




Verification and certification report form for CDM project activities

(Version 01.0)

Complete this form in accordance with the "Attachment: Instructions for filling out the verification and certification report form for CDM project activities" at the end of this form.

VERIFICATION AND CERTIFICATION REPORT

Title of the project activity	Durban Landfill-gas-to-electricity project – Mariannhill and La Mercy Landfills
Reference number of the project activity	UNFCCC ID: 0545 TN P-No. : 8000441647 – 14/152
Version number of the verification and certification report	1.0
Completion date of the verification and certification report	07/07/2016
Monitoring period number and duration of this monitoring period	MP 6 15/12/2013 to 30/09/2014 (including both days)
Version number of monitoring report to which this report applies	4
Crediting period of the project activity corresponding to this monitoring period	15/12/2013 to 14/12/2020 (including both days)
Project participant(s)	Durban Solid Waste (DSW) – eThekweni municipality Netherlands' Ministry of Infrastructure and the Environment (IenM); Electrabel S.A.; Netherlands' Ministry of Economic Affairs, Agriculture and Innovation (EL&I); Government of Finland – Ministry of Foreign Affairs of Finland; Fortum Corporation; RWE Power AG; Chubu Electric Power Co. Inc; The Chugoku Electric Power Co. Inc; Kyushu Electric Power Co. Inc.; Mitsubishi Corporation; Tohoku Electric Power Co. Inc.; The Tokyo Electric Power Co. Inc.; Shikoku Electric Power Co. Inc; Japan International Cooperation Agency (JICA); Mitsui & Co. Ltd.; Government of Norway – Ministry of Foreign Affairs; Norsk Hydro ASA; Statoil ASA; Deutsche Bank AG; BP Alternative Energy International Ltd; GDF SUEZ; Government of Sweden - Swedish Energy Agency; International Bank for Reconstruction and Development

	(IBRD) as Trustee of the Prototype Carbon Fund (PCF)
Host Party	South Africa
Sectoral scope(s), selected methodology(ies), and where applicable, selected standardized baseline(s)	<p>Scope: 13 / Technical Area: 13.1</p> <p>CDM Methodology: ACM0001 ver 15: "Large-scale Consolidated Methodology: Flaring or use of landfill gas"</p> <p>Standardized Baseline: ASB0001 ver. 01.0: "Standardized baseline: Grid Emission Factor for the Southern African power pool"</p>
Estimated GHG emission reductions or net anthropogenic GHG removals for this monitoring period in the registered PDD	49,018 t CO _{2e}
Certified GHG emission reductions or net anthropogenic GHG removals for this monitoring period	22,134 t CO _{2e}
Name of DOE	TÜV NORD CERT GmbH
Name, position and signature of the approver of the verification and certification report	 <p>Martin Saalmann Final Approver</p>

SECTION A. Executive summary

The International Bank for Reconstruction and Development (IBRD), as Trustee of the Prototype Carbon Fund (PCF) has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 6th periodic verification of the project:

“Durban Landfill-gas-to-electricity project – Mariannhill and La Mercy Landfills”

with regard to the relevant requirements for CDM project activities.

This verification covers the period from 15/12/2013 to 30/09/2014 (including both days).

The project reduces GHG emissions due to collection and destruction in gas engine for power generation of landfill gas from the operational Mariannhill landfill in the city of Durban in South Africa. The landfill is receiving approximately 500 tonnes of waste per day. The PP has and is constructing gas collection system including vertical and horizontal wells. The landfill gas (LFG) used to generate electricity in a 1 MW gas engine generator set by Jenbacher. Further landfill gas is destroyed as to be burnt in an enclosed flare. The electricity generated is fed into the national grid of South Africa. By this the project activity reduces greenhouse gases in destroying the methane contained in the landfill gas as well as in replacing electricity in the connected grid which is mainly generated using fossil fuels.

Further the previously included landfill gas project at La Mercy landfill has been decommissioned and is no further in use.

Details of the project location are given in table A-1 below:

Table A-1: Project Location

No.	Project Location
Host Country	South Africa
Region:	KwaZulu Natal Province
Project location address:	Municipality of eThekweni
Latitude:	-29.846389
Longitude:	30.837778

Basic technical details of the project are summarized in table A-2.

Table - A-2: Technical data of the project activity

Parameter	Unit	Value
Electricity generator (Jenbacher type 320)	MW	1.0
Number of Electricity generator (Jenbacher type 320)		1
Vertical extraction wells		11
Horizontal gas collection wells		17
Flare	Nm ³ /h	1,000
Number of flares		1

As a result of this verification, the verifier confirms that:

- all operations of the project are implemented and installed as planned and described in the validated project design document.
- the monitoring plan is in accordance with the applied approved CDM methodology, i.e., ACM001 ver. 15 and the Standardized Baseline ASB0001 ver 1 for the related grid emission factor.
- the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately.
- the monitoring system is in place and functional. The project has generated GHG emission reductions.

As the result of the 6th periodic verification, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:

Emission reductions: 22,134 t CO₂e

SECTION B. Verification team, technical reviewer and approver

B.1. Verification team member

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk review	On-site inspection	Interview(s)	Verification findings
1.	Team Leader / Technical Expert	IR	Winter	Stefan	TN Cert GmbH	x	x	x	x
2.	Verifier	EI	Kochaniewicz	Gregor	-	x	x	x	x

B.2. Technical reviewer and approver of the verification and certification report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	IR	Stöhr	Christina	TÜV NORD CERT
2.	Technical reviewer / Approver	IR	Saalmann	Martin	TÜV NORD CERT

SECTION C. Application of materiality

C.1. Consideration of materiality in planning the verification

In order to ensure a complete, transparent and timely execution of the verification task the team leader has planned the complete sequence of events necessary to arrive at a substantiated final verification opinion.

Various tools have been established in order to ensure an effective verification planning.

Materiality Threshold

The verification is based on the materiality threshold identified in table C-1 below:

Table C-1: Applied Materiality Threshold

	Threshold	Related to
<input type="checkbox"/>	0.5 %	Emission reductions or removals for registered CDM project activities achieving a total emission reduction or removal equal to or more than 500,000 tonnes of carbon dioxide equivalent per year ¹ ;
<input type="checkbox"/>	1 %	Emission reductions or removals for registered CDM project activities achieving a total emission reduction or removal of between 300,000 and 500,000 tonnes of carbon dioxide equivalent per year;
<input checked="" type="checkbox"/>	2 %	Emission reductions or removals for registered large-scale CDM project activities achieving a total emission reduction or removal of 300,000 tonnes of carbon dioxide equivalent per year or less;
<input type="checkbox"/>	5 %	Emission reductions or removals for registered small-scale CDM project activities other than registered CDM project activities covered under next category below;
<input type="checkbox"/>	10 %	Emission reductions or removals for the type of registered CDM project activities referred to in decision 3/CMP.6, paragraph 38 (referred to as microscale project activities).

Strategic Analysis

At the beginning of the verification the verification team leader has assessed the nature, scale and complexity of the verification tasks by carrying out a strategic analysis of all activities relevant to the project activity. The team leader has collected and reviewed the information relevant to assess that the designated verification team is sufficiently competent to carry out the verification and to ensure that it is able to conduct the necessary risk analysis.

Risk analysis and detailed audit testing planning

For the identification and assessment of potential reporting risks and to determine the necessary detailed audit testing procedures for residual risk areas the following table is used.

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
1.	Raw data generation	Medium	<ul style="list-style-type: none"> - Missing data due to failure of measurement equipment - Installation of measuring equipment 	<ul style="list-style-type: none"> - Site – visit - Check of equipment - Check of technical data sheets - Check of suppliers

¹ A year refers to a period of 12 consecutive months.

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
			<ul style="list-style-type: none"> - Dysfunction of installed equipment - Lack of training of operational personnel - Downtimes of equipment - Exchange of equipment - Insufficient accuracy - Change of technology - Accuracy of values supplied by Third Parties 	<i>information / guarantees</i> <ul style="list-style-type: none"> - Check of calibration records - Check of maintenance records - Counter-check of raw data - Check of CDM management system - Check of CDM related procedures - Application of CDM management system procedures - Check of trainings - Check of responsibilities - Check of QA/QC documentation / evidences of involved third parties
2.	Raw data collection and data aggregation	Medium	<ul style="list-style-type: none"> - Wrong data transfer from raw data to daily and monthly aggregated reporting forms - IT Systems - Spread sheet programming - Manual data transmission - Data protection - Responsibilities 	<ul style="list-style-type: none"> - Check of data aggregation steps - Counter-calculation - Data integrity checks by means of graphical data analysis and calculation of specific performance figures - Check of management system certification (if applicable) - Check of data archiving system - Check of application of Management system procedures
3.	Missing data due to failure of measurement equipment	Low	<ul style="list-style-type: none"> - The monitoring plan defines emergency procedures in case a meter fails. Besides back-up meters are either installed or available onsite for fast exchange. 	Check if related meters are installed as per monitoring plan. Check if emergency procedure is known across related personnel via interviews. Check back-up meters on correct calibration.
4.	Intentional or unintentional omissions and misstatements in data transfer from invoices (i.e. electricity invoices) or hand written notes (i.e. quantity of waste disposed in landfill for check purposes) into digital Excel ER spreadsheet	Medium	<ul style="list-style-type: none"> - Ineffective quality control of data transfer due to unclear QA/QC procedure 	<ul style="list-style-type: none"> - Counter check with evidences provided
5.	Monitoring reporting	Medium	<ul style="list-style-type: none"> - Data transfer to the author of the 	<ul style="list-style-type: none"> - Counter check with evidences provided

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
			<i>monitoring report</i> - <i>Data transfer to the monitoring report</i> - <i>Unintended use of outdated versions</i>	- <i>Audit of procedure application</i>
6.	<i>Calculation Methods</i>	<i>Medium</i>	- <i>Applied formulae</i> - <i>Miscalculation</i> - <i>Mistakes in spread-sheet calculation</i>	- <i>Countercheck on the basis of own calculation.</i> - <i>Spread sheet walk-trough</i> - <i>Plausibility checks</i> - <i>Check of plots</i>
7.	<i>Other calculation parameters</i>	<i>Low</i>	- <i>The values and data sources applied are defined in the PDD and monitoring plan</i> - <i>Supporting documentation version updates</i>	- <i>Update-check of regulatory framework</i> - <i>Countercheck of the applied MP in the MR against the methodology and the PDD</i>

On the basis of the risk analysis the verification has been planned. A detailed audit/verification plan has been prepared and submitted to the project participant(s) in due time before the site visit.

C.2. Consideration of materiality in conducting the verification

Based on the verification planning the verification has been carried out. The concept of materiality has been considered. A breakdown of the chosen approaches is included in the following table.

Parameter	Approach ⁺	Errors* detected	Findings reference	Corrected	Remaining verification risk
$V_{LFG, total, y, db}$	CDC	<input checked="" type="checkbox"/>	CAR C1	<input checked="" type="checkbox"/>	Not material
$V_{LFG, sent_flare, y, db}$		<input checked="" type="checkbox"/>	CAR D1	<input checked="" type="checkbox"/>	Not material
$V_{LFG, EL, y, db}$		<input checked="" type="checkbox"/>	CL D3	<input checked="" type="checkbox"/>	Not material
T_t		<input checked="" type="checkbox"/>	CAR D1	<input checked="" type="checkbox"/>	Not material
P_t		<input checked="" type="checkbox"/>	CAR D1	<input checked="" type="checkbox"/>	Not material
$p_{H2O, t, Sat}$		<input type="checkbox"/>		<input type="checkbox"/>	Not material
$V_{CH4, t, db}$		<input checked="" type="checkbox"/>	CAR D1	<input checked="" type="checkbox"/>	Not material
$EG_{PJ, y}$		<input checked="" type="checkbox"/>	CAR D1	<input checked="" type="checkbox"/>	Not material
$EC_{PJ, y}$		<input checked="" type="checkbox"/>	CAR E4	<input checked="" type="checkbox"/>	Not material
$Op_{engine, h}$		<input checked="" type="checkbox"/>	CAR D1 CAR E2	<input checked="" type="checkbox"/>	Not material
$Op_{flare, h}$		<input checked="" type="checkbox"/>	CAR D1 CAR E1 CAR C3	<input checked="" type="checkbox"/>	Not material
$Flame_m$		<input checked="" type="checkbox"/>	CAR C3	<input checked="" type="checkbox"/>	Not material
$T_{EG, m}$		<input checked="" type="checkbox"/>	CAR D1 CAR E1	<input checked="" type="checkbox"/>	Not material
TDL_y		<input type="checkbox"/>	-	<input type="checkbox"/>	-
Management of SWDS		<input type="checkbox"/>	-	<input type="checkbox"/>	-
Aggregate					Materiality threshold not exceeded

^{*)} incl. omissions and misstatements

^{+) Verification Approaches:}

CDC:	Complete data check of data including all data aggregation steps
NDC:	Non-complete data check – omissions not material
SPL:	Sampling approach (all data available)
ASP:	Acceptance Sampling
COM:	Data check at higher data aggregation levels and sampling at original data levels

The verification was basically carried out as per the verification plan. However, based on the actual situation on-site and the errors, omissions and misstatements identified during the verification minor deviations from the original plan occurred. However, due to the insignificance no major revision of the overall plan was required. Esp. there was no need for significant modification of the data assessment approaches or for additional / less locations to be visited during the on-site.

However based on onsite inspection and data check post registration changes have been identified which have been submitted for prior approval. The approval has been received on 12/10/2015 vide PRC-0545-002.

SECTION D. Means of verification

D.1. Desk review

During the desk review all documents initially provided by the client and publicly available documents relevant for the verification were reviewed. The main documents are listed below:

- the last revision of the PDD including the monitoring plan^{/PDD/},
- the last revision of the validation report^{/VAL/},
- documentation of previous verifications^{/VER/}
- the monitoring report, including the claimed emission reductions for the project^{/MR/},
- the emission reduction calculation spreadsheet^{/XLS/}.

Other supporting documents, such as publicly available information on the UNFCCC website and background information were also reviewed.

D.2. On-site inspection

Duration of on-site inspection: 25/11/2014 to 27/11/2014				
No.	Activity performed on-site	Site location	Date	Team member
1.	Opening meeting: Round of introduction, attendance register, final confirmation of the auditplan	PP office	25/11/2014	Stefan Winter (SW), Gregor Kochaniewicz (GK)
2.	General introduction of the project activity, current status, changes, etc.	PP office	25/11/2014	
3.	Visit to La Mercy site to confirm decommissioning	La Mercy landfill	25/11/2015	
4.	Site visit to Mariannahill landfill site: - Verify facilities and equipment (LFG collection and transport system, LFG pre-treatment, elec. Generation unit, elec. Meters, CH4 monitoring, T- and P-meters, DCS) - Data collection and aggregation - Interview with data coordinators, process engineers and other key personnel at site	Mariannahill landfill	25/11/2014	

Duration of on-site inspection: 25/11/2014 to 27/11/2014				
No.	Activity performed on-site	Site location	Date	Team member
4.	Document check: - Check QMS records, maintenance records, instrument specifications, monitoring diagram, calibration records, training and qualification records - Check of operation logs and the data collecting/archiving /calculation process - Any further documents relevant to be checked	PP office	25-27/11/2014	
5.	Review of emission reductions calculation	PP office		
6.	Closing meeting: Summary of the audit Presentation of identified issues	PP office	27/11/2014	

D.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Wright	Marc	D.S.W./ Project Engineer	25-26/11/2014	All issues	SW, GK
2.	Winn	Richard	D.S.W./Environmental Assets Management	25/11/2014	General PA issues	
3.	Modley	Logan	eThekwini Municipality D.S.W/Engineer	25/11/2014	General status of project	
4.	Sewchurran	Sanjeeth	eThekwini Municipality/ Electrical Engineer	25-27/11/2014	All issues	
5.	Jewaskiewicz	Brendon	Envitech/Managing Director	25/11/2014	General PA issues	
6.	Lidegue	Ryan	Peters Plant Hire/Gas engine technician	25/11/2014	General issues, Downtimes, maintenance	
7.	Pass	Jon	Wilson & Pass Inc./Technical and admin advice to D.S.W.	25-27/11/2014	All issues	
8.	Bissett	Robin	Environeaka/ Air Quality and Emissions	25/11/2014	Monitoring, general PA issues	
9.	Pearson	Grant	SLR Consulting/Principal	25-27/11/2014	All issues	
10.	Barrera	Claudia	The World Bank/Carbon Finance Specialist			
11.	Marcos Huidobro	Patricia	The World Bank/Carbon Finance Specialist			

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
12.	Dookhi	Nash	Envitech/Operator	26-27/11/2014	Monitoring equipment	

D.4. Sampling approach

D.4.1 Sampling during monitoring

<input checked="" type="checkbox"/>	No sampling approach has been used by the PP to determine the monitored parameters				
<input type="checkbox"/>	A sampling approach has been taken for the following monitored parameter(s):				
	Parameter	Sampling approach ¹⁾	Sampling Type ²⁾	Population	Sample Size
	<i>n.a.</i>				

¹⁾ Sampling Approaches:

SiRS: Simple Random Sampling
 StRS: Stratified Random Sampling
 SS: Systematic Sampling
 CS: Cluster Sampling
 MSS: Multi-stage Sampling

²⁾ Sampling Types:

PS: Parameter Sampling

D.4.2 Sampling approaches during verification

<input checked="" type="checkbox"/>	No sampling approach has been used by the VT to verify the monitored parameters				
<input type="checkbox"/>	A sampling approach has been applied by the VT for the following monitored parameter(s):				
	Parameter	Sampling approach ¹⁾	Sampling Type ²⁾	Population	Sample Size
	<i>n.a.</i>				

¹⁾ Sampling Approaches:

SiRS: Simple Random Sampling
 StRS: Stratified Random Sampling
 SS: Systematic Sampling
 CS: Cluster Sampling
 MSS: Multi-stage Sampling

²⁾ Sampling Types:

AS: Acceptance Sampling
 PS: Parameter Sampling
 COM: Full data check at higher data aggregation levels and sampling at original data levels

D.5. Clarification requests, corrective action requests and forward action requests raised

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
Compliance of the monitoring report with the monitoring report form (E.1)	1	3	0
Compliance of the project implementation with the registered PDD (E.3)	0	0	0
Post-registration changes (E.4)	0	0	1
Compliance of the monitoring plan with the monitoring methodology including applicable tool and standardized baseline (E.5)	0	3	0
Compliance of monitoring activities with the registered monitoring plan (E.6)	1	0	1
Compliance with the calibration frequency requirements for measuring instruments (E.7)	0	2	1
Assessment of data and calculation of emission reductions or net removals (E.8)	1	3	0
Others (please specify)	0	0	0
Total	3	11	3

SECTION E. Verification findings

E.1. Compliance of the monitoring report with the monitoring report form

Means of verification	<p>A draft monitoring report was submitted to the verification team by the project participants. The DOE has made this report publicly available prior to the start of the verification activities. No comments were received.</p> <p>By means of the UNFCCC website it has been checked whether the latest applicable MR template CDM-MR-FORM has been used.</p> <p>Further it has been checked whether the latest instructions for filling out the MR template have been followed. Every section has been checked against the respective guidance.</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /MR/ • /MRT/ • /unfccc/ 	
Findings	<input type="checkbox"/>	The latest reporting template CDM-MR-FORM as listed on the UNFCCC website has been used for the Monitoring Report to be uploaded.
	<input checked="" type="checkbox"/>	The latest instructions for filling out the MR have been followed. No adverse finding has been identified in the course of this verification.
	<input checked="" type="checkbox"/>	The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context:
		CAR A2: The used monitoring report template is not the latest version thereof. PP used ver 4.0 whereas latest version is currently ver 5.1. Revision requested.
		CL A1: Inconsistencies have been identified w.r.t. the names and related countries between MR title page and section A.3 and related UNFCCC project webpage. Related revision is requested.
		CAR B2: Clarification is requested why downtimes and periods for which monitoring could not be conducted esp. in the beginning of the monitoring period has not been mentioned in section B.1 of the MR.
Conclusion		CAR B3: A.1 mentioned that a notification of changes has been conducted and approved as well as a correction has been conducted to the PDD in 06/06/2013 however please clarify why the same is not mentioned under related section in B.2.
	<input type="checkbox"/>	No CARs/CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.
	<input checked="" type="checkbox"/>	The raised CARs/CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be

		closed out. For details please refer to Appendix 4.
		The PP has provided a monitoring report for the related monitoring period to be verified. After correction of raised issues during verification assessment the final MR is based on latest template available and filled according to the instructions to fill the form.

E.2. Remaining forward action requests from validation and/or previous verification

During the validation the validating DOE might have raised issues that could not be closed or resolved during the validation stage. For this purpose FARs might have been raised. Likewise FARs might have been raised in the course of previous verifications. In the course of this verification the latest version of the PDD ^{/PDD/} and the previous verification report ^{/VER/}, where applicable, have been checked in order to identify any remaining forward action requests. For the current monitoring period the following applies:

(i) Open issues from validation:

<input checked="" type="checkbox"/>	There were no open issues which have been addressed in the latest version of the validation report.
<input type="checkbox"/>	All open issues from the validation have been appropriately addressed in the context of previous verifications.
<input type="checkbox"/>	All issues related to the validation have been appropriately addressed in the course of the current monitoring period (for details please refer to appendix 4)
<input type="checkbox"/>	The following issues related to the validation have not yet been appropriately addressed (for details please refer to appendix 4):
	- N/A

(ii) Open issues from previous verifications:

<input type="checkbox"/>	N/A – as this is the first monitoring period for this CDM project activity.
<input checked="" type="checkbox"/>	There were no open issues which have been addressed in the previous verification report
<input type="checkbox"/>	All issues related to the previous verification have been appropriately addressed in the course of the current monitoring period (for details please refer to appendix 4)
<input type="checkbox"/>	The following issues related to the previous verification have not yet been appropriately addressed (for details please refer to appendix 4):
	- N/A

E.3. Compliance of the project implementation with the registered project design document

Means of verification	<p>By means of an in-depth review of the PDD in its latest form – as downloaded from the UNFCCC project site - and the checks carried out during the on-site visit an assessment has been carried out whether the project has been implemented and operated in line with the latest approved version of the PDD and whether all physical features of the project are in place. The following has been checked: implemented technology, project equipment as well as monitoring and metering equipment.</p> <p>Further it has been checked if relevant technical equipment of the project activity has been exchanged or modified during the monitoring period and consistent notations of key equipment (meters etc.) in PDD, MR and calculation spreadsheet are applied.</p> <p>Interviews with operational personnel have been carried out, QMS records, maintenance records, instrument specifications were checked in this context. Special focus has further been laid to determine whether a potential phase</p>
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	<p>wise implementation has occurred within the crediting period or any delays with respect to the starting dates have occurred.</p> <p>Further it has been checked whether any observed deviations from the registered project design have been correctly addressed as PRCs.</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /PDD/ • /MR/ • /VVS/ • /XLS/ • /VER/ • /LPL/ • /CAUD/ • /TS/ • /unfccc/ 	
Findings	<input type="checkbox"/> The project has been implemented as described in the latest version of the PDD as well as in section B.1 of the monitoring report. No deviations thereof have been identified in the course of this verification.	
	<input type="checkbox"/> The following deviations from the registered / approved project design and or the project description in the MR have been identified in the course of this verification (for further details please refer to section E.4): - N/A	
	<input checked="" type="checkbox"/> In this context the following findings have been raised: - FAR B4: The PP intends to physically shut down the gas connection to and from the baseline wells as those do not produce any LFG anymore and would like to use the related flow meter as spare part. During next verification it is to be checked whether the baseline collecting system has been physically cut off.	
	<i>In case of phased implementation:</i>	
	<input type="checkbox"/> N/A	
	<input type="checkbox"/> The phased implementation has correctly and in sufficient detail been described in the latest version of the PDD.	
	<input type="checkbox"/> The description in section 3.1 of the MR differs in content or the level of detail from the latest version of the PDD. However, the description in the MR is correct and reflects the situation during the site inspection.	
	<input type="checkbox"/> The project description in the PDD/MR is not deemed sufficient. The detailed implementation timeline is as follows: -	
Conclusion	<input checked="" type="checkbox"/> No CARs/CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.	
	<input type="checkbox"/> The raised CARs/CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.	
	<p>At the project site vertical and horizontal wells are constructed to extract landfill gas from the Mariannhill landfill which is still in operation. The PP further installed a landfill gas extraction system consisting of a blower, gas cleaning system as well as methane destruction equipment such as a flare of up to 1000 m³/h and a Jenbacher gas engine of 1 MW. The gas engine is connected with a generator and via a transformer generated electricity is fed into the connected grid. The 6 baseline wells are still existent but no landfill gas is produced from those wells. It is intended to physically disconnect the baseline wells.</p> <p>Besides no changes in the mode of operation occurred. However the PP intends to physically shut down the gas connection to and from the baseline wells as those do not produce any LFG anymore and would like to use the related flow meter as spare part. DOE has checked the flow meter and can confirm the flow was zero when checked. Correspondingly a FAR B4 was raised to check whether the baseline collecting system has been physically cut off during next verification.</p>	

E.4. Post-registration changes

- ☒ By means of site visit, document check and interview it could be verified that the project is implemented and operated in line with the registered PDD and the applied methodology.
- ☐ Post registration changes have been identified and are assessed in detail in the subsequent steps E.4.1 to E.4.7.

E.4.1. Temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline

It has been checked whether Temporary deviations from the registered monitoring plan (TDfrMP) or Temporary deviations from monitoring methodology or standardized baseline (TDfMM) have been applied during this monitoring period. The result is summarized in the table below.

<input checked="" type="checkbox"/>	No Temporary deviations from the registered monitoring plan (TDfrMP) or Temporary deviations from monitoring methodology or standardized baseline (TDfMM) have been submitted to the UNFCCC prior to the current monitoring period.									
<input type="checkbox"/>	The following TDfrMP or TDfMM have been approved or are under approval by the UNFCCC									
	1	<table border="1"> <tr> <td>Title</td> <td></td> </tr> <tr> <td>Status</td> <td><input type="checkbox"/> under approval; <input type="checkbox"/> approved (approval No.:)</td> </tr> <tr> <td>Appr.date</td> <td></td> </tr> <tr> <td>Ref. No.</td> <td></td> </tr> </table>	Title		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved (approval No.:)	Appr.date		Ref. No.	
Title										
Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved (approval No.:)									
Appr.date										
Ref. No.										
	2	<table border="1"> <tr> <td>Title</td> <td></td> </tr> <tr> <td>Status</td> <td><input type="checkbox"/> under approval; <input type="checkbox"/> approved (approval No.:)</td> </tr> <tr> <td>Appr.date</td> <td></td> </tr> <tr> <td>Ref.No.</td> <td></td> </tr> </table>	Title		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved (approval No.:)	Appr.date		Ref.No.	
Title										
Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved (approval No.:)									
Appr.date										
Ref.No.										
<input checked="" type="checkbox"/>	During the verification of the current MP no need for a TDfrMP or TDfMM has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA									
<input type="checkbox"/>	An approval of the following TDfrMP or TDfMM is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply. Please refer to the related PRC report submitted along with this issuance request for further details w.r.t. the assessment of the PRC.									
	1	Issue:								
	2	Issue:								
<input type="checkbox"/>	The following TDfrMP or TDfMM for which appendix 1 of the PS is applicable have been applied:									
	1	Issue:								
	2	Issue:								

E.4.2. Corrections

It has been checked whether any corrections to project information or parameters fixed at validation have been approved during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

<input type="checkbox"/>	During the verification of the current MP no need for corrections has been identified.
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<input checked="" type="checkbox"/>	The following corrections have been applied:	
1	Issue:	A.4: Correction of indication of involvement of Parties and IBRD as Bilateral and Multilateral Fund as per latest MOC.
2	Issue:	Page 24 of PDD: The description for $p_{H_2O,t,Sat}$ is updated to be consistent with related tool for gaseous stream.
3	Issue:	Page 30: The reference to Parameter Carbon Emission Factor CEF is deleted as not used any longer
4	Issue:	Page 31 of PDD: Parameter indication of grid emission factor is updated to be consistent between equation and description below the equation in the PDD ($EF_{EL,j,y}$ and $EF_{grid,y}$). Similar for parameter TDL.
5	Issue:	B.6.2: Value for methane density is updated as it is given with 0.0007168 tCH ₄ /m ³ CH ₄ in the PDD whereas the related tool states 0.716 kgCH ₄ /m ³ CH ₄ which is also applied in ER calculation.
6	Issue:	B.6.2: Parameter f is now revised to f_y and the description is updated to be consistent with related tool.
7	Issue:	B.6.2: Parameter description for parameter \square_{PJ} is updated to be consistent with related methodology. Further PDD is updated for the source of data and choice of data it is referred to ACM0001.
8	Issue:	B.6.2: Description for each waste type under parameter DOC_i is updated to be consistent with related tool.
9	Issue:	B.6.2: Parameter $CEF_{electricity,y}$ has been changed to parameter $EF_{EL,k,y}$.
10	Issue:	B.6.2: Values applied for parameter $\square_{Flare,m}$ have been updated to be consistent with the related tool.
11	Issue:	B.7.1: Parameter $EC_{PJ,y}$: The description is corrected from "Quantity" of elec consumed in line with related the methodology which states "Amount".
12	Issue:	B.7.1: Parameter Management of SWSD: Clarification is provided under measurement method w.r.t. the abbreviation "the PE".
The PDD has been revised accordingly: (New) version No.: 4 Revision date: 30/06/2015		
It is confirmed that the updated / corrected information is an accurate reflection of the actual project information and that the corrected parameters are in accordance with the applied methodology and the monitoring plan.		
<input checked="" type="checkbox"/> A related post registration change has been submitted prior to the issuance request. The approval has been received on 12/10/2015 via approval number PRC-0545-002. <input type="checkbox"/> A related post registration change is submitted along with this issuance request. Please refer to the related PRC report submitted along with this issuance request for further details w.r.t. the assessment of the PRC.		

E.4.3. Changes to the start date of the crediting period

<input checked="" type="checkbox"/>	N/A - as this is not the first verification within the crediting period
<input type="checkbox"/>	The PPs do not intend to change the start date of the crediting period.
<input type="checkbox"/>	As the change in the start date was below the related time period as indicated in PS § 277 and § 278 no prior approval was required but only a notification. This notification has been submitted

	by the PP without involvement of the DOE. The change and new start date has been checked from the related UNFCCC project webpage.
<input type="checkbox"/>	The PPs intend to change the start date of the crediting period. As the intended change in start date beyond the related time period as indicated in PS § 279 prior approval by the Board is required. For detailed assessment of the change please refer to related PRC validation report. As per assessment in this report the DOE confirms that the change to the start date of the crediting period are in line with the related requirements of the VVS and PS.
<input type="checkbox"/>	The approval to change the start date of the crediting period has been received on DD/MM/YYYY via approval number PRC-XXXX-00Z

E.4.4. Inclusion of a monitoring plan to a registered project activity

<input checked="" type="checkbox"/>	N/A - as this monitoring plan was part of the registered PDD
<input type="checkbox"/>	In line with PS § 281 or § 282 the PP has forwarded a monitoring plan to the DOE for validation. No prior approval of the monitoring plan was required as the PP in line with PS § 282 wished to submit the monitoring plan together with the request for issuance for the first monitoring period. Please refer to the related PRC report submitted along with this issuance request for further details w.r.t. the assessment of the PRC..
<input type="checkbox"/>	In line with § 282 the PP submitted a monitoring plan prior to the submission of the request for issuance for validation to the DOE. A DOE has assessed the monitoring plan in line with related VVS requirements and submitted a related PRC report for prior approval. The approval has been received on DD/MM/YYYY via approval number PRC-XXXX-00Z.

E.4.5. Permanent changes from registered monitoring plan, monitoring methodology or standardized baseline

It has been checked whether any permanent changes from the registered monitoring plan (PCfrMP) or applied methodologies (PCfMM) including standardized baselines (PCfSB) have been approved prior or during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

<input type="checkbox"/>	No PCfrMP, PCfMM or PCfSB have been submitted to the UNFCCC prior to the current monitoring period		
<input checked="" type="checkbox"/>	The following PCfrMP, PCfMM or PCfSB have been approved or are under approval by the UNFCCC		
1	Title	The monitoring plan has been updated w.r.t. the following points and issues: 1. Flow diagram has been updated to include the measurement points in PDD w.r.t. actual conditions found onsite 2. Removal of three parameters for monitoring of LFG volume on wet basis as the LFG is monitored on dry basis. ($V_{LFGsent_flare,y,wb}$, $V_{LFGtotal,y,wb}$ and $V_{LFGEL,y,wb}$) 3. Revision of QA/QC and additional comment for parameter w.r.t volumetric flow of LFG 4. The reg PDD is updated w.r.t. the parameter as per tool “Project emissions from flaring” ver 2 SPEC _{flare} in section B.6.2. The tool states that the flare specifications have to be documented in the CDM-PDD. 5. The monitoring plan as per reg PDD B.7.1 is updated w.r.t. the parameter $p_{H2O,t,Sat}$ as indicated in related tool for gaseous stream. 6. Parameter T _i : The QA/QC procedure is updated to be consistent with the “tool to determine the mass flow of a greenhouse gas in a gaseous stream”. Besides the source of data is updated in line onsite observation. Finally the monitoring frequency is also corrected. 7. Parameter P _i : The QA/QC procedure is updated to be consistent with the	

		<p>“tool to determine the mass flow of a greenhouse gas in a gaseous stream”. Finally the monitoring frequency is also corrected.</p> <p>8. Parameter EG_{PJ,y}: The measurement procedure is updated to be consistent with the related methodology. Further the determination of net elec. is further specified in line with the onsite observation where the elec. import is deducted from the export generated by the gas engine via bi-directional meter.</p> <p>9. Parameter Op_{flare,h}: As per onsite only a flame detection is used for determination of the flare operation however two criteria are mentioned in PDD.</p> <p>10. Ex-ante fixed parameter OX has been deleted as already parameter OX_{top_layer} in line with methodology ACM0001 is given.</p>								
		<table border="1"> <tr> <td>Status</td><td><input type="checkbox"/> under approval; <input checked="" type="checkbox"/> approved</td></tr> <tr> <td>Appr.date</td><td>12/10/2015</td></tr> <tr> <td>Ref. No.</td><td>PRC-0545-002</td></tr> </table>	Status	<input type="checkbox"/> under approval; <input checked="" type="checkbox"/> approved	Appr.date	12/10/2015	Ref. No.	PRC-0545-002		
Status	<input type="checkbox"/> under approval; <input checked="" type="checkbox"/> approved									
Appr.date	12/10/2015									
Ref. No.	PRC-0545-002									
	2	<table border="1"> <tr> <td>Title</td><td></td></tr> <tr> <td>Status</td><td><input type="checkbox"/> under approval; <input type="checkbox"/> approved</td></tr> <tr> <td>Appr.date</td><td></td></tr> <tr> <td>Ref.No.</td><td></td></tr> </table>	Title		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved	Appr.date		Ref.No.	
Title										
Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved									
Appr.date										
Ref.No.										
<input type="checkbox"/>	During the verification of the current MP no need for a PCfrMP, PCfMM or PCfSB has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA									
<input type="checkbox"/>	An approval of the following PCfrMP, PCfMM or PCfSB is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply.									
	1	Issue:								
	2	Issue:								
<input type="checkbox"/>	The following PCfrMP, PCfMM or PCfSB for which appendix 1 of the PS is applicable have been applied:									
	1	Issue:								
	2	Issue:								

The above stated changes to the monitoring period have been identified during this monitoring period but have been already approved. The final monitoring report and the project activity are now in line with the latest approved monitoring plan.

E.4.6. Changes to the project design of a registered project activity

It has been checked whether any changes to the project design (CoPD) have been approved prior or during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

<input type="checkbox"/>	No CoPD has been submitted to the UNFCCC prior to the current monitoring period									
<input checked="" type="checkbox"/>	The following CoPD have been approved or are under approval by the UNFCCC									
	1	<table border="1"> <tr> <td>Title</td><td>Decommissioning of La Mercy LFG project activity</td></tr> <tr> <td>Status</td><td><input type="checkbox"/> under approval; <input checked="" type="checkbox"/> approved</td></tr> <tr> <td>Appr.date</td><td>25/11/2011</td></tr> <tr> <td>Ref. No.</td><td>No ref. number as it was a notification of changes during first crediting period</td></tr> </table>	Title	Decommissioning of La Mercy LFG project activity	Status	<input type="checkbox"/> under approval; <input checked="" type="checkbox"/> approved	Appr.date	25/11/2011	Ref. No.	No ref. number as it was a notification of changes during first crediting period
Title	Decommissioning of La Mercy LFG project activity									
Status	<input type="checkbox"/> under approval; <input checked="" type="checkbox"/> approved									
Appr.date	25/11/2011									
Ref. No.	No ref. number as it was a notification of changes during first crediting period									

	2	Title	
		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved
		Appr.date	
		Ref.No.	
<input checked="" type="checkbox"/>	During the verification of the current MP no need for a CoPD has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA		
<input type="checkbox"/>	An approval of the following CoPD is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply.		
	1	Issue:	
	2	Issue:	
<input type="checkbox"/>	The following CoPD for which appendix 1 of the PS is applicable have been applied:		
	1	Issue:	
	2	Issue:	

E.4.7. Types of changes specific to afforestation and reforestation project activities

<input checked="" type="checkbox"/>	N/A - as this is not an afforestation and reforestation project
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E.5. Compliance of monitoring plan with the monitoring methodology including applicable tool and standardized baseline

Means of verification	By means of comparison of the MR with (i) the applied CDM methodology (ii) all applicable CDM Meth tools and (iii) if applicable, a standardized baseline the verification team has checked whether the MP is in compliance with the MP related requirements of the applied methodology/tools/SB. The following sources of information have been used in this context: <ul style="list-style-type: none"> • /MR/ • /ACM1/ • /TA/ • /unfccc/ 			
Findings	<input checked="" type="checkbox"/>	The MP is completely in accordance with the approved methodology applied by the CDM project (last registered/approved version of the PDD)		
	<input checked="" type="checkbox"/>	The breakdown of MP accordance of the referenced tools is as follows:		
		1	Title (of the tool)	Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion
			Version	2
			MP compliance	<input type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input checked="" type="checkbox"/> N/A (for MP)
		2	Title (of the tool)	Tool to calculate baseline, project and/or leakage emissions from electricity consumption
		Version	1	

		MP compliance	<input checked="" type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input type="checkbox"/> N/A (for MP)	
	3	Title (of the tool)	Combined tool to identify the baseline scenario and demonstrate additionality	
		Version	2.1	
		MP compliance	<input type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input checked="" type="checkbox"/> N/A (for MP)	
	4	Title (of the tool)	Emissions from solid waste disposal sites	
		Version	6.0.1	
		MP compliance	<input checked="" type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input type="checkbox"/> N/A (for MP)	
	5	Title (of the tool)	Project emissions from flaring	
		Version	2.0.0	
		MP compliance	<input checked="" type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input type="checkbox"/> N/A (for MP)	
	6	Title (of the tool)	Tool to determine the mass flow of a greenhouse gas in a gaseous stream	
		Version	2.0.0	
		MP compliance	<input type="checkbox"/> full compliance <input checked="" type="checkbox"/> findings have been raised <input type="checkbox"/> N/A (for MP)	
	<input checked="" type="checkbox"/>	The breakdown of MP accordance of the applicable SB is as follows:		
		1	Title (of the SB)	<i>Standardized baseline: Grid Emission Factor for the Southern African power pool</i>
			Version	ASB0001 ver. 01.0
	<input checked="" type="checkbox"/>		MP compliance	<input checked="" type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input type="checkbox"/> N/A (for MP)
		In this context the following CARs, CLs, FARs have been raised: - CAR C1: Based on onsite visit and interviews conducted during site visit it has been identified that the diagram has to be updated according to actual conditions e.g. it mentions that EGy would be monitored however no such parameter is in reg PDD. Further Op_{flare} is linked to $T_{EG,m}$ but as per interview with the CDM Operator the Flame detection system is used to monitor Op_{flare} primarily. Further a chiller has been installed to cool the LFG which consumes electricity. - CAR C2: During check of the monitoring plan against related methodology and tools the several issues have been identified - CAR D1: Several issues w.r.t. section D.2 of the MR have been identified - CAR D2: Clarification is requested why three parameters for LFG Volume on wet basis as included in the monitoring plan in reg PDD are not provided in the MR.		
Conclusion		<input type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.	

	<input checked="" type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
		After closure of the related findings the MP is completely in compliance with the last registered/approved version of the PDD / MP or standardized baseline or methodology

E.6. Compliance of monitoring activities with the registered monitoring plan

E.6.1. Data and parameters fixed ex ante or at renewal of crediting period

Means of verification		By means of comparison of the MR and the ER calculation with the latest version of the registered PDD the verification team has checked whether all parameters fixed ex-ante or at renewal of the crediting period have been applied correctly. Further it has been checked whether the GWP for the respective period have been correctly applied. The following sources of information have been used in this context: <ul style="list-style-type: none"> • /MR/ • /XLS/ • /PDD/ • /PS/ • /VVS/ • /unfccc/ • /TOOL/ • /AMS1/
Findings	<input checked="" type="checkbox"/>	The MR and the ER calculation have considered the parameters fixed ex-ante or at the renewal of the crediting period correctly, no deviations have been observed.
	<input type="checkbox"/>	The following deviations from the parameters fixed ex-ante or at renewal of crediting period have been identified in the course of this verification: - N/A
	<input checked="" type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised: CAR C2
Conclusion	<input type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input checked="" type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
		<p>The following ex-ante fixed values are used as per MR:</p> <p>$OX_{top\ layer}$, Fraction of methane that would be oxidized in the top layer of the SWDS in the baseline: 0.1</p> <p>GWP_{CH_4}, Global warming potential of CH₄: 25 tCO₂e/tCH₄</p> <p>D_{CH_4}, Methane density 0.0007168 tCH₄/m³CH₄</p> <p>ϕ, Model correction factor to account for model uncertainties: 0.75</p> <p>F, Fraction of methane in the SWDS gas (volume fraction): 0.5</p> <p>f_v, Fraction of methane captured at the SWDS and flared, combusted or used in another manner: 0</p> <p>η_{PJ}, The efficiency of the degassing system which will be installed in the project activity, in year y: 50%</p> <p>MCF, Methane Correction Factor: 1.0</p> <p>DOC_j, Fraction of degradable organic carbon (by weight) in the waste type j: Not applicable during verification</p> <p>DOC_f, Fraction of degradable organic carbon (DOC) that can decompose: 0.5</p> <p>k_j, Decay rate for the waste type j: Not applicable during verification</p> <p>$FE_{EL,k,y}$, CO₂ emissions intensity of the electricity displaced: 0.9488tCO₂e/MWh</p> <p>$\eta_{flare,m}$, Flare Efficiency in the minute m: 0, 50% or 80% depending on related criteria</p> <p>R_u, Universal ideal gases constant: 8,314 Pa.m/kmol.k</p> <p>MM_i, Molecular mass of greenhouse gas i: 16.04 kg/kmol for methane</p>

	<p>P_n, Total pressure at normal conditions: 101,325 Pa</p> <p>T_n, Temperature at normal conditions: 273.15 K</p> <p>$SPEC_{flare}$: manufacturer's flare specifications for temperature, flow rate and maintenance schedule</p> <p>The values have been applied correctly. The value for the corresponding grid factor has been obtained from a standardized baseline for South Africa.</p>
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E.6.2. Data and parameters monitored

Means of verification	<p>During the verification all relevant monitoring parameters (as listed in chapter B.7.1 of the PDD) have been verified with regard to the</p> <ul style="list-style-type: none"> (i) appropriateness of the applied measurement / determination method, (ii) the correctness of the values applied for ER calculation, (iii) the accuracy, and applied QA/QC measures. <p>The results as well as the verification procedure are described parameter-wise in the project specific verification checklist (Appendix 5).</p>				
Findings	<p>For details please refer to appendix 5</p> <p>CAR C1, CAR C3, CAR D1, CL D3, CAR E1, CAR E2, CAR E4 have been raised.</p> <p>Besides FAR D4:</p> <p>Further all flow meters have been exchanged to E+H 65i flow meters. Related technical specifications have been provided. Further as per statement provided by E+H the accuracy of the current installation is of 4% without flow conditioner dated 24/02/2015. Further E+H recommends an annual on-site verification test, if the test fails the equipment to their factory for calibration. The same is to be checked during next verification.</p>				
Conclusion	<table border="1"> <tr> <td><input type="checkbox"/></td><td>No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.</td></tr> <tr> <td><input checked="" type="checkbox"/></td><td>The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.</td></tr> </table> <p>It can be confirmed that all monitoring parameters have been measured / determined without material misstatements and in line with all applicable standards and relevant requirements.</p> <p>Further details as per Appendix 5.</p>	<input type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.	<input checked="" type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
<input type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.				
<input checked="" type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.				

E.6.3. Implementation of sampling plan

Means of verification	<p>The verification team has been checked whether the PPs have applied a sampling approach to determine the monitored values. Further it has been checked whether the PPs have correctly applied the implemented sampling plan including</p> <ul style="list-style-type: none">(i) description of the implemented sampling design(ii) collected data(iii) analysis of collected data(iv) demonstration on whether the required confidence/precision has been met. <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none">• /MR/• /XLS/• /PDD/.			
Findings	<input checked="" type="checkbox"/>	The PPs have not applied sampling approaches for the parameters monitored.		
	<input type="checkbox"/>	The PPs have applied sampling approaches for the following parameters monitored.		
		1	Parameter:	
			Name:	
		Description on how the sampling efforts and survey comply with the validated		

		sampling plan:	
	2	Parameter:	
		Name:	
		Description on how the sampling efforts and survey comply with the validated sampling plan:	
	<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised:	
		-	
Conclusion	<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.	
	<input type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.	
	n.a.		

E.7. Compliance with the calibration frequency requirements for measuring instruments

Means of verification	<p>During the verification the relevant monitoring equipment has been checked whether the calibration requirements have been met; especially if the calibration frequency is in line with the requirements of the validated PDD and/or the applicable calibration standards.</p> <p>The results as well as the verification procedure are described equipment-wise in the project specific verification checklist (Appendix 6).</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /MR/ • /XLS/ • /CAL/ • /TS/ • /OPR/. 		
Findings	<input type="checkbox"/>	Based on the details listed in appendix 6 the verification team can confirm that all installed monitoring equipment has been duly calibrated for this entire monitoring period.	
	<input checked="" type="checkbox"/>	<p>Based on the assessment and information as per appendix 6 delay(s) in calibration have been identified. The PP has applied the maximum permissible error of the instrument to the measured values taken during the period between the scheduled date of calibration and the actual date of calibration.</p> <p>From the related calibration certificates and emission reduction calculation the verification team confirms that the maximum permissible error has been applied in a conservative manner so that the adjusted measured values due to the delayed calibration result in fewer claimed emission reductions.</p> <p>For details please refer to appendix 6</p>	
	<input type="checkbox"/>	<p>In this context the following CARs, CLs, FARs have been raised:</p> <p>CAR C3: Following supporting documents are to be provided:</p> <ol style="list-style-type: none"> 1. Latest Calibration sheet for handheld biogas 5000 gas analyzer 2. Flame detector manual <p>- FAR C4: It has been identified during verification that the handheld instrument Biogas 5000 for crosscheck on methane content in landfill gas has been calibrated on 15/01/2014 and again 02/02/2015. As the calibration frequency is defined as annually a delay in calibration is identified for the period 15/01/2015 until 01/02/2015. As this is after the end date of this monitoring period this FAR is raised to notify this for next verification.</p> <p>- CAR D1</p>	

Conclusion	<input type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input checked="" type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
		Please refer to Appendix 5 and esp. 6 for detailed assessment of the accuracy of each monitoring parameter and related equipment as well as their calibration dates and validity. Finally one related FAR, FAR C4, has been raised as delay in calibration outside this monitoring period has been identified. Besides that and the already considered delays all monitoring equipment is duly calibrated for this entire monitoring period.

E.8. Assessment of data and calculation of emission reductions or net removals

E.8.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

Means of verification		<p>During the verification the calculation of baseline GHG emissions has been checked. In detail the following has been verified:</p> <ul style="list-style-type: none"> • <i>Transparency:</i> It has been checked whether the calculation of baseline emissions is fully traceable and, where used, the Excel calculation provides all calculation formulae. • <i>Parameter consistency:</i> It has been checked whether all internal and external parameters and data used for the calculation are applied consistently in the monitoring report and the calculation spreadsheet. • <i>Correctness:</i> It has been checked whether the applied formulae and methods for calculating baseline emissions are in accordance with the monitoring plan and the approved methodology. • <i>Completeness:</i> It has been checked whether all calculations are complete and without omissions. <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /MR/ • /XLS/, /WDR/, /REC/, /DSR/, /ELEB/, /ELER/, /GMR/ • /ACM1/ • /TA/ • /PDD/.
Findings	<input type="checkbox"/>	<p>The calculation of the baseline emissions was found to be fully compliant with the above stated principles.</p> <p>The calculations of baseline GHG emissions or baseline net GHG removals have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied standardized baseline. Any assumptions used in emission or removal calculations have been justified. Appropriate emission factors, IPCC default values, GWPs and other reference values have been correctly applied.</p> <p>No errors, miscalculations, omissions, misstatements or incomplete information has been identified.</p>
	<input checked="" type="checkbox"/>	The verification team has identified mistakes in the baseline emissions calculation or the underlying calculation approaches.
	<input checked="" type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised: CAR E1, CAR E2, CL E3, CAR E4
Conclusion	<input type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input checked="" type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
		<p>The baseline emissions are calculated as following:</p> <p>As no heat generation takes place at the site which is used and no natural gas is generated which is used e.g. via pipeline or bottles the baseline emissions are calculated as following:</p>

$$BE = BE_{CH_4,y} + BE_{EC,y}$$

$BE_{CH_4,y}$ = Baseline emissions of methane from the SWDS in year y

$BE_{EC,y}$ = Baseline emissions associated with electricity generation in year y

$$BE_{CH_4} = \left((1 - OX_{top_layer}) \cdot F_{CH_4,PJ,y} - F_{CH_4,BL,y} \right) \cdot GWP_{CH_4}$$

OX_{top_layer} = Fraction of methane in the LFG that would be oxidized in the top layer of the SWDS in the baseline

$F_{CH_4,PJ,y}$ = Amount of methane in the LFG which is flared and/or used in the project activity in year y

$F_{CH_4,BL,y}$ = Amount of methane in the LFG that would be flared in the baseline in year y
= 0 tCH₄/yr

GWP_{CH_4} = Global warming potential of CH₄ (t CO₂e/t CH₄)

$$F_{CH_4,PJ,y} = F_{CH_4,flared,y} + F_{CH_4,EL,y}$$

$F_{CH_4,flared,y}$ = Amount of methane in the LFG which is destroyed by flaring in year y

$F_{CH_4,EL,y}$ = Amount of methane in the LFG which is used for electricity generation in year y

$$F_{CH_4,flared,y} = F_{CH_4,sent_flared,y} - \frac{PE_{flare,y}}{GWP_{CH_4}}$$

$F_{CH_4,sent_flare,y}$ = amount of methane in the LFG which is sent to flare in year y

$PE_{flare,y}$ = Project emissions from flaring of the residual gas stream in year y

$$PE_{flare,y} = GWP_{CH_4} \cdot \sum_{n=1}^{525600} F_{CH_4,RG,y} \cdot (1 - \eta_{flare,m}) \cdot 10^{-3}$$

$F_{CH_4,RG,y}$ = mass flow of methane in the residual gas in the minute m (kg)

$\eta_{flare,m}$ = flare efficiency in the minute m

$F_{CH_4,sent_flare,y}$ and $F_{CH_4,EL,y}$ are determined via

$$F_{i,t} = V_{t,db} \cdot v_{i,t,db} \cdot \rho_{i,t} \text{ and } \rho_{i,t} = P_t \cdot MM_i / R_u \cdot T_t$$

$F_{i,t}$ = Mass flow of greenhouse gas i in the gaseous stream in time interval t

$V_{t,db}$ = Volumetric flow of the gaseous stream in time interval t on a dry basis

$v_{i,t,db}$ = Volumetric fraction of greenhouse gas i in the gaseous stream in a time interval t on a dry basis

$\rho_{i,t}$ = Density of greenhouse gas i in the gaseous stream in time interval t

P_t = Absolute pressure of the gaseous stream in time interval t

MM_i = Molecular mass of greenhouse gas i

R_u = Universal ideal gases constant

T_t = Temperature of the gaseous stream in time interval t (K)

$$BE_{EC,y} = \sum_k EC_{BL,k,y} \cdot EF_{EL,k,y} \cdot (1 + TDL_{k,y})$$

$EC_{BL,k,y}$ = the quantity of electricity that would be consumed by the baseline electricity consumption source k during the year y

$EF_{EL,k,y}$ = the emission factor for the grid in year y

$TDL_{k,y}$ = the average technical transmission and distribution losses in the grid in the year y for the voltage level at which electricity is obtained from the grid at the project site.

A spreadsheet has been provided for each month with underlying data as obtained from the DCS as well as a monthly summary spreadsheet including the overall summary. It is noted that due to downtimes the first or last data when data was recorded as indicated in the spreadsheet is not the 1st or last day (28th, 30th or 31st) of the related month.

Where corrections were required a revised baseline emissions calculation was prepared by the PPs and presented to the verification team. All raised issues were addressed appropriately so that it can be confirmed that the

	baseline calculation is overall correct.
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E.8.2. Calculation of project GHG emissions or actual net GHG removals by sinks

Means of verification	<p>During the verification the calculation of project GHG emissions has been checked. In detail the following has been verified:</p> <ul style="list-style-type: none"> • Transparency: It has been checked whether the calculation of project emissions is fully traceable and, where used, the Excel calculation provides all calculation formulae. • Parameter consistency: It has been checked whether all internal and external parameters and data used for the calculation are applied consistently in the monitoring report and the calculation spreadsheet. • Correctness: It has been checked whether the applied formulae and methods for calculating project emissions are in accordance with the monitoring plan and the approved methodology. • Completeness: It has been checked whether all calculations are complete and without omissions. <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /MR/ • /XLS/, /WDR/, /REC/, /DSR/, /ELEB/, /ELER/, /GMR/ • /ACM1/ • /TA/ • /PDD/. 						
Findings	<table border="1"> <tr> <td data-bbox="474 925 528 1256"><input type="checkbox"/></td><td data-bbox="537 925 1412 1256"> <p>The calculation of the project emissions was found to be fully compliant with the above stated principles.</p> <p>The calculations of project GHG emissions or actual net GHG removals have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied standardized baseline. Any assumptions used in emission or removal calculations have been justified. Appropriate emission factors, IPCC default values, GWPs and other reference values have been correctly applied.</p> <p>No errors, miscalculations, omissions, misstatements or incomplete information have been identified.</p> </td></tr> <tr> <td data-bbox="474 1261 528 1323"><input checked="" type="checkbox"/></td><td data-bbox="537 1261 1412 1323"> <p>The verification team has identified mistakes in the project emissions calculation or the underlying calculation approaches.</p> </td></tr> <tr> <td data-bbox="474 1328 528 1391"><input checked="" type="checkbox"/></td><td data-bbox="537 1328 1412 1391"> <p>In this context the following CARs, CLs, FARs have been raised:</p> <p>CAR E1, CAR E2, CL E3, CAR E4</p> </td></tr> </table>	<input type="checkbox"/>	<p>The calculation of the project emissions was found to be fully compliant with the above stated principles.</p> <p>The calculations of project GHG emissions or actual net GHG removals have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied standardized baseline. Any assumptions used in emission or removal calculations have been justified. Appropriate emission factors, IPCC default values, GWPs and other reference values have been correctly applied.</p> <p>No errors, miscalculations, omissions, misstatements or incomplete information have been identified.</p>	<input checked="" type="checkbox"/>	<p>The verification team has identified mistakes in the project emissions calculation or the underlying calculation approaches.</p>	<input checked="" type="checkbox"/>	<p>In this context the following CARs, CLs, FARs have been raised:</p> <p>CAR E1, CAR E2, CL E3, CAR E4</p>
<input type="checkbox"/>	<p>The calculation of the project emissions was found to be fully compliant with the above stated principles.</p> <p>The calculations of project GHG emissions or actual net GHG removals have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied standardized baseline. Any assumptions used in emission or removal calculations have been justified. Appropriate emission factors, IPCC default values, GWPs and other reference values have been correctly applied.</p> <p>No errors, miscalculations, omissions, misstatements or incomplete information have been identified.</p>						
<input checked="" type="checkbox"/>	<p>The verification team has identified mistakes in the project emissions calculation or the underlying calculation approaches.</p>						
<input checked="" type="checkbox"/>	<p>In this context the following CARs, CLs, FARs have been raised:</p> <p>CAR E1, CAR E2, CL E3, CAR E4</p>						
Conclusion	<table border="1"> <tr> <td data-bbox="474 1395 528 1458"><input type="checkbox"/></td><td data-bbox="537 1395 1412 1458"> <p>No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.</p> </td></tr> <tr> <td data-bbox="474 1462 528 1547"><input checked="" type="checkbox"/></td><td data-bbox="537 1462 1412 1547"> <p>The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.</p> </td></tr> </table> <p>Project emissions: Total project emissions are the sum of project emissions due to elec. consumption, use of fossil fuel and distribution of compressed/liqefied LFG using trucks.</p> <p>As there is no distribution of LFG and no consumption of fossil fuels, project emissions are calculated as follows:</p> $PE_{EC,y} = PE_{EC,y}$ <p>PE_y = Project emissions in year y (t CO₂/yr)</p> <p>PE_{EC,y} = Emissions from consumption of electricity due to the project activity in year y (t CO₂/yr)</p> $PE_{EC,y} = \sum_j EC_{PJ,j,y} \cdot EF_{EL,j,y} \cdot (1 + TDL_{j,y})$ <p>EC_{PJ,j,y} = the quantity of electricity consumed by the project activity during the year y (MWh)</p> <p>EF_{EL,j,y} = the emission factor for the grid in year y</p> <p>TDL_{i,y} = the average technical transmission and distribution losses in the grid</p>	<input type="checkbox"/>	<p>No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.</p>	<input checked="" type="checkbox"/>	<p>The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.</p>		
<input type="checkbox"/>	<p>No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.</p>						
<input checked="" type="checkbox"/>	<p>The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.</p>						

	<p>in the year y for the voltage level at which electricity is obtained from the grid at the project site</p> <p>A spreadsheet has been provided for each month with underlying data as obtained from the DCS as well as a monthly summary spreadsheet including the overall summary. It is noted that due to downtimes the first or last data when data was recorded as indicated in the spreadsheet is not the 1st or last day (28th, 30th or 31st) of the related month.</p> <p>Where corrections were required a revised PE calculation was prepared by the PPs and presented to the verification team. All raised issues were addressed appropriately so that it can be confirmed that the baseline calculation is overall correct.</p>
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E.8.3. Calculation of leakage GHG emissions

Means of verification	<p>During the verification it has been checked whether leakage emissions have to be considered and, in cases where leakage emissions have to be calculated, the respective calculation of leakage GHG emissions has been checked. In such cases the same verification principles have been considered as for the baseline and project emissions calculation. Please refer to E.8.1 and E.8.2.</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /MR/ • /XLS/, /WDR/, /REC/, /DSR/, /ELEB/, /ELER/, /GMR/ • /ACM1/ • /TA/ • /PDD/. 								
Findings	<table border="1"> <tr> <td><input checked="" type="checkbox"/></td><td>No leakage emissions were to be considered ($LE_y = 0$).</td></tr> <tr> <td><input checked="" type="checkbox"/></td><td> <p>The calculation of the leakage emissions was found to be fully compliant with the above stated principles (see 8.1 and 8.2).</p> <p>The calculations of leakage GHG emissions have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied standardized baseline. Any assumptions used in leakage emissions calculations have been justified. Where applicable, appropriate emission factors, IPCC default values, GWPs and other reference values have been correctly applied.</p> <p>No errors, miscalculations, omissions, misstatements or incomplete information have been identified.</p> </td></tr> <tr> <td><input type="checkbox"/></td><td>The verification team has identified mistakes in the project emissions calculation or the underlying calculation approaches.</td></tr> <tr> <td><input type="checkbox"/></td><td>In this context the following CARs, CLs, FARs have been raised:</td></tr> </table>	<input checked="" type="checkbox"/>	No leakage emissions were to be considered ($LE_y = 0$).	<input checked="" type="checkbox"/>	<p>The calculation of the leakage emissions was found to be fully compliant with the above stated principles (see 8.1 and 8.2).</p> <p>The calculations of leakage GHG emissions have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied standardized baseline. Any assumptions used in leakage emissions calculations have been justified. Where applicable, appropriate emission factors, IPCC default values, GWPs and other reference values have been correctly applied.</p> <p>No errors, miscalculations, omissions, misstatements or incomplete information have been identified.</p>	<input type="checkbox"/>	The verification team has identified mistakes in the project emissions calculation or the underlying calculation approaches.	<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised:
<input checked="" type="checkbox"/>	No leakage emissions were to be considered ($LE_y = 0$).								
<input checked="" type="checkbox"/>	<p>The calculation of the leakage emissions was found to be fully compliant with the above stated principles (see 8.1 and 8.2).</p> <p>The calculations of leakage GHG emissions have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied standardized baseline. Any assumptions used in leakage emissions calculations have been justified. Where applicable, appropriate emission factors, IPCC default values, GWPs and other reference values have been correctly applied.</p> <p>No errors, miscalculations, omissions, misstatements or incomplete information have been identified.</p>								
<input type="checkbox"/>	The verification team has identified mistakes in the project emissions calculation or the underlying calculation approaches.								
<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised:								
Conclusion	<table border="1"> <tr> <td><input checked="" type="checkbox"/></td><td>No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.</td></tr> <tr> <td><input type="checkbox"/></td><td>The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.</td></tr> </table> <p>Leakage: No leakage is applicable based on methodology. Therefore $LE_y = 0$</p>	<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.	<input type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.				
<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.								
<input type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.								

E.8.4. Summary of calculation of GHG emission reductions or net anthropogenic GHG removals by sinks

Means of verification	<p>The verification team has checked if the MR includes a summary table of the emission reductions calculation specifying separately</p> <ul style="list-style-type: none"> - Total baseline emissions, - Total project emissions, - Total leakage, - Total emission reductions. <p>It has been assessed whether the values are correct or need to be revised as a consequence of issues identified above.</p>
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Findings	<input checked="" type="checkbox"/>	Section E.4 of the MR includes in a summary table of the emission reductions calculation.
	<input checked="" type="checkbox"/>	The summary table specified the total baseline, project and leakage emissions as well as the total emission reductions separately.
	<input type="checkbox"/>	The values as specified in the ER summary table are correct; no issues have been identified during the verification which requires changes in the ER calculation.
	<input checked="" type="checkbox"/>	During the verification issues with impact on the ER calculation have been identified.
	<input checked="" type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised: CAR E1, CAR E2, CL E3, CAR E4
Conclusion	<input type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input checked="" type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
<p>The final emission reductions are the difference between baseline emissions and project as well as leakage emissions:</p> <p>Initially as per published MR: $ER_y = BE_y - PE_y$ $= 23,662 \text{ t CO}_2\text{e} - 202 \text{ t CO}_2\text{e}$ $= 23,459 \text{ t CO}_2\text{e}$ (due to rounding)</p> <p>Final as per latest MR: $ER_y = BE_y - PE_y$ $= 22,334 \text{ t CO}_2\text{e} - 200 \text{ t CO}_2\text{e}$ $= 22,134 \text{ t CO}_2\text{e}$.</p>		

E.8.5. Comparison of actual GHG emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD

Means of verification	The verification team has checked if the MR includes a comparison of actual values of the monitoring period with the estimations in the registered PDD. It has further checked which of the below listed cases is applicable for the calculated ER of the current monitoring period.	
Findings	<input checked="" type="checkbox"/>	Case 1: The ex-ante estimated value was found to be proportionally higher than the ex-post determined value. No further action is deemed required.
	<input type="checkbox"/>	Case 2: The ex-ante estimated value fits very good to the actually monitored value. No further justification is deemed required.
	<input type="checkbox"/>	Case 3: The ex-ante estimated value was found to be proportionally lower than the ex-post determined value.
	<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised:
Conclusion	<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.

E.8.6. Remarks on difference from estimated value in registered PDD

Means of verification	On the basis of the above comparison of actual values of the monitoring period with the estimations in the registered PDD (E.8.5) the verification team has checked whether (in case 3) an appropriate explanation is included in the MR.	
Findings	<input checked="" type="checkbox"/>	No further justification or explanation is deemed required as actual emissions of this MP do not exceed significantly the ex-ante calculated emission reductions (applicable for case 1 and 2).
	<input type="checkbox"/>	For case 3: The PP has provided a related justification in the MR. The reasons for the increase are as follows: - N/A

	<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised:
Conclusion	<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
	As the achieved amount of emission reductions is lower than the ex-ante calculated value for this monitoring period no further justification is required.	

E.8.7. Actual GHG emission reductions or net anthropogenic GHG removals by sinks during the first commitment period and the period from 1 January 2013 onwards

Means of verification	The verification team has checked chapter E.7 of the MR and the emission reduction calculation sheet /XLS/.									
Findings	<input checked="" type="checkbox"/>	The MR in section E.7 includes a summary table of the ER breakdown a) <i>ER up to 2012-12-31 and</i> b) <i>ER from 2013-01-01 onwards</i>								
	<input checked="" type="checkbox"/>	The breakdown of the ERs during the first commitment period and from 2013-01-01 onwards is as follows: <input type="checkbox"/> The ER have completely been generated during the first commitment period <input checked="" type="checkbox"/> The ERs have completely been generated from 2013-01-01 onwards, <input type="checkbox"/> The ERs have partly been generated during the first commitment period and partly from 2013-01-01 onwards.								
	<input checked="" type="checkbox"/>	The breakdown of the ERs is correct, considering the applicable guidance.								
	<table border="1"> <thead> <tr> <th></th> <th>until 2012-12-31 ¹⁾</th> <th>from 2013-01-01 ¹⁾</th> <th>Sum</th> </tr> </thead> <tbody> <tr> <td>Emission reductions [tCO_{2e}]</td> <td>0</td> <td>22,134</td> <td>22,134</td> </tr> </tbody> </table> <p>¹⁾ Both days included</p>				until 2012-12-31 ¹⁾	from 2013-01-01 ¹⁾	Sum	Emission reductions [tCO _{2e}]	0	22,134
	until 2012-12-31 ¹⁾	from 2013-01-01 ¹⁾	Sum							
Emission reductions [tCO _{2e}]	0	22,134	22,134							
Conclusion	<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.								
	<input type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.								
	The data provided in the MR is correct as well as the related breakdown. The pro-rata approach was correctly applied to the calculations of GHG emission reductions or net anthropogenic GHG removals in accordance with the project standard, as the monitoring period starts before 31 December 2012 and ends anytime thereafter.									

SECTION F. Internal quality control

Before the submission of the final verification report a technical review of the whole verification procedure was carried out. The technical reviewers are competent GHG auditors where at least one is being appointed for the scope this project falls under. The technical reviewers are not considered to be part of the verification team and thus not involved in the decision making process up to the technical review.

As a result of the technical review process the verification opinion and the topic specific assessments as prepared by the verification team leader may have been confirmed or revised. Furthermore reporting improvements might have been achieved.

After the successful technical review an overall (esp. procedural) assessment of the complete verification has been carried out by a senior assessor located in the accredited premises of TÜV NORD.

After this step the submission for requesting for issuance is conducted.

SECTION G. Verification opinion

The International Bank for Reconstruction and Development (IBRD), as Trustee of the Prototype Carbon Fund (PCF) has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 1st periodic verification of the 2nd crediting period of the project: "Durban Landfill-gas-to-electricity project – Mariannhill and La Mercy Landfills", with regard to the relevant requirements for CDM project activities. The project reduces GHG emissions due to collection and destruction of methane contained in landfill gas and substitution of mainly fossil fuel generated electricity from the connected grid. This verification covers the period from 15/12/2013 to 30/09/2014 (including both days).

As a result of this verification, the verifier confirms that:

- all operations of the project are implemented and installed as planned and described in the validated project design document,
- the monitoring plan is in accordance with the applied approved CDM methodology, i.e., ACM0001 ver. 15 as well as approved standardized baseline ASB0001,
- the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately,
- the monitoring system is in place and functional. The project has generated GHG emission reductions,
- the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner.

TÜV NORD JI/CDM CP further confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:

Emission reductions: 22,134 t CO_{2e}.

SECTION H. Certification statement

As a duly accredited DOE, TÜV NORD CERT confirms that the project

"Durban Landfill-gas-to-electricity project – Mariannhill and La Mercy Landfills"

registered under

UNFCCC-No. : 0545

has achieved emission reductions in accordance with all applicable requirements for registered CDM project activities during the current monitoring period

MP-No.: 01 of 2nd CP

from: 15/12/2013

to: 30/09/2014

(including both days) as follows:

Emission reductions: 22,134 t CO_{2e}.

Essen, 07/07/2016




Stefan Winter
Team leader

Appendix 1. Abbreviations

Abbreviations	Full texts
CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CO ₂	Carbon dioxide
CO _{2eq}	Carbon dioxide equivalent
CL	Clarification Request
DVerR	Draft Verification Report
DWS	Durban metro Water Services
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse gas(es)
IM	Interview Memo
MP	Monitoring Plan
MR	Monitoring Report
PA	Project Activity
PDD	Project Design Document
PP	Project Participant
QA/QC	Quality Assurance / Quality Control
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation and Verification Standard
XLS	Emission Reduction Calculation Spread Sheet

Appendix 2. Competence of team members and technical reviewers



Statement of Competence
Appointment and authorization according to the procedures of the TÜV NORD JICDM Certification Program

Mr. Stefan Winter

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2017-07-27
VCS	Senior Assessor (Validation, Verification) Technical Reviewer	2017-07-27

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.1	Thermal energy generation
1.2	Renewables
2.1	Energy distribution
3.1	Energy demand
4.1	Cement and lime production
4.2	Paper
5.2	Caprolactam, nitric and adipic acid
9.1	Aluminium and magnesium production
9.2	Iron, steel and Ferro-alloy production
13.1	Solid waste and wastewater
13.2	Manure

163 – Rev. 4, Date: 2015-01-05

163_S01-VA060-F20_2015-01-05_v04.doc S01-VA060-F20 m03 / 2012-10-26



Statement of Competence
Appointment and authorization according to the procedures of the TÜV NORD JICDM Certification Program

Mr. Grzegorz Kochaniewicz


SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2019-02-08
VCS / ISO 14064-2	Senior Assessor	2019-02-08

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.2	Renewables
3.1	Energy Demand
14.1	Afforestation and Reforestation

173 – Rev. 7, Date: 2016-02-09

173_S01-VA060-F20_2016-02-09_v07.doc S01-VA060-F20 m03 / 2012-10-26



Statement of Competence
Appointment and authorization according to the procedures of the TÜV NORD JICDM Certification Program

Ms. Christina Stöhr

SCHEME	STATUS	VALID UNTIL
CDM	Assessor (Validation, Verification) Technical Reviewer	2017-12-12
VCS / ISO 14064-2	Assessor / Technical Reviewer	

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.1	Thermal energy generation
1.2	Renewables
13.1	Solid waste and wastewater

200 – Rev. 4 Date: 2015-06-09

200_S01-VA060-F20_2015-12-13_v04.doc S01-VA060-F20 m03 / 2012-10-26



Statement of Competence
Appointment and authorization according to the procedures of the TÜV NORD JICDM Certification Program

Mr. Martin Saalmann

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2019-11-10
J1	Senior Assessor Technical Reviewer	2019-11-10
VCS / ISO 14064-2	Senior Assessor Technical Reviewer	2019-11-10

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.2	Renewables
13.1	Solid waste and wastewater

022 – Rev. 6, Date: 2015-11-11

022-021-VA060-F20_2015-11-11_v06.doc S01-VA060-F20 m03 / 2012-10-26

Appendix 3. Documents reviewed or referenced

No.	Author	Reference	Title	References to the document	Provider
1	UNFCCC	/ACM1/	ACM0001 ver. 15 "Large-scale Consolidated Methodology: Flaring or use of landfill gas" ASB0001 ver. 1 "Grid emission factor for the Southern African power pool"		Other
2	DOE	/CPM/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)		Other
3	IPCC	/IPCC/	1. 1996 IPCC Guidelines for National Greenhouse Gas Inventories: work book 2. 2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book	www.ipcc-nggip.iges.or.jp	Other
4	UNFCCC	/KPI/	Kyoto Protocol (1997)	http://unfccc.int/kyoto_protocol/items/2830.php	Other
5	UNFCCC	/MA/	Decision 3/CMP. 1 (Marrakesh – Accords)	http://cdm.unfccc.int/Reference/COPMOP/index.html	Other
6	PP	/MR/	Monitoring Report for CDM project: "Durban Landfill-gas-to-electricity project – Mariannhill and La Mercy Landfills" - version 1, dated 22/10/2014 - version 2, dated 26/01/2016 - version 3, dated 21/03/2016 - version 4, dated 06/07/2016		Other
7	UNFCCC	/MRT/	Monitoring Report Form (CDM-MR-FORM), Version 5.1	https://cdm.unfccc.int/Reference/PDDs_Forms/index.html	Other
8	UNFCCC	/PDD/	Project Design Document for CDM project: "Durban landfill-Gas-to-Electricity Project – Mariannhill and La Mercy Landfills" - version 3, dated 28/01/2014 - version 4, dated 30/06/2015	http://cdm.unfccc.int/Projects/DB/TUEV-SUED1154520464.04/view	Other
9	UNFCCC	/PS/	CDM Project Standard (Version 9.0)	http://cdm.unfccc.int/Reference/Standards/index.html	Other
10	PP	/VAL/	Validation Report for CDM project "Durban landfill-Gas-to-Electricity Project – Mariannhill and La Mercy Landfills" version 2, dated 31/01/2014 Assessment opinion regarding Post	http://cdm.unfccc.int/Projects/DB/TUEV-SUED1154520464.04/view	Other

No.	Author	Reference	Title	References to the document	Provider
			Registration Changes for CDM project "Durban landfill-Gas-to-Electricity Project – Mariannhill and La Mercy Landfills" version 0, dated 15/07/2015		
11	PP	/VER/	Documents of previous verifications (Monitoring report, verification report, ER calculation sheet)	http://cdm.unfccc.int/Projects/DB/TUEV-SUED1154520464.04/view	Other
12	UNFCCC	/VVS/	CDM Validation and Verification Standard (Version 09.0)	http://cdm.unfccc.int/Reference/Standards/index.html	Other
13	UNFCCC	/SAMPLE/	"Guidelines for Sampling and Surveys for CDM Project Activities and Programme Activities" (Version 03.0) "Standard for Sampling and Surveys for CDM Project Activities and Programme Activities" (version 4.1)	https://cdm.unfccc.int/Reference/Guidclarif/index.html http://cdm.unfccc.int/Reference/Standards/index.html	Other
14	UNFCCC	/TA/	<ul style="list-style-type: none"> • Tool to calculate project or leakage CO2 emissions from fossil fuel combustion Version 2 • Emissions from solid waste disposal sites Version 7 • Project emissions from flaring Version 2.0.0 • Tool to calculate the emission factor for an electricity system Version 4.0 • Tool to determine the mass flow of a greenhouse gas in a gaseous stream Version 2.0.0 • Tool to determine the baseline efficiency of thermal or electric energy generation systems Version 1 • Project and leakage emissions from transportation of freight Version 1.1.0 	http://cdm.unfccc.int/Reference/tools/index.html	Other
15	UNFCCC	/GOT/	Glossary "CDM terms" (version 08.0)	https://cdm.unfccc.int/filestorage/e/x/t/extfile-20150226124447549-glos_CDM.pdf/glos_CDM.pdf?t=UmZ8bnFjODI3fDCW9A3vJwR03kQQh4sbLiYu	Other
16	Other	/GRC/	NRS 057 SANA 474 (South African Grid Code)		Other
17	Other	/CAL/	Certificate of Calibration of		PP

No.	Author	Reference	Title	References to the document	Provider
			Thermocouple Probe, Serial No 3397084/3397085/3397086/3397087/3397087/3397089/, dated 2013-12-11 Certificate of Calibration (Gascard NG), dated 12/11/2013; Certificate of Calibration (Gascard NG), dated 22/08/2013; Certificate of Calibration (Gascard NG), dated 13/03/2014; Calibration of Gas Cylinder 04/02/2013; Calibration of Gas Cylinder 19/01/2014; Calibration of pressure transmitter dated 13/05/2015		
18		/CAUD/	Permit Compliance Audit of the Mariannhill G:L:B+ Landfill Site Located on Sub Lot 79 of Zeenoegat No 937, Kwazulu Natal: Permit No: B33/2/1920/27/1/P241, dated July 2014.		PP
19	PP	/COM/	Contingency Management Plan. Cleansing and Solid Waste DSW, Mariannhill Landfill Site		PP
20		/DAT/	MH Site Record Sheet from 2013-12 to 2014-09		PP
21	Envitech Solution	/DPR/	CDM Data Processing: Step by Step Methodology (Envitech Solution)		PP
22	Envitech Solution	/DSR/	Daily site record sheet (Envitech Solution)		PP
23		/ELEB/	Monthly Electricity Billing spreadsheet		PP
24		/ELER/	Monthly Electricity Reading by metering department		PP
25	Eskom	/ESK/	Eskom Integrated Results for the year ended 31 March 2014		PP
26		/FMA/	Test Report: Mariannhill Landfill Flow Meter Audits, dated 30/01/2014,		PP
27		/GMR/	GAS WELL MONITORING REPORT: MARIANNHILL LANDFILL SITE		PP
28	GE Jenbacher	/HRT/	Heat Rate Testing – GE Jenbacher 320 Series Engines, dated February 2014		PP
29		/LPL/	Mariannhill overall gas wells October 2014 (drawing)		PP
30		/MCL/	Methodology for the Calculation of CERs for the Durban/World Bank CDM Landfill Gas to Electricity Project (Version 4, August 2014)		PP
31		/WDR/	Waste delivery record		PP
32		/OPR/	Durban Gas to Electricity CDM Project: Operation & Maintenance (Minutes of Meeting 51 Held on 17		PP

No.	Author	Reference	Title	References to the document	Provider
			June 2014) DWS Report for solid waste management in the Durban metroplolitan area, Nov 1998 Email by Rajesh Ramlagan (fleet manager) providing list of all vehicles used to collect waste in respective districts.		
33		/REC/	Mariannhill Monthly Report 2014B 22 13_15-Excel		PP
34	Various suppliers	/TS/	<ul style="list-style-type: none"> Resistance Thermometers, Model WIKA TR200 (data sheet) WIKA Instruments Manufacturer_TR200_Letter Pressure Transmitters PTX 7900 Series (data sheet) GA5000 Portable gas analyser (technical specification); Biogas 5000 Gas Analyser. Operating Manual; Gascard NG infrared Gas Monitoring Users Manual Series 353FT Insertion Mass Flow Transmitter User's Guide 		PP
35		/TRAIN/	Trainings records: <ul style="list-style-type: none"> Certificate; Field Tech Basic Training, training dates: 03.05.2010 to 07.05.2010 Operation and Maintenance SC Flare Stack Operation and Maintenance Gas Booster 		PP
36		/XLS/	Initial and final Emission reduction calculation summary spreadsheet Initial and final monthly CDM Data spreadsheets including raw data from the digital control system by Envitech Solutions		PP

Appendix 4. Clarification requests, corrective action requests and forward action requests

Table 3. Remaining FAR from validation and/or previous verification

FAR ID	-	Section no.	E.2	Date: DD/MM/YYYY
Description of FAR				
n.a.				
Project participant response (1st round)				Date: DD/MM/YYYY
Documentation provided by project participant (1st round)				
<input type="checkbox"/>	Changes in the PDD	Section(s):	New version No.:	
<input type="checkbox"/>	Changes in MR	Section(s):	New version No.:	
<input type="checkbox"/>	Changes in XLS	Worksheet(s):	New version No.:	
<input type="checkbox"/>	Other:			
DOE assessment (1st round)				Date: DD/MM/YYYY
Conclusion <i>Tick the appropriate checkbox</i>				
<input type="checkbox"/> Additional action should be taken (finding remains open) <input type="checkbox"/> The finding is closed				

Table 4. CL from this verification

CL ID	A1	Section no.	A.3	Date: 27/11/2014
Description of CL				
Inconsistencies have been identified w.r.t. the names and related countries between MR title page and section A.3 and related UNFCCC project webpage. Related revision is requested.				
Project participant response (1st round)				Date: 26/01/2016
The parties and project participants information is updated in MR front page and section A.3 in line with the UNFCCC project webpage, and revised PDD.				
Documentation provided by project participant (1st round)				
<input type="checkbox"/>	Changes in the PDD	Section(s):	New version No.:	
<input checked="" type="checkbox"/>	Changes in MR	Section(s): A.3, title page	New version No.: 2	
<input type="checkbox"/>	Changes in XLS	Worksheet(s):	New version No.:	
<input type="checkbox"/>	Other:			
DOE assessment (1st round)				Date: 02/03/2016
DOE has checked updated MR ver 2 against information at related UNFCCC project webpage as well as title page against section A.3. Based on that the information is consistent besides the company Electrabel. MR mentions Electrabel S.A (title page and A.3) whereas the UNFCCC project webpage states Electrabel N.V.				
Project participant response (2nd round)				Date: 17/05/2016
The concerned project participant name is corrected in front page and section A.3 of the latest MR in line with the UNFCCC project webpage.				
Documentation provided by project participant (2nd round)				
<input type="checkbox"/>	Changes in the PDD	Section(s):	New version No.:	
<input checked="" type="checkbox"/>	Changes in MR	Section(s): A.3, title page	New version No.: 3	
<input type="checkbox"/>	Changes in XLS	Worksheet(s):	New version No.:	
<input type="checkbox"/>	Other:			
DOE assessment (2nd round)				Date: 08/06/2016
Ok. As per updated MR ver 3 and related UNFCCC project webpage the name of the PPs are now fully consistent. However section A.1 does not clearly provide the purpose of the project activity. Specification requested.				
Project participant response (3rd round)				Date: 06/07/2016

The last sentence has been modified to be more specific.			
Documentation provided by project participant (3rd round)			
<input type="checkbox"/>	Changes in the PDD	Section(s):	New version No.:
<input checked="" type="checkbox"/>	Changes in MR	Section(s): A.1	New version No.: 4
<input type="checkbox"/>	Changes in XLS	Worksheet(s):	New version No.:
<input type="checkbox"/>	Other:		
DOE assessment (3rd round)			Date: 07/07/2016
Ok. Related specification has been provided. Finding is closed.			
Conclusion <i>Tick the appropriate checkbox</i>		<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed	

CL ID	D3	Section no.	D.2	Date: 27/11/2014
Description of CL				
SGS calibration reports a range of -5% to +5% allowable range whereas the MR in D.2 states $\pm 2\%$ accuracy class. Further the result for one meter shows an error of 4.1% and therefore the meter is measuring outside the accuracy class. Pls clarify which measures are taken in case a crosscheck identifies that a meter is not operating within its accuracy class.				
Project participant response (1st round)				Date: 26/01/2016
Existing flow meters have been replaced by flow meters from other manufacturer.				
Documentation provided by project participant (1st round)				
<input type="checkbox"/>	Changes in the PDD	Section(s):	New version No.:	
<input type="checkbox"/>	Changes in MR	Section(s):	New version No.:	
<input type="checkbox"/>	Changes in XLS	Worksheet(s):	New version No.:	
<input type="checkbox"/>	Other:			
DOE assessment (1st round)				Date: 02/03/2016
<p>Not ok. Pls clarify whether new E+H flow meters have been installed now or whether this will be the procedure such a case is identified. The MR states as Type Kurz Instrument. In case new meters have been installed pls further clarify when exactly the new meters have been installed and for which parameters this is relevant and provide the details of the meters (serial#, type, manufacturer, accuracy class, monitoring frequency, etc.) along with an updated MR.</p> <p>Further the statement by E+H states that the accuracy is $\pm 3\%$ if a flow conditioner is installed and $\pm 4\%$ if not. Pls clarify whether a flow conditioner is installed. Further the manufacturer recommends conducting an annual verification test and in case the test fails to send the meter to the factory for flow calibration. Pls clarify how this is considered in the monitoring plan.</p> <p>Further if this is the applied procedure for such a case please clarify why the PDD has not been updated accordingly in the related monitoring section.</p> <p>Finally please clarify how this result of the meter as identified during the onsite visit is considered for the emission reduction calculation.</p>				
Project participant response (2nd round)				Date: 26/01/2016

Regarding the Kurz flow meters, given that the 4.1% identified error was reported by SGS as within the allowable range for the meter, no further action was taken by the project owner. In acknowledgement of this misinterpretation by the project owner, and in order to conservatively account for this error, DSW has applied this 4.1% as a discount to all the values that were monitored by this meter. This has a discount effect on the emission reductions claimed during this Monitoring Period. Please refer to all CDM Data excel files, "Processed Data" Tab, column E.

As a consequence of this finding, DSW replaced the Kurz flowmeters with The Endress+Hauser T-mass meter (65i). Two E+H T-mass meters were installed in February 2015 and are functioning well. However, the information regarding E+H meter was not included in this MR given they were installed after the monitoring period.

The flow conditioner will not be installed, hence the accuracy of the new flow meters will be $\pm 4\%$; and manufacturer recommendations on calibration will be followed as per the QA/QC procedures for $V_{LFG,total,y,db}$, $V_{LFG,sent_flare,y,db}$, $V_{LFG,EL,y,db}$ in the approved revised PDD.

Documentation provided by project participant (2nd round)

<input type="checkbox"/>	Changes in the PDD	Section(s):	New version No.:
<input type="checkbox"/>	Changes in MR	Section(s):	New version No.:
<input checked="" type="checkbox"/>	Changes in XLS	Worksheet(s): CDM Data for 2013 and 2014.	New version No.:
<input type="checkbox"/>	Other:		

DOE assessment (2nd round)
Date: 02/03/2016

Ok. DOE checked the emission reduction spreadsheets esp. raw data and processed data sheet in CDM Data files and can therefore confirm that a 4.1% discount has been applied to the flow value to the engine. The flow to the flare has not been discounted as the accuracy of that flow meter was found to be at 0.5% and therefore within the permissible error. A reduction in the flow is resulting in lower emission reductions and therefore the application is conservative. As the actual error is outside the max error of the new installed flow meters the actual error of 4.1% identified by SGS have been applied.

Further all flow meters have been exchanged to E+H 65i flow meters. Related technical specifications have been provided. Further as per statement provided by E+H the accuracy of the current installation is of 4% dated 24/02/2015. Further E+H recommends an annual on-site verification test, if the test fails the equipment to their factory for calibration. A related FAR is raised to check this during next verification.

Finding is closed.

Conclusion
Tick the appropriate checkbox

- ☐ Additional action should be taken (finding remains open)
☒ The finding is closed

CL ID	E3	Section no.	A.3	Date: 27/11/2014
Description of CL				
Clarification is requested w.r.t. following issue:				
In the monthly spreadsheet CDM Data the emission reduction result for the related month in the "SUMMARY" sheet is different from the value given under the sheet "PROCESSED DATA".				
Project participant response (1st round)				Date: 26/01/2016

When looking at the way emission reductions are calculated on both tabs, it can be seen that the main difference stems from the way the "Baseline Emissions from Electricity Generation" are calculated. While the calculation on the "Summary Tab" uses the electricity generation data from the bills (official third party value from the electricity company), the calculations on the "Processed Data" tab uses the data from the load profile. As was explained on-site by the eThekweni electricity company representative, metering staff use different software to extract the data for the load profile and the peak/standard/off-peaks, hence there is always a very tiny difference when using these two sets of data.

For emission reduction claims (hence the CDM Summary spreadsheet) the PP uses the data provided by the electricity company on the bills, as this is the official value provided by a third party.

Documentation provided by project participant (1st round)

<input type="checkbox"/> Changes in the PDD	Section(s):	New version No.:
<input type="checkbox"/> Changes in MR	Section(s):	New version No.:
<input type="checkbox"/> Changes in XLS	Worksheet(s):	New version No.:
<input type="checkbox"/> Other:		

DOE assessment (1st round)
Date: 02/03/2016

DOE checked the CDM data spreadsheet against the Summary spreadsheet and can confirm that the difference is the evolving from the electricity generation and the related baseline emissions. As the elec. generated is fed into the related grid owned by ESKOM (local grid company) which provides monthly invoices on the elec. generated those are correctly taken as basis for calculation. Further as the CDM data and esp the raw data within are derived from the PP own monitoring system differences as explained might occur. The stated has been confirmed by operation personnel during site visit and by check of the monitoring system during onsite inspection. Further the data from the PP system can be and is used to crosscheck the data in the invoices provided by ESKOM. No significant deficiencies have been identified.

Based on that this finding is closed.

Conclusion
Tick the appropriate checkbox

- ☐ Additional action should be taken (finding remains open)
☒ The finding is closed

Table 5. CAR from this verification

CAR ID	B1	Section no.	B.1	Date: 27/11/2014
Description of CAR				
As per onsite observation the following issues have been identified on the table of gas wells in section B.1 of the MR:				
1. Well HS1, V 13, HW 16 LE is mentioned incorrect				
2. Well HS1, V 14, HW 17 LE is mentioned incorrect				
Well HS1, V 16, HW 7 LC is not operating any more but not crossed out				
Project participant response (1 st round)				
The information for gas wells has been corrected accordingly in the table on page 8 of the MR.				
Documentation provided by project participant (1 st round)				Date: 26/01/2016
<input type="checkbox"/>	Changes in the PDD	Section(s):		New version No.:
<input checked="" type="checkbox"/>	Changes in MR	Section(s): B.1		New version No.: 2
<input type="checkbox"/>	Changes in XLS	Worksheet(s):		New version No.:
<input type="checkbox"/>	Other:			
DOE assessment (1 st round)				Date: 02/03/2016

In section B.1 of MR ver 2 the status of implementation has been updated. Well HS1, V16, HW7 has been crossed out and wells HS1 V13 HW16 and V14 HW17 has been corrected from LD to level LE.

Based on updated MR, onsite observation and check with landfill project layout diagram the project status as per MR is now as per actual situation found during onsite visit and checked documents.

Finding is closed.

Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed
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CAR ID	B2	Section no.	B.1	Date:	27/11/2014	
Description of CAR						
Clarification is requested why downtimes and periods for which monitoring could not be conducted esp. in the beginning of the monitoring period has not been mentioned in section B.1 of the MR.						
Project participant response (1st round)						
Operational downtimes and periods when parts of the monitoring system were unavailable due to: 1-Stabilization of the monitoring equipment (when the monitoring system was updated to new requirements of the renewed version of the PDD); 2-Periods of time when power was being restored and 3-Periods of time when the flare was operating outside of its specifications, have been identified and tabulated in the section B.1 of the MR.						
The PP would like to note that in order to be conservative, no emission reductions have been claimed during any of these events, even though during some of them (specifically number 2) the methane destruction equipment (flare and gas flow) was operating adequately and as per manufacturer specifications, but the reporting system was down and unavailable due to power outages and it taking time in being restored.						
Even though a 50% flare efficiency could have been applied as per the provisions stipulated for the flare efficiency in the registered PDD, 0% has been used in order to be conservative. This has also been clarified under the "Additional comments" section for the flare efficiency parameter, $\eta_{\text{flare,m}}$, of the Monitoring Report.						
Documentation provided by project participant (1st round)					Date:	26/01/2016
<input type="checkbox"/>	Changes in the PDD	Section(s):		New version No.:		
<input checked="" type="checkbox"/>	Changes in MR	Section(s): B.1, and D.1		New version No.: 2		
<input checked="" type="checkbox"/>	Changes in XLS	Worksheet(s): CDM Data for 2013 and 2014.		New version No.:		
<input type="checkbox"/>	Other:					
DOE assessment (1st round)					Date:	02/03/2016
DOE has checked the one minute raw data for the entire monitoring period and can therefore confirm that first the MR in section B.12 now mentions the downtimes of the project activity along with related reasons and that stated downtimes and reasons are correct and consistent with the underlying raw data. Further the ER calculation does not consider ER for all stated downtimes in the MR which is conservative.						
Finding is closed.						
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed					

CAR ID	B3	Section no.	B.2	Date:	27/11/2014
Description of CAR					
A.1 mentioned that a notification of changes has been conducted and approved as well as a correction has been conducted to the PDD in 06/06/2013 however please clarify why the same is not mentioned under related section in B.2.					
Project participant response (1st round)					

Section B.2 of the MR has been updated by adding the corrections and permanent changes to the revised registered PDD approved on 12/10/2015.

Documentation provided by project participant (1 st round)		Date: 26/01/2016
<input type="checkbox"/> Changes in the PDD	Section(s):	New version No.:
<input checked="" type="checkbox"/> Changes in MR	Section(s): B.2	New version No.: 2
<input type="checkbox"/> Changes in XLS	Worksheet(s):	New version No.:
<input type="checkbox"/> Other:		

DOE assessment (1 st round)	Date: 02/03/2016
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The MR ver 2 has been updated w.r.t. the information on the post registration changes conducted via PRC-0545-002 approved on 12/10/2015. However the information on the previous changes are still missing besides the reference number PRC-0545-002 is not given in the MR as required by the instruction to fill MR. Further the provided links are not working. Please check.

Project participant response (2 nd round)	Date: 17/05/2016
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The reference number PRC-0545-002 is now added in the latest version of the MR in line with the Instructions for filling out the monitoring report form. The first PRC, PRC-0545-001 has also been mentioned in section B.2.2, although a note has been added noting that it is no longer relevant to this crediting period as the methodology has been updated since the projects renewal of the crediting period. The hyperlinks to the PRCs have been corrected.

Documentation provided by project participant (2 nd round)			
<input type="checkbox"/> Changes in the PDD	Section(s):		New version No.:
<input checked="" type="checkbox"/> Changes in MR	Section(s): B.2.2		New version No.: 3
<input type="checkbox"/> Changes in XLS	Worksheet(s):		New version No.:
<input type="checkbox"/> Other:			

DOE assessment (2 nd round)	Date: 08/06/2016
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Ok. Related reference number and date of approval has been provided now in the updated MR ver 3 for PRC number 1 and number 2. Also the hyperlinks are now correct.

Finding is closed.

Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed
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CAR ID	C1	Section no.	C	Date: 27/11/2014
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Description of CAR

Based on onsite visit and interviews conducted during site visit it has been identified that the diagram has to be updated according to actual conditions e.g. it mentions that EGy would be monitored however no such parameter is in reg PDD. Further Op_{flare} is linked to T_{EG,m} but as per interview with the CDM Operator the Flame detection system is used to monitor Op_{flare} primarily. Further a chiller has been installed to cool the LFG which consumes electricity.

Project participant response (1st round)

Flow diagram on page 12 of the MR has been updated in line with the actual operation and the revised PDD dated 30/06/2015. The change on the revised PDD was approved on 12/10/2015.

Documentation provided by project participant (1 st round)		Date: 26/01/2016
<input type="checkbox"/> Changes in the PDD	Section(s):	New version No.:
<input checked="" type="checkbox"/> Changes in MR	Section(s): C	New version No.: 2
<input type="checkbox"/> Changes in XLS	Worksheet(s):	New version No.:
<input type="checkbox"/> Other:		

DOE assessment (1 st round)	Date: 02/03/2016
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PDD has been updated accordingly which has been submitted as PRC with prior approval. The PRC has been approved on 12/10/2015. However the MR is inconsistent with the latest PDD w.r.t. the parameter T_i which is given in PDD diagram but not in MR diagram.

Project participant response (2 nd round)	Date: 17/05/2016
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The flow diagram has been updated in line with the approved revised PDD dated 30/06/2015. Parameter T_i is now included.

Documentation provided by project participant (2nd round)

<input type="checkbox"/>	Changes in the PDD	Section(s):	New version No.:
<input checked="" type="checkbox"/>	Changes in MR	Section(s): C	New version No.: 3
<input type="checkbox"/>	Changes in XLS	Worksheet(s):	New version No.:
<input type="checkbox"/>	Other:		

DOE assessment (2nd round)
Date: 08/06/2016

Ok. The related parameter is now also presented in the diagram in the MR ver 3 and the diagram is now consistent with the related PDD and the situation found during onsite inspection.

Finding closed.

Conclusion
Tick the appropriate checkbox

- ☐ Additional action should be taken (finding remains open)
☒ The finding is closed

CAR ID	C2	Section no.	D.2	Date: 27/11/2014
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Description of CAR

During check of the monitoring plan against related methodology and tools the following issues have been identified

1. Page 24 of PDD: The description for $p_{H20,t,Sat}$ is inconsistent with related tool for gaseous stream.
2. The monitoring plan as per reg PDD B.7.1 is missing parameter $p_{H20,t,Sat}$ as indicated in related tool for gaseous stream.
3. The reg PDD is missing the parameter as per tool "Project emissions from flaring" ver 2 SPEC_{flare} in section B.6.2. The tool states that the flare specifications have to be documented in the CDM-PDD.
4. Page 31 of PDD parameter description of grid emission factor is inconsistent between equation and description below ($EF_{EL,j,y}$ and $EF_{grid,y}$). Similar for TDL.
5. Value for density is given with 0.0007168 tCH₄/m³CH₄ whereas the related tool states 0.716 kgCH₄/m³CH₄ which is also applied in ER calculation.
6. Parameter description for parameter f is inconsistent with related tool.
7. Parameter description for parameter \square_{PJ} is inconsistent with related methodology. Further under source of data and choice of data it is referred to page 17 however page 17 does not provide related info.
8. Parameter description for parameter DOC_f is inconsistent with related tool.
9. B.6.2 does not provide a parameter $EF_{EL,k,y}$ but CEF_{electricity,y}.
10. Standardized baseline for grid emission factor in South Africa does not have any parameter CEF_{electricity,y}. Pls clarify.
11. Clarify why parameter $\eta_{flare,m}$ is provided under B.6.2.
12. The parameters for volumetric flow state under comment that a meter monitoring volumes in normalized cubic meters will be used, however as per onsite check it is monitoring in standard cubic meters. Further as per B.6.1 the mass flow should be calculated every minute however the same is not included in the monitoring plan.
13. Parameter T_i : The QA/QC procedure is inconsistent with "tool to determine the mass flow of a greenhouse gas in a gaseous stream". Besides under source of data it is referred that "a flow meter" is monitoring the parameter. However this is inconsistent to onsite observation. Finally under monitoring frequency it is stated that the data will also be "aggregated" monthly/yearly. Pls clarify as this does not make sense for this parameter.
14. Parameter P_i : The QA/QC procedure is inconsistent with "tool to determine the mass flow of a greenhouse gas in a gaseous stream". Finally under monitoring frequency it is stated that the data will also be "aggregated" monthly/yearly. Pls clarify as this does not make sense for this parameter.
15. Parameter EG_{PJ,y}: The measurement procedure is inconsistent with related methodology. Further as per onsite visit the elec. import is deducted from the export

generated by the gas engine via bi-directional meter.

16. Parameter $EC_{PJ,y}$: The description refers to "Quantity" of elec consumed whereas the methodology states "Amount".
17. Parameter $Op_{flare,h}$: As per onsite flame detection is used for determination of the flare operation however two criteria are mentioned in PDD.
18. Parameter Management of SWSD: Under measurement method it is referred to "the PE". Pls clarify the abbreviation.

Project participant response (1st round)

- (1) and (2) Page 24 of PDD: The description for $p_{H2O,t,Sat}$ has been updated in the approved new version of the PDD;
- (3) $SPEC_{flare}$ has been added to the parameter under Section 6.2 of the approved new version of the PDD;
- (4) Description of parameters $EF_{EL,j,y}$, $EF_{grid,y}$ and TDL have been updated in the approved new version of the PDD;
- (5) Density value has been updated in the approved new version of the PDD;
- (6) Description of parameter fy has been updated as per the latest version of the tool;
- (7) parameter η_{PJ} has been updated;
- (8) Description for parameter DOC_f has been updated;
- (9) and (10) $CEF_{electricity,y}$ has been replaced in Section B.6.2 by parameter $EF_{EL,k,y}$;
- (11) Clarification on $\eta_{flare,m}$ has been added
- (12) Clarification for the parameters for volumetric flow has been added
- (13) Parameter Tt has been updated accordingly;
- (14) Parameter Pt has been deleted since as per the tool monitoring of parameter Pt is not required;
- (15) and (16) Parameter $EG_{PJ,y}$ and $EC_{PJ,y}$ have been updated accordingly;
- (17) Measurement methods and procedures for Op_{flare} has been updated;
- (18) Acronym PE has been clarified under parameter SWSD.

All of the above were submitted with a revised version of the PDD dated 30/06/2015 for pre-approval. The change on the revised PDD was approved on 12/10/2015.

Documentation provided by project participant (1st round)

Date: 11/05/2015

<input checked="" type="checkbox"/>	Changes in the PDD	Section(s): B.7.1	New version No.: 4 dtd April 2015
<input type="checkbox"/>	Changes in MR	Section(s):	New version No.:
<input type="checkbox"/>	Changes in XLS	Worksheet(s):	New version No.:
<input type="checkbox"/>	Other:		

DOE assessment (1st round)

Date: 02/03/2016

Updated PDD ver 4 dtd April 2015 has been checked as following:

1. OK. Consistent now.
2. OK. No response but the parameter is now provided in B.7.1 of PDD and in line with related tool.
3. OK. Parameter is now provided in B.6.2 of the updated PDD. The stated values have been checked against confirmation letter by manufacturer and are consistent.
4. OK. The parameters are now consistent between equation and description.
5. OK. Value is now 100% consistent with the tool.
6. OK. Parameter description is now consistent with the tool.
7. OK. Parameter description is now consistent with the tool and the reference has been corrected which is footnote 4.
8. OK. Parameter description is now consistent with the tool.
9. OK. Parameter has been changed to $EF_{EL,k,y}$ equivalent to $EF_{grid,CM,y}$ as per standardized baseline for South Africa. The PDD has been updated correctly.
10. OK. PDD has been updated to provide grid emission factor as $EF_{EL,k,y}$ equivalent to $EF_{grid,CM,y}$ in line with the standardized baseline. The reference to $CEF_{electricity,y}$ has been deleted.
11. OK. The PDD has been updated accordingly. The parameter will be determined as per stated criteria. Accordingly a related default value is used. As a default value is used the parameter is given in B.6.2.
12. OK. The comment has been corrected in line with the actual conditions. As per onsite check of the SCADA system it includes a value of 0.92 to convert into normalized conditions which represents the ratio of 273.15K to 298.15K. Further the monitoring frequency has been updated to every minute in line with actual practice as checked during onsite visit.
13. Not Ok. QA/QC procedure has been updated and calibration is conducted according to manufacturer specification which states that no calibration is required for this type of temperature transmitter. Further the monitoring frequency is updated to continuous and the comment in line with the tool. However the text under QA/QC is provided in blue colour which is not in line with instructions to fill PDD.
14. Not ok. P_t has been deleted from the list of monitored parameters. Pls clarify as under B.6.1 the parameter is used for determination of moisture content in gas.
15. Ok. The parameter description has been updated accordingly as well as measurement procedure and QA/QC procedure in line with the methodology.
16. Ok. The parameter description has been updated accordingly as well as QA/QC procedure in line with the methodology.
17. Ok. The PDD has been updated and provides now one method to determine an hour when the flare is operating, according to the installed flame detection system installed. PDD is updated according to actual conditions found during onsite visit.
18. Ok. The abbreviation is now clarified to be "Project Entity".

Project participant response (2nd round)

Date: 18/05/2015

13. Text provided under QA/QC has been edited and submitted for pre-approval. It has been approved as of 12/10/2015.
14. Parameter P_t has been introduced again, and the comments section has been updated to follow the tool, indicating that this parameter will only be needed in the event the temperature of the gas flow is detected to be above 60°C, and Option 2 of the tool: "Simplified calculation without measurement of the moisture content" needs to be applied. This is in line with the approved revised PDD dated 30/06/2015 (section D.2, page 48)

Documentation provided by project participant (2nd round)

<input checked="" type="checkbox"/>	Changes in the PDD	Section(s): B.7.1	New version No.: 4 dtd 30/06/2015
<input type="checkbox"/>	Changes in MR	Section(s):	New version No.:
<input type="checkbox"/>	Changes in XLS	Worksheet(s):	New version No.:
<input type="checkbox"/>	Other:		

DOE assessment (2nd round)

Date: 02/03/2016

Updated PDD ver 4 dtd 30 June 2015 and MR ver 2 has been checked as following:			
13. Ok. The colour has been changed to black.			
14. Ok. The parameter has been included again the monitoring plan as per related tool.			
Besides MR ver 2 has been updated in line with the approved changes as per latest PDD ver 4.			
15. However monitoring parameter BE _{CH₄,SWDS,y} as per registered monitoring plan is missing in D.2.			
Project participant response (3rd round)			Date: 06/07/2016
15. It has been included in the revised version of the MR, indicating that this is only used ex-ante for baseline emissions.			
Documentation provided by project participant (3rd round)			
<input type="checkbox"/>	Changes in the PDD	Section(s):	New version No.:
<input checked="" type="checkbox"/>	Changes in MR	Section(s): D.2	New version No.: 4
<input type="checkbox"/>	Changes in XLS	Worksheet(s):	New version No.:
<input type="checkbox"/>	Other:		
DOE assessment (3rd round)			Date: 07/07/2016
16. Ok. The related parameter has been included now in D.2 for completeness even though it is not monitored but only used for ex-ante BE calculation.			
Conclusion <i>Tick the appropriate checkbox</i>		<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed	

CAR ID	C3	Section no.		Date: 27/11/2014
Description of CAR				
Following supporting documents are to be provided:				
1. Latest Calibration sheet for handheld biogas 5000 gas analyzer 2. Flame detector manual				
Project participant response (1st round)				
1. Calibration certificates for the handheld biogas 5000 gas analyzer are being submitted.				
2. Flame Detector Manual is attached to this submission.				
Documentation provided by project participant (1st round)				Date: 26/01/2016
<input type="checkbox"/>	Changes in the PDD	Section(s):	New version No.:	
<input type="checkbox"/>	Changes in MR	Section(s):	New version No.:	
<input type="checkbox"/>	Changes in XLS	Worksheet(s):	New version No.:	
<input type="checkbox"/>	Other:			
DOE assessment (1st round)				Date: 02/03/2016
1. Ok. The calibration certificates for the handheld Biogas 500 have been provided. The dates as given in the MR are consistent with the certificates. According to the certificates the instrument is calibrated for this entire monitoring period. However it is identified that there is delay in calibration from 15/01/2015 until 02/02/2015 which is AFTER this monitoring period. Therefore FAR C4 is raised for notification for next verification.				
2. Ok. Flame detection manual is provided. Based on that it can be confirmed that the system installed is in line with the monitoring plan.				
Finding closed.				
Conclusion <i>Tick the appropriate checkbox</i>		<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed		

CAR ID	D1	Section no.	D.2	Date: 27/11/2014
Description of CAR				
Following issues w.r.t. section D.2 of the MR have been identified:				

1. For all flow meters please clarify the statement in MR Calibration Frequency: recommended annual re-certification and/or in-situ calibration as the related reg PDD states „[...] according to manufacturer's specification, but at least every 2 years”.
2. Parameter T_t :
 - a. MR states under Monitoring equipment “Calibration Frequency: not applicable - Date of Last Calibration: not applicable” however under QA/QC in MR is stated that the “Temperature transmitter is subject to a regular maintenance and testing regime [...]”. Further validity is mentioned “item to be replaced on failure as required”. Pls clarify.
 - b. Reg PDD states under monitoring frequency “Data will also be aggregated monthly/yearly” however MR does only state “continuous” under Measuring/Reading/Recording frequency. Pls clarify.
 - c. Besides under source of data it is referred that “a flow meter” is monitoring the parameter. However this is inconsistent to onsite observation.
 - d. Measuring is indicated as continuous however the MP states that data will also be aggregated monthly/yearly. Pls clarify.
3. Parameter P_t :
 - a. MR states under Monitoring equipment “Calibration Frequency: not applicable Date of Last Calibration: not applicable” however under QA/QC in MR is stated that the “pressure transmitter is subject to a regular maintenance and testing regime [...]”.
 - b. Reg PDD states under monitoring frequency “Data will also be aggregated monthly/yearly” however MR does only state “continuous” under Measuring/Reading/Recording frequency. Pls clarify.
4. Parameter $v_{CH_4,t,db}$. Following issues have been identified:
 - a. The actual applied procedure to check the calibration with nitrogen and calibration gas for the Gascard NG equipment is inconsistent with the procedure stated in the reg PDD as well as in MR under QA/QC procedures. Due to this delay in calibration has been identified for the period from 22/08/2014 until 10/10/2014. Related revision requested.
 - b. Besides it is stated that the accuracy of the meter is checked by another meter with higher accuracy (Biogas 5000) however as per interview with CDM operator this is not correct. Pls clarify and revise accordingly.
 - c. The calibration dates and validity procedure of the stationary analyzer Gascard is missing in MR.
 - d. Please clarify the statement in MR under “Monitoring equipment” “accuracy class: $\pm 2\%$ of range”. Pls clarify which “range” is meant.
 - e. The meaning of the description that such calibrations have been “carried out each time the GDU is serviced” is unclear. Pls clarify.
5. Parameter $EG_{PJ,y}$, $EC_{PJ,y}$: During onsite visit it has been identified that the accuracy class of the electricity meter (0.5S) is inconsistent with the accuracy class mentioned in the MR (0.10%).
6. Parameter $Op_{flare,h}$: Under Monitoring equipment only information w.r.t. the temperature equipment is given however under calculation method the parameter can also be monitored by a flame detection. But no info on the flame detection is provided.
7. $T_{EG,m}$: Clarify why no accuracy class is given in the MR.
8. Please clarify the abbreviation “PE” as well as the sentence “The PE is in compliance with their operational manual and procedures.” stated under “Value(s) of monitored parameter” for parameter “Management of SWSD”.

Project participant response (1st round)

1. The statement has been updated accordingly on the MR according to the new revised version of the PDD.
2. Parameter T_t :
 - a. “Monitoring Equipment” and “QA/AC procedure” for T_t in the MR have been updated to be in line with the revised approved monitoring plan in the PDD.
 - b. “Monitoring frequency” in MR is now in line with the revised approved monitoring plan.

- c. "Source of data" is from temperature transmitter. This is in line with the revised approved monitoring plan.
- d. It is continuously monitored by a temperature transmitter. This is in line with the revised approved monitoring plan.
3. Parameter Pt:
- "Monitoring Equipment" and "QA/QC procedure" for Pt in MR have been updated in line with the revised approved monitoring plan.
- b. "Monitoring frequency" in MR is now in line with the revised approved monitoring plan.
4. Parameter $v_{CH_4,t,db}$.
- a. In accordance with the recommendations of the manufacturer, the stationary analysers were checked annually by the manufacturer, however since the procedure was not followed as per the PDD the analyser has been considered as out of calibration for the period from 22/08/2014 to 30/09/2014 – the end of this monitored period. During this time and following the guidance for delayed calibration, a discount of 2% has been applied to the monitored values from the analyser. The ER spreadsheet and MR have been revised accordingly (Please check column G on the "Processed Data" tab on file "CDM Data 2014_09a.xlsx").
- b. The Biogas 5000 has a higher accuracy (i.e. +/- 0.5% of methane content) and is used to crosscheck data from the stationary gas analysers. The handheld Biogas 5000 gas analyser has been serviced and calibrated annually by the manufacturer and also checked and adjusted periodically by the monitoring contractor using certified calibration gas. Having had used this equipment to crosscheck the reported data from the stationary gas analysers, confirms that a 2% discount for not following the monitoring procedure as per the PDD is in fact a conservative measure.
- c. The calibration dates and validity procedure of the stationary analyzer Gascard has been added in MR
- d. accuracy is +/-2%, the word range has been removed to avoid confusion.
- e. The description has been deleted in the MR to avoid confusion.
5. The accuracy class of the electricity meter for Parameter $EG_{PJ,y}$, $EC_{PJ,y}$ have been corrected to 0.50% in the MR.
6. A reference has been added under source of data and monitoring equipment, to indicate how operation of the flare is recorded by the SCADA system when the flame is not detected.
7. The MR has been updated to include the accuracy class for the thermocouples, which is 0.75%.
8. The abbreviation for PE (Project Entity) has been spelled out under "Value(s) of monitored parameter" for parameter "Management of SWSD".

Documentation provided by project participant (1 st round)			Date: 26/01/2016
<input type="checkbox"/>	Changes in the PDD	Section(s):	New version No.:
<input checked="" type="checkbox"/>	Changes in MR	Section(s): D.2	New version No.: 2
<input checked="" type="checkbox"/>	Changes in XLS	Worksheet(s): CDM Data 2014_09a.xlsx	New version No.:
<input type="checkbox"/>	Other:		

DOE assessment (1 st round)		Date: 02/03/2016
1. Not ok. The statement is still given in MR and revised PDD states as per manufacturer specification but at least every 2 years. Therefore clarify the statement in MR ver 2.		
2. T _i :		
a. Not ok. The MR has been revised in accordance to latest revised PDD ver 4. However specification is requested that the TR200 thermoelement does not have to be calibrated as per manufacturer specification.		
b. Ok. The MR has been updated in accordance to revised PDD ver 4 and both are now		

consistent.

- c. Ok. MR has been corrected and states now that a “temperature transmitter” is used which is reasonable and plausible and as per site visit observation.
- d. Ok. MR as well as revised PDD ver 4 now refer to continuous measuring which is correct as per site visit observation and raw data check.

3. P_t:

- a. Not ok. MR ver 2 states that the calibration is done as per manufacturer specification. However the same are not mentioned and the manufacturer specification states to keep the PTX 7900 accurate a calibration check should be carried out once per year” (page 4 of instruction box “Maintenance” mid right of the page). Please clarify whether the same has been followed.
- b. Ok. MR as well as revised PDD ver 4 now refer to continuous measuring which is correct as per site visit observation and raw data check.

4. V_{CH4,t,db}:

- a. Not Ok. QA/QC procedure has been updated in line with latest approved PDD ver 4 that calibration includes zero verification with inert gas and verification with a standard gas. Calibration gases must have related certificates on validity. Further DOE checked raw data and process data sheets in file CDM Data 2014 for months August and Sept and can therefore confirm that for the methane content a 2% discount has been applied for the entire two months which is even more than required. This is in line with §395 a) VVS has been applied. However the requirement can only be applied if a calibration has been conducted thereafter to identify whether the equipment is still within the permissible range. DOE can therefore confirm that the adjusted values result in fewer emission reductions as less methane is considered for two months of August and Sept 2014 which includes the delay period. However DOE cannot confirm that the equipment does not show any error or the error is smaller than the maximum permissible error. Related supporting documents are to be provided.
 - b. Ok. MR is updated to include the procedure that methane content is crosscheck with a handheld equipment Biogas 5000. As per calibration certificates the accuracy is of 0.5% which is higher than the installed Gascard NG of 2.0%. Further the Biogas 5000 has been calibrated for this entire monitoring period as per calibration certificates.
 - c. Ok. The calibration dates of the stationary analyzer as well as the related validity are now provided. Further the QA/QC procedure is now consistently given in MR with the latest approved PDD.
 - d. Ok. The statement “of range” has been deleted. As per Manufacturer specification the accuracy is +/-2.0%.
 - e. Ok. Related statement has been deleted.
5. Ok. The accuracy class of the meter for electricity metering has been adjusted to 0.5% in accordance with onsite observations. Further the details of the back-up meter for EG_{PJ,y} are also included now.
6. Ok. Reference to parameter Flame_m and related detector is now given in MR.

7. Ok. Accuracy class of 0.75% is now stated in updated MR in line with cal certificate.

8. Not ok. The abbreviation PE has been clarified and given in MR now as Project Entity. However clarification w.r.t. the statement “Project Entity is in compliance with their operational manual and procedures” is still missing esp. how this is proof that the land filling is not differently management to increase methane generation

Project participant response (2nd round)

Date: 17/05/2016

1. The statement given in the MR on section D.2, on the “Monitoring equipment” part of the

tables has been revised to match the text of the revised PDD.

2. a. Please find attached to this submission a letter from the manufacturer WIKA Instruments that confirms that the equipment TR200 does not need to be calibrated. Refer to file *WIKA Instruments Manufacturer_TR200_Letter.pdf*
- 3.a. The calibration information on the "Monitoring equipment" box for parameter Pt has been updated to indicate that it is recommended to be done annually. The information on last calibration as well as validity has been included, conducted on 13/05/2015 and valid from 13/05/2015 to 12/05/2016; please see file with name "*Calibration of pressure trans Report.pdf*" attached to this submission. During this calibration a maximum error of 0.687% was identified and corrected. The PE would like to note that no prior calibration for the pressure transmitter was conducted as the previous version of the PDD did not require it, and hence this 0.687% maximum error has been applied for the monitored data by the pressure transmitter during this period. However the PE would also like to note that since the temperature of the gas did not go over 60°C at any point during this monitoring period, then changes on data from this equipment have no impact on ER calculations.
- 4.a. The Gascard Gas Analyser 2309 was replaced on 10/10/2014 and was not calibrated thereafter, however by looking closely at the last calibration certificate dated 30/08/2013 it can be noted that the certificate has a validity of 5 years. Please see file with name "*2309 CH4 - Aug 2013.pdf*" attached to this submission, for easy reference. In addition it was monitored and crosschecked on site monthly, with the use of the calibration gas to ensure that it was operating within the required specifications by using the calibrated handheld gas analyser Biogas 5000. Please find attached the documented on-site checks for the months of August and September 2014, with name: 1- "*MH Site Record Sheet 2014-08.pdf*", and "*MH Site Record Sheet 2014-09.pdf*" attached to this submission which show that the equipment's error was less than 2% during both months in question. This confirms that the reduction of 2% is a conservative measure from the Project Entities side.
8. Please find attached an operational report from DSW dated 1998, which on its last page on table B20 shows a total of 41 vehicles used for collection and transportation. In addition find attached a current report from Rajesh Ramlagan, the current fleet manager, showing DSWs transport and collection fleet to date. It can be seen that DSW has 44 operating vehicles (vehicles serving New Germany and Queensburgh). This is presented to the auditor to confirm that management of the landfill site continues to be the same as it has been run for many years, in no way intentionally increasing methane generation.

Documentation provided by project participant (2nd round)

<input type="checkbox"/>	Changes in the PDD	Section(s):	New version No.:
<input checked="" type="checkbox"/>	Changes in MR	Section(s): D.2	New version No.: 3
<input type="checkbox"/>	Changes in XLS	Worksheet(s):	New version No.:
<input checked="" type="checkbox"/>	Other: /CAL/, /DAT/, /OPR/, /TS/		

DOE assessment (2nd round)

Date: 08/06/2016

1. Ok. The statement has been revised in line with the related latest registered PDD.
2. a. Not ok. The stated supporting document was not submitted along with the doc set for this assessment round only a related WIKA techn spec "*WIKA T200_DS_TE6010_GB_8880.pdf*".
3. a. Ok. MR ver 3 has been updated to specify that the calibration is to be done annually as per manufacturer specification. As the latest calibration has been conducted 13/05/2015 delay in calibration is identified and related maximum permissible error identified in the latest calibration of 0.687% has been applied. To apply the error identified in the latest calibration is correct as the accuracy class is +/- 0.25% of full scale as 0.687% is greater than the max permissible error of 0.25%. Further the value has applied correctly and in conservative manner in the ER calculation.
4. a. Ok. The registered PDD requires that the "calibration should include zero verification with inert gas and at least one reading verification with standard gas" besides those calibration gases have to have related certificates. As per MR it is

<p>further specified that the calibration check is to be done annually. According to the documents provided the gascard gas analyzer has been manufacturer calibrated on 22/08/2013 with accuracy smaller than +/-2.0% but 0.38%. PP has conducted onsite crosschecks with a handheld analyzer of accuracy class +/-0.5%. For the months August and Sept 2014 the checks show deviation of 0.9% (CH4) and 0.6% (CO2) for August and 0.3% (CH4) and 0.8% for Sept (CO2). On 10/10/2014 the gas analyzer has been exchanged with a new calibrated analyzer serial number 5147. Therefore another recalibration of the analyzer 2139 is not possible anymore. Based on the monthly PP checks provided the DOE considers the application of 2% error to the ER calculation as reasonable and plausible as well as conservative and in line with VVS §397. Further the 2% have been correctly deducted in Monthly CDM data file sheet PROCESS DATA Column G, inlet CH4.</p> <p>8. Ok. PP provided related explanation and report from 1998 and Email from Rajesh Ramlagan (fleetmanager) which justify that the collection area/districts are still the same and also the number of vehicles did not significantly increase. Further from onsite inspection the landfilling did also not change.</p>			
Project participant response (3rd round)			
<p>2. Please find the letter from the manufacturer WIKA Instruments that confirms that the equipment TR200 does not need to be calibrated. Refer to file <i>WIKA Instruments Manufacturer_TR200_Letter.pdf</i></p>			
Documentation provided by project participant (3rd round)			Date: 08/06/2016
<input type="checkbox"/>	Changes in the PDD	Section(s):	New version No.:
<input type="checkbox"/>	Changes in MR	Section(s):	New version No.:
<input type="checkbox"/>	Changes in XLS	Worksheet(s):	New version No.:
<input checked="" type="checkbox"/>	Other:		
DOE assessment (3rd round)			Date: 09/06/2016
<p>2. Ok. The related letter has been provided. The letter by the manufacturer confirms that the transmitter does not require set software calibration to operate under process conditions.</p> <p>Finding closed.</p>			
Conclusion <i>Tick the appropriate checkbox</i>		<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed	

CAR ID	D.2	Section no.	D.2	Date: 27/11/2014
Description of CAR				
Clarification is requested why three parameters for LFG Volume on wet basis as included in the monitoring plan in reg PDD are not provided in the MR.				
Project participant response (1st round)				
Parameters for LFG Volume on wet basis have been removed from the updated PDD.				
Documentation provided by project participant (1st round)				Date: 26/01/2016
<input type="checkbox"/>	Changes in the PDD	Section(s):	New version No.:	
<input checked="" type="checkbox"/>	Changes in MR	Section(s): D.2	New version No.: 2	
<input type="checkbox"/>	Changes in XLS	Worksheet(s):	New version No.:	
<input type="checkbox"/>	Other:			
DOE assessment (1st round)				Date: 02/03/2016
<p>The parameters have been removed from the PDD in line with actual conditions found onsite. Related PRC has been approved on 12/10/2015.</p> <p>Finding closed.</p>				
Conclusion <i>Tick the appropriate checkbox</i>		<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed		

CAR ID	E1	Section no.		Date: 27/11/2014
Description of CAR				

Evidence is missing w.r.t. the minimum requirement by the manufacturer specification ($T=500^{\circ}\text{C}$ and $V=100\text{m}^3/\text{h}$) for the operation of the flare which are applied to determine the flare efficiency.

Project participant response (1st round)

Manufacturer evidence wrt flare specifications is attached to this submission.

Documentation provided by project participant (1st round)

Date: 26/01/2016

☐ Changes in the PDD

Section(s):

New version No.:

☐ Changes in MR

Section(s):

New version No.:

☐ Changes in XLS

Worksheet(s):

New version No.:

☐ Other:

DOE assessment (1st round)

Date: 02/03/2016

Ok. Confirmation letter by the manufacturer has been provided. Based on that the values provided are correct.

Conclusion

Tick the appropriate checkbox

☐ Additional action should be taken (finding remains open)

☒ The finding is closed

CAR ID	E2	Section no.		Date: 27/11/2014
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Description of CAR

Several of the parameter names stated in the monthly spreadsheets CDM Data sheets are inconsistent with the registered monitoring plan. Further the calculation of mass flow of methane does not consider the check with the related operation hours (refer $Op_{\text{flare},h}$; $Op_{\text{engine},h}$ and page 14 §33 (e) of the methodology).

Project participant response (1st round)

Parameter names on spreadsheets have been updated to match those on the new registered monitoring plan.

Further, calculations have been made more transparent by linking:

1- $Op_{\text{engine},h}$ (in column M of the "Processed Data" tab of all monthly CDM Data files being submitted) with "Baseline Emissions associated with electricity generation $BE_{EC,y}$ " (in column Z of the same tab; and

2- $Op_{\text{flare},h}$ (in column H of the "Processed Data" tab of all monthly CDM Data files being submitted), with Flare Efficiency (in column S of the same tab)

Documentation provided by project participant (1st round)

Date: 26/01/2016

☐ Changes in the PDD

Section(s):

New version No.:

☐ Changes in MR

Section(s):

New version No.:

☒ Changes in XLS

Worksheet(s): CDM Data

New version No.:

☐ Other:

DOE assessment (1st round)

Date: 02/03/2016

DOE checked the updated CDM data spreadsheets including the raw data and can therefore confirm that the correct parameter description is now applied for the related values for easy and transparent crosscheck and identification.

Further two checks have been included to ensure that mass flow for a minute is zero in case the related equipment is not operating Op_{engine} or Op_{flare} is zero in line with §33 (e) of the methodology. DOE considers the application on a minute basis as correct as the raw data is obtain on a minute-by-minute basis even though the methodology refers to hours.

Finding is closed.

Conclusion

Tick the appropriate checkbox

☐ Additional action should be taken (finding remains open)

☒ The finding is closed

CAR ID	E4	Section no.		Date: 27/11/2014
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Description of CAR

1. During check of CDM Data spreadsheet against the spreadsheet of the eThekweni municipality electricity inconsistency has been identified for the month September 2014 for Export 328.691 compared to 328.93 as well as July.
2. Further please clarify how the December value has been adjusted from monthly value to the start of the monitoring period. It has been identified that the value in the MR is different from the value from billing as the one is derived pro rata but actual values from the period are available.

Project participant response (1st round)

1. As was identified on site, the larger differences for these two months are explained as follows: for the September 2014 inconsistency, the issue is due to missing data on the load profile for the first day of the month; the bill file for September 2014 was provided on-site –along with bills for all other months- and also attached to this submission, please see the “September Profile” tab on the “September 2014 Marian hill LFS Bills” attached. With regards to July 2014, the difference is because the load profile meter didn't record from 21/7/2014 5:00 to 21/7/2014 15:30 (as highlighted in red on the attached July bill file, on the “July Profile” tab) hence the slightly larger discrepancy. In both cases the value from the bill on the summary tab has been used for ER calculations as this is the official/third party value reported by the electricity company.
2. The initial value applied was derived pro rata from the reported monthly billed value, but as the values from the exact period were made available by the eThekweni electricity representative, these have been replaced. Please refer to the “December 2013 Marianhill bills” file attached to this submission. These have therefore been updated on the tab for December 2013 values on the CDM Summary excel sheet. The effect is that there is a slight reduction of emission reductions claimed from the month of December 2013. The MR has been updated accordingly.

Documentation provided by project participant (1 st round)		Date: 26/01/2016
<input type="checkbox"/>	Changes in the PDD	Section(s): New version No.:
<input type="checkbox"/>	Changes in MR	Section(s): New version No.:
<input checked="" type="checkbox"/>	Changes in XLS	Worksheet(s): 1- DECEMBER 2013 MARIANHILLFS Bills - 19 december 2014.xls 2- Worksheet(s): CDM Data 2013_12a.xlsx 3-160126_GP_CDM_Summary.xlsx New version No.:
<input type="checkbox"/>	Other:	

DOE assessment (1st round) Date: 02/03/2016

1. Ok. The reasons provided w.r.t. the difference in the values could be reproduced from the related monthly excel file provided for billing by the grid company which includes the 30 min values. Based on that the above stated is correct. As the official value is the value provided by the grid company in the bill this value is taken for ER calculation and this is considered correct. Considering the values from the bill the data between the bill and the CDM summary ER calculation spreadsheet are consistent.
2. Ok. The actual values available have been used to for the exact period to determine the elec. generation and consumption for the month of Dez 2013 where the monitoring period starts on 15/12/2013. The related data has been checked and the correct values as per source have been applied.

However the following has been identified:

3. The value of BEy shall be rounded down or an integer value shall be used. Up to now the calculation: $22335 \text{ tCO}_2\text{e} - 200 = 22134$ is not correct. This accounts also for the MR.

Project participant response (2nd round)

- 3 Find attached summary sheet with rounded down BE.

Documentation provided by project participant (2 nd round)		Date: 06/07/2016
<input type="checkbox"/>	Changes in the PDD	Section(s): New version No.:
<input checked="" type="checkbox"/>	Changes in MR	Section(s): E.4 New version No.: 4
<input checked="" type="checkbox"/>	Changes in XLS	Worksheet(s): 1610126_GP_CDM_Summary.xlsx New version No.:
<input type="checkbox"/>	Other:	

DOE assessment (2nd round)		Date: 07/07/2016
3 Ok. The spreadsheet has been adjusted to provide rounded down values and the final ER calculation is now correct given in MR.		
Finding closed.		
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed	

CAR ID	A2	Section no.	all	Date: 18/05/2015
Description of CAR				
The MR does not apply latest version of monitoring report as available via UNFCCC webpage.				
Project participant response (1st round)				
MR updated based on latest template ver 5.1				
Documentation provided by project participant (1st round)				Date: 26/01/2016
<input type="checkbox"/>	Changes in the PDD	Section(s):	New version No.:	
<input checked="" type="checkbox"/>	Changes in MR	Section(s): entire	New version No.: 2	
<input type="checkbox"/>	Changes in XLS	Worksheet(s):	New version No.:	
<input type="checkbox"/>	Other:			
DOE assessment (1st round)				Date: 02/03/2016
Ok. Now MR is based on latest template available.				
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed			

Table 6. FAR from this verification

FAR ID	B4	Section No.		Date: 27/11/2014
Description of FAR				
The PP intends to physically shut down the gas connection to and from the baseline wells as those do not produce any LFG anymore and would like to use the related flow meter as spare part. During next verification it is to be checked whether the baseline collecting system has been physically cut off.				
Project participant response				Date: 26/01/2016
The PP confirms that the baseline wells have been shut down.				
Documentation provided by project participant				
<input type="checkbox"/>	Changes in the PDD	Section(s):	New version No.:	
<input type="checkbox"/>	Changes in MR	Section(s):	New version No.:	
<input type="checkbox"/>	Changes in XLS	Worksheet(s):	New version No.:	
<input type="checkbox"/>	Other:			
DOE assessment				Date: DD/MM/YYYY
Conclusion <i>Tick the appropriate checkbox</i>	<input checked="" type="checkbox"/> To be checked during the next periodic verification			

FAR ID	C4	Section No.		Date: 27/11/2014
Description of FAR				
It has been identified during verification that the handheld instrument Biogas 5000 for crosscheck on methane content in landfill gas has been calibrated on 15/01/2014 and again 02/02/2015. As the calibration frequency is defined as annually a delay in calibration is identified for the period 15/01/2015 until 01/02/2015. As this is after the end date of this monitoring period this FAR is raised to notify this for next verification.				
Project participant response				Date: DD/MM/YYYY

Documentation provided by project participant			
<input type="checkbox"/> Changes in the PDD	Section(s):	New version No.:	
<input type="checkbox"/> Changes in MR	Section(s):	New version No.:	
<input type="checkbox"/> Changes in XLS	Worksheet(s):	New version No.:	
<input type="checkbox"/> Other:			
DOE assessment			Date: DD/MM/YYYY
Conclusion <i>Tick the appropriate checkbox</i>		<input checked="" type="checkbox"/> To be checked during the next periodic verification	

FAR ID	D4	Section No.		Date: 02/03/2016
Description of FAR				
Further all flow meters have been exchanged to E+H 65i flow meters. Related technical specifications have been provided. Further as per statement provided by E+H the accuracy of the current installation is of 4% without flow conditioner dated 24/02/2015. Further E+H recommends an annual on-site verification test, if the test fails the equipment to their factory for calibration. The same is to be checked during next verification.				
Project participant response				Date: DD/MM/YYYY
Documentation provided by project participant				
<input type="checkbox"/> Changes in the PDD	Section(s):	New version No.:		
<input type="checkbox"/> Changes in MR	Section(s):	New version No.:		
<input type="checkbox"/> Changes in XLS	Worksheet(s):	New version No.:		
<input type="checkbox"/> Other:				
DOE assessment				Date: DD/MM/YYYY
Conclusion <i>Tick the appropriate checkbox</i>		<input checked="" type="checkbox"/> To be checked during the next periodic verification		

Appendix 5. Monitored Parameters

Table A-5: Periodic Verification Checklist – Monitored Parameters

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
A. $V_{LFG, total, y, db}$		Volumetric flow of total landfill gas which is sent to flare and used for electricity generation in year y on a dry basis		
<p>a) Measurement / Determination method (VVS, §§ 389-393) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</p>	<p>/IM01/ /PDD/ /ACM1/ /TS/ /IM01/</p>	<p><i>Description:</i> The Volumetric flow of total landfill gas is monitored by flow meters. The total flow is determined by adding the two measured flows going to the flare and the engine. The two flow meters are of type Kurz Instruments serial number: FD20272A and FD20273A.</p> <p>The value of the equipment is forwarded to a digital control system where the value is recorded every minute. The digital control system stores and records every minute value by software "Historian". On monthly basis the data is backed-up onsite on a hard drive and on server in Envitech office in Durban and raw data is downloaded. The downloaded information is forwarded by the CDM Operator Envitech to the landfill operator and PP Durban Solid Waste (DSW), the CDM Project Manager. Thereafter the data are forwarded to the Quality Assurance SLR Consulting Limited for further processing and compilation into the monitoring report and final emission reduction calculation.</p> <p>Besides the above, monthly meetings are held to discuss the project activity progress, actual generation data, problems occurred, upcoming maintenance etc.</p> <p><i>Verifier's action:</i> By check of MR, reg PDD as well as onsite visit and technical data sheet as well as interview with CDM operator.</p> <p><i>Conclusion:</i> CAR C1 and CAR D1 have been raised.</p>	<p>CAR C1 CAR D1</p>	<p>Ok</p>
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) In case of measured (or estimated) values, check whether</p>	<p>/CAL/ /MM/ /MR/</p>	<p><i>Description:</i> The accuracy of the flow meters is $\pm 2\%$. The meters have been calibrated on 30/10/2013 with a validity of one year ending 29/10/2014. The calibration of the flow meters installed</p>	<p>CAR C1 CAR</p>	<p>Ok</p>

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p> <p><i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i></p>		<p>has been conducted by SGS onsite.</p> <p>Besides the flow meter is periodically calibrated against a primary device provided by an independent accredited laboratory is mandatory. Calibration and frequency of calibration is according to manufacturer's specifications, but at least every 2 years.</p> <p>A primary device has been used to conduct the onsite calibration. The used equipment for the calibration has been duly calibrated as indicated by related certificates attached to the SGS report.</p> <p><i>Verifier's action:</i> By means of checking calibration certificates, interview with CDM operator, reg PDD as well as MR.</p> <p><i>Conclusion:</i> The reported error is 4.1% for FD 20273A and 0.5% for FD 20272A. However CAR C1, CAR D1 and CL D3 w.r.t. calibration procedure have been raised.</p>	<p>D1 CL D3</p>	
<p>c) Correctness (VVS, §§ 389-393)</p> <p><i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i></p> <p><i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i></p> <p><i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i></p>	/MR/	<p><input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment)</p> <p><i>Description:</i> The value is directly taken by the digital operation system from which the value is included in the CDM Data spreadsheet for ER calculation.</p> <p><i>Verifier's action:</i> The CDM Data spreadsheet has been checked against the daily site record sheet and monthly meeting minutes as well as monthly operational reports by the CDM operator.</p> <p><i>Conclusion:</i> No inconsistencies or implausible values have been identified. However CL D3 has been raised w.r.t. calibration of the equipment.</p>	CL D3	Ok
B. $V_{LFG, sent flare, y, db}$		Volumetric flow of landfill gas which is sent to flare in year y on a dry basis		
a) Measurement / Determination method	/IM01/	<i>Description:</i> The volumetric flow of landfill gas which is flared is	CAR	Ok

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p>(VVS, §§ 389-393)</p> <p><i>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).</i></p> <p><i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i></p> <p><i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p>	/PDD/ /ACM1/	<p>monitored by flow meter of type Kurz Instruments, Serial Number: FD20272A.</p> <p>The value of the equipment is forwarded to a digital control system where the value is recorded every minute. The digital control system stores and records every minute value by software "Historian". On monthly basis the data is backed-up onsite on a hard drive and on server in Envitech office in Durban and raw data is downloaded. The downloaded information is forwarded by the CDM Operator Envitech to the landfill operator and PP Durban Solid Waste (DSW), the CDM Project Manager. Thereafter the data are forwarded to the Quality Assurance SLR Consulting Limited for further processing and compilation into the monitoring report and final emission reduction calculation.</p> <p>Besides the above, monthly meetings are held to discuss the project activity progress, actual generation data, problems occurred, upcoming maintenance etc.</p> <p><i>Verifier's action:</i> By check of MR, reg PDD as well as onsite visit and technical data sheet.</p> <p><i>Conclusion:</i> CAR C1 and CAR D1 have been raised.</p>	C1 CAR D1	
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 394-400)</p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p> <p><i>Include calibration dates and information in validity of the</i></p>	/CAL/ /MM/ /MR/ /PDD/ /TS/	<p><i>Description:</i> The accuracy of the flow meter is of $\pm 2\%$. The latest calibration has been conducted on 30/10/2013 and is valid for one year until 29/10/2014. The calibration of the flow meters installed has been conducted by SGS onsite.</p> <p>Besides the flow meter is periodically calibrated against a primary device provided by an independent accredited laboratory is mandatory. Calibration and frequency of calibration is according to manufacturer's specifications, but at least every 2 years.</p> <p>A primary device has been used to conduct the onsite calibration. The used equipment for the calibration has been duly calibrated as indicated by related certificates attached to</p>	CAR D1 CAR C1 CL-D3	Ok

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
installed monitoring equipment in the table in Annex 2.		the SGS report. <i>Verifier's action:</i> By check of MR, reg PDD as well as onsite visit and technical data sheet and calibration certificates. <i>Conclusion:</i> The reported error is 4.1% for FD 20273A and 0.5% for FD 20272A. However CAR C1, CAR D1 and CAL D3 w.r.t. calibration procedure have been raised.		
c) Correctness (VVS, §§ 389-393) <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i> <i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i> <i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>	/MR/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment) <i>Description:</i> The value is directly taken by the digital operation system from which the value is included in the CDM Data spreadsheet for ER calculation. <i>Verifier's action:</i> The CDM Data spreadsheet has been checked against the daily site record sheet and monthly meeting minutes as well as monthly operational reports by the CDM operator. <i>Conclusion:</i> No inconsistencies or implausible values have been identified. However CL D3 has been raised.	CL-D3	Ok
C. V_{LFG,EL,y,db}		Volumetric flow of landfill gas which is used for electricity generation in year y on a dry basis		
a) Measurement / Determination method (VVS, §§ 389-393) <i>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).</i> <i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used.</i> <i>Furthermore, verify the frequency of measurements as per the requirements.</i> <i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i>	/IM01/ /PDD/ /ACM1/	<i>Description:</i> The volumetric flow of landfill gas used for electricity generation is monitored by a flow meter of type Kurz Instruments, Serial Number: FD20273A. The value of the equipment is forwarded to a digital control system where the value is recorded every minute. The digital control system stores and records every minute value by software "Historian". On monthly basis the data is backed-up onsite on a hard drive and on server in Envitech office in Durban and raw data is downloaded. The downloaded information is forwarded by the CDM Operator Envitech to the landfill operator and PP Durban Solid Waste (DSW), the CDM Project Manager. Thereafter the data are forwarded to the Quality Assurance SLR Consulting Limited for further processing and compilation into the monitoring report and final emission reduction calculation.	CAR C1 CAR D1	Ok

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<p>Besides the above, monthly meetings are held to discuss the project activity progress, actual generation data, problems occurred, upcoming maintenance etc.</p> <p><i>Verifier's action:</i> By check of MR, reg PDD as well as onsite visit and technical data sheet.</p> <p><i>Conclusion:</i> CAR C1 and CAR D1 have been raised.</p>		
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 394-400)</p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p> <p><i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i></p>	/CAL/ /MM/	<p><i>Description:</i> The accuracy of the flow meter is of $\pm 2\%$. The latest calibration has been conducted on 30/10/2013 and is valid for one year until 29/10/2014. The calibration of the flow meters installed has been conducted by SGS onsite.</p> <p>Besides the flow meter is periodically calibrated against a primary device provided by an independent accredited laboratory is mandatory. Calibration and frequency of calibration is according to manufacturer's specifications, but at least every 2 years.</p> <p>A primary device has been used to conduct the onsite calibration. The used equipment for the calibration has been duly calibrated as indicated by related certificates attached to the SGS report.</p> <p><i>Verifier's action:</i> By check of MR, reg PDD as well as onsite visit and technical data sheet and calibration certificates.</p> <p><i>Conclusion:</i> The reported error is 4.1% for FD 20273A and 0.5% for FD 20272A. However CAR C1, CAR D1 and CL D3 w.r.t. calibration procedure have been raised.</p>	CAR C1 CAR D1 CLD3	Ok
<p>c) Correctness (VVS, §§ 389-393)</p> <p><i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i></p> <p><i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i></p> <p><i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i></p>	/MR/	<p><input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment)</p> <p><i>Description:</i> The value is directly taken by the digital operation system from which the value is included in the CDM Data spreadsheet for ER calculation.</p> <p><i>Verifier's action:</i> The CDM Data spreadsheet has been checked against the daily site record sheet and monthly meeting minutes.</p> <p><i>Conclusion:</i> No inconsistencies or implausible values have been</p>	CLD3	Ok

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		identified. However CL D3 has been raised.		
D. T_t		Temperature of the gaseous stream in time interval t		
<p>a) Measurement / Determination method (VVS, §§ 389-393) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</p>	<p>/IM01/ /PDD/ /MR/ /TS/ /ACM1/</p>	<p><i>Description:</i> The temperature is monitored by temperature transmitter WIKA TR200 Serial Number: 46002570.</p> <p>The temperature transmitter is located at the same position as the related flow meter.</p> <p>The value of the equipment is forwarded to a digital control system where the value is recorded every minute. The digital control system stores and records every minute value by software "Historian". On monthly basis the data is backed-up onsite on a hard drive and on server in Envitech office in Durban and raw data is downloaded. The downloaded information is forwarded by the CDM Operator Envitech to the landfill operator and PP Durban Solid Waste (DSW), the CDM Project Manager. Thereafter the data are forwarded to the Quality Assurance SLR Consulting Limited for further processing and compilation into the monitoring report and final emission reduction calculation.</p> <p>Besides the above, monthly meetings are held to discuss the project activity progress, actual generation data, problems occurred, upcoming maintenance etc.</p> <p><i>Verifier's action:</i> By check of MR, reg PDD as well as onsite visit and technical data sheet.</p> <p><i>Conclusion:</i> However CAR D1 has been raised.</p>	CAR D1	Ok
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs. Describe whether all applicable QA/QC procedures are</p>	<p>/CAL/ /MM/ /MR/ /PDD/</p>	<p><i>Description:</i> The accuracy of the installed temperature transmitter is 0.75% over the full scale.</p> <p><i>Verifier's action:</i> By means of MR, reg PDD as well as related tools and methodology as well as calibration certificates.</p> <p><i>Conclusion:</i> CAR D1 has been raised as the calibration details</p>	CAR D1	Ok

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance. Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.		for the meter are not clear.		
c) Correctness (VVS, §§ 389-393) Determine whether the value given in the monitoring report is correct or determined in a conservative manner. In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given. In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.	/MR/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment) <i>Description:</i> The value is directly taken by the digital operation system from which the value is included in the CDM Data spreadsheet for ER calculation. <i>Verifier's action:</i> The CDM Data spreadsheet has been checked against the daily site record sheet and monthly meeting minutes. <i>Conclusion:</i> No inconsistencies or implausible values have been identified. Further all temperature values confirm that Option A (b) as per tool to determine the mass flow of gaseous streams is still valid. All temperature values are below the 60 °C threshold.	Ok	Ok
E. P_t		Pressure of the gaseous stream in time interval t		
a) Measurement / Determination method (VVS, §§ 389-393) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.	/IM01/ /PDD/ /ACM1/	<i>Description:</i> The pressure of the gaseous stream is monitored by pressure transmitter GE Sensing Druck PTX 7900-3399 Serial Number: 2345399. The pressure transmitter is located at the same position as the related flow meter. The value of the equipment is forwarded to a digital control system where the value is recorded every minute. The digital control system stores and records every minute value by software "Historian". On monthly basis the data is backed-up onsite on a hard drive and on server in Envitech office in Durban and raw data is downloaded. The downloaded information is forwarded by the CDM Operator Envitech to the landfill operator and PP Durban Solid Waste (DSW), the CDM Project Manager. Thereafter the data are forwarded to the Quality Assurance SLR Consulting Limited for further processing and compilation into the monitoring report and final emission reduction calculation. Besides the above, monthly meetings are held to discuss the	CAR D1	Ok

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		project activity progress, actual generation data, problems occurred, upcoming maintenance etc. <i>Verifier's action:</i> By check of MR, reg. PDD as well as onsite visit and technical data sheet. <i>Conclusion:</i> However CAR D1 has been raised.		
b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) <i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i> <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i> <i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i>	/CAL/ /MM/	<i>Description:</i> The accuracy of the installed pressure transmitter is $\pm 0.25\%$ over the full scale. <i>Verifier's action:</i> By means of MR, reg PDD as well as related tools and methodology as well as calibration certificates. <i>Conclusion:</i> CAR D1 has been raised as the calibration details for the meter are not clear.	CAR D1	Ok
c) Correctness (VVS, §§ 389-393) <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i> <i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i> <i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>	/MR/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment) <i>Description:</i> The value is directly taken by the digital operation system from which the value is included in the CDM Data spreadsheet for ER calculation. <i>Verifier's action:</i> The CDM Data spreadsheet has been checked against the daily site record sheet and monthly meeting minutes. <i>Conclusion:</i> No inconsistencies or implausible values have been identified.	Ok	Ok
F. $p_{H_2O, t, Sat}$		Saturation pressure of H₂O at temperature T_t in time interval t		

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p>a) Measurement / Determination method (VVS, §§ 389-393) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</p>	/IM01/ /PDD/ /ACM1/ /MR/ /XLS/	<p><i>Description:</i> The saturation pressure of the temperature Tt is determined from literature as it is solely a function of the gaseous stream temp. Tt for a total pressure equal to 101,325 Pa.</p> <p>The saturation pressure is only required in case the gas temperature increases above 60°C to determine the moisture content in the gas stream to calculate gas on dry basis.</p> <p>The CDM data is checked if the temp is above or below 60°C. If Tt >60°C the saturation pressure is determined according to the related literature.</p> <p>Please refer to the related parameter Tt on this is monitored.</p> <p><i>Verifier's action:</i> By check of MR, reg. PDD as well as onsite visit and technical data sheet.</p> <p><i>Conclusion:</i> DOE checked PDD and also by interview with PP and personnel on the monitoring of the value. Based on that DOE is of the opinion that the PP is aware of the procedure and determination method. As during this entire monitoring period the gas temperature did not exceed the threshold of 60°C it was not necessary to monitor this parameter. And hence ok.</p>	Ok	Ok
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs. Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance. Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</p>	/CAL/ /MM/	<p><i>Description:</i> No measurement equipment is involved as the value is determined from literature source.</p> <p><i>Verifier's action:</i> By means of MR, reg PDD as well as related source document.</p> <p><i>Conclusion:</i> ok.</p>	Ok	Ok

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p>c) Correctness (VVS, §§ 389-393)</p> <p>Determine whether the value given in the monitoring report is correct or determined in a conservative manner. In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given. In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</p>	/MR/ /XLS/	<p><input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment)</p> <p><i>Description:</i> The saturation pressure of the temperature Tt is determined from literature as it is solely a function of the gaseous stream temp. Tt for a total pressure equal to 101,325 Pa.</p> <p><i>Verifier's action:</i> The CDM Data spreadsheet has been checked against the daily site record sheet and monthly meeting minutes.</p> <p><i>Conclusion:</i> As the gas temp did not exceed the 60°C level it was not required to monitor or determine this parameter during this entire monitoring period. Hence ok.</p>	Ok	Ok
G. $v_{CH_4,t,db}$		Volumetric fraction of CH4 in a time interval t on a dry basis		
<p>a) Measurement / Determination method (VVS, §§ 389-393)</p> <p>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</p>	/IM01/ /PDD/ /ACM1/	<p><i>Description:</i> The volumetric fraction of CH4 in a time interval t on a dry basis is monitored by CH4 measurement equipment type Edinburgh Instruments, Gascard NG, serial number: 2309. The Gascard #2309 has been installed on 19/12/2013 and operated until 10/10/2014. From 10th Oct 2014 Gascard has been exchanged with serial number 5147 has been installed which is after the end date of this monitoring period.</p> <p>The Gascard NG is located between the booster and the flare.</p> <p>Besides that the CDM operator uses a handheld gas analyzer of type Biogas 5000 from Geotech serial number G500625. The handheld analyzer is used to check the methane quality at each well on a monthly basis and more frequent for new wells. This is done to operate the wells in a way to have a constant flow of constant methane content.</p> <p>The value of the equipment is forwarded to a digital control system where the value is recorded every minute. The digital control system stores and records every minute value by software "Historian". On monthly basis the data is backed-up onsite on a hard drive and on server in Envitech office in Durban and raw data is downloaded. The downloaded information is</p>	CAR D4	Ok

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<p>forwarded by the CDM Operator Envitech to the landfill operator and PP Durban Solid Waste (DSW), the CDM Project Manager. Thereafter the data are forwarded to the Quality Assurance SLR Consulting Limited for further processing and compilation into the monitoring report and final emission reduction calculation.</p> <p>Besides the above, monthly meetings are held to discuss the project activity progress, actual generation data, problems occurred, upcoming maintenance etc.</p> <p><i>Verifier's action:</i> By onsite visit, interview with CDM operator, check of notes in CDM data spreadsheet as well as reg PDD, MR and supporting documents.</p> <p><i>Conclusion:</i> CAR D1 has been raised.</p>		
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 394-400)</p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p> <p><i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i></p>	<p>/CAL/ /MM/</p>	<p><i>Description:</i> The accuracy of the installed pressure transmitter is $\pm 2\%$ over the range.</p> <p>The Gascard NG is calibrated when delivered by the manufacturer. The calibration date of #2309 was 22/08/2013. The manufacturer recommends that the calibration is checked every 12 months as per their manual chapter 11. Therefore the validity of the initial calibration would be until 21/08/2014. Further as per manufacturer manual the following conditions apply for the calibration check:</p> <ul style="list-style-type: none"> • a zero calibration has to be conducted before a calibration against calibration gas and • the concentration of the calibration gas should be between 80% to 100% of either CO₂, CH₄ or CO and • the accuracy of the calibration gas should be of $\pm 2\%$ or better <p>Thereafter the Gascard NG has been calibrated against calibration gas on 17/12/2013, 28/03/2014 and 09/07/2014.</p> <p>On 10/10/2014 the Gascard NG #2309 has been exchanged with #5147 calibrated on 13/03/2014 and valid until 12/03/2015.</p>	<p>CAR D1</p>	<p>Ok</p>

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<p>The accuracy of the Edinburgh Instrument Gascard NG has been checked against a handheld analyzer Biogas 5000, serial number: G500625, accuracy class $\pm 0.5\%$ of methane content. The Biogas 5000 analyzer has been calibrated on 30/08/2013 and 15/01/2014 by the manufacturer with a validity of one year each ending 29/08/2014 and 14/01/2015 respectively. Further the handheld analyzer is calibrated against calibration gas on a monthly basis before it is used. The calibration dates are: 12/11/2013, 09/12/2013, 27/01/2014, 14/02/2014, 13/03/2014, 25/03/2014, 11/04/2014, 06/05/2014, 01/07/2014, 14/08/2014 and 13/09/2014.</p> <p>The related calibration gas used have a corresponding certificate the validity of the gases used is 04/02/2013 to 04/02/2014 and 19/01/2014 until 19/01/2015.</p> <p>In case of failure of the stationary analyzer the handheld analyzer will be used until the failure is cleared and the stationary analyzer is working well again.</p> <p><i>Verifier's action:</i> By means of MR, reg PDD as well as related tools and methodology as well as calibration certificates and sheets.</p> <p><i>Conclusion:</i> Based on the above the Biogas 5000 monitoring equipment has been duly calibrated for this entire monitoring period. However CAR D1 has been raised.</p>		
<p>c) Correctness (VVS, §§ 389-393) <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i> <i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i> <i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i></p>	<p>/MR/ /XLS/ /DPR/ /DSR/ /DAT/</p>	<p><input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment)</p> <p><i>Description:</i> The value is directly taken by the digital operation system from which the value is included in the CDM Data spreadsheet for ER calculation.</p> <p><i>Verifier's action:</i> The CDM Data spreadsheet has been checked against the daily site record sheet and monthly meeting minutes.</p> <p><i>Conclusion:</i> No inconsistencies or implausible values have been identified.</p>	Ok	Ok

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
H. EG_{PJ,y}		Amount of electricity generated using LFG		
<p>a) Measurement / Determination method (VVS, §§ 389-393) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</p>	/IM01/ /PDD/ /ACM1/ /XLS/ /MR/ /PDD/	<p><i>Description:</i> The amount of electricity generated using LFG via the installed gas engine is monitored by an electricity meter of type Landis+Gyr, Serial Number: 86342181. The meter is a bi-directional meter measuring output and input electricity.</p> <p>The value for the amount of electricity generated is taken by a person from the meter section (department) every month online digital from the meter. The raw data is processed and the person from the meter section summarizes the input and output values for peak, standard time and off-peak periods in a pdf file. The pdf-file is forwarded to the related electricity engineer from the eThekweni (Durban) municipality. The eThekweni engineer inserts the values from the pdf file into an Excel template to calculate the related peak, standard and off-peak period kWh values and the amount in Rand respectively. In the Excel file the net generation is calculated by subtracting the input electricity from the output generated electricity by the project activity. Then the monthly spreadsheet is forwarded to the CDM operator (Envitech) an employee of the CDM operator inserts the respectively monthly value in their CDM Data spreadsheet. The CDM data spreadsheet is then forwarded to the PP (DSW) which again forwards the files to the Quality assurance/CDM Consultant who prepares the monitoring report.</p> <p><i>Verifier's action:</i> Onsite observation, interview with personnel, technical data sheet as well as MR and registered PDD. Checked the monthly Excel template against all monthly pdf files as well as the values inserted into the CDM Data spreadsheet.</p> <p><i>Conclusion:</i> No mistakes have been identified by transferring the data. Further as the above stated data aggregation and processing is laid down in related manuals e.g. step-by-step methodology DOE considers the measuring and monitoring of the value as in compliance with the monitoring plan. However CAR D1 and CAR E4 have been raised.</p>	CAR D1 CAR E4	Ok

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 394-400)</p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p> <p><i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i></p>	<p>/CAL/ /MM/ /STAND/ /PDD/</p>	<p><i>Description:</i> The accuracy of the installed meter is 0.10%. The calibration frequency is stated in MR with every 10 years.</p> <p>The meter has been calibrated on 22/03/2006 and is valid until 21/03/2016.</p> <p><i>Verifier's action:</i> By check of MR, calibration certificates as well as reg PDD and related standard</p> <p><i>Conclusion:</i> DOE has checked registered PDD and related South African Nation Standard (SANS) and can confirm that the standard requires a calibration frequency of every 10 years for project up to 10 MVA load.</p> <p>The meter has been duly calibrated for this entire monitoring period.</p> <p>However CAR D1 has been raised w.r.t. the accuracy class mentioned in MR.</p>	CAR D1	Ok
<p>c) Correctness (VVS, §§ 389-393)</p> <p><i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i></p> <p><i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i></p> <p><i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i></p>	<p>/MR/ /PDD/ /XLS/ /IM01/ /ELEB/ /ELER/ /DSR/</p>	<p><input type="checkbox"/> Correct <input checked="" type="checkbox"/> Not correct (initial assessment)</p> <p><i>Description:</i> The value for the amount of electricity generated is taken by a person from the meter section (department) every month online digital from the meter. The raw data is processed and the person from the meter section summarizes the input and output values for peak, standard time and off-peak periods in a pdf file. The pdf-file is forwarded to the related electricity engineer from the eThekwin (Durban) municipality</p> <p><i>Verifier's action:</i> By means of checking MR, reg PDD, data from spreadsheet CDM Data besides monthly elec billing spreadsheet, elec reading by metering dept. and calculation method and check of digital control system during onsite visit.</p> <p><i>Conclusion:</i> CAR E4 has been raised.</p>	CAR E4	Ok
I. EC_{PJ,y}		Quantity of electricity consumed by the project activity during the year y		
a) Measurement / Determination method	/IM01/	<i>Description:</i> The quantity of electricity consumed by the project	CAR D1	Ok

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p>(VVS, §§ 389-393)</p> <p><i>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).</i></p> <p><i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i></p> <p><i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p>	/PDD/ /ACM1/	<p>activity is monitored by an electricity meter of type Landis+Gyr, Serial Number: 85066208.</p> <p>The value for the amount of electricity consumed is taken by a person from the meter section (department) every month online and digitally from the meter. The raw data is processed and the person from the meter section summarizes the input and output values for peak, standard time and off-peak periods in a pdf file. The pdf file is forwarded to the related electricity engineer from the eThekweni (Durban) municipality. The eThekweni engineer inserts the values from the pdf file into an Excel template to calculate the related peak, standard and off-peak period kWh values and the amount in Rand respectively. In the Excel file the net generation is calculated by subtracting the input electricity from the output generated electricity by the project activity. Then the monthly spreadsheet is forwarded to the CDM operator (Envitech) an employee of the CDM operator inserts the respectively monthly value in their CDM Data spreadsheet. The CDM data spreadsheet is then forwarded to the PP (DSW) which again forwards the files to the Quality assurance/CDM Consultant who prepares the monitoring report.</p> <p><i>Verifier's action:</i> Onsite observation, interview with personnel, technical data sheet as well as MR and registered PDD.</p> <p><i>Conclusion:</i> CAR D1 and CAR E4 have been raised.</p>	CAR E4	
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 394-400)</p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB</i></p>	/CAL/ /MM/	<p><i>Description:</i> The accuracy of the installed meter is 0.10%. The calibration frequency is stated in MR with every 10 years.</p> <p>The meter has been calibrated on 26/08/2005 and is valid until 25/08/2015.</p> <p><i>Verifier's action:</i> By check of MR, calibration certificates as well as reg PDD and related standard</p> <p><i>Conclusion:</i> DOE has checked registered PDD and related South African Nation Standard (SANS) and can confirm that the</p>	CAR D1	Ok

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>guidance. Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i>		standard requires a calibration frequency of every 10 years for project up to 10 MVA load. The meter has been duly calibrated for this entire monitoring period. However CAR D1 has been raised w.r.t. the accuracy class mentioned in MR.		
c) Correctness (VVS, §§ 389-393) <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner. In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given. In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>	/MR/ /PDD/ /XLS/ /IM01/ /ELEB/ /ELER/ /DSR/	<input type="checkbox"/> Correct <input checked="" type="checkbox"/> Not correct (initial assessment) <i>Description:</i> The value for the amount of electricity generated is taken by a person from the meter section (department) every month online digital from the meter. The raw data is processed and the person from the meter section summarizes the input and output values for peak, standard time and off-peak periods in a pdf file. The pdf-file is forwarded to the related electricity engineer from the eThekweni (Durban) municipality <i>Verifier's action:</i> By means of checking MR, reg PDD, data from spreadsheet CDM Data besides monthly elec billing spreadsheet, elec reading by metering dept. and calculation method and check of digital control system during onsite visit. <i>Conclusion:</i> CAR E4 has been raised.	CAR E4	Ok
J. Op_{engine,h}		Operation of the engine that consumes the LFG		
a) Measurement / Determination method (VVS, §§ 389-393) <i>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and</i>	/IM01/ /PDD/ /ACM1/ /MR/	<i>Description:</i> The Operation of the engine that consumes the LFG is monitored via an electricity meter of type Landis+Gyr, Serial Number: 86342181. The control box of the engine further sends a signal to the connected PLC. The value of the equipment is forwarded to a digital control system where the value is recorded every minute. The digital control system stores and records every minute value by software "Historian". On monthly basis the data is backed-up onsite on a hard drive and on server in Envitech office in Durban and raw data is downloaded. The downloaded information is forwarded by the CDM Operator Envitech to the landfill operator	CAR E2	Ok

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>the applied methodology.</i>		and PP Durban Solid Waste (DSW), the CDM Project Manager. Thereafter the data are forwarded to the Quality Assurance SLR Consulting Limited for further processing and compilation into the monitoring report and final emission reduction calculation. Besides the above, monthly meetings are held to discuss the project activity progress, actual generation data, problems occurred, upcoming maintenance etc. <i>Verifier's action:</i> by means of checking MR, reg PDD, methodology, tools as well as monthly meeting minutes, onsite visit and interviews conducted. <i>Conclusion:</i> However CAR E2 has been raised.		
b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) <i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs. Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance. Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i>	/CAL/ /MM/	<i>Description:</i> The Operation of the engine that consumes the LFG is monitored via an electricity meter of type Landis+Gyr, Serial Number: 86342181. For further details please refer to checklist item D.2.7 b). <i>Verifier's action:</i> By check of MR, calibration certificates as well as reg PDD and related standard <i>Conclusion:</i> However CAR D1 has been raised w.r.t. the accuracy class mentioned in MR.	CAR D1	Ok
c) Correctness (VVS, §§ 389-393) <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner. In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given. In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>	/MR/ /IM01/ /XLS/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment) <i>Description:</i> The value is determined by electricity meter as stated under a). The related digital control system records a value of 1 when the engine is operating and zero if not. This is done on minute basis. <i>Verifier's action:</i> By means of checking raw data, digital control system, interview with related personnel as well ER spreadsheet and MR.	OK	Ok

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<i>Conclusion:</i> The value has been monitored correct and ER spreadsheet has correctly reflected the value.		
K. Op_{flare,h}		Operation of the flare that consumes the LFG		
<p>a) Measurement / Determination method (VVS, §§ 389-393) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</p>	/IM01/ /PDD/ /ACM1/ /MR/ /REC/ /XLS/ /DPR/ /MCL/	<p><i>Description:</i> The operation hours of the flare can be determined by two means applying following criteria:</p> <ol style="list-style-type: none"> 1. The flame is detected via flame detection equipment and parameter $Flame_m$ or 2. Temperature in the exhaust gas of the flare $T_{EG,m}$ <p>Please see related parameter for further details of the monitoring equipment.</p> <p>The value of the equipment is forwarded to a digital control system where the value is recorded every minute. The digital control system stores and records every minute value by software "Historian". On monthly basis the data is backed-up onsite on a hard drive and on server in Envitech office in Durban and raw data is downloaded. The downloaded information is forwarded by the CDM Operator Envitech to the landfill operator and PP Durban Solid Waste (DSW), the CDM Project Manager. Thereafter the data are forwarded to the Quality Assurance SLR Consulting Limited for further processing and compilation into the monitoring report and final emission reduction calculation.</p> <p>Besides the above, monthly meetings are held to discuss the project activity progress, actual generation data, problems occurred, upcoming maintenance etc.</p> <p><i>Verifier's action:</i> By means of checking MR, reg PDD, methodology, tools as well as monthly meeting minutes, onsite visit and interviews conducted.</p> <p><i>Conclusion:</i> CAR D1 and CAR E1 have been raised.</p>	CAR D1 CAR E1	Ok
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 394-400)</p>	/MR/ /PDD/	<p><i>Description:</i> No equipment is used to determine the operation hours for the flare directly. The operation of the flare is</p>	CAR E3	Ok

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p> <p><i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i></p>	/IM01/	<p>determined via indirect equipment. Therefore please see related parameters $Flame_m$ and $T_{EG,m}$. See checklist item D.2.11 b) and D.2.12 b) for further details.</p> <p><i>Verifier's action:</i> By means of checking MR, PDD as well as onsite visit.</p> <p><i>Conclusion:</i> CAR C3 has been raised as the manual for the flame detection camera has to be provided.</p>		
<p>c) Correctness (VVS, §§ 389-393)</p> <p><i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i></p> <p><i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i></p> <p><i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i></p>	<p>/MR/ /XLS/ /REC/ /DSR/</p>	<p><input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment)</p> <p><i>Description:</i> Even though the operation of the flare could be determined by two means during this monitoring period the operation of the flare has been determined via the flame detection system (infrared camera, parameter $Flame_m$)</p> <p><i>Verifier's action:</i> By means of checking raw data, digital control system, monthly minutes, interview with related personnel as well ER spreadsheet and MR.</p> <p><i>Conclusion:</i> The value has been correctly monitored and reported.</p>	Ok	Ok
L. $Flame_m$		Flame detection of flare in the minute m		
<p>a) Measurement / Determination method (VVS, §§ 389-393)</p> <p><i>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).</i></p> <p><i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used.</i></p> <p><i>Furthermore, verify the frequency of measurements as per</i></p>	<p>/IM01/ /PDD/ /ACM1/ /TA/ /TS/</p>	<p><i>Description:</i> Whether the flame in the flare is on or off is identified via an installed flame detector. The flame detector is an infrared camera which gives a zero signal when no flame is identified and a 1 when a flame is detected. The value is used to determine whether the flare is on or off and is used to determine the related flare efficiency.</p> <p>The value of the equipment is forwarded to a digital control system where the value is recorded every minute. The digital control system stores and records every minute value by</p>	CAR C3	Ok

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>the requirements.</i></p> <p><i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p>		<p>software “Historian”. On monthly basis the data is backed-up onsite on a hard drive and on server in Envitech office in Durban and raw data is downloaded. The downloaded information is forwarded by the CDM Operator Envitech to the landfill operator and PP Durban Solid Waste (DSW), the CDM Project Manager. Thereafter the data are forwarded to the Quality Assurance SLR Consulting Limited for further processing and compilation into the monitoring report and final emission reduction calculation.</p> <p>Besides the above, monthly meetings are held to discuss the project activity progress, actual generation data, problems occurred, upcoming maintenance etc.</p> <p><i>Verifier’s action:</i> by means of checking MR, reg PDD, interview with personnel, onsite visit and document check.</p> <p><i>Conclusion:</i> CAR C3 has been raised as the related manual has to be provided.</p>		
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 394-400)</p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p> <p><i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i></p>	/MR/ /PDD/ /IM01/	<p><i>Description:</i> The equipment used us an infrared camera for the flare detection. The camera has no accuracy.</p> <p><i>Verifier’s action:</i> By means of checking MR, reg PDD and interview with personnel.</p> <p><i>Conclusion:</i> CAR C3 has been raised as the related manual has to be provided esp. to clarify whether the camera requires calibration.</p>	CAR C3	Ok
<p>c) Correctness (VVS, §§ 389-393)</p> <p><i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i></p> <p><i>In case of conservative approaches used in lieu of the</i></p>	/MR/ /XLS/ /DSR/ /IM01/	<p><input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment)</p> <p><i>Description:</i> The flame detector is an infrared camera which gives a zero signal when no flame is identified and a “1” when a flame is detected. The value is used to determine whether the flare is on or off and is used to determine the related flare</p>	Ok	Ok

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given. In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>		<p>efficiency. The value of the equipment is forwarded to a digital control system where the value is recorded every minute.</p> <p><i>Verifier's action:</i> By means of checking raw data given in CDM data spreadsheet against MR and onsite visit against the digital control system.</p> <p><i>Conclusion:</i> As per check the values can be confirmed as correct.</p>		
M. T_{EG,m}		Temperature in the exhaust gas of the enclosed flare in minute m		
<p>a) Measurement / Determination method (VVS, §§ 389-393)</p> <p><i>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).</i></p> <p><i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i></p> <p><i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p>	/IM01/ /PDD/ /ACM1/	<p><i>Description:</i> The temperature of the exhaust gas is monitored by a thermocouple of type "Type N Thermocouple Probe" serial number 3397084.</p> <p>The value of the equipment is forwarded to a digital control system where the value is recorded every minute. The digital control system stores and records every minute value by software "Historian". On monthly basis the data is backed-up onsite on a hard drive and on server in Envitech office in Durban and raw data is downloaded. The downloaded information is forwarded by the CDM Operator Envitech to the landfill operator and PP Durban Solid Waste (DSW), the CDM Project Manager. Thereafter the data are forwarded to the Quality Assurance SLR Consulting Limited for further processing and compilation into the monitoring report and final emission reduction calculation.</p> <p>Besides the above, monthly meetings are held to discuss the project activity progress, actual generation data, problems occurred, upcoming maintenance etc.</p> <p><i>Verifier's action:</i> By means of checking the ER spreadsheet, monthly CDM data spreadsheet, interview with related personnel, onsite observations, technical data sheet, reg PDD, MR.</p> <p><i>Conclusion:</i> The value is monitored as per registered PDD.</p>	Ok	Ok

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 394-400)</p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p> <p><i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i></p>	<p>/CAL/ /MR/ /TS/</p>	<p><i>Description:</i> No accuracy class is given in the MR. The meter has been calibrated on 29/11/2013 and is valid for 3 years. Further the thermocouple will be exchanged on an annual basis and the new thermocouple is calibrated at the manufacturer before delivery. No further QA/QC procedure is required.</p> <p><i>Verifier's action:</i> By means of checking MR, calibration certificate as well as technical data sheet.</p> <p><i>Conclusion:</i> CAR D1 has been raised as no accuracy class is given in the MR. Due to the above the monitoring equipment has been duly calibrated for the entire monitoring period.</p>	<p>CAR D1</p>	<p>Ok</p>
<p>c) Correctness (VVS, §§ 389-393)</p> <p><i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i></p> <p><i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i></p> <p><i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i></p>	<p>/MR/ /PDD/ /XLS/ /IM01/</p>	<p><input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment)</p> <p><i>Description:</i> The value is used to ensure that methane is destroyed efficiently. The minimum value for efficient methane destruction applied is T at least 500 °C at a LFG flow of at least 100 m³/h. Due to this the flare efficiency determination is accordingly set up. In case the flare detection is reporting a flare, the flow is above 100 m³/h (on a minute basis = 100/60) and the temperature is above 500 °C then the flare efficiency is 80% (90% minus 10% for a low height flare). Otherwise it is 50% in case a flare is detected but the other criteria are not met and 0% if none of the criteria is met.</p> <p><i>Verifier's action:</i> By means of checking reg PDD, MR, related tool, CDM data spreadsheet</p> <p><i>Conclusion:</i> The value is monitored and recorded correctly. However CAR E1 has been raised.</p>	<p>CAR E1</p>	<p>Ok</p>
N. TDL_y		Average technical transmission and distribution losses in the grid in year y for the voltage level at which electricity is		

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		obtained from the grid at the project site.		
<p>a) Measurement / Determination method (VVS, §§ 389-393) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</p>	<p>/IM01/ /PDD/ /ACM1/ /TA/ /MR/ /DPR/</p>	<p><i>Description:</i> the average technical transmission losses in the connected grid are monitored via publication by the grid operator during this monitoring period via: Value of average transmission losses from the South African national electricity utility, Eskom Report 2013/2014, page 98, available at http://integratedreport.eskom.co.za/pdf/full-integrated.pdf The CDM operator is checking on annual basis the latest available value for transmission losses and updates the related CDM Data spreadsheet. The updated information is forwarded by the CDM Operator Envitech to the landfill operator and PP Durban Solid Waste (DSW), the CDM Project Manager. Thereafter the data are forwarded to the Quality Assurance SLR Consulting Limited for further processing and compilation into the monitoring report and final emission reduction calculation. Besides the above, monthly meetings are held to discuss the project activity progress, actual generation data, problems occurred, upcoming maintenance etc. <i>Verifier's action:</i> By means of checking the related internet webpage of the power supplier ESKOM as well as ER spreadsheet, PDD and MR. <i>Conclusion:</i> The value is derived correctly and correctly applied.</p>	Ok	Ok
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs. Describe whether all applicable QA/QC procedures are</p>	<p>/CAL/ /MR/ /PDD/</p>	<p><i>Description:</i> No measurement equipment is involved in the monitoring of this value as it is derived from a document downloaded from the internet. <i>Verifier's action:</i> By onsite visit, interview with PP, reg PDD as well as MR. <i>Conclusion:</i> No accuracy as no monitoring equipment and QA/QC is considered ok based on documents checked.</p>	Ok	Ok

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance. Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.				
c) Correctness (VVS, §§ 389-393) Determine whether the value given in the monitoring report is correct or determined in a conservative manner. In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given. In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.	/MR/ /PDD/ /XLS/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment) Description: The value is derived from the webpage of the power supply company ESKOM. Verifier's action: By means of checking the related internet webpage (http://integratedreport.eskom.co.za/pdf/full-integrated.pdf) of the power supplier ESKOM as well as ER spreadsheet, PDD and MR. Conclusion: The value is correctly considered for this monitoring period.	Ok	Ok
O. Management of SWSD		Management of SWSD		
a) Measurement / Determination method (VVS, §§ 389-393) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DALO)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.	/IM01/ /PDD/ /ACM1/ /CAUD/ /WDR/ /COM/	Description: The parameter is monitored by site records. The records and information is collected by the landfill operator and PP Durban Solid Waste (DSW), the CDM Project Manager. Thereafter the data are forwarded to the Quality Assurance SLR Consulting Limited for further processing and compilation into the monitoring report and final emission reduction calculation. Verifier's action: By onsite observation, interview with PP and personnel as well as check of records and landfill development plan. The Management of the SWDS is operated under defined conditions. As per interview with PP and landfill operator the management and filling is conducted in the same fashion since the beginning e.g. a layer of waste is dumped and covered by a thin layer of soil. This has been checked from the Environmental audit report conducted twice a year. The audit report shows how the landfill is operated and even provides pictures. Further a list	Ok	Ok

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		of waste amount dumped during 2013 and for 2014 up to now has been provided including also types of waste dumped. <i>Conclusion:</i> Based on the report provided as well as by onsite check the management of the SWDS has not changed due to the implementation to the project activity.		
b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) <i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs. Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance. Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i>	/IM01/ /MR/ /CAUD/ /WDR/ /COM/	<i>Description:</i> No measurement equipment is used to monitor this parameter. Therefore no accuracy or calibration requirements or procedures applicable. The stated related QA/QC procedure as per monitoring plan is that “any change in the management of the landfill will be justified by referring to technical or regulatory specifications. Also, it will be documented and filed by the landfill operator”. <i>Verifier’s action:</i> By onsite observation, besides interview with PP and personnel as well as check of supporting documents. <i>Conclusion:</i> As there is no equipment and the management of the landfill did not change this point is considered as fulfilled.	Ok	Ok
c) Correctness (VVS, §§ 389-393) <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner. In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given. In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>	/MR/ /PDD/ /CAUD/ /WDR/ /COM/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment) <i>Description & Conclusion:</i> No value is monitored. However the management of the landfill has not changed. <i>Verifier’s action:</i> By onsite observation, interview with PP and personnel as well as check of records e.g. landfill development plan.	Ok	Ok
P. BE_{CH4}, SWDS,y		Methane generation from the landfill in the absence of the project activity at year y		
a) Measurement / Determination method (VVS, §§ 389-393)	/IM01/ /PDD/	<i>Description:</i> Not applicable as this parameter is only relevant during RfReg to determine the ex-ante amount of methane	CAR C2	Ok

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.	/ACM1/ /TA/	generated from the landfill. Thereafter the actual amount of methane destroyed will be directly monitored. <i>Verifier's action:</i> By check of PDD and related methodology and tool. <i>Conclusion:</i> However CAR has been raised.		
b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs. Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance. Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.	/IM01/ /MR/ /AMS1/ /TA/	<i>Description:</i> Not applicable as not monitored during project operation as only used for ex-ante determination of methane generation from the landfill.	CAR C2	Ok
c) Correctness (VVS, §§ 389-393) Determine whether the value given in the monitoring report is correct or determined in a conservative manner. In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given. In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.	/MR/ /PDD/ /AMS1/ /TA/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment) <i>Description & Conclusion:</i> Not applicable as this parameter is only relevant during RfReg to determine the ex-ante amount of methane generated from the landfill. Thereafter the actual amount of methane destroyed will be directly monitored. <i>Verifier's action:</i> By check of PDD and related methodology and tool.	CAR C2	Ok

Appendix 6. Calibration dates and validity of installed monitoring equipment

Table A-6: Periodic Verification Checklist – Calibration details

Monitoring equipment	Related monitoring parameter as per applicable registered monitoring plan	Serial number	Type	Accuracy or accuracy class	Previous calibration (last calibration before start of this monitoring period)	Calibration date(s) during this monitoring period	Validity of calibration(s)	Delay in calibration: yes/no	Period of delayed calibration
Electricity meter (main)	EG _{PJ,y}	86342181	Landis+Gyr	0.5%	22/03/2006	-	21/03/2016	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	From: To:
Electricity meter (back-up)	EG _{PJ,y}	95680700	Landis+Gyr	0.5%	12/11/2008	-	11/11/2018	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	From: To:
Electricity meter	EC _{PJ,y}	85066208	Landis+Gyr	0.5%	26/08/2005	-	25/08/2015	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	From: To:
Thermocouple	T _{EG,m}	3397084	Type N Thermocouple	0.75%	29/11/2013			<input type="checkbox"/> No <input type="checkbox"/> Yes	From: To:
Pressure transmitter	P _t	2345399	GE Sensing Druck PTX 7900-3399	+/-0.25%	-	-	-	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	From: 15/12/2013 To: 30/09/2014
Calibration gas	V _{CH4,t,db}	8845806 50453B	CH4, CO2 and N2		04/02/2013	19/01/2014	19/01/2015	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	From: To:
CH4 analyzer	V _{CH4,t,db}	2309	Gascard NG	+/-2.0%	22/08/2013	-	21/08/2014	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	From: 22/08/2014 To: 30/09/2014
CH4 analyzer	V _{CH4,t,db}	G500625	Handheld Instrument Biogas 5000	+/-0.5%	30/08/2013	15/01/2014	14/01/2015	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	From: To:
Flow meter	V _{LFG,total,y,db} V _{LFG,sent flare,y,db} V _{LFG,EL,y,db}	FD20272A FD20273A	Kurz Instruments	+/-2%	30/10/2013	-	29/10/2014	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	From: To:
Temperature transmitter	T _t	46002570	WIKA TR200	0.75%		n/a		<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	From: To: