



**Monitoring report form  
(Version 05.1)**

*Complete this form in accordance with the Attachment "Instructions for filling out the monitoring report form" at the end of this form.*

**MONITORING REPORT**

|  |   |   |
|--|---|---|
| <b>Title of the project activity</b>   | Univanich TOPI Biogas Project   |   |
| <b>UNFCCC reference number of the project activity</b>   | 2661  |   |
| <b>Version number of the monitoring report</b>   | 01  |   |
| <b>Completion date of the monitoring report</b>  | 31/05/2017  |   |
| <b>Monitoring period number and duration of this monitoring period</b>   | 4th Monitoring Period<br>Duration of this Monitoring Period:<br>01/01/2014 – /30/09/2016                                      |   |
| <b>Project participant(s)</b>  | Univanich Palm Oil Public Co. Ltd<br>Carbon Bridge Pte Ltd<br>Foundation myclimate - The Climate Protection Partnership       |   |
| <b>Host Party</b>  | Thailand  |   |
| <b>Sectoral scope(s)</b>   | Sectoral Scope 13 : Waste handling and disposal<br>Sectoral Scope 1 : Energy industries (renewable - / non-renewable sources) |   |
| <b>Selected methodology(ies)</b>   | AMS-III H V.9 – Methane recovery in wastewater treatment<br>AMS-I.D-v13 – Grid connected renewable electricity generation     |   |
| <b>Selected standardized baseline(s)</b>   | N/A   |   |
| <b>Estimated amount of GHG emission reductions or net GHG removals by sinks for this monitoring period in the registered PDD</b> | 172,895 tCO <sub>2</sub> e  |   |
| <b>Total amount of GHG emission reductions or net GHG removals by sinks achieved in this monitoring period</b>                   | GHG emission reductions or net GHG removals by sinks reported up to 31 December 2012  | GHG emission reductions or net GHG removals by sinks reported from 1 January 2013 onwards |
|  | N/A   | 148,828 tCO <sub>2</sub> e  |

## SECTION A. Description of project activity

### A.1. Purpose and general description of project activity

&gt;&gt;

Univanich Palm Oil Public Co. Ltd constructed a covered lagoon anaerobic reactor at the TOPI Factory in Krabi Province, Southern Thailand. The digester is a 60,000 m3 lagoon with a series of inlet pipes, baffles, gas extraction pipes and a thick cover of HDPE sheeting. The biogas captured in the digester is extracted in a large diameter pipe where it is stripped of condensation, dust, H<sub>2</sub>S and compressed treated with an H<sub>2</sub>S scrubber before being used to fuel three 952kW Guascor biogas engines and the electricity is sold to the Provincial Electricity Authority (PEA) and used onsite when the existing biomass generator was not operating. The excess biogas is combusted in an open flare. The wastewater is pumped from the factory, passed through a cooling tower/heat exchanger and delivered into a mixing tank and then pumped into the digester. The effluent released from the digester is recycled back or sent to a small settling pond where sediment is settled and returned to the digester before the treated wastewater is pumped to the existing water treatment lagoons. Sludge from the bottom of the digester is removed periodically and used as fertiliser in the company's nearby oil palm plantations with a depth of less than 1 meter. The project was commissioned in July and August 2009, however the start date of the crediting period is 1st October 2009 as there were delays with electricity grid connection and installation of monitoring equipment. The third Guascor biogas engine was installed in October 2009

The project activity history

| Event                             | Date                     | CERs claimed |
|-----------------------------------|--------------------------|--------------|
| Registration date                 | 24/10/2009               | -            |
| 1 <sup>st</sup> monitoring period | 01/10/2009 – 31/12/2010  | 75,192       |
| 2 <sup>nd</sup> monitoring period | 01/01/2011 – 31/12/ 2012 | 124,417      |
| 3 <sup>rd</sup> monitoring period | 01/01/2013 – 31/12/2013  | 62,855       |

The total Emission Reductions in this monitoring period, 01/01/2014 – 30/09/2016, are 148,828 tCO<sub>2</sub>e

### A.2. Location of project activity

&gt;&gt;

Univanich TOPI Factory, 592 Plaiphraya-Pasaeng Road, Plaipaya, Krabi 81160, Thailand  
GPS : N08°35'05.8200", E098°55'14.1000"

### A.3. Parties and project participant(s)

| Party involved<br>(host) indicates<br>a host Party) | Private and/or public entity(ies)<br>project participants<br>(as applicable) | Indicate whether the Party involved<br>wishes to be considered as project<br>participant<br>(yes/no) |
|---|--|--|
| Thailand (host)                                     | Univanich Palm Oil Public Co. Ltd<br>Carbon Bridge Pte Ltd                   | No   |
| Liechtenstein                                       | Foundation Myclimate – The<br>Climate Protection Partnership                 | No   |

### A.4. Reference of applied methodology and standardized baseline

&gt;&gt;

- (a) AMS-III H “Methane recovery in wastewater treatment” Version. 9
- (b) Tool to determine project emissions from flaring gases containing methane – Version 1(EB28)

**A.5. Crediting period of project activity**

&gt;&gt;

Renewable crediting period of 7 years  
The start date of the crediting period is 01/10/ 2009.

**A.6. Contact information of responsible persons/entities**

&gt;&gt;

**Responsible person**

|                    |   |
|--------------------|---|
| Contact Person:    | Mr. Sakol Tantanawat                        |
| Organization Name: | Univanich Palm Oil Public Company Ltd.      |
| Address:           | Box 8-9 Aoluk District Krabi 81110 THAILAND |
| Email:             | sakol.t@univanich.com                       |

**SECTION B. Implementation of project activity****B.1. Description of implemented registered project activity**

&gt;&gt;

The Project Activity was designed by KPSR construction co.ltd. and Kasetsart University using modified covered lagoon technology, which comprises a uniquely designed lagoon process with mixers, baffles and a thick HDPE cover. The covered lagoon contains the organic rich effluent water in an anaerobic lagoon which optimises the contact with anaerobic bacteria to convert the organic matter into biogas. The modified covered lagoon system optimises the mixing process to separate and capture the biogas, which is then collected in pipes, cleaned and stripped of hydrogen sulfide and fed to dedicated biogas engines. In case of any excess build-up of biogas the surplus gas will be flared.

The technology and the project process is summarised as follows:

- Effluent collection and reticulation – the POME from the factory is pumped from the factory, passed through heat exchanger with cooling tower and delivered into a mixing tank.
- Feed distribution – from the mixing tank the POME is pumped into the digester (covered lagoon).
- Digester process – the covered lagoon is a 60,000 m3 lagoon with a series of inlet pipes, baffles, gas extraction pipes and a thick cover of HDPE sheeting. In the covered lagoon the POME follows a series of processes and baffle walls that maximize mixing and contact with the anaerobic bacteria to promote the release of biogas.
- Effluent Discharge or Recycle – the effluent released from the covered lagoon is either recycled or sent to a small settling pond where sediment is settled and returned to the digester. The treated waste leaving the treatment system boundary is then pumped to existing water treatment lagoons.
- Sludge, which consists of active bacteria, perished bacteria, and cell debris from the waste water is collected periodically in the bottom of the covered lagoon and either recirculated back to the digester as slurry or removed by pump and used as fertilizer in the company's nearby oil palm plantations.
- Gas extraction and pumping – the gas is extracted in a large diameter pipe where it is stripped of condensation, dust, H2S and compressed to be sent to the biogas engines.
- Biogas engines – three dedicated Guascor biogas engines connected to 952kW generator capacity are installed to produce electricity. The third genset was installed in October 2009.
- An open flare is installed to combust any excess biogas not used by the gas engines.

The specification of main machines installed in the project activity

| Main Machine    | Type/Model                                  | Quantity | Capacity                  |
|-----------------|---|----------|---------------------------|
| Biogas Digester | Covered in ground anaerobic reactor (CIGAR) | 1        | 60,000 m <sup>3</sup>     |
| Gas engine      | Guascor SFGLD560                            | 3        | 952 kw                    |
| Biogas flare    | Open flare                                  | 1        | 1,200 Nm <sup>3</sup> /hr |

## B.2. Post-registration changes

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

>>

Not applicable for this monitoring period

### B.2.2. Corrections

>>

Not applicable for this monitoring period

### B.2.3. Changes to start date of crediting period

>>

The start date of crediting period changed from 24 August 2009 to 01 October 2009

### B.2.4. Inclusion of a monitoring plan to the registered PDD that was not included at registration

>>

Not applicable for this monitoring period

### B.2.5. Permanent changes from registered monitoring plan, applied methodology or applied standardized baseline

>>

Not applicable for this monitoring period

A Permanent Request Change to modify the Monitoring Plan was approved on 18th February 2014 ( PRC ref no. PRC-2661-001).

### B.2.6. Changes to project design of registered project activity

>>

Not applicable for this monitoring period

A Permanent Request Change to update the input values from the mill was approved on 18th February 2014 ( PRC ref no. PRC-2661-001) and no change on this monitoring period.

**B.2.7. Types of changes specific to afforestation or reforestation project activity**

&gt;&gt;

Not applicable for this monitoring period

**SECTION C. Description of monitoring system**

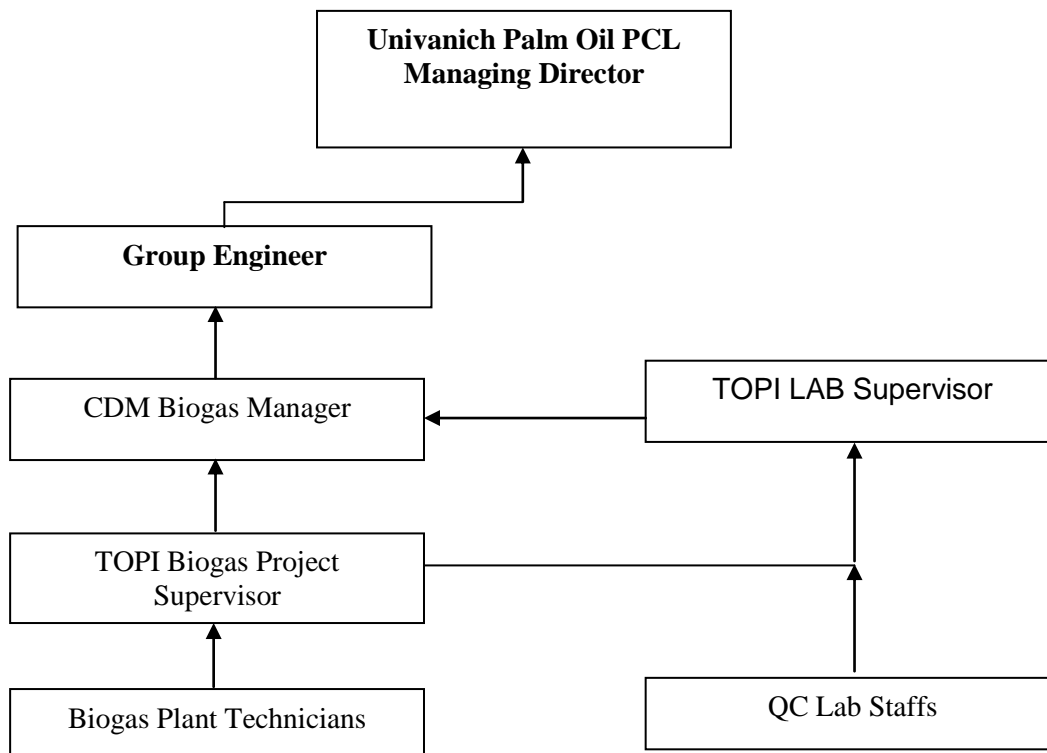
&gt;&gt;

**Data processing and archiving**

Measurements from the monitoring instruments are transmitted to the Fuji data logger through analog signals and viewed using PHR Data Viewer software. These raw data files are converted to CSV and saved in excel spreadsheet format and then collated to the CDM Data Reporting spreadsheet (TBP008). Measurements for the Methane Flare Tool (necessary every 1 minute) data files are converted to CSV file and transferred to the Flare spreadsheet. The manual readings for wastewater analysis and electricity meters are recorded in daily forms and entered manually into the CDM Data Reporting spreadsheet (TBP008). The Raw electronic data and electronic TBP008 files are saved on a separate computer for backup.

**Quality check of data and equipment**

Data collection and collation are prepared by the TOPI Biogas Supervisor. Each month, quality control the Laboratory staff cross checks the data with the raw data files and manual hand written readings before being finalised. The full annual data set used for preparation of CDM Monitoring Report is quality crossed checked before final release. The roles and responsibilities for the project are outlined below:

**Management Structure**

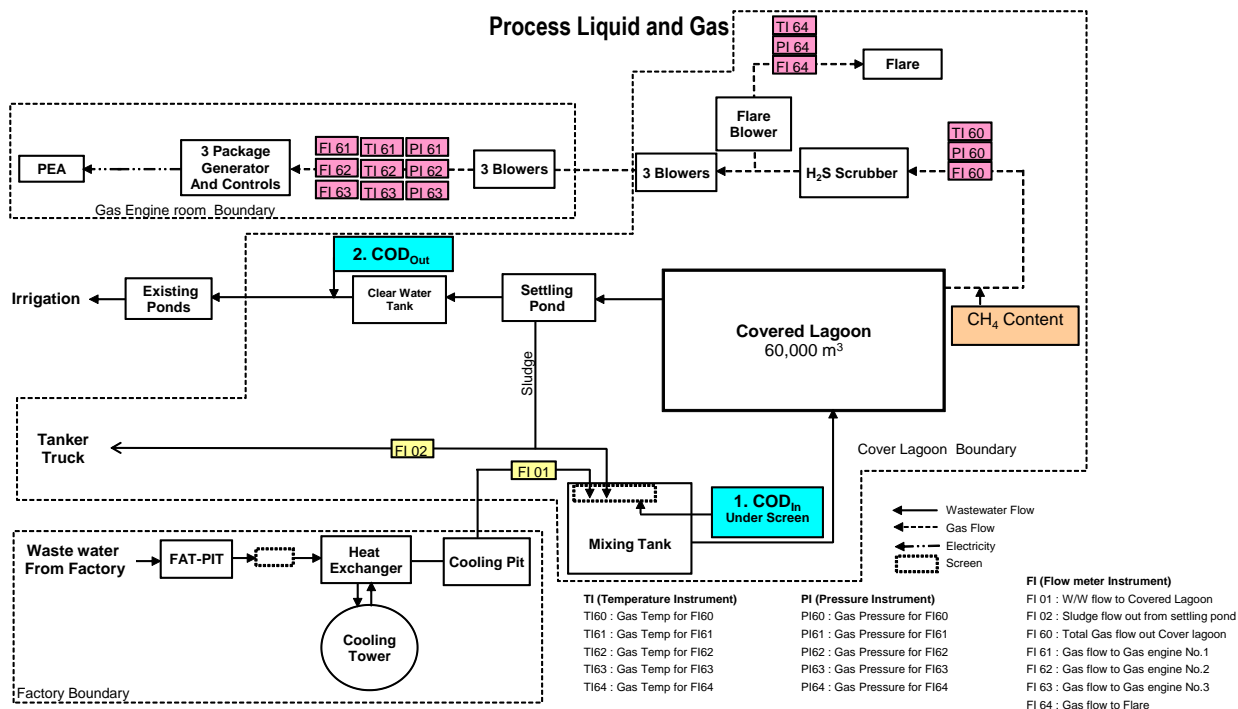
The CDM Biogas Manager prepares the Monitoring Report with the advice from Carbon Bridge Pte Ltd.

The relevant Diagrams showing monitoring equipment are as follows:

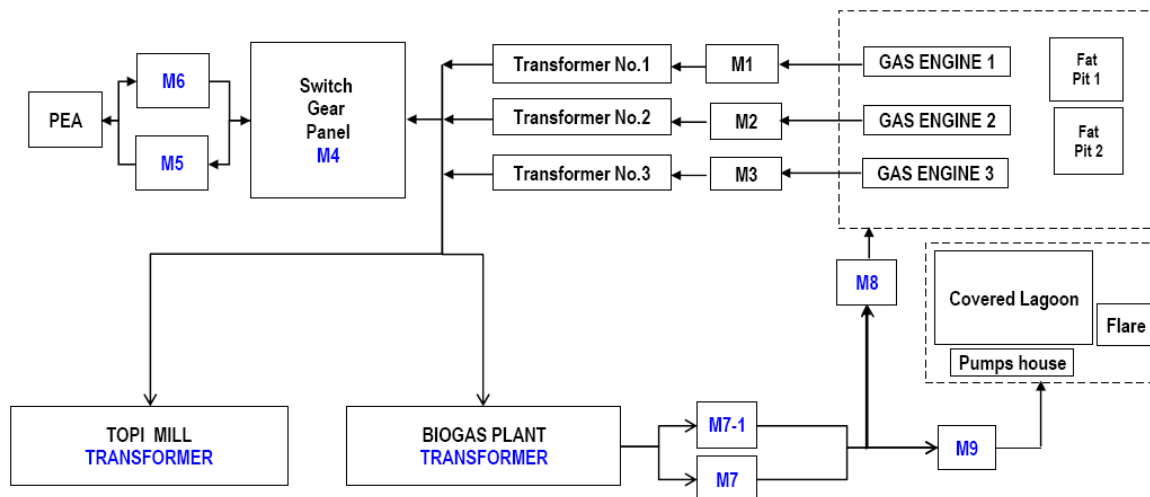


Univanich Palm Oil Public Company Limited  
TOPI Biogas Project (Plaipraya branch)

Process Liquid and Gas



Univanich Palm Oil Public Company Limited  
TOPI Biogas Project (Plaipraya Branch) : Electricity Meter Layout



Remark :

M1 = kWh Generated from Gas engine No.1  
M2 = kWh Generated from Gas engine No.2  
M3 = kWh Generated from Gas engine No.3  
M4 = kWh Total In/Out at Switch Gear Panel  
M5 = kWh Total Sold to PEA  
M6 = kWh Total Import from PEA

M7 = kWh Total Biogas use only from PEA  
M7-1 = kWh Total Biogas use all to Biogas plant and from any source  
M8 = kWh Total use for engine room area (All from PEA/Gas gen/Turbine)  
M9 = kWh Total use for Covered Lagoon area (All from PEA/Gas gen/Turbine)

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

|  |                                     |
|--|-------------------------------------|
| <b>Data/parameter:</b>                               | <b>GWP<sub>CH4</sub></b>            |
| Unit   | tCO <sub>2</sub> e/tCH <sub>4</sub> |
| Description  | Global Warming Potential of methane |
| Source of data                                       | EB69 Annex3 IPCC table 2-14 for GWP |
| Value(s) applied)                                    | 21                                  |
| Choice of data or measurement methods and procedures | Default Value                       |
| Purpose of data                                      | Baseline and Project emissions      |
| Additional comments                                  | -                                   |

|  |  |
|--|--|
| <b>Data/parameter:</b>                               | <b>B<sub>o,ww</sub></b>  |
| Unit   | kgCH <sub>4</sub> /kgCOD   |
| Description  | Methane producing capacity of wastewater   |
| Source of data                                       | AMS III.H Page 4   |
| Value(s) applied)                                    | 0.21   |
| Choice of data or measurement methods and procedures | The IPCC default value of 0.25 kg CH <sub>4</sub> /kg COD was corrected to take into account the uncertainties |
| Purpose of data                                      | Project emissions  |
| Additional comments                                  | -  |

|  |  |
|--|--|
| <b>Data/parameter:</b>                               | <b>DOC<sub>F</sub></b>                 |
| Unit   | Fraction                               |
| Description  | Fraction of DOC dissimilated to biogas |
| Source of data                                       | AMSIH.H Page 5                         |
| Value(s) applied)                                    | 0.50                                   |
| Choice of data or measurement methods and procedures | IPCC default value                     |
| Purpose of data                                      | Project emissions                      |
| Additional comments                                  | -                                      |

|                        |  |
|------------------------|--|
| <b>Data/parameter:</b> | <b>MCF<sub>ww,final</sub></b>  |
| Unit                   | Fraction   |
| Description            | Methane correction factor of the final wastewater based on treatment and discharge pathway of the wastewater |
| Source of data         | Table III.H1 Page 5 of AMSIH.H   |
| Value(s) applied)      | 0.20   |

|  |  |
|--|--|
| Choice of data or measurement methods and procedures | MCF higher value of table III.H1 for discharge of wastewater to sea, river or lake. The treated wastewater is used for irrigation on the plantations where it is taken-up by the root systems of the palms makes it's way through to the sub-soil water table. |
| Purpose of data                                      | Project emissions  |
| Additional comments                                  | -  |

|  |   |
|--|---|
| <b>Data/parameter:</b>                               | <b>MCF<sub>ww,treatment</sub></b>   |
| Unit   | Fraction  |
| Description  | Methane Correction Factor for the existing anaerobic wastewater treatment system to which the sequential anaerobic treatment step is being introduced. (Higher Value) |
| Source of data                                       | Table III.H1 Page 5 of AMSIII.H   |
| Value(s) applied)                                    | 1.0   |
| Choice of data or measurement methods and procedures | MCF higher value of table III.H1 for anaerobic deep lagoons (depth more than 2 meters)  |
| Purpose of data                                      | Project emissions   |
| Additional comments                                  | -   |

|  |  |
|--|--|
| <b>Data/parameter:</b>                               | <b>MCF<sub>ww,bl,treatment</sub></b>   |
| Unit   | Fraction   |
| Description  | Methane Correction Factor for the existing anaerobic wastewater treatment system to which the sequential anaerobic treatment step is being introduced. (Lower Value) |
| Source of data                                       | Table III.H1 Page 5 of AMSIII.H  |
| Value(s) applied)                                    | 0.8  |
| Choice of data or measurement methods and procedures | MCF lower value of table III.H1 for anaerobic deep lagoons (depth more than 2 meters)  |
| Purpose of data                                      | Project emissions  |
| Additional comments                                  | -  |

|  |  |
|--|--|
| <b>Data/parameter:</b>                               | <b>CFE<sub>ww</sub></b>  |
| Unit   | Fraction   |
| Description  | Capture & flare efficiency of CH <sub>4</sub> recovery equipment |
| Source of data                                       | AMS III.H Page 6   |
| Value(s) applied)                                    | 0.90   |
| Choice of data or measurement methods and procedures | AMSIII.H default value   |
| Purpose of data                                      | Project emissions  |
| Additional comments                                  | -  |



|  |   |
|--|---|
| <b>Data/parameter:</b>                               | <b>[CH<sub>4</sub>]<sub>y,ww,treated</sub></b>  |
| Unit   | Tonnes/m <sup>3</sup>                           |
| Description  | Dissolved methane content in treated wastewater |
| Source of data                                       | AMS III.H Page 7                                |
| Value(s) applied)                                    | 0.0001  |
| Choice of data or measurement methods and procedures | AMSIII.H default value                          |
| Purpose of data                                      | Project emissions                               |
| Additional comments                                  | -   |

|  |   |
|--|---|
| <b>Data/parameter:</b>                               | <b>EF<sub>project</sub></b>                                   |
| Unit   | kg CO <sub>2</sub> e/kWh                                      |
| Description  | Emissions factor for the electricity grid                     |
| Source of data                                       | Ex-ante calculation of Emissions Factor for the Thailand Grid |
| Value(s) applied)                                    | 0.534   |
| Choice of data or measurement methods and procedures | Refer to PDD Appendix 3.                                      |
| Purpose of data                                      | Baseline emissions  |
| Additional comments                                  | -   |

|  |   |
|--|---|
| <b>Data/parameter:</b>                               | <b>ρ<sub>CH4</sub></b>                  |
| Unit   | Kg/m <sup>3</sup>                       |
| Description  | Density of methane at normal conditions |
| Source of data                                       | Methane Tool                            |
| Value(s) applied)                                    | 0.716                                   |
| Choice of data or measurement methods and procedures | Default value.                          |
| Purpose of data                                      | Project emissions                       |
| Additional comments                                  | -                                       |

|  |  |
|--|--|
| <b>Data/parameter:</b>                               | <b>η<sub>flare</sub></b>   |
| Unit   | Fraction   |
| Description  | Flare efficiency   |
| Source of data                                       | AMSIII.H Section 38 for open flare using 50% default value for open flares |
| Value(s) applied)                                    | 0.5  |
| Choice of data or measurement methods and procedures | Default value.   |

|                     |                   |
|---------------------|-------------------|
| Purpose of data     | Project emissions |
| Additional comments | -                 |

## D.2. Data and parameters monitored

|  |  |                                    |                 |                       |  |          |
|--|--|------------------------------------|-----------------|-----------------------|--|----------|
| Data/parameter:                        | Q <sub>biogas, total, y</sub>  |                                    |                 |                       |  |          |
| Unit                                   | Nm <sup>3</sup>  |                                    |                 |                       |  |          |
| Description                            | Total quantity of biogas recovered from the covered lagoon   |                                    |                 |                       |  |          |
| Measured/calculated/default            | Measured   |                                    |                 |                       |  |          |
| Source of data                         | Measured by project developer  |                                    |                 |                       |  |          |
| Value(s) of monitored parameter        | 01/01/2014 – 31/12/2014 = 5,437,204<br>01/01/2015 – 31/12/2015 = 5,672,983<br>01/01/2016 – 30/09/2016 = 2,408,078  |                                    |                 |                       |  |          |
| Monitoring equipment                   |  |                                    |                 |                       |  |          |
|  | Type   | Accuracy Class                     | Serial Number   | Calibration Frequency | Last Calibration                                     | Validity |
|  | Kobold Fluidic Oscillator flow meter (FI60)  | ±1.5%                              | 5814            | 3 years               | 01/04/2013<br>22/01/2014<br>15/01/2015<br>07/01/2016 | 3 years  |
|  | Kobold TWD-B9410213T (TI60)  | ± 0.6°C at 60°C<br>± 0.7°C at 80°C | N01853<br>34    | 1 year                | 28/03/2013<br>21/01/2014<br>14/01/2015<br>07/01/2016 | 1 year   |
|  | Honeywell STD924 (PI60)  | ±0.075%                            | 800238<br>60001 | 2 years               | 26/03/2013<br>21/01/2014<br>14/01/2015<br>07/01/2016 | 2 years  |
| Measuring/reading/recording frequency: | continuously   |                                    |                 |                       |  |          |
| Calculation method (if applicable):    | -  |                                    |                 |                       |  |          |
| QA/QC procedures:                      | Flow meters will factory calibrated and a calibration certificate issued. The meters will be calibrated every three years or as specified by manufacturer, whichever is earliest.. |                                    |                 |                       |  |          |
| Purpose of data:                       | For baseline emission calculations   |                                    |                 |                       |  |          |
| Additional comments:                   | -  |                                    |                 |                       |  |          |

|                             |  |
|-----------------------------|--|
| Data/parameter:             | $Q_{\text{biogas, engine, y}}$                                 |
| Unit                        | $\text{Nm}^3$  |
| Description                 | Amount of biogas recovered and combusted for energy production |
| Measured/calculated/default | Measured   |
| Source of data              | Measured by project developer                                  |

| Value(s) of monitored parameter             | 01/01/2014 – 31/12/2014 = 5,348,396.2<br>01/01/2015 – 31/12/2015 = 6,055,011.5<br>01/01/2016 – 30/09/2016 = 3,384,240.8   |                  |                       |  |                       |                  |          |   |       |      |         |  |         |   |       |      |         |  |         |   |       |      |         |  |         |                              |                 |                  |        |  |        |                              |                 |                  |        |  |        |                              |                 |                  |        |  |        |                        |        |             |         |  |         |                        |        |         |         |  |         |                        |        |             |         |  |         |  |  |  |  |  |
|---|---|------------------|-----------------------|--|-----------------------|------------------|----------|---|-------|------|---------|--|---------|---|-------|------|---------|--|---------|---|-------|------|---------|--|---------|------------------------------|-----------------|------------------|--------|--|--------|------------------------------|-----------------|------------------|--------|--|--------|------------------------------|-----------------|------------------|--------|--|--------|------------------------|--------|-------------|---------|--|---------|------------------------|--------|---------|---------|--|---------|------------------------|--------|-------------|---------|--|---------|--|--|--|--|--|
| Monitoring equipment                        | <table border="1"> <thead> <tr> <th>Type</th><th>Accuracy Class</th><th>Serial Number</th><th>Calibration Frequency</th><th>Last Calibration</th><th>Validity</th></tr> </thead> <tbody> <tr> <td>Kobold Fluidic Oscillator flow meter (FI61)</td><td>±1.5%</td><td>5813</td><td>3 years</td><td>09/05/2013<br/>22/01/2014<br/>15/01/2015<br/>07/01/2016</td><td>3 years</td></tr> <tr> <td>Kobold Fluidic Oscillator flow meter (FI62)</td><td>±1.5%</td><td>5811</td><td>3 years</td><td>09/05/2013<br/>22/01/2014<br/>15/01/2015<br/>07/01/2016</td><td>3 years</td></tr> <tr> <td>Kobold Fluidic Oscillator flow meter (FI63)</td><td>±1.5%</td><td>5812</td><td>3 years</td><td>09/05/2013<br/>22/01/2014<br/>15/01/2015<br/>07/01/2016</td><td>3 years</td></tr> <tr> <td>Kobold TWD-B9410213 T (TI61)</td><td>± 0.7°C at 80°C</td><td>N0851.9<br/>65110</td><td>1 year</td><td>28/03/2013<br/>21/01/2014<br/>14/01/2015<br/>07/01/2016</td><td>1 year</td></tr> <tr> <td>Kobold TWD-B9410213 T (TI62)</td><td>± 0.7°C at 80°C</td><td>N0851.9<br/>65113</td><td>1 year</td><td>28/03/2013<br/>21/01/2014<br/>14/01/2015<br/>07/01/2016</td><td>1 year</td></tr> <tr> <td>Kobold TWD-B9410213 T (TI63)</td><td>± 0.7°C at 80°C</td><td>N0851.9<br/>65101</td><td>1 year</td><td>28/03/2013<br/>21/01/2014<br/>14/01/2015<br/>07/01/2016</td><td>1 year</td></tr> <tr> <td>Kobold SEN-3251 (PI61)</td><td>±0. 5%</td><td>260TUT<br/>O</td><td>2 years</td><td>26/03/2013<br/>21/01/2014<br/>14/01/2015<br/>07/01/2016</td><td>2 years</td></tr> <tr> <td>Kobold SEN-3251 (PI62)</td><td>±0. 5%</td><td>2063135</td><td>2 years</td><td>26/03/2013<br/>21/01/2014<br/>14/01/2015<br/>07/01/2016</td><td>2 years</td></tr> <tr> <td>Kobold SEN-3251 (PI63)</td><td>±0. 5%</td><td>260SUO<br/>X</td><td>2 years</td><td>26/03/2013<br/>21/01/2014<br/>14/01/2015<br/>07/01/2016</td><td>2 years</td></tr> </tbody> </table> | Type             | Accuracy Class        | Serial Number  | Calibration Frequency | Last Calibration | Validity | Kobold Fluidic Oscillator flow meter (FI61) | ±1.5% | 5813 | 3 years | 09/05/2013<br>22/01/2014<br>15/01/2015<br>07/01/2016 | 3 years | Kobold Fluidic Oscillator flow meter (FI62) | ±1.5% | 5811 | 3 years | 09/05/2013<br>22/01/2014<br>15/01/2015<br>07/01/2016 | 3 years | Kobold Fluidic Oscillator flow meter (FI63) | ±1.5% | 5812 | 3 years | 09/05/2013<br>22/01/2014<br>15/01/2015<br>07/01/2016 | 3 years | Kobold TWD-B9410213 T (TI61) | ± 0.7°C at 80°C | N0851.9<br>65110 | 1 year | 28/03/2013<br>21/01/2014<br>14/01/2015<br>07/01/2016 | 1 year | Kobold TWD-B9410213 T (TI62) | ± 0.7°C at 80°C | N0851.9<br>65113 | 1 year | 28/03/2013<br>21/01/2014<br>14/01/2015<br>07/01/2016 | 1 year | Kobold TWD-B9410213 T (TI63) | ± 0.7°C at 80°C | N0851.9<br>65101 | 1 year | 28/03/2013<br>21/01/2014<br>14/01/2015<br>07/01/2016 | 1 year | Kobold SEN-3251 (PI61) | ±0. 5% | 260TUT<br>O | 2 years | 26/03/2013<br>21/01/2014<br>14/01/2015<br>07/01/2016 | 2 years | Kobold SEN-3251 (PI62) | ±0. 5% | 2063135 | 2 years | 26/03/2013<br>21/01/2014<br>14/01/2015<br>07/01/2016 | 2 years | Kobold SEN-3251 (PI63) | ±0. 5% | 260SUO<br>X | 2 years | 26/03/2013<br>21/01/2014<br>14/01/2015<br>07/01/2016 | 2 years |  |  |  |  |  |
| Type  | Accuracy Class  | Serial Number    | Calibration Frequency | Last Calibration                                     | Validity              |                  |          |   |       |      |         |  |         |   |       |      |         |  |         |   |       |      |         |  |         |                              |                 |                  |        |  |        |                              |                 |                  |        |  |        |                              |                 |                  |        |  |        |                        |        |             |         |  |         |                        |        |         |         |  |         |                        |        |             |         |  |         |  |  |  |  |  |
| Kobold Fluidic Oscillator flow meter (FI61) | ±1.5%   | 5813             | 3 years               | 09/05/2013<br>22/01/2014<br>15/01/2015<br>07/01/2016 | 3 years               |                  |          |   |       |      |         |  |         |   |       |      |         |  |         |   |       |      |         |  |         |                              |                 |                  |        |  |        |                              |                 |                  |        |  |        |                              |                 |                  |        |  |        |                        |        |             |         |  |         |                        |        |         |         |  |         |                        |        |             |         |  |         |  |  |  |  |  |
| Kobold Fluidic Oscillator flow meter (FI62) | ±1.5%   | 5811             | 3 years               | 09/05/2013<br>22/01/2014<br>15/01/2015<br>07/01/2016 | 3 years               |                  |          |   |       |      |         |  |         |   |       |      |         |  |         |   |       |      |         |  |         |                              |                 |                  |        |  |        |                              |                 |                  |        |  |        |                              |                 |                  |        |  |        |                        |        |             |         |  |         |                        |        |         |         |  |         |                        |        |             |         |  |         |  |  |  |  |  |
| Kobold Fluidic Oscillator flow meter (FI63) | ±1.5%   | 5812             | 3 years               | 09/05/2013<br>22/01/2014<br>15/01/2015<br>07/01/2016 | 3 years               |                  |          |   |       |      |         |  |         |   |       |      |         |  |         |   |       |      |         |  |         |                              |                 |                  |        |  |        |                              |                 |                  |        |  |        |                              |                 |                  |        |  |        |                        |        |             |         |  |         |                        |        |         |         |  |         |                        |        |             |         |  |         |  |  |  |  |  |
| Kobold TWD-B9410213 T (TI61)                | ± 0.7°C at 80°C   | N0851.9<br>65110 | 1 year                | 28/03/2013<br>21/01/2014<br>14/01/2015<br>07/01/2016 | 1 year                |                  |          |   |       |      |         |  |         |   |       |      |         |  |         |   |       |      |         |  |         |                              |                 |                  |        |  |        |                              |                 |                  |        |  |        |                              |                 |                  |        |  |        |                        |        |             |         |  |         |                        |        |         |         |  |         |                        |        |             |         |  |         |  |  |  |  |  |
| Kobold TWD-B9410213 T (TI62)                | ± 0.7°C at 80°C   | N0851.9<br>65113 | 1 year                | 28/03/2013<br>21/01/2014<br>14/01/2015<br>07/01/2016 | 1 year                |                  |          |   |       |      |         |  |         |   |       |      |         |  |         |   |       |      |         |  |         |                              |                 |                  |        |  |        |                              |                 |                  |        |  |        |                              |                 |                  |        |  |        |                        |        |             |         |  |         |                        |        |         |         |  |         |                        |        |             |         |  |         |  |  |  |  |  |
| Kobold TWD-B9410213 T (TI63)                | ± 0.7°C at 80°C   | N0851.9<br>65101 | 1 year                | 28/03/2013<br>21/01/2014<br>14/01/2015<br>07/01/2016 | 1 year                |                  |          |   |       |      |         |  |         |   |       |      |         |  |         |   |       |      |         |  |         |                              |                 |                  |        |  |        |                              |                 |                  |        |  |        |                              |                 |                  |        |  |        |                        |        |             |         |  |         |                        |        |         |         |  |         |                        |        |             |         |  |         |  |  |  |  |  |
| Kobold SEN-3251 (PI61)                      | ±0. 5%  | 260TUT<br>O      | 2 years               | 26/03/2013<br>21/01/2014<br>14/01/2015<br>07/01/2016 | 2 years               |                  |          |   |       |      |         |  |         |   |       |      |         |  |         |   |       |      |         |  |         |                              |                 |                  |        |  |        |                              |                 |                  |        |  |        |                              |                 |                  |        |  |        |                        |        |             |         |  |         |                        |        |         |         |  |         |                        |        |             |         |  |         |  |  |  |  |  |
| Kobold SEN-3251 (PI62)                      | ±0. 5%  | 2063135          | 2 years               | 26/03/2013<br>21/01/2014<br>14/01/2015<br>07/01/2016 | 2 years               |                  |          |   |       |      |         |  |         |   |       |      |         |  |         |   |       |      |         |  |         |                              |                 |                  |        |  |        |                              |                 |                  |        |  |        |                              |                 |                  |        |  |        |                        |        |             |         |  |         |                        |        |         |         |  |         |                        |        |             |         |  |         |  |  |  |  |  |
| Kobold SEN-3251 (PI63)                      | ±0. 5%  | 260SUO<br>X      | 2 years               | 26/03/2013<br>21/01/2014<br>14/01/2015<br>07/01/2016 | 2 years               |                  |          |   |       |      |         |  |         |   |       |      |         |  |         |   |       |      |         |  |         |                              |                 |                  |        |  |        |                              |                 |                  |        |  |        |                              |                 |                  |        |  |        |                        |        |             |         |  |         |                        |        |         |         |  |         |                        |        |             |         |  |         |  |  |  |  |  |
| Measuring/reading/recording frequency:      | continuously  |                  |                       |  |                       |                  |          |   |       |      |         |  |         |   |       |      |         |  |         |   |       |      |         |  |         |                              |                 |                  |        |  |        |                              |                 |                  |        |  |        |                              |                 |                  |        |  |        |                        |        |             |         |  |         |                        |        |         |         |  |         |                        |        |             |         |  |         |  |  |  |  |  |

|                                     |   |
|-------------------------------------|---|
| Calculation method (if applicable): | -   |
| QA/QC procedures:                   | Flow meters will factory calibrated and a calibration certificate issued. The meters will be calibrated every three years or as specified by manufacturer, whichever is earliest. |
| Purpose of data:                    | For baseline emission calculations  |
| Additional comments:                | -   |

|  |   |   |                  |                       |  |          |
|--|---|---|------------------|-----------------------|--|----------|
| <b>Data/parameter:</b>                 | $Q_{\text{biogas, flare, y}}$   |   |                  |                       |  |          |
| Unit                                   | $\text{Nm}^3$   |   |                  |                       |  |          |
| Description                            | Amount of biogas recovered and flared   |   |                  |                       |  |          |
| Measured/calculated/default            | Measured  |   |                  |                       |  |          |
| Source of data                         | Measured  |   |                  |                       |  |          |
| Value(s) of monitored parameter        | 01/01/2014 – 31/12/2014 = 1,434,458<br>01/01/2015 – 31/12/2015 = 422,19.0<br>01/01/2016 – 30/09/2016 = 267,168.0  |   |                  |                       |  |          |
| Monitoring equipment                   | Type  | Accuracy Class                                | Serial Number    | Calibration Frequency | Last Calibration                                     | Validity |
|  | Kobold Fluidic Oscillator flow meter (FI64)   | $\pm 1.5\%$                                   | 5815             | 3 years               | 09/05/2013<br>22/01/2014<br>15/01/2015<br>07/01/2016 | 3 years  |
|  | Kobold TWD-B9410213 T (TI64)  | $\pm 0.7^\circ\text{C}$ at $80^\circ\text{C}$ | N0906.9<br>79554 | 1 year                | 28/03/2013<br>21/01/2014<br>14/01/2015<br>07/01/2016 | 1 year   |
|  | Kobold SEN-3251 (PI64)  | $\pm 0.5\%$                                   | 260TUT<br>1      | 2 years               | 26/03/2013<br>21/01/2014<br>14/01/2015<br>07/01/2016 | 2 years  |
| Measuring/reading/recording frequency: | continuously  |   |                  |                       |  |          |
| Calculation method (if applicable):    | -   |   |                  |                       |  |          |
| QA/QC procedures:                      | Flow meters will factory calibrated and a calibration certificate issued. The meters will be calibrated every three years or as specified by manufacturer, whichever is earliest. |   |                  |                       |  |          |
| Purpose of data:                       | For baseline emission calculations  |   |                  |                       |  |          |
| Additional comments:                   | -   |   |                  |                       |  |          |

|                        |                                   |
|------------------------|-----------------------------------|
| <b>Data/parameter:</b> | $F_{\text{CH}_4}$                 |
| Unit                   | %                                 |
| Description            | Fraction of methane in the biogas |

| Measured/calculated/default                     | Measured  |               |                       |  |                       |                  |          |                                   |     |             |        |  |        |   |       |       |        |  |        |   |       |       |        |  |        |   |       |       |        |  |        |
|---|---|---------------|-----------------------|--|-----------------------|------------------|----------|-----------------------------------|-----|-------------|--------|--|--------|---|-------|-------|--------|--|--------|---|-------|-------|--------|--|--------|---|-------|-------|--------|--|--------|
| Source of data                                  | Measured  |               |                       |  |                       |                  |          |                                   |     |             |        |  |        |   |       |       |        |  |        |   |       |       |        |  |        |   |       |       |        |  |        |
| Value(s) of monitored parameter                 | 01/01/2014 – 31/12/2014 = 55.4<br>01/01/2015 – 31/12/2015 = 58.9<br>01/01/2016 – 30/09/2016 = 58.9  |               |                       |  |                       |                  |          |                                   |     |             |        |  |        |   |       |       |        |  |        |   |       |       |        |  |        |   |       |       |        |  |        |
| Monitoring equipment                            | <table border="1"> <thead> <tr> <th>Type</th><th>Accuracy Class</th><th>Serial Number</th><th>Calibration Frequency</th><th>Last Calibration</th><th>Validity</th></tr> </thead> <tbody> <tr> <td>OLCT IR<br/>(Main Inline analyser)</td><td>±3%</td><td>10034A4-203</td><td>1 year</td><td>19/12/2013<br/>17/12/2014<br/>17/12/2015<br/>15/11/2016</td><td>1 year</td></tr> <tr> <td>JE CH4<br/>100%<br/>(backup inline analyser Gen1)</td><td>±2.5%</td><td>29196</td><td>1 year</td><td>19/12/2013<br/>17/12/2014<br/>17/12/2015<br/>15/11/2016</td><td>1 year</td></tr> <tr> <td>JE CH4<br/>100%<br/>(backup inline analyser Gen2)</td><td>±2.5%</td><td>28961</td><td>1 year</td><td>19/12/2013<br/>17/12/2014<br/>17/12/2015<br/>15/11/2016</td><td>1 year</td></tr> <tr> <td>JE CH4<br/>100%<br/>(backup inline analyser Gen3)</td><td>±2.5%</td><td>27894</td><td>1 year</td><td>19/12/2013<br/>17/12/2014<br/>17/12/2015<br/>15/11/2016</td><td>1 year</td></tr> </tbody> </table> | Type          | Accuracy Class        | Serial Number  | Calibration Frequency | Last Calibration | Validity | OLCT IR<br>(Main Inline analyser) | ±3% | 10034A4-203 | 1 year | 19/12/2013<br>17/12/2014<br>17/12/2015<br>15/11/2016 | 1 year | JE CH4<br>100%<br>(backup inline analyser Gen1) | ±2.5% | 29196 | 1 year | 19/12/2013<br>17/12/2014<br>17/12/2015<br>15/11/2016 | 1 year | JE CH4<br>100%<br>(backup inline analyser Gen2) | ±2.5% | 28961 | 1 year | 19/12/2013<br>17/12/2014<br>17/12/2015<br>15/11/2016 | 1 year | JE CH4<br>100%<br>(backup inline analyser Gen3) | ±2.5% | 27894 | 1 year | 19/12/2013<br>17/12/2014<br>17/12/2015<br>15/11/2016 | 1 year |
| Type  | Accuracy Class  | Serial Number | Calibration Frequency | Last Calibration                                     | Validity              |                  |          |                                   |     |             |        |  |        |   |       |       |        |  |        |   |       |       |        |  |        |   |       |       |        |  |        |
| OLCT IR<br>(Main Inline analyser)               | ±3%   | 10034A4-203   | 1 year                | 19/12/2013<br>17/12/2014<br>17/12/2015<br>15/11/2016 | 1 year                |                  |          |                                   |     |             |        |  |        |   |       |       |        |  |        |   |       |       |        |  |        |   |       |       |        |  |        |
| JE CH4<br>100%<br>(backup inline analyser Gen1) | ±2.5%   | 29196         | 1 year                | 19/12/2013<br>17/12/2014<br>17/12/2015<br>15/11/2016 | 1 year                |                  |          |                                   |     |             |        |  |        |   |       |       |        |  |        |   |       |       |        |  |        |   |       |       |        |  |        |
| JE CH4<br>100%<br>(backup inline analyser Gen2) | ±2.5%   | 28961         | 1 year                | 19/12/2013<br>17/12/2014<br>17/12/2015<br>15/11/2016 | 1 year                |                  |          |                                   |     |             |        |  |        |   |       |       |        |  |        |   |       |       |        |  |        |   |       |       |        |  |        |
| JE CH4<br>100%<br>(backup inline analyser Gen3) | ±2.5%   | 27894         | 1 year                | 19/12/2013<br>17/12/2014<br>17/12/2015<br>15/11/2016 | 1 year                |                  |          |                                   |     |             |        |  |        |   |       |       |        |  |        |   |       |       |        |  |        |   |       |       |        |  |        |
| Measuring/reading/recording frequency:          | continuously.   |               |                       |  |                       |                  |          |                                   |     |             |        |  |        |   |       |       |        |  |        |   |       |       |        |  |        |   |       |       |        |  |        |
| Calculation method (if applicable):             | -   |               |                       |  |                       |                  |          |                                   |     |             |        |  |        |   |       |       |        |  |        |   |       |       |        |  |        |   |       |       |        |  |        |
| QA/QC procedures:                               | The spectrometer will undergo maintenance according to the manufacturer's standards. It will be calibrated at the time of installation and as per manufacturer's specifications.  |               |                       |  |                       |                  |          |                                   |     |             |        |  |        |   |       |       |        |  |        |   |       |       |        |  |        |   |       |       |        |  |        |
| Purpose of data:                                | For baseline and project emission calculations  |               |                       |  |                       |                  |          |                                   |     |             |        |  |        |   |       |       |        |  |        |   |       |       |        |  |        |   |       |       |        |  |        |
| Additional comments:                            | -   |               |                       |  |                       |                  |          |                                   |     |             |        |  |        |   |       |       |        |  |        |   |       |       |        |  |        |   |       |       |        |  |        |

|                                 |                           |
|---------------------------------|---------------------------|
| <b>Data/parameter:</b>          | <b>T<sub>biogas</sub></b> |
| Unit                            | °C                        |
| Description                     | Temperature of biogas     |
| Measured/calculated/default     | Measured                  |
| Source of data                  | Measured                  |
| Value(s) of monitored parameter | N/A                       |

|  |   |                                    |               |                       |  |          |
|--|---|------------------------------------|---------------|-----------------------|--|----------|
| Monitoring equipment                   | Type  | Accuracy Class                     | Serial Number | Calibration Frequency | Last Calibration                                     | Validity |
|  | Kobold TWD-B9410213T  | ± 0.6°C at 60°C<br>± 0.7°C at 80°C | N0185334      | 1 year                | 28/03/2013<br>21/01/2014<br>14/01/2015<br>07/01/2016 | 1 year   |
|  |   |                                    |               |                       |  |          |
| Measuring/reading/recording frequency: | continuously  |                                    |               |                       |  |          |
| Calculation method (if applicable):    | -   |                                    |               |                       |  |          |
| QA/QC procedures:                      | Instruments are calibrated as per manufacturer's specifications.  |                                    |               |                       |  |          |
| Purpose of data:                       | As per Monitoring Plan, not actually used for ER calculation (Version 9 of AMSIIH required to monitor separately T and P, whereas new versions do not need this to be monitored separately) |                                    |               |                       |  |          |
| Additional comments:                   | -   |                                    |               |                       |  |          |

|  |  |                |                 |                       |  |          |
|--|--|----------------|-----------------|-----------------------|--|----------|
| <b>Data/parameter:</b>                 | <b>P<sub>biogas</sub></b>  |                |                 |                       |  |          |
| Unit                                   | mBar   |                |                 |                       |  |          |
| Description                            | Pressure of biogas   |                |                 |                       |  |          |
| Measured/calculated/default            | Measured   |                |                 |                       |  |          |
| Source of data                         | Measured   |                |                 |                       |  |          |
| Value(s) of monitored parameter        | N/A  |                |                 |                       |  |          |
| Monitoring equipment                   | Type   | Accuracy Class | Serial Number   | Calibration Frequency | Last Calibration                                     | Validity |
|  | Honeywell STD924   | ±0.075%        | 800238<br>60001 | 2 years               | 26/03/2013<br>21/01/2014<br>14/01/2015<br>07/01/2016 | 2 years  |
|  |  |                |                 |                       |  |          |
| Measuring/reading/recording frequency: | continuously   |                |                 |                       |  |          |
| Calculation method (if applicable):    | Value measured in mBar and converted to reported data unit of kPa through unit conversion divided by 10. Average of values calculated monthly  |                |                 |                       |  |          |
| QA/QC procedures:                      | Pressure transducers are calibrated as per manufacturers specification   |                |                 |                       |  |          |
| Purpose of data:                       | As per Monitoring Plan but not actually used for ER calculation (Version 9 of AMSIIH required to monitor separately T and P, whereas new versions do not need this to be monitored separately) |                |                 |                       |  |          |
| Additional comments:                   | -  |                |                 |                       |  |          |

|                             |  |  |  |  |  |  |
|-----------------------------|--|--|--|--|--|--|
| <b>Data/parameter:</b>      | <b>Other flare operation parameters – Flame detector</b> |  |  |  |  |  |
| Unit                        | -  |  |  |  |  |  |
| Description                 | Detection unit   |  |  |  |  |  |
| Measured/calculated/default | Measured   |  |  |  |  |  |

|  |  |
|--|--|
| Source of data                         | Measured by project developer  |
| Value(s) of monitored parameter        | Refer to Flare tool Excel sheet  |
| Monitoring equipment                   | Flame Ionization Detector(FID)   |
| Measuring/reading/recording frequency: | Continuously.  |
| Calculation method (if applicable):    | -  |
| QA/QC procedures:                      | The detector will be checked on a quarterly basis to ensure that it is operational and functioning correctly.  |
| Purpose of data:                       | For project emission calculations  |
| Additional comments:                   | As per Tool to determine project emissions from flaring gases containing Methane". Used to demonstrate that the flare is operational (e.g. through a flame detection system reporting electronically on continuous basis)). If the flare is not operational for more than 20mins the default value to be adopted for flare efficiency is 0%. |

|  |  |                |               |                       |  |          |
|--|--|----------------|---------------|-----------------------|--|----------|
| Data/parameter:                        | Other flare operation parameters – pressure biogas at flare  |                |               |                       |  |          |
| Unit                                   | mBar   |                |               |                       |  |          |
| Description                            | Pressure of biogas   |                |               |                       |  |          |
| Measured/calculated/default            | Measured   |                |               |                       |  |          |
| Source of data                         | Measured   |                |               |                       |  |          |
| Value(s) of monitored parameter        | From Quarterly Monitoring Sheet<br>06/02/ 2014 = 32.7 mBars<br>23/06/2014 = 45.2 mBars<br>31/07/ 2014 = 54.1 mBars<br>06/12/ 2014 = 44.8 mBars<br>13/03/ 2015 = 43.5 mBars<br>18/05/ 2015 = 42.6 mBars<br>29/09/ 2015 = 35.5 mBars<br>23/12/ 2015 = 40.2 mBars<br>31/03/ 2016 = 54.7 mBars<br>29/06/ 2016 = 43.9 mBars<br>22/09/ 2016 = 46.5 mBars |                |               |                       |  |          |
| Monitoring equipment                   |  |                |               |                       |  |          |
|  | Type   | Accuracy Class | Serial Number | Calibration Frequency | Last Calibration                                     | Validity |
|  | KOBOLD SEN-3251  | ±0. 5%         | 260TUT1       | 2 years               | 26/03/2013<br>21/01/2014<br>14/01/2015<br>07/01/2016 | 2 years  |
| Measuring/reading/recording frequency: | quarterly  |                |               |                       |  |          |
| Calculation method (if applicable):    | -  |                |               |                       |  |          |
| QA/QC procedures:                      | The transmitter will be calibrated before use and calibrated regularly according to manufacturer's specifications.   |                |               |                       |  |          |
| Purpose of data:                       | For project emission calculations  |                |               |                       |  |          |
| Additional comments:                   | -  |                |               |                       |  |          |

|  |   |                 |               |                       |  |          |
|--|---|-----------------|---------------|-----------------------|--|----------|
| Data/parameter:                        | Other flare operation parameters – flowrate of biogas at flare  |                 |               |                       |  |          |
| Unit                                   | Nm³/h   |                 |               |                       |  |          |
| Description                            | Flowrate of biogas sent to the flare  |                 |               |                       |  |          |
| Measured/calculated/default            | Measured  |                 |               |                       |  |          |
| Source of data                         | Measured  |                 |               |                       |  |          |
| Value(s) of monitored parameter        | See flare tool sheet  |                 |               |                       |  |          |
| Monitoring equipment                   | Type  | Accuracy Class  | Serial Number | Calibration Frequency | Last Calibration                                     | Validity |
|  | Kobold Fluidic Oscillator flow meter (FI64)   | ±1.5%           | 5815          | 3 years               | 09/05/2013<br>22/01/2014<br>15/01/2015<br>07/01/2016 | 3 years  |
|  | Kobold TWD-B9410213T (TI64)   | ± 0.7°C at 80°C | N0906.979554  | 1 year                | 28/03/2013<br>21/01/2014<br>14/01/2015<br>07/01/2016 | 1 year   |
|  | Kobold SEN-3251 (PI64)  | ±0. 5%          | 260TUT 1      | 2 years               | 28/03/2013<br>21/01/2014<br>14/01/2015<br>07/01/2016 | 2 years  |
| Measuring/reading/recording frequency: | continuously.   |                 |               |                       |  |          |
| Calculation method (if applicable):    | See flare tool calculation – flowrate and methane concentration used to calculation flare emissions every minute.   |                 |               |                       |  |          |
| QA/QC procedures:                      | Flow meters will factory calibrated and a calibration certificate issued. The meters will be calibrated every three years or as specified by manufacturer, whichever is earliest. |                 |               |                       |  |          |
| Purpose of data:                       | For Project emission calculations   |                 |               |                       |  |          |
| Additional comments:                   | -   |                 |               |                       |  |          |

|                                 |   |
|---------------------------------|---|
| <b>Data/parameter:</b>          | <b>EL<sub>grid</sub>,</b>   |
| Unit                            | MWh   |
| Description                     | Net Electricity generated from the biogas collected in the anaerobic treatment facility sent to the grid                |
| Measured/calculated/default     | Measured by electricity meters.<br>Net calculated.  |
| Source of data                  | Measured by project developer   |
| Value(s) of monitored parameter | 01/01/2014 – 31/12/2014 = 8,422.17042<br>01/01/2015 – 31/12/2015 = 9,839.60340<br>01/01/2016 – 30/09/2016 = 5,311.00328 |



|  |  |                |               |                       |  |          |
|--|--|----------------|---------------|-----------------------|--|----------|
| Monitoring equipment                   | Type   | Accuracy Class | Serial Number | Calibration Frequency | Last Calibration                         | Validity |
|  | EDMI Genius (M5)   | 0.5%           | 202008352     | 3 years               | 12/11/2013<br>10/11/ 2014<br>03/11/ 2015 | 3 year   |
|  | PM710 (M7)   | ±1.0%          | 4A9515d5      | 1 year                | 12/11/2013<br>10/11/2014<br>03/11/2015   | 1 year   |
| Measuring/reading/recording frequency: | continuously, logged monthly   |                |               |                       |  |          |
| Calculation method (if applicable):    | Net sold to grid = M5 – M7   |                |               |                       |  |          |
| QA/QC procedures:                      | Meters will undergo maintenance and calibration according to appropriate industry standards. PEA invoice records will be cross checked with the meter results. |                |               |                       |  |          |
| Purpose of data:                       | For baseline emission calculations.  |                |               |                       |  |          |
| Additional comments:                   | -  |                |               |                       |  |          |

|  |   |                |               |                       |  |          |
|--|---|----------------|---------------|-----------------------|--|----------|
| <b>Data/parameter:</b>                 | <b>Q<sub>y,ww</sub></b>   |                |               |                       |  |          |
| Unit                                   | m <sup>3</sup>  |                |               |                       |  |          |
| Description                            | Volume of wastewater treated in year  |                |               |                       |  |          |
| Measured/calculated/default            | Measured  |                |               |                       |  |          |
| Source of data                         | Monitored   |                |               |                       |  |          |
| Value(s) of monitored parameter        | 01/01/2014 – 31/12/2014 = 213,865.1<br>01/01/2015 – 31/12/2015 = 208,141.3<br>01/01/2016 – 30/09/2016 = 133,230.7   |                |               |                       |  |          |
| Monitoring equipment                   | Type  | Accuracy Class | Serial Number | Calibration Frequency | Last Calibration                                     | Validity |
|  | Kobold Magnetic flow meter  | ±0.3%          | 265044        | 2 years               | 12/07/2013<br>21/01/2014<br>13/01/2015<br>07/01/2016 | 2 years  |
|  |   |                |               |                       |  |          |
| Measuring/reading/recording frequency: | continuously  |                |               |                       |  |          |
| Calculation method (if applicable):    | -   |                |               |                       |  |          |
| QA/QC procedures:                      | Flow meters will factory calibrated and a calibration certificate issued. The meters will be calibrated every three years or as specified by manufacturer, whichever is earliest.<br>Meters are checked monthly to ensure they are operating. |                |               |                       |  |          |
| Purpose of data:                       | For project emission calculations   |                |               |                       |  |          |
| Additional comments:                   | -   |                |               |                       |  |          |

| <b>Data/parameter:</b>                 | <b>COD<sub>y,ww,treated</sub></b>  |               |                       |  |                       |                  |          |             |     |              |        |  |        |
|--|--|---------------|-----------------------|--|-----------------------|------------------|----------|-------------|-----|--------------|--------|--|--------|
| Unit                                   | tonnes/m <sup>3</sup>  |               |                       |  |                       |                  |          |             |     |              |        |  |        |
| Description                            | Chemical oxygen demand of the treated wastewater in year y   |               |                       |  |                       |                  |          |             |     |              |        |  |        |
| Measured/calculated/default            | Measured by Univanich laboratory and external laboratory   |               |                       |  |                       |                  |          |             |     |              |        |  |        |
| Source of data                         | Measured   |               |                       |  |                       |                  |          |             |     |              |        |  |        |
| Value(s) of monitored parameter        | 01/01/2014 – 31/12/2014 = 0.00753<br>01/01/2015 – 31/12/2015 = 0.00288<br>01/01/2016 – 30/09/2016 = 0.00291  |               |                       |  |                       |                  |          |             |     |              |        |  |        |
| Monitoring equipment                   | <table border="1"> <thead> <tr> <th>Type</th><th>Accuracy Class</th><th>Serial Number</th><th>Calibration Frequency</th><th>Last Calibration</th><th>Validity</th></tr> </thead> <tbody> <tr> <td>Hach DR2800</td><td>±1%</td><td>S/N. 1275172</td><td>1 year</td><td>25/01/2013<br/>23/01/2014<br/>26/01/2015<br/>26/01/2016</td><td>1 year</td></tr> </tbody> </table> | Type          | Accuracy Class        | Serial Number  | Calibration Frequency | Last Calibration | Validity | Hach DR2800 | ±1% | S/N. 1275172 | 1 year | 25/01/2013<br>23/01/2014<br>26/01/2015<br>26/01/2016 | 1 year |
| Type                                   | Accuracy Class   | Serial Number | Calibration Frequency | Last Calibration                                     | Validity              |                  |          |             |     |              |        |  |        |
| Hach DR2800                            | ±1%  | S/N. 1275172  | 1 year                | 25/01/2013<br>23/01/2014<br>26/01/2015<br>26/01/2016 | 1 year                |                  |          |             |     |              |        |  |        |
| Measuring/reading/recording frequency: | monthly  |               |                       |  |                       |                  |          |             |     |              |        |  |        |
| Calculation method (if applicable):    | The average COD value is calculated for emission calculation.  |               |                       |  |                       |                  |          |             |     |              |        |  |        |
| QA/QC procedures:                      | Sampling and analysis will be carried out to internationally recognised procedures.  |               |                       |  |                       |                  |          |             |     |              |        |  |        |
| Purpose of data:                       | For project emission calculations  |               |                       |  |                       |                  |          |             |     |              |        |  |        |
| Additional comments:                   | -  |               |                       |  |                       |                  |          |             |     |              |        |  |        |

| <b>Data/parameter:</b>                 | <b>COD<sub>y,ww,untreated</sub></b>  |               |                       |  |                       |                  |          |             |     |              |        |  |        |
|--|--|---------------|-----------------------|--|-----------------------|------------------|----------|-------------|-----|--------------|--------|--|--------|
| Unit                                   | tonnes/m <sup>3</sup>  |               |                       |  |                       |                  |          |             |     |              |        |  |        |
| Description                            | Chemical oxygen demand of the wastewater entering the Biogas system in year y  |               |                       |  |                       |                  |          |             |     |              |        |  |        |
| Measured/calculated/default            | Measured by Univanich laboratory and external laboratory   |               |                       |  |                       |                  |          |             |     |              |        |  |        |
| Source of data                         | Measured   |               |                       |  |                       |                  |          |             |     |              |        |  |        |
| Value(s) of monitored parameter        | 01/01/2014 – 31/12/2014 = 0.05865<br>01/01/2015 – 31/12/2015 = 0.05613<br>01/01/2016 – 30/09/2016 = 0.05936  |               |                       |  |                       |                  |          |             |     |              |        |  |        |
| Monitoring equipment                   | <table border="1"> <thead> <tr> <th>Type</th><th>Accuracy Class</th><th>Serial Number</th><th>Calibration Frequency</th><th>Last Calibration</th><th>Validity</th></tr> </thead> <tbody> <tr> <td>Hach DR2800</td><td>±1%</td><td>S/N. 1275172</td><td>1 year</td><td>25/01/2013<br/>23/01/2014<br/>26/01/2015<br/>26/01/2016</td><td>1 year</td></tr> </tbody> </table> | Type          | Accuracy Class        | Serial Number  | Calibration Frequency | Last Calibration | Validity | Hach DR2800 | ±1% | S/N. 1275172 | 1 year | 25/01/2013<br>23/01/2014<br>26/01/2015<br>26/01/2016 | 1 year |
| Type                                   | Accuracy Class   | Serial Number | Calibration Frequency | Last Calibration                                     | Validity              |                  |          |             |     |              |        |  |        |
| Hach DR2800                            | ±1%  | S/N. 1275172  | 1 year                | 25/01/2013<br>23/01/2014<br>26/01/2015<br>26/01/2016 | 1 year                |                  |          |             |     |              |        |  |        |
| Measuring/reading/recording frequency: | monthly  |               |                       |  |                       |                  |          |             |     |              |        |  |        |

|                                     |   |
|-------------------------------------|---|
| Calculation method (if applicable): | The average COD value is calculated for emission calculation.                       |
| QA/QC procedures:                   | Sampling and analysis will be carried out to internationally recognised procedures. |
| Purpose of data:                    | For project emission calculations   |
| Additional comments:                | -   |

|  |   |                |               |                       |  |          |
|--|---|----------------|---------------|-----------------------|--|----------|
| <b>Data/parameter:</b>                 | <b>Sludge Application</b>   |                |               |                       |  |          |
| Unit                                   | -   |                |               |                       |  |          |
| Description                            | End use of final sludge   |                |               |                       |  |          |
| Measured/calculated/default            | -   |                |               |                       |  |          |
| Source of data                         | Monitored and recorded in logbook   |                |               |                       |  |          |
| Value(s) of monitored parameter        | There are no any sludge removal through the monitoring period   |                |               |                       |  |          |
| Monitoring equipment                   |   |                |               |                       |  |          |
|  | Type  | Accuracy Class | Serial Number | Calibration Frequency | Last Calibration                                     | Validity |
|  | Kobold Magnetic flow meter  | ±0.3%          | 265047        | 2 years               | 26/03/2013<br>22/01/2014<br>14/01/2015<br>07/01/2016 | 2 years  |
|  |   |                |               |                       |  |          |
| Measuring/reading/recording frequency: | as per desludging event   |                |               |                       |  |          |
| Calculation method (if applicable):    | -   |                |               |                       |  |          |
| QA/QC procedures:                      | The application to land will be monitored at the time of application to land and a week afterwards to ensure it is distributed to the fields in aerobic condition , ie less than 1 meter deep |                |               |                       |  |          |
| Purpose of data:                       | For project emission calculations   |                |               |                       |  |          |
| Additional comments:                   | -   |                |               |                       |  |          |

### D.3. Implementation of sampling plan

&gt;&gt;

N/A

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

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

&gt;&gt;

AMSIII.H specifies that the monitored emission reductions are based on the amount of methane recovered and fuelled or flared that is monitored ex-post. The monitored emission reductions for AMSI.D is based on the amount of electricity generated using biogas and is calculated as per the method used for ex-ante emission reduction estimates

The equation is  $BE_y = MD_{y,combustion} + BE_{elec,y}$

Where,

$MD_{y,combustion}$  = Baseline Methane Emissions destroyed through combustion for energy production or flaring (tCO<sub>2</sub>e)

$BE_{elec,y}$  = Baseline emissions from electricity consumption (tCO<sub>2</sub>e)

Ex-post baseline emissions methane released from anaerobic decay of wastewater which is destroyed through combustion for energy production or flared are calculated as per the guidance of AMSIII.H section 34 as follows:

$$MD_{y,combustion} = Q_{biogas,combust} \times F_{CH_4} \times \rho_{CH_4} \times 0.001 \times GWP_{CH_4}$$

where,

$Q_{biogas,combust}$  = Volume of biogas combusted as fuel or flared (m<sup>3</sup>/year)

$F_{CH_4}$  = Fraction of Methane in the biogas (kg/m<sup>3</sup>)

$\rho_{CH_4}$  = Density of Methane at normal conditions (kg/m<sup>3</sup>)

Ex-post baseline emissions from the electricity grid in the absence of the project are calculated as per AMSI.D section 9

$$BE_{elec,y} = EG_{d,y} \times EF_{project} / 1000$$

where,

$EG_{d,y}$  = Amount of electricity generated utilizing the biogas and exported to the grid (kWh)

$EF_{project}$  = Carbon emissions factor for the displaced electricity source (kgCO<sub>2</sub>e/kWh)

For the full calculations and formula please refer to Emission Reduction calculation spreadsheet.

|   |                            |                  |                    |
|---|----------------------------|------------------|--------------------|
| <b>Baseline Methane Emissions destroyed through combustion for energy production or flaring AMS III.H</b> | $MD_{y,combustion,flare}$  |                  | tCO <sub>2</sub> e |
|   | 2014                       | 64,409.59        |                    |
|   | 2015                       | 67,242.70        |                    |
|   | 2016                       | 38,189.00        |                    |
| <b>Baseline Emissions from the displaced electricity from grid AMS I.D</b>                                | $BE_{elec,y}$              |                  | tCO <sub>2</sub> e |
|   | 2014                       | 4,497.44         |                    |
|   | 2015                       | 5,254.35         |                    |
|   | 2016                       | 2,836.08         |                    |
| <b>Total Baseline Emissions</b>   | <b>BE(AMSI.H + AMSI.D)</b> |                  | tCO <sub>2</sub> e |
|   | 2014                       | <b>68,907.03</b> |                    |
|   | 2015                       | <b>72,497.05</b> |                    |
|   | 2016                       | <b>41,025.07</b> |                    |

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

>>

AMSI.H defines the project emissions associated with electricity use, wastewater treatment, decay of sludge produced in the project, methane released due to inefficiencies in the capture and flare systems and dissolved methane in wastewater. The project emissions are calculated as follows:

$$PE_y = PE_{y,power} + PE_{y,ww,treated} + PE_{y,s,final} + PE_{y,fugitive} + PE_{y,dissolved}$$

where,

|                     |   |   |
|---------------------|---|---|
| $PE_y$              | = | Project activity emissions in the year y (tCO <sub>2</sub> e)               |
| $PE_{y,power}$      | = | Emissions from electricity or diesel consumption in the year "y"            |
| $PE_{y,ww,treated}$ | = | Emissions from degradable organic carbon in treated wastewater in year "y"  |
| $PE_{y,s,final}$    | = | Emissions from anaerobic decay of the final sludge produced in the year "y" |
| $PE_{y,fugitive}$   | = | Emissions from methane release in capture and flare systems in year "y"     |
| $PE_{y,dissolved}$  | = | Emissions from dissolved methane in treated wastewater in year "y"          |

It cannot be shown that the technology implemented does not increase the amount of methane produced per unit of COD removed (according to AMSIIIH, COD removed is the difference between the inflow COD ( $COD_{y,ww,untreated}$ ) and outflow COD ( $COD_{y,ww,treated}$ ), compared with the technology used in the baseline). Therefore, project emissions will be calculated as per the methods for the ex-ante project emissions calculations with the addition of project emissions from flaring:

$$PE_y = PE_{flare} + PE_{wastewater}$$

where,

|                   |   |  |
|-------------------|---|--|
| $PE_{flare}$      | = | Project Emissions from Flaring (tCO <sub>2</sub> e)              |
| $PE_{wastewater}$ | = | Project Emissions from Wastewater treatment (tCO <sub>2</sub> e) |

For the full calculations and formula please refer to Emission Reduction calculation spreadsheet

|  |                                       |                  |                    |
|--|---------------------------------------|------------------|--------------------|
| <b>Emissions from degradable organic carbon in treated wastewater in year "y"</b>  | <b><math>PE_{y,ww,treated}</math></b> |                  |                    |
|  | 2014                                  | 1,690.19         | tCO <sub>2</sub> e |
|  | 2015                                  | 629.15           |                    |
|  | 2016                                  | 406.44           |                    |
| <b>Emissions from anaerobic decay of the final sludge produced in the year "y"</b> | <b><math>PE_{y,s,final}</math></b>    |                  |                    |
|  | 2014                                  | 0                | tCO <sub>2</sub> e |
|  | 2015                                  | 0                |                    |
|  | 2016                                  | 0                |                    |
| <b>Emissions from methane release in capture and flare systems in year "y"</b>     | <b><math>PE_{y,fugitive}</math></b>   |                  |                    |
|  | 2014                                  | 5,740.24         | tCO <sub>2</sub> e |
|  | 2015                                  | 5,819.40         |                    |
|  | 2016                                  | 3,948.97         |                    |
| <b>Emissions from dissolved methane in treated wastewater in year "y"</b>          | <b><math>PE_{y,dissolved}</math></b>  |                  |                    |
|  | 2014                                  | 534.66           | tCO <sub>2</sub> e |
|  | 2015                                  | 520.35           |                    |
|  | 2016                                  | 333.08           |                    |
| <b>Total Project Emissions from AMSIIIH</b>  | <b><math>PE_y</math></b>              |                  |                    |
|  | 2014                                  | 7,965.10         | tCO <sub>2</sub> e |
|  | 2015                                  | 6,968.90         |                    |
|  | 2016                                  | 4,688.49         |                    |
| <b>Project Emissions from Flaring</b>  | <b><math>PE_{y,flare}</math></b>      |                  |                    |
|  | 2014                                  | 9,880.55         | tCO <sub>2</sub> e |
|  | 2105                                  | 2,939.54         |                    |
|  | 2016                                  | 137.95           |                    |
| <b>Total Project Emissions</b>   | <b>PE</b>                             |                  |                    |
|  | 2014                                  | <u>17,845.64</u> | tCO <sub>2</sub> e |
|  | 2015                                  | <u>9,908.44</u>  |                    |
|  | 2016                                  | <u>4,826.44</u>  |                    |

**E.3. Calculation of leakage**

&gt;&gt;

No leakage is included as technology used does not involve equipment transferred from another activity or existing equipment being transferred to another activity.

| <b>Leakage</b>                      |                |   |                    |
|-------------------------------------|----------------|---|--------------------|
| No leakage is estimated in AMSIII.H | <b>Leakage</b> | 0 | tCO <sub>2</sub> e |

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

&gt;&gt;

The emissions reductions in this project activity can be calculated as follow;

$$ER_y = BE_y - PE_y - Leakage$$

where,

$ER_y$  = Emission Reductions in year y (tCO<sub>2</sub>e)

$BE_y$  = Baseline Emissions in year y (tCO<sub>2</sub>e)

$PE_y$  = Project Emissions in year y (tCO<sub>2</sub>e)

$Leakage$  = Leakage in year y (tCO<sub>2</sub>e)

| Item           | Baseline emissions or baseline net GHG removals by sinks (t CO <sub>2</sub> e) | Project emissions or actual net GHG removals by sinks (t CO <sub>2</sub> e) | Leakage (t CO <sub>2</sub> e) | GHG emission reductions or net GHG removals by sinks (t CO <sub>2</sub> e) achieved in the monitoring period |                              |                              |
|----------------|--|---|-------------------------------|--|------------------------------|------------------------------|
|                |  |   |                               | Up to 31/12/2012   | From 01/01/2013              | Total amount                 |
| <b>AMSIIIH</b> |  |   |                               |  |                              |                              |
| 2014           | 64,409.59  | 17,845.64   | 0                             |  | 46,563.95                    | 46,563.95                    |
| 2015           | 67,242.70  | 9,908.44  | 0                             |  | 57,334.26<br>(capped 56,314) | 57,334.26<br>(capped 56,314) |
| 2016           | 38,189.00  | 4,826.44  | 0                             |  | 33,362.56                    | 33,362.56                    |
| <b>AMSID</b>   |  |   |                               |  |                              |                              |
| 2014           | 4,497.44   | 0   | 0                             |  | 4,497.44                     | 4,497.44                     |
| 2015           | 5,254.35   | 0   | 0                             |  | 5,254.35                     | 5,254.35                     |
| 2016           | 2,836.08   | 0   | 0                             |  | 2,836.08                     | 2,836.08                     |
| <b>Total</b>   |  |   |                               |  |                              |                              |
| 2014           | 68,907.03  | 17,845.64   | 0                             |  | 51,061.39                    | 51,061.39                    |
| 2015           | 72,497.05  | 9,908.44  | 0                             |  | 61,568.35                    | 61,568.35                    |
| 2016           | 41,025.08  | 4,826.44  | 0                             |  | 36,198.64                    | 36,198.64                    |

**E.5. Comparison of actual emission reductions or net 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 <sub>2</sub> e) | 172,895<br>( 2014 : 62,871 )<br>( 2015 : 62,871 )<br>( 2016 : 47,153 ) | 148,828<br>( 2014 : 51,061 )<br>( 2015 : 61,568 )<br>( 2016 : 36,199 ) |

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

>> The actual emission reductions are lower than estimated in the PDD due to lower volume of wastewater than predicted in PDD.



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

|  |  |
|--|--|
| <b>Project participant and/or responsible person/ entity</b> | <input checked="" type="checkbox"/> Project participant<br><input type="checkbox"/> Person/entity responsible for completing the CDM-MR-FORM |
| <b>Organization name</b>                                     | Univanich Palm Oil Public Company Ltd.   |
| <b>Street/P.O. Box</b>                                       | Box 8-9 Aoluk District   |
| <b>Building</b>  |  |
| <b>City</b>  |  |
| <b>State/region</b>  | Krabi  |
| <b>Postcode</b>  | 81110  |
| <b>Country</b>   | Thailand   |
| <b>Telephone</b>   | +66 75 634 484   |
| <b>Fax</b>   | +66 75 681 124   |
| <b>E-mail</b>  | john.clendon@univanich.com   |
| <b>Website</b>   | www.univanich.com  |
| <b>Contact person</b>  | Mr. John Clendon   |
| <b>Title</b>   | Managing Director  |
| <b>Salutation</b>  | Mr.  |
| <b>Last name</b>   | Clendon  |
| <b>Middle name</b>   |  |
| <b>First name</b>  | John   |
| <b>Department</b>  |  |
| <b>Mobile</b>  |  |
| <b>Direct fax</b>  | +66 75 681 260   |
| <b>Direct tel.</b>   | +66 75 634 484   |
| <b>Personal e-mail</b>                                       | john.clendon@univanich.com   |

|  |  |
|--|--|
| <b>Project participant and/or responsible person/ entity</b> | <input checked="" type="checkbox"/> Project participant<br><input type="checkbox"/> Person/entity responsible for completing the CDM-MR-FORM |
| <b>Organization name</b>                                     | Carbon Bridge Pte Ltd  |
| <b>Street/P.O. Box</b>                                       | 300 Beach Road   |
| <b>Building</b>  | 38-05 The Concourse  |
| <b>City</b>  |  |
| <b>State/region</b>  | Singapore  |
| <b>Postcode</b>  | 199555   |
| <b>Country</b>   | Singapore  |
| <b>Telephone</b>   |  |
| <b>Fax</b>   |  |
| <b>E-mail</b>  | bmcintosh@carbon-bridge.com  |
| <b>Website</b>   | www.carbon-bridge.com  |
| <b>Contact person</b>  |  |
| <b>Title</b>   | Managing Director  |

|                        |                             |
|------------------------|-----------------------------|
| <b>Salutation</b>      | Ms.                         |
| <b>Last name</b>       | McIntosh                    |
| <b>Middle name</b>     |                             |
| <b>First name</b>      | Bridget                     |
| <b>Department</b>      |                             |
| <b>Mobile</b>          | +668 33 407090              |
| <b>Direct fax</b>      |                             |
| <b>Direct tel.</b>     |                             |
| <b>Personal e-mail</b> | bmcintosh@carbon-bridge.com |

|  |  |
|--|--|
| <b>Project participant and/or responsible person/ entity</b> | <input type="checkbox"/> Project participant<br><input checked="" type="checkbox"/> Person/entity responsible for completing the CDM-MR-FORM |
| <b>Organization name</b>                                     | Univanich Palm Oil Public Company Ltd.   |
| <b>Street/P.O. Box</b>                                       | Box 8-9 Aoluk District   |
| <b>Building</b>  |  |
| <b>City</b>  |  |
| <b>State/region</b>  | Krabi  |
| <b>Postcode</b>  | 81110  |
| <b>Country</b>   | Thailand   |
| <b>Telephone</b>   | +66 75 634 634   |
| <b>Fax</b>   | +66 75 681 124   |
| <b>E-mail</b>  |  |
| <b>Website</b>   | www.univanich.com  |
| <b>Contact person</b>  | Sakol Tantanawat   |
| <b>Title</b>   | CDM Biogas manager   |
| <b>Salutation</b>  | Mr.  |
| <b>Last name</b>   | Tantanawat   |
| <b>Middle name</b>   |  |
| <b>First name</b>  | Sakol  |
| <b>Department</b>  |  |
| <b>Mobile</b>  | +668 9472 7472   |
| <b>Direct fax</b>  |  |
| <b>Direct tel.</b>   |  |
| <b>Personal e-mail</b>                                       | sakol.t@univanich.com  |

- - - - -

## Document information

| <i>Version</i>  | <i>Date</i>     | <i>Description</i>   |
|---|-----------------|--|
| 05.1  | 4 May 2015      | Editorial revision to correct version numbering.   |
| 05.0  | 1 April 2015    | Revisions to: <ul style="list-style-type: none"> <li>• Include provisions related to delayed submission of a monitoring plan;</li> <li>• Provisions related to the Host Party;</li> <li>• Remove reference to programme of activities;</li> <li>• Overall editorial improvement.</li> </ul>  |
| 04.0  | 25 June 2014    | Revisions to: <ul style="list-style-type: none"> <li>• Include the Attachment: Instructions for filling out the monitoring report form (these instructions supersede the "Guideline: Completing the monitoring report form" (Version 04.0));</li> <li>• Include provisions related to standardized baselines;</li> <li>• Add contact information on a responsible person(s)/ entity(ies) for completing the CDM-MR-FORM in A.6 and Appendix 1;</li> <li>• Change the reference number from <i>F-CDM-MR</i> to <i>CDM-MR-FORM</i>;</li> <li>• Editorial improvement.</li> </ul> |
| 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 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<br>Document Type: Form<br>Business Function: Issuance<br>Keywords: monitoring report |                 |  |