

MONITORING REPORT FORM (CDM-MR)*
Version 01 - in effect as of: 28/09/2010

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*as contained within the document entitled “Guidelines for completing the monitoring report form(CDM-MR)” (EB54 meeting report, annex 34)

MONITORING REPORT
Version 1.0 – 06/11/2011

Bangkok Kamphaeng Saen East: Landfill Gas to Electricity Project
CDM Registration Number: 3462
Monitoring Period 2 – 01/06/2011 - 31/10/2011 cc(inclusive)

SECTION A. General description of the project activity

A.1. Brief description of the project activity:

Bangkok Kamphaeng Saen East: Landfill Gas to Electricity Project (hereinafter is referred as “The Project”) extracts, captures and utilizes landfill gas (LFG) to generate electricity. The LFG is extracted and captured using Sindicatum Carbon Capital (ordered by Xentolar Holdings Limited, a project participant) proprietary LFG collection system and the electricity generated is exported to the Thailand electrical grid (Thai Grid).

Under the project activity, a fully integrated LFG collection system is installed and operated. When the yield of gas is insufficient to supply to the generators, or surplus LFG is available, due to engine maintenance or other site factors, LFG is sent to an enclosed ground flare where it is flared; thus minimising methane emissions and maximising carbon abatement. The annual emission reductions of the project activity indicated in the PDD are approximately 273,086 tCO₂e yearly over the first 7-year crediting period.

The construction of Landfill gas extraction pipe system commenced in August 2009. Landfill gas has been extracted and combusted by flare since February 2010, which is the project’s first day of operation. The physical installation of the first four engines and construction of the grid connection was completed by the end of March 2010. Following commissioning the project exported electricity to the Thai Grid from April 2010. An additional 2 engines were installed during April 2011 and commissioned during May 2011.

Total emission reductions achieved in this monitoring period are **123,379 tCO₂e**.

A.2. Project Participants

The project participants are:

Bangkok Greenpower Co., Ltd. is a single purpose company established to build and operate the LFG to-energy project. Bangkok Greenpower Co., Ltd. is registered in Thailand and is a host country Project Participant.

Xentolar Holdings Limited is registered in Cyprus and is a non-host Project Participant.

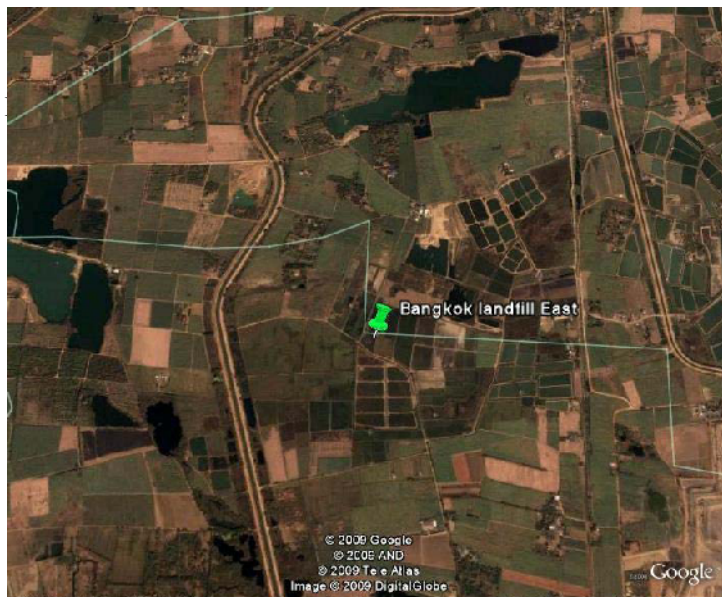
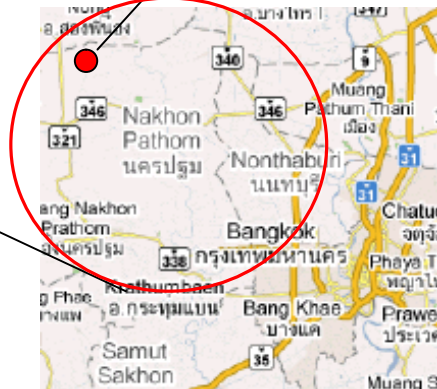
Sindicatum Carbon Capital Ltd. is a privately owned company registered in the UK and is a non-host Project Participant.

A.3. Location of the project activity:

The Project is located at T. Sasimhum, A. Kamphaeng Saen, Nakhon Pathom, 73140. The geographic coordinates of the project are: longitude 14°3'50.62"N and latitude 99°56'50.96"E



Kamphaeng Saen District



A.4. Technical description of the project

The project is extracting, capturing and utilizing landfill gas (LFG) from Kamphaeng Saen East Landfill to generate electricity. The electricity generated is exported to the Thai Grid. Whenever there is surplus LFG, due to engine maintenance or other site factors, LFG is sent to an enclosed ground flare where it is flared thus minimising methane emissions and maximising carbon abatement.

Landfill gas collection system:

High-density polyethylene (HDPE) horizontal collection pipes have been installed in the waste as an integral part of the tipping operation. These collection wells are augmented by additional horizontal and vertical collection wells. The collection pipes are connected via main carrier pipes to the LFG extraction plant and a negative pressure applied. The LFG, comprising approximately 50% methane and 50% carbon dioxide is used for power generation with any surplus gas flared. The SCC proprietary LFG system has been designed to optimise LFG recovery and utilisation and optimise carbon abatement, and is designed to overcome inherent problems associated with LFG projects in similar conditions.

The recovered LFG passes through the pre-treatment plant where moisture and particulates are removed prior to the power generating engines. The pre treatment plant is designed to ensure that the gas quality reaching the engines is in line with the manufacturer's requirements. A schematic layout of the pre treatment and utilisation plant is shown in Figure A.4-1 below. Power generation units have been installed in line with electrical infrastructure capacity and also to match the LFG recovery profile. Sufficient flare capacity has been installed to ensure that any surplus LFG is flared if engine capacity is insufficient or during periods of maintenance or breakdown. The interface control and system management has been designed to allow real time adjustment of system performance thus optimising gas utilisation and carbon abatement.

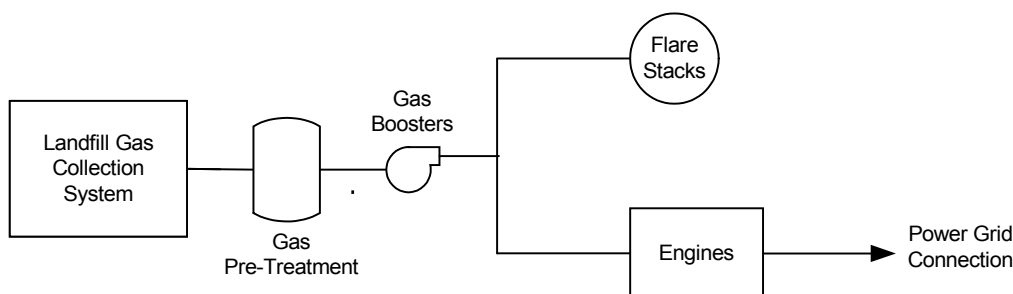


Figure A.4-1 Technical diagram of the project activity

LFG generator sets

After the LFG has passed through the pre treatment plant the gas is sent to spark ignition power generation units. The electricity produced is distributed to the Thailand Electric Grid. Currently the project activity consists of 6 generator sets manufactured by GE Jenbacher. The specification for the generator sets are shown below:

Parameters	Generator Sets
Quantity	6
Style	4 strokes
Rated rotating speed	1000r/minute
Rated power	1063kW
Rated voltage	400V
Rated frequency	50Hz

The generator sets used by this project are designed for power generation by utilizing landfill gas.

Flare system

The surplus gas is destroyed by a flare system. The combination of power generation and flare optimizes the destruction of landfill gas.

The flare installation used by this project meets all of the necessary conditions that are required by “Tool to determine project emissions from flaring gases containing methane” option a) for a default value of 90% for flare efficiency with continuous monitoring of compliance with the flare manufacture specifications. The flare system is equipped with a monitoring system to measure flow, pressure, methane concentration and the temperature in order to comply with the tool.

Below is a summary of the technical specification of the flare:

Parameters	Flare
Type	Enclosed Flare
Quantity	3
Capacity	2,000 Nm ³ /h
Flare Temperature (°C)	500-1200
Methane Combustion Efficiency	>98%
Manufacturer	Nanjing Carbon Recycle Biomass Technology Co., Ltd

Specification of the installed monitoring equipment is detailed in the tables included in section D.

A.5. Title, reference and version of the baseline and monitoring methodology applied to the project activity:

- Baseline and monitoring methodology ACM0001 (Version 11) - “Consolidated baseline methodology and monitoring for landfill gas project activities”;
- “Tool for the demonstration and assessment of additionality” - Version 05.2
- “Tool to determine project emissions from flaring gases containing methane”
- “Tool to calculate the emission factor for an electricity system” - Version 02 “Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site” - Version 04
- “Tool to calculate baseline, project and/or leakage emissions from electricity consumption” - Version 1.

A.6. Registration date of the project activity:

21/01/2011

A.7. Crediting period of the project activity and related information (start date and choice of crediting period):

A renewable 7 years crediting period was chosen for the project activity. The start date of the crediting period was 21/01/2011.

A.8. Name of responsible person(s)/entity(ies):

Mr. Gareth Phillips
Chief Climate Change Officer

Jay Mariyappan
Managing Director, Climate Change Delivery

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SECTION B. Implementation of the project activity

B.1. Implementation status of the project activity

Landfill gas has been extracted and combusted by flare since February 2010. The physical installation of the first 4*1063kW engines and construction of the grid connection was completed by late March 2010. Following commissioning of the grid connection the project started to export power to the Thai Grid on 8th April 2010. An additional 2*1063kW engines (No.s 5 & 6) were installed during April and commissioned during May 2011. The dates of commissioning completion for the engines were as follows:

Engine	Commissioning Handover Date	Engine	Commissioning Handover Date
1	18/05/2010	4	18/05/2010
2	17/06/2010	5	20/04/2011
3	18/05/2010	6	20/05/2011

The project activity started to export power on 8th April 2010 at a capacity of 0.8MW, which was subsequently increased to 3MW on June 3rd 2010, and 4MW on October 6th 2010, as each phase of the power generation plant was granted approval by the Provincial Electricity Authority (PEA). PEA export approval for 6MW was achieved 26th May 2011, correspondingly a larger emission reduction was achieved from this time.

Meanwhile, excessive landfill gas was also combusted by the flares in conjunction with power generation. At this stage, the combination of power generation and flaring optimizes the destruction of landfill gas. As waste tipping continues and additional LFG is generated, further generator sets will be installed.

Therefore, emission reductions of methane destroyed by both flare and power generation occurred within this monitoring period and emission reductions calculated for both types of LFG destruction are included in this monitoring report.

This is the second monitoring report. The monitoring period covered by this monitoring report is: **01/06/2011 - 31/10/2011 (inclusive)**.

The individual engine operational time for this monitoring period is provided in section D.2 – operation of energy plant. Information regarding replacement schedule of monitoring equipment can be referred to Annex E.

Special events (overhaul times, downtimes of equipment, exchange,...) of the project activity during this monitoring period are detailed in Annex F. This includes overhauls to engines 1, 2, 3 & 4 in addition to routine maintenance of all six engines.

During this monitoring period, no events or situations occurred, which impact the applicability of the methodology, as such no need to result any issues resulting from these events or situations.

B.2. Revision of the monitoring plan

There have been no revisions to the monitoring plan as detailed in the registered PDD.

B.3. Request for deviation applied to this monitoring period

There have been no requests for deviation applied to this monitoring period.

B.4. Notification or request of approval of changes

There have been no notifications or requests of approval of change for the project activity as described in the CDM-PDD.

SECTION C. Description of the monitoring system

In order to guarantee the quality of the data and data collection system, a detailed monitoring manual has been developed and implemented. This detailed monitoring manual (available for verification by the DOE) is based upon requirements set out in the PDD and monitoring plan.

Management structure for the implementation of monitoring plan

The project owner has established a specific CDM department and a CDM manager has been appointed to oversee that activities are carried out according to the monitoring plan. The organizational structure for the CDM department is shown below.

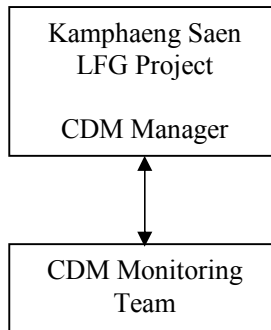


Figure C.1 Organisation Structure of the CDM Team

Responsibility and CDM management:

A CDM Manager is appointed with responsibility for monitoring all Project related activities and organizing training. The CDM Manager is responsible for overseeing the implementation of this procedure. Competency requirements for the position of CDM Manager are defined and applied to ensure that the CDM Manager is able to implement this procedure.

All calculations are checked and signed off by the CDM Manager who is also be responsible for preparing and checking the documents required for verification.

A CDM Monitoring Team, that reports directly to the CDM Manager, has day to day responsibilities for checking instrumentation, record keeping, data handling and data processing, filing, reporting, organizing repair and maintenance of monitoring equipment and ensuring the monitoring plan is adhered to as indicated in the approved PDD. The monitoring staff have received technical training and refresher training as well as safety training to minimize exposure to workplace hazards.

A management level link has been established to ensure effective co-operation between landfill staff and CDM monitoring staff.

All relevant information, notes of meetings, data files, maintenance records, defect reports, hard copy and computerised records of monitoring are kept at a designated location and arranged in an orderly and transparent manner to facilitate auditing as and when required.

Responsibilities, procedures, methods, equipment types and specifications are described in detail in a site-specific CDM monitoring manual.

The parameters monitored and the monitoring procedure applied for determination of the emission reductions is described in detail in section B.7.1 of the Project Design Document Version 8, dated 13th August 2010, and available upon the UNFCCC website:

<http://cdm.unfccc.int/Projects/DB/SGS-UKL1267631662.24/view>

An overview of the parameters monitored is provided in **Section D**.

The location of measurement devices is presented in figure B.4-1 below:

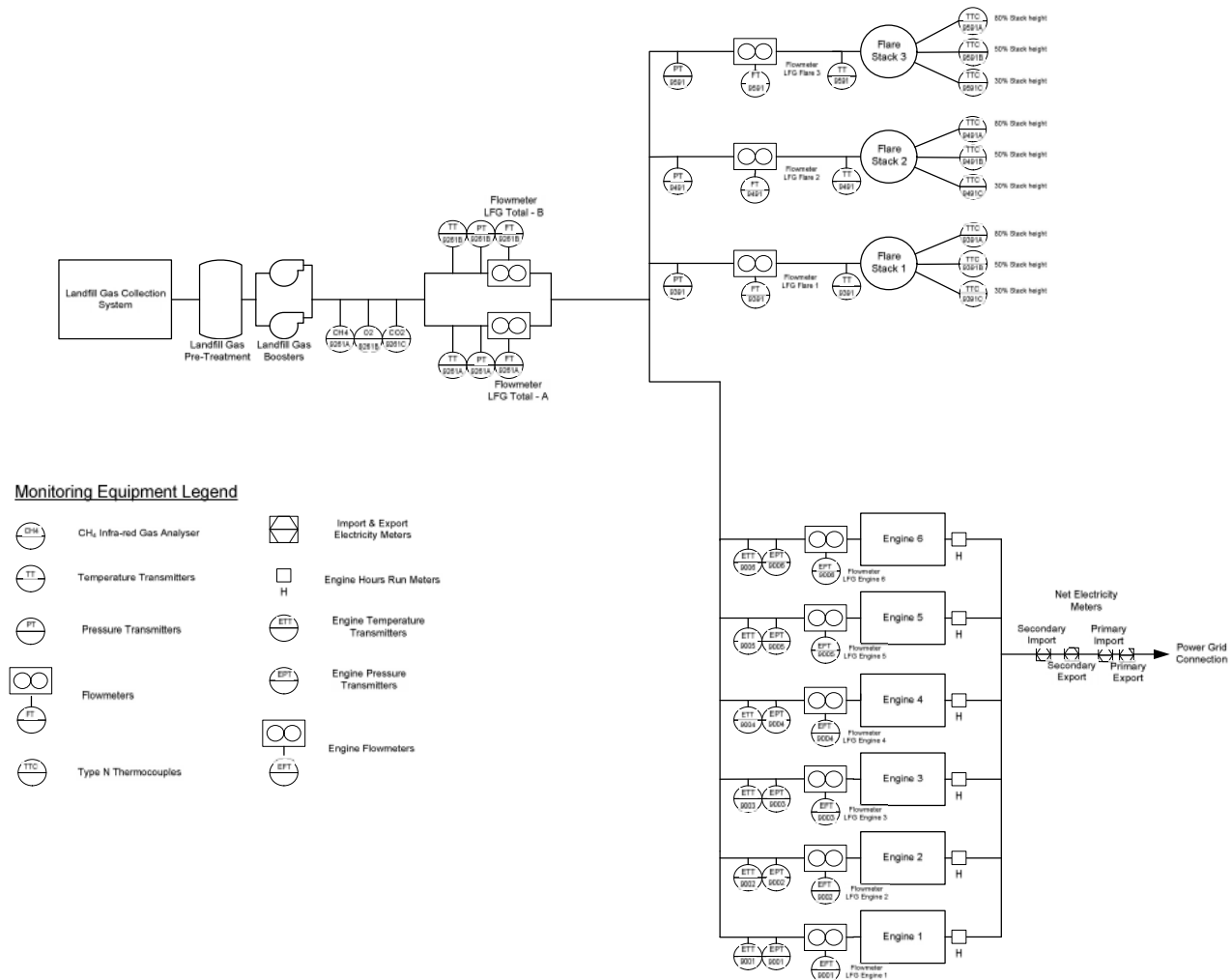


Figure B.4-1 - Location of the measurement devices

Data collection and management

- On-line monitoring

With the exception of the electricity meters, monitoring equipment required to determine GHG emissions and emission reductions are monitored on-line from a central control point which records meter readings at one minute intervals.

- Manual data recording system

A manual data recording system to act as a back-up for the on-line monitoring system is in place. This involves completion of a log sheet that records flow meter readings. Spot readings of other values (methane concentration, temperature and pressure) are also recorded periodically and at the times when flow meter readings are taken.

- Regulatory requirements related to landfill gas projects

Although the methodology only requires recording at the renewal of the crediting period, the information related to all relevant policies and circumstances are collected and recorded annually. Information will be kept during crediting period and two years after.

- Data archiving

The on-line monitoring system automatically and periodically archives data in a safe manner. Electronic documents are saved for backup, with written documents and back-ups safely kept. Calibration data is saved electronically. All information related to monitoring such as meeting minutes, data documents, maintenance records, accident reports, hard copies as well as computer records, are kept at designated locations to ensure that the examination process is transparent and effective. These data will be stored until 2 years after the end of the crediting period.

Maintenance and calibration of meters

All meters are maintained as specified in the CDM monitoring manual and according to manufacturer specifications. All key meters are subject to a quality control regime that includes regular maintenance and calibration. Calibrations are carried out by the manufacturer or a suitably qualified external company. A record is maintained showing the location and unique identification number of each meter, the calibration status of that meter (when last calibrated, when next due for calibration) and who performs the calibration service. Calibration certificates will be retained for all meters until two years after the end of the crediting period.

Mass flow of methane supplied to the engines is corroborated by comparison with the sum of the gross engine power outputs, the relationship being a function of engine efficiency which can be considered a constant under the proposed maintenance regime.

Treatment of missing or corrupted data

When data in the on-line system are corrupted or missing whilst the generators are operating (as shown, for example, by electricity output) the missing data can be estimated by taking the lower value of the parameter one hour before the error and one hour after the system restart. If there is evidence that neither of these values is representative, use the average value of the parameter from the previous 24 hours.

Any error is recorded in the log sheet and the occurrence of the error is investigated and rectified as soon as possible. If the on-line system is compromised for more than 24 hours, data is manually recorded. Manually recorded data is backup data for methane destruction amount and other key parameters. Any deficiencies in methane flow monitoring data is rectified by calculation from power generation data.

Any treatment of missing or corrupt data is detail in the special events schedule in Appendix F.

Non-essential data

The on-line monitoring system also records “non-essential” data. Such data is termed non-essential because it is not directly listed in the CDM Monitoring Methodology, but it will constitute a means of corroborating the on-line system. Non-essential data may include measurements of net and gross output from individual

generators, certificated conversion efficiency, waste deposition and any other data considered relevant to the project activity.

Document Control

The CDM Manager has implemented a document control system that ensures that the current versions of necessary documents are available at the point of use.

Audit function and management review

The CDM Manager arranges for an independent internal audit of the management system periodically and at least once per year. The auditor is not be involved in the daily operation of the project and if necessary, may be sourced from a third party. The auditor assesses the implementation of the monitoring procedure and the preparation of the monitoring report. Audit findings and steps taken to address findings are recorded and reviewed in a Management Review meeting (convened at least annually) at which time the effectiveness of these procedures will be reviewed and necessary changes implemented. The audit reports and annual review meeting notes are available to the verifying DOE.

SECTION D. Data and parameters

D.1. Data and parameters determined at registration and not monitored during the monitoring period, including default values and factors

Data / Parameter:	GWP_{CH_4}
Data unit:	tCO ₂ e/tCH ₄
Description:	Global warming potential of CH ₄
Source of data used:	Decisions under UNFCCC and the Kyoto Protocol
Value(s):	21
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	This data is used for baseline and project emission reduction calculations.
Additional comment:	Shall be updated according to any future COP/MOP decisions

Data / Parameter:	D_{CH_4}
Data unit:	tCH ₄ / m ³ CH ₄
Description:	Methane density
Source of data used:	ACM0001 version 11
Value(s):	0.0007168 (at standard temperature and pressure: 0 degree Celsius and 1.013 bar)
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	This data is used for baseline emission calculations.
Additional comment:	N.A.

Data / Parameter:	$CEF_{elec,BL,y}$ (the same parameter as EF_{EL})
Data unit:	tCO ₂ /MWh
Description:	Grid emission factor of electricity
Source of data used:	Thai grid emission factor calculation
Value(s):	0.57420
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	This data is used for baseline emission and project emission calculations.
Additional comment:	N.A.

D.2. Data and parameters monitored	
Data / Parameter:	$LFG_{total,y}$
Data unit:	m ³
Description:	Total amount of landfill gas captured at Normal Temperature and Pressure
Measured /Calculated /Default:	Measured
Source of data:	Flow meter readings
Value(s) of monitored parameter:	Refer to Emission Reductions spreadsheet
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	For baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	• V-Cone Flow Meter –with associated Rosemount 3051CD differential pressure transmitter. See specification details in Annex D. • Installation, calibration dates and validity periods are provided in Annex E.
Measuring/ Reading/ Recording frequency:	Continuous measuring/recorded every minute Data is aggregated monthly and yearly.
Calculation method (if applicable):	N.A.
QA/QC procedures applied:	Data is backed up and archived, where it is stored for two years longer than the crediting period or two years after the last issuance of CERs. For internal cross checking purposes the consistency of flow measurements is checked by examining the hourly flow balance. The conservative value is used for ER calculation. $(LFG_{flare,h} + LFG_{electricity,h}) = LFG_{total,h}$ Flow meter is calibrated according to the manufacturer's specifications. Calibrations are carried out by the manufacturer or a suitably qualified external company. Calibration and maintenance records are retained. On site staff have received training in CDM monitoring and the maintenance requirements of the flow meters.

Data / Parameter:	$LFG_{flare,y}$ (The same as $FV_{RG,h}$, different nomenclature for ACM0001 (version 11) and "Tool to determine project emissions from flaring gases containing methane".)
Data unit:	m ³
Description:	Amount of landfill gas flared at Normal Temperature and Pressure
Measured /Calculated /Default:	Measured
Source of data:	Flow meter on the inlet to each flare.
Value(s) of monitored parameter:	Refer to Emission Reductions spreadsheet
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	For baseline emission and project emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	• V-Cone Flow Meter –with associated Rosemount 3051CD differential pressure transmitter. See specification details in Annex D. • Installation, calibration dates and validity periods are provided in Annex E.

Measuring/ Reading/ Recording frequency:	Continuous measuring/reading every minute. Data is aggregated monthly and yearly.
Calculation method (if applicable):	N.A.
QA/QC procedures applied:	Data is backed up and archived, where it is stored for two years longer than the crediting period or two years after the last issuance of CERs. For internal cross checking purposes the consistency of flow measurements is be checked by examining the hourly flow balance. The conservative value is used for ER calculation. $(LFG_{flare,h} + LFG_{electricity,h}) = LFG_{total,h}$ Flow meter is calibrated according to the manufacturer's specifications. Calibrations are carried out by the manufacturer or a suitably qualified external company. Calibration and maintenance records are retained. On site staff have received training in CDM monitoring and the maintenance requirements of the flow meters.

Data / Parameter:	$LFG_{electricity,y}$
Data unit:	m ³
Description:	Amount of landfill gas combusted in power plant at Normal Temperature and Pressure
Measured /Calculated /Default:	Measured
Source of data:	Flow meter on the inlet to each generator.
Value(s) of monitored parameter:	Refer to Emission Reductions spreadsheet
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	For baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	- V-Cone Flow Meter –with associated Rosemount 3051CD differential pressure transmitter. See specification details in Annex D. - Installation, calibration dates and validity periods are provided in Annex E.
Measuring/ Reading/ Recording frequency:	Continuous measuring/reading every minute. Data is aggregated monthly and yearly.
Calculation method (if applicable):	N.A.
QA/QC procedures applied:	Data is backed up and archived, where it is stored for the longer of two years longer than the crediting period or two years after the last issuance of CERs. For internal cross checking purposes the consistency of flow measurements is be checked by examining the hourly flow balance. The conservative value is used for ER calculation. $(LFG_{flare,h} + LFG_{electricity,h}) = LFG_{total,h}$ Flow meter is calibrated according to the manufacturer's specifications. Calibrations are carried out by the manufacturer or a suitably qualified external company. Calibration and maintenance records are retained. On site staff have received training in CDM monitoring and the maintenance requirements of the flow meters.

Data / Parameter:	$PE_{flare,y}$
Data unit:	tCO ₂ e

Description:	Project emissions from flaring of the residual gas stream in year y
Measured /Calculated /Default:	Calculated
Source of data:	Calculated
Value(s) of monitored parameter:	Refer to Emission Reductions spreadsheet
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	For project emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	N.A.
Measuring/ Reading/ Recording frequency:	N.A.
Calculation method (if applicable):	The parameter is calculated as per “Tool to determine project emissions from flaring gases containing Methane”.
QA/QC procedures applied:	Regular maintenance should ensure optimal operation of flares. The enclosed flares are operated and maintained as per the specifications prescribed by the manufacturer.

Data / Parameter:	$\omega_{CH_4,y}$ (The same parameter as $f_{V_{CH_4, RG,h}}$ different nomenclature for ACM001(version 11) and “Tool to determine project emissions from flaring gases containing methane”.)
Data unit:	m^3CH_4/m^3LFG
Description:	Methane fraction in the landfill gas
Measured /Calculated /Default:	Measured
Source of data:	Gas quality analyser reading
Value(s) of monitored parameter:	Refer to Emission Reductions spreadsheet
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	For baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	• Infra-Red Gas Monitor. See specification details in Annex D. • Installation, calibration dates and validity periods are provided in Annex E.
Measuring/ Reading/ Recording frequency:	Continuous measuring/reading every minute Data is aggregated monthly and yearly.
Calculation method (if applicable):	N.A.
QA/QC procedures applied:	Routine checks are performed by the CDM Monitoring Team to ensure proper functioning of the equipment. Any faults are reported to the CDM Manager for action. Monthly zero check using atmospheric air or a certified nitrogen reference gas. Monthly site gas span undertaken using certified calibration gas. Gas analyser maintained and calibrated as per manufacturers recommendations. Data is backed up and archived where it is stored for the longer of two years longer than the crediting period or two years after the last issuance of CERs.

Data / Parameter:	<i>T</i>
Data unit:	°C
Description:	Temperature of the landfill gas
Measured /Calculated /Default:	Measured
Source of data:	Temperature probe in LFG pipe work between the gas treatment package and the generator sets / flares.
Value(s) of monitored parameter:	Refer to Emission Reductions spreadsheet
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	For baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	• Temperature Transmitter. • See specification details in Annex D. • Installation, calibration dates and validity periods are provided in Annex E.
Measuring/ Reading/ Recording frequency:	Continuous measuring/reading every minute
Calculation method (if applicable):	N.A.
QA/QC procedures applied:	Routine checks are performed by CDM Monitoring Team to ensure proper functioning of the equipment. Any faults are reported to the CDM Manager for action. Temperature probe maintained and calibrated as per manufacturers recommendations. Data is backed up and archived where it is stored for the longer of two years longer than the crediting period or two years after the last issuance of CER's.

Data / Parameter:	<i>P</i>
Data unit:	Pa
Description:	Pressure of the landfill gas
Measured /Calculated /Default:	Measured
Source of data:	Pressure transmitter mounted in the LFG pipe work between the gas treatment package and the generator sets / flares.
Value(s) of monitored parameter:	Refer to Emission Reductions spreadsheet
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	For baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	• Absolute Pressure Transmitter See specification details in Annex D. • Installation, calibration dates and validity periods are provided in Annex E.
Measuring/ Reading/ Recording frequency:	Continuous measuring/reading every minute Data is aggregated monthly and yearly.
Calculation method (if applicable):	N.A.
QA/QC procedures applied:	Routine checks are performed by CDM Monitoring Team to ensure proper functioning of the equipment. Any faults are reported to the CDM Manager for action. Pressure Transmitter maintained and calibrated as per manufacturers recommendations.

	Data is backed up and archived where it is stored for the longer of two years longer than the crediting period or two years after the last issuance of CER's.
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Data / Parameter:	EL_{LFG}
Data unit:	MWh
Description:	Net quantity of electricity produced / exported using LFG
Measured /Calculated /Default:	Measured
Source of data:	Electricity meter
Value(s) of monitored parameter:	Refer to Emission Reductions spreadsheet
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	For baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	- Electricity Meter - See specification details in Annex D. - Installation, calibration dates and validity periods are provided in Annex E.
Measuring/ Reading/ Recording frequency:	Continuously measured. Data is aggregated monthly and yearly.
Calculation method (if applicable):	N.A.
QA/QC procedures applied:	The electricity meters are maintained and calibrated according to manufacturer's instructions or the relevant regulations. Data will be archived for 2 years after the crediting period or two years after the last issuance of CERs. The data can be corroborated against financial data from the export of power to the grid.

Data / Parameter:	EL_{import} (The same parameter as $EC_{PJ,j,y}$)
Data unit:	MWh
Description:	Net amount of electricity imported from the grid for auxiliary use
Measured /Calculated /Default:	Measured
Source of data:	Electricity meter
Value(s) of monitored parameter:	Refer to Emission Reductions spreadsheet
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	For project emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	- Electricity Meter - See specification details in Annex D. - Installation, calibration dates and validity periods are provided in Annex E.
Measuring/ Reading/ Recording frequency:	Continuously measured. Data is aggregated monthly and yearly
Calculation method (if applicable):	N.A.
QA/QC procedures applied:	The electricity meters are maintained and calibrated according to manufacturer's instructions or the relevant regulations. Data will be archived for 2 years after the crediting period or two years after the last issuance of CERs. The data can be corroborated against financial data

	from the import of power from the grid
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Data / Parameter:	Operation of the energy plant
Data unit:	Hours
Description:	Operation of the energy plant
Measured /Calculated /Default:	Measured
Source of data:	Measured with individual, software based, run meters on each generator set, readings taken from SCADA system
Value(s) of monitored parameter:	Engine #1 : 3467 hours run Engine #2 : 3213 hours run Engine #3 : 3447 hours run Engine #4 : 3454 hours run Engine #5 : 3486 hours run Engine #6 : 3366 hours run
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	For emission reductions calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	N.A.
Measuring/ Reading/ Recording frequency:	Continuously Measured
Calculation method (if applicable):	N.A.
QA/QC procedures applied:	N.A.

Data / Parameter:	T_{flare}
Data unit:	°C
Description:	Temperature of the exhaust gas of the flare
Measured /Calculated /Default:	Measured
Source of data:	Type N Temperature thermocouple mounted in flare stack
Value(s) of monitored parameter:	Refer to Emission Reductions spreadsheet
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	For project emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	• Type N Thermocouple • See specification details in Annex D. • Installation, calibration dates and validity periods are provided in Annex E.
Measuring/ Reading/ Recording frequency:	Continuous measuring/reading every minute
Calculation method (if applicable):	N.A.
QA/QC procedures applied:	Routine checks are performed by Site Engineers to ensure proper functioning of the equipment. Any faults are reported to the CDM Manager for action. Thermocouple maintained and calibrated as per manufacturer's recommendations. Data is backed up and archived where it is stored for the longer of two

	years longer than the crediting period or two years after the last issuance of CER's.
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Data / Parameter:	$TDL_{b,y}$
Data unit:	%
Description:	Average technical transmission and distribution losses for providing electricity to Source j
Measured /Calculated /Default:	Measured
Source of data:	Electricity Annual Report 2010 by DEDE Department Ministry of Energy, Thailand. Most recent, accurate and reliable published data available within the host country is applied.
Value(s) of monitored parameter:	9.61%
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	For project emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	N.A.
Measuring/ Reading/ Recording frequency:	Annually
Calculation method (if applicable):	N.A.
QA/QC procedures applied:	N.A.

Data / Parameter:	Regulatory requirements relating to landfill gas projects
Data unit:	-
Description:	Regulatory requirements relating to landfill gas projects may effect the value of AF or $MD_{reg,y}$
Measured /Calculated /Default:	Measurements by project participants
Source of data:	See details in Annex C.
Value(s) of monitored parameter:	N.A.
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	For baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	N.A.
Measuring/ Reading/ Recording frequency:	Annually
Calculation method (if applicable):	N.A.
QA/QC procedures applied:	N.A.

SECTION E. Emission reductions calculation

E.1. Baseline emissions calculation

The formulae used for determination of the baseline emissions are described in section B.6.1 of the registered PDD for the project activity.

$$BE_y = (MD_{project,y} - MD_{BL,y}) * GWP_{CH4} + EL_{LFG,y} * CEF_{elec,BL,y} + ET_{LFG,y} * CEF_{ther,BL,y} \quad (1)$$

Where:

- BE_y = Baseline emission in year y(tCO₂e)
- $MD_{project,y}$ = The amount of methane that would have been destroyed/combusted during year y (tCH₄) in project scenario
- $MD_{BL,y}$ = The amount of methane that would have been destroyed/combusted during year y in the absence of the project due to regulatory and/or contractual requirement (tCH₄) this is zero for this project
- GWP_{CH4} = Global Warming Potential value for methane for the first commitment period is 21(tCO₂e/tCH₄)
- $EL_{LFG,y}$ = Net quantity of electricity produced using LFG, which in the absence of this project activity would have been produced by power plants connected to the Thai Grid during year y(MWh)
- $CEF_{elec,BL,y}$ = CO₂ emission factor of the Thai Grid (tCO₂e/MWh)
- $ET_{LFG,y}$ = The quantity of thermal energy produced utilizing the landfill gas, which in the absence of project activity would have been produced from onsite/offsite fossil fuel fired boiler, during the year y (TJ)
- $CEF_{ther,BL,y}$ = CO₂ emission intensity of the fuel used by boiler to generate thermal energy which is displaced by LFG based thermal energy generation (t CO₂/TJ)

$MD_{project,y}$ is determined via the measured quantities of methane captured and destroyed by the project, either by flaring or as fuel to the gas engines, as detailed in equation 2 below.

$$MD_{project,y} = MD_{flared,y} + MD_{electricity,y} \quad (2)$$

Where:

- $MD_{flared,y}$ = measured quantity of methane destruction in flares during the year y;
- $MD_{electricity,y}$ = measured quantity of methane destruction in power plant during the year y;

$$MD_{electricity,y} = LFG_{electricity,y} * w_{CH4,y} * D_{CH4} \quad (3)$$

Where:

- $LFG_{electricity,y}$ = quantity of LFG destroyed by the generators in m³
- $w_{CH4,y}$ = average concentration of methane in LFG (m³CH₄/m³LFG)
- D_{CH4} = density of methane (tCH₄/m³)

Including it in this equation takes account of the fact that $LFG_{electricity,y}$ is measured at the inlet to the generator.

$$MD_{flared,y} = (LFG_{flare,y} * w_{CH_4,y} * D_{CH_4}) - (PE_{flare,y} / GWP_{CH_4}) \quad (4)$$

Where:

- $LFG_{flared,y}$ = quantity of landfill gas fed to the flare during the year measured in cubic meters (m^3),
- $w_{CH_4,y}$ = the average methane fraction of the landfill gas as measured during the year and expressed as a fraction ($m^3 CH_4 / m^3 LFG$);
- D_{CH_4} = methane density, ($tCH_4 / m^3 CH_4$)
- $PE_{flare,y}$ = the project emissions from flaring of the residual gas stream in year y (tCO_2e)

$$PE_{flare,y} = \sum_{h=1}^{8760} TM_{RG,h} X (1 - \eta_{flare,h}) X GWP_{CH_4} / 1000 \quad (5)$$

Where:

- $PE_{flare,y}$ = Project emissions from flaring of the residual gas stream in year y (tCO_2e);
- $TM_{RG,h}$ = Mass flow rate of methane in the residual gas in the hour h ($kgCH_4/h$);

$$TM_{RG,h} = FV_{RG,h} \times f_{V_{CH_4, RG,h}} \times \rho_{CH_4,n} \quad (6)$$

Where:

- $\eta_{flare,h}$ = Flare efficiency in hour h(%), IPCC default value 90% is taken;
- GWP_{CH_4} = Global warming potential of methane valid for the first commitment period ($21tCO_2e/tCH_4$).

In the above formula, $LFG_{flare,y}$, $LFG_{flared,h}$, $w_{CH_4,y}$, $w_{CH_4,h}$ and $\eta_{flare,h}$ has been confirmed ex-post during project implementation.

The value of D_{CH_4} under standard temperature and air pressure (1.013bar and $0^\circ C$) is $0.0007168 tCH_4 / m^3 CH_4$.

In this project there is no thermal energy utilization from LFG: $ET_{LFG,y} = 0$. Similarly $MD_{BL,y} = 0$ as there is no methane destruction due to regulatory and/or contractual requirements in the absence of this project.

The baseline emissions are calculated in the attached ER calculation excel spreadsheets, and a summary of the calculation results is provided in Tables 1 to 5 below.

E.2. Project emissions calculation

$$PE_y = PE_{EC,y} + PE_{FC,j,y} \quad (7)$$

Where:

- $PE_{EC,y}$ = Emission from consumption of electricity in project case
- $PE_{FC,j,y}$ = Emission from consumption of heat in the project case

$PE_{FC,j,y}$ does not need to be accounted for as there is no thermal generation by the proposed project activity.

Project emissions arise from consumption of grid electricity ($PE_{EC,y}$) during periods when there is no on-site generation. $PE_{EC,y}$ is determined using the procedure described in Methodological “Tool to calculate baseline, project and/or leakage emissions from energy consumption” Version 1.

$$PE_{EC,y} = EC_{P,y} \times EF_{EL,y} \times (1 + TDL_{j,y}) \quad (8)$$

Where

$EC_{P,y}$ (also = Electricity imported from the grid and used in the project in year y (MWh/yr)

EL_{import}

$CEF_{EL,y}$ (also = CO₂ emission factor of the Thai Grid in year y (tCO₂e/MWh)

$EF_{EL,y}$

$TDL_{j,y}$ = Average technical transmission and distribution losses for providing electricity to the project in year y (fraction)

The project emissions are calculated in the attached ER calculation excel spreadsheets, and a summary of the calculation results is provided in Table 6.

E.3. Leakage calculation

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

E.4. Emission reductions calculations/table

Emission reductions are calculated using ACM 0001 version 11, as follows:

$$ER_y = BE_y - PE_y \quad (9)$$

Where:

ER_y = Emission reductions in year y(tCO₂e/yr)

BE_y = Baseline emissions in year y(tCO₂e/yr)

PE_y = Project emissions in year y(tCO₂e/yr)

The emission reductions are calculated in the attached ER calculation excel spreadsheets, and a summary of the calculation results is provided in Table 7.

See registered PDD for detailed information.

<http://cdm.unfccc.int/Projects/DB/SGS-UKL1267631662.24/view>

Notes on ER Calculations:

1. The flow of LFG_{total,y}, LFG_{flare,y} and LFG_{electricity,y} are measured using V-Cone pressure differential flow meters at each location as detailed in section D.2 above. At each V-cone flow measuring location an independent temperature transmitter and pressure transmitter is also installed to measure the LFG at this location. These working conditions are then used to convert the flow of LFG to NTP. The CH₄ volume flow is then converted to mass flow using the NTP methane density, a constant provided in the ACM0001 methodology.



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The following table shows monthly total LFG collected by project and amount of LFG fed to each individual flare stack and each engine.

Table 1. Monthly net methane destruction attribute to the project activity

Date (inclusive)	Quantity of total Landfill gas captured measured in Nm ³	Quantity of Landfill gas fed to flare measured in Nm ³	Quantity of landfill gas fed to the power generators measured in Nm ³	Average value of concentration of methane in landfill gas m ³ CH ₄ /m ³ LFG	Quantity of Methane Gas fed to the flare measured in Nm ³	Quantity of Methane Gas fed to the power generators measured in Nm ³
	LFG total, month	LFG flare, month	LFG Electricity, month	$\omega_{CH_4,y}$	CH ₄ Flare, month	CH ₄ Electricity, month
01/06/2011 30/06/2011	3,347,093	467,853	2,872,441	47	219,151	1,344,259
01/07/2011 31/07/2011	2,852,970	90,379	2,718,718	49	46,637	1,313,295
01/08/2011 31/08/2011	2,803,654	412,178	2,362,673	51	209,334	1,193,345
01/09/2011 30/09/2011	3,125,868	614,548	2,503,246	47	296,543	1,215,947
01/10/2011 31/10/2011	3,417,226	839,345	2,518,514	52	440,386	1,312,944

Table 2. Methane destruction attributes to power generation

Date (inclusive)	Quantity of Methane Gas fed to the power generators measured in Nm ³	Methane density expressed in tonnes of methane per cubic meter of methane tCH ₄ /m ³ CH ₄	Quantity of methane destroyed by generator (tCH ₄)*	Global warming potential of methane	Quantity of equivalent Carbon dioxide destroyed by power generation(tCO ₂)
	CH ₄ Electricity, month	D CH ₄	MD electricity, month	GWP CH ₄	tCO ₂ e, month
01/06/2011 30/06/2011	1,344,259	0.0007168	964	21	20,235
01/07/2011 31/07/2011	1,313,295	0.0007168	941	21	19,769
01/08/2011 31/08/2011	1,193,345	0.0007168	855	21	17,963
01/09/2011 30/09/2011	1,215,947	0.0007168	872	21	18,303
01/10/2011 31/10/2011	1,312,944	0.0007168	941	21	19,763

Table 3. Methane destruction attributes to LFG flaring

Flare 1

Date (inclusive)	Quantity of Methane Gas fed to the flare measured in Nm ³	Methane density expressed in tonnes of methane per cubic meter of methane tCH ₄ /m ³ CH ₄	Quantity of methane fed to flaring (tCH ₄)*	Project emissions from flaring of the residual gas stream (tCH ₄)*	Global warming potential of methane	Project emissions from flaring of the residual gas stream (tCO ₂ eq)*	Quantity of methane destroyed by flaring (tCH ₄)*
	CH ₄ total, month	D CH ₄		PE flare CH ₄ , month	GWP CH ₄	PE flare CO ₂ , month	MD flare, month
01/06/2011 30/06/2011	14,597	0.0007168	10.46	10.46	21	219.73	0.00
01/07/2011 31/07/2011	3,585	0.0007168	2.57	0.79	21	16.49	1.78
01/08/2011 31/08/2011	27,583	0.0007168	19.77	3.37	21	70.72	16.40
01/09/2011 30/09/2011	40,288	0.0007168	28.88	3.88	21	81.46	25.00
01/10/2011 31/10/2011	40,402	0.0007168	28.96	2.92	21	61.29	26.04

Flare 2

Date (inclusive)	Quantity of Methane Gas fed to the flare measured in Nm ³	Methane density expressed in tonnes of methane per cubic meter of methane tCH ₄ /m ³ CH ₄	Quantity of methane fed to flaring (tCH ₄)*	Project emissions from flaring of the residual gas stream (tCH ₄)*	Global warming potential of methane	Project emissions from flaring of the residual gas stream (tCO ₂ eq)*	Quantity of methane destroyed by flaring (tCH ₄)*
	CH ₄ total, month	D CH ₄		PE flare CH ₄ , month	GWP CH ₄	PE flare CO ₂ , month	MD flare, month
01/06/2011 30/06/2011	29,815	0.0007168	21.37	2.98	21	62.53	18.39
01/07/2011 31/07/2011	12,154	0.0007168	8.71	3.11	21	65.28	5.60
01/08/2011 31/08/2011	0	0.0007168	0.00	0.00	21	0.00	0.00
01/09/2011 30/09/2011	50,376	0.0007168	36.11	3.93	21	82.53	32.18
01/10/2011 31/10/2011	211,948	0.0007168	151.92	16.96	21	356.08	134.97

Flare 3

Date (inclusive)	Quantity of Methane Gas fed to the flare measured in Nm ³	Methane density expressed in tonnes of methane per cubic meter of methane tCH ₄ /m ³ CH ₄	Quantity of methane fed to flaring (tCH ₄)*	Project emissions from flaring of the residual gas stream (tCH ₄)*	Global warming potential of methane	Project emissions from flaring of the residual gas stream (tCO ₂ eq)*	Quantity of methane destroyed by flaring (tCH ₄)*
	CH ₄ total, month	D CH ₄		PE flare CH ₄ , month	GWP CH ₄	PE flare CO ₂ , month	MD flare, month
01/06/2011 30/06/2011	174,738	0.0007168	125.25	13.18	21	276.72	112.07
01/07/2011 31/07/2011	30,897	0.0007168	22.15	4.47	21	93.92	17.67
01/08/2011 31/08/2011	181,751	0.0007168	130.28	14.54	21	305.40	115.74
01/09/2011 30/09/2011	205,879	0.0007168	147.57	15.51	21	325.65	132.07
01/10/2011 31/10/2011	188,036	0.0007168	134.78	17.96	21	377.20	116.82

Remarks: Flare efficiency determination is referred to scenario a) of “tool to determine project emissions from flaring gases containing methane”.

The following table shows monthly net methane destruction attributed to the project activity and total emission reductions completed associated with project activity in this monitoring period.

Table 4. Monthly net methane destruction attributed to the project activity

Date (inclusive)	The amount of methane that have been destroyed in the project scenario (tCH ₄)	The amount of methane that have been destroyed in the absence of the project (tCH ₄)	Net methane destruction attributable to the project activity (tCH ₄)	Net methane destruction attributable to the project activity (tCO ₂)
	MD _{project, month}	MD _{BL, month}	MD _{project, month} - MD _{BL, month}	=(MD _{project, month} - MD _{BL, month})*GWP _{CH₄}
01/06/2011 – 30/06/2011	1094.03	0.00	1094.03	22,975
01/07/2011 – 31/07/2011	966.43	0.00	966.43	20,295
01/08/2011 – 31/08/2011	987.53	0.00	987.53	20,738
01/09/2011 – 30/09/2011	1060.84	0.00	1060.84	22,278
01/10/2011 – 31/10/2011	1218.95	0.00	1218.95	25,598
Total 01/06/2011 – 31/10/2011 (inclusive)				111,883

Remarks: Data in this table is aggregated from the hourly results; calculation formulas are used in hourly and daily data level.

The sum of the LFG quantities fed to the flare and the power plant was compared hourly with the LFG_{total}. The lowest value is be used for calculation of MD_{Project,y} in the next data processing step, according to QA/QC.



Table 5. The net amount of electricity exported to the grid

Date (inclusive)		Total amount of electricity exported (MWh)	CO ₂ emissions intensity of the baseline source of electricity displaced (tCO ₂ e/MWh)	CO ₂ emissions (exported electricity) (tCO ₂ e)
		EL _{LFG, month}	CEF _{elec, BL, month}	
01/06/2011	31/10/2011	20,026.44	0.5742	11,499

Table 6. The net amount of electricity imported for the project purpose (project emissions)

Date (inclusive)		Total amount of electricity imported (MWh)	CO ₂ emissions intensity of the baseline source of electricity displaced (tCO ₂ e/MWh)	Average technical transmission and distribution losses for providing electricity	CO ₂ emissions (imported electricity) (tCO ₂ e)
		EL _{IM, month}	CEF _{elec, BL, month}	TDL _{grid, month}	
01/06/2011	31/10/2011	5.88	0.5742	9.61%	3.70

Table 7. Total Emission reductions of the monitoring period

Reporting Period	Net methane destruction attributable to the project activity (tCO ₂)	CO ₂ emissions intensity (imported electricity) (tCO ₂ e)	CO ₂ emissions intensity (exported electricity) (tCO ₂ e)	Total emission reductions (tCO ₂ e)
Total 01/06/2011 – 31/10/2011 (inclusive)	111,883	4	11,499	123,379

Total baseline emissions: 123,778 tCO₂e
Total project emissions: 2,399 tCO₂e
Total leakage: 0 tCO₂e
Total emission reductions: 123,379 tCO₂e

E.5. Comparison of actual emission reductions with estimates in the CDM-PDD

Item	Values applied in ex-ante calculation of the registered CDM-PDD	Actual values reached during the monitoring period
Emission reductions (tCO ₂ e)	= 315,502 x 153/365 = 132,251	123,379

E.6. Remarks on difference from estimated value in the PDD

The ex-ante emission reduction calculation included in the PDD estimates a total of 132,251tCO₂e for the current monitoring period (calculation as per table section E.5). However only **123,379tCO₂e** have actually been generated during the current monitoring period due to the lower number of engines being installed to date compared to that envisaged at this stage in the PDD. Further engines are to be installed during the next monitoring period.

Annex A. Emission Reductions Calculation Sheets

Separate emission reductions calculation spreadsheets have been provided for the purpose of verification.

Annex B. Flare Efficiency

The determination of project emissions from flaring gases containing methane is described in the registered PDD page 25 onwards.

Determination of the hourly flare efficiency:

In case of enclosed flares and use of the default value for the flare efficiency, the flare efficiency in the hour h ($\eta_{flare,h}$) is:

- 0% if the temperature in the exhaust gas of the flare (T_{flare}) is below 500°C for more than 20 minutes during the hour h .
- 50%, if the temperature in the exhaust gas of the flare (T_{flare}) is above 500°C for more than 40 minutes during the hour h , but the manufacturer's specifications on proper operation of the flare are not met at any point in time during the hour h .
- 90%, if the temperature in the exhaust gas of the flare (T_{flare}) is above 500°C for more than 40 minutes during the hour h and the manufacturer's specifications on proper operation of the flare are met continuously during the hour h .

The assessment of the hourly flare efficiency using the above described criteria for the dataset covering the monitoring period is to be verified by the DOE at the time of the site visit. The excel spreadsheet indicating flare efficiency for the reported period is submitted to the DOE.

Annex C. Monitored Laws and Regulations

Regulation	Impact	Date of application
Public Health Act 1992	Stated in PDD. Governs the operation of the landfill and provides a mechanism for regulation by local administrative body via the issuance of the license to the landfill. Sasimhum Sub-district Administrative Organisation has not currently set out and specific regulations relating to the license. No impact on parameters monitored during the current crediting period.	1992
Act of Cleanliness and Tidiness of the Nation 1992	Has no requirement for LFG control, extraction or utilisation. No impact on parameters monitored during the current crediting period.	1992

Annex D. Specification of CDM Monitoring Equipment

Parameter	Instrument Type	Manufacturer	Instrument Model	Instrument Range	Accuracy	Calibration Requirements
LFG _{total}	V-Cone Flow Meter	Kingways	KVS14IIC23FSN with Rosemount 3051 CD Differential Pressure Transmitter	750-7500m ³ /hr	±0.5%	2 yearly
LFG _{flare}	V-Cone Flow Meter	Kingways	KVS08IIC23FSN with Rosemount 3051 CD Differential Pressure Transmitter	250-2500m ³ /hr	±0.5%	2 yearly
	V-Cone Flow Meter	KVS Lamway	RVM-VS08IIJF63N2 with Rosemount 3051 CD Differential Pressure Transmitter	250-2500m ³ /hr	±0.5%	2 yearly
LFG _{electricity}	V-Cone Flow Meter	Kingways	KVS06IIC23FSN with Rosemount 3051 CD Differential Pressure Transmitter	100-1000m ³ /hr	±0.5%	2 yearly
	V-Cone Flow Meter (for equipment S/N 9062901)	Kingways	KVS06IIC23FSN with Rosemount 3051 CD Differential Pressure Transmitter	200-2000m ³ /hr	±0.5%	2 yearly
	V-Cone Flow Meter	KVS Lamway	RVM-VS06IIJF63N2 with Rosemount 3051 CD Differential Pressure Transmitter	100-1000m ³ /hr	±0.5%	2 yearly
ω _{CH4}	Infra Red Gas Analyser	Edinburgh Instruments Limited	Guardian Plus Infra-Red Gas Monitor	0-100%	± 2.0% Full Scale Deflection	Annually
T	Temperature Transmitter	Honeywell	STT830-171	-58 to 500°C	(0.3+0.005 t)°C	Annually
P	Absolute Pressure Transmitter	Rosemount	Model 3051TA	0 –207 kPa	± 0.065%	Annually
EL _{LFG}	Electric Meter	EDMI	EDMI-Mk6(Genius)	-	Class 0.5S	Annually
EL _{import}	Electric Meter	EDMI	EDMI-Mk6(Genius)	-	Class 0.5S	Annually
T _{flare}	Type N Thermocouple	Honeywell	STT830-173	0 to 1200°C	Accuracy Class II (allowable deviation ±(0.0075 t))	Annually
	Type N Thermocouple	Uniflare	32-N-LTS-176-6.0-21-TXLIN/EX1	0 to 1300°C	Accuracy Class II (allowable deviation ±(0.0075 t))	Annually

Annex E. CDM Monitoring Equipment Installation & Calibration Dates

Name	Tag No.	Serial No.	Equipment Start Date	Equipment End Date	Calibration Certification Validity Period	Certificate Reference	Monitoring Period
LFG Total	FT 9261 A ^C	9061213	20110602	20110823	20090803-20110802	D09-770-JG-14	20110602 - 20111101
	FT 9261 E ^F	9062912 ^B	20110823	20111101	20110729-20130728	D11-733-JG-01	
LFG Flame	FT 9391	10071509	20110602	20111021	20100824-20120823	D10-783-JG-11	
		9061210 ^A	20111021	20111101	20110914-20130913	LC1106-046	
	FT 9491	9061210	20110602	20110730	20090803-20110802	D09-770-JG-11	
		9062916 ^A	20110730	20111101	20110621-20130620	LC1106-080	
	FT 9591	10071510	20110602	20111021	20100824-20120823	D10-783-JG-09	
		9061205 ^A	20111021	20111101	20110618-20130617	LC1106-075	
LFG Electricity	EFT 9001	10071502	20110602	20111021	20100820-20120819	D10-783-JG-01	
		9062903 ^A	20111021	20111101	20110613-20130612	LC1106-025	
	EFT 9002	10071503	20110602	20111101	20100823-20120822	D10-783-JG-04	
		10071504	20110602	20111021	20100820-20120819	D10-783-JG-02	
	EFT 9003	9062907 ^A	20111021	20111101	20110613-20130612	LC1106-026	
		10071505	20110602	20111021	20100823-20120822	D10-783-JG-07	
	EFT 9004	9062913 ^A	20111021	20111101	20110613-20130612	LC1106-027	
		10071506	20110602	20111021	20100823-20120822	D10-783-JG-03	
	EFT 9005	1104-0160 ^A	20111021	20111101	20110714-20130713	LC1106-082	
		9062914	20110602	20110729	20090812-20110811	D09-800-JG-15	
WCH4	CH4 9261 A	31421	20110602	20110822	20100823-20110822	C2010-0018051	
		31425	20110822	20111101	20110603-20120602	L1106-104	
T	TT 9261 A	080625360	20110602	20110809	20100822-20110821	C1008-615	
		080625355 ^A	20110809	20111101	20110808-20120807	11/1867	
	TT 9261 B	080625355	20110602	20110810	20100822-20110821	C1008-619	
		080625360 ^A	20110810	20111101	20110809-20120808	11/1870	
	TT 9391	080625397	20110602	20110809	20100822-20110821	C1008-618	
		100208523 ^A	20110809	20111101	20110808-20120807	11/1875	
	TT 9491	080625432	20110602	20110809	20100822-20110821	C1008-617	
		080625400 ^A	20110809	20111101	20110808-20120807	11/1868	
	TT 9591	080625347	20110602	20110809	20100822-20110821	C1008-616	
		090536657 ^A	20110809	20111101	20110808-20120807	11/1876	
	ETT 9001	100208515	20110602	20110808	20100922-20110921	10/2366	
		090536658 ^A	20110808	20111101	20110317-20120316	11/0541	
	ETT 9002	100208537	20110602	20110808	20100922-20110921	10/2371	
		090543121 ^A	20110808	20111101	20110317-20120316	11/0542	
	ETT 9003	100208540	20110602	20110808	20100922-20110921	10/2369	
		090536683 ^A	20110808	20111101	20110317-20120316	11/0544	
	ETT 9004	100208541	20110602	20110808	20100922-20110921	10/2370	
		090543120 ^A	20110808	20111101	20110317-20120316	11/0543	
P	PT 9261 A	100211340	20110602	20111101	20110329-20120328	11/0656	
		100098212	20110602	20111101	20110329-20120328	11/0657	
	PT 9261 B	5466002	20110602	20110626	20100630-20110629	L1007-092	
		5466080 ^A	20110626	20111101	20110614-20120613	L1106-158	
	PT 9391	5466003	20110602	20110626	20100630-20110629	L1007-093	
		5466089 ^A	20110626	20111101	20110614-20120613	L1106-159	
	PT 9491	5466004	20110602	20110626	20100630-20110629	L1007-094	
		5466010 ^A	20110626	20111101	20110614-20120613	L1106-155	
	PT 9591	5466006	20110602	20110626	20100630-20110629	L1007-095	
		5466007 ^A	20110626	20111101	20110614-20120613	L1106-156	
	FPT 9001	5466033	20110602	20110626	20100630-20110629	L1007-096	
		5466015 ^A	20110626	20111101	20110614-20120613	L1106-157	
	EPT 9002	02166515	20110602	20111101	20101116-20111115	C1011-354	
	EPT 9003	02300672	20110602	20111101	20101116-20111115	C1011-355	
	EPT 9004	02300673	20110602	20111101	20101116-20111115	C1011-356	
	EPT 9005	02300674	20110602	20111101	20101116-20111115	C1011-357	
	FPT 9006	02150753	20110602	20111101	20101220-20111219	P02760	
	EPT 9006	02150750	20110602	20111101	20101220-20111219	P02758	

Name	Tag No.	Serial No.	Equipment Start Date	Equipment End Date	Calibration Certification Validity Period	Certificate Reference
EL _{export}	Primary	201005194 - PEA 15850695	20110602	20110712	20100719-20110718	-
		205610138 - PEA 19936995 ^A	20110712	20110712	20110707-20120706	-
		201005194 - PEA 15850695 ^B	20110712	20111101	20110712-20120711	-
	Back-up	201007272 - PEA 15852773	20110602	20110713	20100719-20110718	-
		205610138 - PEA 19936995 ^A	20110713	20110713	20110707-20120706	-
		201007272 - PEA 15852773 ^B	20110713	20111101	20110713-20120712	-
EL _{import}	Primary	201006718 - PEA 15852219	20110602	20110712	20101115-20111114	-
		205610055 - PEA 19936912 ^A	20110712	20110712	20110707-20120706	-
		201006718 - PEA 15852219 ^B	20110712	20111101	20110712-20120711	-
	Back-up	201005191 - PEA 15850692	20110602	20110713	20100719-20110718	-
		205610055 - PEA 19936912 ^A	20110713	20110713	20110707-20120706	-
		201005191 - PEA 15850692 ^B	20110713	20111101	20110713-20120712	-
T _{Flare}	TTC 9393 A	090326010	20110602	20110616	20100825-20110824	10/2051
		22641C/2A ^A	20110616	20111101	20110105-20110104	18706-2A
	TTC 9393 B	090329544	20110602	20110809	20100906-20110905	H2010-0018860
		090329544 ^A	20110809	20110829	20110809-20120808	11/1863
		22641C/3A ^A	20110829	20111101	20110105-20110104	18706-3A
	TTC 9393 C	090326007	20110602	20110809	20100825-20110824	10/2058
		090329527 ^A	20110809	20111101	20110809-20120808	11/1861
	TTC 9493 A	22641C/1A	20110602	20111101	20110105-20110104	18706-1A
	TTC 9493 B ^D	080614289	20110602	20110809	20100825-20110824	10/2055
		080614305 ^E	20110922	20111101	20110907-20110906	11/2185
	TTC 9493 C ^D	080614373	20110602	20110809	20100816-20110815	10/1815
		080614306 ^E	20110922	20111101	20110907-20110906	11/2184
	TTC 9593 A	090326013	20110602	20110810	20100816-20110815	10/1820
		080614323 ^A	20110810	20111101	20110809-20120808	11/1896
	TTC 9593 B	090326012	20110602	20110810	20100816-20110815	10/1819
		080614321 ^A	20110810	20111101	20110809-20120808	11/1898
	TTC 9593 C	090326009	20110602	20110810	20100816-20110815	10/1818
		080614320 ^A	20110810	20111101	20110809-20120808	11/1897

Note : A : Instrument installed during the monitoring period to replace an instrument that was due for calibration
B : Instrument installed during the monitoring period and removed for calibration, then reinstalled following onsite calibration
C : V-Cone FT 9261 A was removed for calibration and did not operate from 20110823 during this monitoring period.
D : Flare # 2 did not operate during Thermocouple damage from 20110809 to 20110922
E : This instrument was installed during the monitoring period to replace an instrument that was damaged
F : V-Cone FT 9261 B was removed for calibration and re-installed 20110823

Annex F. Special Events Table and Missing CDM Data

Start Time (UTC)	Finish Time (UTC)	Event/Cause	Impact on ER Calculation
04/06/11 0:16	04/06/11 0:54	Power Plant Grid connection failures	No methane destruction by the project (MD project = 0)
04/06/11 0:16	04/06/11 7:24	Engine 3 schedule maintenance 8000 OPH	No methane destruction by the Engine 3
04/06/11 7:35	04/06/11 10:07	Stopped Engine 2 for lube oil changing	No methane destruction by the Engine 2
05/06/11 6:33	05/06/11 9:13	Stopped Engine 4 for lube oil changing	No methane destruction by the Engine 4
06/06/11 7:38	06/06/11 8:40	Engine 3 trip due to generator reverse power	No methane destruction by the Engine 3
06/06/11 9:43	06/06/11 11:56	Stopped Engine 3 for change and clean spark plug	No methane destruction by the Engine 3
09/06/11 4:07	09/06/11 14:40	Pre-treatment fault – high moisture content tripped the power plant	No methane destruction by the project (MD project = 0)
11/06/11 2:20	11/06/11 7:06	Engine 1 schedule maintenance 8000 OPH and lube oil changing	No methane destruction by the Engine 1
12/06/11 1:30	12/06/11 5:55	Engine 4 schedule maintenance 8000 OPH	No methane destruction by the Engine 4
13/06/11 4:28	13/06/11 9:29	Stopped Engine 1 for check	No methane destruction by the Engine 1
16/06/11 8:00	16/06/11 8:17	Power Plant Grid connection failures	No methane destruction by the project (MD project = 0)
16/06/11 22:18	16/06/11 23:59	Engine 1 trip due to leanox controller deviation high	No methane destruction by the Engine 1
18/06/11 2:00	18/06/11 6:00	Engine 2 schedule maintenance 8000 OPH	No methane destruction by the Engine 2
19/06/11 2:42	19/06/11 5:33	Stopped Engine 3 for lube oil changing	No methane destruction by the Engine 3
25/06/11 1:33	25/06/11 6:49	Stopped Engine 5 for lube oil changing	No methane destruction by the Engine 5
29/06/11 10:02	29/06/11 10:50	Power Plant Grid connection failures	No methane destruction by the project (MD project = 0)
05/07/11 16:36	05/07/11 18:46	Power Plant trip due to gas collection system	No methane destruction by the project (MD project = 0)
07/07/11 8:05	07/07/11 10:10	Stopped Engine 3 for cleaning all spark plug	No methane destruction by the Engine 3
08/07/11 4:32	08/07/11 5:01	Low CH ₄ % tripped the power plant	No methane destruction by the project (MD project = 0)
08/07/11 23:34	09/07/11 3:53	Stopped Engine 2 for lube oil changing	No methane destruction by the Engine 2
09/07/11 4:01	09/07/11 6:30	Stopped Engine 4 for lube oil changing	No methane destruction by the Engine 4
09/07/11 7:15	09/07/11 10:10	Stopped Engine 6 for lube oil changing	No methane destruction by the Engine 6
10/7/11 9:44	10/7/11 10:22	Low CH ₄ % tripped the power plant	No methane destruction by the project (MD project = 0)
11/7/11 3:32	11/7/11 3:53	Low CH ₄ % tripped the power plant	No methane destruction by the project (MD project = 0)
11/7/11 18:19	11/7/11 19:34	Power Plant trip due to gas collection system	No methane destruction by the project (MD project = 0)
12/7/11 6:45	12/7/11 6:56	Power Plant trip due to gas collection system	No methane destruction by the project (MD project = 0)

Start Time (UTC)	Finish Time (UTC)	Event/Cause	Impact on ER Calculation
12/07/11 7:21	12/07/11 7:29	Power Plant trip due to gas collection system	No methane destruction by the project (MD project = 0)
13/07/11 2:39	13/07/11 3:17	Shutdown for Calibration IPMS and EPMS By PEA	No methane destruction by the project (MD project = 0)
13/07/11 6:46	13/07/11 7:18	Shutdown for Calibration IPMS and EPMS By PEA	No methane destruction by the project (MD project = 0)
14/07/11 6:04	14/07/11 7:25	Pre-treatment fault – low suction pressure	No methane destruction by the project (MD project = 0)
15/07/11 14:15	16/07/11 8:41	Stopped Engine 1 for check exhaust gas temperature deviation high cylinder 5, cylinder 2 and cylinder 1	No methane destruction by the Engine 1
17/07/11 8:53	17/07/11 10:52	Stopped Engine 1 for lube oil changing	No methane destruction by the Engine 1
18/7/11 2:06	18/7/11 2:28	Pre-treatment fault – low suction pressure	No methane destruction by the project (MD project = 0)
19/7/11 17:20	19/7/11 19:09	Power Plant trip due to gas collection system	No methane destruction by the project (MD project = 0)
21/7/11 11:47	21/7/11 12:27	Pre-treatment fault – low suction pressure	No methane destruction by the project (MD project = 0)
21/7/11 19:21	21/7/11 20:06	Pre-treatment fault – low suction pressure	No methane destruction by the project (MD project = 0)
21/7/11 23:36	22/7/11 1:04	Engine 2 trip due to exhaust gas temperature deviation high cylinder 20	No methane destruction by the Engine 2
22/7/11 13:14	22/7/11 14:37	Engine 3 trip due to fuel mixture temperature deviation high	No methane destruction by the Engine 3
22/7/11 16:26	23/7/11 8:40	Stopped Engine 3 for valve voeaked, cylinder 15 measuring signal failure and change cylinder head 15	No methane destruction by the Engine 3
23/7/11 2:00	23/7/11 4:35	Power Plant Maintenance (remove flame arrestor element)	No methane destruction by the project (MD project = 0)
24/7/11 6:22	24/7/11 7:42	Stopped Engine 3 for lube oil changing	No methane destruction by the Engine 3
28/7/11 19:05	28/7/11 19:43	Power Plant trip due to gas collection system	No methane destruction by the project (MD project = 0)
28/7/11 21:36	29/7/11 1:44	Engine 2 trip due to oil filter difference pressure high	No methane destruction by the Engine 2
29/7/11 2:30	29/7/11 4:12	Engine 2 trip due to fuel mixture temperature deviation high	No methane destruction by the Engine 2
30/7/11 8:43	30/7/11 10:01	Stopped Engine 2 for change cooling water and inter cooler	No methane destruction by the Engine 2
31/7/11 3:34	31/7/11 9:33	Stopped Engine 5 for lube oil changing	No methane destruction by the Engine 5
07/31/11 15:49	07/31/11 17:21	Engine 3 trip due to exhaust gas temperature deviation high	No methane destruction by the Engine 3
31/7/11 17:58	31/7/11 20:10	Engine 2 trip due to fuel mixture temperature deviation high	No methane destruction by the Engine 2
01/08/11 5:48	15/08/11 9:48	De-coking of engine 2	No methane destruction by the Engine 2
02/08/11 3:37	02/08/11 4:45	Stopped Engine 1 for repair the door	No methane destruction by the Engine 1
03/08/11 11:41	03/08/11 12:41	Power Plant trip due to gas collection system	No methane destruction by the project (MD project = 0)
04/08/11 14:58	04/08/11 16:19	Engine 5 trip due to ignition system failure	No methane destruction by the Engine 5

Start Time (UTC)	Finish Time (UTC)	Event/Cause	Impact on ER Calculation
05/08/11 9:58	05/08/11 11:05	Engine 5 trip due to ignition system failure	No methane destruction by the Engine 5
08/08/11 2:24	08/08/11 6:08	Stopped Engine 4 for lube oil changing	No methane destruction by the Engine 4
12/08/11 13:07	12/08/11 16:24	Engine 4 trip due to exhaust gas temperature deviation high cylinder 6	No methane destruction by the Engine 4
15/08/11 7:08	15/08/11 10:23	Engine 5 schedule maintenance 2000 OPH	No methane destruction by the Engine 5
16/08/11 6:35	16/08/11 9:56	Stopped Engine 1 for lube oil changing	No methane destruction by the Engine 1
16/08/11 9:21	16/08/11 10:22	Engine 2 trip due to power plant container emergency stop	No methane destruction by the Engine 2
16/08/11 11:15	16/08/11 11:27	Pre-treatment fault – low suction pressure	No methane destruction by project (MD project=0)
16/08/11 14:21	16/08/11 15:08	Gas collection system failure	No methane destruction by project (MD project=0)
16/08/11 14:21	17/08/11 8:29	Engine 6 trip due to failure auxiliaries	No methane destruction by the Engine 6
19/08/11 19:22	19/08/11 20:26	Engine 4 trip due to exhaust gas temperature deviation high cylinder 7 and change spark plug cylinder 7	No methane destruction by the Engine 4
20/08/11 1:46	20/08/11 8:24	Stopped Engine 6 for lube oil changing	No methane destruction by the Engine 6
20/08/11 12:47	20/08/11 13:52	Gas collection system failure	No methane destruction by project (MD project=0)
22/08/11 1:39	26/08/11 6:57	De-coking of engine 3	No methane destruction by the Engine 3
23/08/11 3:24	23/08/11 3:28	Manual shut down	No methane destruction by project (MD project=0)
24/08/11 7:53	24/08/11 8:00	Pre-treatment fault – low suction pressure	No methane destruction by project (MD project=0)
24/08/11 11:29	24/08/11 11:32	Pre-treatment fault – low suction pressure	No methane destruction by project (MD project=0)
24/08/11 16:31	24/08/11 18:30	Engine 5 trip due to ignition system failure	No methane destruction by the Engine 5
25/08/11 16:32	25/08/11 17:27	Gas collection system failure	No methane destruction by project (MD project=0)
25/08/11 18:21	25/08/11 20:11	Engine 1 trip due to leanox controller deviation high	No methane destruction by the Engine 1
25/08/11 18:21	25/08/11 20:31	Engine 2 trip due to leanox controller deviation high	No methane destruction by the Engine 2
26/08/11 18:18	26/08/11 19:22	Engine 4 trip due to fuel mixture temperature deviation high	No methane destruction by the Engine 4
27/08/11 15:31	27/08/11 16:29	Gas collection system failure	No methane destruction by project (MD project=0)
28/08/11 14:23	28/08/11 16:29	Engine 4 trip due to exhaust gas temperature deviation high cylinder 19	No methane destruction by the Engine 4
28/08/11 14:51	28/08/11 15:17	Pre-treatment fault	No methane destruction by project (MD project=0)
28/08/11 14:52	29/08/11 4:36	Stopped Engine 5 for trouble after battery change adjustment	No methane destruction by the Engine 5
28/08/11 14:52	29/08/11 3:17	Engine 6 trip due to auxilaly failure check	No methane destruction by the Engine 6
29/08/11 17:24	29/08/11 19:03	Engine 4 trip due to exhaust gas temperature deviation high cylinder 12	No methane destruction by the Engine 4
31/8/11 5:29	31/8/11 6:37	Pre-treatment fault – low suction pressure	No methane destruction by project (MD project=0)
03/09/11 4:12	03/09/11 8:13	Stopped Engine 4 for lube oil changing	No methane destruction by the Engine 4
04/09/11 6:09	04/09/11 9:02	Stopped Engine 2 for lube oil changing	No methane destruction by the Engine 2
05/09/11 1:32	09/09/11 4:10	De-coking of engine 1	No methane destruction by the Engine 1
06/09/11 9:28	07/09/11 4:57	Power Plant Grid connection failures (Feeder PEA fail and Switch gear have problem)	No methane destruction by the project (MD project = 0)

Start Time (UTC)	Finish Time (UTC)	Event/Cause	Impact on ER Calculation
10/9/11 9:50	10/9/11 10:03	Pre-treatment fault – and landfill site power cut	No methane destruction by the project (MD project = 0)
10/9/11 10:47	10/9/11 11:08	Pre-treatment fault – and landfill site power cut	No methane destruction by the project (MD project = 0)
11/9/11 6:43	11/9/11 8:17	Engine 5 trip due to ignition system failure	No methane destruction by the Engine 5
12/9/11 13:26	12/9/11 14:45	Engine 5 trip due to ignition system failure	No methane destruction by the Engine 5
12/9/11 14:57	13/9/11 2:20	Engine 5 trip due to ignition system failure	No methane destruction by the Engine 5
15/9/11 3:45	15/9/11 12:42	Power Plant Maintenance (repair switch gear and replace flame arrestor)	No methane destruction by the project (MD project = 0)
15/9/11 14:45	15/9/11 16:36	Engine 6 trip due to room temperature high	No methane destruction by the Engine 6
18/9/11 23:15	18/9/11 23:21	Engine trips due to switch gear failure	No methane destruction by the engines (MD electricity =0)
19/9/11 2:39	19/9/11 2:48	Pre-treatment fault – low suction pressure	No methane destruction by the engines (MD electricity =0)
21/09/11 13:01	21/09/11 14:10	Engine 5 trip due to ignition system failure	No methane destruction by the Engine 5
22/09/11 9:47	22/09/11 11:07	Engine 5 trip due to ignition system failure	No methane destruction by the Engine 5
23/09/11 2:12	23/09/11 4:56	Stopped Engine 6 for lube oil changing	No methane destruction by the Engine 6
23/09/11 10:34	23/09/11 11:59	Engine 6 trip due to leanox controller deviation high	No methane destruction by the Engine 6
25/09/11 2:36	25/09/11 4:51	Stopped Engine 1 for lube oil changing	No methane destruction by the Engine 1
25/09/11 5:53	25/09/11 6:09	Pre-treatment fault – low suction pressure	No methane destruction by the engines (MD electricity =0)
26/09/11 0:42	30/09/11 2:34	De-coking of engine 4	No methane destruction by the Engine 4
28/09/11 14:39	28/09/11 15:42	Power Plant Grid connection failures	No methane destruction by the project (MD project = 0)
28/09/11 17:13	28/09/11 18:11	Engine 1 trip due to main failures	No methane destruction by the Engine 1
28/09/11 17:14	28/09/11 18:11	Engine 2 trip due to main failures	No methane destruction by the Engine 2
28/09/11 17:14	28/09/11 18:11	Engine 3 trip due to main failures	No methane destruction by the Engine 3
28/09/11 17:14	28/09/11 17:19	Engine 6 trip due to main failures	No methane destruction by the Engine 6
30/09/11 4:23	30/09/11 8:09	Engine 4 trip due to leanox controller deviation high	No methane destruction by the Engine 4
1/10/11 2:20	1/10/11 4:41	Stopped Engine 3 for lube oil changing	No methane destruction by the Engine 3
1/10/11 4:48	1/10/11 9:25	Stopped Engine 5 for lube oil changing	No methane destruction by the Engine 5
5/10/11 2:34	5/10/11 10:04	Engine 2 schedule maintenance 10,000 OPH	No methane destruction by the Engine 2
5/10/11 4:41	5/10/11 7:21	Engine 3 trip due to gas collection system	No methane destruction by the Engine 3
5/10/11 4:41	5/10/11 8:01	Engine 5 trip due to gas collection system	No methane destruction by the Engine 5
5/10/11 4:41	5/10/11 4:47	Power Plant trip due to gas collection system	No methane destruction by the project (MD project = 0)
8/10/11 6:34	8/10/11 8:22	Stopped Engine 4 for lube oil changing	No methane destruction by the Engine 4

Start Time (UTC)	Finish Time (UTC)	Event/Cause	Impact on ER Calculation
8/10/11 19:21	8/10/11 20:14	Power Plant trip due to gas collection system	No methane destruction by the project (MD project = 0)
9/10/11 1:26	10/10/11 1:45	Engine 6 cannot start due to alarm failure auxiliaries	No methane destruction by the Engine 6
11/10/11 3:52	11/10/11 3:54	Power Plant trip due to gas collection system	No methane destruction by the project (MD project = 0)
11/10/11 5:11	11/10/11 5:25	Power Plant trip due to gas collection system	No methane destruction by the project (MD project = 0)
15/10/11 13:44	15/10/11 13:55	Power Plant trip due to gas collection system	No methane destruction by the project (MD project = 0)
15/10/11 15:51	15/10/11 16:22	Power Plant trip due to gas collection system	No methane destruction by the project (MD project = 0)
16/10/11 14:48	16/10/11 15:27	Power Plant trip due to gas collection system	No methane destruction by the project (MD project = 0)
21/10/11 6:21	21/10/11 7:27	Stopped Engine 4 for change V-Cone	No methane destruction by the Engine 4
22/10/11 5:18	22/10/11 6:22	Stop Power Plant for Install short circuit terminal at TOU meter	No methane destruction by the project (MD project = 0)
26/10/11 1:27	26/10/11 1:47	Power Plant Grid connection failures	No methane destruction by the project (MD project = 0)
29/10/11 6:37	29/10/11 8:35	Stopped Engine 1 for lube oil changing	No methane destruction by the Engine 1
30/10/11 7:13	30/10/11 7:23	Power Plant Grid connection failures	No methane destruction by the project (MD project = 0)
31/10/11 18:43	31/10/11 20:05	Engines trip due to control failure	No methane destruction by the Gensets (MD electricity =0)