Monitoring report form
(Version 04.0)

MONITORING REPORT	
Title of the project activity	Modelo del Callao Landfill Gas Capture and Flaring System
Reference number of the project activity	5619
Version number of the monitoring report	1
Completion date of the monitoring report	18/11/2014
Registration date of the project activity	20/08/2012
Monitoring period number and duration of this monitoring period	1st Monitoring Report covering from 20/08/2012 to 19/08/2014 (both days included)
Project participant(s)	PETRAMAS S.A.C.
Host Party(ies)	Peru
Sectoral scope and selected methodology(ies), and where applicable, applied standardized baseline(s)	Sectoral scope: 13: Waste handling and disposal Methodologies: ACM0001 ver. 11 - Consolidated baseline and monitoring methodology for landfill gas project activities
Estimated amount of GHG emission reductions or net anthropogenic GHG removals by sinks for this monitoring period in the registered PDD	93,018 tCO_2e
Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period	122,057 tCO_2e
Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved during the period up to 31 December 2012(if applicable)	21,268 tCO_2e
Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved during the period from 1 January 2013 onwards (if applicable).	100,789 tCO_2e

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

a) Purpose of the project activity and the measures taken for GHG emission reductions or net anthropogenic GHG removals by sinks;

The objective of the "Modelo del Callao Landfill Gas Capture and Flaring System" project is to capture the landfill gas (LFG) and to flare it leading to GHG emissions reductions. The principal components of landfill gas are methane (CH_4) and carbon dioxide (CO_2), both of which are greenhouse gases (GHG) listed as such in the Kyoto Protocol.

b) Brief description of the installed technology and equipment;

Modelo del Callao landfill has an area of 54 hectares (ha) and receives around 1,250 tonnes (t) of municipal solid waste (MSW) daily from Callao and the district of San Martin de Porras. It is expected that the amount of MSW could be incremented according to markets conditions of the MSW management sector. Modelo del Callao landfill is anticipated to remain open at least until 2030 reaching an accumulated amount of municipal solid waste of 13,115,618 tones by year 2030. The landfill used to be an open dump managed by Callao's municipal company, ESLIMP. After 26 years of operations, on 10 November 2003, it was awarded as a concession to PETRAMAS S.A.C. The concession was regarded as a solution for converting the open dump into a landfill, and encompasses the management and final disposal of the MSW. The 30-year concession clearly establishes that the rights to the LFG belong to PETRAMAS. Modelo del Callao landfill is in compliance with all Peruvian regulations for Solid Waste Management (SWM) activities[1].

Prior to the start of the implementation of the project activity, there was no destruction of CH_4 through LFG combustion.

The installed equipment of the project activity is composed by a LFG Collection System and a LFG Combustion System (Flare). During the monitoring period, the LFG has been flared reducing methane (CH_4) emissions.

The project activity contributes to sustainable development by significantly improving local and global air quality by addressing greenhouse gas emission by reducing LFG exhaust from landfill activity which was previously vented to the atmosphere. Moreover, there is a technology transfer with the installation of state of the art enclosed flaring equipment and electricity generation which is not common practice in Peru.

c) Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods, etc.);

13/08/2012: Commissioning of the LFG Combustion System (Flare);
20/08/2012: Project registration date with Executive Board of United Nation Framework for Climate Change Convention (UNFCCC)
20/08/2012: Start date (day included) of the 1st Monitoring period;
19/08/2014: End date (day included) of the 1st Monitoring period.

d) Total GHG emission reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period.

The total emission reductions achieved during the first monitoring period from 20/08/2012 to 19/08/2014 (both days included) are 122,057 tCO_2e.

[1] Modelo del Callao's landfill activity is particularly regulated by the General Law of Solid Residues of 2002 (Law 27314).

A.2. Location of project activity

The project activity is located close to the right bank of the Chillon River at km 19 on the highway to the district of Ventanilla, province of Callao. The landfill has an area of 55 ha. The coordinates of the Project are Latitude -11.933383 South and Longitude -77.123583 West.

A.3. Parties and project participant(s)

Party involved ((host) indicates a host Party)	Private and/or public entity(ies) project participants (as applicable)	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
Peru	PETRAMAS S.A.C.	No

A.4. Reference of applied methodology and standardized baseline

The baseline and monitoring methodology applied for the proposed project activity is:

- ACM0001 ver. 11: "Consolidated baseline and monitoring methodology for landfill gas project activities". This methodology is used for estimation of emission reductions achieved from destruction of methane by the project.

Moreover, the methodology also refers to the latest versions of each of the following tools:

- Tool for the Demonstration and Assessment of Additionality (Version 5.2.1);
- Tool to Determine Project Emissions from Flaring Gases Containing Methane (Version 1);
- Tool to Calculate Baseline, Project and/or Leakage Emissions from Electricity
- Consumption (Version 1);
- Tool to Calculate Project or Leakage CO2 Emissions from Fossil Fuel Combustion (Version 2);
- Combined Tool to Identify the Baseline Scenario and Demonstrate Additionality (Version 4.0.0);
- Tool to Determine Methane Emissions Avoided from Disposal of Waste at a Solid Waste
- Disposal Site (Version 5.1.0) ; and,
- Tool to Calculate the Emission Factor for an Electricity System (Version 02.2.1).

The methodologies and tools applied to the project activity can be found in the UNFCCC webpage: http://cdm.unfccc.int/methodologies/PAmethodologies/approved

A.5. Crediting period of project activity

The first crediting period corresponding to this monitoring period commence from the date of registration that is from 20/08/2012 and last till 19/08/2019 (Renewable).

A.6. Contact information of responsible persons/ entities

Hired by PETRAMAS S.A.C. as CDM Consultant, the entity responsible for completing the Monitoring Report is ClimaLoop which is not a project participant. The responsible person is Sergi Cuadrat, Climate Change Mitigation Consultant of ClimaLoop. His contact details are:

Address: Travessera de Sant Pau, 1. Post Code 43202, Reus. Spain.
Tel: +34 636 075 989
Website: www.climaloop.com
Email: sergi.cuadrat@climaloop.com

SECTION B. Implementation of project activity

B.1. Description of implemented registered project activity

a) **Description of the installed technology, technical processes and equipments;**

PETRAMAS S.A.C. is a Peruvian private company that has provided since 1996 services of collection, transport and final waste disposal to several municipalities and businesses within the city of Lima. The company owns a large fleet of garbage trucks and two landfills; namely, Huaycoloro and Modelo del Callao.

The project activity includes the construction and operation of a landfill gas (LFG) collection and flare system. The purpose of LFG flaring is to safely dispose of the flammable constituents, particularly methane, and to control odour nuisance, health risks and adverse environmental impacts. The installed equipment of the project activity is composed by a LFG Collection System and a LFG Combustion System (Flare) with the following characteristics:

- The LFG Collection System has been installed comprehensively over the closed areas of the landfill with approximately 30 vertical extraction wells of high density polyethylene pipes (HDPE). The wells have bene coupled to a high-density polyethylene pipe grid to transport the LFG to the flare station and LFG control plant.
- The LFG Combustion System is an automated station for the capture and combustion of LFG provided by John Zink Company. The combustion of LFG is in an enclosed flare (ZTOF Type). The maximum flow of LFG of the flare is 1500 SCFM (equivalent to 2411 Nm3/h). The LFG Combustion System includes an automatic flare station composed by blowers, moisture separator and enclosed flaring station, including the LFG measuring and recording equipment. The flaring station has destruction efficiency between 98% and 100%. The system is installed with a set of thermocouples that allows to control the temperature of the flame in order to guarantee the destruction efficiency of the system

A standard operation and maintenance (O&M) program for LFG collection and flaring equipment has been implemented according to equipment manufacturer.

The following diagram represents the technology applied in the “Modelo del Callao Landfill Gas Capture and Flaring System” project:

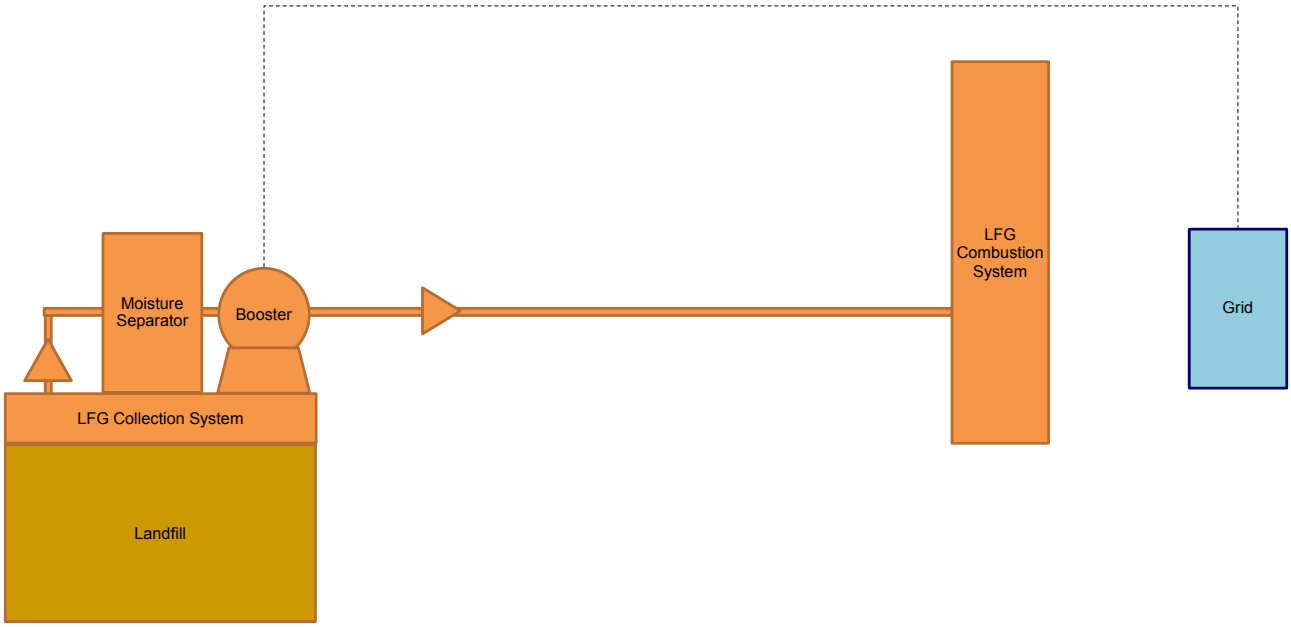

Figure 1. Diagram of the technology applied in the project activity.

b) **Information on the implementation and actual operation of the project activity, including relevant dates (e.g. construction, commissioning, continued operation periods, etc.).**

During the monitoring period, the LFG has been was commissioned on 13/08/2012 and was operating by the date of CDM registration on 20/08/2012. The LFG has been continuously flared during the first monitoring period from 20/08/2012 to 19/08/2014 (both days included). Since its registration date, the project activity has been implemented and monitored as per the monitoring plan of the PDD, with continuous operation.

The LFG Combustion System of the "Modelo del Callao Landfill Gas Capture and Flaring System" project has been operational 93% of the monitoring period, as summarized in the following table:

Table 1. Information regarding the actual operation of the project activity

Monitoring Period Starts	Monitoring Period Ends	Days of Monitoring Period	Days of Compliance Flare
20/08/2012	31/08/2012	12.0	11.8
01/09/2012	30/09/2012	30.0	29.4
01/10/2012	31/10/2012	31.0	30.5
01/11/2012	30/11/2012	30.0	25.8
01/12/2012	31/12/2012	31.0	0.0
01/01/2013	31/01/2013	31.0	30.7
01/02/2013	28/02/2013	28.0	27.5
01/03/2013	31/03/2013	31.0	30.2
01/04/2013	30/04/2013	30.0	29.4
01/05/2013	31/05/2013	31.0	30.3
01/06/2013	30/06/2013	30.0	29.4
01/07/2013	31/07/2013	31.0	30.8
01/08/2013	31/08/2013	31.0	30.5
01/09/2013	30/09/2013	30.0	29.3
01/10/2013	31/10/2013	31.0	30.9
01/11/2013	30/11/2013	30.0	29.7
01/12/2013	31/12/2013	31.0	31.0
01/01/2014	31/01/2014	31.0	30.8
01/02/2014	28/02/2014	28.0	27.4
01/03/2014	31/03/2014	31.0	30.5
01/04/2014	30/04/2014	30.0	28.2
01/05/2014	31/05/2014	31.0	30.3
01/06/2014	30/06/2014	30.0	28.6
01/07/2014	01/08/2014	31.0	30.5
01/08/2014	19/08/2014	19.0	18.4
20/08/2012	**19/08/2014**	**730.0**	**682.0**
Operational Compliance			**93%**

c) **Description of events or situations that occurred during the monitoring period that may impact the applicability of the methodology and how the issues resulting from these events or situations are being addressed:**

During the monitoring period, there were not major events or situations that affected the applicability of the methodology.

B.2. Post registration changes

B.2.1. Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline

Not applicable. The section is left blank intentionally.

B.2.2. Corrections

Not applicable. The section is left blank intentionally.

B.2.3. Permanent changes from registered monitoring plan, applied methodology or applied standardized baseline

Not applicable. The section is left blank intentionally.

B.2.4. Changes to project design of registered project activity

Not applicable. The section is left blank intentionally.

B.2.5. Changes to start date of crediting period

Not applicable. The section is left blank intentionally.

B.2.6. Types of changes specific to afforestation or reforestation project activity

Not applicable. The section is left blank intentionally.

SECTION C. Description of monitoring system

The following section provides a description of the monitoring system including data collection procedures (information flow including data generation, aggregation, recording, calculation and reporting), organizational structure, roles and responsibilities of personnel, and emergency procedures for the monitoring system for the "Modelo del Callao Landfill Gas Capture and Flaring System" project:

a) Line diagram showing all relevant monitoring points: The following line diagram shows the monitoring points applied in the project activity during the monitoring period:

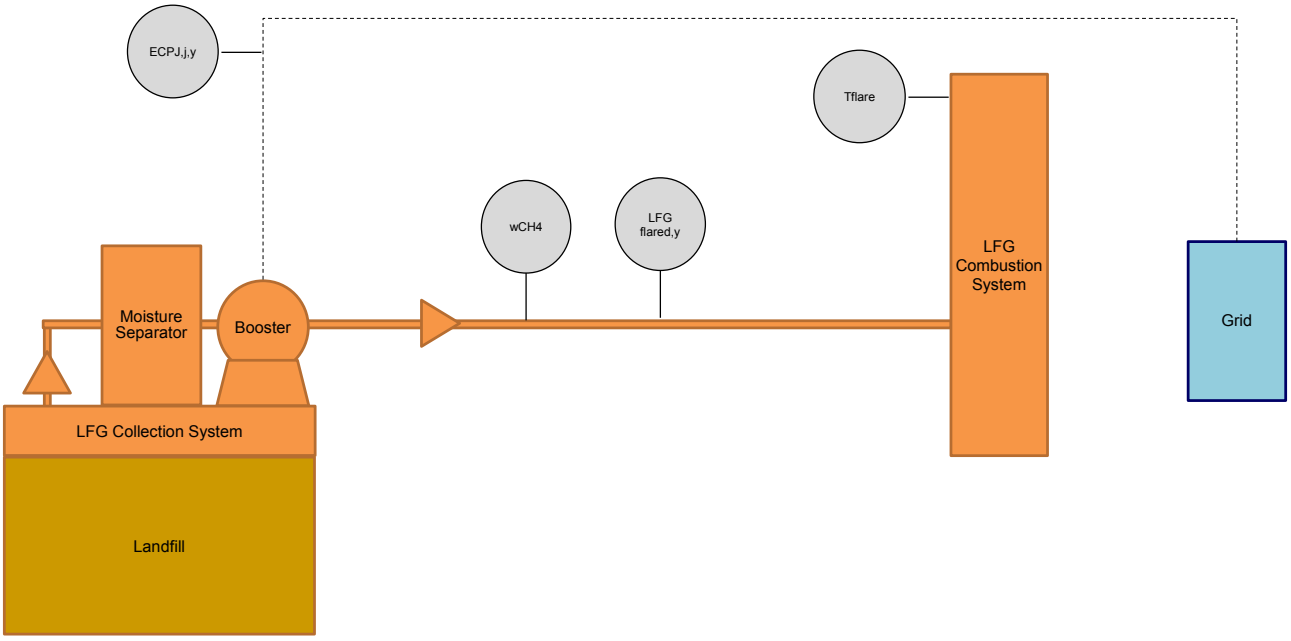

Figure 2. Line diagram showing all relevant monitoring points

b) Data collection procedures: The following points provide a description of the data collection procedures followed by the "Modelo del Callao Landfill Gas Capture and Flaring System" project during the monitoring period:

a) Data generation: The data generation for the project activity is using both Automatic Continuous and Manual Periodic Data Gathering System as follows:

i. Manual Periodic Data Gathering System: The following parameters are gathered manually in daily log sheets:

Table 2. Parameter gathered manually

Parameter	Data unit	Description of the parameter
$EC_{PJ,j,y}$	MWh	Quantity of electricity consumed by the project electricity consumption source j in year y

ii. Automatic Continuous Data Gathering System: In normal operating conditions, data has been recorded every minute electronically and it will be kept during the crediting period and two years after. The Automatic Continuous Data Gathering System aggregates monthly the raw data and transmits these through Excel file to PETRAMAS S.A.C. The following parameters are gathered automatically under such procedure:

Table 3. Parameters gathered automatically

Parameter	Data unit	Description of the parameter
$LFG_{flared,y}$	Nm^3	Amount of LFG flared at normal temperature and pressure
W_{CH4}	m^3 CH_4/m^3 LFG	Methane fraction in the LFG
T_{flare}	ºC	Temperature in the exhaust gas of the flare.

b) Data aggregation: The data is aggregated monthly in a Monthly Report which is presented to the Board of PETRAMAS S.A.C. as per internal procedures.

c) Data recording: The data which is gathered automatically is recorded in monthly spreadsheets while the data gathered manually is recorded both in paper forms and in spreadsheets. PETRAMAS S.A.C. has an in-house back-up system to record the data during the crediting period.

d) ER calculation and reporting: The gathered data is used to calculate the Emission Reductions (ER) as per the applicable methodology and the registered PDD and these are reported in the CDM-MR. Previous to this process, a QA/QC procedure is used with the aim of disregard any raw data in the same time interval which do not accomplish the operational condition that the T_{flare} should be above 500ºC.

The following scheme simplifies the Data collection procedures followed in “Modelo del Callao Landfill Gas Capture and Flaring System” project during the monitoring period:

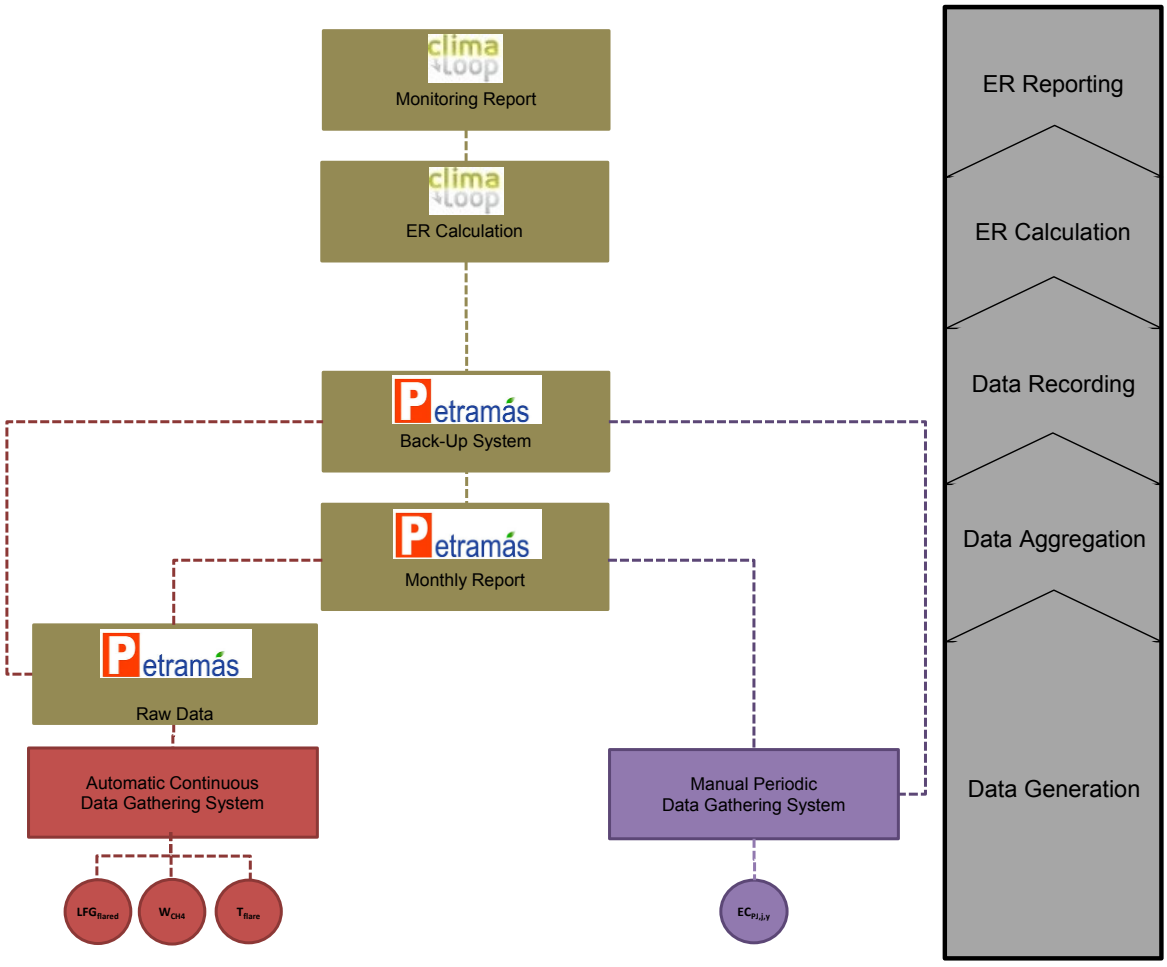

Figure 3. Scheme of the data collection procedures

As shown in the scheme above, the Data collection procedures in the “Modelo del Callao Landfill Gas Capture and Flaring System” project are divided in an Automatic Continuous Data Gathering System (which gathers the parameters $LFG_{flared,y}$, W_{CH4} and T_{flare}) and a Manual Periodic Data Gathering System (which gathers the parameter $EC_{PJ,j,y}$). Once the data is collected, it is aggregated in a monthly basis to report the expected CER generation to PETRAMAS S.A.C ´s Board. Once data is archived in back-up system of the facility, all data is sent to the CDM Consultant to conduct the ER calculations and the preparation of the Monitoring Report (CDM-MR).

c) **Organizational structure, roles and responsibilities:** The following list simplifies the responsibilities allocated of each role during the monitoring period:

Table 4. Roles and responsibilities in the project activity

Name	Role	Organization	Process Involvement
Ivan Garcilazo	Data Technician	PETRAMAS	Data Collection and Recording
Wiliam Segura	Senior Manager	PETRAMAS	Data Aggregation
Sergi Cuadrat	CDM Consultant	ClimaLoop	ER Calculation and Reporting
Jorge Zegarra	General Manager	PETRAMAS	Final Approval

The following scheme simplifies the Organizational Structure followed by the "Modelo del Callao Landfill Gas Capture and Flaring System" project:

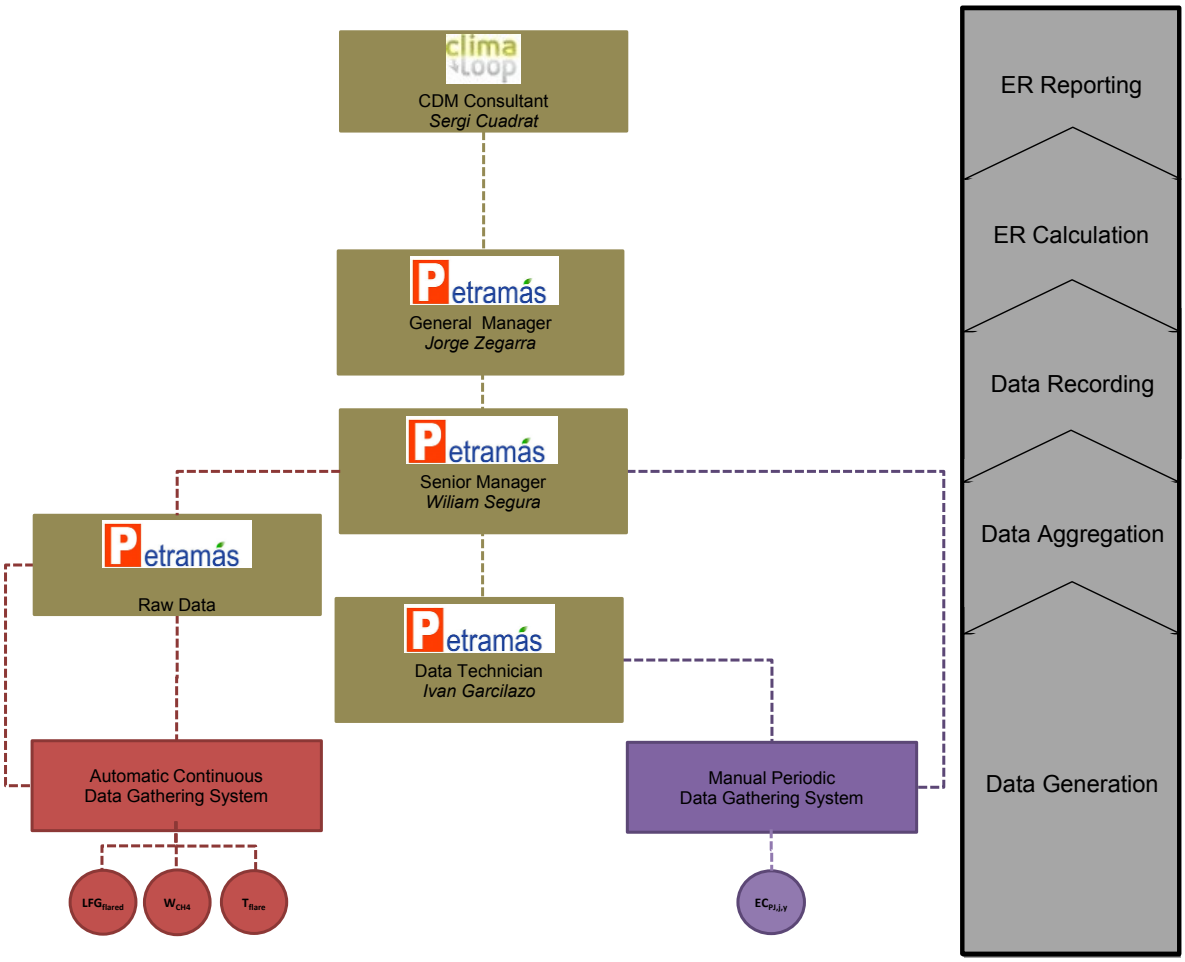

Figure 4. Organizational Structure

The Data Technician is the responsible to conduct the day-to-day operation of equipment and collects data under the Manual Periodic Data Gathering System. The Monitoring Technician supervises all CDM activities such as data collection, aggregation and recording and reports to the Senior Manager who supervises the project activity. Finally, the CDM Consultant is responsible for the CERs calculations and elaborates the Monitoring Report.

d) The responsibilities and authorities for monitoring and reporting: The following list simplifies the responsibilities allocated of each role during the monitoring period:

- Data Technician
  - ✓ Checks day-to-day operation of equipment.
  - ✓ Oversees the required maintenance as per predefined schedule.
  - ✓ Collects data under the Manual Periodic Data Gathering System (which gathers the parameter $CONS_{ELEC,PJ}$) in paper registries and transfers to electronic registries.
- Automatic Continuous Data Gathering System provider:
  - ✓ Aggregates the raw data gathered by the Automatic Continuous Data Gathering System.
  - ✓ Transmits raw data gathered in a monthly basis through Excel file to PETRAMAS.
  - ✓ Provides support to back-up the automatic raw data.
- Senior Manager
  - ✓ Supervises the general operations.
  - ✓ Supervises all CDM activities such as data collection, aggregation and recording.
  - ✓ Executes the calibration of equipment with procedures and frequency established.
  - ✓ Supervision of Automatic Continuous Data Gathering System.

- ✓ Ensures that data is collected as per the registered PDD.
- ✓ Manages the calibration of equipment with procedures and frequency established.
- ✓ Ensures proper Back-Up of the Raw Data and CDM Documentation.
- ✓ Sends Raw Data to CDM Consultant.

- General Manager
  - ✓ Supervises the project activity.
  - ✓ Takes major decisions when required (equipment repair/replacement, improvements, etc).

- CDM Consultant (ClimaLoop)
  - ✓ Performs the CERs calculations;
  - ✓ Performs internal audits of the project;
  - ✓ Elaborates the Monitoring Report;
  - ✓ Supports the project during the verification site visits.

e) Emergency procedures for the monitoring system:

The emergency procedures for the monitoring system in the “Modelo del Callao Landfill Gas Capture and Flaring System” project consist in daily checks of the project activity equipment and meters. If any problem occurs, the responsible personnel take the required action to solve the problem. If a malfunction on meters or equipment occurs, no CERs are claimed for the corresponding period.

SECTION D. Data and parameters

D.1. Data and parameters fixed ex ante or at renewal of crediting period

Data / Parameter:	Regulatory requirements relating to landfill gas projects
Unit:	N/A
Description:	Regulatory requirements relating to landfill gas
Source of data:	Publicly available information of the Host Country's regulatory requirements relating to landfill gas.
Value(s) applied):	0
Purpose of data:	Baseline emission calculations.
Additional comment:	Callao landfill is in compliance with all Peruvian regulations for Solid Waste Management ("SWM") activities. There have been no new developments in the regulatory requirements since registration. The information though recorded annually, is used for changes to the adjustment factor (AF) or directly $MD_{reg,y}$ at renewal of the credit period.

Data / Parameter:	GWP_{CH4}
Unit:	tCO_2e/tCH_4
Description:	Global warming potential of CH_4
Source of data:	Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories for the first commitment period and 25 for the second commitment period in accordance with Table 2.14 of the Fourth Assessment Report of the IPCCC.
Value(s) applied):	21 and 25
Purpose of data:	Baseline emission calculation
Additional comment:	GWP_{CH4} of methane has been updated from 21 (used to calculate ERs up to 31/12/2012) to 25 (used to calculate ERs from 01/01/2013)

Data / Parameter:	D_{CH4}
Unit:	tCH_4/m^3CH_4
Description:	Methane Density
Source of data:	ACM0001 version 11, adopted at EB 47, "Consolidated baseline and monitoring methodology for landfill gas project activities", page 14
Value(s) applied):	0.0007168
Purpose of data:	Baseline emission calculations
Additional comment:	N/A

Data / Parameter:	$BE_{CH4, SWDS,y}$
Unit:	tCO_2e
Description:	Methane generation from the landfill in the absence of the project activity at year y
Source of data:	Not applied
Value(s) applied):	Not applied
Purpose of data:	Not used
Additional comment:	Used for ex-ante estimation in the CDM-PDD.

Data / Parameter:	MD_{Hist}
Unit:	tCH_4
Description:	Amount of methane destroyed historically for the previous year before the start of project activity

Source of data:	Not applied
Value(s) applied):	Not applied
Purpose of data:	Not used
Additional comment:	Used for ex-ante estimation in the CDM-PDD.

Data / Parameter:	φ
Unit:	-
Description:	Model correction factor to account for model uncertainties
Source of data:	Not applied
Value(s) applied):	Not applied
Purpose of data:	Not used
Additional comment:	Used for ex-ante estimation in the CDM-PDD.

Data / Parameter:	**OX**
Unit:	Number
Description:	Oxidation factor (reflecting the amount of methane from solid waste disposal site (SWDS) that is oxidized in the soil or other material covering the waste)
Source of data:	Not applied
Value(s) applied):	Not applied
Purpose of data:	Not used
Additional comment:	Used for ex-ante estimation in the CDM-PDD.

Data / Parameter:	**MCF**
Unit:	-
Description:	Methane correction factor
Source of data:	Not applied
Value(s) applied):	Not applied
Purpose of data:	Not used
Additional comment:	Used for ex-ante estimation in the CDM-PDD.

Data / Parameter:	**DOC_j**
Unit:	-
Description:	Fraction of degradable organic carbon (by weight) in the waste type *j*.
Source of data:	Not applied
Value(s) applied):	Not applied
Purpose of data:	Not used
Additional comment:	Used for ex-ante estimation in the CDM-PDD.

Data / Parameter:	**K_j**
Unit:	-
Description:	Decay rate for the waste type *j*.
Source of data:	Not applied
Value(s) applied):	Not applied
Purpose of data:	Not used
Additional comment:	Used for ex-ante estimation in the CDM-PDD.

Data / Parameter:	**F**
Unit:	-

Description:	Fraction of methane in the SWDS gas (volume fraction)
Source of data:	Not applied
Value(s) applied):	Not applied
Purpose of data:	Not used
Additional comment:	Used for ex-ante estimation in the CDM-PDD.

Data / Parameter:	**DOC_f**
Unit:	-
Description:	Fraction of degradable organic carbon (DOC) that can decompose
Source of data:	Not applied
Value(s) applied):	Not applied
Purpose of data:	Not used
Additional comment:	Used for ex-ante estimation in the CDM-PDD.

Data / Parameter:	**$EF_{EL,j,y}$**
Unit:	tCO2/MWh
Description:	Emission factor of the grid
Source of data:	*Tool to Calculate Baseline, Project and/or Leakage Emissions from Electricity Consumption*
Value(s) applied):	Default Value: 1.3 tCO2/MWh
Purpose of data:	Not applied
Additional comment:	There is no captive power plant installed at the site and no on-site captive power plant exists. Therefore the electricity is purchased from the grid only.

Data / Parameter:	**W_{total}**
Unit:	Tons
Description:	The amount of waste disposed in the landfill sites in year x
Source of data:	Not applied
Value(s) applied):	Not applied
Purpose of data:	Not used
Additional comment:	Used for ex-ante estimation in the CDM-PDD.

Data / Parameter:	**CE**
Unit:	%
Description:	LFG collection efficiency
Source of data:	Not applied
Value(s) applied):	Not applied
Purpose of data:	Not used
Additional comment:	Used for ex-ante estimation in the CDM-PDD.

D.2. Data and parameters monitored

Data/Parameter	$LFG_{total,y}$
Unit	Nm^3
Description	Total amount of landfill gas captured at normal temperature and pressure
Measured/Calculated /Default	Not applicable
Source of data	Not applicable
Value(s) of monitored parameter	Not applicable
Monitoring equipment	$LFGt_{otal,y}$ is equal to $LFG_{flare,y}$, therefore, no separate flow meter has been installed.
Measuring/Reading/ Recording frequency	Not applicable
Calculation method (if applicable)	Not applicable
QA/QC procedures	Not applicable
Purpose of data	Not applicable
Additional comment	Not applicable

Data/Parameter	$LFG_{flared,y}$	
Unit	Nm^3	
Description	Amount of LFG flared at normal temperature and pressure	
Measured/Calculated /Default	Measured with a thermal mass flow meter	
Source of data	Monitoring equipment	
Value(s) of monitored parameter		16,355,412
Monitoring equipment	***Equipment 1***	
	Type	Thermo-mass Flowmeter
	Accuracy class	± 1% Full Scale
	Manufacturer	Thermal Instruments
	Model	62-9/9500
	Serial Number	2006174
	Calibration Frequency	12 months
	Date of last calibration	18/04/2012
	Validity of last calibration	18/04/2013
	Installation date	20/08/2012
	Validity of calibration runs from	Installation date
	Equipment 2	
	Type	Thermo-mass Flowmeter
	Accuracy class	± 1% Full Scale
	Manufacturer	Thermal Instruments
	Model	62-9/9500
	Serial Number	2012436
	Calibration Frequency	18 months

	Date of last calibration	15/11/2012
	Validity of last calibration	15/05/2014
	Installation date	01/04/2013
	Validity of calibration runs from	Installation date
Measuring/Reading/ Recording frequency	Measured continuously each minute.	
Calculation method (if applicable)	The Automatic Continuous Data Gathering System measures the maximum and minimum value of the parameter each minute so the value considered is the simple average between the two. As established by the manufacturer, the mass flow meter registers the volume in m3/h at 21.1°C and 1.013 bar. Therefore, the LFG flow should be converted at normal conditions (0°C and 1.013bar). In accordance with ACM0001 ver 11, the normalized density is 0.0007168 tCH_4/m^3 (which is the density of methane at 0 °C and 1.013 bar). In order to do so, since pressure is a constant in both conditions, Charles´s Law of ideal gasses is used to convert the volume registered by the meter to a volume in normal conditions, as follows: **Charles´s Law:** V1/T1 = V2/T2 Where V1: Flow measured V2: Flow Normalized T1: Temperature measured = 21.1°C (294.25K) T2 : Temperature Normalized= 0°C (273.15K) **Normalization equation:** V2 = (273.15 / 294.15) x V1 The value of the monitored value shown in this table represents the total value monitored during the period by adding the instantaneous readings taken each minute.	
QA/QC procedures	Flow meters are subject to a regular maintenance and testing regime to ensure accuracy.	
Purpose of data	Baseline emission calculation.	
Additional comment	Data will be kept for 2 years after end of crediting period or last issuance of CERs, whichever is later. The amount of landfill gas flared equals to the amount of landfill gas sent to the flare. Furthermore, $LFG_{flare,v}$ is equal to $LFG_{total,v,}$ therefore, the same flow meter has been used. Methane fraction of the landfill gas and LFG flow has been measured on the same basis (dry).	

Data/Parameter	**T**
Unit	ºC
Description	Temperature of the landfill gas
Measured/Calculated /Default	Not measured
Source of data	Not installed
Value(s) of monitored parameter	Not monitored
Monitoring equipment	Not installed
Measuring/Reading/ Recording frequency	Not measured. The flow meters automatically measure temperature and pressure, expressing LFG volumes in normalized cubic meters (Nm^3).

Calculation method (if applicable)	Not applicable.
QA/QC procedures	Not applicable.
Purpose of data	Not used. The flow meters automatically measure temperature and pressure, expressing LFG volumes in normalized cubic meters (Nm^3).
Additional comment	No separate monitoring of temperature is necessary when using flow meters that automatically measure temperature and pressure, expressing LFG volumes in normalized cubic meters (Nm^3).

Data/Parameter	**P**
Unit	Pa
Description	Pressure of the landfill gas
Measured/Calculated /Default	Not measured
Source of data	Not installed
Value(s) of monitored parameter	Not monitored
Monitoring equipment	Not installed
Measuring/Reading/ Recording frequency	Not measured. The flow meters automatically measure temperature and pressure, expressing LFG volumes in normalized cubic meters (Nm^3).
Calculation method (if applicable)	Not applicable.
QA/QC procedures	Not applicable.
Purpose of data	Not used. The flow meters automatically measure temperature and pressure, expressing LFG volumes in normalized cubic meters (Nm^3).
Additional comment	No separate monitoring of temperature is necessary when using flow meters that automatically measure temperature and pressure, expressing LFG volumes in normalized cubic meters (Nm^3).

Data/Parameter	**T_{flare}**	
Unit	^0C	
Description	Temperature in the exhaust gas of the flare.	
Measured/Calculated /Default	Measured	
Source of data	Thermocouples	
Value(s) of monitored parameter	871.01	
Monitoring equipment	***Equipment 1***	
	Type	Thermocouple
	Accuracy class	± 2.2° C or 0.75% of reading, whichever is greater
	Manufacturer	Thermo Sensors Corporation
	Model	494-92716-8-K-I600
	Serial Number	121826-1,2,3 and 4
	Calibration Frequency	12 months
	Date of last calibration	09/03/2012
	Validity of last calibration	10/08/2013
	Installation date	10/08/2012

	Validity of calibration runs from	Installation date
	Equipment 2	
	Type	Thermocouple
	Accuracy class	± 2.2° C or 0.75% of reading, whichever is greater
	Manufacturer	Thermo Sensors Corporation
	Model	494-92716-8-K-I600
	Serial Number	128042-2,3,4 and 5
	Calibration Frequency	12 months
	Date of last calibration	28/09/2012
	Validity of last calibration	20/02/2014
	Installation date	20/02/2013
	Validity of calibration runs from	Installation date
	Equipment 3	
	Type	Thermocouple
	Accuracy class	± 2.2° C or 0.75% of reading, whichever is greater
	Manufacturer	Thermo Sensors Corporation
	Model	494-92716-8-K-I600
	Serial Number	124264-1,2,3 and 4
	Calibration Frequency	12 months
	Date of last calibration	18/03/2011
	Validity of last calibration	28/09/2014
	Installation date	28/09/2013
	Validity of calibration runs from	Installation date
Measuring/Reading/ Recording frequency	Measured continuously each minute.	
Calculation method (if applicable)	The flare is considered to be operational if the T_{flare} is above 500 ºC. The Automatic Continuous Data Gathering System measures the maximum and minimum value of the parameter each minute so the value considered is the simple average between the two. The value of the monitored value shown in this table represents the weighted average value monitored during the period using the instantaneous readings taken each minute.	
QA/QC procedures	Temperature in the exhaust gas has been measured every minute using four thermocouples distributed along the flare stack.	
Purpose of data	Baseline emission calculation.	
Additional comment	Data will be kept for 2 years after end of crediting period or last issuance of CERs, whichever is later.	

Data/Parameter	**$MD_{BL,y}$ or AF**
Unit	% or tons
Description	Methane destroyed due to regulatory or other requirements
Measured/Calculated /Default	Measured
Source of data	Local and/or national authorities
Value(s) of monitored parameter	0
Monitoring equipment	Changes in regulatory requirements, relating to the baseline landfill(s) need to be monitored in order to update the adjustment factor (AF), or directly MD_{reg}.
Measuring/Reading/ Recording frequency	At the beginning of each crediting period.
Calculation method (if applicable)	Not applicable.

QA/QC procedures	Not applicable.
Purpose of data	Project emission calculation.
Additional comment	The AF was set at 0%. This value is justified based on the fact that the regulatory requirements do not indicate any specific amount of gas collection and destruction or utilization and that in practice, no amounts of LFG were flared before project implementation.

Data/Parameter	**$PE_{flare,y}$**
Unit	tCO_2
Description	Project emissions from flaring of the residual gas stream in year y
Measured/Calculated /Default	Calculated
Source of data	Calculated based on monitored values as per the "Tool to determine project emissions from flaring gases containing methane"
Value(s) of monitored parameter	13,562
Monitoring equipment	Calculated, based on monitored energy consumed by the project activity.
Measuring/Reading/ Recording frequency	Calculated continuously each minute.
Calculation method (if applicable)	The parameters used for determining the project emissions from flaring of the residual gas stream in year y will be monitored as per the "Tool to determine project emissions from flaring gases containing methane". The parameters used for the determination of $PE_{flare,y}$ when the monitoring exist are $FV_{RG,h}$, w_{CH4}, $fv_{i,h}$, $fv_{CH4.FG,h}$, t_{O2} and T_{flare}. When no records for monitoring exist, the default value for enclosed flare are selected and the flare efficiency in the hour *h* as: • 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*. During the monitoring period, no records for monitoring exist hence the default values for enclosed flare are selected.
QA/QC procedures	As per the "Tool to determine project emissions from flaring gases containing methane" and regular maintenance and testing regime in line with the manufacturer`s recommendations will ensure optimal operation of the flare.
Purpose of data	Project emission calculation.
Additional comment	Data will be kept for 2 years after end of crediting period or last issuance of CERs, whichever is later.

Data/Parameter	**w_{CH4}**
Unit	m^3 CH_4/m^3 LFG
Description	Methane fraction in the landfill gas

Measured/Calculated /Default	Measured continuously	
Source of data	Continuous Gas Analyzer	
Value(s) of monitored parameter		47.87%
Monitoring equipment	***Equipment 1***	
	Type	Continuous Analyzer
	Accuracy class	± 1% Full Scale
	Manufacturer	NOVA
	Model	910
	Serial Number	8456
	Calibration Frequency	12 months
	Date of last calibration	20/08/2012
	Validity of last calibration	20/08/2013
	Installation date	20/08/2012
	Validity of calibration runs from	Installation date
	Equipment 2	
	Type	Continuous Analyzer
	Accuracy class	± 1% Full Scale
	Manufacturer	Landtec
	Model	FAU
	Serial Number	1061
	Calibration Frequency	12 months
	Date of last calibration	09/11/2012
	Validity of last calibration	20/02/2014
	Installation date	20/02/2013
	Validity of calibration runs from	Installation date
	Equipment 3	
	Type	Continuous Analyzer
	Accuracy class	± 1% Full Scale
	Manufacturer	Landtec
	Model	FAU
	Serial Number	1061
	Calibration Frequency	12 months
	Date of last calibration	12/09/2013
	Validity of last calibration	20/11/2014
	Installation date	20/11/2013
	Validity of calibration runs from	Installation date
Measuring/Reading/ Recording frequency	Measured continuously each minute.	
Calculation method (if applicable)	The Automatic Continuous Data Gathering System measures the maximum and minimum value of the parameter each minute so the value considered is the simple average between the two. The value of the monitored value shown in this table represents the weighted average value monitored during the period using the instantaneous readings taken each minute.	
QA/QC procedures	The gas analyzer is subject to quarterly maintenance and testing to ensure accuracy, to be performed by the project developer according to the supplier's manual, to ensure the optimal conditions of the instrument.	
Purpose of data	Baseline emission calculation.	
Additional comment	Methane fraction of the landfill gas and LFG flow has been measured on the same basis (dry). Data will be kept for 2 years after end of crediting period or last issuance of CERs, whichever is later.	

Data/Parameter	$\mathbf{fv_{i,h}}$

Unit	-
Description	Volumetric fraction of component i in the residual gas in the hour h where i = CH_4, CO, CO_2, O_2,H_2, N_2
Measured/Calculated /Default	Measured continuously
Source of data	Continuous Gas Analyzer
Value(s) of monitored parameter	47.87%
Monitoring equipment	The methane concentration in the residual gas in the hour h ($\mathbf{fv_{CH4,h}}$) is measured as per the equipment set out for the parameter w_{CH4}
Measuring/Reading/ Recording frequency	Measured continuously each minute.
Calculation method (if applicable)	The Automatic Continuous Data Gathering System measures the maximum and minimum value of the parameter each minute so the value considered is the simple average between the two. The value of the monitored value shown in this table represents the weighted average value monitored during the period using the instantaneous readings taken each minute.
QA/QC procedures	The gas analyzer is subject to quarterly maintenance and testing to ensure accuracy, to be performed by the project developer according to the supplier's manual, to ensure the optimal conditions of the instrument.
Purpose of data	Baseline emission calculation.
Additional comment	Methane fraction of the landfill gas and LFG flow has been measured on the same basis (dry). Data will be kept for 2 years after end of crediting period or last issuance of CERs, whichever is later. As a simplified approach, project participants have only measured the methane content of the residual gas and consider the remaining part as N_2.

Data/Parameter	$\mathbf{fv_{CH4,FG,h}}$
Unit	mg/m^3
Description	Concentration of methane in the exhaust gas of the flare in dry basis at normal conditions in the hour h
Measured/Calculated /Default	Not used
Source of data	Not used
Value(s) of monitored parameter	Not monitored.
Monitoring equipment	Not monitored
Measuring/Reading/ Recording frequency	Measured continuously each minute.
Calculation method (if applicable)	When no records for monitoring exist, the default value for enclosed flare are selected as the flare efficiency in the hour *h* as: • 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*. During the monitoring period, no records for monitoring exist hence the default

	values for the combustion efficiency of the enclosed flare are selected.
QA/QC procedures	When no records for monitoring exist, the default value for enclosed flare are selected as the flare efficiency in the hour *h*
Purpose of data	Baseline emission calculation.
Additional comment	During the monitoring period, no records for monitoring exist hence the default values for the combustion efficiency of the enclosed flare are selected.

Data/Parameter	**$EC_{PJ,j,y}$**	
Unit	MWh	
Description	Quantity of electricity consumed by the project electricity consumption source j in year y (MWh/yr)	
Measured/Calculated /Default	Measured	
Source of data	Electricity Meter	
Value(s) of monitored parameter	279.215	
Monitoring equipment	***Equipment 1***	
	Type	Electricity Meter
	Accuracy class	0.2S
	Manufacturer	SATEC
	Model	PM175
	Serial Number	858728
	Calibration Frequency	Not applicable
	Date of last calibration	25/06/2010
	Validity of last calibration	18/11/2012
	Installation date	25/06/2010
	Validity of calibration runs from	Not applicable
Measuring/Reading/ Recording frequency	Measured continuously. The data used for the monitored parameter is sourced from the monthly invoices provided by the electricity company.	
Calculation method (if applicable)	The value of the monitored value shown in this table represents the total value monitored during the period by adding the monthly readings.	
QA/QC procedures	0.2 Precision as required by National Law when a power plant is connected to the national grid. Will be maintained and calibrated regularly by the project developer, following the supplier's manual.	
Purpose of data	Project emission calculation.	
Additional comment	Data will be kept for 2 years after end of crediting period or last issuance of CERs, whichever is later.	

Data/Parameter	**TDL_y**
Unit	-
Description	Average technical transmission and distribution losses for providing electricity from the grid.
Measured/Calculated /Default	Default
Source of data	"Tool to calculate baseline, project and/or leakage emissions from electricity consumptions"
Value(s) of monitored parameter	20%
Monitoring equipment	Not monitored.

Measuring/Reading/ Recording frequency	Not applicable
Calculation method (if applicable)	Not applicable
QA/QC procedures	Not applicable
Purpose of data	Project emission calculation
Additional comment	There is no captive power plant installed at the site and no on-site captive power plant exists. Therefore the electricity is purchased from the grid only. As such, the default value of Scenario A is applied.

Data/Parameter	**$PE_{EC,y}$**
Unit	tCO_2
Description	Project emissions from electricity consumption by the project activity during the year y
Measured/Calculated /Default	Calculated as per the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption"
Source of data	Calculated based on monitored values.
Value(s) of monitored parameter	152
Monitoring equipment	Calculated, based on monitored energy consumed by the project activity.
Measuring/Reading/ Recording frequency	Calculated continuously each minute.
Calculation method (if applicable)	The $EC_{PJ,i,y}$ as quantity of electricity consumed by the project electricity consumption source j in year y (MWh/yr) is multiplied by Emission factor for the grid in year t (0.45338 tCO_2/MWh) and by the factor (1+ TDL_y)
QA/QC procedures	As per the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption"
Purpose of data	Project emission calculation.
Additional comment	As per the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption"

Data/Parameter	**$FV_{RG,h}$**
Unit	Nm^3
Description	Total amount of landfill gas captured at normal temperature and pressure
Measured/Calculated /Default	See corresponding section for parameter $LFG_{flare,y}$
Source of data	See corresponding section for parameter $LFG_{flare,y}$
Value(s) of monitored parameter	See corresponding section for parameter $LFG_{flare,y}$
Monitoring equipment	$FV_{RG,h}$ is equal to $LFG_{flare,y}$, therefore, no separate flow meter has been installed.
Measuring/Reading/ Recording frequency	See corresponding section for parameter $LFG_{flare,y}$
Calculation method (if applicable)	See corresponding section for parameter $LFG_{flare,y}$
QA/QC procedures	See corresponding section for parameter $LFG_{flare,y}$

Purpose of data	See corresponding section for parameter $LFG_{flare,y}$
Additional comment	See corresponding section for parameter $LFG_{flare,y}$

Data/Parameter	$t_{O2,h}$
Unit	
Description	Volumetric fraction of O_2 in the exhaust gas of the flare in the hour h
Measured/Calculated /Default	Not used
Source of data	Not used
Value(s) of monitored parameter	Not monitored.
Monitoring equipment	Not monitored
Measuring/Reading/ Recording frequency	Measured continuously each minute.
Calculation method (if applicable)	When no records for monitoring exist, the default value for enclosed flare are selected as the flare efficiency in the hour *h* as: • 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*. During the monitoring period, no records for monitoring exist hence the default values for the combustion efficiency of the enclosed flare are selected.
QA/QC procedures	When no records for monitoring exist, the default value for enclosed flare are selected as the flare efficiency in the hour *h*
Purpose of data	Baseline emission calculation.
Additional comment	During the monitoring period, no records for monitoring exist hence the default values for the combustion efficiency of the enclosed flare are selected.

D.3. Implementation of sampling plan

Not applicable. The section is left blank intentionally.

SECTION E. Calculation of emission reductions or GHG removals by sinks

E.1. Calculation of baseline emissions or baseline net GHG removals by sinks

The following table summarizes the actual values used to calculate the baseline emissions (BE_y) with the corresponding results applying the formulae as per the registered PDD:

Table 5. Results and parameters used to calculate the Baseline Emissions

Data / Parameter:	Description	Source	Value	Unit
BE_y	Baseline Emissions			
$BE_y = (MD_{project,y} - MD_{reg,y}) \times GWP_{CH4}$		Eq 1 (page 19 PDD)	**122,209**	tCO_2e
$MD_{project,y}$	Amount of methane that would have been destroyed in project scenario			
$MD_{project,y} = MD_{flared,y}$		Eq 2 (page 19 PDD)	**5,051**	tCH_4
$MD_{flared,y}$	Methane destroyed by flaring			
$MD_{flared,y} = LFG_{flared,y} \times W_{CH4} \times D_{CH4} - (PE_{flare,y} / GWP_{CH4})$		Eq 3 (page 19 PDD)	**5,051**	tCH_4
$LFG_{flared,y}$	Amount of LFG flared	Monitored	**16,355,412**	Nm^3 LFG
W_{CH4}	Methane fraction in the LFG	Monitored	**47.87%**	m^3CH4/m^3LFG
D_{CH4}	Methane density at normal temperature and pressure	Default	**0.0007168**	tCH_4/Nm^3CH_4
T_{flare}	Temperature of the flare	Monitored	**871.01**	°C
$PE_{flare,y}$	Project emissions from flaring of the residual gas stream in year y			
$PE_{flare,y} = TM_{RG,h} * (1 - \eta_{flare,h}) * GWP_{CH4} / 1000$		Eq (8)	**13,562**	tCO2e
$TM_{RG,h}$	Mass flow rate of methane in the residual gas in the hour h			
$TM_{RG,h} = FV_{RG,h} * fv_{CH4,RG,h} * \rho_{CH4,n}$		Step 5. Eq (T.13)	**5,605,969**	kg
$FV_{RG,h}$	Volumetric flow rate of the residual gas	Monitored	**16,355,412**	Nm^3 LFG
$fv_{CH4,RG,h}$	Volumetric fraction of methane in the residual	Monitored	**47.87%**	m^3CH4/m^3LFG
$\rho_{CH4,n}$	Density of methane at normal conditions	Default	**0.716**	$kgCH_4/Nm^3CH_4$
$\eta_{flare,h}$	Flare efficiency in hour h	Default	**90.0%**	
GWPCH4	Global Warming Potential value of methane	Default	**21 and 25**	tCO2e/tCH4
$MD_{reg,y}$	Methane that would have been destroyed in the absence of the project due to regulatory requirement			
$MD_{reg,y} = MD_{project,y} \times AF$		Eq 3 (page 19 PDD)	**-**	tCH_4
$MD_{project,y}$	Amount of methane that would have been destroyed in project scenario	Monitored	**5,051**	tCH_4
AF	Adjustment factor (for methane destruction in the baseline)	Default	**0.0%**	
GWP_{CH4}	Global Warming Potential value for methane	Default	**21 and 25**	tCO_2e/tCH_4

E.2. Calculation of project emissions or actual net GHG removals by sinks

The following table summarizes the actual values used to calculate the project emissions (PE_y) with the corresponding results applying the formulae as per the registered PDD:

Table 6. Results and parameters used to calculate the Project Emissions

Data / Parameter:	Description	Source	Value	Unit
PE_y	Project Emissions			
$PEy = PE_{EC,y}$		Eq 16 (page 30 PDD)	**152**	tCO_2e
$PE_{EC,y}$	Emissions from consumption of electricity in the project case			
$PE_{EC,y} = EC_{PJ,y} * EF_{EL,j,y} * (1+TDL_y)$		Eq (page 31 PDD)	**152**	tCO_2e
$EC_{PJ,j,y}$	Quantity of electricity consumed by the project activity	Monitored	**279.215**	MWh
$EF_{EL,j,y}$	Emission factor for the grid in year	Calculated	**0.45338**	tCO2/MWh
TDL_y	Average technical transmission and distribution losses in the grid	Default	**20%**	

E.3. Calculation of leakage

The calculation does not need to consider leakage emissions, so $LE_y=0$

E.4. Summary of calculation of emission reductions or net anthropogenic GHG removals by sinks

The following table summarizes the actual values used to calculate the emission reductions (ERy) with the corresponding results applying the Equation (10) as per the registered PDD:

Item	Baseline emissions or baseline net GHG removals by sinks ($t CO_2e$)	Project emissions or actual net GHG removals by sinks ($t CO_2e$)	Leakage ($t CO_2e$)	Emission reductions or net anthropogenic GHG removals by sinks ($t CO_2e$)
Total	122,209	152	-	122,057

E.5. Comparison of actual emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD

Item	Values estimated in ex-ante calculation of registered PDD	Actual values achieved during this monitoring period
Emission reductions or GHG removals by sinks (t CO_2e)	93,018 [2]	122,057

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

The emission reductions derived from the yearly values stated in the registered CDM-PDD are shown in the following table:

Table 7. Comparison of actual emission reductions with estimates in registered PDD

Item		Values estimated in ex-ante calculation of registered PDD	Actual values achieved during this monitoring period
Year 2012	*From*	01/06/2012	20/08/2012
	To	31/12/2012	31/12/2012
	Days	214	134
	Emission reductions or GHG removals by sinks (t CO_2e)	23,995	21,268
	tCO2e/day	112	159
Year 2013	*From*	01/01/2013	01/01/2013
	To	31/12/2013	31/12/2013
	Days	365	365
	Emission reductions or GHG removals by sinks (t CO_2e)	45,073	66,335
	tCO2e/day	123	182
Year 2014	*From*	01/01/2014	01/01/2014
	To	31/12/2014	19/08/2014
	Days	365	232
	Emission reductions or GHG removals by sinks (t CO_2e)	51,793	34,455
	tCO2e/day	142	149

[2] The values in the ex-ante calculation of the CDM-PDD are 23,995 tCO2e for 2012 (214 days), 45,073 tCO2e for 2013 (365 days) and 51,793 tCO2e for 2014 (365 days). The daily average for 2012, 2013 and 2014 equate to 112, 123 and 142 tCO2e/day, respectively. The ex-ante estimation is calculated by multiplying each of the daily average for 2012, 2013 and 2014 by the days of the current monitored period (134, 365 and 232 days, respectively).

The actual emission reductions achieved during the current monitoring period are 31% higher than the emission reductions derived from the yearly values stated in the registered CDM-PDD due to the following three main reasons:

- As stated in the CDM-PDD, before year 2007, there was not reliable information about the accumulated waste disposed since it was an open dump. Therefore, the ex-ante calculation of the CDM-PDD did not take into account the historic data before year 2007 due to inconsistencies in the records and the aim of being conservative in the projections.

- Moreover, as stated in the CDM-PDD, the LFG collection efficiency of the landfill was estimated based on bibliographical sources, which estimated that the collection efficiency in a landfill is between 50 and 80%. So, to be conservative in the ex-ante calculation of the CDM-PDD the assumption of 50% collection efficiency was used. In case the ex-ante calculation of the CDM-PDD would have been used a LFG collection efficiency of the landfill of around 65%(31 % higher), the actual emission reductions achieved during the current monitoring period would have been the same as the emission reductions derived from the yearly values stated in the registered CDM-PDD.

- Finally, the GWP_{CH4} of methane used to calculate the actual emission reductions achieved during the current monitoring period has been updated from 21 (used to calculate ERs up to 31/12/2012) to 25 (used to calculate ERs from 01/01/2013) whereas the ex-ante calculation of the CDM-PDD was using 21 as the value of GWP_{CH4} of methane for the whole period.

The above argumentation explain the fact that more LFG than projected ex-ante has been collected and flared during the monitoring period hence the difference from estimated value in registered PDD.

E.7. Actual emission reductions or net anthropogenic GHG removals by sinks during the first commitment period and the period from 1 January 2013 onwards

Item	Actual values achieved up to 31 December 2012	Actual values achieved from 1 January 2013 onwards
Emission reductions or GHG removals by sinks (t CO_2e)	21,268	100,789

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Appendix 1. Contact information of project participants and responsible persons/ entities

Project participant and/or responsible person/ entity	☒ Project participant ☐ Responsible person/ entity for completing the CDM-MR-FORM
Organization name	PETRAMAS S.A.C
Street/P.O. Box	Av Tomas Marsano 2813- piso 8
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Country	Peru
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E-mail	informes@petramas.com
Website	http://www.petramas.com/
Contact person	Mr. Jorge Zegarra
Title	General Manager
Salutation	Mr.
Last name	Zegarra
Middle name	
First name	Jorge
Department	
Mobile	
Direct fax	
Direct tel.	(511) 419-9300
Personal e-mail	jzegarra@petramas.com

Project participant and/or responsible person/ entity	☐ Project participant ☒ Responsible person/ entity for completing the CDM-MR-FORM
Organization name	ClimaLoop
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Document information

Version	*Date*	*Description*
04.0	25 June 2014	Revisions to: • Include the Attachment: Instructions for filling out the monitoring report form (these instructions supersede the "Guideline: Completing the monitoring report form" (Version 04.0)); • Include provisions related to standardized baselines; • Add contact information on a responsible person(s)/ entity(ies) for completing the CDM-MR-FORM in A.6 and Appendix 1; • Change the reference number from *F-CDM-MR* to *CDM-MR-FORM*; • Editorial improvement.
03.2	5 November 2013	Editorial revision to correct table in page 1.
03.1	2 January 2013	Editorial revision to correct table in section E.5.
03.0	3 December 2012	Revision required to introduce a provision on reporting actual emission reductions or net anthropogenic GHG removals by sinks for the period up to 31 December 2012 and the period from 1 January 2013 onwards (EB70, Annex 11).
02.0	13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the monitoring report form" (EB 66, Annex 20).
01	28 May 2010	EB 54, Annex 34. Initial adoption.

Decision Class: Regulatory
Document Type: Form
Business Function: Issuance
Keywords: monitoring report