

JOBURG LANDFILL GAS TO ENERGY PROJECT



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Summary:

ENER-G Systems Joburg (PTY) Ltd. has commissioned Carbon Check (Pty) Ltd., to carry out the gap validation and verification of the CDM registered project “Joburg Landfill Gas to Energy Project” (UNFCCC ref. no. 6797), with regards to the relevant requirements of VCS Standard Version 3.4 for the pre-registration period from 27/05/2011 to 11/11/2012. The project templates and forms have been used from the earlier version. This is in line with the requirements stated in VCS program update catalogue/39/, the template and forms become mandatory after 08/04/2014.

The project activity involves collection and utilization of landfill gas released from 5 landfill sites spread across the City of Johannesburg municipality area.

The objective of the verification was to verify the projects emission reductions during the reporting period 27/05/2011 to 11/11/2012. In particular the, monitoring plan, monitoring report and the project's compliance are verified against the relevant criteria and guidance documents provided by VCS, which included the following: VCS Program Guide (v3.5), VCS Standard (v3.4), Program Definitions (v3.4), Registration & Issuance Process (v3.4) in order to confirm that the project has been implemented in accordance with the VCS PD and registered CDM PDD and conservative assumptions, as documented. And also to confirm whether the monitoring plan is in compliance with the VCS PD and approved CDM monitoring methodology, ACM0001, version 11.

Based on the assessment of monitoring report version 01 dated 05/07/2013, 17 Corrective Action Requests (CARs) and 17 Clarification Requests (CLs) were raised; responses were requested and received from the project participant. All CARs and CLs are successfully closed during the course of verification and no Forward Action Requests (FARs) were raised.

Summary of the verification conclusion:

The total number of VCUs claimed by the project activity during the monitoring period 27/05/2011 to 11/11/2012 is 94527 tonnes of CO₂ equivalent.

Baseline Emissions: 94667 tonnes of CO₂e

2011 43497 tCO₂e

2012 51170 tCO₂e

Project Emissions: 140 tonnes of CO₂e

2011 75 tCO₂e

2012 65 tCO₂e

Leakage: 0 tCO₂e

Net GHG emission reductions: 94527 tCO₂e

2011 43422 tCO₂e

2012 51105 tCO₂e

Carbon Check confirms a positive verification opinion confirming the project complies with the applicable VCS requirements, thus recommending the project for registration and issuance.

Abbreviations

BE	Baseline Emissions
CAR	Corrective Action Request
CC	Cross Check
CCL	Carbon Check (Pty) Ltd
CDM	Clean Development Mechanism
CER(s)	Certified Emission Reduction(s)
CH ₄	Methane
CL	Clarification Request
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DR	Document Review
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
EIA	Environmental Impact assessment
ER	Emission Reductions
FAR	Forward Action Request
GHG(s)	Greenhouse gas(es)
GWP	Global Warming Potential
I	Interview or any follow up action
IPCC	Intergovernmental Panel on Climate Change
LE	Leakage Emission
LoA	Letter of Approval
MoV	Means of Verification
MP	Monitoring Plan
MR	Monitoring Report
NGO	Non-governmental Organization
ODA	Official Development Assistance
PD	Project Description
PDD	Project Design Document
PE	Project Emission
PP(s)	Project Participant/Proponent(s)
Ref.	Document Reference
SD	Sustainable Development
SS(s)	Sectoral Scope(s)
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Voluntary Carbon Standard
VCU	Voluntary Carbon Unit
VER(s)	Verified Emission Reductions
VVB	Validation/Verification Body
VVM	Validation and Verification Manual

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1 INTRODUCTION

1.1 Objective

Verification is the periodic independent review and ex post determination of both quantitative and qualitative information by a Validation and Verification Body (VVB) of the monitored reductions in GHG emissions that have occurred as a result of the VCS project activity during a defined monitoring period.

The purpose of verification is to review the monitoring results and verify that the monitoring methodology was implemented according to the monitoring plan and monitoring data, and used to confirm the reductions in anthropogenic emissions by sources, is sufficient, definitive and presented in a concise and transparent manner. Carbon Check's objective is to perform a thorough, independent assessment of the registered projects activities.

In particular the, monitoring plan, monitoring report and the project's compliance are verified against the relevant criteria and guidance documents provided by VCS. This allows for the confirmation that the project has been implemented in accordance with the previously validated CDM PDD and conservative assumptions, as documented. It is also confirmed whether the monitoring plan is in compliance with the VCS PD and approved monitoring methodology.

1.2 Scope and Criteria

The verification of this project is based on the registered PDD /07/, Project Description /04/, the Monitoring Report for this monitoring period /02/, emission reduction calculation spread sheet /06/, supporting documents made available to the Verification Team and information collected through performing interviews and during the on-site assessment. Furthermore, publicly available information was considered as far as available and required.

The verification considers both quantitative and qualitative information on emission reductions. The monitoring report is assessed; using a rule based approach, against the principles of accuracy, relevance, credibility, reliability, completeness, consistency, and transparency. Conservativeness is applied throughout the process to ensure that emission reductions are not overstated.

The verification criteria followed the guidance documents provided by VCS and included the following:

- VCS Program Guide (v3.5)
- VCS Standard (v3.4)
- Program Definitions (v3.5)
- Registration & Issuance Process (v3.5)
- Validation and Verification Manual (v3.1)
- Approved CDM Methodology ACM0001, version 11

The scope of this verification, by independent checking of objective evidence, is as follows:

- To verify that the project is implemented as described in the project description and CDM registered PDD /07/
- To assess the project's compliance with other relevant rules including the host country legislation.
- To assess the implementation of the monitoring plan content as mentioned in the registered PDD /07/
- To confirm that the monitoring system is implemented and fully functional to generate voluntary emission reductions (VERs/VCUs) without any double counting and
- To establish that the data reported are accurate, complete, consistent, transparent and free of material error or omission by checking the monitoring records and the emissions reduction calculation /06/.
- To evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement.
- To verify that reported GHG emission data is sufficiently supported by evidence.
- The verification shall ensure that the reported emission reductions are complete and accurate in order to be certified.

The method and criteria used for verification consisted of the following phases:

1. Completeness check and desk review:
2. On site visit;
3. Resolution of outstanding issues and issuance of final verification report and applicable VCS Validation and Verification Deeds of Representation.

Carbon Check (Pty) Ltd conducts all its work under strict rules to safeguard impartiality and ensure the independence of the verification team. The verification does not provide any consulting or recommendations for the client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the monitoring activities.

1.3 Level of assurance

☒ Reasonable level of assurance

☐ Limited level of assurance

1.4 Summary Description of the Project

The project "Joburg Landfill Gas to Energy Project" is a large scale landfill gas project that involves collection and utilization of the landfill gas released from 5 landfill sites spread across the City of Johannesburg municipality area. The proposed project activity involves flaring and utilization (electricity generation) from the landfill gas project and thus leads to GHG reductions

compared to the release of methane in landfill gas. The proposed project activity intends to claim pre-CDM VERs/VCUs generated due to the activity for the period from 27/05/2011 to 11/11/2012. This project was registered under CDM on 12/11/2012 and hence crediting period for claiming the emission reductions under VCS ends on 11/11/2012 which is the last day of the monitoring period. Moreover it has been stated on the VCS PD /04/ that project is not claiming any ERs (Emission Reductions) under any other standards (GHG abatement scheme) for the claimed period under VCS i.e. 27/05/2011 to 11/11/2012. Thus, it is confirmed that the ERs are not being double counted for the monitoring period.

The project start date is 27/05/2011, the date on which the first landfill gas flare was completed and started reducing GHG emissions. The May 2011 workbook for Robinson Deep Landfill site has been provided to the Validation/Verification Team as supporting documents for start date of the project. This was also confirmed through the implementation plan/38/ and the Flare commissioning certificate/27-h/. This was assessed to be appropriate and hence in accordance with the definition of "Project Start Date" in VCS programme definitions page 11 of version 3.4 /11/.

The project "Joburg Landfill Gas to Energy Project" is located in City of Johannesburg municipality area of Gauteng Province in Republic of South Africa. Geographical co-ordinates of the sites are stated in section 1.7 of the monitoring report and have been verified during the site visit. Summary details of the project:

Project Title	Joburg Landfill Gas to Energy Project			
Project Owner(s)	ENER-G Systems Joburg (PTY) Ltd			
Locations	Linbro Park Landfill	Marlboro Drive, Sandton	26° 05'41.85" S 28° 07' 13.43" E	
	Marie Louise Landfill	Dobsonville Drive, Roodepoort	26° 11' 23.89" S 27° 53' 00.13" E	
	Robinson Deep Landfill	Turffontein Road, Turffontein	26° 13' 59.03" S 28° 02' 14.77" E	
	Goudkoppies	Houthammer road, Devland, Lenasia	26° 16' 52.31" S 27° 55' 24.93" E	
	Ennerdale Landfill	Old Lawley Road, Lawley	26° 22' 07.78" S 27° 50'02.80" E	
Methodology Used	ACM0001: Consolidated baseline and monitoring methodology for landfill gas project activities (Version 11)			
Sectoral Scope	13 (TA 13.1)			
Monitoring period under VCS	27/05/2011 to 11/11/2012			
Emission reductions (in tCO ₂ e)	94527 tCO ₂ e			

2 VALIDATION PROCESS, FINDINGS AND CONCLUSION

2.1 Validation Process

Carbon Check has carried out a gap Validation of the project, as the project is already registered under CDM, and validated the cover page and the required sections 1.2, 1.3, 1.5, 1.6, 1.7, 1.9, 1.10, 1.12.1, 1.12.2, 1.12.3, 1.12.4 and 1.13 of the PD /04/.

- **Method and Criteria:**

Validation was conducted using Carbon Check procedures in line with the requirements specified in the VCS Program Guide version 3.5, VCS Project Standard version 3.4 and VCS Validation and Verification Manual version 3.1 and applying standard auditing techniques.

Validation consisted of the following phases:

- Document review, involving:
 - a) A review of data and information;
 - b) Cross checks between information provided in the VCS PD /04/, CDM PDD /07/ and information from sources other than those used.
- Follow-up actions, including:
 - a) Interviews with relevant stakeholder in the host country, personnel with knowledge of the project design and implementation;
 - b) Cross checks between information provided by interviewed personnel to ensure that no relevant information has been omitted.
- Reference to available information relating to projects or technologies similar to the proposed project activity under validation;
- Review, based on the approved methodology being applied, of the appropriateness of formulae and accuracy of calculations.
- The resolution of outstanding issues and the issuance of the final verification report and applicable VCS Validation and Verification Deeds of Representation.

- **Document Review:**

Project description (PD)/04/, CDM Project Design Document (PDD)/07/, methodology ACM0001, version 11/08/ and other supporting documents were reviewed by Carbon Check and follow up interviews were conducted.

- **Interviews:**

From 24/07/2013 to 25/07/2013, Carbon Check conducted an onsite visit at the locations of the project activity to perform interviews with relevant stakeholders. Representatives of the project participant were interviewed.

The key personnel interviewed and the main topics of the interviews are summarized in the table below:

	Date	Name and role	Organisation	Topic
/a/	24/07/2013 - 25/07/2013	David Cornish, General Manager	ENER-G Systems (PTY) Ltd	• Project Design • Project Implementation status • Baseline Scenario • Monitoring and reporting documentation • Roles and responsibility
/b/	24/07/2013 - 25/07/2013	Tony Cummings, Project Manager	ENER-G Systems (PTY) Ltd	• Monitoring and reporting documentation • Quality Assurance – Management and operating system • Qualification and Training • Plant Operations • Environmental Impacts • Roles and responsibility
/c/	24/07/2013	Musa Mbombi, Site Technician, Marie Louise Landfill	ENER-G Systems (PTY) Ltd	• Monitoring and measuring system • Observations of established practices • Roles and responsibility
/d/	25/07/2013	Elleck Mkhari, Site Technician, Robinson Deep Landfill	ENER-G Systems (PTY) Ltd	• Monitoring and measuring system • Observations of established practices • Roles and responsibility

- Site Inspections:

Site inspection was carried out to verify that the project is implemented in accordance with the applicable criteria. On-site assessment is necessary to check the monitoring data with respect to accuracy to ensure the calculation of emission reductions. The main tasks carried out during site inspection are:

- The on-site assessment included an investigation of whether all relevant equipment is installed and works as anticipated. The operating staff was interviewed and observed in order to check the risks of inappropriate operation and data collection procedures.
- Information processes for generating; aggregating and reporting the selected monitored parameters were reviewed.
- The duly calibration/testing of all metering equipment was checked.
- The monitoring processes, routines and documentations were audited to check their proper application.
- The monitoring data were checked completely.

- Resolution of Any Material Discrepancy:

The objective of this phase of the validation is to resolve any outstanding issues which need to be clarified for Carbon Check's conclusion on the project design. Material discrepancies identified in the course of the validation process are addressed either as CARs or CLs.

A **Corrective Action Request (CAR)** is established where:

- mistakes have been made in assumptions, application of the methodology or the project documentation which will have a direct influence the project results,
- the requirements deemed relevant for verification of the project with certain characteristics have not been met or
- There is a risk that the project would not be registered or that emission reductions would not be able to be verified and certified.

A **Clarification Request (CL)** will be issued where information is insufficient, unclear or not transparent enough to establish whether a requirement is met. All the outstanding issues found with respect to the validation of the project activity were closed.

2.2 Validation Findings

2.2.1 Gap Validation

The project is already registered as a CDM project (UNPA number: 6797) on 12/11/2012 (<http://cdm.unfccc.int/Projects/DB/BVQI1343063541.26/view>). A gap validation of the project is performed as the project is already registered under CDM (only the cover page and sections 1.2, 1.3, 1.5, 1.6, 1.7, 1.9, 1.10, 1.12.1, 1.12.2, 1.12.3, 1.12.4 and 1.13 of the VCS Project Description Template shall be completed).

The cover page has been filled according to the template of the Project Description and as per the VCS Standard Version 3.4.

During the course of validation 7 CARs and 3 CLs were raised and subsequently closed:

Finding	2.2.1.1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding (DOE)	The project title has not been indicated at the top of cover page in the project description and the monitoring report title has not been indicated at the top of cover page in the Monitoring Report.		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	Amended to state project titles for both MR and PD		
DOE Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	PD & MR have been revised to indicate the Project Title at the top of cover page.		
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed		

Finding	2.2.1.2		
Classification	☒ CAR	☐ CL	☐ FAR

Finding	2.2.1.2
Description of finding (DOE)	Date format in the MR and PD are not provided as per the guidelines for filling MR and PD. Refer sections: 1. Cover page of PD 2. Cover page of MR
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	Amended to correct format for both MR and PD
DOE Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	PD & MR have not been revised as per the guidelines for filling MR and PD.
Corrective Action or clarification #2 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	Amended
DOE Assessment #2 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	PD & MR have been revised as per the guidelines for filling MR and PD.
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	2.2.1.3
Classification	☒ CAR ☐ CL ☐ FAR
Description of finding (DOE)	A table of contents is not provided in the PD. It is not clear as to why the guidelines for filling PD are not deleted from the filled PD. They are only for guidance purpose. Refer guidance on the cover page of PD "All instructions, including this introductory text, should be deleted from the final document."
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	Table of contents added and all instruction text deleted
DOE Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	Table of the content has been provided in the revised PDD and all instructions, including this introductory text have been deleted.

Finding	2.2.1.3
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	2.2.1.4
Classification	☒ CAR ☐ CL ☐ FAR
Description of finding (DOE)	The right of use as per para 3.11.1 of the VCS standard, for the project participant stated in para 1.3 and 1.12.1 of PD is not provided for validation. Also, it is not clear if there is change in the project participants from the registered CDM project.
Corrective Action or clarification #1 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	The right of use agreement is attached hereto titled the Joburg Gas Rights Agreement which detailed the rights to use. The Project participant EcoSecurities has withdrawn from the project and this is supported by a letter attached detailing their choice to not exercise their option.
DOE Assessment #1 <i>The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The right of use agreement signed between ENER-G Systems Joburg (PTY) Ltd and The Johannesburg Metropolitan Municipality has been provided as an evidence to confirm that the Johannesburg Metropolitan Municipality is entitled to exploit the Landfill Gas at the sites and has resolved to grant exclusive rights to ENER-G Systems Joburg (PTY) Ltd for the same. However, the letter from EcoSecurities has not been provided to the validation team.
Corrective Action or clarification #2 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	It was provided in Dropbox
DOE Assessment #2 <i>The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The right of use agreement signed between ENER-G Systems Joburg (PTY) Ltd and The Johannesburg Metropolitan Municipality has been provided as an evidence to confirm that the Johannesburg Metropolitan Municipality is entitled to exploit the Landfill Gas at the sites and has resolved to grant exclusive rights to ENER-G Systems Joburg (PTY) Ltd for the same. Letter has been provided to the VVB. The letter confirms that the EcoSecurities has terminated the contract with the project participant ENER-G Systems Joburg (PTY) Ltd and thus EcoSecurities does not have any right over the sale of VCUs. It is confirmed that only ENER-G Systems Joburg (PTY) Ltd is the project participant for the VCS monitoring period.
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	2.2.1.5		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding (DOE)	Proof of start date stated in section 1.5 of the project description (PD) is not provided to validation team.		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	Changed to date when data was first sent and plant was operational. Proof is the first workbook for the monitoring period.		
DOE Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	The 1st date on the workbook is 26/05/2011; it is not clear why the 27/05/2011 was used as start date of the project.		
Corrective Action or clarification #2 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	The 26 data is during commissioning and the data is not used to calculate ERs.		
DOE Assessment #2 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	It has been clarified that the data recorded on the 26/05//2011 was not used on the calculations of emission reduction and the complete recording of the data for the monitoring period started only on 26/05/2011.		
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed		

Finding	2.2.1.6		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding (DOE)	Section 1.10 of the PD is not provided as per the guidance as it has not been "demonstrated that the project has not been implemented to generate GHG emissions for the purpose of their subsequent reduction, removal or destruction."		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	Wording has been expanded to fully detail the condition prior to the project being implemented.		
DOE Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	The PD has been revised to demonstrate that the project has not been implemented to generate GHG emissions for the purpose of their subsequent reduction, removal or destruction.		
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed		

Finding	2.2.1.7		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding (DOE)	Section 1.12.2 of the PD states that "This can be evidenced through the review of the project PDD and Validation report". As this section needs to be completed as per section 3.11.8 of the VCS standard, hence the information needs to be completely provided in the section.		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	A letter has been provided stating that the activity is a voluntary action. Voluntary.		
DOE Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	Section 1.12.2 of the PD has been completed as per section 3.11.8 of the VCS Standard and a letter stating that the activity is a voluntary action has been provided to the Validation team.		
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed		

Finding	2.2.1.8		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding (DOE)	The project title indicated on cover page of project description and monitoring report does not match the one provided in section 1.1 of the MR and section 1.1 of the PD. The title of the project on the cover page of MR and PD does not match the title of the registered CDM project referenced in section 1.12.3.		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	Amended.		
DOE Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	Project title on the cover page of VCS MR has been amended to match with the one in section 1.1 of the MR and Registered CDM PDD. However, The project title on the cover page of the PD is still not in line with the project title in section 1.1 of the PD and Registered CDM PDD		
Corrective Action or clarification #2 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	Fixed		
DOE Assessment #2 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	The project title on the cover page of the PD is in line with the project title in section 1.1 of the PD and Registered CDM PDD.		

Finding	2.2.1.8
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	2.2.1.9
Classification	☐ CAR ☒ CL ☐ FAR
Description of finding (DOE)	It is not clear if the project proponent and the entity preparing the PD and MR document are same or different.
Corrective Action or clarification #1 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	Please clarify?
DOE Assessment #1 <i>The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The address in section 1.3 of PD and MR is different with the one mentioned on the cover Page of the VCS PD & MR whereas the company is the same.
Corrective Action or clarification #2 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	Amended to be the same
DOE Assessment #2 <i>The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The company address in section 1.3 and cover page of VCS PD and MR is now the same.
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	2.2.1.10
Classification	☐ CAR ☒ CL ☐ FAR
Description of finding (DOE)	As per the methodology no leakage emissions need to be accounted under this methodology. It is not clear how leakage management would be accounted in the PD as per section 1.13 of the PD.
Corrective Action or clarification #1 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	Agreed and Amended

Finding	2.2.1.10
DOE Assessment #1 <i>The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Section 1.13 of the VCS PD has been revised as per the methodology.
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

2.2.2 Methodology Deviations

No deviations from the applied CDM methodology ACM0001, version 11 were found during the course of validation.

2.2.3 Project Description Deviations

No deviations from the project description were found during the course of validation.

2.2.4 New Project Activity Instances

Project activity is not a grouped project.

2.3 Validation Conclusion

The project meets all relevant validation criteria for projects, as set out in VCS Version 3 as well as all relevant host country criteria. The review of the project description and the subsequent follow-up interviews has provided Carbon Check with sufficient evidence to determine the fulfilment of the stated criteria. The validation team confirms that:

The project fulfils criteria of VCS version 3.

The project correctly applies the approved baseline and monitoring methodology ACM0001, "Consolidated baseline and monitoring methodology for landfill gas project activities", version 11 /08/.

The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 94527 tCO₂e (total) is most likely to be achieved within the period from 27-05-2011 to 11-11-2012.

No double counting of ERs are being done as the crediting period of the project finishes on 11-11-2012 and project was registered with CDM on 12-11-2012.

No restrictions or uncertainties were identified related to the validation.

3 VERIFICATION PROCESS

3.1 Method and Criteria

The method and criteria used for verification:

The verification consists of the following three phases:

1. Completeness check and desk review of the validation report, monitoring plan, monitoring report, monitoring methodology, VCS PD, applicable tools in particular attention to the frequency of measurements, quality of metering equipment's including calibration requirements, QA/QC procedures and other relevant documents;
2. On-site visit (including follow-up interviews with project stakeholders, when deemed necessary). The on-site assignment includes the following;
 - An assignment of implementation and operation of project activity with respect to validated CDM PDD and VCS PD;
 - Review of information flows for generating, aggregating and reporting the monitoring parameters;
 - Interview with relevant personals to determine whether the operational and data collection procedures are implemented and in accordance with monitoring plan of the validated CDM PDD and VCS PD;
 - Cross check of information and data provided in the monitoring report with plant logbooks, inventories, purchase records or similar data sources;
 - Check of monitoring equipment's, calibration frequency and monitoring practice in-line with methodology and validated CDM PDD and VCS PD;
 - Review of assumptions made in calculating the emission reduction;
 - Implementation of QA/QC procedure in-line with the validated CDM PDD and VCS PD and methodology requirement.
3. Resolution of outstanding issues and the issuance of the final Verification report and if applicable the VCS Validation and Verification Deeds of Representation.

3.2 Document Review

The registered CDM PDD/07/, VCS PD/03//04/, VCS MR/01//02/, emission reduction calculation spread sheet/05//06/ and supporting documents (as provided in Annex 1) related to the project implementation, project design, monitoring and baseline were reviewed as per VCS version 03 standard requirements. The desk review included:

- A review of the data and information presented to verify completeness and consistency in accordance with VCS version 03 requirements;
- A review of the approved revised monitoring plan and monitoring methodology, paying particular attention to the frequency of measurements, quality of metering equipment

(including calibration requirements) and the quality assurance and quality control (QA/QC) procedures;

- An evaluation of data management and the QA/QC system in the context of their influence on the generation and reporting of emission reductions.

Data input values were also checked from the records maintained by the project proponents. Result of calculations reported in the monitoring report was checked against data values as available from the project participant in VER calculation sheet/06/.

These data values and other information related to project performance are available in the form of data logs and records duly archived and maintained as per the quality assurance/quality control procedure specified as a part of monitoring plan in the registered CDM PDD /07/. Furthermore, the verification team used additional documentation by third parties like host-party legislation, technical reports referring to the project design or to the basic conditions and technical data.

3.3 Interviews

A site visit to the project activity was undertaken on 24/07/2013 and 25/07/2013 to assess the implementation and operation of the project activity and to review evidence, and interview key personnel to confirm evidence associated with the data generation, aggregation, and calculation and reporting of the monitoring parameters. The site visit addressed:

- An assessment of the project implementation and operation as per the CDM PDD /07/ (including site walk to confirm physical existence and operation of project components);
- Review of information flows for generating, aggregating and reporting the monitoring parameters;
- Interviews with relevant personnel to confirm that the operational and data collection procedures are implemented in accordance with the approved revised monitoring plan in the monitoring report /01/.

The key personnel interviewed and the main topics of the interviews are summarized in the table below:

	Date	Name and role	Organisation	Topic
/a/	24/07/2013 - 25/07/2013	David Cornish, General Manager	ENER-G Systems (PTY) Ltd	• Project Design • Project Implementation status • Baseline Scenario • Monitoring and reporting documentation • Roles and responsibility
/b/	24/07/2013 - 25/07/2013	Tony Cummings, Project Manager	ENER-G Systems (PTY) Ltd	• Monitoring and reporting documentation • Quality Assurance – Management and operating system

				• Qualification and Training • Plant Operations • Environmental Impacts • Roles and responsibility
/c/	24/07/2013	Musa Mbombi, Site Technician, Marie Louise Landfill	ENER-G Systems (PTY) Ltd	• Monitoring and measuring system • Observations of established practices • Roles and responsibility
/e/	25/07/2013	Elleck Mkhari, Site Technician, Robinson Deep Landfill	ENER-G Systems (PTY) Ltd	• Monitoring and measuring system • Observations of established practices • Roles and responsibility

3.4 Site Inspections

Site inspection was carried out to verify that the project is implemented in accordance with the applicable criteria. On-site assessment is necessary to check the monitoring data with respect to accuracy to ensure the calculation of emission reductions. The main tasks carried out during site inspection are:

- The on-site assessment included an investigation of whether all relevant equipment is installed and works as anticipated.
- The operating staff was interviewed and observed in order to check the risks of inappropriate operation and data collection procedures.
- Information processes for generating, aggregating and reporting the selected monitored parameters were reviewed.
- The duly calibration/testing of all metering equipment was checked.
- The monitoring processes, routines and documentations were audited to check their proper application.
- The monitoring data were checked completely.

During the site visit all monitoring data with respect to accuracy to ensure the calculation of emission reductions was checked. All the procedures and records were found authenticated and properly maintained as per the requirements of the project.

The verification team has carried out interviews in order to assess the information included in the project documentation and to gain additional information regarding the compliance of the project with the relevant criteria applicable for the VCS.

3.5 Resolution of Any Material Discrepancy

Material discrepancies identified in the course of the verification are addressed either as CARs, CLs or FARs.

A Corrective Action Request (CAR) are issued, where:

- i. mistakes have been made with a direct influence on project results requiring adjustments of the VERS/Vcus monitoring report;
- ii. applicable methodological specific requirements have not been met.

A Clarification request (CL) may be used where additional information is needed to fully clarify an issue or where the information is not transparent enough to establish whether a requirement is met.

A Forward Action Request (FAR) should be issued, where:

- i. the actual project monitoring and reporting practices requires attention and /or adjustment for the next consecutive verification period, or
- ii. an adjustment of the MP is recommended.

In the context of FARs, risks have been identified, which may endanger the delivery of high quality emissions reductions in the future, i.e. by deviations from standard procedures as defined by the MP. As a consequence, such aspects should receive a special focus during the next consecutive verification. A FAR may originate from lack of data sustaining claimed emission reductions.

4 VERIFICATION FINDINGS

This section summarises the findings from the verification of the voluntary emission reductions reported for the project with monitoring period from 27-05-2011 to 11-11-2012. In this section the findings from the document review, site visit, assessments and interviews are provided.

4.1 Project Implementation Status

4.1.1 Implementation status of the project activity

The project activity involves five landfill sites for collection and utilization of landfill gas, these sites are spread across the City of Johannesburg municipality area. In two of the five landfill sites flares have been constructed and in remaining three the area to set up the flare compound has been identified however construction of flares has not started yet. Physical details of the project activity is checked and confirmed during the OSV by the verifier.

As stated in section A.4.3 of the registered CDM PDD, electricity generation facilities would be installed once the project is able to secure power purchase agreements (PPAs). As confirmed by interview with the PP, the PP has not been able to secure a power purchase agreement (PPA) for the project activity. It is expected that the PP would be able to secure the PPAs by 06/03/2015

and the electricity generation equipment would be installed on all the sites (Marie Louise landfill and Robinson Deep Landfill, Linbro Park Landfill, Goudkoppies and Ennerdale Landfill) as shown in a table below and on the implementation plan provided by the client. /38/

The implementation status of different landfill sites is provided below:

Landfill Site	Start date of implementation (flaring) – Commissioning of gas flaring	Start date of electricity generation
Robinson Deep Landfill	27/05/2011	06/03/2015
Marie Louise Landfill	04/05/2012	11/03/2015
Goudkoppies	23/03/2015	07/04/2015
Linbro Park Landfill	23/03/2015	07/04/2015
Ennerdale Landfill	21/04/2015	06/05/2015

1 CAR had been raised with regards to implementation status of the project and are closed.

Finding	4.1.1.2		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding (DOE)	The monitoring period dates stated on the cover page of the MR overlap with the dates of the CDM monitoring period. In accordance with § 3.11.5 of the VCS standard “Project proponents shall not claim credit for the same GHG emission reduction or removal under the VCS Program and another GHG program”.		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	Amended		
DOE Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	Monitoring Period has been revised to reflect the dates which does not overlap with the dates provided in CDM Monitoring Period		
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed		

4.1.2 Implementation status of the monitoring plan and the completeness of monitoring

The monitoring plan of the project activity is in line with the description of monitoring plan provided in section B.7 of PDD /07/. The complete monitoring procedure was verified at the site. Following instruments and records were verified at the project site:

- Electronic information management system (control panel) including data and information flow.
- Flow meters for the gas sent to the flares
- Gas analysers for the gas sent to the flares
- Thermocouple used for measuring temperature in the flares
- Span gas cylinders for calibration of the gas analysers
- Power meters for measuring the electricity consumed by the flare
- Calibration records and certificates
- Functionality check sheets

No FARs were raised during the CDM registration for the project activity, hence no issues are remaining from previous validation. No methodology deviations have been identified for the project activity. This was confirmed through an interview with the PP during site visit.

6 CARs and 10 CLs were raised and closed with regards to implementation status of the monitoring plan and the completeness of monitoring:

Finding	4.1.2.1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding (DOE)	Purpose of the data is not provided in section 3.1 of MR for each of the parameters as per the guidance of MR.		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	A description of the purpose of the data has been updated.		
DOE Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	Purpose of the data in section 3.1 of MR has been provided as per the guidance of MR.		
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed		

Finding	4.1.2.2		
Classification	☒ CAR	☐ CL	☐ FAR

Finding	4.1.2.2
Description of finding (DOE)	The calibration frequency and dates of calibration for each of the parameters in section 3.2 of MR is not provided in the section “QA/QC procedures to be applied” as required by MR guidance
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	Amended to included dates and QA/QC processes updated
DOE Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	Calibration frequency has been provided but the dates of last calibration are not provided as per Guidance to complete MR.
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	4.1.2.3
Classification	☒ CAR ☐ CL ☐ FAR
Description of finding (DOE)	The “value monitored” of the monitored parameters is not provided clearly for the parameters in section 3.2 of MR.
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	Updated to reflect values achieved.
DOE Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	The value monitored has been provided but the values have not been provided for each of the flares separately.
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	4.1.2.4
Classification	☒ CAR ☐ CL ☐ FAR
Description of finding (DOE)	The description of the parameter “LFG _{flare,y} ” and “Other Flare operational Parameters” as stated in section 3.2 of the MR do not match the description of the parameter in section B.7.1 of the registered PDD, MR, CDM PDD.
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	Amended

Finding	4.1.2.4
DOE Assessment #1 <i>The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Still the Description provided does not match the description provided in CDM PDD.
Corrective Action or clarification #2 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	Fixed
DOE Assessment #2 <i>The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The description of parameter LFG _{Flare} is still not matching the description provide in registered CDM PDD
Corrective Action or clarification #3 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	Amended to; Amount of LFG flared at Normal Temperature and Pressure
DOE Assessment #3 <i>The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The description of parameter LFG _{Flare} has been revised to match the description provide in registered CDM PDD.
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	4.1.2.5
Classification	☒ CAR ☐ CL ☐ FAR
Description of finding (DOE)	QA/QC procedures for parameter T_{flare} stated in section 3.2 of the MR are not line with that stated in the registered PDD. In section B.7.1 of the PDD it is stated that the thermocouples are subjected to replacement or calibration once a year as stated in PDD. Part numbers for the equipment are not provided for the parameter. In the registered PDD, accuracy has been stated as +/- 0.75 % and range of 333°C to 1,200°C for the parameter. However, same is not provided in the MR and the supporting documents.

Finding	4.1.2.5
Corrective Action or clarification #1 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	Procedure for parameter amended. Part numbers added This has been fixed. We used $\pm 5^{\circ}\text{C}$ as a conservative value as our flare does not operate at anything below 700°C and at 0.75% this is 5.25°C.
DOE Assessment #1 <i>The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	QA/QC procedures for parameter T_{flare} stated in section 3.2 of the MR have been revised and now are in line with the ones stated in registered CDM PDD. Although, $\pm 5^{\circ}\text{C}$ was used earlier as the accuracy of thermocouple, it has been revised to match with the accuracy provided (0.75 %) in the MR and conforms to information in other supporting documents. Part number of the Equipment has been included.
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	4.1.2.6
Classification	☒ CAR ☐ CL ☐ FAR
Description of finding (DOE)	QA/QC procedures and the description of measurement methods stated in the registered PDD for the parameter "Other Flare operational Parameters", are not provided for the parameter in section 3.2 of the MR.
Corrective Action or clarification #1 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	This has been expanded to include a full description.
DOE Assessment #1 <i>The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The description and QA/QC Procedures have been provide in parameter "Other Flare operational Parameters" however the QA/QC Procedures does not match the ones mentioned on the Registered CDM PDD
Corrective Action or clarification #2 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	Amended
DOE Assessment #2 <i>The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The QA/QC Procedures is now consistent with the registered PDD, however the previous description still reflects

Finding	4.1.2.6
Corrective Action or clarification #2 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	We have removed the previous description
DOE Assessment #2 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	The QA/QC Procedures is now consistent with the registered PDD.
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	4.1.2.7
Classification	☐ CAR ☒ CL ☐ FAR
Description of finding (DOE)	Section 1.2 of the MR does not state clearly if the project is a grouped project as required by the guidance for filling MR. Section 2.3 of the MR does not state clearly if the project is a grouped project.
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	Clarified by stating that the project is not grouped,
DOE Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	Section 1.2 and Section 2.3 of the MR have been revised to state that the Project is not a grouped Project.
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	4.1.2.8
Classification	☐ CAR ☒ CL ☐ FAR
Description of finding (DOE)	It is not clear in section 3.2 of the MR that the conditions for using the value for the parameter $\eta_{flare,h}$ as stated in the tool are satisfied by the project activity. Also, it is not clear how this parameter is a monitored parameter.
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	This value is not measured by rather used in the calculation of the ERs.

Finding	4.1.2.8
DOE Assessment #1 <i>The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	It has not been demonstrated how the conditions outlined on the tool to use the value of 90% has been met.
Corrective Action or clarification #2 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	The flare is set up to trip if the operational parameters are not all met during operation. This can be demonstrated in site if required. This data is monitored continuously and recorded every 30 minutes. The data is then used to check the operational up time of the flare to establish the flare efficiency to be used. We set the flare up to always achieve a 90% flare efficiency or to trip
DOE Assessment #2 <i>The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	It has been clarified in section 3.2 of the MR how the conditions stated on the tool are satisfied by the project activity.
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	4.1.2.9
Classification	☐ CAR ☒ CL ☐ FAR
Description of finding (DOE)	It is not clear how the value for the parameter $PE_{flare,y}$ is monitored as no monitoring equipment has been stated corresponding to the parameter. The measuring frequency of 30 minutes does not meet the requirements stated in the tool used. As per the tool "Tool to determine project emissions from flaring gases containing methane" constituent parameters need to be monitored continuously. Also, as this is a monitored parameter latest version of the tool has not been used for calculation in the ER sheet
Corrective Action or clarification #1 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	The project specifically uses and details the default 90% efficiency in the PDD section B6.1 page 30 of the PDD. As the tool details in section IIa we use a default 90% flare efficiency we only need to ensure that the flare complies with the manufactures specifications. This achieve in two ways one is the calculation in the ER sheet does a functionality check with the operating parameters for time over every hour as required by the tool. The ER sheet also checks each half hour for compliance with the manufactures specification for temperature and CH ₄ concentration.

Finding	4.1.2.9
DOE Assessment #1 <i>The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The parameter $PE_{flare,y}$ meets the requirement as stated in the tool "Tool to determine project emissions from flaring gases containing methane" for using the default value.
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	4.1.2.10
Classification	☐ CAR ☒ CL ☐ FAR
Description of finding (DOE)	It is not clear what T_{comp} refers to, as provided in "value monitored" for parameter "Other Flare operational Parameters" in section 3.2 of MR
Corrective Action or clarification #1 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	This is T combustion for the thermocouple measuring the combusting gas. This is reflected in the ER sheet.
DOE Assessment #1 <i>The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	In the Revised MR there is no Value Monitored stated in parameter "Other Flare operational Parameters" in section 3.2 of the MR
Corrective Action or clarification #2 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	Fixed
DOE Assessment #2 <i>The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The Values have been provided in the MR for the parameter.
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	4.1.2.11
Classification	☐ CAR ☒ CL ☐ FAR
Description of finding (DOE)	It is not clear in section 3.3 of MR, how non-conformities from internal audits are handled, as required by the guidance for MR.

Finding	4.1.2.11
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	These are addressed through corrective action by the production manager
DOE Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	It has not been mentioned in section 3.3 that how non-conformities from internal audits are addressed through corrective action by the production manager as required by Guidance for MR.
Corrective Action or clarification #2 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	There is a procedure for corrective action
DOE Assessment #2 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	Section 3.3 has been revised to indicate clearly how non-conformities from internal audits are handled.
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	4.1.2.12
Classification	☐ CAR ☒ CL ☐ FAR
Description of finding (DOE)	It is not clear as to the difference in project start date and the start date of the crediting period in section 1.5 and 1.6 of the MR.
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	Amended
DOE Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	The start date of the project and start date of crediting period has been revised to match each other, however it is not clear whether the start date of the project is 26/05/2011 or 27/05/2011 because the proof provided by the PP shows that the data start to be recorded by the 26/05/2011 whereas the PD & MR mentions 27/05/2011. Clarification required.
Corrective Action or clarification #2 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	The 26 th is when data starts coming through the system but the plant is only commissioned and starts operation on the 27 th .
DOE Assessment #2 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	It has been clarified that the data recorded on the 26/05/2011 was not used in calculating the emission reductions and the plant started flaring operation only on 27/05/2011.

Finding	4.1.2.12
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	4.1.2.13
Classification	☐ CAR ☒ CL ☐ FAR
Description of finding (DOE)	In section 3.2 of the MR, start date of calibration certificate has been stated as 28/06/2011 for parameters LFG _{total,y} , LFG _{flare,y} and LFG _{electricity,y} , of Robinson Deep Landfill site, although start date of the Landfill Site has been stated as 28/05/2011 in section 2.1
Corrective Action or clarification #1 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	Amended to state the start date of the cert as per the equipment supplier's calibration certificate and not the completion certificate.
DOE Assessment #1 <i>The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The start date of calibration certificates in section 3.2 of the MR has been amended to match the start date of project activity. However the start date of the project activity has to be clarified.
Corrective Action or clarification #2 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	Addressed above as the 27 th
DOE Assessment #2 <i>The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Section 3.3 has been revised as per manufacture's specification and the start date of the project activity has been clarified.
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	4.1.2.14
Classification	☐ CAR ☒ CL ☐ FAR
Description of finding (DOE)	The accuracy class stated for Trolex Gas Analyser in Robinson Deep Landfill site and Marie Louise Landfill site does not match the manufacturer specifications
Corrective Action or clarification #1 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	These have been amended to show full details of the instruments performance

Finding	4.1.2.14
DOE Assessment #1 <i>The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Accuracy class for Trolex Gas Analyser in both Landfill site has been revised to match manufacturer's specifications. The accuracy class for the gas analysers Trolex and GIR 5000 is more than that stated in PDD and thus is conservative and hence acceptable to Verification Team.
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	4.1.2.15
Classification	☐ CAR ☒ CL ☐ FAR
Description of finding (DOE)	Parameters $EC_{PJ,y}$ and $FC_{i,j,y}$ are not provided in section 3.2 of the MR required as monitored parameters as per the PDD section B.7.1
Corrective Action or clarification #1 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	Added to MR
DOE Assessment #1 <i>The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Parameter $EC_{PJ,y}$ and $FC_{i,j,y}$ are provide in section 3.2 of the MR, but the information provide in Value monitored for Parameter $EC_{PJ,y}$ does not clearly explains the Average value monitored. And also both parameters are not quoted as they are on the tool and on the Registered PDD.
Corrective Action or clarification #2 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	Amended to reflect MWh and Lt
DOE Assessment #2 <i>The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Section 3.2 of the MR has been revised to provide Parameter $EC_{PJ,y}$ and $FC_{i,j,y}$ and their Values Monitored.
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	4.1.2.16
Classification	☐ CAR ☒ CL ☐ FAR

Description of finding (DOE)	In parameter LFG_{total,y} , LFG_{flare,y} , PE_{flare,y} , W_{CH4} , T_{flare} , it is not clear why there is no data reported from September to November for Robinson Deep Landfill site.
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	The fixed gas analyser for the Robinson Deep flare became faulty and was not able to be serviced or calibrated on site. This was not just the individual gas analysing cards but the entire unit. As this instrument conducts all the measuring of the methane concentrations the flare was not able to operate as the methane readings were out of range for safe operation of the flare and the flare was therefore turned off until the new fixed gas analyser was installed. Therefore there was no data from the flare for the above parameters as the flare was not running from September to November.
DOE Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	It has been clarified why there is no data reported from September to November for Robinson Deep Landfill site for above parameters. No emission reductions have been claimed for the period from the Robinson Deep flare. The other flare at Marie Louise landfill site was unaffected due to this.
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

4.2 Accuracy of GHG Emission Reduction or Removal Calculations

Emission reductions have been calculated in accordance with the applied methodology ACM0001 "Consolidated baseline and monitoring methodology for landfill gas project activities" version 11 /08/, CDM PDD/07/ and the VCS PD/04/. The PP has used monitored data and ex-ante fixed data including default values as mandated/permitted by the applied methodology. The values used for calculation of GHG emission reductions have been thoroughly checked by the verification team and was found appropriate and correct. The spread sheet/06/ submitted by the PP clearly and transparently mentions values of the data parameters used for calculation of emission reductions. The calculations are traceable and follow logical steps. The input values have been verified from the reliable and authentic sources including monitoring records (distribution records) /25//34/, PD /03//04/, and applied methodology /08/. The emission reductions calculated were compared with the emission reduction spread sheet/06/ and found to be correct. No significant reporting risks have been identified for the data reported.

Calibration records and certificates /20//27/ were checked for the equipment, and calibration was done as per the monitoring plan.

Flare trip logs/25/ were analysed to check the details when trips were observed, during that period, no emission reduction claims should be made.

A replacement report for the monitoring equipment that was replaced, i.e. Thermocouple was referred. /33/

3 CARs and 2 CLs were raised and closed during the course of verification.

Finding	4.2.1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding (DOE)	The value for baseline emissions, project emissions and leakage emissions provided in section 4 of the MR do not match the values provided in ER sheet. Also, it is stated in section 4.1 of MR that no baseline emissions are applicable to this project. This is not consistent with the information provided in the applied methodology and the CDM PDD. The information in section 4.4 of MR doesn't provide clearly if the PP wishes to breakdown the ERs for different vintages.		
Corrective Action or clarification #1 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	A revised and consolidated ER sheet has been provided. The values have now been correctly allocated. Section 4.4 has been amended to reflect the baseline emissions Amended vintages required.		
DOE Assessment #1 <i>The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Section 4 of the MR has been revised to reflect the value of baseline emission, project emission and leakage emissions which match the Values in ER Sheet. Baseline emissions are correctly recorded in section 4.1 of the MR. It is now clear how the PP want to breakdown the ERs		
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed		

Finding	4.2.2		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding (DOE)	The ER sheet provided for the monitoring period does not provide the data clearly and links fields to another Spreadsheet. All the data for the monitoring period needs to be provided in a single Spreadsheet with complete information for validation		
Corrective Action or clarification #1 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	A revised combined and consolidated sheet has been provided.		
DOE Assessment #1 <i>The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The revised ER Sheet provides the data for entire monitoring period		
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed		

Finding	4.2.3
Classification	☒ CAR ☐ CL ☐ FAR
Description of finding (DOE)	In section 3.2 of the MR, for parameters “EL _{LFG} ” and “Operations of the Energy Plant” in sub-section Value monitored it is stated that the value is variable during the monitoring period. However, no values are available for the parameters in the ER sheet and MR.
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	Corrected to state 0.
DOE Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	Section 3.2 of the MR, for parameters “EL _{LFG} ” and “Operations of the Energy Plant” in sub-section Value monitored has been revised to state 0 as there is no electricity being produced at this stage. This has been checked through the observation during the site visit and further compared with the implementation plan.
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	4.2.4
Classification	☐ CAR ☒ CL ☐ FAR
Description of finding (DOE)	It is not clear how the value for the parameter PE _{flare,y} is monitored as no monitoring equipment has been stated corresponding to the parameter. The measuring frequency of 30 minutes does not meet the requirements stated in the tool used. As per the tool “Tool to determine project emissions from flaring gases containing methane” constituent parameters need to be monitored continuously. Also, as this is a monitored parameter latest version of the tool has not been used for calculation in the ER sheet
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	The project specifically uses and details the default 90% efficiency in the PDD section B6.1 page 30 of the PDD. As the tool details in section II as we use a default 90% flare efficiency we only need to ensure that the flare complies with the manufactures specifications. This achieve in two ways one is the calculation in the ER sheet does a functionality check with the operating parameters for time over every hour as required by the tool. The ER sheet also checks each half hour for compliance with the manufactures specification for temperature and CH4 concentration.

Finding	4.2.4
DOE Assessment #1 <i>The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The parameter $PE_{flare,y}$ meets the requirement as stated in the tool "Tool to determine project emissions from flaring gases containing methane" for using the default value. This has been clarified by providing details in Calculation method for the parameter.
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	4.2.5
Classification	☐ CAR ☒ CL ☐ FAR
Description of finding (DOE)	The values for the parameter $PE_{EC,y}$ are not provided clearly in raw data and emission reduction sheet. It is not clear if the parameter has been used for calculation of emission reductions. Also, it is not clear if the value is recorded continuously. The accuracy class of the transformer DEM024SJ for Marie Louise Landfill site has been stated as Class 2, however the manufacturer specification stated the accuracy class as Class B.
Corrective Action or clarification #1 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	The revised consolidated sheet now clearly has a sheet dedicated to PE_{ecy}. This has been amended to state B and not 2.
DOE Assessment #1 <i>The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The values of parameter are mentioned but the stated period is not consistent. Clearly stated that is recorded continuously. The accuracy class of the transformer DEM024SJ for Marie Louise Landfill site has been revised to State class B as per Manufactures Specification
Corrective Action or clarification #2 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	Corrected
DOE Assessment #2 <i>The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	It is not clear why the value of 545 CO_{2e} was monitored from 1 May 2012 to 11 November 2012. In section 2.1 of the MR it has been stated that the Marie Louise site was only commissioned on 4th of May 2012. Please clarify

Finding	4.2.5
Corrective Action or clarification #3 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	The flare had power supplied to it prior to the commissioning date which is reflected 2.1 and we are being conservative in including this pre commissioning power as part of the project emissions. It is also not easy to establish what portion of the power was used prior to commissioning and therefore we used the full meter reading for the calculation
DOE Assessment #3 <i>The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	It has been clarified why the value of 545 CO _{2e} was monitored from 1 May 2012 to 11 November 2012 as the flare had power supplied to it prior to commissioning date. However this was before operation of the flare for emission reductions.
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

The details of monitoring parameters used for calculation of emission reductions are provided below:

Monitoring Parameter Requirement	Assessment/ Observation by the DOE																				
Data / Parameter: (as in monitoring plan of PDD):	Total amount of landfill gas captured at Normal Temperature and Pressure (LFG _{total,y})																				
Data unit	Nm ³																				
Reported Values	Robinson Deep: <table> <tr> <td>May 2011 Average</td><td>569.7</td></tr> <tr> <td>June 2011 Average</td><td>807.1</td></tr> <tr> <td>July 2011 Average</td><td>1218.3</td></tr> <tr> <td>August 2011 Average</td><td>1234.1</td></tr> <tr> <td>September 2011 Average</td><td>1350.6</td></tr> <tr> <td>October 2011 Average</td><td>1228.7</td></tr> <tr> <td>November 2011 Average</td><td>1520.8</td></tr> <tr> <td>December 2011 Average</td><td>1465.9</td></tr> <tr> <td>January 2012 Average</td><td>1288.8</td></tr> <tr> <td>February 2012 Average</td><td>1380.0</td></tr> </table>	May 2011 Average	569.7	June 2011 Average	807.1	July 2011 Average	1218.3	August 2011 Average	1234.1	September 2011 Average	1350.6	October 2011 Average	1228.7	November 2011 Average	1520.8	December 2011 Average	1465.9	January 2012 Average	1288.8	February 2012 Average	1380.0
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November 2011 Average	1520.8																				
December 2011 Average	1465.9																				
January 2012 Average	1288.8																				
February 2012 Average	1380.0																				

	March 2012 Average			1235.2
	April 2012 Average			890.4
	May 2012 Average			1070.9
	June 2012 Average			1109.3
	July 2012 Average			1156.4
	August 2012 Average			1251.8
	September 2012 Average			0
	October 2012 Average			0
	November 2012 Average			0
	Marie Louise			
	June 2012 Average			383.0
	July 2012 Average			389.8
	August 2012 Average			392.8
	September 2012 Average			380.6
	October 2012 Average			360.7
	November 2012 Average			318.8
Measuring frequency/Time Interval:	Continuously			
Reporting frequency:	Recorded every 30 minutes			
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes			
Details of monitoring equipment:		Robinson Deep Landfill Site	Marie Louise Landfill Site	
	Make	Endress+Hauser/Proline T-mass 65F	Endress+Hauser/Proline T-mass 65F	
	Serial	E2110C02000	E704AF02000	

	Number		
	Accuracy Class	Less than 3 %	Less than 3 %
	Calibration Frequency	Every 3 years	Every 3 years
	Last Calibration	02/03/2011 ¹	13/11/2011 ²
	Flow meter conversion factor is automatically taken care of by the flow meter due to changes in composition. The error curve statement that specifies the values for A, B and C from technology provider has been provided/24-e/ /31-g/. And it has been clarified that the error curve takes into account those small changes in the gas composition that affect the readings for a thermal mass flow meter and is used to adjust the flow readings accordingly.		
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	Yes, the accuracy of the monitoring equipment is as stated in the PDD /07/.		
Calibration frequency /interval:	Every 3 years		
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	PDD does not specify the frequency of calibration. However, the selected frequency represents good monitoring practise as checked through the letter provided by the manufacturer confirming the validity of the calibration /34/.		
Company performing the calibration(internal or external calibration):	Endress+Hauser (External)		
Did calibration confirm proper functioning of monitoring equipment?	Yes		

¹ The calibration period of 3 years will remain effective from the date of installation as clarified by a letter provided by the manufacturer/34/.

² The calibration period of 3 years will remain effective from the date of installation as clarified by a letter provided by the manufacturer/34/.

(Yes / No):	
Is (are) calibration(s) valid for the whole reporting period?	Yes
If applicable, has the reported data been cross-checked with other available data?	Yes
How were the values in the monitoring report verified?	The values for the parameter are monitored continuously and then through the internet linked to control panel data is sent to Biogas/Dexdyne server. Biogas/Netrix website has a provision for extracting data aggregated monthly and yearly.
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The necessary QA/QC procedures for this parameter are in place as provided in monitoring report and the registered PDD/07/. The flow meters are calibrated by Endress + Hauser/34//20//27/.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA. Full set of data has been provided for the monitoring period.

Monitoring Parameter Requirement	Assessment/ Observation by the DOE
Data / Parameter: (as in monitoring plan of PDD):	Amount of LFG flared at Normal Temperature and Pressure (LFG _{flare,y})
Data unit	Nm ³
Reported Values	Robinson Deep May 2011 Average 569.7 June 2011 Average 807.1

	July 2011 Average	1218.3
	August 2011 Average	1234.1
	September 2011Average	1350.6
	October 2011 Average	1228.7
	November 2011Average	1520.8
	December 2011 Average	1465.9
	January 2012 Average	1288.8
	February 2012 Average	1380.0
	March 2012 Average	1235.2
	April 2012 Average	890.4
	May 2012 Average	1070.9
	June 2012 Average	1109.3
	July 2012 Average	1156.4
	August 2012 Average	1251.8
	September 2012Average	0
	October 2012 Average	0
	November 2012Average	0
	Marie Louise	
	June 2012 Average	383.0
	July 2012 Average	389.8
	August 2012 Average	392.8
	September 2012Average	380.6
	October 2012 Average	360.7
	November 2012Average	318.8

Measuring frequency/Time Interval:	Continuously		
Reporting frequency:	Recorded every 30 minutes		
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes		
Details of monitoring equipment:		Robinson Deep Landfill Site	Marie Louise Landfill Site
	Make	Endress+Hauser/Proline T-mass 65F	Endress+Hauser/Proline T-mass 65F
	Serial Number	E2110D02000	E704B102000
	Accuracy Class	Less than 3 %	Less than 3 %
	Calibration Frequency	Every 3 years	Every 3 years
	Last Calibration	02/03/2011 ³	13/11/2011 ⁴
	Flow meter conversion factor is automatically taken care of by the flow meter due to changes in composition. The error curve statement that specifies the values for A, B and C from technology provider has been provided/24-e/ /31-g/. And it has been clarified that the error curve takes into account those small changes in the gas composition that affect the readings for a thermal mass flow meter and is used to adjust the flow readings accordingly.		
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	Yes, the accuracy of the monitoring equipment is as stated in the PDD.		

³ The calibration period of 3 years will remain effective from the date of installation as clarified by a letter provided by the manufacturer/34/.

⁴ The calibration period of 3 years will remain effective from the date of installation as clarified by a letter provided by the manufacturer/34/.

Calibration frequency /interval:	Every 3 years
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	PDD does not specify the frequency of calibration. However, the selected frequency represents good monitoring practise as checked through the letter provided by the manufacturer confirming the validity of the calibration/34/.
Company performing the calibration(internal or external calibration):	Endress+Hauser (External)
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes
Is (are) calibration(s) valid for the whole reporting period?	Yes
If applicable, has the reported data been cross-checked with other available data?	Yes
How were the values in the monitoring report verified?	The values for the parameter are monitored continuously and then through the internet linked to control panel data is sent to Biogas/Dexdyne server. Biogas/Netrix website has a provision for extracting data aggregated monthly and yearly.
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The necessary QA/QC procedures for this parameter are in place as provided in monitoring report and the registered PDD/07/. The flow meters are calibrated by Endress + Hauser/34//20//27/.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA. Full set of data has been provided for the monitoring period.

Monitoring Parameter Requirement	Assessment/ Observation by the DOE		
Data / Parameter: (as in monitoring plan of PDD):	Amount of LFG combusted in power plants at Normal Temperature and Pressure (LFG _{electricity,y})		
Data unit	Nm ³		
Reported Values	0		
Measuring frequency/Time Interval:	Continuously		
Reporting frequency:	Recorded every 30 minutes		
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes		
Details of monitoring equipment:		Robinson Deep Landfill Site	Marie Louise Landfill Site
	Make	Endress+Hauser/ Proline T-mass 65F	Endress+Hauser/ Proline T-mass 65F
	Serial Number	E2110B02000	E704B002000
	Accuracy Class	Less than 3 %	Less than 3 %
	Calibration Frequency	Every 3 years	Every 3 years
	Last Calibration	02/03/2011 ⁵	12/11/2011 ⁶
	Flow meter conversion factor is automatically taken care of by the flow meter due to changes in composition. The error curve statement that specifies the values for A, B and C from technology provider has been provided/24-e/ /31-g/. And it has been clarified that the error curve takes into account those small changes in the gas		

⁵ The calibration period of 3 years will remain effective from the date of installation as clarified by a letter provided by the manufacturer/34/.

⁶ The calibration period of 3 years will remain effective from the date of installation as clarified by a letter provided by the manufacturer/34/.

	composition that affect the readings for a thermal mass flow meter and is used to adjust the flow readings accordingly.
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	Yes, the accuracy of the monitoring equipment is as stated in the PDD.
Calibration frequency /interval:	Every 3 years
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	PDD does not specify the frequency of calibration. However, the selected frequency represents good monitoring practise as checked through the letter provided by the manufacturer confirming the validity of the calibration.
Company performing the calibration(internal or external calibration):	Endress+Hauser (External)
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes
Is (are) calibration(s) valid for the whole reporting period?	Yes
If applicable, has the reported data been cross-checked with other available data?	Yes
How were the values in the monitoring report verified?	The values for the parameter are monitored continuously and then through the internet linked to control panel data is sent to Biogas/Dexdyne server. Biogas/Netrix website has a provision for extracting data aggregated monthly and yearly.
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC	The necessary QA/QC procedures for this parameter are in place as provided in monitoring report and the registered PDD/07/. The flow meters are calibrated by Endress + Hauser/20//27/.

processes in place?	
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA. Full set of data has been provided for the monitoring period.

Monitoring Parameter Requirement	Assessment/ Observation by the DOE																										
Data / Parameter: (as in monitoring plan of PDD):	Project emissions from flaring of the residual gas stream in year y ($PE_{flare,y}$)																										
Data unit	tCO _{2e}																										
Reported Values	Robinson Deep <table> <tr><td>May 2011</td><td>5.29 tCO_{2e}</td></tr> <tr><td>June 2011</td><td>37.99 tCO_{2e}</td></tr> <tr><td>July 2011</td><td>64.25 tCO_{2e}</td></tr> <tr><td>August 2011</td><td>53.54 tCO_{2e}</td></tr> <tr><td>September 2011</td><td>71.33 tCO_{2e}</td></tr> <tr><td>October 2011</td><td>71.79 tCO_{2e}</td></tr> <tr><td>November 2011</td><td>84.27 tCO_{2e}</td></tr> <tr><td>December 2011</td><td>80.71 tCO_{2e}</td></tr> <tr><td>January 2012</td><td>74.4 tCO_{2e}</td></tr> <tr><td>February 2012</td><td>56.56 tCO_{2e}</td></tr> <tr><td>March 2012</td><td>69.01 tCO_{2e}</td></tr> <tr><td>April 2012</td><td>48.1 tCO_{2e}</td></tr> <tr><td>May 2012</td><td>50.61 tCO_{2e}</td></tr> </table>	May 2011	5.29 tCO _{2e}	June 2011	37.99 tCO _{2e}	July 2011	64.25 tCO _{2e}	August 2011	53.54 tCO _{2e}	September 2011	71.33 tCO _{2e}	October 2011	71.79 tCO _{2e}	November 2011	84.27 tCO _{2e}	December 2011	80.71 tCO _{2e}	January 2012	74.4 tCO _{2e}	February 2012	56.56 tCO _{2e}	March 2012	69.01 tCO _{2e}	April 2012	48.1 tCO _{2e}	May 2012	50.61 tCO _{2e}
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October 2011	71.79 tCO _{2e}																										
November 2011	84.27 tCO _{2e}																										
December 2011	80.71 tCO _{2e}																										
January 2012	74.4 tCO _{2e}																										
February 2012	56.56 tCO _{2e}																										
March 2012	69.01 tCO _{2e}																										
April 2012	48.1 tCO _{2e}																										
May 2012	50.61 tCO _{2e}																										

	June 2012	58.92 tCO _{2e}
	July 2012	41.85 tCO _{2e}
	August 2012	62.07 tCO _{2e}
	September 2012	0 tCO _{2e}
	October 2012	0 tCO _{2e}
	November 2012	0 tCO _{2e}
	Marie Louise	
	June 2012	6.13 tCO _{2e}
	July 2012	16.9 tCO _{2e}
	August 2012	18.7 tCO _{2e}
	September 2012	18.78 tCO _{2e}
	October 2012	17.87 tCO _{2e}
	November 2012	4.91 tCO _{2e}
Measuring frequency/Time Interval:	Monitored continuously	
Reporting frequency:	Recorded every 30 minutes	
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes	
Details of monitoring equipment:	The monitoring equipment used is T _{flare} , WCH ₄ , and LFG _{flare}	
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	Yes, the accuracy of the monitoring equipment is as stated in the PDD.	
Calibration frequency /interval:	NA	

Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA
Company performing the calibration(internal or external calibration):	NA
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	NA
Is (are) calibration(s) valid for the whole reporting period?	NA
If applicable, has the reported data been cross-checked with other available data?	Yes, available data were checked during site visit.
How were the values in the monitoring report verified?	The values for the parameter are monitored continuously and then through the internet linked to control panel data is sent to Biogas/Dexdyne server. Biogas/Netrix website has a provision for extracting data aggregated monthly and yearly.
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The necessary QA/QC procedures for this parameter are in place as provided in monitoring report and the registered PDD/07/. The flow meters are calibrated by Endress + Hauser/20//27/.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA. Full set of data has been provided for the monitoring period.

Monitoring Parameter Requirement	Assessment/ Observation by the DOE																																						
Data / Parameter: (as in monitoring plan of PDD):	Methane fraction in the landfill gas (w_{CH_4})																																						
Data unit	Nm^3CH_4/Nm^3LFG																																						
Reported Values	Robinson Deep <table> <tr><td>May 2011 Average</td><td>48.2%</td></tr> <tr><td>June 2011 Average</td><td>49.9 %</td></tr> <tr><td>July 2011 Average</td><td>50.8%</td></tr> <tr><td>August 2011 Average</td><td>54.4%</td></tr> <tr><td>September 2011Average</td><td>51.7%</td></tr> <tr><td>October 2011 Average</td><td>51.1%</td></tr> <tr><td>November 2011Average</td><td>52.3%</td></tr> <tr><td>December 2011 Average</td><td>53.8%</td></tr> <tr><td>January 2012 Average</td><td>51.1%</td></tr> <tr><td>February 2012 Average</td><td>50.0%</td></tr> <tr><td>March 2012 Average</td><td>48.7%</td></tr> <tr><td>April 2012 Average</td><td>49.0%</td></tr> <tr><td>May 2012 Average</td><td>49.8%</td></tr> <tr><td>June 2012 Average</td><td>48.1 %</td></tr> <tr><td>July 2012 Average</td><td>49.3%</td></tr> <tr><td>August 2012 Average</td><td>49.3%</td></tr> <tr><td>September 2012Average</td><td>0 %</td></tr> <tr><td>October 2012 Average</td><td>0 %</td></tr> <tr><td>November 2012Average</td><td>0 %</td></tr> </table>	May 2011 Average	48.2%	June 2011 Average	49.9 %	July 2011 Average	50.8%	August 2011 Average	54.4%	September 2011Average	51.7%	October 2011 Average	51.1%	November 2011Average	52.3%	December 2011 Average	53.8%	January 2012 Average	51.1%	February 2012 Average	50.0%	March 2012 Average	48.7%	April 2012 Average	49.0%	May 2012 Average	49.8%	June 2012 Average	48.1 %	July 2012 Average	49.3%	August 2012 Average	49.3%	September 2012Average	0 %	October 2012 Average	0 %	November 2012Average	0 %
May 2011 Average	48.2%																																						
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August 2012 Average	49.3%																																						
September 2012Average	0 %																																						
October 2012 Average	0 %																																						
November 2012Average	0 %																																						

	Marie Louise June 2012 Average 49.1% July 2012 Average 50.7% August 2012 Average 46.2% September 2012Average 47.9% October 2012 Average 46.6% November 2012Average 42.3%																										
Measuring frequency/Time Interval:	Continuously																										
Reporting frequency:	Recorded every 30 minutes																										
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes																										
Details of monitoring equipment:	<table border="1"> <tr> <td></td><td colspan="2">Robinson Deep Landfill Site</td><td>Marie Louise Landfill Site</td></tr> <tr> <td></td><td>Up to 14/09/2012</td><td>From 17/01/2013</td><td></td></tr> <tr> <td>Make</td><td>Trolex</td><td>Hi Tech GIR gas analyzer</td><td>Trolex</td></tr> <tr> <td>Serial Number</td><td>BG 10931-inlet-GA</td><td>I-05007</td><td>017976</td></tr> <tr> <td>Accuracy Class</td><td>+0.1 %</td><td>+0.5 %</td><td>+0.1 %</td></tr> <tr> <td>Calibration Frequency</td><td>Monthly</td><td>Monthly</td><td>Monthly</td></tr> </table>				Robinson Deep Landfill Site		Marie Louise Landfill Site		Up to 14/09/2012	From 17/01/2013		Make	Trolex	Hi Tech GIR gas analyzer	Trolex	Serial Number	BG 10931-inlet-GA	I-05007	017976	Accuracy Class	+0.1 %	+0.5 %	+0.1 %	Calibration Frequency	Monthly	Monthly	Monthly
	Robinson Deep Landfill Site		Marie Louise Landfill Site																								
	Up to 14/09/2012	From 17/01/2013																									
Make	Trolex	Hi Tech GIR gas analyzer	Trolex																								
Serial Number	BG 10931-inlet-GA	I-05007	017976																								
Accuracy Class	+0.1 %	+0.5 %	+0.1 %																								
Calibration Frequency	Monthly	Monthly	Monthly																								

	Last Calibration	12/09/2012 (for the monitoring period) ⁷	NA (for the monitoring period)	09/11/2012 (for the monitoring period) ⁸
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	Yes, the accuracy of the monitoring equipment is as stated in the PDD.			
Calibration frequency /interval:	Monthly			
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	PDD does not specify the frequency of calibration. However, the selected frequency represents good monitoring practise.			
Company performing the calibration(internal or external calibration):	Internal			
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes			
Is (are) calibration(s) valid for the whole reporting period?	Yes			
If applicable, has the reported data been cross-checked with other available data?	Yes			
How were the values in the monitoring	The values for the parameter are monitored			

⁷ Initial calibration (1st calibration) is done by the original manufacturer. The certificate as per the original manufacturer is valid from 27/05/2011/27-d/. The unit is then calibrated at least monthly with a certified span gas to ensure accuracy until the unit is no longer able to be calibrated on site. If the unit is not able to be calibrated using the certified span gas then the analyzing unit is replaced.

⁸ Initial calibration (1st calibration) is done by the original manufacturer. The certificate as per the original manufacturer is valid from 04/05/2012/20-d/. The unit is then calibrated at least monthly with a certified span gas to ensure accuracy until the unit is no longer able to be calibrated on site. If the unit is not able to be calibrated using the certified span gas then the analyzing unit is replaced.

report verified?	continuously and then through the internet linked to control panel data is sent to Biogas/Dexdyne server. Biogas/Netrix website has a provision for extracting data aggregated monthly and yearly.
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The necessary QA/QC procedures for this parameter are in place as provided in monitoring report and the registered PDD/07/.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA. Full set of data has been provided for the monitoring period.

Monitoring Parameter Requirement	Assessment/ Observation by the DOE
Data / Parameter: (as in monitoring plan of PDD):	Net amount of electricity generated using LFG (EL_{LFG})
Data unit	MWh
Reported Values	0
Measuring frequency/Time Interval:	Continuously
Reporting frequency:	Archived
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	NA. To be installed when generators are installed.
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the	NA

accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	
Calibration frequency /interval:	NA
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA
Company performing the calibration(internal or external calibration):	NA
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	NA
Is (are) calibration(s) valid for the whole reporting period?	NA
If applicable, has the reported data been cross-checked with other available data?	NA, No data for this parameter
How were the values in the monitoring report verified?	It has been observed during site visit that there is no data for this parameter as the power generation component of this project is still to be installed.
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	NA
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a	NA. Full set of data has been provided for the monitoring period.

request for deviation been approved?	
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Monitoring Parameter Requirement	Assessment/ Observation by the DOE
Data / Parameter: (as in monitoring plan of PDD):	Operation of the energy plant
Data unit	Hours
Reported Values	0
Measuring frequency/Time Interval:	Continuously
Reporting frequency:	Archived.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	NA, Monitoring equipment Still to be installed with Generators.
Calibration frequency /interval:	NA
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA
Company performing the calibration(internal or external calibration):	NA
Did calibration confirm proper functioning of monitoring equipment?	NA

(Yes / No):	
Is (are) calibration(s) valid for the whole reporting period?	NA
If applicable, has the reported data been cross-checked with other available data?	Yes
How were the values in the monitoring report verified?	It has been observed during site visit that there is no data for this parameter as the power generation component of this project is still to be installed.
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	NA
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Monitoring Parameter Requirement	Assessment/ Observation by the DOE
Data / Parameter: (as in monitoring plan of PDD):	Project emissions from electricity consumption by the project activity during the year y ($PE_{EC,y}$)
Data unit	tCO ₂
Reported Values	Robinson Deep 27 May 2011 to 11 November 2012 121 tCO _{2e} Marie Louise 1 May 2012 to 11 November 2012 19 tCO _{2e}
Measuring frequency/Time Interval:	Continuously
Reporting frequency:	Recorded Monthly

Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes		
Details of monitoring equipment:		Robinson Deep Landfill Site	Marie Louise Landfill Site
	Make	CBI	ACORP
	Part Number	CBI-EC330CM	DEM024SJ
	Accuracy Class	Class 2	Class B
	Calibration Frequency	NA	NA
	Last Calibration	NA ⁹	NA ¹⁰
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	Yes, the accuracy of the monitoring equipment is as stated in the PDD.		
Calibration frequency /interval:	NA		
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA		
Company performing the calibration(internal or external calibration):	NA		
Did calibration confirm proper	NA		

⁹ The monitoring equipment is intrinsically designed to self-test for operability and correct functioning as confirmed through the manufacturer specification /27-f/. It has been confirmed through publically available information that the type of equipment used automatically calibrates/40/..

¹⁰ The monitoring equipment is intrinsically designed to self-test for operability and correct functioning as confirmed through the manufacturer specification /20-e/. It has been confirmed through publically available information that the type of equipment used automatically calibrates/40/..

functioning of monitoring equipment? (Yes / No):	
Is (are) calibration(s) valid for the whole reporting period?	NA
If applicable, has the reported data been cross-checked with other available data?	Yes
How were the values in the monitoring report verified?	The values were verified in Electricity supply meter on site and Eskom website.
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The necessary QA/QC procedures for this parameter are in place as provided in monitoring report and the registered PDD/07/.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA. Full set of data has been provided for the monitoring period.

Monitoring Parameter Requirement	Assessment/ Observation by the DOE
Data / Parameter: (as in monitoring plan of PDD):	Project emissions from fossil fuel combustion in fossil fuel based generators during the year y ($PE_{FC,j,y}$)
Data unit	tCO ₂ e
Reported Values	NA. No standby generators have been used during the monitoring period in the project activity.
Measuring frequency/Time Interval:	NA. No standby generators have been used during the monitoring period in the project activity.
Reporting frequency:	NA. No standby generators have been used during the monitoring period in the project activity.

Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	NA. No standby generators have been used during the monitoring period in the project activity.
Details of monitoring equipment:	NA. No standby generators have been used during the monitoring period in the project activity.
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	NA. No standby generators have been used during the monitoring period in the project activity.
Calibration frequency /interval:	NA. No standby generators have been used during the monitoring period in the project activity.
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA. No standby generators have been used during the monitoring period in the project activity.
Company performing the calibration(internal or external calibration):	NA. No standby generators have been used during the monitoring period in the project activity.
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	NA. No standby generators have been used during the monitoring period in the project activity.
Is (are) calibration(s) valid for the whole reporting period?	NA. No standby generators have been used during the monitoring period in the project activity.
If applicable, has the reported data been cross-checked with other available data?	NA. No standby generators have been used during the monitoring period in the project activity.
How were the values in the monitoring report verified?	NA. No standby generators have been used during the monitoring period in the project activity.
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission	NA. No standby generators have been used during the monitoring period in the project activity.

reductions and are necessary QA/QC processes in place?	
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA. No standby generators have been used during the monitoring period in the project activity.

Monitoring Parameter Requirement	Assessment/ Observation by the DOE																								
Data / Parameter: (as in monitoring plan of PDD):	Temperature in the exhaust gas of the flare (T_{flare})																								
Data unit	°C																								
Reported Values	Robinson Deep <table> <tr><td>May 2011 Average</td><td>1007.4 °C</td></tr> <tr><td>June 2011 Average</td><td>1003.7 °C</td></tr> <tr><td>July 2011 Average</td><td>1002.1 °C</td></tr> <tr><td>August 2011 Average</td><td>936.5 °C</td></tr> <tr><td>September 2011 Average</td><td>967.8 °C</td></tr> <tr><td>October 2011 Average</td><td>877.8 °C</td></tr> <tr><td>November 2011 Average</td><td>859.1 °C</td></tr> <tr><td>December 2011 Average</td><td>866.4 °C</td></tr> <tr><td>January 2012 Average</td><td>867.8 °C</td></tr> <tr><td>February 2012 Average</td><td>902.7 °C</td></tr> <tr><td>March 2012 Average</td><td>891.9 °C</td></tr> <tr><td>April 2012 Average</td><td>911.9 °C</td></tr> </table>	May 2011 Average	1007.4 °C	June 2011 Average	1003.7 °C	July 2011 Average	1002.1 °C	August 2011 Average	936.5 °C	September 2011 Average	967.8 °C	October 2011 Average	877.8 °C	November 2011 Average	859.1 °C	December 2011 Average	866.4 °C	January 2012 Average	867.8 °C	February 2012 Average	902.7 °C	March 2012 Average	891.9 °C	April 2012 Average	911.9 °C
May 2011 Average	1007.4 °C																								
June 2011 Average	1003.7 °C																								
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February 2012 Average	902.7 °C																								
March 2012 Average	891.9 °C																								
April 2012 Average	911.9 °C																								

	May 2012 Average 898.1 °C		
	June 2012 Average 840.2 °C		
	July 2012 Average 872.2 °C		
	August 2012 Average 960.3 °C		
	September 2012 Average 0 °C		
	October 2012 Average 0 °C		
	November 2012 Average 0 °C		
	Marie Louise		
	June 2012 Average 840.2 °C		
	July 2012 Average 860.8 °C		
	August 2012 Average 896.3 °C		
	September 2012 Average 892.8 °C		
	October 2012 Average 879.9 °C		
	November 2012 Average 882.0 °C		
Measuring frequency/Time Interval:	Continuously		
Reporting frequency:	Recorded every 30 minutes		
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes		
Details of monitoring equipment:		Robinson Deep Landfill Site	Marie Louise Landfill Site
	Make	Type N thermocouple	Type N thermocouple
	Part Number	T1TECNSX60	T1TECNSX60
	Accuracy	+/- 0.75 °C	+/- 0.75 °C
	Calibration Frequency	Functionality tests every 3 months	Functionality tests every 3 months
	Last Calibration	11/12/2012	11/12/2012

Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	Yes, the accuracy of the monitoring equipment is as stated in the PDD.
Calibration frequency /interval:	Every 3 Months
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	Yes, Calibration interval is in line with the monitoring plan of the PDD.
Company performing the calibration(internal or external calibration):	Internal
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes
Is (are) calibration(s) valid for the whole reporting period?	Yes
If applicable, has the reported data been cross-checked with other available data?	Yes
How were the values in the monitoring report verified?	The reported data has been compared with functionality check sheets at the site.
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The necessary QA/QC procedures for this parameter are in place as provided in monitoring report.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically	NA. Full set of data has been provided for the monitoring period.

possible been applied or has a request for deviation been approved?	
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Monitoring Parameter Requirement	Assessment/ Observation by the DOE
Data / Parameter: (as in monitoring plan of PDD):	Operating conditions as per manufacturer specifications.(Other Flare operational Parameters)
Data unit	-
Reported Values	700 °C < T _{flare} < 1200 °C T _{flare} < 1200 °C W _{CH4} > 25% v/v
Measuring frequency/Time Interval:	Continuously
Reporting frequency:	Recorded every 30 minutes
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	NA
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	
Calibration frequency /interval:	Annually
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	Yes
Company performing the calibration(internal or external calibration):	Internal

Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes
Is (are) calibration(s) valid for the whole reporting period?	Yes
If applicable, has the reported data been cross-checked with other available data?	NA
How were the values in the monitoring report verified?	Data in the monitoring report were verified during the site visit checks.
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA Full set of data has been provided for the monitoring period.

Monitoring Parameter Requirement	Assessment/ Observation by the DOE		
Data / Parameter: (as in monitoring plan of PDD):	Onsite consumption of electricity attributable to the project activity during the year y ($EC_{PJ,y}$)		
Data unit	MWh		
Reported Values	Site Name:	ROBINSON DEEP	
	Year 2011	Monthly net MWh Reading	
	31/05/2011	5.671	
	30/06/2011	5.671	
	29/07/2011	5.671	

	31/08/2011	5.671
		Accumulative MWh Reading
	30/09/2011	4.363
	31/10/2011	10.227
	30/11/2011	18.815
	30/12/2011	26.041
	Average/month	6.09MWh/month
	Year 2012	Accumulative MWh Reading
	30/01/2012	31.862
	29/02/2012	37.657
	30/03/2012	44.342
	26/04/2012	48.685
	31/05/2012	53.501
	29/06/2012	57.752
	27/07/2012	61.038
	31/08/2012	64.910
	28/09/2012	69.651
	31/10/2012	76.974
	30/11/2012	84.510
	31/12/2012	90.742
	Average/month	7.56MWh/month
	Parameter	ECpi.v
	Site Name	MARIE LOUISE
	Year 2012	Accumulative MWh Reading
	31/05/2012	2.192
	29/06/2012	4.204
	27/07/2012	6.694
	31/08/2012	9.297
	28/09/2012	11.487
	31/10/2012	13.881
	30/11/2012	16.266
	31/12/2012	18.575
	Average/month	2.32MWh/month
Measuring frequency/Time Interval:	Monitored continuously	

Reporting frequency:	Recorded monthly		
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes		
Details of monitoring equipment:		Robinson Deep Landfill Site	Marie Louise Landfill Site
	Make	Transformer	Transformer
	Part Number	CBI- EC330CM	DEM024SJ
	Accuracy Class	Class 1	Class B
	Calibration Frequency	NA	NA
	Last Calibration	NA ¹¹	NA ¹²
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	Yes		
Calibration frequency /interval:	NA		
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA		
Company performing the calibration(internal or external calibration):	NA		

¹¹ The monitoring equipment is intrinsically designed to self-test for operability and correct functioning as confirmed through the manufacturer specification /27-f/. It has been confirmed through publically available information that the type of equipment used automatically calibrates/40/..

¹² The monitoring equipment is intrinsically designed to self-test for operability and correct functioning as confirmed through the manufacturer specification /20-e/. It has been confirmed through publically available information that the type of equipment used automatically calibrates/40/..

Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	NA
Is (are) calibration(s) valid for the whole reporting period?	NA
If applicable, has the reported data been cross-checked with other available data?	Yes the data has been checked
How were the values in the monitoring report verified?	Measured using electricity meters and aggregated annually.
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA Full set of data has been provided for the monitoring period.

Monitoring Parameter Requirement	Assessment/ Observation by the DOE
Data / Parameter: (as in monitoring plan of PDD):	Amount of fossil fuel type i consumed by the group of power units m in year y ($FC_{i,m,y}$)
Data unit	Mass or Volume
Reported Values	0
Measuring frequency/Time Interval:	NA
Reporting frequency:	NA
Is measuring and reporting frequency in accordance with the monitoring plan	NA

and monitoring methodology? (Yes / No)	
Details of monitoring equipment:	NA
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	NA
Calibration frequency /interval:	NA
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA
Company performing the calibration(internal or external calibration):	NA
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	NA
Is (are) calibration(s) valid for the whole reporting period?	NA
If applicable, has the reported data been cross-checked with other available data?	NA
How were the values in the monitoring report verified?	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	NA

In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA Full set of data has been provided for the monitoring period.
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Monitoring Parameter Requirement	Assessment/ Observation by the DOE
Data / Parameter: (as in monitoring plan of PDD):	Flare efficiency in the hour h ($\eta_{\text{flare},h}$)
Data unit	%
Reported Values	90 %
Measuring frequency/Time Interval:	Monitored and measured continuously
Reporting frequency:	Recorded every 30 minutes
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	Flare T_{flare} thermocouple mounted in the flare stack, LFG_{flare} , W_{ch4} and operational time recorded in the workbook reflecting with the data collected.
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	NA
Calibration frequency /interval:	NA
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected	NA

frequency represent good monitoring practise?	
Company performing the calibration(internal or external calibration):	NA
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	NA
Is (are) calibration(s) valid for the whole reporting period?	NA
If applicable, has the reported data been cross-checked with other available data?	NA
How were the values in the monitoring report verified?	Calculated and checked during Site visit.
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA. Full set of data has been provided for the monitoring period.

Emission reductions have been calculated in accordance with the applied methodology “ACM0001/Version 11 Consolidated baseline and monitoring methodology for landfill gas project activities”/08/.

4.3 Quality of Evidence to Determine GHG Emission Reductions or Removals

The quality of supporting documents that are provided by the PP as evidence is adequate.

Primary data sheets for all the flares is provided, which tallies with the data provided in the emission reduction calculation sheet /25//32/.

Competent employees are recruited for the management and operation of the project. A management structure has been provided supporting the same /17/. Trainings have been provided to the concerned persons operating the project. Training certificates have been provided as evidence /21//28/.

All the calibration certificates provided are valid for the monitoring period /20//27/.

4.4 Management and Operational System

The suitability of the monitoring system was assessed first during the desk review of MR /01/, followed by site visit and the interviews with PP and operational staff. The management and operation of the project has been found to be sufficient as per the monitoring plan of the registered PDD /07/.

The monitoring system includes the data monitored at flow meters, gas analysers and thermocouples; this data is recorded and transmitted from the control panel system through telemetry to the central database, maintained by Dexdyne/Biogas. The data is recorded for every 30 minutes and the raw data is stored in CSV files which could be downloaded from the website. The data is downloaded monthly by the PP and recorded into a workbook for calculation of the emission reductions. The management structure provided in the MR/01/ does not match the one provided as supporting evidence/17/. CL 15 has been raised and closed in this regard:

It has been stated in the registered PDD /07/ that data collected on-site will be compiled in an electronic format which will be sent to EcoSecurities on a regular basis. CL 16 has been raised and closed in this regard:

The management structure for the project activity is presented below:

Position	Responsibilities	Authorities
ENER-G Systems Joburg Process Operations Manager (Tony Cummings)	Overall responsibility for the landfill gas system. Overall responsibility for the Quality Management System for the landfill gas data collection system. Reviews performance data on landfill gas system Stores and archives data received for ENER-G Systems Joburg Robinson Deep and Marie Louise CDM projects.	Manages resources for operation of the landfill gas system
Ener-G Systems General Manager (David Cornish)	Overall responsibility for managing the landfill gas projects allocation of resources and review of performance.	Manages resources for the landfill gas system.
Ener-G Site Technician Nhlanhla Sepatake (Robinson Deep) Ellek Mkhari (Robinson Deep) Musa Mbombi (Marie Louise) Tshimangadzo Manngo (Marie Louise)	Day-to-day operation of the landfill gas system and flare maintenance and calibration of site instruments.	Controls the landfill gas system and flare
Data Controller	Reviews and compares primary and secondary data from flare system. Prepares monthly workbook and submits to Ener-G General Manager for Review and comments.	Compile Data into monthly workbook.
Dexdyne	Responsible for data collection. Allows ENER-G Systems and Biogas access to down load the raw data collected from the sites.	Management and archiving of the raw data.

Verification team, as observed during the site visit and through interviews with the PP representatives, confirms that:

- The operational structure is in place as stated in monitoring plan in monitoring report /02/ and PDD /07/.
- Competent staff under the supervision of process operations manager is employed for data monitoring and collection. Personnel are trained by manufacturer and are provided with manuals to operate tools and equipment.
- Data collection, measurement, calibration, recording and archiving was found to be carried out as per the monitoring plan.
- Periodic review of the system is conducted and internal review reports are prepared and provided for management review.

2 CLs were raised and closed with regards to management and operational System

Finding	4.4.1		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding (DOE)	The management structure provided in section 3.3 of the MR does not match with the structure provided in the supporting evidence.		
Corrective Action or clarification #1 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	Clarify which mismatches?		
DOE Assessment #1 <i>The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The roles and Responsibilities provided in section 3.3 of the MR are different from those mentioned on the Management Structure submitted as supporting evidence.		
Corrective Action or clarification #2 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	Amended		
DOE Assessment #2 <i>The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Roles and responsibilities have been revised to match the ones on the supporting document provided.		
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed		

Finding	4.4.2		
Classification	☐ CAR	☒ CL	☐ FAR

Finding	4.4.2
Description of finding (DOE)	It has been stated in section B.7.2 of the registered PDD that data collected on-site will be compiled in an electronic format which will be sent to EcoSecurities on a regular basis. However, as provided in the data flow diagram in section 3.3 of the MR and during site visit it was observed that the data and information is being handled by ENER-G Systems Joburg (PTY) Ltd.
Corrective Action or clarification #1 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	That is correct EcoSecurities are no longer involved in the project. This is evidenced by the attached option letter
DOE Assessment #1 <i>The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The roles and Responsibilities provided in section 3.3 of the MR are different from those mentioned on the Management Structure submitted as supporting evidence.
Corrective Action or clarification #2 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	Provided
DOE Assessment #2 <i>The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Letter has been provided to the DOE The letter provided confirms EcoSecurities revoke their option to buy credits post 2012. However the letter does not state that they will no longer be responsible for data flow/collection. PP is required to evidence whether EcoSecurities have ceded their responsibilities and PP is required to clarify who shall be responsible for data flow/collection currently and moreover after EcoSecurities have been removed. Furthermore the above mentioned letter only refers to the rights and purchase of CDM credits
Corrective Action or clarification #3 <i>(PP shall write a detailed and clear corrective action or further information for clarification as per finding)</i>	EcoSecurities ERPA notes that they have contract to purchase all CERs up to the end of December 2012. They only had an option to procure CER post 2012. As they have not exercised this option they are no longer part of the project. They will however be removed once the CERs that were generated up to the end of 2012 have been procured and credited to their account. EcoSecurities had no rights to the VERs in terms of the ERPA. With regards to the data flow process ENER-G Systems will take over the additional responsibilities noted as being EcoSecurities
DOE Assessment #3 <i>The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	It has been clarified that EcoSecurities is no longer part of the project and all their roles and responsibilities are being taken by ENER-G Systems. This includes their responsibility for data flow/collection.
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

5 VERIFICATION CONCLUSION

Carbon Check has performed the verification of the project activity “Joburg Landfill Gas to Energy Project” in South Africa, with regards to the relevant requirements for VCS project activities.

The conclusions can be summarised as follows:

- All components of the project are implemented and installed as planned and described in the registered PDD /07/ and project activity confirms with the verification criteria for project and their GHG emission reductions or removals set out in the VCS rules VCS version 03.
- The monitoring plan is in accordance with the applied approved methodology, i.e. ACM0001, version 11 /08/ and monitoring plan as sought out in the registered PDD /07/.
- The monitoring system is in place and functional. The project has generated verifiable GHG emission reductions.

As the result of the verification of pre-CDM VERs, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. Carbon Check (Pty) Ltd herewith confirms that the project has achieved emission reductions in the below mentioned reporting period as follows.

Reporting period: From [27-May-2011] to [11-November-2012]

Verified GHG emission reductions or removals in the above reporting period:

GHG Emission Reductions or Removals	tCO ₂ e
Baseline Emissions	94667
Project Emissions	140
Leakage	0
Net GHG emission reductions or removals	94527

Emission Reduction to be issued according vintage in years as detailed below:

Year 2011	43422 tCO ₂ e
Year 2012	51105 tCO ₂ e

Place: Johannesburg **Date:** 24/01/2014



Priyesh Ramlall
Final Approval

Annex-1

Table A-1 Reference Documents:

Ref	Document
/01/	Monitoring Report titled: Joburg Landfill Gas to Energy Project Version 1 dated 05/07/2013
/02/	Monitoring Report titled: Joburg Landfill Gas to Energy Project Version 04 dated 21/01/2014
/03/	Project Description titled: Joburg Landfill Gas to Energy Project Version 01 dated 05/10/2013
/04/	Project Description titled: Joburg Landfill Gas to Energy Project Version 04 dated 21/01/2014
/05/	Emission reductions calculation sheet version 1 corresponding to /01/
/06/	Emission reductions calculation sheet version 2 corresponding to /01/
/07/	CDM PDD titled: Joburg Landfill Gas to Energy Project Version 9 dated 06/11/2012
/08/	Approved CDM methodology ACM0001 titled: Consolidated baseline and monitoring methodology for landfill gas project activities, version 11
/09/	VCS Monitoring Report Template, v 3.2
/10/	VCS PD template version 3.1
/11/	VCS Programme Definitions version 3.5
/12/	VCS Validation and Verification Manual version 3.1
/13/	VCS Program Guide (v3.5)
/14/	VCS Standard (v3.4)
/15/	Registration & Issuance Process (v3.5)
/16/	Data flow diagram
/17/	Roles and Responsibilities (Management Structure)
/18/	Quarterly Project Review Minutes a) Quarterly Meeting August 2011 b) Quarterly Meeting Nov 2011 c) Quarterly Meeting February 2012 d) Quarterly Meeting Aug 2012 e) Quarterly Meeting May 2012 f) Quarterly Meeting Nov 2012
/19/	Eskom Tariff Schedule 2013/2014
/20/	Calibration Data (Marie Louise) Parameter LFG_{total,y} a) Flow Meter Calibration Certificate with Serial Number E704B102000, Dated 12.07.2011 Parameter LFG_{electricity,y}

	b) Flow Meter Calibration Certificate with Serial Number E704AF02000, Dated 13.07.2011 Parameter $LFG_{flare,y}$ c) Flow Meter Calibration Certificate with Serial Number E704B002000, Dated 13.07.2011 Parameter W_{CH4} d) Trolex Calibration Certificate with Serial Number 017976-Inlet-GA, Dated 10.05.2012 Parameter $PE_{EC,y}$ e) Electricity Meter with serial number DEM024SJ Parameter T_{flare} f) Wika Thermocouple data sheet g) Flare Commissioning Certificate dated 04/05/2012 h) Calibration of Hand-Held Gas Meter Form 2012 i) Calibration for Flare Fixed Gas Analyser 2012 j) Span Gas Data Sheet (Expiry date: 30/06/2013)
/21/	Marie Louise Flare Training Certificates a) Flare Training Certificate - T.Manngo dated 04/05/2012 b) Flare Training Certificate - M.Mbombi dated 22/01/2013
/22/	Marie Louise Gas Collection System Phase 1 Drawing dated 16/01/2012
/23/	Marie Louise Compound Layout Phase 1 dated 10/05/2011
/24/	Marie Louise Equipment's Manual a) GFM400 Series Gas Analyser User Manual dated January 2007 b) E&H Proline t-mass 65 Manual c) Trolex TX6400 Operating Manual d) Flare Technical Manual 11104 dated 27/08/2011 e) E H error curve statement
/25/	Marie Louise Flare Data a) June 2012 b) July 2012 c) August 2012 d) September 2012 e) October f) November 2012 g) December 2012 h) Marie Louise CER's 2012 i) Marie Louise Compound Power Supply 2012
/26/	Marie Louise Flare Maintenance Data a) 2012 - Marie Louise Flare Maintenance 15/08/2012 & 23/11/2012 - Thermocouple Test 15/08/2012 & 23/11/2012 - WI-ES-MAR-21 Rev 00 Compressor Weekly Checks Form 2012
/27/	Calibration Data (Robinson Deep) Parameter $LFG_{total,y}$ a) Flow Meter Calibration Certificate with Serial Number E2110D02000, Dated

	02.03.2011 Parameter LFG_{electricity,y} b) Flow Meter Calibration Certificate with Serial Number E2110C02000, Dated 02.03.2011 Parameter LFG_{flare,y} c) Flow Meter Calibration Certificate with Serial Number E2110B02000, Dated 02.03.2011 Parameter W_{CH4} d) Trolex Calibration Certificate with Serial Number 10931-Inlet-GA, Dated 27.05.2011 e) Hi Tech GIR 5000 Gas Analyser Calibration Certificate Dated XX/XX/XXXX Parameter PE_{EC,y} f) Electricity Meter with serial number CBI-EC330CM Parameter T_{flare} g) Wika Thermocouple data sheet h) Flare Commissioning Certificate dated 28/07/2011 i) Modderfontein Laboratory Gas Test dated 18/04/2012 j) Calibration of Hand-Held Gas Meter Form 2011 k) Calibration of Hand-Held Gas Meter Form 2012 l) Calibration for Flare Fixed Gas Analyser 2011 m) Calibration for Flare Fixed Gas Analyser 2012 n) Span Gas Data Sheet 1 and 2
/28/	Robinson Deep Flare Training Certificates a) Flare Training Certificate - N.B.Sepatake dated 27/05/2011 b) Flare Training Certificate - E.Mkhari dated 17/01/2013
/29/	Robinson Deep Gas Collection System Phase 1 Drawing dated 24/10/2011
/30/	Robinson Deep Compound Layout Phase 1 dated 16/02/2011
/31/	Robinson Deep Equipment's Manual a) GFM400 Series Gas Analyser User Manual dated January 2007 b) GA2000 Operating Manual c) E&H Proline t-mass 65 Manual d) Trolex TX6400 Operating Manual e) Flare Technical Manual 11104 dated 27/08/2011 f) Hitech GIR 5000 Manual g) EH Error Curve Statement
/32/	Robinson Deep Flare Data: Year 2011: a) May 2011 b) June 2011 c) July 2011 d) August 2011 e) September 2011

	f) October 2011 g) November 2011 h) December 2011 i) Robinson Compound Power Supply 2011 Year 2012: j) January 2012 k) February 2012 l) March 2012 m) April 2012 n) May 2012 o) June 2012 p) July 2012 q) August 2012 r) September 2012 s) October t) November 2012 u) December 2012 v) Robinson Deep Compound Power Supply 2012
/33/	Robinson Deep Flare Maintenance Data a) 2011 - Robinson Flare Scheduled Maintenance 11/10/2011 - Thermocouple Test 11/10/2011 - Compressor Weekly Checks Form 2011 b) 2012 - Robinson Flare Scheduled Maintenance (11/12/2012, 16/05/2012, 17/02/2012, 27/08/2012) - Thermocouple Test (11/12/2012, 17/02/2012, 17/05/2012, 27/08/2012) - WI-ES-ROB-21 Rev 00 Compressor Weekly Checks Form 2012 - WI-ES-ROB-27 IR CH4 Sensor (07/09/2012 & 17/08/2012) - WI-ES-ROB-27 IR Thermocouple Bottom (27/07/2012) - WI-ES-ROB-27 IR Thermocouple Top 27/07/2012 - WI-ES-ROB-27 Rev 00 Instrument Replacement Form
/34/	A letter from Endress + Hauser for calibration of Flow meters dated 21/11/2008
/35/	Voluntary action letter dated 20/08/2013
/36/	Contract between ENER-G Systems Joburg (Proprietary) Limited and The Johannesburg Metropolitan Municipality, dated 14/05/2009
/37/	Eskom Integrated Results Presentation for the year ended 31 March 2013 dated 10/07/2013
/38/	Implementation Plan
/39/	VCS Program Update Catalogue, 8 October 2013
/40/	a. IEE 1999 - Solid State solutions for electricity metrology b. A. S. Pabla - Electricity Power Distribution

Annex-2 - Certificates of Competence



Carbon Check (Pty) Ltd

Anubhav Dimri

is hereby certified as a qualified

Assessor

Lead Assessor

Technical Expert for Technical Area

1.2

*with Carbon Check (Pty) Ltd, under the regulations of the
UNFCCC and Carbon Check's qualification criteria .*

Approval date: 15 November 2013

Technical Executive
Mr Vikash Kumar Singh

Executive Director
Mr Priyesh Ramlall

The above competence is valid for one year from the date of approval and is subject to review as per changes in CCL and UNFCCC requirements and procedures.



Carbon Check (Pty) Ltd

Barun Kumar

is hereby certified as a qualified

Assessor
Technical Expert

In the following Technical Areas

1.2; 13.1

with Carbon Check (Pty) Ltd, under the regulations of the
UNFCCC and Carbon Check's qualification criteria .

Approval date: 15 November 2013

Technical Executive
Mr Vikash Kumar Singh

Executive Director
Mr Priyesh Ramlall

The above competence is valid for one year from the date of approval and is
subject to review as per changes in CCL and UNFCCC requirements and
procedures.



Carbon Check (Pty) Ltd

Vikash Kumar Singh

is hereby certified as a qualified

Assessor

Lead Assessor

Technical Expert

Technical Reviewer

In the following Technical Areas

1.2; 3.1; 13.1

*with Carbon Check (Pty) Ltd, under the regulations of the
UNFCCC and Carbon Check's qualification criteria .*

Approval date: 15 November 2013

Chief Executive Officer
Mr Adam Simcock

Executive Director
Mr Priyesh Ramlall

The above competence is valid for one year from the date of approval and is subject to review as per changes in CCL and UNFCCC requirements and procedures.