricity consumption source. The captive power plant(s) is/are also connected to the electricity grid. Hence, the electricity consumption source can be provided with electricity from the captive power plant(s) and the grid. 4) Tool to calculate project or leakage CO2 emissions from fossil fuel combustion This tool provides procedures to calculate project and/or leakage CO_2 emissions from the combustion of fossil fuels. It can be used in cases where CO_2 emissions from fossil fuel combustion are calculated	this project activity, the Tool for demonstrartion and assessment of additionality was used to evaluate additionality, as required in the ACM0001 version 11. 6) Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site is applicable as the solid waste disposal site is clearly identified, there are no hazardous wastes and this is not a stockpile case. 7) Tool to calculate the emission factor for an electricity system is applicable as this project will supply electricity to the grid.	Project, the electricity consumption source will be provided with electricity from the captive power plant (that will be installed for back up purposes) and the grid so the scenario for the source electricity consumption is c) and the ñTool to calculate baseline, project and/or leakage emissions from electricity consumption is applicable to the Project activity. 4) According to page 35 of the PDD version 04, in the CRL Project, the only project emissions that will use the ñTool to calculate project or leakage CO2 emissions from fossil fuel combustionòis the project emissions due to LPG combustion. According to the PDD this will be calculated based on the quantity of fuel combusted (in mass) and the EF of the LPG. All in accordance with the ñToolò 5) The CTL Landfill Gas Project utilises the ñTool for the demonstration and assessment of additionalityòversion 05.2. 6) a) The Project is a landfill and not a stock pile as validated during site visit. b) The solid waste disposal site where the waste is dumped is clearly identified as the CTL Landfill (geographical coordinates	

	based on the quantity of fuel combusted and its properties. 5) Combine tool to identify the baseline scenario and demonstrate additionality (the applied methodology states that this Tool could be used as an alternative to the Tool for the demonstration and assessment of additionality for the selection of the most plausible baseline scenario and for demonstration of additionality). 6) Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site states that: a) The tool is not applicable to stockpiles b) The tool is applicable in cases where the solid waste disposal site where the waste would be dumped can be clearly identified. c) The tool is not applicable to hazardous wastes. 7) Tool to calculate the emission factor for an electricity system states that ñThis tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity, i.e. where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the gridé ò		23°37ô52.17òS and 46°25ô30.29òW). C) The waste type deposited in the CTL landfill as described in PDD version 04 page 3 are type II A and II B, these are not considered hazardous under the brazilian norm used for the classification of waste (ref. 2.7-B.26). The Operation License (ref.7.2-A.22) states that dangerous wastes should be adequately stored and only sent to systems of treatment and disposition approved by the state of São Paulo Environmental Regulators. 7) As stated in the PDD version 4 page 2, the project activity intends to substitute grid electricity and therefore the ñTool to calculate the emission factor for an electricity systemò applies to this project activity.	

	Validated situation	Conclusion
5. Confirm that any specific guidance provided by the CDM Executive Board in respect to an approved methodology has been correctly applied.	All guidance provided by CDM Executive Board in respect to the applied methodology have been correctly applied and are discussed in relevant sections of this protocol.	OK
6. If a determination regarding the applicability of the selected methodology to the proposed CDM project activity can not be made, request clarification of the methodology in accordance with the guidance provided by the CDM Executive Board Describe the clarification request and response.	All the determinations regarding applicability conditions of the applied methodology were followed by the CDM Project Activity (see above for details) and therefore no clarification was necessary during the validation of this project.	OK
7. If the Validation Team determines that the proposed CDM project activity does not comply with the applicability conditions of the methodology the Team may proceed by means of requesting revision to or deviation from the methodology in accordance with the guidance provided by the CDM Executive Board. Describe the request for revision or deviation and approval by the CDM Executive Board.	The Validation Team determined that the proposed CDM project activity complies with all the applicability conditions of the methodology (see above for details).	OK
8. If there are any GHG emissions occurring within the proposed CDM project activity boundary, which are not addressed by the applied methodology and which are expected to contribute more than 1% of the overall expected average annual emissions reductions as a result of the implementation of the project but a determination is made that the approved methodology(ies) is/are applicable to the project activity, provide here information about them in relation to the applicability criteria and justify the determination.	During the site visit and throughout the validation process the assessment team has not found any emissions which could possibly occur in the Project boundary and which are not addressed by the applied methodology.	OK

	Validated situation	Conclusion
SECTION 5a. Project boundary		

	Validated situation	Conclusion
1. Does the project boundary include physical, geographical site of the industrial facility, processes or equipment that are affected by the project activity?	Yes ☐ No ☐ NA☒ According to methodology ACM0001 Version 11 the Project Boundary is the site of the project activity where the gas is captured and destroyed/used. If the electricity for project activity is sourced from the grid or electricity generated by the LFG captured would have been generated by power generation sources connected to the grid, the project boundary shall include all the power generation sources connected to the grid to which the project activity is connected. If the electricity for project activity is from captive generation source or electricity generated by the captured LFG would have been generated by a captive power plant, the captive power plant shall be included in the project boundary.	OK
2. Confirm that all sources and GHGs required by the methodology have been included within the project boundary. Describe here if any emission source that will be affected by the project activity and is not addressed by the approved methodology, has been identified. In such case request clarification of, revision to or deviation from the methodology in accordance with EB guidance. Use the table below for this purpose:	All the sources and GHGs required by the methodology were included within the project boundary. No emission source connected to the project activity and that is not addressed in the methodology were identified.	OK

Gases And Sources Included In The Project Boundary						
	Source	**Gas**	**Inc./Exc. Pdd**	**Justification PDD**	**Steps Taken To Assess PDD Justification**	**Conclusion**
BASELINE	Emissions from decomposition of waste at the landfill site	CH4	Inc.	The major source of emissions in the baseline	The validation team visited the site where the landfill is located on May 14th 2011 and it examined project planning details and confirms that this source of baseline emissions are correctly included (for more	OK

					details see section 4.1 of this protocol above).	
	Emissions from electricity consumption	CO2	Inc.	Electricity may be consumed from the grid or generated onsite/offsite in the baseline scenario	The validation team visited the site where the landfill is located on May 14th 2011 and it examined project planning details and confirms that this source of baseline emissions are correctly included (for more details see section 4.1 of this protocol above). The electricity that will be generated in the Project Activity would have been consumed from the grid in the absence of the project activity.	OK
	Emissions from thermal energy generation	CO2	Exc.	Section B.6.1 states that the project only aims to flare and generate electricity and that therefore thermal energy produced utilizing LFG ($ET_{,LFG,y}$) is 0 and this has been removed from BEy formula in the methodological choices.	The validation team visited the site where the landfill is located on May 14th 2011 and it examined project planning details and confirms that this source of baseline emissions are correctly excluded from the baseline scenario because it is not going to be included in the Project Activity (for more details see section 5.3 of this protocol).	OK
PROJECT	On-site fossil fuel consumption due to the project activity other than for electricity generation	CO2	Exc.	PDD v1 states ñThere is no on-site fossil fuel consumption due to project activity other than for electricity generation.ò Since version 1 of the PDD the PP added the monitoring of LPG to the Monitoring Plan of the PDD and therefore the PP also changed the table in section B.3 of the PDD version 4 (table with sources of baseline and project emissions) to reflect this change. The PDD v4 shows that CO2 emissions from on site fossil fuel consumption due to the project activity other than for electricity generation is included in the project boundary.	The validation team visited the site where the landfill is located on May 14th 2011 and during interviews the PPs confirmed that, although extremely small this will be a source of project emissions so it was correctly included in Project Emissions of the Project Activity.	
	Emissions from on-site electricity use	CO2	Inc.	May be an important emission source	Correctly included in project emissions since the project needs electricity for blowers and other equipment (ref.7.2-A.11).	OK

	Validated situation	Conclusion
SECTION 5b. Baseline identification		
1. Determine whether the PDD provides a verifiable description of the identified baseline scenario, including 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.	Yes, see more details below in this section.	OK
2. Confirm that any procedure contained in the methodology to identify the most reasonable baseline scenario, has been correctly applied.	Yes ☒ No ☐ NA☐	OK
3. Check each step in the procedure described in the PDD to identify the baseline scenario against the requirements of the methodology. (Note that if the methodology requires use of tools, i.e. such as the tool for the demonstration and assessment of additionality and the combined tool to identify the baseline scenario and demonstrate additionality, the guidance in the methodology shall supersede it in the tool.)	**Step 1: Identification of alternative scenarios** of the ACM0001 was followed. Section B.4 of the PDD version 1 identifies 3 realistic and credible scenarios for the treatment of waste consistent with all current laws and regulations, and taking into account relevant examples of scenarios identified in the methodology. The identified alternatives were LFG1 The Project Activity (capture of LFG and power generation) undertaken without being registered as a CDM project activity, LFG2 Atmospheric release of the LFG and LFG3 Capture of LFG and flaring, without being registered as a CDM Project Activity. The alternative LFG3 was later, in version 4 of the PDD, discarded by the PP as a realistic alternative because although technically feasible, financially it required investments and it is known that without being registered as a CDM project it has no revenues at all, therefore it is not even worth including in the financial analysis. The DOE agreed to the changes made by the PP because it recognises that flaring is technically an alternative but because there are no legislation requiring to flare landfill gas in Brazil, it is also financially an unrealistic alternative without being registered as a CDM Project. In the PDD version 1 the PP also chose 2 realistic and credible scenarios for power generation consistent with all current laws and regulations, and taking into account	OK

	Validated situation	Conclusion
	relevant examples of scenarios identified in the methodology. For a summary of identified scenarios see table below in this section of the protocol. **Step 2: Identify the fuel for the baseline choice of energy taking into account the national and/or sectoral policies as applicable** Since the project activity intends to supply energy to the grid, displacing energy from fossil fuel fired power plants connected to this grid, the PDD version 1 identified the fuels in the grid as being the baseline fuel. According to the PDD version 1 in the year of 2009 the Brazilian interconnected grid has a CM emission factor of 0.1635 tCO2e/MWh. **Note in meth: Steps 3 and 4 shall be applied for each component of the baseline, i.e. waste treatment, electricity generationé** **Steps 3: Step 2 and/or step 3 of the latest ñTool for demonstration and assessment of additionalityò shall be used to assess which of these alternatives should be excluded from further consideration (e.g. alternatives facing prohibitive barriers or those clearly economically unattractive).** From document review of the PDD version 1 the PP chose step 2 of the ñTool for demonstration and assessment of additionalityòto assess which of the alternatives were to be excluded from further consideration for both waste treatment and power generation. Note that the option LFG1 is the same as P1 (see table below in this section of the protocol). In version 4 of the PDD the PP decided to exclude alternative 3 as explained above and the assessment team agreed with this exclusion for the reasons also explained above. The PP then changed the financial analysis to benchmark analysis, since the only realistic alternative to the project activity was business as usual (or do nothing) which required no investments. This is in accordance with paragraph 19 of the ñGuidelines on the assessment of investment analysisòversion 05, which states that for cases where the choice is to invest or not to invest in the project activity, the benchmark analysis should be used. The financial analysis made clear that the financial returns of the Proposed Project Activity (alternative LFG1 or P1) will be insufficient to justify the required investment with a negative NPV even when the main parameters (CAPEX, Revenues and Operating Costs) are stressed. Therefore the assessment team concludes that scenarios LFG2 and P6 (business as usual) are the baseline scenarios.	

	Validated situation	Conclusion
	LFG3, P2, P3, P4 and P5 were not considered realistic baseline scenarios to the Project Activity. **Step 4: Where more than one credible and plausible alternative remains, the project participants shall, as a conservative assumption, use the alternative baseline scenario that results in the lowest baseline emissions of the baseline scenario. In assessing the scenarios, any regulatory and contractual requirements should be taken into consideration.** There was not more than one alternative to the project participants and the baseline identified was the atmospheric release of the landfill gas (for waste treatment/landfill gas) with electricity obtained from the grid (for electricity). These are options LFG2 and P6 from methodology and therefore comply with table 2 of page 5 of the applied methodology. All steps of the PDD complies with steps of ACM0001 version 11 and with the ñTool for the demonstration and assessment of additionalityòversion 05.2.	
4. Based on financial expertise and local and sectoral knowledge, determine whether all scenarios that are considered by the project participants and are supplementary to those required by the methodology, are reasonable in the context of the proposed CDM project activity and that no reasonable alternative scenario has been excluded. Use the table below for this purpose:	Based on local knowledge the assessment team agrees that all the scenario identified by the project participants and which are supplementary to those required by the methodology (i.e. LFG3 - Capture of LFG and its flare, without being registered as a CDM Project Activity), is technically reasonable in the context of the proposed CDM Project activity however it was not considered a financially reasonable alternative since this option requires investments and render no revenues without being registered as a CDM Project. No reasonable alternative scenario has been excluded. The PP chose alternative scenarios to both treatment of waste in the absence of the project activity and for the generation of power which are the two services provided in the Project Activity. No alternative scenarios for the generation of heat or steam were included since in the project activity scenario LFG is not being used for thermal energy generation. Below you can find the rationale for the choices made in the PDD for the realistic alternative waste treatment and power generation scenarios.	OK

Alternative Scenario Ref.	Description in the PDD	Cross-checked with	Validation Opinion
LFG1	The Project Activity (capture of LFG and power generation) undertaken without being registered as a CDM project activity	Alternative scenario given in ACM0001 version 11.	Valid alternative scenario.
LFG2	Atmospheric release of the LFG	Alternative scenario given in ACM0001 version 11. During the site visit the assessment team evidenced through field observation that this is the current situation.	Valid alternative scenario.
LFG3	Capture of LFG and its flare, without being registered as a CDM Project Activity	This is technically a reasonable alternative scenario to the type of waste treatment in place at the moment, however it is not financially realistic since without CDM registration this would not render any revenue at all.	Not a realistic baseline scenario alternative and this was excluded from further analysis by the PP in PDD version 4. The exclusion was deemed correct by the assessment team since it requires investments, renders no revenues without being registered as a CDM Project, and there are no legislation in Brazil (nationally or locally) that requires this alternative to be implemented.
P1	Power generated from LFG undertaken without being registered as CDM Project Activity	Alternative scenario given in ACM0001 version 11.	Valid alternative scenario.
P2	Existing or construction of a new on-site or off-site fossil fuel fired cogeneration plant The PDD version 1 also states that ñthere is no alternative to use heat inside the landfill and there is no consumer nearby the project activity, the heat generation was not considered a realistic alternative by the project participantsò	This scenario is given in ACM0001 version 11, however the PP informed that generation of thermal energy is not one of the services that the project activity intends to supply so cogeneration is not a comparable application area. CAR06 was raised (see below in findings section) in order for the PP to include the correct justification given in the PDD. This was done and CAR06 was closed out.	Not a realistic baseline scenario alternative and this was not considered by the PP as such in the PDD.
P3	Existing or construction of a new on-site or off-site renewable based cogeneration plant The PDD version 1 also states that ñthere is no	This scenario is given in ACM0001 version 11, however the PP informed that generation of thermal energy is	Not a realistic baseline scenario alternative and this was not considered by the PP as such in the PDD.

	alternative to use heat inside the landfill and there is no consumer nearby the project activity, the heat generation was not considered a realistic alternative by the project participantsù	not one of the services that the project activity intends to supply so cogeneration is not a comparable application area. CAR06 was raised (see below in findings section) in order for the PP to include the correct justification given in the PDD. This was done and CAR06 was closed out.	
P4	Existing or construction of a new on-site or off-site fossil fuel fired captive power plant The PDD version 1 also states that ñThe alternatives P4 and P5 were not considered realistic as there is no need for power at the landfill site and power generation is not EcoUrbisôcore business; consequently no captive power is required to be built in the project surroundingsù	This scenario is given in ACM0001 version 11. The project activity intends to generate electricity to export to the grid. However, from version 1 of the PDD and from the site visit the assessment team confirms that there is no internal demand for the amount of electricity being generated, so captive power plant (which refers to generation from a unit set up by industry for its exclusive consumption) is not a realistic baseline scenario for the project activity.	Not a realistic baseline scenario alternative and this was not considered by the PP as such in the PDD.
P5	Existing or construction of a new on-site or off-site renewable based captive power plant The PDD version 1 also states that ñThe alternatives P4 and P5 were not considered realistic as there is no need for power at the landfill site and power generation is not EcoUrbisôcore business; consequently no captive power is required to be built in the project surroundingsù	This scenario is given in ACM0001 version 11. The project activity intends to generate electricity to export to the grid. However, from version 1 of the PDD and from the site visit the assessment team confirms that there is no internal demand for the amount of electricity being generated, so captive power plant (which refers to generation from a unit set up by industry for its exclusive consumption) is not a realistic baseline scenario for the	Not a realistic baseline scenario alternative and this was not considered by the PP as such in the PDD.

		project activity.	
P6	Existing and/or new grid-connected power plant	This alternative scenario is given in ACM0001 version 11.The validation team visited the site where the landfill is located on May 14th 2011 and it examined project planning details (for more details see section 4.1 of this protocol above). The electricity that will be generated in the absence of the Project Activity can be consumed from the grid in the absence of the project activity so this is a reasonable alternative scenario.	Valid alternative scenario.

5. Determine whether the baseline scenario identified is reasonable by validating the assumptions, calculations and rationales used, as described in the PDD. It shall be ensured that documents and sources referred to in the PDD are correctly quoted and interpreted. Cross check the information provided in the PDD with other verifiable and credible sources, such as local expert opinion. The table above may be used for this purpose.	As seen in the table above and in sections 5 and 6 of this protocol below, the baseline scenario identified is reasonable. All documents and sources in the PDD and spreadsheets are correctly quoted and interpreted.	OK

6. Is the identified baseline scenario in line with regulatory or legal requirements and takes into account relevant national and/or sectoral policies?	All identified scenarios were in line with regulatory and legal requirements and takes into account relevant national and/or sectoral policies. The PDD version 1 p.20, Table 2 has a list of relevant documents and national policies about solid waste sector used to evidence that no legislation requires LFG to be collected and burnet. Also the assessment team confirms that there is no requirement for the capture and flaring of the landfill gas in Brazil as per search carried out in the CONAMA website (ref.7.2-B.4). The assessment team also validated the email (ref.7.2-A.24) sent to the PP by CETESB - Companhia Ambiental do Estado de São Paulo (the Environment Agency of the State of São Paulo) stating that there is no obligation for the capture and flaring of the landfill gas neither in São Paulo State nor São Paulo City.	OK
7. Is this identification supported by official and/or verifiable documents (e.g. studies, web pages, certificates, etc?	Yes see above and sections 5 and 6 of this protocol below.	OK

	Validated situation	**Conclusion**
SECTION 5c. Algorithms and/or formulae used to determine emission reductions		
1. Compare the equations and parameters in the PDD to those in the selected approved methodology and determine if they have been correctly applied. Confirm that adequate justification has been provided for selection between different options.	The Baselie emissions formula shown in the PDD version 1 section B.6.1 is: $BEy = (MD_{project,y} ï MD_{BL,y}) \times GWP_{CH4} + EL_{LFG},y \times CEF_{elec,BL,y} + ET_{LFG,y} \times CEF_{ther,BL,y}$ Where: BEy = Baseline emissions in year y (tCO2e) $MD_{project,y}$ = The amount of methane that would have been destroyed/combusted during the year, in tonnes of methane (tCH4) in project scenario; $MD_{BL,y}$ = The amount of methane that would have been destroyed/combusted during the year in the absence of the project due to regulatory and/or contractual requirement, in tonnes of methane (tCH4); GWP_{CH4} = Global Warming Potential value for methane for the first commitment period is 21	~~CAR03~~ OK

	Validated situation	Conclusion
	tCO2e/tCH4; EL_{LFG},y = Net quantity of electricity produced using LFG which in the absence of the project activity would have been produced by power plants connected to the grid or by an onsite/off-site fossil fuel based captive power generation, during year y, in megawatt hours (MWh); $CEF_{elec,BL,y}$ = CO2 emissions intensity of the baseline source of electricity displaced, in tCO2e/MWh; $ET_{LFG,y}$ = The quantity of thermal energy produced utilizing the landfill gas, which in the absence of the project activity would have been produced from onsite/offsite fossil fuel fired boiler, during the year y in TJ; $CEF_{ther,BL,y}$ = CO2 emissions intensity of the fuel used by boiler to generate thermal energy which is displaced by LFG based thermal energy generation, in tCO2/TJ. The above formula is in accordance with ACM0001 Version 11. Section B.6.1 of the PDD also states that as the project only aims to flare and generate electricity, $ET_{LFG,y}$ = 0 and the equation for BEy is changed to the following: **$BEy = (MD_{project,y} - MD_{BL,y}) \times GWP_{CH4} + EL_{LFG,y} \times CEF_{elec,BL,y}$** Furthermore, it states that there is no regulatory or contractual requirements specifying $MD_{BL,y}$ and that historic data for LFG capture and destruction do not exist for the particular project, therefore the PP adopted an adjustment factor (AF) taking into account the project context by using the following formula: **$MD_{BL,y} = MD_{project,y} \times AF$** The assessment team confirms that there is no requirement for the capture and flaring of the landfill gas in Brazil as per search carried out in the CONAMA website (ref.7.2-B.4). The assessment team also validated the email (ref.7.2-A.24) sent to the PP by CETESB - Companhia Ambiental do Estado de São Paulo (the Environment Agency of the State of São Paulo) stating that there is no obligation for the capture and flaring of the landfill gas neither in São Paulo State nor São Paulo City. The assessment team checked the ñConcession Contract ï South East Groupò(ref. ref.7.2 ï A.4) specially annex III ï Specific Obligations of the South East Group, and confirms that there is no contractual obligations for burning of landfill gas in this contract neither. Given that there is no specific system for collection and destruction of methane mandated by regulatory or contractual requirements or undertaken for other reasons in the CTL landfill,	

	Validated situation	Conclusion
	steps 1 to 3 of the methodology are not applicable to the projectõs context. The PP however, has for conservative purposes, adopted the value of 1% of AF calculated in a recent study by Magalhães et al (2010), presented to the Scientific Committee of the 3rd International Workshop on Uncertainty in Greenhouse Gas Inventories (of which the UNFCCC secretariat is a member), in September 22-24, 2010, Lviv, Ukraine (see ref.7.2-B.8). Section **B.6.1** of the PDD states all the methodological choices for baseline, project and leakage for ***ex-post*** calculations of ERs. According to the ACM0001 version 11, $MD_{project,y}$ will be determined *ex-post* by metering the actual quantity of methane captured and destroyed once the project activity is operational. The following equation is given: $MD_{project,y} = MD_{flared,y} + MD_{electricity,y} + MD_{thermal,y} + MD_{PL,y}$ Where: $MD_{flared,y}$ = Quantity of methane destroyed by flaring (tCH4) $MD_{electricity,y}$ = Quantity of methane destroyed by generating electricity (tCH4) $MD_{thermal,y}$ = Quantity of methane destroyed by the generation of thermal energy (tCH4) $MD_{PL,y}$ = Quantity of methane sent to the pipeline for feeding to the natural gas distribution network (tCH4). As stated above, section B.6.1 of the PDD version 1 explains that the project will only flare and generate electricity and therefore the equation for $MD_{project,y}$ in this section of the PDD is as follows: **$MD_{project,y} = MD_{flared,y} + MD_{electricity,y}$** **and** **$MD_{flared,y} = (LFG_{flared,y} \times w_{CH4} \times D_{CH4}) \ï Pe_{flare,y}/GWP_{CH4}$** Where: **$LFG_{flared,y}$ =** Quantity of landfill gas fed to flare(s) during the year measured in m^3 w_{CH4} = Average methane fraction of the landfill gas as measured during the year and expressed as a fraction (in m^3CH_4/ m^3LFG) D_{CH4} = Methane density expressed in tonnes of methane per cubic meter of methane (tCH_4/ m^3CH_4) **$Pe_{flare,y}$ =** Project emissions from flaring of the residual gas stream in year y (tCO2e) will be	

	Validated situation	Conclusion
	determined following the procedure described in the ñTool to determine project emissions from flaring gases containing methaneò(ref.7.2-B.9). The assessment team verified all formulas in the PDD v4 for the future determination of the **$Pe_{flare,y}$** and found it to be correct and according to the ñTool to determine project emissions from flaring gases containing methanteò(ref.7.2-B.9). **and** **$MD_{electricity,y} = LFG_{electricity,y} \times w_{CH4} \times D_{CH4}$** Where $LFG_{electricity,y}$ = Quantity of landfill gas fed into electricity generator in m^3 All of the above have been correctly applied according to the applicable methodology. For project emissions the applied methodology states that the following formula should be used: $PEy = PE_{EC} + PE_{FC,j,y}$ Where PE_{EC} = Emissions from consumption of electricity in the project case (tCO2) $PE_{FC,j,y}$ = Emissions from consumption of heat in the project case (tCO2) Section B.6.1 of the PDD version 1, explained that there would be no consumption of heat by the project activity and therefore the following equation will be used to calculate PEy: $PEy = PE_{EC}$ Nevertheless page 38 of the PDD version 1 stated that $PE_{FC,j,y}$ will be calculated according to the ñTool to calculate project or leakage CO2 emissions from fossil fuel combustionò(ref.7.2-B.8). Furthermore the formula for the calculation of $PE_{FC,j,y}$ is given as: **$PE_{FC,j,y} = \Sigma FC_{i,j,y} \times COEF_{i,y}$** Where $PE_{FC,j,y}$ = CO2 emissions from fossil fuel combustion in process j during the year y (tCO2/yr) $FC_{i,j,y}$ = quantity of fuel type i combusted in process j during year y (mass or volume unit/yr) $COEF_{i,y}$ = CO2 emission coefficient of fuel type i in year y (tCO2/mass or volume unit)	

	Validated situation	Conclusion
	It also states that for calculating $COEF_{i,y}$ option A of the ñTool òwill be applied and thus: $COEF_{i,y} = w_{C,i,y} \times 44/12$ Where: $w_{C,i,y}$ is the weighted average mass fraction of fuel type i in year y (tCO2/mass or volume unit). **CAR03 ï** The PDD version 1 page 38 states that for calculating $COEF_{i,y}$, option A of the ñTool to calculate project of leakage CO2 emissions from fossil fuel combustionòwill be applied and thus: $COEF_{i,y} = w_{C,i,y} \times 44/12$ Where: $w_{C,i,y}$ is the weighted average mass fraction of fuel type i in year y (tCO2/mass or volume unit). However, the methodology gives two different formulas to calculate $COEF_{i,y}$ if $FC_{i,j,y}$ is being measured in mass or volume: If $FC_{i,j,y}$ is measured in a mass unit: $COEF_{i,y} = w_{C,i,y} \times 44/12$ If $FC_{i,j,y}$ is measure in a volume unit: $COEF_{i,y} = w_{C,i,y} \times ⅄_{i,y} \times 44/12$ and explains that $w_{C,i,y}$ is the weighted average mass fraction of carbon in fuel type i in year y (tC/mass unit of the fuel). These small issues need to be addressed in order to make PDD version 1 more transparent. The PPs response to CAR03 was that $FC_{i,j,y}$ will be measured in a mass unit and the parameter $w_{C,i,y}$ has been withdrawn from the PDD because in Brazil there is no information about weight average mass fraction ($w_{C,i,y}$). Thus, the option B was chosen to calculate the CO_2 emission coefficient $COEF_{i,y}$ and in this option, the information about weight average mass fraction (wC,i,y) is not necessary. The information was amended in PDD version 2. The assessment team checked PDD version 2 section B.6.1 and the calculation of Project Emissions due to consumption of heat, heat flux to start the combustion of the flares to be more precise, are being calculated as per option B of the ñTool to calculate project and leakage CO2 emissions from fossil fuel combustionò This is in accordance with the applied methodology. Furthermore, this option only requires the quantity of fuel, the NCV and the EF of the fuel used. The choices are now clear in the PDD version 2.	

	Validated situation	Conclusion
	CAR03 was closed out. As a result of CAR03, the PDD version 2 now correctly shows that option B will be used to calculate the EF of the fuel being consumed in the project activity to produce heat (which from site visit it was found to be LPG for the ignition of flare). The formula for that is: **$COEF_{i,y} = NCV_{i,j} \times EFCO2_{,i,j}$** Where: $NCV_{i,j}$ = weighted average net calorific value of fuel type i in year y (GJ/mass); $EFCO2_{,i,j}$ = weighted average emission factor of fuel type i in year y (tCO2/GJ) The description of the parameters **$PE_{FC,j,y}$, $FC_{i,j,y}$** and **$COEF_{i,y}$** were also changed slightly in PDD version 2 to reflect that the fuel used is LPG. The parameters are therefore described as: $PE_{FC,j,y}$ = CO2 emissions from LPG combustion in flares during the year y (tCO2/yr) $FC_{i,j,y}$ = quantity of LPG combusted in pilot flames of flares during year y (mass/yr) $COEF_{i,y}$ = CO2 emission coefficient of LPG in year y (tCO2/mass). The assessment team also noticed that the PP introduced the parameter $PE_{FC,j,y}$ to the formula describing PEy. The correct formula is now presented in version 2 of the PDD as: **$PEy = PE_{EC,y} + PE_{FC,j,y}$** The above supplementary changes to CAR03 comply with the latest ñTool to calculate project or leakage CO2 emissions from fossil fuel combustionò(ref.7.2-B.8) and the applied methodology and thus were accepted by the assessment team. The PDD version 1 explained that, as electricity will be consumed from the grid they will (as per applied methodology) use the ñTool to calculate baseline, project and/or leakage emissions from electricity consumptionò(ref.7.2-B.6), and that option A from this tool is chosen ñElectricity consumption from the gridò. From the ñToolò, option A project emissions is calculated with the following formula: $PE_{EC,y} = ∑EC_{PJ,j,y} \times EF_{EL,j,y} \times (1 + TDLj,y)$ Where: $PE_{EC,y}$ = Project emissions from electricity consumption in year y (tCO2/yr) $EC_{PJ,j,y}$ = Quantity of electricity that would be consumed by the baseline electricity	

	Validated situation	Conclusion
	consumption source k in year y (MWh/yr) $EF_{EL,j,y}$ = Emission factor of electricity generation for source j in year y (tCO2/MWh) TDLj,y = Average technical transmission and distribution losses for providing electricity to source j in year y j = sources of electricity consumption in the project To calculate the $EF_{EL,j,y}$ option A1 of the ñTool to calculate baseline, project and/or leakage emissions from electricity consumptionòwas chosen. This option refers the reader to the ñTool to calculate the emission factor for an electricity systemò(ref.7.2-B.7) for the calculation of the EF, thus the above formula for PE is presented as below in the PDD version 1: $PE_{EC,y} = ∑EC_{PJ,j,y} \times EF_{grid,\ CM,y} \times (1 + TDLj,y)$ Where: $EF_{grid,\ CM,y}$ = Combined margin CO2 emission factor for the project electricity system in year y (tCO2/MWh) as per ñTool to calculate the emission factor for an electricity systemò Section B.6.3 of the PDD later explain that this parameter will be calculated ex-post and therefore monitored, and also gives detailed description of the calculations for the purpose of estimating expected emission reductions. As a result of CAR10 below the PP also revised PDD to version 2 to include in section B.6.1 the formulae to calculate emissions from the diesel generator, which will be used as a back up in the advent of power failure to supply electricity to the project activity (blowers etc), so that the project can continue to accrue ERs in these situations. Therefore, section B.6.1 of the PDD version 2 explains that the formula to calculate project emissions due to electricity consumption is: $\mathbf{PE_{EC,y} = PE_{EC1,y} + PE_{EC2,y}}$ $\mathbf{PE_{EC1,y} = ∑EC_{PJ,j,y} \times EF_{grid,\ CM,y} \times (1 + TDLj,y)}$ explained above **and** $\mathbf{PE_{EC2,y} = EC_{PJ2,y} \times EF_{diesel\_generator}}$ where $PE_{EC2,y}$ = Project emissions from diesel generators (tCO2) $EC_{PJ2,y}$ = quantity of electricity consumed from diesel generator by the project activity during the year y(MWh)	

	Validated situation	Conclusion
	$EF_{diesel\_generator}$ = the emission factor for the diesel generator in year y (tCO2/MWh) For the EF the PP opted for option B2 of the scenario B ñelectricity is consumed from an off-grid captive power plantòfrom the ñTool to calcualate baseline, project and/or leakage emissions from electricity consumptionò This means that a default value of 1.3 tCO2/MWh will be used for calculating emissions from the diesel generators during the crediting period. All of the above PE were found to be calculated in accordance with applied methodology and tools. The PDD states that according to ACM0001 version 11 no leakage emissions need to be accounted for. This was confirmed by the assessment team. Finally ER formula is given as: **ERy = BEy ï PEy** This was also found to be in compliance with applied methodology.	
2. Verify the justification given in the PDD for the choice of data and parameters used in the equations to determine estimated emission reductions. If data and parameters will not be monitored throughout the crediting period and will remain fixed, assess that all data sources and assumptions are appropriate and calculations are correct, applicable to the proposed CDM project activity and will result in a conservative estimate of the emission reductions. If data and parameters will be monitored on implementation and hence become available only after validation of the project activity, confirm that the estimates provided in the PDD for these data and parameters are reasonable.	As seen above to estimate ERs the following formula needs to be applied: **1) ERy = BEy ï PEy** For the baseline emissions, **BEy**, the parameters of the following formula are needed: **2) BEy = ($MD_{project,y}$ ï $MD_{BL,y}$) x GWP_{CH4} + $EL_{LFG,y}$ x $CEF_{elec,BL,y}$** According to ACM0001 Version 11 MDproject,y is estimated ex-ante using the following formula: **3) $MD_{project,y} = BE_{CH4,SWDS,y}/GWP_{CH4}$** **$BE_{CH4,SWDS,y}$** should be calculated as per the latest version of the ñTool to determine methane emissions avoided from disposal of waste at a solid waste disposal siteò, in this case version 5.1. The formula in version 5.1. of the ñToolòis: $$BE_{CH4,SWDS,y} = \varphi \cdot (1-f) \cdot GWP_{CH4} \cdot (1-OX) \cdot \frac{16}{12} \cdot F \cdot DOC_f \cdot MCF \cdot \sum_{x=1}^{y} \sum_{j} W_{j,x} \cdot DOC_j \cdot e^{-k_j \cdot (y-x)} \cdot$$	~~CAR09~~ ~~CAR10~~ OK

	Validated situation	Conclusion

ACM0001 version 11 states that in the ñTooløx will refer to the year since the landfill started receiving wastes (x runs from the first year of landfill operation (x=1) to the year for which emissions are calculated (x=y). In the case of CTL x is 2010 when the landfill received its first partial Operational License from 23.11.2010 (ref.7.2-A.22) and started receiving waste (see register of waste delivered to site in ref.7.2 - A.14).

It also states that the efficiency of the degassing system which will be installed in the project activity should be taken into account while carrying out ex ante estimations. In this case the efficiency was considered 70%, an estimate of the engineering company contracted to carry out installation works ï CRA ï based on its experience in other landfills (ref.7.2-A.11).

The parameters for formula 3 above formulae and the values applied are discussed in the tables below. The parameter f was excluded from the formula since the AF is accounted for at a later stage when calculating MD_{BL}.

Data/Parameter title:$BE_{CH4,SWDS,y}$	Comments
Title in line with methodology?	Yes
Fixed throughout the crediting period?	This parameter is the ex-ante calculation of MDproject,y. MDproject y will be calculated as per ACM0001 v11 throughout the crediting period. Also MGPr,y (which is the amount of methane generated during year y of the project activity estimated using the actual amount of waste disposed in the landfill as per latest version of the ñTool to determine methane emissions avoided from disposal of waste at a solid waste disposal siteò) will be monitored throughout the

	Validated situation		Conclusion	
		crediting period.		
	Data unit correctly expressed?	Yes tCO2e		
	Appropriate description of parameter?	Yes		
	Source clearly referenced?	This parameter was calculated as per ñTool to determine methane emissions avoided from disposal of waste at a solid waste disposal siteò		
	Correct value provided?	No. The value for the waste prevented from disposal was incorrect when this parameter was calculated and therefore this parameter was also reported wrongly in ERs spreadsheets and in the PDD version 1. See CAR09 below for details. The values reported were: 2012 676,564 2013 860,885 2014 992,876 2015 1,089,237 2016 1,161,202 2017 1,216,333 2018 1,259,733		
	Has this value been verified?	Yes, all the parameters for the estimate of $BE_{CH4,SWDS,y}$ as per ñTool to determine methane emissions avoided from disposal of waste at a solid waste disposal siteò		

	Validated situation		Conclusion	
		were verified and found to be correct except for the estimates of waste delivered to the landfill site (see CAR09 below). The verified values calculated for the crediting period are: 2012 676,822 2013 861,218 2014 993,261 2015 1,089,662 2016 1,161,655 2017 1,216,809 2018 1,260,226 2019 647,679 The crediting period has changed slightly because of CAR07, therefore the crediting period starts in July 2012 (as opposed to January 2012) and ends now in July 2019.		
	Choice of data correctly justified?	Yes		
	Measurement method correctly described?	This parameter is calculated ex-ante according to the ñTool to determine methane emissions avoided from disposal of waste at a solid waste disposal siteò and as explained above will be calculated as MDproject,y and as MGPr,y.		

	Validated situation	Conclusion

CAR09 - The PDD version 1 does not state how the waste tonnage was estimated in order to calculate $BE_{CH4,SWDS,y.}$ Furthermore, the values in the ERs spreadsheet calculations ñEcoUrbis_CER_v1_2011.01.31_FESòdo not match the evidence of waste collected by Ecourbis in the year of 2010 (the report sent to the Municipality of São Paulo ï ref.7.2-A.14). This should be corrected in order to give more accurate estimates of ERs.
The PPs response was to large to insert in this part of the protocol, please refer to findings for the PPs response to CAR09.
The estimated amount of waste used for the calculation of $BE_{CH4,SWDS,y.}$ was place in Annex 3 of the PDD version 2. The assessment team crosschecked the values with the report sent by the PP to the Municipality of São Paulo (Quantitativos Resíduos Domiciliares.pdf - ref.7.2-A.14) and confirms the values are correct. The values were also checked and correctly used in the spreadsheet version 2 (ref.7.2-A.9.b).
CAR09 was closed out.

Data/Parameter title: Wj,x	Comments
Title in line with methodology?	Title in line with the Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site v.5.1
Fixed throughout the crediting period?	This parameter was used to estimate MDproject,y ex-ante. MDproject y will be calculated as per ACM0001 v11 throughout the crediting period (or ex-post). Also MGPr,y (which is the amount of methane generated during year y of the project activity estimated using the actual amount of waste disposed in the landfill as per latest

	Validated situation		Conclusion	
		version of the ñTool to determine methane emissions avoided from disposal of waste at a solid waste disposal siteö) will be monitored throughout the crediting period (ex-post).		
	Data unit correctly expressed?	Yes, tonnes/year		
	Appropriate description of parameter?	Yes, amount of organic waste type j prevented from disposal in the SWDS		
	Source clearly referenced?	During the site visit the PP informed that the estimates of the waste disposal were found in the CTL report sent to the Municipality of São Paulo (Quantitativos Resíduos Domiciliares.pdf - ref.7.2-A.14). This explanation was not given in the PDD version 1 (see CAR09 above).		
	Correct value provided?	No. The values provided in PDD version 1 were: 2010 203,079 2011 2,001,913 2012 2,001,913 2013 2,001,913 2014 2,001,913 2015 2,001,913 2016 2,001,913 2017 2,001,913 2018 2,001,913 2019 2,001,913		

	Validated situation		Conclusion	
		2020 2,001,913 2021 834,130 The values above were corrected to the values verified below in CAR09 above.		
	Has this value been verified?	The verified values from ref.7.2-A.14 were: 2010 203,076 2011 2,002,699 2012 2,002,699 2013 2,002,699 2014 2,002,699 2015 2,002,699 2016 2,002,699 2017 2,002,699 2018 2,002,699 2019 2,002,699 2020 2,002,699 2021 834,458		
	Choice of data correctly justified?	Yes		
	Measurement method correctly described?	This data is estimated from reports (ref.7.2-A.14).		
	Data/Parameter title: ∧	Comments		
	Title in line with methodology?	Title in line with the Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site v.5.1		
	Fixed throughout the crediting period?	This parameter was used to estimate MDproject,y ex-ante. MDproject y will be		

	Validated situation		Conclusion	
		calculated as per ACM0001 v11 throughout the crediting period (or ex-post). Also MGPr,y (which is the amount of methane generated during year y of the project activity estimated using the actual amount of waste disposed in the landfill as per latest version of the ñTool to determine methane emissions avoided from disposal of waste at a solid waste disposal siteò) will be monitored throughout the crediting period (ex-post).		
	Data unit correctly expressed?	Yes		
	Appropriate description of parameter?	Yes, model correction factor to account for model uncertainties		
	Source clearly referenced?	Yes , IPCC2006 in Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site v.5.1.		
	Correct value provided?	Yes , 0.9		
	Has this value been verified?	Yes ref.7.2-B.27		
	Choice of data correctly justified?	Default		
	Measurement method correctly described?	Default		
	Data/Parameter title: GWP_{CH4}	Comments		
	Title in line with methodology?	Title in line with the Tool to determine methane emissions avoided from disposal of waste		

	Validated situation		Conclusion	
		at a solid waste disposal site v.5.1		
	Fixed throughout the crediting period?	Valid for the relevant commitment period, will be updated as appropriate		
	Data unit correctly expressed?	Yes, tCO2e/tCH4		
	Appropriate description of parameter?	Yes, global warming potential of methane		
	Source clearly referenced?	Yes, Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site v.5.1		
	Correct value provided?	Yes, 21		
	Has this value been verified?	Yes		
	Choice of data correctly justified?	Yes		
	Measurement method correctly described?	Default until end of commitment period		
	Data/Parameter title: OX	Comments		
	Title in line with methodology?	Title in line with the Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site v.5.1		
	Fixed throughout the crediting period?	This parameter was used to estimate MDproject,y ex-ante. MDproject y will be calculated as per ACM0001 v11 throughout the crediting period (or ex-post). Also MGPr,y (which is the amount of methane generated during year y of the project activity estimated using the actual		

	Validated situation		Conclusion	
		amount of waste disposed in the landfill as per latest version of the ñTool to determine methane emissions avoided from disposal of waste at a solid waste disposal siteò) will be monitored throughout the crediting period (ex-post).		
	Data unit correctly expressed?	Yes		
	Appropriate description of parameter?	Yes, oxidation factor		
	Source clearly referenced?	Yes , IPCC2006 in Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site v.5.1.		
	Correct value provided?	Yes, 0.1		
	Has this value been verified?	Yes		
	Choice of data correctly justified?	Yes, for managed solid waste disposal sites that are covered with oxidizing material.		
	Measurement method correctly described?	Default		

Data/Parameter title: F	Comments
Title in line with methodology?	Title in line with the Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site v.5.1

	Validated situation		Conclusion	
	Fixed throughout the crediting period?	This parameter was used to estimate MDproject,y ex-ante. MDproject y will be calculated as per ACM0001 v11 throughout the crediting period (or ex-post). Also MGPr,y (which is the amount of methane generated during year y of the project activity estimated using the actual amount of waste disposed in the landfill as per latest version of the ñTool to determine methane emissions avoided from disposal of waste at a solid waste disposal siteò) will be monitored throughout the crediting period (ex-post).		
	Data unit correctly expressed?	Yes , IPCC2006 in Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site v.5.1.		
	Appropriate description of parameter?	Yes, fraction of methane in the SWDS		
	Source clearly referenced?	Yes		
	Correct value provided?	Yes, 0.5		
	Has this value been verified?	Yes		
	Choice of data correctly justified?	Yes		
	Measurement method correctly described?	Default		
	Data/Parameter title: DOCf	Comments		
	Title in line with methodology?	Title in line with the Tool to		

	Validated situation		Conclusion	
		determine methane emissions avoided from disposal of waste at a solid waste disposal site v.5.1		
	Fixed throughout the crediting period?	This parameter was used to estimate MDproject,y ex-ante. MDproject y will be calculated as per ACM0001 v11 throughout the crediting period (or ex-post). Also MGPr,y (which is the amount of methane generated during year y of the project activity estimated using the actual amount of waste disposed in the landfill as per latest version of the ñTool to determine methane emissions avoided from disposal of waste at a solid waste disposal siteò) will be monitored throughout the crediting period (ex-post).		
	Data unit correctly expressed?	Yes		
	Appropriate description of parameter?	Yes, fraction of degradable organic carbon that can decompose		
	Source clearly referenced?	Yes , IPCC2006 in Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site v.5.1.		
	Correct value provided?	Yes, 0.5		
	Has this value been verified?	Yes		

	Validated situation		Conclusion	
	Choice of data correctly justified?	Yes		
	Measurement method correctly described?	Default		

Data/Parameter title: MCF	Comments
Title in line with methodology?	Title in line with the Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site v.5.1
Fixed throughout the crediting period?	This parameter was used to estimate MDproject,y ex-ante. MDproject y will be calculated as per ACM0001 v11 throughout the crediting period (or ex-post). Also MGPr,y (which is the amount of methane generated during year y of the project activity estimated using the actual amount of waste disposed in the landfill as per latest version of the ñTool to determine methane emissions avoided from disposal of waste at a solid waste disposal siteò) will be monitored throughout the crediting period (ex-post).
Data unit correctly expressed?	Yes
Appropriate description of parameter?	Yes, methane correction factor
Source clearly referenced?	Yes , IPCC2006 in Tool to determine methane emissions avoided from disposal of waste

	Validated situation		Conclusion	
		at a solid waste disposal site v.5.1.		
	Correct value provided?	Yes, 1.0		
	Has this value been verified?	Yes		
	Choice of data correctly justified?	Yes, anaerobic managed solid waste disposal site. It was seen during site visit that the managing of the landfill uses sand and silt, mechanical compacting and levelling of waste.		
	Measurement method correctly described?	Default		
	Data/Parameter title: DOCj	Comments		
	Title in line with methodology?	Title in line with the Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site v.5.1		
	Fixed throughout the crediting period?	This parameter was used to estimate MDproject,y ex-ante. MDproject y will be calculated as per ACM0001 v11 throughout the crediting period (or ex-post). Also MGPr,y (which is the amount of methane generated during year y of the project activity estimated using the actual amount of waste disposed in the landfill as per latest version of the ñTool to determine methane emissions avoided from		

	Validated situation		Conclusion	
		disposal of waste at a solid waste disposal site) will be monitored throughout the crediting period (ex-post).		
	Data unit correctly expressed?	Yes		
	Appropriate description of parameter?	Yes, fraction of degradable organic carbon (by weight) in the waste type j		
	Source clearly referenced?	Yes , IPCC2006 in Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site v.5.1.		
	Correct value provided?	Yes, values for wet waste are correctly applied as below. Wood and wood products 43% Pulp, paper and cardboard (other than sludge) 40% Food, food waste, beverages and tobacco 15% Textiles 24% Garden 20% Glass, plastic etc 0% The assessment team compared the choice with		

	Validated situation		Conclusion	
		other landfill gas projects registered as CDM projects and located in Southeastern Brazil (Exploitation of the biogas from Controlled Landfill in Solid Waste Management Central ï CTRS / BR.040, ref.7.2-B.28).		
	Has this value been verified?	Yes, see above for details		
	Choice of data correctly justified?	Yes		
	Measurement method correctly described?	Default		
	Data/Parameter title: kj	Comments		
	Title in line with methodology?	Title in line with the Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site v.5.1		
	Fixed throughout the crediting period?	This parameter was used to estimate MDproject,y ex-ante. MDproject y will be calculated as per ACM0001 v11 throughout the crediting period (or ex-post). Also MGPr,y (which is the amount of methane generated during year y of the project activity estimated using the actual amount of waste disposed in the landfill as per latest version of the ñTool to determine methane emissions avoided from		

	Validated situation		Conclusion	
		disposal of waste at a solid waste disposal site) will be monitored throughout the crediting period (ex-post).		
	Data unit correctly expressed?	Yes		
	Appropriate description of parameter?	Yes, decay rate for waste type j		
	Source clearly referenced?	Yes , IPCC2006 in Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site v.5.1.		
	Correct value provided?	Yes, values for Tropical (MAT > 20°C) and Wet climate (MAP>1000mm) were correctly applied. The average daily temperature and precipitation for the region are placed under the ñkòtab of the ER spreadsheets (ref.7.2-A.9). The values applied were: Pulp, paper, cardboard 0.07 Wood, wood products 0.035 Other (non food) organic 0.17 Food, food waste 0.4		
	Has this value been verified?	Yes, the values for average daily temperatures for São		

	Validated situation		Conclusion
		Paulo presented in tab ñkòof the ER spreadsheets (ref.7.2-A.9) were verified against ref.7.2-B.30 using the date range from 01/01/72 to 13/12/2010, and the average monthly precipitation values shown in the same tab were verified against calculations in ref.7.2-A.25 using daily precipitation data from ref.7.2-B.30. A sample of the latter was checked against ref.7.2-A.25.	
	Choice of data correctly justified?	Yes	
	Measurement method correctly described?	Default	

Data/Parameter title: Waste Composition	Comments
Title in line with methodology?	Title in line with the Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site v.5.1
Fixed throughout the crediting period?	This parameter was used to estimate MDproject,y ex-ante. MDproject y will be calculated as per ACM0001 v11 throughout the crediting period (or ex-post). Also MGPr,y (which is the amount of methane generated during year y of the project activity estimated using the actual amount of waste disposed in the landfill as per latest version of the ñTool to determine

	Validated situation		Conclusion	
		methane emissions avoided from disposal of waste at a solid waste disposal site) will be monitored throughout the crediting period (ex-post).		
	Data unit correctly expressed?	Yes % or fraction		
	Appropriate description of parameter?	Yes, waste composition (or weight fraction of the waste type j)		
	Source clearly referenced?	Yes, waste composition reports.		
	Correct value provided?	Yes, the following values were verified: A) Wood and wood products 1.31% B) Pulp, paper and carboard (other than sludge) 9.85% C) Food, food waste, beverages and tobacco (other than sludge) 62.51% D) Textiles 2.39% E) Garden, yard and park waste 0.00% F) Glass, plastic, metal, other inert 23.95%		

	Validated situation	Conclusion
	waste TOTAL 100.0%	
	Has this value been verified?	Yes, the assessment team verified the values in the PDD and in the ERs spreadsheet (ref.7.2-A.9) against the summary of the reports of the gravimetric analysis (data from 2010) and from a sample of the reports themselves sent by Ecourbis to the Municipality of São Paulo (as a contractual obligation - ref.7.2-A-23). According to the reports the gravimetric analysis of the waste is carried out by a third party (company called Operator).
	Choice of data correctly justified?	Yes
	Measurement method correctly described?	The values are based on historical data in the reports mentioned above (ref.7.2-A.23). This is in accordance with ACM0001 version 11 p.11

4) $MD_{BL,y} = MD_{project,y}$ x AF

As explained above in section 5.C.1, there are no requirements for the capture and flaring of landfill gas in Brazil (see CONAMA website ref.7.2-B.4) and in the state or city of São Paulo (see CETESB email ref.7.2-A.24). Also there are no contractual obligations for CTL to flare or burn landfill gas (see concession contract ï ref. 7.2 ï A.4).

Given that there is no specific system for collection and destruction of methane mandated by regulatory or contractual requirements or undertaken for other reasons in the CTL landfill, steps 1 to 3 of the methodology are not applicable to the projectõs context. The PP however, has for conservative purposes, adopted the value of 1% as AF. This value was taken from a recent study by Magalhães et al (2010), presented to the Scientific Committee of the 3rd

	Validated situation	Conclusion

International Workshop on Uncertainty in Greenhouse Gas Inventories (of which the UNFCCC secretariat is a member), in September 22-24, 2010, Lviv, Ukraine (see ref.7.2-B.8).

5) $EL_{LFG,y}$ x $CEF_{elec,BL,y}$

Data/Parameter title: $EL_{LFG,y}$	Comments
Title in line with methodology?	Yes
Fixed throughout the crediting period?	No
Data unit correctly expressed?	Yes, MWh
Appropriate description of parameter?	Yes, this is the net quantity of electricity produced using LFG which in the absence of the project activity would have been produced by power plants connected to the grid or by an onsite/off-site fossil fuel based captive power generation, during year y, in megawatt hours (MWh)
Source clearly referenced?	This parameter was checked against estimates of the number of engines the PP is planning to install as per preliminary project study (ref.7.2-A.11) and as per capacity of each group generator shown in the technical proposal (ref.7.2-A.27). In 2012 for example the calculation is carried out with

	Validated situation		Conclusion	
		6 engines (planned to be installed in that year) with net capacity of 1.54 MW each, 8,268 hrs per year (8760 hrs with a load factor of 94.38% from Catterpillar operation and maintenance proposal- ref. 7.2-A.20). Although the estimates were reasonable for a parameter that is going to be monitored, the values changed in subsequent PDD versions as a result of CAR07 (see below section 6.a and findings for details) where the starting date of the project activity was slightly changed and consequently so did the initial chronogram of implementation and the start of commercialisation of energy starting date went from January 2013 to October 2013 (from 12 months to 3 months in that year).		
	Correct value provided?	2011 0 2012 76,393 2013 114,590 2014 140,055 2015 152,787 2016 152,787 2017 152,787		

	Validated situation	Conclusion

	2018 152,787
Has this value been verified?	This are the values verified after changes resulting from CAR07. 2011 0 2012 0 2013 19,098 2014 114,590 2015 140,055 2016 152,787 2017 152,787 2018 152,787 2019 76,393
Choice of data correctly justified?	Yes
Measurement method correctly described?	Yes, see section 7 of this protocol.

Data/Parameter title:EFgrid,OM-DD2009	Comments
Title in line with methodology?	In line with the Tool to calculate the emission factor for an electricity system v2.2
Fixed throughout the crediting period?	No
Data unit correctly expressed?	Yes tCO2/MWh
Appropriate description of parameter?	Yes, Operating Margin emission factor of the Brazilian Grid
Source clearly referenced?	Yes, Brazilian DNA
Correct value provided?	Yes, 0.2476
Has this value been verified?	Yes, ref.7.2-B.22
Choice of data correctly justified?	Yes
Measurement method correctly described?	Yes

	Validated situation	Conclusion

Data/Parameter title:EFgrid,BM, 2009	Comments
Title in line with methodology?	In line with the Tool to calculate the emission factor for an electricity system v2.2
Fixed throughout the crediting period?	No
Data unit correctly expressed?	Yes tCO2/MWh
Appropriate description of parameter?	Yes, Build Margin emission factor of the Brazilian Grid
Source clearly referenced?	Yes, Brazilian DNA
Correct value provided?	Yes, 0.0794
Has this value been verified?	Yes, ref.7.2-B.22
Choice of data correctly justified?	Yes
Measurement method correctly described?	Yes

Data/Parameter title: EFgrid,CM,y	Comments
Title in line with methodology?	In line with the Tool to calculate the emission factor for an electricity system v2.2
Fixed throughout the crediting period?	No
Data unit correctly expressed?	Yes tCO2/MWh
Appropriate description of parameter?	Yes, Combined Margin CO2 EF of the Brazilian Grid
Source clearly referenced?	Yes, Brazilian DNA
Correct value provided?	Yes, 0.1635
Has this value been verified?	Yes, ref.7.2-B.22
Choice of data correctly justified?	Yes
Measurement method correctly described?	Yes

Section B.6.3 of the PDD version 1 used the ñTool to calculate project and leakage CO2 emissions from fossil fuel combustionòto calculate project emissions due to electricity consumption in the project activity. Therefore the assessment team opened CAR10.

	Validated situation	Conclusion
	CAR10 - The assessment team verified the estimates for Project emissions in the spreadsheet ñEcoUrbis_CER_v1_2011.01.31_FESòand they are reasonable estimates for the ex-ante calculations. However, the PDD v01 page 54 states that project emissions due to consumption of electricity by the stand by generator will be calculated as per ñTool to calculate project and leakage CO2 emissions from fossil fuel combustionòwhen the applied methodology seems to request that any project emissions from consumption of electricity be calculated as per ñTool to calculate baseline, project and/or leakage emissions from electricity consumptionò Revise the PDD and clarify this point. The PPs response to CAR10 was: The calculation of ex-ante project emission was amended in Section B.6.1 and B.6.3 of the PDD ï version 2 according to requested. The revised PDD v2 and the ERs spreadsheet v2 were checked and the assessment team confirmed that it used the ñTool to calculate baseline, project and/or leakage emissions from electricity consumptionòfor all estimates of emissions due to electricity consumption as per applied methodology. Emissions due to consumption of heat, heat flux to start the combustion of the flares to be more precise, are being calculated as per option B of the ñTool to calculate project and leakage CO2 emissions from fossil fuel combustionò This is in accordance with the applied methodology too. CAR10 was closed out. After this CAR was closed it was observed a small error in the PE calculations, for the years of 2012 and 2019 the value for electricity was divided by 2 in the tab ñProject Emissionsòand again in the tab ñEmission Reductionòto account for the changes in dates in crediting period. The error was corrected in v3 of the ER spreadsheets and in V4 of the PDD. **CAR10 remains closed out (for more information see CAR10 in findings log below).** Therefore in version 2 of the PDD the following formulae were used to calculate project emissions. **6) $PE_y = PE_{EC,y} + PE_{FC,j,y}$** **7) $PE_{EC,y} = PE_{EC1,y} + PE_{EC2,y}$** **8) $PE_{EC1,y} = \sum EC_{PJ,j,y} \times EF_{grid,CM,y} \times (1 + TDL_{j,y})$** **and**	

	Validated situation	Conclusion

9) $PE_{EC2,y} = EC_{PJ2,y} \times EF_{diesel\_generator}$

10) $PE_{FC,j,y} = \Sigma FC_{i,j,y} \times COEF_{i,y}$

11) $COEF_{i,y} = NCV_{i,j} \times EFCO2_{,i,j}$

Project emissions due to consumption of LPG ($PE_{FC,j,y}$) were not considered in ex-ante calculations. From the assessment teamôs experience this is a very small percentage of total ERs and this fact connected with the fact that it will be monitored ex-post (see section 5.c.1 of this protocol above) made the assessment team come to the conclusion that it was considered reasonable not to account for this emission ex-ante. That is the assessment team came to the conclusion it would make very little difference for ex-ante estimates and will be monitored in future, and thus acceptable not to include in ex-ante estimates.

The EF of the grid was already covered above and it is in accordance with the ñTool to calculate baseline, project and/or leakage emissions from electricity consumptionò

Therefore, for the purpose of the ex-ante calculations of the above equations the following parameters still needed to be validated.

Data/Parameter title: $EC_{PJ,j,y}$	Comments
Title in line with methodology?	In line with the ñTool to calculate baseline, project and/or leakage emissions from electricity consumptionò
Fixed throughout the crediting period?	No
Data unit correctly expressed?	Yes, MWh/year
Appropriate description of parameter?	Yes, Electricity Consumption from the grid
Source clearly referenced?	Yes
Correct value provided?	Values provided in the PDD v1 were: 2012 1,756 2013 1,756 2014 3,240

	Validated situation		Conclusion	
		2015 3,240 2016 3,240 2017 3,240 2018 3,240		
	Has this value been verified?	The following values were validated due to CAR10 and CAR07: 2012 878 2013 1,756 2014 3,240 2015 3,240 2016 3,240 2017 3,240 2018 3,240 2019 1,620		
	Choice of data correctly justified?	Electricity consumption was calculated based on estimates of consumption from the study for the executive project carried out by CRA (ref.7.2-A.11). These were based on the power of the equipments planned to be installed. For 2012 and 2013 a total of 263.7KVA are expected and for 2014 onwards a further 222.9KVA is expected totalling 486.6KVA. To calculate consumption of electricity from the grid the equipment power was multiplied by the power factor of 0.8 (ref.7.2-		

	Validated situation		Conclusion	
		A.11). The assumption was that the equipment would work 8760hrs and that 95% of the electricity would come from the grid (the other 5% from the stand by generator). Therefore in 2012 for example the calculation for electricity consumed from the grid was: $EC_{PJ,j,y}$ 263.7x.8x8760x.95=1756MWh/yr 1756/2=878MWh to come to consumption of six months in 2012.		
	Measurement method correctly described?	Yes, see section 7 of this protocol below.		

Data/Parameter title: **TDLj,y**	Comments
Title in line with methodology?	In line with the ñTool to calculate baseline, project and/or leakage emissions from electricity consumptionò
Fixed throughout the crediting period?	No
Data unit correctly expressed?	Yes %
Appropriate description of parameter?	Yes
Source clearly referenced?	Yes, National Energy Balance 2006, p21
Correct value provided?	Yes, 6%
Has this value been verified?	Yes, from the Brazilian National Energy Balance 2006 (ref.7.2-A.31).

	Validated situation		Conclusion	
	Choice of data correctly justified?	Yes		
	Measurement method correctly described?	Regional and national default values, this is in accordance with the ñTool to calculate baseline, project and/or leakage emissions from electricity consumptionò p12, which says that recent, accurate and reliable data available at the host country should be used.		

Data/Parameter title: $PE_{EC1,y}$	Comments
Title in line with methodology?	In line with the ñTool to calculate baseline, project and/or leakage emissions from electricity consumptionò
Fixed throughout the crediting period?	No
Data unit correctly expressed?	Yes, tCO2/yr
Appropriate description of parameter?	Yes, Project emissions from electricity consumption from the grid
Source clearly referenced?	Yes
Correct value provided?	Values provided in the PDD v1 were: 2012 305 2013 305 2014 562 2015 562 2016 562 2017 562 2018 562

	Validated situation		Conclusion	
	Has this value been verified?	The following values were validated due to CAR10 and CAR07: 2012 153 2013 305 2014 562 2015 562 2016 562 2017 562 2018 562 2019 281		
	Choice of data correctly justified?	Yes see above parameters. $PE_{EC1,y}$ for 2012 for example was calculated as follows: 878MWhx0.1635tCO2/MWhx (1+0.06)= 152MWh in 2012 for 6 months (this value is rounded up in the ERs spreadsheet and PDD).		
	Measurement method correctly described?	This value is calculated from the values above.		

Data/Parameter title: $EC_{PJ2,y}$	Comments
Title in line with methodology?	In line with the ñTool to calculate baseline, project and/or leakage emissions from electricity consumptionò
Fixed throughout the crediting period?	No
Data unit correctly expressed?	Yes, MWh/year
Appropriate description of parameter?	Yes, project emissions from electricity consumption of the diesel generator

	Validated situation		Conclusion	
	Source clearly referenced?	Yes		
	Correct value provided?	Values provided in the PDD v1 were: 2012 92 2013 92 2014 171 2015 171 2016 171 2017 171 2018 171		
	Has this value been verified?	The following values were validated due to CAR10 and CAR07: 2012 46 2013 92 2014 171 2015 171 2016 171 2017 171 2018 171 2019 86		
	Choice of data correctly justified?	Electricity consumption was calculated based on estimates of consumption from the study for the executive project carried out by CRA (ref.7.2-A.11). These were based on the power of the equipments planned to be installed. For 2012 and 2013 a total of 263.7KVA are expected and for 2014		

	Validated situation		Conclusion	
		onwards a further 222.9KVA is expected totalling 486.6KVA. To calculate consumption of electricity from the diesel generators the equipment power was multiplied by the power factor of 0.8 (ref.7.2-A.11). The assumption was that the equipment would work 8760hrs and that 5% of the electricity would come from the stand by generator (95% from the grid). Therefore in 2012 $EC_{PJ2,y}$ was calculated as follows: 263.7x.8x8760x.05=92MWh/ yr 92/2= 46.2MWh in 2012 for 6 months.		
	Measurement method correctly described?	Yes see section 7 of this protocol.		

Data/Parameter title: **$EF_{diesel\_generator}$**	Comments
Title in line with methodology?	In line with the ñTool to calculate baseline, project and/or leakage emissions from electricity consumptionò
Fixed throughout the crediting period?	Yes
Data unit correctly expressed?	Yes, tCO2/MWh
Appropriate description of parameter?	Yes
Source clearly referenced?	Yes, option B2 of scenario B of the ñTool to calculate

	Validated situation		Conclusion	
		baseline, project and/or leakage emissions from electricity consumptionò		
	Correct value provided?	The ER spreadsheets presented this value as 0.8tCO2/MWh. This however has been changed to 1.3tCO2/MWh as per option B2 of the scenario B of the ñTool to calculate baseline, project and/or leakage emissions from electricity consumptionòas a result of CAR10.		
	Has this value been verified?	Yes		
	Choice of data correctly justified?	Yes, the justification is that the electricity consumption source is a project consumption source. This is in accordance with Option B2 of scenario B of the ñTool to calculate baseline, project and/or leakage emissions from electricity consumptionò		
	Measurement method correctly described?	Conservative, default value applied		

Data/Parameter title: $PE_{EC2,y}$	Comments
Title in line with methodology?	In line with the ñTool to calculate baseline, project and/or leakage emissions from electricity consumptionò

	Validated situation		Conclusion	
	Fixed throughout the crediting period?	No		
	Data unit correctly expressed?	Yes, tCO2/year		
	Appropriate description of parameter?	Yes, Project emissions from electricity consumption from diesel generator		
	Source clearly referenced?	Yes		
	Correct value provided?	Values provided in the PDD v1 were: 2012 74 2013 74 2014 137 2015 137 2016 137 2017 137 2018 137		
	Has this value been verified?	The following values were validated due to CAR10 and CAR07: 2012 60 2013 120 2014 223 2015 223 2016 223 2017 223 2018 223 2019 112		
	Choice of data correctly justified?	Therefore in 2012 the calculation was: $PE_{EC2,y}$ 46.2MWhx1.3tCO2/MWh= 60tCO2		

	Validated situation		Conclusion	
	Measurement method correctly described?	This value is calculated from the values above.		

Data/Parameter title: **Pey**	Comments
Title in line with methodology?	Yes
Fixed throughout the crediting period?	No
Data unit correctly expressed?	Yes, tCO2/year
Appropriate description of parameter?	Yes, Project Emissions
Source clearly referenced?	This was calculated from the above parameters
Correct value provided?	Values provided in the PDD v1 were: 2012 379 2013 379 2014 699 2015 699 2016 699 2017 699 2018 699
Has this value been verified?	The following values were validated due to CAR10 and CAR07: 2012 213 2013 425 2014 785 2015 785 2016 785 2017 785 2018 785 2019 393
Choice of data correctly justified?	These values were calculated

	Validated situation	Conclusion
	from the parameters validated above. So for 2012 for example the calculation was: **Pey=** 153 + 60 **=** 213tCO2/yr	
	Measurement method correctly described? This value is calculated from the values above	

According to ACM0001 version 11 no leakage effects need to be taken into account.

All formulas and parameters were checked by the assessment team and found to be correct. Where the parameter was fixed throughout the crediting period the assessment team made sure that conservative values were used. Where the parameters were monitored, the assessment team made sure that the values used for the estimates were reasonable values. As an example the following ER was checked for the year of 2012:

BEy = ($MD_{project,y}$ ï $MD_{BL,y}$) x GWP_{CH4} + $EL_{LFG,y}$ x $CEF_{elec,BL,}$

$MD_{project,y}$ = $BE_{CH4,SWDS,y}$/GWP_{CH4} but also taking into account 70% efficiency of degassing system.

$MD_{project,2012}$ = 676,822x0.7/21 = 22,560 tCH4/year so for 6 months in which the system will be operational in CTL in 2012:

$MD_{project,6months}$= 22,560/2 = 11,280tCH4

$MD_{BL,y}$ = $MD_{project,y}$ x AF

$MD_{BL,y}$ = 11,280 x 0.01 = 112.8tCH4

$EL_{LFG,y}$ x $CEF_{elec,BL}$ = 0 x 0.1635 = 0 tCO2e

BEy = (11,280 tCH4 ï 112.8tCH4) x 21 + 0 = 234,507 tCO2e

ERy = BEy ï PEy

ERy = 234,507 ï 213 = 234,294tCO2e

	Validated situation	Conclusion
	In the ERs spreadsheets v3 and the PDD v4 the value is 234,305. The difference represents 0.005% and if this difference is multiplied by all the years of the crediting period it comes to 0.04%, thus the difference is not material. The difference was found to be due to the fact that the spreadsheets consider all decimal places when coming to the final ERy value while this calculations are only taken into account 2 decimal places at the most so the that the spreadsheets are more accurate. Therefore the assessment team concludes that the values calculated by PP are correct.	

	Validated situation	Conclusion
SECTION 6. Additionality of a project activity		
1. Does the PDD clearly describe how the proposed CDM project activity is additional?	Yes ☒ No ☐	Ok
2. List the documents and tools provided by the CDM Executive Board used to demonstrate the additionality	Tool for the demonstration and assessment of additionality ï version 5.2	OK

	Validated situation	Conclusion
SECTION 6a. Prior consideration of the clean development mechanism		
1. Does the PDD clearly indicate the start date of the project activity in format: dd/mm/yyyy and it is in accordance to the Glossary of CDM Terms?	Yes ☐ No ☐ PDD version 1 section C.1.1 stated that the starting date of the project activity is 01/06/2011 and that this refers to the date that EcoUrbis plans to purchase the equipments that will be installed during Phase I of the project. The Glossary of CDM terms (ref. http://cdm.unfccc.int/Reference/Guidclarif/glos_CDM.pdf) state that ñThe starting date of a CDM project activity is the earliest date at which either the implementation or construction or real action of a project activity begins.òand also that ñIn light of the	~~CAR07~~ OK

	Validated situation	Conclusion
	above definition, the start date shall be considered to be the date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity. This, for example, can be the date on which contracts have been signed for equipment or construction/operation services required for the project activity. Minor pre-project expenses, e.g. the contracting of services /payment of fees for feasibility studies or preliminary surveys, should not be considered in the determination of the start date as they do not necessarily indicate the commencement of implementation of the project. For those project activities which do not require construction or significant pre-project implementation (e.g. light bulb replacement) the start date is to be considered the date when real action occurs. In the context of the above definition, pre-project planning is not considered ñreal actionòò The assessment team examined the CTL Chronogram for the implementation of the Project Activity (ref.7.2-A.12.a) and confirmed that Ecourbisôestimated date for the purchase of the first equipment (flare) was June 2011. The assessment team also confirmed that there was no evidence during the site visit of implementation of the Project Activity. The PP informed during site visit that the source of investment decision as well as the purchase of first equipment for the Project Activity is dependent upon the Project Approval. Page 19 and 74 of the PDD version 1 stated that the starting date of the Project Activity is 01/06/2011 (estimated date that Ecourbis plans to purchase the equipment to be installed in phase I of the Project). At the time of the issuance of findings, the best estimate of the delivery of the validation report by the DOE was 15/07/2011, so this was not coherent with the PDD version 1 and the explanation of the PP about the time of decision of investment source and purchase of first equipment. Clarification was required about this issue and because some of the dates in Table 1 of the PDD version 1 were not correct (for example the date of notification of CDM consideration to the UNFCCC is 06/12/2010, the date of contract with the DOE is 20/12/2010, the date of submission of the PDD version 1 for global stakeholder consultation is 08/03/2011) the DOE opened **CAR07.** Furthermore, some of the evidence was still pending from the PP (i.e. notification of prior consideration of the CDM to the Brazilian DNA).	

<table>
<tr><th></th><th>Validated situation</th><th>Conclusion</th></tr>
<tr><td></td><td>
The assessment team asked the PP to explain the above and provide a statement as to what exactly they wished to tie the starting date of the project activity with (i.e. Validation Report by the DOE, LoA by DNA or Project Registration at the UNFCCC). Also the incorrect dates in the PDD version 1 needed correcting and any evidencemissing and new CTL chronogram provided (if applicable).

The answer by the PP was:

<table>
<tr><th>Key Events</th><th>Date</th></tr>
<tr><td>Prior Consideration of the CDM to UNFCCC and Brazilian DNA</td><td>06/12/2010</td></tr>
<tr><td>Contract between Designated Operational Entity (DOE) and the PP for the validation process</td><td>20/12/2010</td></tr>
<tr><td>Submit the PDD for Global Stakeholder Consultation (GSC)</td><td>08/03/2011</td></tr>
<tr><td>Starting date of the project activity (the Project Participant will decide to implement the project activity after receiving the Brazilian Letter of Approval. The date chosen on 11/11/2011 is the forecast date of the Brazilian DNA meeting</td><td>11/11/2011</td></tr>
<tr><td>Start-up ï Phase I*</td><td>July/2012</td></tr>
<tr><td>Commercial operation ï Phase II*</td><td>October/2013</td></tr>
</table>

Starting date of the project activity, the Project Participant will decide to implement the project activity after receiving the Brazilian Letter of Approval.
</td><td></td></tr>
</table>

	Validated situation	Conclusion
	The date chosen on 11/11/2011 is the forecast date of the Brazilian DNA meeting[2]. 1) The assessment team verified the new chronogram sent by the PP and developed by Conestoga-Rovers (ref.7.2 ï A.12.b). The new chronogram was more realistic with the timeline of the project activity. It states that the estimated date for the purchase of the first equipment (flares and blowers) are November 2011 which is after the date of the last meeting of the Brazilian DNA (11/11/2011) where the decision of approval of Brazilian projects by the DNA are announced, and to which the PP intends to have had submitted the project by. Therefore the starting date of the project is linked to an important date in the process of approval of the project activity (by then approved by 2/3 of the institutions responsible for analysing and approving the project) and also to the estimated date of purchase of the first equipment which is in accordance with the CDM Glossary of Terms which says that ñstart date shall be considered to be the date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activityò(ref.7.2 ï B.14). The PDD can, besides stating the link between the starting date approval of the project by the Brazilian DNA, leave the statement which was in the PDD version 01 that this is also the date estimated for the purchase of initial equipment for the project activity so that it is clearly shown that the starting date complies with CDM glossary of terms too. 2) Also the assessment team verified and confirms that the dates in table 1 of the PDD version 2 for CDM consideration to the UNFCCC is 06/12/2010, the date of contract with the DOE is 20/12/2010, the date of submission of the PDD version 1 for global stakeholder were changed and are in accordance with evidences (CTL Landfill Gas Project Prior Consideration of CDM notification to UNFCCC ref.7.2 ï B.12; LRQA Service Agreement with Ecourbis Ambiental S/A signed on 20/12/2010 ref.7.2 ï B.15; UNFCCC website with initial PDD for CTL Landfill Gas Project International Stakeholder Consultation ref.7.2 ï B.16). 3) The evidence for the statement made in the PDD that a notification to prior consideration of CDM was with the Brazilian DNA by 06/12/2010 is still pending. CAR07 remained opened because of 1 and 3 above.	

[2] Source: http://www.mct.gov.br/index.php/content/view/327781.html, accessed on 21/02/2011

	Validated situation	Conclusion
	The PP then replied: 30/06/2011 The PDD was amended to link the start date to the date of the investment decision. In addition, the notification of prior consideration is now provided to the audit team. 14/07/2011 TBB 1) With regards to the starting date of the project activity: The assessment team checked the PDD version 3 and it states that the Project Participant will decide whether to implement the project activity when receiving the LoA from the DNA. It is forecast that the notification of approval will be 11/11/2011. It also states that this date may be the date of the main equipment purchase and that this is estimated. Therefore the PDD now states the estimated date in which a decision will be reached (11/11/2011) which is the estimated date to purchase the first equipment once CTL reaches a decision. All in accordance with the CDM Glossary of Terms (ref.7.2 ï B.14). 2) The PP provided the email notifying the Brazilian DNA of their intention to seek CDM status (dated 06/12/2010) and the email by the Brazilian (dated 07/12/2010) acknowledging notification (ref.7.2-A.18). **CAR07 is now closed.**	
2. If the PDD was published for Global Stakeholder Consultation process after the start date, check that the CDM benefits were considered necessary in the decision to undertake the project activity as a CDM project, following the below queries.	The PDD version 1 was published on 08/03/2011 for Global Stakeholder. It was checked during site visit that the Project Activity has not started yet. The plan is to start the project activity (to purchase the first equipment) once the letter from the Brazilian DNA is obtained. This is planned for the 11/11/2011 (the last planned meeting of the Brazilian DNA for this year).	OK

	Validated situation	Conclusion
3. For a project activity with a start date on or after the 2nd August 2008, confirm that the PPs have informed the host party DNA and the UNFCCC secretariat in writing of their intention to seek CDM Status If such a notification has not been provided by the PPs within six months of the project activity start date, determine that the CDM was not seriously considered in the decision to implement the project activity	The PDD was published before the starting date of the Project Activity and according to VVM paragraph 101, the DOE shall ensure by means of confirmation from the UNFCCC secretariat that PPs had informed the host Party DNA and the UNFCCC secretariat in writing of the commencement of the project activity and of their intention to seek CDM status only if new project activities for which PDD has not been published for global stakeholder consultation or a new methodology proposed to the CDM Executive Board before the project activity starting date. However according to PDD version 1, page 19, Table 1, the PP has notified the Brazilian DNA and UNFCCC of their intention to seek CDM status. This was checked by the assessment team (see ref.7.2-A.18 and ref.7.2 ï B.12 already mentioned above in section 6.a.1).	OK

	Validated situation	Conclusion
4. For a project activity with a start date before the 2nd August 2008, check the following requirements through document reviews to assess the PPs prior consideration of the CDM: (a) Evidence that must indicate that awareness of the CDM prior to the project activity start date, and that the benefits of the CDM were a decisive factor in the decision to proceed with the project. (b) Reliable evidence from project participants that must indicate that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation. The time gap between the documented evidence of prior CDM consideration and continuing and real actions shall be within the period required by the Guidance on prior consideration of the CDM If evidence to support the serious prior consideration of the CDM as indicated above that is authentic is not available, determine that the CDM was not considered in the decision to implement the project activity.	N/A, the project activity starting date is after 2nd August 2008.	OK

<table>
<tr><th></th><th>Validated situation</th><th>Conclusion</th></tr>
<tr><td colspan="3">SECTION 6b. Identification of alternatives</td></tr>
<tr><td>1. Does the PDD identify credible alternatives to the project activity, in order to determine the most realistic baseline scenario?
Assess this list of alternatives and ensure that:
(a) The list of alternatives includes as one of the options that the project activity is undertaken without being registered as a proposed CDM project activity;
(b) The list contains all plausible alternatives considered to be viable means of supplying the outputs or services that are to be supplied by the proposed CDM project activity;
(c) The alternatives comply with all applicable and enforced legislation.</td><td>
<table>
<tr><th colspan="3">LIST OF ALTERNATIVES</th></tr>
<tr><th>No</th><th>Description in the PDD</th><th>Describe why it is credible and complete</th></tr>
<tr><td>1</td><td>The project activity (capture of landfill gas and power generation) undertaken without being a registered as a CDM project activity ï LFG1 and P1</td><td>This is the project activity without being registered as a CDM project activity. Therefore it is technically credible and complies with VVM version 1.2</td></tr>
<tr><td>2</td><td>Atmospheric release of the LFG (electricity is obtained from the grid) ï LFG2 and P6</td><td>The is the current status of the waste treatment and the energy production.</td></tr>
</table>
As can be seen from above the list of alternatives contain the the project activity is undertaken without being registered as a proposed CDM project activity, all plausible alternatives considered to be viable means of supplying the outputs or services that are to be supplied by the proposed CDM project activity and all of them comply with all applicable and enforced legislation.
</td><td>OK</td></tr>
</table>

	Validated situation	Conclusion
SECTION 6c. Investment analysis		
1. Verify the accuracy of financial calculations carried out for the investment analysis: (a) Conduct a thorough assessment of all parameters and assumptions used in calculating the relevant financial indicator, and determine the accuracy and suitability of these parameters; (b) Cross-check the parameters against third-party or publicly available sources, such as invoices or price indices; (c) Review feasibility reports, public announcements and annual financial reports related to the proposed CDM project activity and the project participants;	1.(a) The assessment team validated the calculations and all input parameters and assumptions used to calculate the relevant financial indicators (NPV and IRR), as per table below. NPV calculated in spreadsheet v4 (ref.7.2-A.10.d) presented a negative value of R$43,056.68 and a IRR of -1.2% in 25years. This values remained negative even when stressed by + or ï 10% of the main parameters (Revenues, OPEX and CAPEX) as seen in sectiond 6.c.1 below. The breakeven points for each parameter was also worked out and shown to be improbable. Few slight mistakes were found with the financial analysis v1 and resolved in CAR04, the energy tariff used was changed as a result of CAR13 and the number of flares used in the financial analysis changed as a result of CL01. For details please see table below with the validation of each parameter and also section called ñFindingsò below. With regards to the discount rate used: Ecourbis S/A has never implemented a similar project with a similar risk in the past, therefore Version 1 of the PDD used a discount rate calculated with parameters that are standard in the market and which considered specific characteristics of the project type (i.e. government bond rates, increased by a suitable risk premium). The parameters used to calculate the discount rate (or ñbenchmarkò) were: a Brazilian Government Bond Rate NTN-B (maturity of 2035), a market risk premium calculated as the difference between US T-bonds and the US S&P500, and an unlevered Beta of Electric Sector in US. The values for the discount rate in PDD version 1 were checked by the assessment team and calculations were correct. The initial value adopted was 10.48%. Considering that Bovespa, the Brazilian Stock Exchange, had an average return in the last 24 months of 38.41% and IGPM (Brazilian Inflation indicator) was 13.79%, the assessment team calculate that the annual net real return was 11.63% on average. Based on it, the PP benchmark evaluations were considered conservative. However, while answering to the initial findings, versions 4 and 5 of the ñGuidelines on the assessment of financial analysisòwere published in EB61 and EB 62, and the PP took the opportunity to change the discount rate calculated for the default discount rate of 11.75%, in the new version of the ñGuidelinesò. The guideline also has a new requirement of consideration of the debt/equity finance structure, as a result of the new requirement the PP used the default option 50% debt and 50% equity financing provided in the ñGuidelinesò. (b) and (c) The PP did not rely on values of a official feasibility report that has to be approved by	~~CAR04~~ ~~CAR13~~ ~~CL01~~ OK

	Validated situation	Conclusion
	a national authority but by a feasibility study presented in the proposal by CRA (ref.7.2-A.11). The values of the study were all crosschecked with third party references, for example, publicly available information, price indices, prices published in a construction guide in November 2010, project plans, manufacturers proposals and the contract with CRA (for references see below in the table with the validation of the input values after section 6.c.3 of this protocol). Nevertheless, the assessment team also compared the project with another landfill gas to electricity project which, although of a different scale, can be used to help and validate values used in the investment analysis (see also below section 6.c.5 and the table showing the comparison to a similar registered project in the region). Dimensions and costs were also validated by the assessment team Scope 1 and 13 Sector Expert by examining the Project values and comparing with the only recent project in the region; ñExploitation of the biogas from Controlled Landfill in Solid Waste Management Central-CTRS/BR.040ò. Values used were found to be correct for the size of the landfill, amount of gas being captured and electricity produced. Please see Section 6.c.5 and associated table below for details. The expert stated that: ñThe quantities of pipelines and other components of the LFG station, collection system and electricity generation are reasonable to the dimension of the landfill (ref.7.2-A.48 and site visit). Since crosschecked information is correct, both CAPEX for LFG and Electricity are correctò. The electricity generation operational costs are extremely similar for ñExploitation of the biogas from Controlled Landfill in Solid Waste Management Central-CTRS/BR.040ò (R$65/MWh) and ñCTL Landfill Gas Projectò (R$72.3/MWh). The conservativeness of the costs adopted by the Project CTL Landfill Gas are clearly shown when inflation is taken into account. The table below presents the accumulated inflation index used by energy utility companies (ref.7.2-B.24 and 36) since the date of completion of the last PDD of the project, ñExploitation of the biogas from Controlled Landfill in Solid Waste Management Central-CTRS/BR.040ò (November 2009).	

	Validated situation	Conclusion
	Exploitation of the biogas from Controlled Landfill in Solid Waste Management Central-CTRS/BR.040 v CTL (O&M Costs) IGPM — Index calculated by Getúlio Vargas Foundation Ref.7.2-B.36 Indice acumulado do ano (%) / R$/MWh / Impact of inflation / Adjusted R$/MWh Dez 2008 to June 2011: 65 Dez2009: -1.71% / 65 / -1.11 / 63.89 Dez2010: 11.32% / 63.887005 / 7.23 / 71.12 Junho2011: 3.15% / 71.12029171 / 2.24 / 73.36 / 72.32 / **-1.43%** Furthermore, the Sector Expert also analysed the operational cost of the CTL landfill gas collection system and stated that it ñis proportional to the dimensions of the collection, suction and flaring systemsò	
2. Assess the correctness of computations carried out and documented by the project participants	All computations analyses and calculations were checked accordingly, some mistakes were found and corrected in CAR04 (see section called ñFindingsò below).	~~CAR04~~ OK
3. Assess the sensitivity analysis by the project participants to determine under what conditions variations in the result would occur, and the likelihood of these conditions	The sensitivity analysis carried out by the PP took into account + or - 10% variations in CAPEX, OPEX and revenues. These levels and parameters were also observed in the recently registered project ñExploitation of the biogas from Controlled Landfill in Solid Waste Management Central-CTRS/BR.040ò. Furthermore, the PP also carried out a breakeven point analysis and in PDD version 4, which shows that the CAPEX would need to be reduced by 43.7% for the NPV to reach 0. This would mean a 92.5% reduction in the CAPEX for electricity generation, or in the words of the Sector Expert ñat least the diminishing of half of engines, because it is not possible to reduce much of collection system and LFG station; reducing the number of conveying lines would obligate the exclusion of some wells, causing a decrease in the quantity of biogas captured, so a reduction in the amount of ERs and electricity, to be followed by the decrease in the revenues; reduction of number of flares is not enough to make the project attractive and, even considering that blowerôs dimension can be reduced PP cannot avoid to use them keeping one equipment in standby (because without blowing no other system can operate), so not much difference in price would	OK

	Validated situation	Conclusion

be achieved.òTherefore, a reduction of 43.7% in the total CAPEX is unfeasible for this project.

The breakeven point analysis in the PDD version 4 also showed that revenues would have to be increased by 45.3%. As explained in CAR13 (although the analysis in this corrective action was carried out in PDD and financial analysis spreadsheets v2 and thus with slightly different values) The electricity price considered in this project activity is R$148.39/MWh (from CCEE website ref. 7.2-B.23). Considering that there is no official projections for energy price published in Brazil, the most reliable estimate of energy prices publicly available are the auction prices found in the CCEE website for renewables (wind, small hydros and biomass).

The tariff used in the financial analysis for the project ñExploitation of the biogas from Controlled Landfill in Solid Waste Management Central-CTRS/BR.040ò was also from the same source although from the previous auction carried out in 2007 as opposed to 2010 (R$137.32), and when inflation indices are taken into account, as done above for operational costs, it is demonstrated that prices have comparatively actually fallen (in other words have not kept up with inflation in the last 2 and a half years (see table below).

Exploitation of the biogas from Controlled Landfill in Solid Waste Management Central-CTRS/BR.040 v CTL (Tarif)

IGPM Index calculated by Getúlio Vargas Foundation Ref.7.2-B.36

	Indice acumulado do ano (%)	R$/MWh	Impact of inflation	Adjusted R$/MWh		
	Dez 2008 to June 2011			137.32		
Dez2009	-1.71%	137.32	-2.35	134.97		
Dez2010	11.32%	134.96867	15.28	150.25		
Junho2011	3.15%	150.24982	4.73	154.98	148.39	**-4.44%**

The email presented by the PP from CPFL, a local energy company (ref. Ref.7.2-A17), also indicates that there is an expectation that the price offer for purchase of energy tends to decrease. The email give estimates of prices for purchase of electricity from 2011 to 2023 of R$140,00 and from 2024 to 2036 of R$110,00. The expectation of decrease or at least that increase in revenues will not be higher than inflation, was confirmed by the assessment team

	Validated situation	Conclusion
	Sector Expert as being a result of technological development and acceptance. In the light of the information shown above the assessment team accepted that a 45.3% increase in price in auctions can be deemed unrealistic. During technical review and decision maker review of this project a finding was raised in relation to the fact that while the PDD describes accurately the effect on 45% variation in revenues, which of course infers both generation output and electricity price, it only detailed why 45% variation is unlikely due to electricity price and did not explain why it is unlikely due to LFG volume or energy variation. The PP revised the PDD and the Financial Spreadsheet to version 5 to address the issue raised above. An explanation was added to the PDD page 25 to explain why it is not probable that a 45.3% increase in revenues due to and increase in LFG generation would occur. Furthermore, a calculation was added to the financial spreadsheet to show that to increase the revenue by 45.3% (that is to increase the gas collection by 45.3%) the landfill gas generation would need to be increased by 64.71%, since all the estimates of energy generation engines required by the project activity were carried out considering the gas captured with a 70% collection efficiency. The explanation added to the PDD version 5 states that this increase in LFG generation is unlikely since the study by EPA (1996) states that variations in estimates of LFG generation using first order decay models should consider an uncertainty of + or ï 50% and model uncertainties tend to reduce over the years and not decrease. The assessment team verified the reference given and agreed with the conclusion of PPs. With regards to OPEX, the PDD version 4 shows that to reach the benchmark, the O&M shall be reduced in 101.3%. This means that PPs would be actually paying to operate the project, therefore this scenario is also considered unrealistic.	

Use the table below to list all the inputs to the investment analysis and to describe how each parameter has been validated:

Parameter/input	Symbol/Unit	Value	Source	Means of validation	Conclusion
Benchmark/Discount Rate	%	10.48%	See explanation above in 6.c.1(a) new value adopted from ñGuidelines on the assessment of financial analysisòv5 (ref.7.2-B.10.c).	The value was checked by the assessment team against the value given in the ñGuidelines on the assessment of financial analysisò v5 (ref.7.2-B.10.c) for Brazil, group	11.75%

				1. For more information see above section 6.c.1(a).	
Asset's Life time	Years	25	Expert evaluation (ref.7.2-A.11) and default value of the õTool to determine the remaining lifetime of equipmentòv1 (ref.7.2-B.32)	The PP presented the study carried out by CRA (ref.7.2-A.11) with their evaluation of the assets lifetime of 25years. The opinion of the experts from CRA match the value in the õTool to determine the remaining lifetime of equipmentòv1 (ref.7.2-B.32) for electric generators, air cooled.	25 years
Installed capacity for each engine	MW	1.60	Caterpillar G3520C technical specification (ref.7.2-A.26)	The value was checked against the manufacturers specifications mentioned on the left.	1.60MW
Net capacity for each engine	MW	1.54	Technical Proposal by Caterpillar (ref.7.2-A.27)	The value was checked against manufacturers technical proposal.	1.54MW
Number of generators groups	unit	12	Technical proposal by CRA (ref.7.2-A.11)	The number of generators was evidenced in the technical proposal by CRA mentioned in the left. The Proposal also gave the value of the total installed capacity for the 12 generator groups as 19.2MW. This value was crosschecked with the total installed capacity required to utilise the estimated maximum amount of methane of 7,029m3/h generated in the lifetime of the project as shown in the Ecourbis CER spreadsheet v1 (ref.7.2-A.9.a). The value of the total power capacity required, estimated by using a NCV for CH4 of 35.53 MJ/m^3 (ref.7.2-A.1) and using a yield of 33% for the group generators (ref. 7.2-A.2) was of approximately 23MW. This shows	12 units

				that the PP is not overestimating the numbers of generators required.	
Total installed capacity	MW	19.2	Technical proposal by CRA (ref.7.2-A.11)	Same as above.	19.2MW
Price per MW installed	R$/MWe	R$ 5,894,497.58	The total price for installed generator units was taken from the proposal by Sotreq/Catterpilar (ref.7.2-A.28). The number of units and the total capacity in MW installed as per above from the Technical proposal by CRA (ref.7.2-A.11)	The PDD version 1, Table 5 states that the Price per MW installed is R$5,894,497.58. According to the financial spreadsheets version 1, this price was reached by dividing the total price of the installed units R$70,733,971 by the number of units (12). This is however the price per unit and not the price per MW installed. The correct price per MW installed is R$3,684,060.99. CAR04 (see section on findings below for more details) was open to correct this and a few other small issues with the financial analysis spreadsheets.	R$ 3,684,060.99
Load factor	%	94.38%	Technical proposal by CRA (ref.7.2-A.11)	The plant load factor was determined by the 3rd party contracted by the project participant (the engineering company CRA) to carry out projects study and design. This complies with the ñGuidelines for the reporting and validation of plant load factorsò option b (ref.7.2-B.33)	94.38%
Exchange Rate	R$/USD	1.70	Brazilian Central Bank webpage (ref.7.2-B.34)	Dollar quotation on 16/12/2010 when the spreadsheet started being prepared.	R$ 1.70
Electricity price	R$/MWh	140.00	The price per MWh of electricity	The first price adopted in PDD	R$ 148.39

			in PDD v1 was taken from the email from CPFL (a local utility company) department of commercialisation of energy (ref.7.2-A.17) giving a price estimate for purchase of energy for the years between 2011-2023 and 2024-2036. The price adopted in the final version of the PDD was the highest value from the 2 auctions of alternative energy sources in Brazil (ref.7.2-B.23).	version 1 was found not to be the most conservative price from the searches carried out by the assessment team which included research of prices in auctions, spot or local utility companies (and which the PP stated were possible markets for the electricity which will be produced). The assessment team therefore opened CAR13 to address this issue. For more details see CAR13 in section called ñFindingsò. The price adopted in the PDD version 5 was R$148.39, the highest price from the result of the alternative energy sources auctions of 2007 and 2010 found in the website of CCEE (Electric Power Commercialisation Chamber). CCEE is responsible for wholesale transactions, commercialisation and settlements of electric power within the National Interconnected System, for both regulated and free contracting environments including the spot market. The commercialisation rules and procedures that govern the activities performed by CCEE are defined and approved by ANEEL ï Brazilian Electricity Regulatory Agency (see validation report for registered project, UNFCCC number 3464, ref.7.2-A.28).	
Contingency	%	5%	Landfill Full Cost Accounting	The reference given by PP states	5%

			Guide for New Zealand (ref.7.2-A.29) and sector expert opinion.	that ñContingency costs associated with the pre-development, development and operation, closure and aftercare of the landfill should be included. Typically figures of between 5% and 25% are used, depending on the level of accuracy of the costs of the individual items in the analysis.ò 5% of total costs was used as contingency for CAPEX LFG station in CTL Landfill gas project. The opinion of the Sector Expert scope 13 is that this is also common practice in Brazil.	
Tax - IRPJ (income tax)	%	25%	Ministério da Fazenda ï Receita Federal Brazilian Treasury Department ï Federal Revenues (ref.7.2-B.30)	Value for corporate income tax, validated from the site of the Brazilian Treasury Department.	25%
Tax - CSLL (social contribution)	%	9%	LEI Nº 7.689, DE 15 DE DEZEMBRO DE 1988 Law N7.689 of Dezember 15 1988 (ref.7.2-B.31)	Value for social contribution on profits of legal entities. Value published in the by the Deputy Head of Legal Affairs, Civil Office, Presidency of the Republic.	9%
Tax (PIS)	%	1.65%	Ministério da Fazenda Brazilian Treasury Department (ref.7.2-B.30)	Contribution to the Social Integration Program and Civil Service Asset Formation Program ï PIS/PASEP	1.65%
Tax (Cofins)	%	7.60%	Ministério da Fazenda Brazilian Treasury Department (ref.7.2-B.30)	COFINS - Contribution to Social Security Financing	7.60%
Depreciation	%/year	10.00%	Ministério da Fazenda Brazilian Treasury Department (ref.7.2-B.30)	Depreciation value for motors and generators	10%

Commercial Lending rate	%	10.97%	Brazilian National Bank for Development website (ref. 7.2-B.25)	The assessment team checked the values used in the calculation of the commercial lending rate in the site of the Brazilian National Bank for Development website for õother alternative sources of energyòand confirms the value of 10.97% used in version 4 of the cash flow and PDD is correct.	10.97%
Debt term	years	16	Brazilian National Bank for Development website (ref. 7.2-B.25)	The dept term of 16 years was checked against reference cited the Brazilian National Bank for Development website.	16 years
Engineering Project	R$	R$ 760,024.42	Contract between CRA and Ecourbis (ref.7.2-A.19).	Engineering project contract between Ecourbis Ambiental S/A and Conestoga-Rovers and Associates Engineering Ltda. signed on 15/01/2009.	R$ 760,024.42
Environmental Licensing Process	R$	R$ 21,450.00	Proposal by CRA for Environmental Licensing Services dated 09/12/2010 (ref.7.2-A.32).	The price is for the elaboration of the MCE (Memorial of Characterisation of the Enterprise). The price in the proposal was crosschecked with the contract between the parties which was later celebrated on 07/01/2011 (ref.7.2-A.33).	R$ 21,450.00
Preliminary Projects	%	1%	Construction Guide No 112; year 63; November 2010 (from the Portuguese Guia da Construção No 112; ano 63; Novembro 2010 - ref.7.2-A.35)	Validated value of 1% of total civil works from the magazineñGuia de Construçãoòutilized nationally by engineering companies.	1%

Digging	m3 R$/m3	1505.9m3 and R$ 13.80/m3	1) Project Design of earth moving/escavation ñEstação de queima de Gás Planta de Terraplenagemò(ref.7.2-A.34) 2) Construction Guide No 112; year 63; November 2010 (from the Portuguese Guia da Construção No 112; ano 63; Novembro 2010 - ref.7.2-A.35)	From project of earth moving/escavation. From project design "Estação de queima de Gás Planta de Terraplenagem" 25/11/2010 by Conestoga-Rovers & Associates to Ecourbis Ambiental S/A Checked total of 1505.85m3. The unit price was checked from the magazine ñGuia de Construçãoò	1505.9m3 and R$ 13.80/m3
Landfill compaction	m3 R$/m3	772.00m3 and R$ 3.55/m3	1) Project Design of earth moving/escavation ñEstação de queima de Gás Planta de Terraplenagemò(ref.7.2-A.34) 2) Construction Guide No 112; year 63; November 2010 (from the Portuguese Guia da Construção No 112; ano 63; Novembro 2010 - ref.7.2-A.35)	From project of earth moving/escavation. From project design "Estação de queima de Gás Planta de Terraplenagem" 25/11/2010 by Conestoga-Rovers & Associates to Ecourbis Ambiental S/A Checked total of 771.95m3. The unit price was checked from the magazine ñGuia de Construçãoò	772.00m3 and R$ 3.55/m3
Earth Removal	m3 R$/m3	734.00m3 and R$ 13.80/m3	1) Project Design of earth moving/escavation ñEstação de queima de Gás Planta de Terraplenagemò(ref.7.2-A.34) 2) Construction Guide No 112; year 63; November 2010 (from the Portuguese Guia da Construção No 112; ano 63; Novembro 2010 - ref.7.2-A.35)	From project of earth moving/escavation. From project design "Estação de queima de Gás Planta de Terraplenagem" 25/11/2010 by Conestoga-Rovers & Associates to Ecourbis Ambiental S/A Checked total of 733.9m3. The unit price was checked from the magazine ñGuia de Construçãoò	734.00m3 and R$ 13.80/m3
Eletric Room / Operator / Workshop	m2 R$/m2	124.46m2 and R$ 1,056.50 /m2	1) Project engineering design Landfill Gas Flaring Operators Room ñEstação de queima de	Project engineering design Landfill Gas Flaring Operators Room (Estação de queima de Gás sala	124.46m2 and R$ 1,056.50 /m2

			Gás sala operador, s. geradores e s. elétrica-plantasò(ref.7.2-A.36) 2) Construction Guide No 112; year 63; November 2010 (from the Portuguese Guia da Construção No 112; ano 63; Novembro 2010 - ref.7.2-A.35)	operador, s. geradores e s. elétrica-plantas). Date 25/11/2010. Checked that the operator room has the following dimensions 8.27mx15.05m=124.46m2. The unit price was checked from the magazine ñGuia de Construçãoò	
Generator´s Room	m2 R$/m2	55.70m2 and R$ 1,056.50/m2	1) Project engineering design Landfill Gas Flaring Operators Room ñEstação de queima de Gás sala operador, s. geradores e s. elétrica-plantasò(ref.7.2-A.36) 2) Construction Guide No 112; year 63; November 2010 (from the Portuguese Guia da Construção No 112; ano 63; Novembro 2010 - ref.7.2-A.35)	From the engineering designe "Estação de queima de Gás sala operador, s. geradores e s. elétrica-plantas". Checked that the generatorôs room has the following dimensions 7.98 X 6.98 = 55.7m2 The unit price was checked from the magazine ñGuia de Construçãoò	55.70m2 and R$ 1,056.50/m2
Substation	m2 R$/m2	24.16m2 and R$ 1,056.50/m2	1) Project engineering design Landfill Gas Flaring Operators Room ñEstação de queima de Gás sala operador, s. geradores e s. elétrica-plantasò(ref.7.2-A.36) 2) Construction Guide No 112; year 63; November 2010 (from the Portuguese Guia da Construção No 112; ano 63; Novembro 2010 - ref.7.2-A.35)	From the engineering designe "Estação de queima de Gás sala operador, s. geradores e s. elétrica-plantas". Checked that the electric substation is planed with the following dimensions 4.18m X 5.78m = 24.16m2 The unit price was checked from the magazine ñGuia de Construçãoò	24.16m2 and R$ 1,056.50/m2

Blower´s shelter	m2 R$/m2	83.03m2 and R$ 1,056.50/m2	Project design Gas Flaring station base for flare ï shapes-cuts and details ñEstação de queima de gás base para flare-formas-cortes e detalhesò Dated 10/11/2010. (ref.7.2-A.37) Construction Guide No 112; year 63; November 2010 (from the Portuguese Guia da Construção No 112; ano 63; Novembro 2010 - ref.7.2-A.35)	From the engineering designe "Estação de queima de gás abrigo para sopradores-planta" dated 24/11/2010. Checked that blowers shelter is planned to have 10,25m X 8.1m = 83.025m2 The unit price was checked from the magazine ñGuia de Construçãoò	83.03m2 And R$ 1,056.50/m2
Flare bases (Reinforced concrete structure)	m3 R$/m3	23.34m3 and R$ 1,579.64 /m3	Project design Gas Flaring station base for flare ï shapes-cuts and details ñEstação de queima de gás base para flare-formas-cortes e detalhesò Dated 10/11/2010. (ref.7.2-A.37) Construction Guide No 112; year 63; November 2010 (from the Portuguese Guia da Construção No 112; ano 63; Novembro 2010 - ref.7.2-A.35)	From project design named "Estação de queima de gás base para flare- formas-cortes e detalhes" dated 10/11/2010. Checked that each flare has a planned base of 23.34 m3. The unit price was checked from the magazine ñGuia de Construçãoò	23.34m3 R$ 1,579.64 /m3
Piping support base (Reinforced concrete structure)	m3 R$/m3	29.00m3 and R$ 1,579.64 /m3	Project design Gas Flaring station base for flare ï shapes-cuts and details ñEstação de queima de gás base para flare-formas-cortes e detalhesò Dated 10/11/2010. (ref.7.2-A.37) Construction Guide No 112; year 63; November 2010 (from the Portuguese Guia da Construção No 112; ano 63; Novembro 2010 - ref.7.2-A.35)	From project design "Estação de queima de gás - Bases formas-planta do piso, cortes e detalhes" 26/11/2010. Checked that the volume of concret needed for structural purposes is 29m3 The unit price was checked from the magazine ñGuia de Construçãoò	29.00m3 And R$ 1,579.64

Condensate separator box (Condensado (Reinforced concrete structure)	m3 R$/m3	45.64m3 and R$ 1,579.64 /m3	1) Project design Condensate separator box, Shapes- floor plant, cuts and details ñCaixa separadora de condensado, Formas- planta do piso, cortes e detalhesòdated 10/11/2010 (ref. 7.2-A.38) 2) Construction Guide No 112; year 63; November 2010 (from the Portuguese Guia da Construção No 112; ano 63; Novembro 2010 - ref.7.2-A.35)	From project design name "Caixa separadora de condensado, Formas- planta do piso, cortes e detalhes" 10/11/2010. Checked the volume of concrete in 45.64m3 The unit price was checked from the magazine ñGuia de Construçãoò	45.64m3 and R$ 1,579.64 /m3
Urbanization	m2 R$/m2	1662.00m2 and R$ 1,056.50	1) Project design plant called Gas Flaring Station ï General Plant "Estação de queima de gás - Planta Geral" 24.11.2010 (ref.7.2-A.39) 2) Construction Guide No 112; year 63; November 2010 (from the Portuguese Guia da Construção No 112; ano 63; Novembro 2010 - ref.7.2-A.35)	From project design plant called "Estação de queima de gás - Planta Geral" 24.11.2010. Checked the cement requirement in 1662m2 The unit price was checked from the magazine ñGuia de Construçãoò	1662.00m2 and R$ 1,056.50
Energy Input Booth	R$/unit	R$ 186,613.00	Ecourbis eng 77609 rev08(2).doc (Engecor Proposal 21/12/2010 ï ref.7.2-A.40).	Proposal from Engecor de 21/12/2010. Energy input boot for the biogas plant.	R$ 186,613.00
Interconnection section between input booth and the substation	R$	R$ 209,872.00	1) Ecourbis eng 77609 rev08(2).doc (Engecor Proposal 21/12/2010 ï ref.7.2-A.40). 2) ECOURBIS BIOGAS ENG 97411.doc (Engecor Added Proposal ï 10/01/2011 - ref.7.2-A.41).	Cables from booth to substation : Engecor Proposal 21/12/2010 R$156900.00 + Engecor added proposalR$52972.00. Total R$209,872	R$ 209,872.00
External Lighting	R$	R$ 40,720.00	ECOURBIS BIOGAS ENG	Engecor added proposal	R$ 40,720.00

			97411.doc (Engecor Added Proposal ï 10/01/2011 - ref.7.2-A.41).		
Power and lighting conduit envelopes	R$ per ½	R$ 86,258.00	ECOURBIS BIOGAS ENG 97411.doc (Engecor Added Proposal ï 10/01/2011 - ref.7.2-A.41).	Engecor added proposal R$172,516/2 = R$86,258.00 (referent to 1st and 2nd steps in CAPEX LFG Station, the other half is included in steps 3 and 4).	R$ 86,258.00
Motor control center (MCC)	R$	R$ 222,650.00	ECOURBIS BIOGAS ENG 97411.doc (Engecor Added Proposal ï 10/01/2011 - ref.7.2-A.41).	Engecor added proposal R$445,300/2 = R$222,650.00 (referent to 1st and 2nd steps in CAPEX LFG Station, the other half is included in steps 3 and 4).	R$ 222,650.00
ADPS system	R$	R$ 80,620.00	ECOURBIS BIOGAS ENG 97411.doc (Engecor Added Proposal ï 10/01/2011 - ref.7.2-A.41).	Engecor added proposal R$80,620.00	R$ 80,620.00
Flare	R$	R$ 1,096,000.00	Proposal Flare John Zink.pdf (Ref.7.2-A.3)	"Optional Equipment"	R$ 1,096,000.00
Blower + spare parts	R$.	R$ 263,920.00	Proposta Técnica-Comercial - FAT-HSI-058.10 (Fama Air Technologies).pdf(Ref.7.2-A.42)	Price per blower R$249,180.00 + spare parts (which is given for 2 blowers R$29480.00/2) R$14,740.00 = R$263,920	R$ 263,920.00
Transformers	R$.	R$ 56,485.00	ECOURBIS BIOGAS ENG 97411.doc (Engecor Added Proposal ï 10/01/2011 - ref.7.2-A.41).	R$112,970/2 (2 transformers - 1 in 1st step and another in 3rd step) = 56,485.00	R$ 56,485.00
Diesel Generators	R$	R$ 154,690.50	ECOURBIS BIOGAS ENG 97411.doc (Engecor Added Proposal ï 10/01/2011 - ref.7.2-A.41).	R$309,381.00/2 (for 2 generators - 1 in 1st step and another in 3rd step)=R$154,690.50	R$ 154,690.50
Monitoring system	R$	R$ 113,730.00	Sistema Monitoramento - BR 18310 CRA - CTLeste - AEMS rev. 0 120710.pdf (Monitoring System Proposal Landtec - ref.7.2-A.43)	Proposal for monitoring system	R$ 113,730.00

Gas analyzers	R$	R$ 126,616.00	Analisador de Gases LandTec - BR 18510 CRA - CTLeste - FEA rev. 0 120710.pdf (Gas analyser LandTec proposal - ref.7.2-A.44)	Proposal by LandTec for gas analyser	R$ 126,616.00
Electro-mechanic mounting	R$	R$ 39,831.00	ECOURBIS BIOGAS ENG 97411.doc (Engecor Added Proposal ï 10/01/2011 - ref.7.2-A.41).	R$79,662.00/2 (1° fase = 39,831.00)	R$ 39,831.00
Capture and Collection System CAPEX	R$	R$ 57,128,735.64	1) Proposal from Engineering company (CRA). File 10290-001 RevD.pdf (ref.7.2-A.11). 2) Estimativa de Investimento - Captação e Coleta 21-01-11-Reviisao PDD_rev.xls (Capture and Collection system investment estimates by CRA (ref.7.2-A.46) 3) Proposal Brastubo - BQ-1265 - ECOURBIS (CRA).doc (ref.7.2-A.46). 4) Proposal Gaflon No G10-02572010 .pdf (ref.7.2-A.47).	1) 208 trenches per year. Based on the size of the landfill. 2) Spreadsheets with estimates by CRA with the quantities of material needed for the capture and collection system as well as price calculations which show in Cash flow spreasheets 3) and 4) Proposal with prices. The assessment team crosschecked all documentation and found estimates have been correctly reported.	R$ 57,128,735.64
Capture and Collection System OPEX	R$/Year	R$ 50,000.00	Proposal from Engineering company (CRA). File 10290-001 RevD.pdf (ref.7.2-A.11).	The maintenance and operational costs for the capture and collection system were estimated by CRA from their experience in other landfill sites.	R$ 50,000.00 per year
Electricity Generation CAPEX	R$	R$ 5,894,497.58	Sotreq/Catterpilar (ref.7.2-A.28)	Total price for 12 generator units in proposal R$70,733,971	R$ 5,894,497.58
Electricity Generation OPEX	Total for the 25 years	R$ 174,144,541	Proposta _O&M - Catterpilar-Rev00.pdf(ref.7.2-A.20)	R$172,925.00 total for generator groups /month	R$ 170,810,541/25years

				R$58.19/MWh per month (lowest value for O&M from proposal) R$519,877.98 paid for once in the first year for training of personnel for maintenance of group generators. The total values for the 25 years was reduced in version 4 of the financial analysis spreadsheets due to the changes in forecasts of electricity generation in 2013 because of changes in the Projects chronogram (see CAR07 for more details).	

	Validated situation	**Conclusion**

	Validated situation	Conclusion
4. Confirm the suitability of any benchmark applied in the investment analysis: (b) Determine whether the type of benchmark applied is suitable for the type of financial indicator presented; (c) Ensure that any risk premiums applied in determining the benchmark reflect the risks associated with the project type or activity; (d) Determine whether it is reasonable to assume that no investment would be made at a rate of return lower than the benchmark by, for example, assessing previous investment decisions by the project participants involved and determining whether the same benchmark has been applied or if there are verifiable circumstances that have led to a change in the benchmark.	As seen above in the table with the parameters validated, the benchmark applied was the benchmark 11.75%, the benchmark published in EB61 and EB62 for group 1 (Energy Industries and Waste Handling and Disposal) for Brazil. The benchmark was used in real terms because the financial analysis was carried out in real terms. As explained above in section 6.c.1, Ecourbis S/A has never implemented a similar project with a similar risk in the past therefore the default benchmark published in EB61 and EB61 is deemed appropriate.	OK
5. In case the project participants rely on values from a Feasibility Study Report (FSR) approved by any national authority, the team is required to ensure that: (a) The FSR has been the basis of the decision to proceed with the investment in the project, i.e. that the period of time between the finalization of the FSR and the investment decision is sufficiently short for the DOE to confirm that it is unlikely in the context of the underlying project activity that the input values would have materially changed; (b) The values used in the PDD and	The PP did not rely on values of an official feasibility report that has to be approved by a national authority but by a feasibility study presented in the proposal by CRA (ref.7.2-A.11). The values of the proposal were all crosschecked with third party references (i.e. project plants, manufacturers proposals and CRA contract, publicly available information, price indices and publications for the engineering sector), as seen above in section 6.c.1 and the table with the validation of the input values. All costs were consistent. Nevertheless the assessment team also compared the project with another landfill gas to energy project which, although of a different scale, can (together with the Sector Expertõs opinion) be used to help and validate values used in the investment analysis. There are 6 projects in the whole of Brazil that were registered in the UNFCCC with the expectation to flare and generate electricity only. The reason the assessment team decided to only 1 for comparison, the Project "*Exploitation of the biogas from Controlled Landfill in Solid Waste Management Central-CTRS/BR.040",* is that this is the most current project registered in the UNFCCC site. This makes both projects inserted in the same financial, political and sector context and therefore more suitable for comparison. The chosen project also presents the most complete and transparent financial analysis found from all the registered LFG to electricity	OK

	Validated situation	Conclusion
associated annexes are fully consistent with the FSR, and where inconsistencies occur the DOE should validate the appropriateness of the values; (c) On the basis of its specific local and sectoral expertise, confirmation is provided, by cross-checking or other appropriate manner, that the input values from the FSR are valid and applicable at the time of the investment decision. Use the table below to cross-check input values and describe here the results of the comparison.	generation projects in the UNFCCC site. The assessment team found that all references to investment and operational costs are well documented in the Validation Report (ref.7.2-B.28) of this project and would not use projects that were less well referenced than the one under validation for comparison purposes. The 6 landfill gas to electricity generation registered projects in the UNFCCC site are listed below with results found: 1) São João (UN ref. 0373, registered 02/07/2006): sources of data were not cited in the PDD or Validation Report (see ref.7.2-B.38); 2) Lara Landfill (UN ref. 0091, registered 15/05/2006): some of the parameters required for comparison no stated and sources of data were not cited in the PDD or Validation Report (see ref.7.2-B.40); 3) Bandeirantes (UN ref. 0164, registered on 20/02/2006): financial analysis sources of data were not cited in the PDD or Validation Report (see ref.7.2-B.39); 4) Marca (UN ref.0137, registered 31/01/2006): sources of data were not cited in the PDD or Validation Report (see ref.7.2-B.41); 5) NovaGerar (UN ref.0008, registered 18/11/2004): sources of data were not cited in the PDD or Validation Report (see ref.7.2-B.42). Feira de Santana (ref.7.2-B.43) project was removed from comparison since this project is also intended to generate thermal energy for a medical waste treatment plant and not only for electric generation. Furthermore, all of the above projects registered had their PDDs completed before 16th May 2008, when the "Guidelines on assessment of investment analysis" was introduced. All of the reasons above makes the project chosen the most reliable and appropriate for comparison and as can be seen from the information in section 6.c.1 and the table below, both projects are pretty similar in terms of costs per output with CTL showing to be conservative when inflation is taken into account. The PP will decide on how to proceed in the implementation of the Project Activity once it has received the LoA from the Brazilian DNA. The PP will try to submit the PDD in September 2011 so that a decision from the Brazilian DNA can be expected in its last meeting of the DNA in November 2011, so it is not expected that prices will have substantially changed till then.	

Comparison to similar registered project in the region:

CDM Ref	Investment cost	Tariff	O&M cost	Capacity	Output	Investment cost per output	Load factor	O&M relative to investment	O&M per output
3464	R$ 11,913,239.0	R$ 137.32/MWh	1) Electricity Generation R$ 13,200,525 total 2) Flaring R$ 387,920/year R$3,879,200 for 10year 3) Total cost O&M R$17,079,725	Expected 4.5MW	1)203,085MWh 2)189,790,263m3 (lifetime of project of 10 years)	1)R$58.66/MWh	90%	1.43	1) R$ 65.00/MWh 2) R$ 0.02m3 3) R$ 84.10/MWh (collection and flaring costs included)
CTL Landfill Gas Project	R$ 138,221,139.1	R$ 148.39/MWh	1) Electricity Generation R$170,810,541 total 2) Capture, collection and combustion system R$600,000/year R$15,000,000total 3) Total cost O&M R$185,810,541	Expected 19.2MW	1)2,361,830MWh 2)1,559,431,591m3 (lifetime of project of 25 years)	1)R$58.53/MWh	94.38%	1.34	1) R$ 72.32/MWh 2) R$ 0.01m3 3) R$ 78.67

	Validated situation	Conclusion
SECTION 6d. Barrier analysis		
1. Does the PDD demonstrate that the proposed project activity faces barriers that prevent its implementation and do not prevent at least the implementation of one of the alternatives? Provide here an overall determination of the credibility of the barrier analysis. Use the below table to list each barrier considered in the PDD and to describe how the team undertake their validation.	**N/A**	OK

Barriers are issues in project implementation that could prevent a potential investor from pursuing the implementation of the proposed project activity. The identified barriers are only sufficient grounds for demonstration of additionality if they would prevent potential project proponents from carrying out the proposed project activity undertaken without being registered as a CDM project activity.

Type of Barrier	Description in the PDD	Determination			Conclusion
		Barriers are real	Prevent implementation of PA	Do not prevent implementation of BL	
Access to finance					
Risks related barriers					
Technological					
Due to prevailing practice					
Other					
First of its kind					

	Validated situation	Conclusion
SECTION 6e. Common practice analysis		
Describe how the geographical scope of the common practice analysis has been validated. Assess whether the geographical scope (e.g. the defined region) of the common practice analysis is appropriate for the assessment of common practice related to the project activity's technology or industry type.	The geographical scope for the common practice analysis is the whole of Brazil. This has been established in CAR11 discussed below and is correct considering that the legislation and application of legislation (i.e. no regulatory requirements to flare LFG) is the same throughout the country.	OK

	Validated situation	Conclusion
Determine to what extent similar and operational projects (e.g. using similar technology or practice), other than CDM project activities, have been undertaken in the defined region	**CAR11** - Sub-step 4a of the ñTool for the demonstration and assessment of additionalityò Common Practice analysis states: ñProvide an analysis of any other activities that are operational and that are similar to the proposed project activityé Other CDM project activities (registered project activities and project activities which have been published on the UNFCCC website for global stakeholders consultation as part of the validation process) are not to be included in this analysis. On the basis of that analysis, describe whether and to which extent similar activities have already diffused in the relevant region. The discussion in the PDD version 1 page 32 to 35 does not comply with the above (i.e. CDM project activities were included in the analysis and it seems that some of the landfills cited in reference 12 of the PDD were not discussed). Furthermore explain in the PDD the choice of geographical boundary for the Common Practice analysis. To resolve CAR11 the PP removed from the PDD version 2 mention of the registered project activities and stated that ñThe choice geographical boundary for the common practice analysis was the whole country (Brazil). This geographic boundary is suitable for this analysis and it is considered conservative under CDM perspective.ò The assessment team checked PDD version 2 and confirmed that reference to CDM registered project activities were removed. Also the assessment team checked the new references cited (ref.7.2 ï B.17, ref.7.2 ï B.18 and ref.7.2 ï A.8) and confirms the information in PDD version 2. Furthermore, the information in ref.7.2 ï B.19 (reference 12 of the PDD version 1, which now the PP exchanged for more up to date information) was checked and the assessment team confirms that neither the recovery of methane or similar activities to the Project Activity (i.e. landfill gas capture for the generation of energy) are commonly carried out in the geographical area of Brazil without CDM. **CAR11** is closed out.	~~CAR11~~ OK
If similar and operational projects, other than CDM project activities, are already widely observed and commonly carried out in the defined region, assess whether there are essential distinctions between the proposed CDM project activity and the other similar activities	Neither the recovery of methane or similar activities to the Project Activity (i.e. landfill gas capture for the generation of energy) are commonly carried out in the geographical area of Brazil without CDM. See CAR11 above and in section called ñFindingsò below.	OK

	Validated situation	Conclusion

SECTION 7. Monitoring plan

1. *Compliance of the monitoring plan with the approved methodology.* Confirm that the MP contains all the necessary parameters and that they are monitored in accordance to the approve Methodology using the following table:

Parameter	Monitoring Meth description	PDD description	Validated situation	Conclusion
LFGtotal,y	Total amount of landfill gas captured at Normal Temperature and Pressure (Nm3)	Total amount of landfill gas captured at normal temperature and pressure (Nm3)	The PDD version 2 states this parameter will be monitored continuously using a flow meter. Continuous monitoring will be done using average values in time intervals not greater than an hour. The data will be aggregated monthly and yearly. Meters will be periodically calibrated according to manufacturer specifications. All in compliance with applied methodology.	OK
LFGflare,y	Amount of landfill gas flared at Normal Temperature and Pressure (Nm3)	Amount of landfill gas flared at Normal Temperature and Pressure (Nm3)	The information about how this parameter will be monitored is still not transparent for Phase 2 in the PDD version 2 which mentions engines when this is only landfill gas going to flares. Pending CAR08. PDD v4 clearly describes how this parameter will be monitored. CAR08 was closed out.	~~CAR08~~ OK
LFGelectricity,y	Amount of landfill gas combusted in power plant at Normal Temperature and Pressure (Nm3)	Amount of landfill gas combusted in power plant at Normal Temperature and Pressure (Nm3)	The PDD version 2 states this parameter will be monitored continuously using a flow meter. Continuous monitoring will be done using average values in time intervals not greater than an hour. The data will be aggregated monthly and yearly. Meters will be periodically calibrated according to manufacturer specifications. All in compliance with applied methodology.	OK

PEflare,y	Project emissions from flaring of the residual gas stream in year y (tCO2e)	Project emissions from flaring of the residual gas stream in year y (tCO2e)	The PDD version 2 states that the value of the data applied is 2% of the total baseline emissions. Total baseline emissions include emissions from the grid so this value is either stated wrongly or explained wrongly. Also it states that the most current version of the ñTool to determine project emissions from flaring gases containing Methaneòit is not transparent whether it is the most current at the time of validation or whether the most current at the time of verifications. The issue has been solved in PDD version 3, for more details see CAR08 below in section called ñFindingsò	~~CAR08~~ OK
w_{CH4}	Methane fraction in the landfill gas (m3CH4/m3LFG)	Methane fraction in the landfill gas (m3CH4/m3LFG)	The PDD version 2 states that this parameter will be continuously measured from a gas quality analyser. Data will be aggregated monthly and yearly, using average value in a time interval no greater than an hour. The QA/QC reads: ñthe gas analyzer should be subject to a regular maintenance and testing regime to ensure accuracyò	OK
T	Temperature of the landfill gas (°C)	Temperature of the landfill gas (°C)	Measured to determine the density of methane. Section B.7.1 of the PDD version 2 states that this does not need to be monitored separately if flow meters automatically measure temperature and pressure, expressing LFG volumes in normalized cubic meters. This is in accordance with The ACM0001 version 11. If a meter does not measure it automatically the monitoring plan states that the monitoring frequency is continuous and that measuring equipment should be subject to a regular maintenance and testing regime in accordance to appropriate national/international standards.	OK

P	Pressure of the landfill gas (Pa)	Pressure of the landfill gas (Pa)	Measured to determine the density of methane. Section B.7.1 of the PDD version 2 states that this does not need to be monitored separately if flow meters automatically measure temperature and pressure, expressing LFG volumes in normalized cubic meters. This is in accordance with The ACM0001 version 11. If a meter does not measure it automatically the monitoring plan states that the monitoring frequency is continuous and that measuring equipment should be subject to a regular maintenance and testing regime in accordance to appropriate national/international standards.	OK
EL_{LFG}	Net amount of electricity generated using LFG (MWh)	Net amount of electricity generated using LFG (MWh)	The PDD version 2 states that the data will be continuously collected using electricity meter. The amount of electricity will be directly measured. Calibration of equipment will be as per manufacturer specification to ensure validity of data measured. This is all in accordance with applied methodology.	OK
CEFelecy,BL,y	Carbon emission factor of electricity (tCO2/MWh)	EFgrid,CM,y CO2 emission factor of the Brazilian grid electricity during the year y (tCO2/MWh)	The PDD states that this data is made up by other two parameters EFgrid,BM,y and EFgrid,OM,y which will also be monitored. The parameters are calculated by the Brazilian DNA yearly and the monitoring plan states that they will be calculated yearly according to description in section B.6.3 of the PDD which states that BM and OM are calculated by Brazilian DNA. This is accordance with the applied methodology which requires this parameter to be monitored annually according to the ñTool to calculate the emission factor for an electricity systemò	OK
Hours	Operation of the Energy Plant (hrs)	Operational Hours of the Energy Plant (hrs)	The source of data according to the applied methodology is the project participants and the monitoring frequency is annually. The PDD states that the source of data is project participants and that information will be monitored and reviewed on annual basis which complies with what the applied methodology says above.	OK

$PE_{EC,y}$	Project Emissions from electricity consumption by the project activity during the year y (tCO2)	$PE_{EC1,y}$ split into monitored parameters: $EC_{PJ1,y}$ (MWh/y) $EF_{grid,CM,y}$ (tCO2/MWh) TDL_y (-) $PE_{EC2,y}$ split into monitored parameters: $EC_{PJ2,y}$(MWh/y)	Two types of project emissions from electricity consumption by the project activity are being monitored $PE_{EC1,y}$ and $PE_{EC2,y}$ (electricity consumption from the grid and electricity consumption from the standby diesel generators. The monitoring of these two parameters have been split into its components in the monitoring plan of the PDD version 2 as per the ñTool to calculate baseline, project and/or leakage emissions from electricity consumptionò(see left hend side of this column). $EC_{PJ1,y}$ quantity of electricity consumed from the grid by the project activity during the year y. The PDD version 2 states that this parameter will be ñCalculated as per ñTool to calculate baseline, project and/or leakage emissions from electricity consumptionòhowever the ñToolòstates that ñmethodologies which refer to this tool should provide the necessary procedures, equations and monitoring provisions to determine the quantity of electricity that is consumed by each identified sourceòand the ACM0001 Version 11 states that ñThe quantity of electricity imported, in the baseline and the project situation, to meet the requirements of the project activityòhas to be monitored. $EF_{grid,CM,y}$ is being monitored as above. TDL_y the monitoring plan states that regional or national default values will be used this is in accordance with the ñToolòwhich states that ñrecent, accurate and reliable data available within the host countryòshould be used. $EC_{PJ2,y}$ quantity of electricity consumed from diesel generator by the project activity during the year y. The monitoring plan of the PDD revision 2 states that this parameter will measured from the diesel generators but it does not specify how. EFdiesel_generator is not monitored since PP has chosen the default value of 1.3tCO2/MWh as per option B2 of the ñTool to calculate baseline, project and/or leakage emissions from electricity consumptionò. This parameter is included in section B.6.1 of the PDD version 2. The issues above with regards to $EC_{PJ1,y}$ $EC_{PJ2,y}$ have been resolved, for more details see CAR08 below in section entitled ñFindingsò	~~CAR08~~ OK

$PE_{FC,j,y}$	Project emissions from fossil fuel combustion in process j during the year y (tCO2e)	FCi,j,y (kg) EFCO2,i,y (tCO2/GJ) NCVi,y (GJ/ton)	The monitoring of this parameter has been split into its components in the monitoring plan of the PDD version 2 as per the ñTool to calculate project or leakage CO2 emissions from fossil fuel combustionò(see left hand side of this column). FCi,j,y quantity of LPG combusted in pilot flames of flares during the year y. The monitoring plan complies with the ñTooloòwhich requires this parameter to be monitored in mass or volume. However, this parameter seems to be shown twice in the monitoring plan. EFCO2,LPG,y weighted average CO2 emission factor of LPG in year y. The monitoring plan lists the various option listed in the ñTooloòand the preferred sources too, therefore in line with ñTooloò NCVi,j the assessment team was only able to identify NCV for diesel in the monitoring plan. This needs correction. Also, it is not understood why the EFCO2 of diesel remains in the monitoring plan if the default value will be used to calculate PE due to generation of electricity with the diesel generators. The issues above with regards to FCi,j,y NCVi,j have been solved. For more details see CAR08 below in section called ñFindingsò	~~CAR08~~ OK
$MG_{PR,y}$	Amount of methane generated during year y of the project activity (tCH4)	This parameter is not in the PDD	At closer inspection of the ACM0001 version 11 the assessment team noticed that this parameter is monitored and estimated from the actual amount of waste disposed in the landfill as per the latest version of the ñTool to determine methane emissions avoided from disposal of waste at a solid waste disposal siteòso this should actually be included in the monitoring plan. This parameter was included in the montitoring plan of PDD version 3. CAR08 was closed out.	~~CAR08~~ OK

Fvi,h	Volumetric fraction of component i in the residual gas in the hour h where i = CH4, CO, CO2, O2, H2 and N2	Volumetric fraction of component i of the residual gas in dry basis at normal conditions in the hour h, where i = CH4 and N2	This is one of the parameters necessary to monitor PEflare,y according to the ñTool to determine project emissions from flaring gases containing methaneò. The ñToolòallows for the simplified approach of measuring CH4 content of the residual gas and to consider the remaining as N2. The monitoring plan states that this parameter will be continuously measured by PPs with a gas analyzer and values will be averaged hourly or at a shorter time interval as required by the ñToolò. QA/QC states that analyzers must be periodically calibrated according to manufacturerôs recommendations and that a zero check will be carried out using a standard certified gas also as required by ñToolò	OK
$FV_{RG,h}$	Volumetric flow rate of the residual gas in dry basis at normal conditions in the hour h (m3/h)	Volumetric flow rate of the residual gas in dry basis at normal conditions in the hour h (m3/h)	This is also one of the parameters required to monitor PEflare,y and it is essentially the same as LFGflare,y. The monitoring plan states that this parameter will be measured by a flow meter on a wet basis and that to convert to dry basis, which is the basis that the volumetric fraction of the components in the residual gas will be measured, the ñTool to determine the mass flow of a greenhouse gas in a gaseous streamòversion 2 will be used. The ñTool to determine project emissions from flaring gases containing methaneòindeed requires to ensure that both volumetric fraction and flow rate be measured on the same basis (dry or wet) if the temperature of the residual gas exceeds 60°C, however neither the ñTool to determine project emissions from flaring gases containing methaneònor ACM0001 version 11 call for a conversion based on the ñTool to determine the mass flow of a greenhouse gas in a gaseous streamò. They also state that data will be monitored continuously and values will be averaged hourly or at a shorter time interval. Flow meters will be calibrated periodically according to the manufacturerôs recommendations. The issue with parameter $FV_{RG,h}$ was resolved in CAR08. For more details about CAR08 see below section called ñFindingsò.	~~CAR08~~ OK

$t_{O2,h}$	Volumetric fraction of O2 in the exhaust gas of the flare in the hour h	Volumetric fraction of O2 in the exhaust gas of the flare in the hour h	Also one of the parameters required to monitor PEflare,y, according to the monitoring plan of the PDD version 2 the volumetric fraction of O2 in the exhaust gas will be continuously measure by a extractive sampling analyser with water and particulates removal devices or in situ analyser for wet basis determination. The monitoring plan also states that the point of measurement of this parameter is the upper section of the flare (80% of the total flare hight). Sampling shall be conducted by appropriate sampling probes adequate to high temperature level. The analyser will be periodically calibrated according to the manufacturerôs recommendation and a zero check and a typical value check performed with a standard gas. All of the above are in line with the requirements of the ñTool to determine project emissions from flaring gases containing methaneò	OK
$fv_{CH4,FG,h}$	Concentration of methane in the exhaust gas of the flare in dry basis at normal conditions in the hour h (mg/m3)	Concentration of methane in the exhaust gas of the flare in dry basis at normal conditions in the hour h (mg/m3)	Also one of the parameters required to monitor PEflare,y, according to the monitoring plan of the PDD version 2 the concentration of methane in the exhaust gas will be continuously measured by an extractive sampling analyser with water and particulates removal devices or in situ analyser for wet basis determination. Measurements will be carried out in ppmv and converted to mg/m3. The monitoring plan also states that the point of measurement of this parameter is the upper section of the flare (80% of the total flare hight). Sampling shall be conducted by appropriate sampling probes adequate to high temperature level. The analyser will be periodically calibrated according to the manufacturerôs recommendation and a zero check and a typical value check performed with a standard gas. All of the above are in line with the requirements of the ñTool to determine project emissions from flaring gases containing methaneò	OK

Tflare	Temperature in the exhaust gas of the flare (°C)	Temperature in the exhaust gas of the flare (°C)	Also one of the parameters required to monitor PEflare,y, according to the monitoring plan of the PDD version 2 the temperature in the exhaust gas of the flare will be measured by the PPs utilising a type N thermocouple. Data will be recorded continuously and values will be averaged hourly or at shorter time intervals. The thermocouples will be replace or calibrated every year. All of the above are in line with the requirements of the ñTool to determine project emissions from flaring gases containing methaneò	OK
2. *Implementation of the plan.* confirm that the monitoring arrangements described in the monitoring plan are feasible within the project design Described the steps undertaken to assess this.		The monitoring arrangements described in the monitoring plan are feasible within the project design. The assessment team has examined the monitoring plan and the projects plants during site visit and from the teamôs experience there are no difficulties with monitoring (many projects have been validated and registered with the same plan ï see for example Exploitation of the biogas from Controlled Landfill in Solid Waste Management Central ï CTRS / BR.040 ï ref.7.2-B.28).		OK
3. *Implementation of the Plan:* confirm that the means of implementation of the MP, including the data management and quality assurance and quality control procedures, are sufficient to ensure that the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified		All data management, quality control and quality assurance planning are according to applied methodologies and tools and the assessment team confirms that they are sufficient to ensure emission reductions are achieved by the proposed CDM project activity, reported and verified ex-post.		OK

	Validated situation	Conclusion
SECTION 8. Local stakeholder consultation		
1. Determine whether comments by local stakeholders that can reasonably be considered relevant for the proposed CDM project activity, have been invited	Yes, the assessment team confirms that letters inviting stakeholder comments with the correct content have been sent on February 15th 2011 (see ref.7.2-A.49) to all relevant stakeholders as per resolution no 7 of the Brazilian DNA (ref. 7.2-A.50). The PDD was made available in Portuguese in the site http://www.econergy.com.br/Ecourbis/CTLLSP.pdf	OK
2. Confirm that the summary of the comments received as provided in the PDD is complete	Yes, the assessment team checked the content of the letters received by the PP from Local Stakeholders (ref. see ref.7.2-A.49) and confirms they have been correctly reported in the PDD and it is complere.	OK
3. Confirm that the project participants have taken due account of any comments received and have described this process in the PDD	All comments received were complementary comments and thus there is no action required by PP.	OK

	Validated situation	Conclusion
SECTION 9. Environmental Impacts		
1. Is an EIA required by the environmental legislation of the host country? Describe the legislation applicable.	An EIA was required for the implementation of the landfill site and the report to this has been presented to the assessment team (ref.7.2-A.21). Included in the EIA is the prospect of the implementation of the implementation of the biogas capture for energy generation, although, as mentioned earlier there is not legislation in Brazil which obliges the PP to capture and burn landfill gas as discussed in section 5.b.6 of this protocol.	OK
2. Confirm whether the project participants have undertaken an analysis of environmental impacts and, if required by the host Party, an environmental impact assessment	An EIA has been carried out as seen in its report in ref.7.2-A.21.	OK
3. Confirm that environmental impacts considered significant by the PPs or the Host country are described in the PDD, including mitigation measures.	The project itself does not present significant environmental impacts. The EIA described in the PDD is for the whole of the landfill site. The assessment team checked the contents of the report in ref. 7.2-A.21 and confirms that all relevant impacts of the landfill site as a whole are presented in the report, and that a Operational License was issued by CETESB (ref.7.2-A.22) indicating all mitigation and monitoring requirements by the PP for the implementation of the landfill site are included there. This has been described in the PDD.	OK

Findings[3]

1. Grade / Ref:	CAR 01	2. Date:	13/04/2011	3. Status:	Closed
4. Requirement:		Guidelines for Completing the Project Design Document (CDM-PDD) Version 7			
5. Nature of the Issue Raised:					
Mminor non-conformities with the Guidelines for Completing the Project Design Document (CDM-PDD) Version 7 were found during completeness check of the PDD version 1. These are: 1) Section A.4.1.4 of the PDD version 1, has the details of the physical location, including information allowing the unique identification of this project activity, described in pages 4, 5 and 6. The ñGuidelines for Completing the Project Design Document (CDM-PDD) version 7 require this section to be filled in not exceeding one page. 2) The PDD states in section C.1.2 and C.2.1.2, the expected operational lifetime of the project activity and the length of the first crediting period respectively, in years and the ñGuidelinesòrequire it to be stated in years and months. 3) The description in section E.1 of the PDD version 1 does not comply with requirements of section E.1 of the ñGuidelinesò. For example it does not say how comments by local stakeholders have been compiled or the date letters of invitation were sent. 4) Section E.2 does not have a summary of the comments received during local stakeholder consultation and section E.3 does not have a report of how due account was taken of any comments received. 5) Annex 2 of the PDD version 1 does not have any information regarding public funding.					
6. Nature of responses provided by the project participants:					
Part 1: The request was fulfilled and the Section A.4.1.4 does not exceed on page more. Part 2: In the section C.1.2 and C.2.1.2 were included ñyearsòand ñmonthsò, as requested. Part 3: All received comments from local stakeholder consultation were positives, except the São Paulo Prosecutorôs Office which informed the project activity is outside of their attribution. Moreover, a brief summary of each received comment was included in the PDD version 2. The date of letters invitation was included in the PDD ï version 2.					

[3] Explanation of the Findings Log structure:
1. Grading and Sequential Number of the finding 2. Date of Original Finding 3. New, Open, Closed 4. Requirement (VVM, PDD-CDM, etc) 5. Reference to Protocol
6. Details of PPôs response 7. Evaluation from the Validation team 8. List of changes made as a result of the finding

Part 4:
A brief summary of each comment was included in Section E.2. and in Section E.3 it is explained that the comments will be taken into account by the PP.
Part 5:
It was informed in Annex 2 that ñThere is no Annex I public funding involved in the project activity.ò

7. Assessment of such responses:

1) The assessment team checked section A.4.1.4 of the PDD version 2 dated 10/06/2011, supplied by the PP with the answers to this findings, and confirms that it has the details of the physical location, including information allowing the unique identification of this project activity, now described in page 5 only and in accordance with the Guidelines for Completing the Project Design Document (CDM-PDD) version 7.
2) The assessment team checked sections C.1.2 and C.2.1.2 of the PDD version 2 dated 10/06/2011 and confirms that the expected operational lifetime of the project activity and the length of the first crediting period respectively are now stated in years and months as requested and in conformance with the ñGuidelinesò
3) and 4) The assessment team checked the description in section E.1 of the PDD version 2 dated 10/06/2011 and confirms that it now states that letters were sent to the local stakeholders required by Resolution 7 of the Brazilian DNA on 15/02/2011. Section E.2 informs that 4 comments were received and provides a brief description of the comments. The assessment team validated the comments received and confirms that all comments were positive and that the Public Ministry did mention that it was not one of their attributions to comment such projects despite being a requirement of the Brazilian DNA that an invitation for comments be sent to this government body. No questions or issues were raised by any of the 4 stakeholders so that no actions are actually required from the PPs, apart from taking the positive comments into consideration.
5) The assessment team checked Annex 2 of the PDD version 2 dated 10/06/2011 and confirms that it now informs that there is no Annex I public funding to the project activity.

CAR01 was closed out.

8. References to resulting changes in the PDD or supporting annexes:

PDD version 2 dated 10/06/2011.

1. Grade / Ref:	CAR02	**2. Date:**	13/04/2011	**3. Status:**	Closed
4. Requirement:		Paragraph 59 VVM v01.2 and Guidelines for Completing the Project Design Document (CDM-PDD)			

5. Nature of the Issue Raised:

The PDD version 1 provides a good summary of project scenario, including a summary of scope of activities and measures that are being implemented. However, it does not explicitly mentions:

1) How many flares will be installed and their capacities (estimated numbers as has been done for energy generators) so that the DOE can confirm compliance of the PDD with paragraph 59 of the VVM version 01.2.
2) What is the situation of the landfill since November 24th 2010, pre-project activity situation or baseline scenario as required by the Guidelines for Completing the Project Design Document (CDM-PDD).

3) How the proposed project activity reduces greenhouse gas emissions making reference to all scenarios and sources described in sections A.4.3 and B.3 (i.e. CO2 emissions from baseline scenario of the national grid) as required by the Guidelines for Completing the Project Design Document (CDM-PDD).

6. Nature of responses provided by the project participants:

Part 1:
As explained in PDD and validation visit to DOE, the decision-making of the project activity will be only after the project receives the Letter of Approval (LoA). Therefore, at this moment there is no a detailed engineering study regarding the configuration of the flares. It is important to note that the project activity will have flares to burn all biogas captured by a collection system, even if the electricity generating plant stops on special events such as overhaul times, downtimes of equipment and exchange of equipment.

Part 2:
Prior to the implementation of the project activity the landfill gas would be released to atmosphere. This information was included in Section A.2 of the PDD ï version 2.

Part 3
This information was included in Section A.2 of the PDD ï version 2.

7. Assessment of such responses:

1) The assessment team validated the estimates of the ERs spreadsheets version 2 of the 07/06/2011 (ref. 7.2-A.9.b) and confirms that the estimated amount of biogas collected in the year of 2019 (the year with the highest estimate of biogas collected for the 1st crediting period) is 13,753m3/h. According to this estimate and the capacity of the flares in the proposal by John Zink (10,200 Std m3/h) the project would need approximately 2 flares operating at approximately 1 and a 1/3 of its capacity to burn all biogas captured. In the financial analysis sent by the PP to the DOE, and discussed in CL01, the PP informed that they have accounted for a third flare in the financial analysis in order to accommodate possible future variations in the delivery of waste and generation of biogas. Actually they consider that a possible 4th flare might be installed along the lifetime of the project even though this was not considered in the financial analysis spreadsheet version 2 (ref.7.2-A.9.b). It is of the understanding of the assessment team that variations with the generation of biogass are extremely high. The study by EPA (1996) (ref.7.2-B.13) for example states that estimates using first order decay model should take a + or - 50% uncertainty in their estimates because of the uncertainties of estimates of methane generation potential from a mass of waste and uncertainties related to rate of methane generation. It is therefore acceptable that the PP wishes to allow some flexibility to the system with regards to the specific number of flares, suffice to say that they plan in installing enough flares that will capture and burn all the landfill gas produced even in if the electricity generation plant is not operating. Also suffice to say that only 3 flares were taken into account in the financial analysis and that even if the costs of the 3rd flare is not accounted for in the financial analysis the project remains with a negative NPV.
2) The assessment team checked and confirms this information is now on section A.2 of the PDD version 2.
3) The PDD version 2 now explains that emissions will be reduced by burning CH4 in flares and or group generators and by displacement of energy produced by fossil fuel in the Brazilian national grid.
CAR02 is closed out.

8. References to resulting changes in the PDD or supporting annexes:

PDD version 2 dated 07/06/2011. Ref.7.2-A 9.b. EcoUrbis CER v2 2011 06 07 FES Ref.7.2-B 13. Turning a Liability into an Asset: A Landfill Gas-To-Energy Project Development Handbook EPA ï September 1996 http://www.epa.gov

1. Grade / Ref:	CAR03	2. Date:	13/04/2011	3. Status:	Closed
4. Requirement:		Paragraph 90 of the VVM version 01.2			
5. Nature of the Issue Raised:					
The calculation of $COEF_{i,y}$ according to option A of the ñTool òin PDD version 1 page 38 is not completed.					
6. Nature of responses provided by the project participants:					
The $FC_{i,j,y}$ will be measured in a mass unit and the parameter $w_{C,i,y}$ has been withdrawn from the PDD because in Brazil there is no information about weight average mass fraction ($w_{C,i,y}$). Thus, the option B was chosen to calculate the CO_2 emission coefficient $COEF_{i,y}$ and in this option, the information about weight average mass fraction (wC,i,y) is not necessary. The information was amended in PDD version 2.					
7. Assessment of such responses:					
The assessment team checked PDD version 2 section B.6.1 and the calculation of Project Emissions due to consumption of heat, heat flux to start the combustion of the flares to be more precise, are being calculated as per option B of the ñTool to calculate project and leakage CO2 emissions from fossil fuel combustionò. This is in accordance with the applied methodology. Furthermore, this option only requires the quantity of fuel, the NCV and the EF of the fuel used. The choices are now clear in the PDD version 2. CAR03 is closed out.					
8. References to resulting changes in the PDD or supporting annexes:					
PDD version 2 dated 07/06/2011.					

1. Grade / Ref:	CAR04	2. Date:	15/05/2011	3. Status:	Closed
4. Requirement:		Paragraph 111 (d) of the VVM version 01.2			
5. Nature of the Issue Raised:					
The PDD version 1, Table 5 states that the Price per MW installed is R$5,894,497.58. According to the financial spreadsheets version 1, this price was reached by dividing the total price of the installed units R$70,733,971 by the number of units (12). This is however the price per unit and not the price per MW installed. Also cell G9 of the tab ñRevenue +10%ò of the financial spreadsheets dated 31/01/2011 has a greater negative value than the corresponding cell in the tab ñBasecaseò and there seems to be a mistake in row 8 of the ñBase caseò tab since the NPV is not zeroed in the ñBase caseò tab despite this being shown in the tab					

ñRevenue till benchmarkò

The PDD should be revised wherever necessary to reflect this mistake.

6. Nature of responses provided by the project participants:

There was a mistake regarding Price per MW and the mistake was corrected in the financial spreadsheet ï version 2.

In addition, the cell G9 of the sheet ñRevenue +10%òand row 8 of the sheet ñBasecaseòwere corrected in financial spreadsheet ï version 2.

The PDD ï version 2 was amended to include this revision. It is important to notice that the project activity continues additional.

30/06/2011
3- The formula was corrected in the new version of the spreadsheet.
4- The formula was corrected in the new version of the spreadsheet.
5- The PDD was updated accordingly;
6- The value was wrongly stated as -3411MWh/year. In fact it is -1756 MWh/year and it represents the electricity consumed from the grid by the project activity in the year of 2012. This happens as no biogas power generator will be installed in the first phase. The electricity consumption and consequently this value, was validated during the on site visit.
6.a- This is a standard in the PPA currently signed in Brasil. The validation team may find a standard contract, provided by the local utility (CPFL ï the same company that offered to buy the electricity generated by the project activity), in clause 12 a clear reference to the Brazilian inflation index. See http://www.cpfl.com.br/LinkClick.aspx?fileticket=%2F7MeJxW53EM%3D&tabid=333&mid=1247
7- Regarding the salvage value, it was not considered as, in accordance with Aswath Damodaran (evidence attached), there are three options for salvage value:

ñ*When estimating cash flows for an individual project, practicality constrains us to estimate cash flows for a finite period ï 3.5 or 10 years, for instance. At the end of that finite period, we can make one of three assumptions.*

a. The most conservative one is that the project ceases to exist and that its assets are worthless. In that case, the final year of operation will reflect only the operating cash flows from that year.

b. We can assume that the project will end at the end of the analysis period and that the assets will be sold for salvage. While we can try to estimate salvage value directly, a common assumption that is made is that salvage value is equal to the book value of the assets. For fixed assets, this will be the un-depreciated portion of the initial investment whereas for working capital, it will be the aggregate value of the investments made in working capital over the course of the project life.

c. We can also assume that the project will not end at the end of the analysis period and try to estimate the value of the project on an ongoing basis ï this is the terminal value. In the Disney theme park analysis, for instance, we assumed that the cash flows will continue forever and grow at the inflation rate each year. If that seems too optimistic, we can assume that the cash flows will continue with no growth or even that they will drop by a constant rate each year.

The right approach to use will depend upon the project being analyzed. For projects that are not expected to last for long periods, we can use either of the first two approaches; a zero salvage value should be used if the project assets are likely to become obsolete by the end of the project life (example: computer hardware) and salvage can be set to book value if the assets are likely to retain significant value (example: buildings).

*For projects with long lives, the terminal value approach is likely to yield more reasonable results but with one caveat. The investment and maintenance assumptions made in the analysis should reflect its long life. In particular, capital maintenance expenditures will be much higher for projects with terminal value since the assets have to retain their earning power. In the Disney theme park, the capital maintenance expenditures climb over time and become larger than depreciation as we approach the terminal year.*ò

Based on this evidence, and as the project is fully depreciated in the period, no salvage value was considered. This approach is common while estimating the LFG feasibility (see ñSizing and Characterizing the Market for Oregon Biopower Projectsòat http://www.oregon.gov/ENERGY/RENEW/docs/CREFF/CH2MHill_Bioenergy_Market_Assessment.pdf) and the project participants intend to keep the investment analysis as it was presented.

To avoid the complexity of the salvage value calculation and at the same time removing all concerns regarding the project additionality, the PPs included in the financial analysis the ñSalvage value stress testòtab. In this tab, the DOE may find the final price that the PP should get in order to have a zero NPV. This value is kBRL 715,111. As the total capex is kBRL 138,221 one can conclude that this is an unrealistic scenario.

8- Following the Guidelines presented in the EB 61, the project participants considered the debt/equity ratio of 50% (default value allowed in this guidance). This has impacted the financial analysis, where the DOE may find the inclusion of three lines: Interests, Drawdown of debt and Debt repayment. Also, additional info was required, such as debt term and interest rate. The debt term was taken from BNDES (max 16 years) and the Interest rate, as there is no public information of interest rates for projects with the same risk profile, is the commercial lending rate in the host country, i.e. Selic. All evidences are attached.

19/07/2011
6) The correct value electricity consumed from the grid by the project activity in the year of 2012 is 878 MWh/year.
7) After modification in cash flow regarding ñcommercial Lending rateòand ñenergy consumption in 2012ò, the salvage value (in cash flow version 4) is: kBRL 692,196. The ñGuidelines on the assessment of investment analysisòwas updated to version 5.
8) It was included in cash flow spreadsheet, the interest rate from BNDES webpage.

7. Assessment of such responses:

1) The assessment team verified the financial spreadsheet version 2 and the price has now been calculated per MW installed and it is correct. This has also been changed in version 2 of the PDD.
2) The problem of cell G9 was identified in the formula. The value became more negative in the tab ñRevenue +10%òthan in the ñBase caseòtab because in the financial analysis version 1 the value for gross revenue was negative and it was being multiplied by 10% becoming 10% more negative. This was changed in the financial analysis version 2 by inserting a function which stated that if electricity revenues > 0 then the 10%

should be added.

3) The formula in row 8 of the ñBase caseò tab was also modified but it is not clear what was wrong so this should be clarified in this corrective action.
4) It seems that the electricity price in column G of tab ñBasecaseò and in the tabs containing sensitivity analysis was not changed, it remains R$140,00/MWh when the new price adopted is R$148,00/MWh. This also needs clarification.
5) The PDD still has to be revised to take into account row 8 of the ñBase caseò tab.
6) Also noticed that the value for dispatched electricity for the year of 2012 in the financial spreadsheet is of -3,411MWh/year (tab ñBasecaseò cellG7). Explain and evidence why this negative value is being used or adjust as appropriate in both spreadsheet and PDD.

6) In the light of the application of the new benchmark published in the new ñGuidelines on the assessment of investment analysisò version 04, published in EB61 annex 13, provide evidence that the energy price adjustment will be the same as inflation.
7) Also please clarify the assumption that in the end of the project period equipment bought will have no value.
8) According to the new ñGuidelinesò EB61, paragraph 17 and 18, the Equity / Debt evaluations should be considered in the financial spreadsheet.

CAR04 remains opened

14/07/2011 TBB

3) The formula in row 8 has been changed again and no explanation about what was wrong has been provided. However the assessment team checked the calculations and confirmed the model is now correct.
4) The price of R$148,00/MWh has been adopted throughout the model, including cell G8 (electricity purchased). No explanation was given for that, however this would not impact the model to the extent of making the CDM project activity the most financially attractive and therefore the sale price has been accepted as an estimate of the purchase price for the year of 2012.
5) The assessment team verified the PDD version 03 and confirms that the data of the cashflow spreadsheet version 03 are now reflected in this document.
6) The assessment team verified the cashflow spreadsheet version 03 and confirms that the estimated total energy consumption for 2012 was applied, however it was informed that operation of the flares will start in the middle of 2012 so that half -1756MWh/year should be applied for transparency purposes.

6a) The assessment team examined clause 7 of the standard template of the CPFL (the same local electricity utility company which has provided email with estimate of energy price) PPA (ref.7.2-B.24), which states that prices are paid according to contract with no adjustments apart from when delays in payments occur. The price adjustment are then made according to paragraph 3 of clause 12 of the document using IGPM (an index of inflation used in Brazil). This document indicates that IGPM is used for price adjustments, However it is not possible to know at this point if CTL will accept these clauses of contracts and even if they will close a contract with CPFL. Nevertheless, even if a contract forecasts an adjustment higher than the IGPM (which seems unlikely given the above template of PPA) and which would overcome the value of inflation (which was not considered in the cashflow), the sensitivity analysis has taken into account increase in electricity prices and version 3 of the cashflow spreadsheets shows that only an increase of 46.8% would lead to the breakeven point. This was considered unrealistic by the assessment team as explained in CAR13.

7) The PP used the assumption cited in the reference by Aswath Damodaran to show that in financial models it is acceptable to consider the value of the asset as zero if at the end of the period the asset is totaly depreciated.

8) The assessment team checked calculation of the cash flow spreadsheet version 3 and confirms that calculations were carried out according to the latest version of the ñGuidelines on the assessment of investment analysisò version 4 (ref.7.2-B.10.b), using 50% debt and 50% equity financing default value. The dept term of 16 years was checked against reference cited the Brazilian National Bank for Development website (ref. 7.2-B.25). The interest rate was also checked but it is of the opinion of the assessment team that there is public information on the cost of debt to finance comparable projects (i.e. other alternative

sources of energy) in the BNDES webpage.

CAR04 remains opened because of items 6 and 8 above.
21/07/2011

6) The assessment team verified the value for the estimated electricity consumption in the cashflow spreadsheet v4 and confirmed that the value of -878MWh/year has now been applied and it is correct and matches the CER spreadsheets. The assessment team also confirms that this was also corrected in the PDD v4.
8) The assessment team checked the values used in the calculation of the commercial lending rate in the site of the Brazilian National Bank for Development website (ref. 7.2-B.25) and confirms the value of 10.97% used in version 4 of the cash flow and PDD is correct.
7) Because of the changes to the value of electricity consumption and to the commercial lending rate in versions 4 of the cash flow and PDD, the salvage value final price required to get a zero NPV is kBRL 692,196 this was checked by the assessment team and found to be correct.

CAR04 is therefore closed out.

8. References to resulting changes in the PDD or supporting annexes:

CTL Cash Flow v3 2011 06 29 MR.xls
CTL PDD v3 2011_06_30_JAS stc.pdf
CTL Cash Flow v4 2011 07 19 FES.xls
CTL PDD v4 2011 07 19 FES stc.pdf
ref. 7.2-B.25 BNDES (National Bank for Development)

1. Grade / Ref:	CAR05	2. Date:	25/05/2011	3. Status:	Closed
4. Requirement:		VVM Version 01.2 section III and paragraph 59			

5. Nature of the Issue Raised:

A few issues have been identified in the PDD version 1 with regards to sustainable development claims. These are:

1) The PDD version 1 states that the implementation of the project activity will ñcontribute for sustainable development through the improvement of local environmental conditions (as for instance, the destruction of volatile compositions)ò. It is not transparent in PDD version 1 what type of volatile compositions would be destroyed as a result of the project activity.

2) The PDD version 1 states that Ecourbis has been carrying out a program called ñPrograma de Educação Ambientalò (Environmental Education Program) which has been put into practice since it´s planning phase and that will be extended for all the operational period. The program actions have already reached more than 6,837 children, teachers and local communities around the landfill, highlighting issues related to the municipal solid waste (MSW), from waste generation to final disposal. It also states that it carried out formative activities along with teachers and the general community and the ñPrograma Ver de Pertoò (Close Look Program) where teachers and children took part in monitored visits as well as participated in educational speeches and discussions around environmental issues focused on solid waste and involving the waste generation in the of São Paulo and the waste management from the first operation to the final closing of the landfill.

It is not transparent how the landfill gas to energy project would contribute to the above programs since the programs have already started (i.e. before the implementation of the project activity) and since most of the issues highlighted by the programs seemed to be around generation and disposal of MSW (and the landfill site would be there regardless of the implementation of the project activity).

3) Some of the contributions described in PDD version 1 could also be interpreted as being a legislative requirement (i.e. inclusion of handicap people into the job market). It is also not transparent in this case how the project itself will contribute to those issues.

6. Nature of responses provided by the project participants:
Part 1: The landfill started the operation in the November/2010 (at moment, only 7 months) and there is no volatiles compositions (VOCs) report at the moment. To avoid misunderstandings, the information about VOCs was withdrawn from PDD ï version 2. Part 2: The ñPrograma Ver de Pertoò(in English, Close Look Program) it will be included an informative topic concerning the environmental impacts of Greenhouse Gases. This program will inform the community of the importance of Landfill Gas Projects and why such projects which collect LFG are being viewed as having two benefits. The first is reducing methane emissions from landfills and the second is using the LFG as a renewable energy source. Also, this program will provide an in-site of a Landfill Gas-to-Energy project in their community and the benefits of this project. This information was included in PDD version 2. Part 3: The information about handicap people was withdrawn from PDD - version 2.
7. Assessment of such responses:
1) The assessment team verified the PDD version 2 and confirms that the statements made about VOCs has been removed. 2) The assessment team verified the PDD version 2 and confirms that the statement now includes a clear description of how the project activity will contribute to the ñPrograma Ver de Pertoò(in English, Close Look Program), which is aimed at raising peoples awareness of the benefits of MSW management, by adding to it information and insight of Landfill Gas-to-Energy project and its benefits to the community. 3) The assessment team checked and confirms that the information about the inclusion of people with handicap into the job market as a result of the project activity was excluded. CAR05 was closed out.
8. References to resulting changes in the PDD or supporting annexes:
PDD version 2 dated 07/06/2011.

1. Grade / Ref:	CAR06	**2. Date:**	26/05/2011	**3. Status:**	Closed
4. Requirement:		ñTool for the demonstration and assessment of additionalityòversion 5.2			
5. Nature of the Issue Raised:					
The PDD page 17 states that ñAs there is no alternative to use heat inside the landfill and there is no consumer nearby the project activity, the heat generation was not considered a realistic alternative by project participants (P2 and P3).ò The PDD page 17 also states that ñThe alternatives P4 and P5 were not considered					

realistic as there is no need for power at the landfill site and power generation is not EcoUrbisôcore businessò
The PP informed and the assessment team agrees that in fact because the project activity aims at producing electricity the generation of heat/energy is not a service with comparable application areas and because the ñTool for the demonstration and assessment of additionalityò version 5.2 (ref.7.2-B.11) states that ñFor the purpose of identifying relevant alternative scenarios, the project participant should include the technologies or practices that provide outputs (e.g. cement) or services (e.g. electricity, heat) with comparable quality, properties and application areas as the proposed CDM project activity and that have been implemented previously or are currently being introduced in the relevant country/region.òthe baseline scenario which includes heat/steam generation is not a realistic alternative scenario to the project activity.

In the same line, captive power by definition is generated by industry for own consumption. CTL main aim is to produce power not for own consumption of the landfill (as stated in the PDD version 1) but to be exported to the grid. The consumption of energy is a consequence of the project activity (project emissions) and will be mainly from the grid although a standby generator will be implemented for blackout periods. Therefore the assessment team concludes that captive power plants are not a realistic alternative scenario too.

The PDD should be changed to clearly reflect the explanation given by the PP during site visit.

6. Nature of responses provided by the project participants:

In the corrected PDD ï version 2, it is explained that P2, P3, P4 and P5 are not considered realistic alternatives because they do not provide the same service/output like to the project activity.

7. Assessment of such responses:

The assessment team verified and the PDD version 2 and it now transparently explains why alternatives P2, P3, P4 and P5 are not considered realistic alternatives because they do not provide services with comparable application areas.
CAR06 is closed out.

8. References to resulting changes in the PDD or supporting annexes:

PDD version 2 dated 07/06/2011.

1. Grade / Ref:	CAR07	**2. Date:**	26/05/2011	**3. Status:**	Closed
4. Requirement:					

5. Nature of the Issue Raised:

The assessment team examined the CTL Chronogram for the implementation of the Project Activity and confirms that Ecourbisôestimated date for the purchase of the first equipment (flare) is June 2011. The assessment team also confirms that there was no evidence during the site visit of implementation of the Project Activity. The PP informed during site visit that the source of investment decision as well as the purchase of first equipment for the Project Activity is dependent upon the Project Approval.
Page 19 and 74 of the PDD version 1 state that the starting date of the Project Activity is 01/06/2011 (estimated date that Ecourbis plans to purchase the equipment

to be installed in phase I of the Project). At the moment, the best estimate of the delivery of the validation report by the DOE is 15/07/2011, so this is not coherent with the PDD version 1 and the explanation of the PP about the time of decision of investment source and purchase of first equipment. Clarification is required about this issue.
Also, some of the dates in Table 1 of the PDD version 1 are not correct, for example the date of notification of CDM consideration to the UNFCCC is 06/12/2010, the date of contract with the DOE is 20/12/2010, the date of submission of the PDD version 1 for global stakeholder consultation is 08/03/2011.
Furthermore, some of the evidence is still pending from the PP (i.e. notification of prior consideration of the CDM to the Brazilian DNA).
The explanation requested above should be provided here stating exactly what the PP wishes to tie the starting date of the project activity with (i.e. Validation Report by the DOE, LoA by DNA or Project Registration at the UNFCCC). Also the incorrect dates in the PDD version 1 need correcting and any evidence missing and new CTL chronogram provided (if applicable).

6. Nature of responses provided by the project participants:

Key Events	Date
Prior Consideration of the CDM to UNFCCC and Brazilian DNA	06/12/2010
Contract between Designated Operational Entity (DOE) and the PP for the validation process	20/12/2010
Submit the PDD for Global Stakeholder Consultation (GSC)	08/03/2011
Starting date of the project activity (the Project Participant will decide to implement the project activity after receiving the Brazilian Letter of Approval. The date chosen on 11/11/2011 is the forecast date of the Brazilian DNA meeting	11/11/2011
Start-up ï Phase I*	July/2012
Commercial operation ï Phase II*	October/2013

Starting date of the project activity, the Project Participant will decide to implement the project activity after receiving the Brazilian Letter of Approval. The date chosen on 11/11/2011 is the forecast date of the Brazilian DNA meeting[4].

[4] Source: http://www.mct.gov.br/index.php/content/view/327781.html, accessed on 21/02/2011

Document provided by PP:

- CTL Cronograma 2011 06 06.pdf
  10290-001 - rev D.pdf

30/06/2011

The PDD was amended to link the start date to the date of the investment decision. In addition, the notification of prior consideration is now provided to the audit team.

7. Assessment of such responses:

1) The assessment team verified the new chronogram sent by the PP and developed by Conestoga-Rovers (ref.7.2 ï A.12.b). The new chronogram is more realistic with the timeline of the project activity. It states that the estimated date for the purchase of the first equipment (flares and blowers) are November 2011 which is after the date of the last meeting of the Brazilian DNA (11/11/2011) where the decision of approval of Brazilian projects by the DNA are announced, and to which the PP intends to have had submitted the project by. Therefore the starting date of the project is linked to an important date in the process of approval of the project activity (by then approved by 2/3 of the institutions responsible for analysing and approving the project) and also to the estimated date of purchase of the first equipment which is in accordance with the CDM Glossary of Terms which says that ñstart date shall be considered to be the date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activityò (ref.7.2 ï B.14). The PDD can, besides stating the link between the starting date approval of the project by the Brazilian DNA, leave the statement which was in the PDD version 01 that this is also the date estimated for the purchase of initial equipment for the project activity so that it is clearly shown that the starting date complies with CDM glossary of terms too.
2) Also the assessment team verified and confirms that the dates in table 1 of the PDD version 2 for CDM consideration to the UNFCCC is 06/12/2010, the date of contract with the DOE is 20/12/2010, the date of submission of the PDD version 1 for global stakeholder were changed and are in accordance with evidences (CTL Landfill Gas Project Prior Consideration of CDM notification to UNFCCC ref.7.2 ï B.12; LRQA Service Agreement with Ecourbis Ambiental S/A signed on 20/12/2010 ref.7.2 ï B.15; UNFCCC website with initial PDD for CTL Landfill Gas Project International Stakeholder Consultation ref.7.2 ï B.16).
3) The evidence for the statement made in the PDD that a notification to prior consideration of CDM was with the Brazilian DNA by 06/12/2010 is still pending.
CAR07 remains opened because of 1 and 3 above.
14/07/2011 TBB

3) With regards to the starting date of the project activity: The assessment team checked the PDD version 3 and it states that the Project Participant will decide whether to implement the project activity when receiving the LoA from the DNA. It is forecasted that the notification of approval will be 11/11/2011. It also states that this date may be the date of the main equipment purchase and that this is estimated. Therefore the PDD now states the estimated date in which a decision will be reached (11/11/2011) which is the estimated date to purchase the first equipment once CTL reaches a decision. All in accordance with the CDM Glossary of Terms (ref.7.2 ï B.14).

4) The PP provided the email notifying the Brazilian DNA of their intention to seek CDM status (dated 06/12/2010) and the email by the Brazilian (dated 07/12/2010) acknowledging notification (ref.7.2-A.18). CAR07 is now closed.
8. References to resulting changes in the PDD or supporting annexes:
Ref.7.2 ï A.11 Letter from CRA to Ecourbis Ambiental S.A 06062011 Ref.7.2 ï A.12.b CTL Cronograma 2011 06 06.pdf Ref.7.2 ï A. 13.b CTL PDD version 2 dated 10/06/2011

1. Grade / Ref:	CAR08	**2. Date:**	26/05/2011	**3. Status:**	Closed
4. Requirement:		Paragraphs 122 to 124 of the VVM 01.2 and According to the Guidelines for Completing a Project Designe Document version 07			
5. Nature of the Issue Raised:					
According to methodology ACM0001 version 11, the methane destroyed by the project activity (MDproject,y) during a year is determined by monitoring the quantity of methane actually flared and gas used to generate electricity and/or produce thermal energy and/or supply to end users via natural gas distribution pipeline, if applicable, and the total quantity of methane captured. The ñTool to determine methane emissions avoided from disposal of waste at a solid waste disposal siteò is only used for ex ante estimation of MDproject,y so that the assessment team understands that the monitored parameters in this tool do not need to be monitored throughout the crediting period. According to the Guidelines for Completing a Project Design Document version 07, section B.7.1 shall include specific information on how the data and parameters that need to be monitored would actually be collected during monitoring of the project activity including details of QA and QC (i.e. calibration standards and frequency). Likewise, some information that should be present in section B.6.2 of the PDD is not presented there (i.e. the data and parameters that are not monitored but which will be used after project registration from the ñTool to determine project emissions from flaring gases containing methaneò). Revise section B.6.2 and B.7.1 to reflect requirements of Paragraphs 122 to 124 of the VVM 01.2, the Guidelines for Completing a Project Design Document version 07, the methodology and tools applied to the project activity.					
6. Nature of responses provided by the project participants:					
The QA and QC parameters have been detailed in sections B.6.2 and B.7.1 and all applicable parameters have been included reflecting requirements of Paragraphs 122 to 124 of the VVM 01.2, the Guidelines for Completing a Project Designed Document version 07, the methodology and tools applied to the project activity. 30/06/2011 1) The information about LFGflare,y parameter has been amended in section B.7.1 of the last version of the PDD; 2) The information about PEflare,y parameter has been amended in section B.7.1 of the last version of the PDD; 3) The information about $EC_{PJ2,y}$ parameter has been amended in section B.7.1 of the last version of the PDD; 4) $EC_{PJ2,y}$ parameter has been amended in section B.7.1 of the last version of the PDD; 5) The FCi,j,y parameter has been properly reported in section b.7.1 of the last version of the PDD;					

6) Both parameters have been removed from the section B.7.1 of the last version of the PDD;
7) $MG_{PR,y}$ parameter has been included in section B.7.1 of the of the last version of the PDD;
8) The description of $FV_{RG,h}$ parameter has been amended in section B.7.1 of the last version of the PDD;
9) The referred parameter has been removed from section B.6.2 of the last version of the PDD.

19/07/2011

1) In Section B.7.1 of the PDD version 4 dated of 19/07/2011 was informed that the supply to each point of methane destruction, through flaring and use for energy generation, will be measured separately, according requested.
2) There was a mistake in CERs spreadsheet ï version 2 (sheet ñBaseline emissionsò, line 322 and 323) and it was corrected. However, the value of PEflare,y remains 2% of BECH4,SWDS,y (tCO2), according to manufacturer specification. The CERs spreadsheet was updated to version 3.
6) It was included in section B.7.2 (Monitoring Plan - item 3.6) of the PDD ï version 4 that for ex-ante calculation, the value of LPG purchased was considered zero since there is no estimation from LPG consumption in pilot flames of flares and this emission source is very small.

In addition, It was excluded information about diesel purchased in section B.7.2.

7. Assessment of such responses:

1) LFGflare,y: The information about how this parameter will be monitored is still not transparent for Phase 2 in the PDD version 2 which mentions engines when this is only landfill gas going to flares.
2) PEflare,y: The PDD version 2 states that the value of the data applied is 2% of the total baseline emissions. Total baseline emissions include emissions from the grid so this value is either stated wrongly or explained wrongly. Also it states that the most current version of the ñTool to determine project emissions from flaring gases containing Methaneò and it is not transparent whether it is the most current at the time of validation or whether the most current at the time of verifications.
3) $EC_{PJ1,y}$: quantity of electricity consumed from the grid by the project activity during the year y. The PDD version 2 states that this parameter will be ñCalculated as per ñTool to calculate baseline, project and/or leakage emissions from electricity consumptionòhowever the ñToolòstates that ñmethodologies which refer to this tool should provide the necessary procedures, equations and monitoring provisions to determine the quantity of electricity that is consumed by each identified sourceò and the ACM0001 Version 11 states that ñThe quantity of electricity imported, in the baseline and the project situation, to meet the requirements of the project activityòhas to be monitored.
4) $EC_{PJ2,y}$: quantity of electricity consumed from diesel generator by the project activity during the year y. The monitoring plan of the PDD revision 2 states that this parameter will measured from the diesel generators but it does not specify how.
5) FCi,j,y: quantity of LPG combusted in pilot flames of flares during the year y. The monitoring plan complies with the ñToolòwhich requires this parameter to be monitored in mass or volume. However, this parameter seems to be shown twice in the monitoring plan.
6) NCVi,j and EFCO2 of diesel: the assessment team was only able to identify NCV for diesel in the monitoring plan. This needs correction. Also, it is not understood why the EFCO2 of diesel remains in the monitoring plan if the default value will be used to calculate PE due to generation of electricity with the diesel generators.
7) $MG_{PR,y}$: At closer inspection of the ACM0001 version 11 the assessment team noticed that this parameter is monitored and estimated from the actual amount of waste disposed in the landfill as per the latest version of the ñTool to determine methane emissions avoided from disposal of waste at a solid waste disposal siteòso this should actually be included in the monitoring plan.

8) $FV_{RG,h}$: This is also one of the parameters required to monitor PEflare,y and it is essentially the same as LFGflare,y. The monitoring plan states that this parameter will be measured by a flow meter on a wet basis and that to convert to dry basis, which is the basis that the volumetric fraction of the components in the residual gas will be measured, the ñTool to determine the mass flow of a greenhouse gas in a gaseous streamò version 2 will be used. The ñTool to determine project emissions from flaring gases containing methaneò indeed requires to ensure that both volumetric fraction and flow rate be measured on the same basis (dry or wet) if the temperature of the residual gas exceeds 60°C, however neither the ñTool to determine project emissions from flaring gases containing methaneò nor ACM0001 version 11 call for a conversion based on the ñTool to determine the mass flow of a greenhouse gas in a gaseous streamò
9) The data and parameters that are not monitored but which will be used after project registration from the ñTool to determine project emissions from flaring gases containing methaneò were not all included in section B.6.2 of the PDD. However, at closer inspection of the ñTool ò and section B.6.2 of the ñGuidelines for Completing a Project Designe Documentò version 07 it was realised that default values specified in the methodologies should not be included in this section of the PDD. In the light of this information it is concluded that default values of the ñTool ò needn't be included in section B.6.2 of the PDD either. Parameter MF_{O2} can be also removed.
CAR08 remains opened.
18/07/2011TBB
1) Although PDD version 3 is clearer, PDD version 2 stated that ñ1 on-line mass-compensated flow meter located in the piping to each flare would be usedò and this has now been removed although it was in accordance with page 9 of the methodology which stated that ñThe supply to each point of methane destruction, through flaring or use for energy generation, shall be measure separatelyò
2) The assessment team verified the spreadsheet calculations version 2 and the value of PEflare,y is 1.4% of the BECH4,swds,y in tCO2.
3) PDD version 3 has been verified and it now states that the quantity of electricity consumed from the grid by the project activity will be continuously measured by electricity meters. This is now in accordance with ACM0001 Version 11.
4) PDD version 3 has been verified and it now states that the quantity of electricity consumed from diesel generator by the project activity will be continuously measured by electricity meters. This is now transparent in the Monitoring Plan.
5) One of the FCi,j,y has been correctly removed.
6) The EFCO2 of diesel to calculate project emissions from the diesel generator was correctly removed from the monitoring plan since the default value of 1.3tCO2/MWh was chosen.

The NCVdiesel, y was substituted by NCVfuel,y. This is correct, however only the NCV for LPG will be monitored since this is the only source of PEFC,j,y (or emission consumption due to heat in the project case). However, this value was not included in the ex-ante calculations and since they are very small compared to total emissions and will be monitored the assessment team accepted the no inclusion of this in the ex-ante calculations. Nevertheless this should be explained in the Monitoring Plan and the value for NCV diesel removed since this is not used at all for ex-ante calculations or ex-post calculations

7) The assessment team verified the PDD version 3 and the parameter $MG_{PR,y}$ was included in section B.7.1;
8) The ñTool to determine project emissions from flaring gases containing methaneò asks to ñEnsure that the same basis dry or wet is considered for this measurement and the measurement of volumetric fraction of all components in the residual gas (fvi,h) when the residual gas temperature exceeds 60°Cò The PP states that they will be measuring this on a wet basis and they will convert to dry basis to comply with ñTool ò Ok.
9) The assessment team checked the PDD version 3 and the parameter MF_{O2} was correctly removed from section B.6.2.

CAR08 remains opened for 1, 2 and 6 above.
21/07/2011 TBB

1) The assessment team checked the PDD v4 and confirms that it now clearly states that the supply to each point of methane destruction will be measured separately.
2) The assessment team verified CER spreadsheets version 3 and it now has correct value of PEflare,y which takes into account collection efficiency and the value of 2% from the BECH4,SWDS,y (tCO2) is correct.
6) The assessment team verified that a note explaining that LPG purchase was considered zero for ex-ante calculations was included in section B.7.2 of the PDD v4. The assessment team found this to be reasonable since this value is generally very small compared to total ERs and it will be monitored during the crediting period. The assessment team also confirms that the NCV value for diesel was correctly removed from the parameter NCV,fuel,y since this is not a source of PEFC,j,y (or emission consumption due to heat in the project case).

CAR08 is therefore closed out.

8. References to resulting changes in the PDD or supporting annexes:

PDD version 2 dated 07/06/2011.
CTL PDD v3 2011_06_30_JAS stc.pdf
CTL PDD v4 2011 07 19 FES stc.pdf

1. Grade / Ref:	CAR09	**2. Date:**	26/05/2011	**3. Status:**	Closed
4. Requirement:		VVM Paragraph 92 (b)			

5. Nature of the Issue Raised:

The PDD version 1 does not state how the waste tonnage was estimated in order to calculate $BE_{CH4,SWDS,y.}$ Furthermore, the values in the ERs spreadsheet calculations ñEcoUrbis_CER_v1_2011.01.31_FESò do not match the evidence of waste collected by Ecourbis in the year of 2010 (the report sent to the Municipality of São Paulo). This should be corrected.

6. Nature of responses provided by the project participants:

It is presented below the calculation method of the waste disposal in CTL landfill.

Period (year)	Reference and/or calculation	Value
2010	Historical data of waste disposed in landfill.	203,076
2011-2020	As explained in the PDD and to Validation Team, EcoUrbis has 20-year concession agreement for waste collection and disposal in the East and South regions of São Paulo and the value is the amount of waste generated in these regions in 2010.	2,002,699
2021	The life of the project which is 10 years and 5 months and calculation as follows: • Amount of waste for 12 months: 2,002,699 • Thus, for 5 months is: 834,458	834,458

Documents provided by PP:

- Quantitativos Residuos Domiciliares.pdf ;

2011-06-03 Demanda de resíduos - CTL rev01.pdf

7. Assessment of such responses:	
The estimated amount of waste is now in Annex 3 of the PDD version 2. The assessment team crosschecked the above values with the report to the Municipality of São Paulo (Quantitativos Resíduos Domiciliares.pdf - ref.7.2-A.14) and confirms the values are correct. The above values have also been used in the spreadsheet version 2 (ref.7.2-A.9.b). CAR09 is closed out	
8. References to resulting changes in the PDD or supporting annexes:	
Ref.7.2-A.14 Quantitativos Resíduos Domiciliares.pdf Ref.9.b EcoUrbis CER v2 2011 06 07 FES Ref.7.2 ï A. 13.b CTL PDD version 2 dated 10/06/2011	

1. Grade / Ref:	CAR10	**2. Date:**	26/05/2011	**3. Status:**	Closed
4. Requirement:		VVM Paragraph 89			
5. Nature of the Issue Raised:					
The assessment team verified the estimates for Project emissions in the spreadsheet ñEcoUrbis_CER_v1_2011.01.31_FESò and they are reasonable estimates for the ex-ante calculations. However, the PDD page 54 states that this source of emissions will be calculated as per ñTool to calculate project and leakage CO2 emissions from fossil fuel combustionò when the applied methodology requests that any emissions from consumption of electricity be calculated as per ñTool to calculate baseline, project and/or leakage emissions from electricity consumptionò Revise the PDD.					
6. Nature of responses provided by the project participants:					
The calculation of ex-ante project emission was amended in Section B.6.1 and B.6.3 of the PDD ï version 2 according to requested. 30/06/2011 The estimate of energy consumption has changed due to the modification in the crediting period. It is the project participant view that this is correct and consequently no changes were made to the PDD.					
7. Assessment of such responses:					
The PDD was checked and it now uses the ñTool to calculate baseline, project and/or leakage emissions from electricity consumptionòfor all estimates of emissions due to electricity consumption as per applied methodology. Emissions due to consumption of heat, heat flux to start the combustion of the flares to be more precise, are being calculated as per option B of the ñTool to calculate project and leakage CO2 emissions from fossil fuel combustionò. This is in accordance with the applied methodology too. However the estimates for the energy consumption itself, for the years of 2012 and 2019, have been changed and these had already been validated. This neednôt have been changed so CAR10 remains opened. 18/07/2011 TBB					

The assessment team reviewed the values and confirms that changes are correct in the light of the new chronogram of implementation already reported in version 2 of the PDD and they are actually correct. CAR10 was closed out. After this CAR was closed it was observed a small error in the PE calculations. The error was corrected in v3 of the ER spreadsheets and in V4 of the PDD. CAR10 remains closed out.
8. References to resulting changes in the PDD or supporting annexes:
Ref.9.b EcoUrbis CER v2 2011 06 07 FES Ref.9.c EcoUrbis CER v3 2011 07 19 FES Ref.7.2 ï A. 13.b CTL PDD version 2 dated 10/06/2011 Ref.7.2 ï A.13.d CTL PDD version 4 dated 19/07/2011

1. Grade / Ref:	CAR11	**2. Date:**	26/05/2011	**3. Status:**	Closed
4. Requirement:		Step 4 of the Tool for the demonstration and assessment of additionality			
5. Nature of the Issue Raised:					
Sub-step 4a of Common Practice analysis states that: ñProvide an analysis of any other activities that are operational and that are similar to the proposed project activityé Other CDM project activities (registered project activities and project activities which have been published on the UNFCCC website for global stakeholdersô consultation as part of the validation process) are not to be included in this analysis. On the basis of that analysis, describe whether and to which extent similar activities have already diffused in the relevant region. The discussion in the PDD page 32 to 35 does not comply with the above. The choice of geographical boundary for the Common Practice analysis is not described in the PDD					
6. Nature of responses provided by the project participants:					
The CDM project activities were withdrawn from the PDD version 2. In Brazil, there are only 15 biogas electricity landfill projects (similar project than proposed project activity in operation or underway). All of these projects are CDM Projects, as follows:					

Project Title	Status	Source
NovaGerar Landfill Gas to Energy Project	Registered on 18/11/2004	http://cdm.unfccc.int/Projects/DB/DNV-CUK1095236970.6/view
Salvador da Bahia Landfill Gas Management Project	Registered on 15/08/2005	http://cdm.unfccc.int/Projects/DB/DNV-CUK1117823353.4/view
Onyx Landfill Gas Recovery Project ï Trémembé, Brazil	Registered on 24/11/2005	http://cdm.unfccc.int/Projects/DB/DNV-CUK1126082019.35/view
Brazil MARCA Landfill Gas to Energy Project	Registered	http://cdm.unfccc.int/Projects/DB/DNV-CUK1132565688.17/view

	on 23/01/2006	
Bandeirantes Landfill Gas to Energy Project (BLFGE)	Registered on 20/02/2006	http://cdm.unfccc.int/Projects/DB/DNV-CUK1134130255.56/view
Caieiras landfill gas emission reduction	Registered on 09/03/2006	http://cdm.unfccc.int/Projects/DB/DNV-CUK1134509951.62/view
Landfill Gas to Energy Project at Lara Landfill, Mauá, Brazil	Registered on 15/05/2006	http://cdm.unfccc.int/Projects/DB/DNV-CUK1138957573.9/view
São João Landfill Gas to Energy Project (SJ)	Registered on 02/07/2006	http://cdm.unfccc.int/Projects/DB/DNV-CUK1145141778.29/view
Feira de Santana Landfill Gas Project	Registered on 12/08/2008	http://cdm.unfccc.int/Projects/DB/DNV-CUK1203743009.45/view
Projeto de Gas de Aterro TECIPAR ï PROGAT	Validation	http://cdm.unfccc.int/Projects/Validation/DB/O7LXRYICDY6UWTAIEGYKIZXMEM2SMO/view.html
Exploitation of the biogas from Controlled Landfill in Solid Waste Management Central-CTRS/BR.040	Validation	http://cdm.unfccc.int/Projects/Validation/DB/MOYBL8JBAF6YGLLMXD0Q4EWLGPF9M7/view.html
Corpus/Araúna ï Landfill Biogas Project.	Validation	http://cdm.unfccc.int/Projects/Validation/DB/XRCDRQ6VTVP6B8NFCCTH92OZI9D6B7/view.html
CTR Candeias Sanitary Landfill	Validation	http://cdm.unfccc.int/Projects/Validation/DB/N6QEYV2VTTLSA6IHMB5246UONLXAA3/view.html
Manaus Landfill Gas Project	Validation	http://cdm.unfccc.int/Projects/Validation/DB/UU28PRXBOC4Z6WHEUG6OM1EXXDBOW2/view.html
CGR Guatapara Landfill Project	Validation	http://cdm.unfccc.int/Projects/Validation/DB/TTHCJ77HG0RFG6KHL7ELPCESLGQD9X/view.html

All of similar projects (electricity generation biogas projects) than proposed project activity in reference 12 are CDM projects. Despite reference 12 being suitable for the common practice analysis, the PP decided to use more updated reference instead of reference 12 and decided to remove it.

The choice geographical boundary for the common practice analysis was the whole country (Brazil). This geographic boundary is suitable for this analysis and it is considered conservative under CDM perspective.

7. Assessment of such responses:

The assessment team checked the new references cited in the PDD version 2 (ref.7.2 ï B.17, ref.7.2 ï B.18 and ref.7.2 ï A.8) and confirms the information now in the PDD version 2. The assessment team also checked the information in ref.7.2 ï B.19 (reference 12 of the PDD version 1, which now the PP

exchanged for more up to date information) and confirms that neither the recovery of methane or similar activities to the Project Activity (i.e. landfill gas capture for the generation of energy) are commonly carried out in the geographical area of Brazil without CDM. CAR11 is closed out.	
8. References to resulting changes in the PDD or supporting annexes:	
Ref.7.2 ï B.17 Ministry of Scince and Technology (2010) Second National Communication from Brazil to the UNFCCC about Climate Change ï Part 2 ï Chapter 3 Anthropogenic Emissions by Source and Reductions by Sinks of GHGs per sector, 3.6 Waste Treatment, page 253. Ref.7.2 ï B.18 São Paulo State Greenhouse Gas Emissions Inventory for the Waste and Effluent Sector 1990 ï 2008, p62. Ref.7.2 ï A.8 MAGALHÃES, G.HC.; ALVES, J.W.S.; SANTO FILHO. F.; COSTA, R.M.; KELSON. M. (2010). Reducing the uncertainty of methane recovered (R) in greenhouse gas inventories from waste sector and of adjustment factor (AF) in landfill gas projects under the clean development mechanism. Page 174. Ref.7.2 ï B.19 Ministry of Cities ï Nacional Secretariat for Environmental Sanitation (2007) National System of Sanitary Information Diagnosis of Solid Urban Waste Management - 2007	

1. Grade / Ref:	CAR12	**2. Date:**	26/05/2011	**3. Status:**	Closed
4. Requirement:		Procedures for Modalities of Communication Between Project Participants and the Executive Board			
5. Nature of the Issue Raised:					
Provide the MoC for the project activity with relevant evidence of power of attorney as per paragraph 4 of the Procedures for Modalities of Communication Between Project Participants and the Executive Board					
6. Nature of responses provided by the project participants:					
The document (MoC) was sent to DOE. Document provided by PP: Modalities of communication Form - CTL Landfill Gas Project.pdf					
7. Assessment of such responses:					
The assessment team verified the MoC sent and it has been correctly filled in. The assessment team also validated the corporate identity of Mr. Nelson Domingues Pinto Júnior and its signature through the contract of concession between Ecourbis Ambiental S.A and the Municipality of São Paulo. CAR12 was closed out.					
8. References to resulting changes in the PDD or supporting annexes:					
Ref.7.2-A.16 Modalities of communication Form - CTL Landfill Gas Project.pdf Ref.7.2-A.4 Contrato de Concessão Agrupamento Sudeste 5					

1. Grade / Ref:	CAR13	2. Date:	26/05/2011	3. Status:	Closed
4. Requirement:		Paragraph 18 of the Guidelines on the Assessment of Investment Analysis (version 03.1)			

5. Nature of the Issue Raised:

Explain why the marginal prices for energy sale in the 1st and 2nd auctions of alternative sources of energy in Brazil (Leilão de Fontes Alternativas) were not included in the analysis of revenues since:1) the marginal price in the 2nd auction of alternative sources of energy in Brazil seems to be a more conservative price than the offer by CPFL in the email sent to the assessment team; 2) the PP informed that electricity might be sold in auctions, spot or local utility companies; and 3) the lack of market information on electricity prices from landfill gas in Brazil. As a conservative measure these prices should be taken into account in the financial analysis both in terms of revenues and in the % variation of price (the last auction of 2010 for example was averaged at R$135.48 and the marginal price at R$148.39 ï see link below http://www.ccee.org.br/StaticFile/Arquivo/biblioteca_virtual/Leiloes/2_F_A/Resulta_Completo_2_LFA_site.xls).
Also provide more subsidies for the assessment team to validated the statement in the PDD that an electricity tariff of R$182.64 is deemed unrealistic as this value is superior to the average values from the latest electricity sale auctions in Brazil and that tariffs are not likely to increase above that (i.e. inform and take into account any official projections ï if any - of electricity prices for the future in Brazil; provide more than one estimate from possible buyers).

6. Nature of responses provided by the project participants:

As explained to Validation Team, the electricity price used in financial analysis was based on commercial proposal from CPFL (local electricity utility) taking into account the project activity (a biogas landfill project). The marginal price in referred auctions refers to specifics alternatives sources small hydropower (SHP), bagasse cogeneration and wind. However, the project participant decided to adopt the highest value from the only two auctions held in Brazil (148.39 R$/MWh), as requested by DOE.

It is important to note that in the breakeven point, section B.5 of the PDD ï version 2, the electricity price to reach the benchmark (NPV=0) is 228.45 R$/MWh (54% higher than the highest price in auctions). The Project Participant received a proposal for this project activity with electricity price at 140.00 R$/MWh. Therefore, the price of 228.45 R$/MWh is deemed unlikely.

There is neither official projection nor another proposal from electricity utility.

Documents provided by PP:

- 1º Leilão de Fontes Alternativas.pdf;

2º Leilão de Fontes Alternativas.pdf

7. Assessment of such responses:

The assessment team verified the revised cash flow (ref.7.2-A10.b) and confirms that the most recent and conservative price found in the research carried out by the assessment team of renewable energy of R$148.39, and the price deemed conservative by the projectôs sector expert, is now being used (from ref. 7.2-B.23)
The assessment team also confirms that there is no official projections for energy price published in Brazil and in the light of this information, the most reliable estimate of energy prices publicly available are the auction prices found in the CCEE website for renewables (wind, small hydros and biomass).

CCEE (the Electric Power Commercialisation Chamber) is responsible to carry out whole sale transactions and the commercialisation of electric power within the National Interconnected System for both regulated and free contracted environments and spot markets. In addition CCEE is in charge of financial settlement for the spot market transactions. These activities form the Energy Accounting and Financial Settlement Process, audited by third party auditors, according to ANEEL norms (the Brazilian Electricity Regulatory Agency). The commercialisation rules and procedures that govern the activities performed by CCEE are defined by ANEEL (see ref. 7.2 ï B.20). Furthermore, considering the email presented by the PP from CPFL, a local energy company (ref. Ref.7.2-A17), there is an expectation that the price offer for purchase of energy tends to decrease from R$140,00 from 2011 to the year of 2023 to R$110,00 from the year 2024 to 2036. The expectation of decrease was confirmed by the assessment team sector expert as being a result of technological development and acceptance. Therefore the assement team accepts that a 54% increase in price in auctions can be deemed unrealistic. The question about how energy price adjustments are calculated remain opened in CAR04 but CAR13 can be closed out because at the time of validation and considering local knowledge of the assessment team about Brazilôs economic conditions the assessment team considers unrealistic to think that inflation would rise by that amount too. CAR13 was closed out.
8. References to resulting changes in the PDD or supporting annexes:
Ref. 7.2-A10.b CTL Cash Flow v2 2011 06 10 FES Ref.7.2-A17. Venda de energia a longo prazo.msg (email from CPFL with price estimate for purchase of energy for the years between 2011-2023 and 2024-2036) Ref.7.2-B10.b Guidelines on the assessment of investment analysis ï Version 04 http://cdm.unfccc.int/Reference/Guidclarif/reg/reg_guid03.pdf (last accessed 29/06/2011). Ref. 7.2-B20. Exploitation of the biogas from Controlled Landfill in Solid Waste Management Central ï CTRS / BR.040 (CDM Project 3464 at the UNFCCC website) http://cdm.unfccc.int/Projects/DB/SGS-UKL1267696608.78/view Ref.7.2-B.23 CCEE Website with the sale prices obtained in the Second Auction of Alternative Sources of Energy (2010) http://www.ccee.org.br/StaticFile/Arquivo/biblioteca_virtual/Leiloes/2_F_A/Resulta_Completo_2_LFA_site.xls

1. Grade / Ref:	CL01	**2. Date:**	25/05/2011	**3. Status:**	Closed
4. Requirement:		VVM Version 01.2 paragraph 59			
5. Nature of the Issue Raised:					
It was observed that the financial analysis includes 4 flares. From the estimates of the amount of landfill gas produced and captured in the CERs spreadsheets version 1 (ref.7.2-B.9.a), approximately 13,375 m3/h in 2018, 2 flares (of 10,200 Std m3/h ï ref.7.2 ï A.3) would be enough to capture and burn all the landfill gas for this crediting period and for the next (maximum amount of landfill gas produced and captured estimated is in the year of 2020 of 14,057 m3/h). The PP informed during site visit that 2 extra flares have been considered in the financial analysis as back up for the 2 flares needed to flare the amount of biogas which will be captured and burnet when the generators are not in operation. Given that the 2 extra flares would not make a difference to the financial unfeasibility of the project as it stands, this is a choice that the PP has. However, the assessment team requests further clarification of whether these 2 extra flares (back up to the first 2 implemented) are actually needed in the light of the fact that the 2 flares that will be implemented in the first stage of the project will serve as back ups for the generators operation.					

6. Nature of responses provided by the project participants:
Considering the waste acceptance during the lifetime of the landfill project we decided to deploy the project equipment into phases (steps) to guarantee system flexibility. The deployment of two flares with a capacity of 10,200 m³/h will be installed, but will depend on the LFG production estimation during the project period. However, considering the possibility of waste acceptance variations, and to optimize the LFG capture efficiency, it is recommended to install at least one more flare during the project period to accommodate these possible variations (totaling 3 flares), and eventually one for back-up purposes (totaling 4 flares). In order to comply with these possible variations there were 3 flares in the financial analysis.
7. Assessment of such responses:
The assessment team validated the estimates of the ERs spreadsheets version 2 of the 07/06/2011 (ref. 7.2-A.9.b) and confirms that the estimated amount of biogas collected in the year of 2019 (the year with the highest estimate of biogas collected for the 1st crediting period) is 13,753m3/h. According to this estimate and the capacity of the flares in the proposal by John Zink (10,200 Std m3/h) the project would need approximately 2 flares operating at approximately 1 and a 1/3 of its capacity to burn all biogas captured. In the financial analysis sent by the PP to the DOE and the above information, the PPs have accounted for a third flare in the financial analysis in order to accommodate possible future variations in the delivery of waste and generation of biogas. Actually they consider that a possible 4th flare might be installed along the lifetime of the project even though this was not considered in the financial analysis spreadsheet version 2 (ref.7.2-A.9.b). It is of the understanding of the assessment team that variations with the generation of biogass are extremely high. The study by EPA (1996) (ref.7.2-B.13) for example states that estimates using first order decay model should take a + or - 50% uncertainty in their estimates because of the uncertainties of estimates of methane generation potential from a mass of waste and uncertainties related to rate of methane generation. It is therefore acceptable that the PP wishes to allow some flexibility to the system with regards to the specific number of flares, suffice to say that they plan in installing enough flares that will capture and burn all the landfill gas produced even in if the electricity generation plant is not operating. Also suffice to say that only 3 flares were taken into account in the financial analysis and that even if the costs of the 3rd flare is not accounted for in the financial analysis the project remains with a negative NPV. CL01 is therefore closed out.
8. References to resulting changes in the PDD or supporting annexes:
Ref.7.2-A 9.b. EcoUrbis CER v2 2011 06 07 FES Ref.7.2-B 13. Turning a Liability into an Asset: A Landfill Gas-To-Energy Project Development Handbook EPA ï September 1996 http://www.epa.gov