



VERIFICATION REPORT FOR SD BIOSUPPLY WASTEWATER TREATMENT AND BIOGAS UTILIZATION PROJECT



Document Prepared By TÜV NORD CERT GmbH

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Prepared By	TÜV NORD CERT GmbH
Contact	TÜV NORD CERT GmbH JI/CDM Certification Program

	Langemarckstraße, 20 45141 Essen, Germany Phone: +49-201-825-3335 Fax: +49-201-825-3290 www.tuev-nord.de
Approved By	Kunal Rami
Work Carried Out By	Cheong, Chun Yuen (Robert) (Team Leader) David Lubanga (Technical Reviewer)

Summary:

- A brief description of the verification and the project**

The project activity is on the site of the SD Starch factory located in Kambong sub-district, Huai Phueng district, Karasin province, Northeast of Thailand.

The project activity is an anaerobic wastewater treatment facility replacing the open anaerobic lagoon-based system to capture methane for thermal utilization and combust at boilers for starch drying process. This activity leads to avoidance of methane emissions into the atmosphere as well as reduction of CO₂ emission by replacing fossil fuel consumption.

The project started operations on 16/09/2005 based on the date when emission reductions began and was registered as a VCS project activity on 06/05/2010 with registration ID 416. The first 10-year renewable crediting period was from 28/03/2006 to 27/03/2016 (both dates inclusive).

The project activity is in the 2nd crediting period from 28/03/2016 to 27/03/2026 (both dates inclusive).

The registration date of the project is crosscheck against the final validation report at the VERRA website. <https://registry.verra.org/app/projectDetail/VCS/416>.

- The purpose and scope of verification**

The objective of the verification is to have an independent review of the ex post determination by a VVB (Validation and Verification Body) of the monitored GHG emission reductions that have occurred as a result of the implementation of the project activity during a defined monitoring period.

- The monitoring period**

This is the 4th monitoring period for CPII from 03/03/2020 to 30/04/2021 both dates inclusive for total of 424 days.

- The method and criteria used for verification**

Verification is conducted using TÜV NORD CERT GmbH procedures in line with the requirements specified in the latest version of the VCS Validation and Verification Manual and applying standard auditing techniques. The verification team assessed the project activity's compliance with the VCS Standard Version 4.1, the selected CDM methodology and the project description monitoring plan. The verification criteria followed the guidance documents provided by VCS included the following:

VCS Standard Version 4.1, VCS Program Guide Version 4.0 and the applied CDM methodologies "AMS III.H: Methane Recovery in Wastewater Treatment, version 18 and AMS I.C Thermal energy for user with or without electricity, version 20

- **The number of findings raised during this verification**

In the course of the verification, 18 Corrective Action request (CARs) and 6 Clarifications (CL) were raised and successfully closed. Details of the summary of findings are listed in Appendix 4 below.

- **Any uncertainties associated with the verification**

There are no restrictions of uncertainty.

- **Summary of the verification conclusion**

South Pole Carbon Asset Management Ltd. has commissioned TÜV NORD JI/CDM Certification Program to carry out the CPII 4th periodical verification of the project, “SD Biosupply Wastewater Treatment and Biogas Utilization Project” with regard to the relevant requirements of VCS standard Version 4.1.

TÜV NORD confirms all verification activities including objectives, scope and criteria, level of assurance, monitoring and monitoring report adhere to VCS Standard Version 4.1 and all associated updated as documented in this report, are complete.

TÜV NORD concludes that the project activity “SD Biosupply Wastewater Treatment and Biogas Utilization Project” as described in the Monitoring Report version 4.1 dated 13/12/2021, meets all relevant requirements for VCS verification activity and correctly applied the methodologies AMS III.H: Methane Recovery in Wastewater Treatment, version 18, and AMS I.C: Thermal energy for user with or without electricity, version 20. Hence TÜV NORD is able to certify that the GHG emission reduction from the project during the monitoring period from 03/03/2020 to 30/04/2021 (both dates included) amounting to **50,415 tCO₂e**.

1.0 INTRODUCTION

1.1 Objective

South Pole Carbon Asset Management Ltd has commissioned TÜV NORD JI/CDM Certification Program to carry out the CPII 4th periodical verification of the project for the monitoring period from 03/03/2020 to 30/04/2021. The objective of verification is to have an independent review of the ex-post determination by a VVB of the monitored GHG emission reductions that have occurred as a result of the project activity implemented during a defined monitoring period.

The assessment is conducted against the requirements of the VCS Standard version 4.1 based on the monitoring report. In order to confirm that the GHG emission reductions are reasonable and meet the identified criteria, the verification involves the assessment of project implementation and operation status, monitoring plan conformance to the PD and VCS rules, and the applied CDM baseline and monitoring methodology.

Verification is a requirement and is deemed necessary to provide assurance on the generation of VCUs.

1.2 Scope and Criteria

The scope of the verification is to verify:

- a) the actual monitoring system and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan;
- b) the GHG emission reductions data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reductions data are free from material misstatements;
- c) the reported GHG emissions data is sufficiently supported by evidence.

Verification shall ensure that the reported GHG emission reductions are complete and accurate in accordance with the applicable VCS criteria in order to be certified.

Verification is conducted using TÜV NORD procedures in line with the requirements specified in the VCS Program and ISO14064-3 requirements and applying auditing techniques.

The verification team assessed and determined that the implementation and operation of the project activity, and steps to report GHG emission reductions comply with the VCS rules.

The verification involved review of relevant documentation and interview with the project participants.

Verification is not meant to provide any consultancy towards the project participants; however, stated request for clarifications and/or corrective actions may have provided input for improvement of the monitoring.

1.3 Level of Assurance

All GHG sinks, sources and GHG emissions which equal to or greater than 5% of the total GHG assertions are considered. The project generate an average of 51,316 VCUs per year and therefore can be considered as a normal project as per VCS v 4.1 §3.9.1 (a) requirements since the project annual VUCs is less than or equal to 300,000 tonnes of CO_{2e} per year. The threshold for materiality with respect to the aggregate of errors, omissions and misrepresentations relative to the total reported GHG emission reductions and/or removals shall be five percent for projects according to VCS v 4.1 §4.1.8 (4).

The assessment conducted is to provide a reasonable level of assurance of compliance against the defined audit criteria and materiality threshold within the audit scope. Based on the audit findings the verification statement reasonably assures that the GHG assertion is materially correct and is a fair representation of the GHG data and information.

1.4 Summary Description of the Project

The project is implemented by SD Biosupply Co., Ltd and it aims to capture methane from the wastewater for thermal utilization and combust at boilers for starch drying process replacing fossil fuel HFO.

The project activity involves the installation of UASB digesters for recovering biogas and utilised as fuel for thermal generation in the starch factory and located at Kambong sub-district, Huai Phueng district, Karasin province, Northeast of Thailand

The project was registered with Verra on 06/05/2010 with a project ID 416 and adopted the renewal crediting period of 10 years with maximum 2 times renewal. This is the 2nd crediting period of 10 years from 28/03/2016 to 27/03/2026 (both dates included).

The project registration dated 06/05/2010 as described in the validation report is in the project record on the Verra Registry. As such, it is eligible for the 10-year renewable crediting period that is listed in the project description. Therefore, in accordance to Appendix 2 of the VCS Standard, v4.1, “registered projects and projects that complete validation on or before 19 March 2020 remain eligible to apply the crediting period requirements under VCS Version 3.

The project registration at Verra is verified through the weblink <https://registry.verra.org/app/projectDetail/VCS/416>.

The project registered as VCS project activity with the emission reductions will be certified as verified carbon units (VCUs).

The total verified carbon units (VCUs) achieved in the monitoring period are **50,415 tCO₂e**, has been verified by remote inspection and checking the related documentation, interviews with the project implementer and project consultant.

The project activity generates GHG emission reductions by displacing part of the electricity generated by the grid which is dominated by fossil fuel-fired power plants thus generating green house gas emission reductions and produce financial, social and environmental benefits.

The project has resulted in the local sustainable development as described in Section 1.11 of the Monitoring Report.

Refer Appendix 4 for details of findings.

2.0 VERIFICATION PROCESS

2.1 Method and Criteria

A project specific verification and monitoring plan was developed to guide the verification auditing process to ensure efficiency and effectiveness. The purpose of the verification is to present a risk assessment for determining the nature and extent of verification procedures necessary to ensure the risk of auditing error is reduced to a reasonable level. According to the ISO14064-3, the criteria are the policy, procedure or requirement used as reference against which evidence is compared. Therefore, verification of the monitoring plan and the reported project results were measured for compliance against the following criteria:

- VCS Standard, v4.1
- VCS Program Guide, v4.0
- VCS Program Definitions, v4.1

The verification process derived from all items in the verification criteria stated above. There is no sampling approach applied by PP and VVB during this verification. All monitored data have been 100% verified against documents submitted by project participants.

Thus, based on the project parameters, scope and best professional judgement of the verification team it could be concluded that a reasonable level of assurance is met. The verification consists of the following three phases:

- Remote document review
- Remote site assessment and interview of project owner;
- The resolution of outstanding issues and the issuance of the final verification report and certification.

2.2 Document Review

The VCS MR and supporting background documents related to the project implementation were reviewed. Documents review was conducted to ensure consistency with and to identifying any deviation from VCS program requirements. Desk review included an examination of the project details, data and parameters, and quantification of GHG emission reductions.

Furthermore, the verification team used additional documentation from third parties like host party legislation, technical reports referring to the monitoring or to the basic conditions and technical data.

The references used in the course of this verification are summarized in Appendix 3.

The verification was performed basing on the documents check and review of measurements method. Refer appendix 5 of this report for the verification process for each parameter detail and corresponding documents verified.

2.3 Interviews

The objective of the interview process was to solicit important information from personnel related to project and relevant to the verification process. Site inspection and interviews are conducted remotely and information discussions were conducted with project owner, plant operators, technology provider, local commune and project consultant.

The team leader conducted the site inspection and interviews with the project owner, technology provider, project consultant, local communities and plant operators via google meet conference communication tool for opening meeting, inspection of project equipment, project site and closing meeting. Document review and discussion with the project consultant using skype as the communication tool.

The team leader is based in Malaysia was unable to travel to conduct site inspection due to the COVID-19 pandemic with travel restrictions and quarantine requirements for both countries Thailand and Malaysia.

The team leader has interviewed the project owner, technology provider, local commune, operation personnel and project consultant on topics listed in below table:

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Raya	Sirinut (Ann)	South Pole / Project Manager / IM01/	27/05/2021	Remote opening meeting & closing meeting.	Cheong, Chun Yuen (Robert)
2	Phiansamrit	Nawarat	South Pole / Project Development Manager / IM01/		Operations, Equipment, Employment, Environment, Metering, Maintenance	
3	Tiyavanich	Narong	SD Biosupply / Plant Manager / IM02/			
4	Fakklang	Supunnee	SD Biosupply / Biogas Manager / IM02/			
5	Rattanadhekul	Suchai	Papop Co. / Manager / IM03/			
6	Utachkul	Ubonwan	Papop Co. / Sr. Coordinator / IM03/			
7	Kosono	Boonruam	Local commune / IM04/		Interview of communes - environment, safety, employment, type of farming activities	
8	Ruangheho	Tongbai	Local commune / IM04/			
9.	Raya	Sirinut (Ann)	South Pole / Project Manager / IM01/	28/05/2021	Review of MR, ER, logsheets, calibration, site photos, findings and reporting	

2.4 Site Inspections

In lieu of the COVID-19 pandemic, taking into account of local national authority for international travel restrictions at verification team host country in Malaysia and project site in Thailand where quarantine is imposed at both countries are required and World Health Organisation (WHO) recommendations, the onsite inspection is not able to carry out as per the VCS- COVID travel guidance (<https://verra.org/covid-19-travel-guidance/>). In this aspect, the VVB had apply alternative auditing approach and techniques as describe in VCS rules and requirements.

The verification team had applied the following alternative techniques for the assessment and justify that there are sufficient for the purpose of the verification. Along with desk review the audit team had conduct remote interviews and virtual site inspection.

1. A complete and detail desk review of the monitoring report, ER calculations, host country legal requirements, supporting documents on the project technology, equipment installed and site verified.
2. A virtual site inspection and interview of project owner, project technology provider and project consultant using google meet to inspect the project site, current equipment and instrument installed and implemented, project boundary, monitoring and metering instruments, monitoring records and calibration.
3. Photos of the project location, site layout drawing, biogas digesters, boilers, laboratory test equipment, flow meters and metering panel provided by the project owner are reviewed and confirmed during the virtual onsite inspection and interview using google meet.
4. Selected local communities are interviewed using google meet on the project implementation and any negative and positive stakeholders' feedback.

The project location is crosscheck using google earth on the geo coordinates provided by the project owner

Duration of remote inspection: 26/05/2021 to 28/05/2021				
No.	Activity performed remotely	Site location	Date	Team member
1.	Document review	Puchong, Malaysia	26/05//2021	ong, Chun Yuen (Robert)
2	Remote opening meeting & closing meeting. Interview project owner representatives and plant operators	Bangkok / Puchong / Kambong sub-district (Project location)	27/05/2021	
3	Remote interview of local commune			
4	Review of MR, ER, Electricity protocols, equipment, photos, findings and reporting	Bangkok / Puchong	28/05/2021	

2.5 Resolution of Findings

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

A Corrective Action Request (CAR) is established where:

The project participant made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;

The VCS Standard Version 4.1 requirements have not been met;

There is a risk that the emission reductions cannot be monitored or calculated.

A Clarification Request (CL) will be issued where information is insufficient, unclear or not transparent enough to establish whether a requirement is met.

A Forward Action Request (FAR) will be issued when certain issues related to project implementation should be reviewed during the next verification.

A detailed list of the CARs CLs and FAR raised and discussed in the course of this verification is included in Appendix 4 of this report.

2.5.1 Forward Action Requests

This is the CPII 4th verification and there is no FAR raised during the last verification.

There are no FARs raised for this verification to be addressed in the next verification.

2.6 Eligibility for Validation Activities

The VVB TÜV NORD CERT GmbH holds accreditation for both validation and verification for the relevant sectoral scopes 13 and 1.

3.0 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The project is registered as a VCS project with registration number ID 416.

The project does not participate in other GHG programs that include emissions trading program or any other forms of environmental credit such as environmental credits including renewable energy certificates that includes GHG allowance trading.

The verification team has crosschecked at UNFCCC, Gold Standard and IREC. It could be confirmed the project is not listed in any of these registries and therefore there is no other environmental credit (for example renewable energy certificate) which has or will be produced by or obtained for the project.

In addition, the verification team has further confirm that the project activity is not participating in Thailand domestic scheme.

The project owner has signed a declaration dated 07/02/2018 at the time of VCS registration not to participate in emissions trading programs, other forms of environmental credit or other GHG program, not rejected by other GHG programs. /013/

3.2 Methodology Deviations

The project activity applies the methodologies AMS-III-H: Methane Recovery in Wastewater Treatment version 20.0" and AMS-I.C: Thermal energy production with or without electricity referencing to UNFCCC approved methodology. <https://cdm.unfccc.int/methodologies/SSCmethodologies/approved>.

Section 3.2.1 of MR describe the methodology deviation as according to section 2,6 Methodology Deviation in the approved revised PD version 02 applies for this monitoring period. Therefore, no further assessment required.

3.3 Project Description Deviations

During the CPII MP3 monitoring period, there are project description deviations related to changes as below.

Section 3.2.2 of MR has include the changes that have deviated.

Deviation 1

According to the applied methodology AMS-I.C deviation that has been approved on the two approaches for historical and fuel energy input where in the project scenario the amount of biogas combusted and starch produced at any given year are to be monitored to calculate the project scenario thermal energy generation. The quantity of starch produced for any given year is applied to calculate the historical thermal energy. However, the parameter for starch production was not included.

During the review of the ER calculations and MR, the parameter $Q_{\text{starch},y}$ was omitted during the renewal of crediting period. Therefore, the data for starch production was captured in the monitoring plan.

In this monitoring period, the $Q_{\text{starch},y}$ is added in Section D.4.2 of the MR as the monitoring parameter.

According to VCS Standard version 4.1, paragraph 3.18.2, sub-paragraph 2, Where the deviation does not impact the applicability of the methodology, additionality or the appropriateness of the baseline scenario, and the project remains in compliance with the applied methodology, the deviation shall be described and justified in the monitoring report. This shall include a description of when the changes occurred and the reasons for the changes. The deviation shall also be described in all subsequent monitoring reports.

Examples of such deviations include changes in the procedures for measurement and monitoring, or project design changes that do not have an impact on the applicability of the methodology, additionality or the appropriateness of the baseline scenario

During the assessment for the quantity of starch produced, there is no parameter described in Section 4.2 to monitor the quantity of starch produced although capture in the daily logsheet. Therefore, the parameter is added for clarity on how it is monitored, measured and recorded.

By adding this parameter in the monitoring, there is no impact to the baseline scenario, additionality of the project and applicability of the methodology and the deviation should be followed in all subsequent monitoring periods in this aspect

The additional of this parameter will not reduce the VCU emissions and will provide a better outcome of the project scenario thermal energy generated that is taken into account for ER calculations in a conservative manner.

The deviation start date for this parameter as from 01/01/2020 onwards.

Deviation 2

The deviation involves a change in the procedures for measurement and monitoring for parameter Flame_m.

According to the approved revised project description, the parameter should be measured using an instrument to measure and record the operation of the flame on / off in minute according to the applied Tool 06: Project emission from flaring version 3.0.

According to VCS Standard version 4.1, paragraph 3.18.2, sub-paragraph 2, Where the deviation does not impact the applicability of the methodology, additionality or the appropriateness of the baseline scenario, and the project remains in compliance with the applied methodology, the deviation shall be described and justified in the monitoring report. This shall include a description of when the changes occurred and the reasons for the changes. The deviation shall also be described in all subsequent monitoring reports.

Examples of such deviations include changes in the procedures for measurement and monitoring, or project design changes that do not have an impact on the applicability of the methodology, additionality or the appropriateness of the baseline scenario

During the onsite virtual inspection and technical documentation review of the flame system, it was found the flame detector was not installed. Therefore, no data on the flare operational time is captured. Thus has deviated from the applied tool.

According to the tool to calculate project emission from flaring, the duration of flame detected in minute would be used to determine the flare efficiency.

In this aspect, the value Flame_m is considered as "0", zero since the flame detector instrument to capture the duration of time when the flare is operating is not installed.

Therefore, the value from Flame_m is considered as 0 since the flare efficiency could not be determined at any one time when the flare is in operation.

Therefore, the flare efficiency is considered as "0" with zero VCU claim is considered as conservative

In this aspect, there is no impact to the baseline scenario, additionality of the project and applicability of the methodology and the deviation should be followed in all subsequent monitoring periods.

The deviation start date as from 01/01/2020 onwards.

3.4 Grouped Project

This section is not applicable as the project is not a grouped project.

4.0 VERIFICATION FINDINGS

4.1 Project Implementation Status

The project involves the installation of UASB digesters to capture methane to utilise as fuel for thermal generation by boilers for starch drying process replacing fossil fuel in the Somdej starch factory.

Via remote document review and interview of project owner and project technology provider, it is confirmed the project activity is a wastewater treatment with installation of UASB digesters to capture biogas and utilized as fuel for the boilers to generate heat for starch drying to replace fossil fuel at the Somdej starch factory. /RA1/RA2/02/03/09/

The project assists to reduce greenhouse gas (GHG) emissions by an estimated 51,316 tCO₂e per year during the 2nd crediting period. /PD1/VAL/

The project start date was defined as 16/09/2005 based on the date when emission reductions began. As per VCS standard, the start date of crediting period is defined as 28/03/2006.

The 1st crediting period was from 28/03/2006 to 27/03/2016 (both dates inclusive). This is the 2nd crediting period of ten years starts from 28/03/2016 to 27/03/2026 (both dates inclusive).

The expected operational life time of project activity is 15 years as describe in the initial approved PD. This is verified by means of review of the technical specifications provided by the project owner and interview of the project technology provider. /E5/PD1/

By means of documents review, verified photos provided and interview with project owner and project technology provider, the Verification Team was able to confirm that the project implementation is in accordance with the project description contained in the registered and approved revised project description. There are no any material discrepancies between project implementation and the project description.

On the basis on the reviewed project documentation, interview conducted it can be confirmed that w.r.t. the realized technology, the project equipment, as well as the monitoring and metering equipment, the project has been implemented and operated as applied monitoring methodology and monitoring plan described in the registered and approved revised PD.

This verification covers the period from 03/03/2020 to 30/04/2021 (including both days). The net emission reductions achieved during this monitoring period is 50,415 tCO₂e

Via remote interview with the project owner and local communes, it is verified that the project contributes the sustainable development through the following aspects as describe in the MR:

- Reduces GHG emission through the avoidance of methane emission from the existing open lagoon;
- Captures biogas for energy generation purpose; thereby reduced bad odor and improved air quality;
- Reduces GHG emission, other air pollutant emissions such as oxides of nitrogen, oxides of sulphur, carbon monoxide and particulates through reducing the combustion of fossil fuels;
- Employment and training of locals to manage the project to enhance work skills.
- Utilization of renewable energy and contributes thereby to energy security.

Details of the project location as per table below:

No.	Project Location
Host Country	Thailand
Region:	Kalasin
Project location	99 Moo 10, Somdej-Khuchinarai Road, Kambong sub-district, Huai Phueng district,

Latitude:	16° 40' 40.20"N
Longitude:	103° 48' 19.67"E

The location and geo-coordinates of the project site is verified through google earth. /ge/

Basic technical details of the project are summarized in below which has been verified during documents and photos reviewed.

Technical data of the project activity

Description	Unit of measure
Acidification Pond	
Technology Provider	Papop Co Ltd
No. of Unit	1
Capacity	6,000 m ³
UASB Digester	
Technology Provider	Papop Co.. Ltd
No. of unit	1
Capacity	5,000 m ³
Thermal Boiler	
Manufacturer	Sherrer
Capacity	3.780 MW _{th}
No. of Unit	1
Thermal Boiler	
Manufacturer	Vega
Capacity	3.489 MW _{th}
No. of Unit	1
Open Flare System	
Manufacturer	Papop Co. Ltd
Capacity	Combustion rate 750 Nm ³ /hr
No. of Unit	1

In conclusion, after corrections and findings are closed, the verification team could conclude the project implementation is in accordance with the project description contained in the registered and approved revised VCS PD.

4.2 Safeguards

4.2.1 No Net Harm

In accordance to Thailand Notification of Ministry of Industry for Industrial Effluent Standards BE2560 (2017), to control the discharge of wastewater effluent from a factory, by the virtue of the provisions prescribed in Clause 14 of the Ministerial Regulation No. 2 (B.E. 2535), which is prescribed under the Factory Act B.E. 2535, specifying that "Discharge of wastewater effluent from a factory shall be prohibited unless there is any treatment, other than dilution, applied to such wastewater so that its characteristics meets what prescribed by the Minister of Industry in the Government Gazette", the Minister of Industry has prescribed the Notification.

The treated wastewater from the project activity is retained in ponds within the project boundary and do not discharge to any waterways. Therefore, will not cause any environmental and socio-economic impact to the environment.

In addition, the project owner is required to conducted tests and submit the results to the authority on monthly basis.

The project location is surrounded by cassava farms and away from the commune villages based on photo review and remote Interviews with local communes who confirmed the project is away from the nearest commune village of 5km and does not cause any impact to the environment.

Therefore, no harm identified thus, no mitigation measures established as describes in section 2.1 of the MR and Section 4.2.1 of the registered PD.

In conclusion, there were no negative environmental and socio-economic impacts caused by the project activity.

4.2.2 Local Stakeholder Consultation

A local stakeholders' consultation was conducted by the project owner on 22/07/2008 at the time of initial validation and registration of the project activity.

The project owner has sent invitation letter on 07/07/2008 to representative of local authority and local communes to provide comments, feedback and invited to participate in the meeting. /LSC1/

A total of 15 participants consisting of local community leaders, local authority, communes and workers attended the meeting.

The minutes of meeting and participation attendance were verified.

The summary of the stakeholders meeting is describe in Annex 1 and II of the initial registered PD.

No further assessment required since the project activity is in CPII.

4.3 AFOLU-Specific Safeguards

Not applicable.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

4.4.1 Assessment of Data and Parameters Available at Validation

Means of verification	By means of comparison of the MR and the ER calculation with the registered PD, the verification team has checked whether all parameters fixed ex-ante have been applied correctly. The parameters that are fixed ex ante are following:
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	Parameters	Source of data	Values applied	Data Unit	Verification team assessment
	GWP _{CH4}	IPCC	25 (up to 31/12/2020) 28 (from 01/01/2021)	tCO ₂ e/tCH ₄	IPCC data and approved revised PD IPCC AR5
	B _{0,ww}	AMS.III-H v18.0	0.25	kg CH ₄ /kg COD	Applied methodology and approved revised PD
	UF _{BL}	AMS.III-H v18.0	0.89	Factor	Applied methodology and approved revised PD
	UF _{PJ}	ASM.III-H v18.0	1.12	Factor	Applied methodology and approved revised PD
	MCF _{ww,treatment,BL,i}	AMS.III-H v18.0	0.8	Factor	Applied methodology and approved revised PD
	MCF _{ww,treatment,PJ,k}	AMS.III-H v18.0	0.8	Factor	Applied methodology and approved revised PD
	COD removal efficiency-baseline	Historical data of baseline lagoons based on colorimetric analysis	87.62	%	Approved revised PD
	CFE _{ww}	AMS.III-H v18.0	0.9	-	Applied methodology and approved revised PD
	EF _y	Thai DNA	0.5637	tCO ₂ /MWh	Approved revised PD
	D _{CH4}	Tool to determine project emissions from flaring gases containing methane.	0.716	kg/m ³	Tool from UNFCCC

	<table><tr><td>$\eta_{BL,thermal}$</td><td>AMS.i-C</td><td>100</td><td>%</td><td>Applied methodology and approved revised PD</td></tr></table>	$\eta_{BL,thermal}$	AMS.i-C	100	%	Applied methodology and approved revised PD
$\eta_{BL,thermal}$	AMS.i-C	100	%	Applied methodology and approved revised PD		
	The following sources of information have been used in this context: • /MR/ • /ER/ • /PD1/ • /AMSIH/AMSIC/					
Findings	☐	The MR and ER calculation have considered the parameters fixed ex-ante correctly, no deviations have been observed.				
	☒	The following deviations from the parameters fixed ex-ante have been identified in the course of this verification: - The GWP _{CH4} for AR5 was not identified.				
	☒	In this context the following CARs, CLs, FARs have been raised: CAR 4-15				
Conclusion	☐	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.				
	☒	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.				
		After correction the parameters fixed ex ante indicated in the MR are crosschecked with the approved revised PD, applied tool, AR4, AR5 and methodologies for consistency.				

4.4.2 Assessment of Data and parameters Monitored

Means of verification	During the verification all relevant monitoring parameters (as listed in chapter 4.2 of the registered PD) have been verified with regards to the (i) appropriateness of the applied measurement / determination method, (ii) the correctness of the values applied for ER calculation, (iii) the accuracy, and applied QA/QC measures. The results as well as the verification procedure are described parameter-wise in the project specific verification checklist (Appendix 5).	
Findings	CL 4-1; CL 4-2; CL 4-3; CL 4-4; CL 4-5; CAR 4-6; CAR 4-7; CAR 4-8; CAR 4-9; CAR 4-10; CAR 4-11; CAR 4-12; CAR 4-13; CAR 4-14	
Conclusion	☐	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☒	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
	After correction, it could be concluded that all monitoring parameters have been measured / determined without material misstatements and in line with all applicable standards and relevant requirements.	

4.4.3 Assessment of in Compliance with monitoring plan

Means of verification	The verification team conducted a review of Section 4.3 of the draft monitoring report for the monitoring plan of the PA by means of comparison with: (i) the applied CDM methodology (ii) all applicable CDM Meth tools (iii) registered PD (iv) VCS standard The monitoring system diagram figure 3 was crosschecked with the single line and meter location diagram. The meters specification, management system for data collection, roles and responsibilities, data archiving, training, calibration and quality control are describe in section 4.3 are verified though documents review and interview with project owner and project consultant. The following sources of information have been used in this context: • /MR/ • /PD1/ • /ACM2/ • /VCSS/ • /E5/ • /P01/ • /P04/ • /O7/ • /IM01/IM02/						
Findings	<table border="1"> <tr> <td data-bbox="475 1083 548 1182">☒</td><td data-bbox="548 1083 1425 1182">The monitoring implementation is completely in accordance with the approved methodology applied by the project and monitoring plan in the registered PD.</td></tr> <tr> <td data-bbox="475 1182 548 1276">☐</td><td data-bbox="548 1182 1425 1276">In this context the following CARs, CLs, FARs have been raised:</td></tr> </table>	☒	The monitoring implementation is completely in accordance with the approved methodology applied by the project and monitoring plan in the registered PD.	☐	In this context the following CARs, CLs, FARs have been raised:		
☒	The monitoring implementation is completely in accordance with the approved methodology applied by the project and monitoring plan in the registered PD.						
☐	In this context the following CARs, CLs, FARs have been raised:						
Conclusion	<table border="1"> <tr> <td data-bbox="475 1287 548 1360">☒</td><td data-bbox="548 1287 1425 1360">No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.</td></tr> <tr> <td data-bbox="475 1360 548 1459">☐</td><td data-bbox="548 1360 1425 1459">The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.</td></tr> <tr> <td colspan="2" data-bbox="475 1459 1425 1505">The monitoring system is in compliance to the approved revised PD..</td></tr> </table>	☒	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.	☐	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.	The monitoring system is in compliance to the approved revised PD..	
☒	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.						
☐	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.						
The monitoring system is in compliance to the approved revised PD..							

4.4.4 Compliance with the calibration frequency requirements for measuring instruments

Means of verification	During the verification the relevant monitoring equipment has been checked whether the calibration requirements have been met; especially if the calibration frequency is in line with the requirements of the approved revised PD and manufacturer requirements. The calibration of the monitoring instruments was cross-checked with calibration reports.
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		The calibration records covering the monitoring period were maintained and verified by the verification team. The results as well as the verification procedure are described equipment-wise in the project specific verification checklist (Appendix 6). The following sources of information have been used in this context: • /MR/ • /C1 – C7/ • /PD1/
Findings	☐	Based on the details listed in Appendix 6 the verification team can confirm that all installed monitoring equipment has been duly calibrated for this entire monitoring period.
	☒	Based on the assessment and information as per appendix 6 delay(s) in calibration have been identified. The PP has applied the maximum permissible error of the instrument to the measured values taken during the period between the scheduled date of calibration and the actual date of calibration. From the related calibration certificates and emission reduction calculation the verification team confirms that the maximum permissible error has been applied in a conservative manner so that the adjusted measured values due to the delayed calibration result in fewer claimed emission reductions. For details please refer to Appendix 6
	☒	In this context the following CARs, CLs, FARs have been raised: CAR 4-7
Conclusion	☐	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☒	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
		The calibrations of the monitoring instruments installed have been verified as listed in Appendix 6 of this report. The calibration is carried out based on the manufacturers requirements: The VVB could conclude the instruments have been duly calibrated after correction.

4.4.5 Assessment of data and calculation of emission reductions or net removals

4.4.5.1 Calculation of baseline GHG emissions or removals

Means of verification	During the verification the calculation of baseline GHG emissions has been checked. In detail the following has been verified: • <i>Transparency</i>: It has been checked whether the calculation of baseline emissions is fully traceable and, where used, the Excel calculation provides all calculation formulae. • <i>Parameter consistency</i>: It has been checked whether all internal and external parameters and data used for the calculation are applied consistently in the monitoring report and the calculation spreadsheet.
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- **Correctness:** It has been checked whether the applied formulae and methods for calculating baseline emissions are in accordance with the monitoring plan and the approved methodology.
- **Completeness:** It has been checked whether all calculations are complete and without omissions.

There are two baselines for this project activity namely emissions from wastewater treatment (AMS.III-H) and steam/heat produced using fossil fuels (AMS.I-C).

The baselines emissions for wastewater treatment:

$$BE_y = BE_{power, y} + BE_{ww, treatment, y} + BE_{s, treatment, y} + BE_{ww, discharge, y} + BE_{s, final, y}$$

BE_y : Baseline emissions in the monitoring period (tCO_{2e}).

$BE_{power, y}$: Baseline emissions from electricity or fuel consumption in year y (tCO_{2e})

$BE_{ww, treatment, y}$: Baseline emissions of the wastewater treatment systems affected by the project activity in year y (tCO_{2e})

$BE_{s, treatment, y}$: Baseline emissions of the sludge treatment systems affected by the project activity in year y (tCO_{2e})

$BE_{ww, discharge, y}$: Baseline methane emissions from degradable organic carbon in treated wastewater discharged into sea/river/lake in year y (tCO_{2e}).

$BE_{s, final, y}$: Baseline methane emissions from anaerobic decay of the final sludge produced in year y (tCO_{2e}). If the sludge is controlled combusted, disposed in a landfill with biogas recovery, or used for soil application in the baseline scenario, this term would be neglected.

As describe in MR the baseline emissions for power from electricity or fuel consumption , sludge treatment system, degradable organic carbon n treated wastewater discharged into sea/river/lake and anaerobic decay of the final sludge are considered as zero. Thus the wastewater treatment systems affected by the project activity is considered for the baseline emissions.

There are two baseline approaches for calculating baseline emissions from wastewater treatment.

1. COD approach

$$BE_{ww, treatment, y} = \sum Q_{ww, i, y} * COD_{inflow, i, y} * \eta_{COD, BL, i} * MCF_{ww, treatment, BL, i} * B_{o, ww} * UF_{BL} * GWP_{CH4}$$

Where:

$BE_{ww, treatment, y}$ = Baseline emissions of the wastewater treatment systems affected by the project activity in year y (tCO_{2e})

$Q_{ww, i, y}$ = Volume of wastewater treated in baseline wastewater treatment system i in year y (m³)

$COD_{inflow, i, y}$ = Chemical oxygen demand of the wastewater inflow to the baseline treatment system i in year y. Average value may be used through sampling with the confidence/precision level 90/10 (t/m³).

$\eta_{COD, BL, i}$ = COD removal efficiency of the baseline treatment system i

$MCF_{ww, treatment, BL, i}$ = Methane correction factor for the baseline anaerobic wastewater treatment i (MCF values as per table III.H.2)

i = Index for baseline wastewater treatment system

	$B_{0, \text{ww}}$ = Methane producing capacity of the wastewater (IPCC lower value for domestic wastewater of 0.25 kg CH₄/kg COD) U_{BL} = Model correction factor to account for model uncertainties (0.89) GWP_{CH_4} = Global Warming Potential for methane (value of 25 for period up to 31/12/2020 and 28 as from 01/01/2021) Therefore: $\text{BE}_{\text{ww, treatment, y}}$ = 34,165 tCO₂e (for period 03/03/2020 to 31/12/2020) $\text{BE}_{\text{ww, treatment, y}}$ = 24,245 tCO₂e (for period 01/01/2021 to 30/04/2021) 2. MD approach $\text{MD}_y = \text{BG}_{\text{burnt, y}} * W_{\text{CH}_4, y} * D_{\text{CH}_4} * \text{FE} * \text{GWP}_{\text{CH}_4}$ Where: MD_y = Methane captured and destroyed/gainfully used by the project activity in the year y $\text{BG}_{\text{burnt, y}}$ = Biogas flared/combusted in year y (m³) W_{CH_4} = Methane content in the biogas in the year y (mass fraction) D_{CH_4} = Density of methane at the temperature and pressure of the biogas in the year y (tonnes/m³) FE = Flare efficiency in year y (fraction) GWP_{CH_4} = Global Warming Potential for methane (value of 25 for period up to 31/12/2020 and 28 as from 01/01/2021) Therefore: MD_y = 28,951 tCO₂e (for period 03/03/2020 to 31/12/2020) MD_y = 20,320 tCO₂e (for period 01/01/2021 to 30/04/2021) If the biogas is combusted for gainful purposes, e.g. fed to an engine, an efficiency of 100 per cent may be applied. The baseline emissions for thermal energy where fossil fuel is replaced by biogas. $\text{BE}_{\text{thermal, CO}_2, y} = (\text{EG}_{\text{thermal, y}} / \eta_{\text{BL, thermal}}) * \text{EF}_{\text{FF, CO}_2}$ To determine $\text{EG}_{\text{thermal, y}}$ Where: $\text{EG}_{\text{thermal, historical}} = (Q_{\text{starch}} * q_{\text{HFO, starch}}) * D_{\text{FO}} * \text{NCV}_{\text{FO}}$ $\text{EG}_{\text{thermal, energy input}} = \text{BG}_{\text{combusted, y}} * W_{\text{CH}_4} * D_{\text{CH}_4} * \text{NCV}_{\text{CH}_4}$ $\text{EG}_{\text{thermal, historical}}$ = The net quantity of steam/heat supplied by the project activity during the year y (TJ) – based on historical data of starch production $\text{EG}_{\text{thermal, energy}}$ = The net quantity of steam/heat supplied by the project activity during the year y (TJ) – based on monitored value of biogas delivered to starch factory $\text{BG}_{\text{combusted, y}}$ = Amount of biogas sent to boiler in year y (Nm³) W_{CH_4} = Methane content in the biogas in the year y (%) $Q_{\text{starch, y}}$ = Quantity of dry starch produced in year y (tonnes) $q_{\text{HFO, starch}}$ = Quantity of fossil fuel per unit of dry starch (liter/tonne)
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	NCV_{FO} = Net calorific value of the fuel oil (TJ/tonne) D_{HFO} = Density of fuel oil in the year y (tonnes/m³) NCV_{CH_4} = Net calorific value of methane (TJ/tonne) D_{CH_4} = Density of methane at the temperature and pressure of the biogas in the year y (kg/m³) Therefore, $BE_{thermal, CO_2, y} = 2,583 \text{ tCO}_2\text{e}$ (for period 03/03/2020 to 31/12/2020) $BE_{thermal, CO_2, y} = 1,707 \text{ tCO}_2\text{e}$ (for period 01/01/2021 to 30/04/2021) The equations applied for the determination of baseline GHG emissions are consistent with the approved revised PD and applied methodologies: The following sources of information have been used in this context: • /MR/ • /ER/ • /PD1/ • /AMSIH/ • /AMSIC/
Findings	☐ The calculation of the baseline emissions was found to be fully compliant with the above stated principles. The calculations of baseline GHG emissions or baseline net GHG removals have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied standardized baseline. Any assumptions used in emission or removal calculations have been justified. Appropriate emission factors, IPCC default values, GWPs and other reference values have been correctly applied. No errors, miscalculations, omissions, misstatements or incomplete information has been identified.
	☒ The verification team has identified mistakes in the baseline emissions calculation or the underlying calculation approaches.
	☒ In this context the following CARs, CLs, FARs have been raised: CAR 5-2; CAR 5-5; CAR 5-6
Conclusion	☐ No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☒ The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
	The calculations of baseline GHG emissions have been carried out in accordance with the equations and methods described in the approved revised PD and applied methodologies. Any assumptions used in emission or removal calculations have been justified. Appropriate factors and other reference values have been correctly applied. After minor correction, it can be concluded the baseline calculation is overall correct.

4.4.5.2 Calculation of project GHG emissions or actual net GHG removals by sinks

Means of verification	During the verification the calculation of project GHG emissions has been checked. in detail the following has been verified: • Transparency: It has been checked whether the calculation of project emissions is fully traceable and, where used, the Excel calculation provides all calculation formulae. • Parameter consistency: It has been checked whether all internal and external parameters and data used for the calculation are applied consistently in the monitoring report and the calculation spreadsheet. • Correctness: It has been checked whether the applied formulae and methods for calculating project emissions are in accordance with the monitoring plan and the approved methodology. • Completeness: It has been checked whether all calculations are complete and without omissions. The project emissions are described and demonstrated in Section 5.3 of the MR as follows: Project activity emissions from the systems affected by the project activity are: a) CO₂ emissions from electricity and fuel used by the project facilities (PE_{power,y}); b) Methane emissions from wastewater treatment systems affected by the project activity, and not equipped with biogas recovery in the project situation (PE_{ww, treatment, y}); c) Methane emissions from sludge treatment systems affected by the project activity, and not equipped with biogas recovery in the project situation (PE_{s, treatment, y}); d) Methane emissions on account of inefficiency of the project activity wastewater treatment systems and presence of degradable organic carbon in treated wastewater (PE_{ww discharge y}); e) Methane emissions from the decay of the final sludge generated by the project activity treatment systems (PE_{s, final, y}); f) Methane fugitive emissions on account of inefficiencies in capture systems (PE_{fugitive y}); g) Methane emissions due to incomplete flaring (PE_{flaring,y}); h) Methane emissions from biomass stored under anaerobic conditions which does not take place in the baseline situation (PE_{biomass, y}). $PE_{,y} = \{PE_{power, y} + PE_{ww, treatment} + PE_{s, treatment} + PE_{ww discharge, y} + PE_{s, final, y} + PE_{fugitive, y} + PE_{biomass, y} + PE_{flaring, y}\}$ Where: PE_y = Project emissions in year y (tCO₂e) PE_{power,y} = Emissions from electricity or fuel consumption in the year y (tCO₂e) PE_{ww,treatment,y} = Methane emissions from wastewater treatment systems affected by the project activity, and not equipped with biogas recovery in the project situation (tCO₂e) PE_{s,treatment,y} = Methane emissions from sludge treatment systems affected by the project activity, and not equipped with biogas recovery in the project situation (tCO₂e)
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	$PE_{ww,discharge,y}$ = Methane emissions from degradable organic carbon in treated wastewater in year y (tCO₂e) $PE_{s,final,y}$ = Methane emissions from anaerobic decay of the final sludge produced in year y (tCO₂e) $PE_{fugitive,y}$ = Methane emissions from biogas release in capture systems in year y (tCO₂e) $PE_{biomass,y}$ = Methane emissions from biomass stored under anaerobic conditions (tCO₂e) $PE_{flaring,y}$ = Methane emissions due to incomplete flaring in year y (tCO₂e) - PE from electricity consumption $PE_{Power,y} = EC_{PJ,j,y} * EF_{EF,j,y} * (1 + TDL_{j,y})$ = 542 tCO₂e (round up) (for period 03/03/2020 to 31/12/2020) = 231 tCO₂e (round up) (for period 01/01/2021 to 30/04/2021) - PE from wastewater treatment systems $PE_{ww,treatment,y} = \sum (Q_{ww,y} * \eta_{PJ,k,y} * MCF_{ww,treatment,PJ,k} * B_{o,ww} * UF_{PJ} * GWP_{CH4})$ = 1,592 tCO₂e (for period 03/03/2020 to 31/12/2020) = 1,240 tCO₂e (for period 01/01/2021 to 30/04/2021) - PE from capture inefficiencies in the anaerobic wastewater treatment $PE_{fugitive\ ww,y} = (1 - CEF_{ww}) * MEP_{ww,treatment,y} * GWP_{CH4}$ = 5,127 tCO₂e (for period 03/03/2020 to 31/12/2020) = 3,511 tCO₂e (for period 01/01/2021 to 30/04/2021) - PE due to incomplete flaring $PE_{flare,y} = GWP_{CH4} * \sum F_{CH4,RG,m} * (1 - \eta_{flare}) * 10^{-3}$ = 29 tCO₂e (for period 03/03/2020 to 31/12/2020) = 13 tCO₂e (for period 01/01/2021 to 30/04/2021) - PE from fossil fuel consumption $PE_{FC,j,y} = \sum FC_{HFO,y} * NCV_{HFO} * EF_{HFO,CO2} = 0 \text{ tCO}_2\text{e}$ There is no fossil fuel consumed in this monitoring period. Therefore, $PE_y = 7,290 \text{ tCO}_2\text{e}$ (for period 03/03/2020 to 31/12/2020) $PE_y = 4,995 \text{ tCO}_2\text{e}$ (for period 01/01/2021 to 30/04/2021) The following emissions are excluded - Sludge treatment, - Degradable organic carbon in treated wastewater, - Decay of the final sludge produced and - Methane capture inefficiencies in the anaerobic sludge treatment systems - Biomass stored under anaerobic conditions which does not take place in the baseline situation
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	The verification team had checked to verify the data and equations applied in the emissions as describe in MR section 5.2 could confirmed as correct. The following sources of information have been used in this context: • /MR/ • /PD1/ • /AMSIIIH/AMSIC/ • /ER/	
Findings	☐	The calculation of the project emissions was found to be fully compliant with the above stated principles. The calculations of project GHG emissions or actual net GHG removals have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied standardized baseline. Any assumptions used in emission or removal calculations have been justified. Appropriate emission factors, IPCC default values, GWPs and other reference values have been correctly applied. No errors, miscalculations, omissions, misstatements or incomplete information have been identified.
	☒	The verification team has identified mistakes in the project emissions calculation or the underlying calculation approaches.
	☒	In this context the following CARs, CLs, FARs have been raised: CAR 5-2; CAR 5-5; CAR 5-6
Conclusion	☐	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☒	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
	The calculations of project GHG emissions have been carried out in accordance with the equations and methods described in the approved revised PD and applied methodologies. After minor corrections, it can be concluded the PE calculation is overall correct	

4.4.5.3 Calculation of leakage GHG emissions

Means of verification	During the verification it has been checked whether leakage emissions have to be considered and, in cases where leakage emissions have to be calculated, the respective calculation of leakage GHG emissions has been checked. In such cases the same verification principles have been considered as for the baseline and project emissions calculation. According to the approved revised PD and applied methodologies AMS.III-H version 18.0 and AMS.I-C Version 20.0, the project activity equipment is not transferred from another activity therefore, leakage is considered to be zero (Ley = 0). The following sources of information have been used in this context: • /MR/ • /PD1/ • /AMSIIIH/ • /AMSIC/
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	• /ER/
Findings	☒ No leakage emissions were to be considered (LE = 0).
	☐ The calculation of the leakage emissions was found to be fully compliant with the above stated principles. The calculations of leakage GHG emissions have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied standardized baseline. Any assumptions used in leakage emissions calculations have been justified. Where applicable, appropriate emission factors, IPCC default values, GWPs and other reference values have been correctly applied. No errors, miscalculations, omissions, misstatements or incomplete information have been identified.
	☐ The verification team has identified mistakes in the leakage emissions calculation or the underlying calculation approaches.
	☐ In this context the following CARs, CLs, FARs have been raised:
Conclusion	☒ No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☐ The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
	No leakage has to be considered according to the approved revised PD since the project activity does not involve equipment transfer to or from another activity.

4.4.5.4 Summary of calculation of GHG emission reductions or net anthropogenic GHG removals by sinks

Means of verification	The verification team has checked MR section 5.4 includes a summary table of the emission reductions calculation specifying separately - Total baseline emissions, - Total project emissions, - Total leakage, - Total emission reductions. According to the paragraph 46 AMS III.H, emission reduction achieved by the project activity is limited to the ex-post calculated baseline emissions minus project emissions using the actual monitored data for the project activity. Emission reductions achieved on any year are the lowest value of the following. $ER_{y,ex-post} = \min (BE_{y,ex-post} - PE_{y,ex-post} - LE_{y,ex-post}), (MD_y - PE_{power,y} - LE_{y,ex-post})$ According to paragraph 47 in AMS III.H., in case of flaring / combustion MD_y was measured using the conditions of the flaring process: $MD_y = BG_{burnt,y} * W_{CH4,y} * D_{CH4} * FE * GWP_{CH4}$ According to paragraph 48 of AMS III.H and paragraph 80 of AMS I.C emission reductions achieved on any year are as follow: $ER_y = BE_y - PE_y - LE_y$
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	Where: $ER_{y,ex-post}$ = Emission reductions achieved by the project activity based on monitored values for year y (tCO₂e) $BE_{y,ex-post}$ = Baseline emissions calculated as per paragraph ex post monitored values The baseline calculation is based on COD approach under AMS-III.H + BE_y from AMS-I.C. Therefore, $BE_{y, ex-post} = 62,720 \text{ tCO}_2\text{e}$ (36,748 tCO₂e for period 03/03/2020 to 31/12/2020 and 25,952 tCO₂e for period 01/01/2021 to 30/04/2021) BE - MD_y approach = Methane captured and destroyed/gainfully used by the project activity in the year y The baseline calculation is based on MD approach under AMS-III.H + BE_y from AMS-I.C. Therefore, $BE_{MDy, approach} = 53,561 \text{ tCO}_2\text{e}$ (31,534 tCO₂e for period 03/03/2020 to 31/12/2020 and 22,027 tCO₂e for period 01/01/2021 to 30/04/2021) $PE_{y,ex-post}$ = Project emissions calculated as per paragraph ex post monitored values $PE_{y,expost}$ - COD approach = 12,285 tCO₂e $PE_{y,expost}$ - MD_y, approach = 773 tCO₂e ER for COD approach $ER_y = BE_y - PE_y - LE_y$ $= 62,7200 \text{ tCO}_2\text{e} - 12,285 \text{ tCO}_2\text{e} - 0$ = 50,415 tCO₂e ER for MD approach $ER_y = BE_y - PE_y - LE_y$ $= 53,561 \text{ tCO}_2\text{e} - 773 \text{ tCO}_2\text{e} - 0$ = 52,788 tCO₂e Comparing the result of the emission reduction calculation as per requirement of AMS-III.H paragraph 46: - ER achieved from AMS-III.H COD approach: 46,125 tCO₂e - ER achieved from AMS-III.H MD approach: 48,498 tCO₂e. The most conservative ER achieved for AMS.III-H is 46,125 tCO₂e, which is COD approach since it is lower. The ER achieved from AMS.I-C is 4,290 tCO₂e. Therefore, the ER achieved for this monitoring period: $ER_y = 46,125 \text{ tCO}_2\text{e} + 4,290 \text{ tCO}_2\text{e}$ = 50,415 tCO₂e. It has been assessed whether the values are correct or need to be revised as a consequence of issues identified above. Summary of emission reductions during the monitoring period: Where:
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	Emission Reductions Calculation				
	Parameters Period	Baseline Emissions	Project Emissions	Leakage Emissions	Emission Reductions
		BE_y	PE_y	LE_y	ER_y
		(tCO ₂ e)	(tCO ₂ e)	(tCO ₂ e)	(tCO ₂ e)
	03/03/2020 to 31/12/2020	36,748	7,290	0	29,458
	01/01/2021 to 30/04/2021	25,952	4,995	0	20,957
	Total	62,700	12,285	0	50,415
Note: The value for this monitoring period is a rounddown value after sum monthly basis of the period.					
All the figures as per the monitoring report were cross-checked by the verification team against basic monitored data. Refer to Appendix 5 for details.					
Findings	☒	Section 5.4 of the MR includes in a summary table of the emission reductions calculation.			
	☒	The summary table specified the total baseline, project and leakage emissions as well as the total emission reductions separately.			
	☐	The values as specified in the ER summary table are correct; no issues have been identified during the verification which requires changes in the ER calculation.			
	☒	During the verification issues with impact on the ER calculation have been identified.			
	☒	In this context the following CARs, CLs, FARs have been raised: CL 5-1; CAR 5-3; CAR 5-4; CAR 5-5; CAR 5-6			
Conclusion	☐	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.			
	☒	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.			
	After corrections, it can be concluded that the emission reductions calculation is overall correct.				

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

Refer to Appendix 5 for the detail assessment of each monitoring parameters and Appendix 3 for the supporting evidence applied to determine the GHG emission reductions.

For each reported data, the evidence is provided and verified as sufficient and quality is appropriate. Also, the cross-checks has been performed on the reported data with different source of evidence. The information flow from data generation and aggregation, to recording, calculation and final transposition into the monitoring report has been assessed by VVB in Appendix 5 for each parameter and the calibration have been conducted as per the frequency of monitoring equipment defined in the registered PD and national regulation.

Therefore, it is concluded that the evidence provided are verified as sufficient and quality is appropriate and thus the evidence can be used to determine the GHG reductions and removals for this monitoring period.

Refer to Appendix 5 for the detail assessment.

4.6 Non-Permanence Risk Analysis

N/A

5.0 VERIFICATION CONCLUSION

South Pole Carbon Asset Management Ltd has commissioned the TÜV NORD JI/CDM Certification Program to carry out the Verified Carbon Standard (VCS) CPII 4th periodic verification of the project activity SD Biosupply Wastewater Treatment and Biogas Utilization Project VCS ID. 416, for the period 03/03/2020 to 30/04/2021 (both days inclusive), with regard to the relevant requirements for VCS Standard version 4.1.

Based on the documented evidence and corroborated by an on-site assessment, TÜV NORD could confirm that:

- the project has been implemented and operated as per the approved revised PD;
- the project complies with the validation criteria for projects set out in VCS Version 4.1;
- the monitoring report and other supporting documents provided are complete and verifiable and in accordance with the applicable VCS requirement;
- the monitoring is in place as per the applied baseline and monitoring methodology;
- the monitoring complies with the monitoring plan in the validated PD;
- the monitoring plan in the validated PD is as per the applied baseline and monitoring methodology.
- there is no double accounting and claim for the VCU generated for this project.

Verification period: From 03/03/2020 to 30/04/2021 (both days inclusive)

Verified GHG emission reductions and removals in the above verification period:

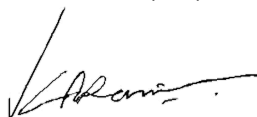
Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
03/03/2020 to 31/12/2020	36,748	7,290	0	29,458
01/01/2021 to 30/04/2021	25,952	4,995	0	20,957
Total	62,700	12,285	0	50,415

Puchong, 14/12/2021



Cheong, Chun Yuen (Robert)
TÜV NORD JI/CDM CP
Verification Team Leader

Essen, 14/12/2021



Kunal Rami
TÜV NORD JI/CDM CP
Final Approval

APPENDIX 1: ABBREVIATIONS

Abbreviations	Full texts
BAU	Business as usual
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CL	Clarification Request
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
CP	Certification Program / Crediting Period
DEDE	Department of Alternative Energy Development and Efficiency
DNA	Designated National Authority
ER	Emission Reductions
EIA	Environmental Impact Assessment
FAR	Forward Action Request
GHG	Greenhouse gas(es)
IPCC	Intergovernmental Panel on Climate Change
IREC	Interstate Renewable Energy Council
MP	Monitoring plan
MR	Monitoring Report
PD	Project Description
PEA	Provincial Electricity Authority
PP	Project Participant
QC/QA	Quality control/Quality assurance
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Verified Carbon Standard
VCSA	Verified Carbon Standard Association
VCU	Verified Carbon Unit
VVB	Validation / Verification Body

APPENDIX 2: COMPETENCE OF TEAM MEMBERS AND TECHNICAL REVIEWERS



Statement of Competence
Assessment and authorisation according to the procedures of the TUV NORD ACCM Certification Program

Mr. David Lubanga

SCHEME	STATUS	VALID UNTIL
CCM	Senior Assessor (Validation, Verification) Technical Reviewer	2021-12-31
VCS/ISO 14064-2	Senior Assessor Technical Reviewer	2021-12-31

Authorisation status for technical areas within certified scope:

CODE	TECHNICAL AREA
1.2	Renewables
5.1	Energy demand
11.2	Waste

251 - Rev. 8, Date: 2021-10-09

09_201 VAB0102_2021-10-09 02 VAB0102 Rev: 2021-10-09



Statement of Competence
Assessment and authorisation according to the procedures of the TUV NORD ACCM Certification Program

Mr. Robert Cheong

SCHEME	STATUS	VALID UNTIL
CCM	Senior Assessor (Validation, Verification) Technical Reviewer	2024-03-28
VCS/ISO 14064-2	Senior Assessor (Validation, Verification) Technical Reviewer	2024-03-28

Authorisation status for technical areas within certified scope:

CODE	TECHNICAL AREA
1.2	Renewables
5.1	Energy demand
11.1	Solid waste and wastewater
11.2	Waste

128 - Rev. 10, Date: 17020224

09_201 VAB0102_2021-10-09 02 VAB0102 Rev: 2021-10-09



Statement of Competence
Assessment and authorisation according to the procedures of the TUV NORD ACCM Certification Program

Mr. Kunal Rami

SCHEME	STATUS	VALID UNTIL
CCM	Senior Assessor (Validation, Verification) Technical Reviewer	2023-03-28
VCS/ISO 14064-2	Senior Assessor Technical Reviewer	2023-03-28

Authorisation status for technical areas within certified scope:

CODE	TECHNICAL AREA
1.2	Renewables
2.1	Energy distribution
3.1	Energy demand
6.1	Construction
7.1	Transport
11.1	Solid waste and wastewater

224 - Rev. 8, Date: 2023-12-03

09_201 VAB0102_2023-12-03 02 VAB0102 Rev: 2023-12-03

APPENDIX 3: DOCUMENTS REVIEWED OR REFERENCED

No.	Author	Reference	Title	References to the document	Provider
1	UNFCCC	/AMSIH/	AMS-III-H: Methane Recovery in Wastewater Treatment version 18.0”	https://cdm.unfccc.int/methodologies/SSCmethodologies/approved	Other
2	UNFCCC	/AMSIC/	AMS-I.C: Thermal energy production with or without electricity, version 20.0	https://cdm.unfccc.int/methodologies/SSCmethodologies/approved	Other
3	DOE	/CPM/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)		Other
4	Verra	/VCSPD/	VCS Program Definitions, v4.1	https://verra.org/project/vcs-program/rules-and-requirements/	Other
5	Verra	/VCSPG/	VCS Program Guide, v4.0	https://verra.org/project/vcs-program/rules-and-requirements/	Other
6	Verra	/VCSS/	VCS Standard v4.1	https://verra.org/project/vcs-program/rules-and-requirements/	Other
7	Verra	/MRF/	Monitoring Report Form v4.0	https://verra.org/project/vcs-program/rules-and-requirements/	Other
8	Verra	/PD1/	Approved revised Project Description for VCS project: “SD Biosupply Wastewater Treatment and Biogas Utilization Project” version 02 dated 23/11/2017	https://registry.verra.org/app/projectDetail/VCS/1975	Other
9	Verra	/VAL/	Validation Report for Renewal Crediting Period VCS project “SD Biosupply Wastewater Treatment and Biogas Utilization Project” version 1.0Aa dated 05/02/2018	https://registry.verra.org/app/projectDetail/VCS/1975	Other
10	UNFCCC	/TL/	TOOL03: Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion”, version 3.0	http://cdm.unfccc.int/Reference/tools/index.html	Other

No.	Author	Reference	Title	References to the document	Provider
			TOOL05: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation version 3.0 TOOL06: Project emission from flaring version 3.0		
11	Monitoring Report				
	PP	/MR/	Monitoring Report version 1.0 dated 11/05/2021 Monitoring Report version 2.0 dated 19/07/2021 Monitoring Report version 3.0 dated 06/08/2021 Monitoring Report version 4.0 dated 09/08/2021 Monitoring Report version 4.1 dated 13/12/2021		PP
12	ER spreadsheet				
	PP	/ER/	ER calculation spreadsheet version 01 dated 11/05/2021 ER calculation spreadsheet version 02 dated 19/07/2021 ER calculation spreadsheet version 03 dated 06/08/2021 ER calculation spreadsheet version 04 dated 09/08/2021 ER calculation spreadsheet version 04.1 dated 13/12/2021		PP
	Calibration Reports				
13	ISOCal	/C1/	Wastewater flow meter Endress & Hauser serial no: 6B00F220000. Details refer to Appendix 6		Other
14	HACH	/C2/	COD measurement HACH serial no. 041090C53333. Details refer to Appendix 6		Others
15	Central Bureau of weight and measures	/C3/	Weighbridge Linear Instrument serial no: 2015024 and no. 2015003. Details refer to Appendix 6		Others
16	ISOCAL Miracel	/C4/	Biogas flow meter Endress & Hauser serial no: 9A070602000, EA033D02000 and N413E702000. Details refer to Appendix 6		Others

No.	Author	Reference	Title	References to the document	Provider
17	Draeger	/C5/	Portable gas analyser Draeger - X-am 7000 serial no: ARAM0090. Details refer to Appendix 6		Others
18	ISOCAL	/C6/	HFO flow meter ABB model no: 92093 ID: TMC-4-1-0068-44. Details refer Appendix 6		Others
19	PEA	/C7/	Electricity meter TTC serial no. 6001693334. Details refer to Appendix 6		Others
Electricity records					
20	PEA	/EI/	Electricity Invoices 03/03/2020 to 31/04/2021		Others
Logsheets					
21	PP	/COD1/	Daily COD incoming and outgoing test results for period 03/03/2020 to 31/04/2021		PP
22	PP	/BD/	Daily biogas data for period 03/03/2020 to 31/04/2021		PP
23	PP	/CH4/	Daily CH ₄ data for period 03/03/2020 to 31/04/2021		PP
24	PP	/WW/	Daily wastewater data for period 03/03/2020 to 31/04/2021		PP
25	PP	/SP/	Daily starch production for period 03/03/2020 to 31/04/2021		PP
26	PP	/HFO/	Daily HFO data for period 03/03/2020 to 31/04/2021		PP
Equipment					
26	HACH	/E1/	HACH DR890 Colorimeter for COD tests		Others
27	E&H	/E2/	Endress & Hauser Wastewater Flowmeter Promag 10W		Others
28	E&H	/E3/	Endress & Hauser Biogas flowmeter t-mass 65F		Others
29	PAPOP	/E4/	PAPOP Open Flare system		Others
30	PAPOP	/E5/	PAPOP UASB Biogas system		Others
31	TTC	/E6/	Smart TTC electricity meter specification		Others
32	Drager	/E7/	Drager Portable methane gas analyser specification		Others
33	Scherrer Hitech	/E8/	Scherrer and Vega Oil Thermal boiler specification and name plates		Others

No.	Author	Reference	Title	References to the document	Provider
Regulatory & Approvals					
34	Mol	/RA1/	Somjeh Starch Factory operating license dated 01/03/1994 issued by Ministry of Industry		Others
35	Moi MoF	/RA2/	SD Biosupply biogas operating licence dated 10/06/2005 issued by Ministry of Industry Business registration of SD Biosupply dated 15/07/2017 issued Ministry of Finance		Others
36	PEA	/RA3/	PEA regulation for meter 2019		Others
37	Mol	/RA4/	Industrial Effluent Standard issued by Ministry of Industrial 1996 & 2017		Others
Local Stakeholders Consultation					
38	PP	/LSC1/	Minutes of Stakeholders Meeting dated 07/07/2008		PP
Others					
39	DEDE	/01/	TDL 2020 Thai National Grid issued by DEDE		Others
40	PP	/02/	Process Flow Diagram		PP
41	PP	/03/	Photos of boiler name plates, burner and flow meters		PP
42	PP	/04/	Photo of COD colorimeter		PP
43	PP	/05/	Photos of wastewater and biogas flow meters and name plates		PP
44	PP	/06/	Photo of flare system and flow meters		PP
45	PP	/07/	Photo of portable gas analyser		PP
46	PP	/08/	Photo of Electricity Meter		PP
47	PP	/09/	Photo of UASB biogas and wastewater treatment system		PP
48	PP	/010/	Photo of project site – main entrance		PP
49	PP	/011/	Project GPS location		PP
50	PP	/012/	Site Layout Drawing		PP
51	PP	/013/	Declaration not to participate in other GHG programmes		PP
52	VVB	/ge/	Site Location by google earth		Others
Website Used					

No.	Author	Reference	Title	References to the document	Provider
53		/vcs/	VCS	https://verra.org/project/vcs-program/	
54		/unfccc/	UNFCCC	http://cdm.unfccc.int	
55		/ipcc/	IPCC publications	www.ipcc-nggip.iges.or.jp	

APPENDIX 4: CLARIFICATION REQUESTS, CORRECTIVE ACTION REQUESTS AND FORWARD ACTION REQUESTS

Table 1. Summary of findings for this verification

Verification topic ¹⁾	No. of CAR	No. of CL	No. of FAR
1. Project Details: 1.1 Summary Description of the Implementation Status of the Project 1.2 Sectoral Scope and Project Type 1.3 Project Proponent 1.4 Other Entities Involved in the Project 1.5 Project Start Date 1.6 Project Crediting Period 1.7 Project Location 1.8 Title and Reference of Methodology 1.9 Participation under other GHG Programs 1.10 Other Forms of Credit 1.11 Sustainable Development	2	0	0
2. Safeguards 2.1 No Net Harm 2.2 Local Stakeholder Consultation 2.3 AFOLU-Specific Safeguards	0	0	0
3. Implementation Status 3.1 Implementation Status of the Project Activity 3.2 Deviations 3.2.1. Methodology Deviations 3.2.2. Project Description Deviations 3.3 Grouped Projects	1	0	0
4. Data And Parameters 4.1 Data and Parameters Available at Validation 4.2 Data and Parameters Monitored 4.3 Monitoring Plan	10	5	0
5. Quantification Of GHG Emission Reductions And Removals 5.1 Baseline Emissions 5.2 Project Emissions 5.3 Leakage 5.4 Net GHG Emission Reductions and Removals	5	1	0
SUM	18	6	0

Table 2. FAR from validation and/or previous verification

FAR ID	xx	Section no.	Date: DD/MM/YYYY
Description of FAR			

NA	
Project participant response	Date: DD/MM/YYYY
Documentation provided by project participant	
VVB assessment	
Date: DD/MM/YYYY	

Table 3. CL from this verification

CL ID	4-1	Section no.	4.2	Date	28/05/2021
Description of CL					
MR version 1.0, Section 4.2, Parameter $Q_{ww,y}$: Clarification on footnote 3					
Project participant response (1st round)					Date
The footnote 3 has been deleted as it is not part of the monitoring period. The value monitored has been updated in line with the actual implementation.					19/07/2021
Documentation provided by project participant (1st round)					
☒	Changes in the MR	Section(s): 4.2		New version No.: 2	
☐	Changes in MR	Section(s):		New version No.:	
☐	Changes in XLS	Worksheet(s):		New version No.:	
☐	Other:				
DOE assessment (1st round)					Date
MR version 1.0, Section 4.2, Parameter $Q_{ww,y}$: PP explain footnote 3 is not part of the monitoring period therefore deleted to avoid confusion.					19/07/2021
Conclusion Tick the appropriate checkbox		☐ Additional action should be taken (finding remains open) ☒ The finding is closed			

CL ID	4-2	Section no.	4.2	Date	28/05/2021
Description of CL					
MR version 1.0, Section 4.2: Parameter W_{CH4} : Clarification on the accuracy of 0.90%.					
Project participant response (1st round)					Date
The accuracy of the equipment has been updated to the accuracy as mentioned in the specification. The accuracy is of 0-5 vol%. The MR has been revised.					19/07/2021
Documentation provided by project participant (1st round)					
☒	Changes in the MR	Section(s):4.2		New version No.: 2	
☐	Changes in MR	Section(s):		New version No.:	
☐	Changes in XLS	Worksheet(s):		New version No.:	
☐	Other:				
DOE assessment (1st round)					Date
MR version 2.0, Section 4.2: Parameter W_{CH4} : The accuracy of instrument is corrected to 0-5 vol% according to the instrument specification.					19/07/2021
Conclusion Tick the appropriate checkbox		☐ Additional action should be taken (finding remains open) ☒ The finding is closed			

CL ID	4-3	Section no.	4.2	Date	28/05/2021
Description of CL					
MR version 1.0, Section 4.2, Parameter $FC_{HFO,y}$: Clarification for the statement "There are two boilers being used in this monitoring period, thus two gas meters were used during this monitoring period"					
Project participant response (1st round)					Date
					19/07/2021

There is a fuel oil meter being implemented at each boiler. The sentence describing monitoring equipment has been updated.			
Documentation provided by project participant (1st round)			
☒	Changes in the MR	Section(s): 4.2	New version No.: 2
☐	Changes in MR	Section(s):	New version No.:
☐	Changes in XLS	Worksheet(s):	New version No.:
☐	Other:		
DOE assessment (1st round)			Date 19/07/2021
MR version 2.0, Section 4.2, Parameter FC _{HFO,y} : The statement is corrected according to the implementation as observed during virtual site inspection and specification provide.			
Conclusion Tick the appropriate checkbox		☐ Additional action should be taken (finding remains open) ☒ The finding is closed	

CL ID	4-4	Section no.	4.2	Date	28/05/2021
Description of CL					
MR version 1.0, Section 4.2 Parameter Flame _m : Clarification for the type of instrument installed that could not capture flame on or flame off when flare is operating.					
Project participant response (1st round)					Date 19/07/2021
It was noted during the virtual site assessment that there is no flame detector being implemented at the project activity. The value taken for the parameter is "0", zero. Kindly see the project description deviation under section of 3.2.2 in the updated MR. The comment section of parameter Flame _m has also been updated under section 4.2 of the MR.					
Documentation provided by project participant (1st round)					
☒	Changes in the MR	Section(s): 4.2	New version No.: 2		
☐	Changes in MR	Section(s):	New version No.:		
☐	Changes in XLS	Worksheet(s):	New version No.:		
☒	Other: Att01 Flaring system				
DOE assessment (1st round)					Date 19/07/2021
MR version 2.0, Section 4.2 Parameter Flame _m : The PP explain the flame detector is not installed in the open flare system thus "0" is applied as the value.					
This is confirmed during the virtual onsite inspection and discussion with technology provider, the flame detector is not installed.					
Thus a deviation is applied in section 3.2.2 of MR describing the deviation, start date and rustication in accordance to VCS 4.1 §3.1.8.2 (2).					
Further assessment refer to Section 3.3 of report					
Conclusion Tick the appropriate checkbox		☐ Additional action should be taken (finding remains open) ☒ The finding is closed			

CL ID	4-5	Section no.	4.2	Date	28/05/2021
Description of CL					
MR 1.0, Section 4.2, Parameter $\eta_{\text{Flare-h}}$: Clarification for 0% default factor is applied.					
Project participant response (1st round)					Date 19/07/2021
The flare efficiency is based on the duration of the flame detected in minute. Since there is no flame detector installed at the open flare system, the flaring efficiency of 0% has been selected for the project. This approach is conservative. The comment of parameter $\eta_{\text{Flare-h}}$ has also been updated.					
Documentation provided by project participant (1st round)					
☒	Changes in the MR	Section(s): 4.2	New version No.: 2		
☐	Changes in MR	Section(s):	New version No.:		
☐	Changes in XLS	Worksheet(s):	New version No.:		
☐	Other:				
DOE assessment (1st round)					Date 19/07/2021

MR 2.0, Section 4.2, Parameter $\eta_{\text{Flare-h}}$: The PP explain that the flame detector is not installed in the open flare system, therefore could not monitor the flame time in minutes, thus “0” flare efficiency is applied for conservative approach.

During the virtual onsite inspection and discussion with technology provider, the flame detector is not installed to monitor the flame combusted in the flare

Conclusion Tick the appropriate checkbox	☐ Additional action should be taken (finding remains open) ☒ The finding is closed
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CL ID	5-1	Section no.	5.4	Date	28/05/2021	
Description of CL						
MR version 1.0, Section 5.4: Clarification for following:						
- How the ex-ante ERs are determined. - The statement “Referring to technical proposal. in registered PD, the ex-ante wastewater generation rate is equal to 707,405 m3, while the approximate ex-post value was in a range around 50 % of adjustment from the ex-ante value which might have been the effect of the drought in 2020. The seasonal change could not be envisaged at the time of validation. It may also happen that in the future verification, the quantity of wastewater may go up. Therefore, it can be concluded that the decrease in emission reductions is not permanent but dependent on various factors, which can neither be controlled nor predicted in advance” which is unclear.						
Project participant response (1st round)					Date	19/07/2021
- The ex-ante ER has been updated and the method of calculation is based on the number of days in the monitoring period; 03/03/2020 to 30/04/2021. It was noted that there are 304 days in 2020 resulting in ER estimation of 42,623 tCO₂e and 120 days in 2021 resulting in 16,871 tCO₂e. The total ER estimation is 59,494 tCO₂e for the monitoring period. - The justification on lower ER estimation has been updated in section 5.4 of the MR or as follows. The ER achieved during the monitoring period 03/03/2021 to 30/04/2021 is based on COD approach of the AMS-III.H and AMS-I.C. The reason of the lower emission reduction came from lower COD load for this monitoring period which is 57,336 kg COD as compared to baseline estimation of 61,565 kg COD						
Documentation provided by project participant (1st round)						
☒	Changes in the MR	Section(s):5.4	New version No.:2			
☐	Changes in MR	Section(s):	New version No.:			
☐	Changes in XLS	Worksheet(s):	New version No.:			
☐	Other:					
DOE assessment (1st round)					Date	19/07/2021
MR version 1.0, Section 5.4: Clarification for following:						
- PP explain the ex-ante ERs calculation as describe above based on the number of days in the monitoring period of 03/03/2020 to 30/04/2021 taking into account there are 304 days in year 2020 period with estimation of 42,623 tCO₂e whilst 120 days in year 2021 period with estimation of 16,871 tCO₂e. The total ex-ante estimation is 59,494 tCO₂e for the monitoring period. Therefore, the calculation is appropriate. - The justification on lower ER achieved for this monitoring period cause by lower COD for this monitoring period which is 57,336 kg COD as compared to baseline estimation of 61,565 kg COD. The COD measured results are crosscheck with test results to confirm the lower COD values for the monitoring period. It could be conclude the decrease in EF is justified appropriately.						
Conclusion Tick the appropriate checkbox		☐ Additional action should be taken (finding remains open) ☒ The finding is closed				

Table 4. CAR from this verification

CAR ID	1-1	Section no.	1.6	Date	28/05/2021
Description of CAR					
MR version 1.0, Section 1.6: The 1 st crediting period shall be described					
Project participant response (1st round)				Date	19/07/2021
The detail of the first crediting period has been added to section 1.6 of the MR.					
Documentation provided by project participant (1st round)					
☒	Changes in the MR	Section(s):	1.6	New version No.:	2
☐	Changes in XLS	Worksheet(s):		New version No.:	
☐	Other:				
DOE assessment (1st round)				Date	19/07/2021
MR version 2.0, Section 1.6: The 1 st crediting period is added.					
Conclusion Tick the appropriate checkbox		☐ Additional action should be taken (finding remains open) ☒ The finding is closed			

CAR ID	3-1	Section no.	3.1	Date	28/05/2021
Description of CAR					
MR version 1.0, Section 3.1:					
1. A table should be included to describe the project main equipment of the digester capacity, no of units, no. of boilers, type, manufacturer, flare system, etc., 2. There is no surge tank as per discussion with technology provider during the interview and site inspection. It is a biogas buffer tank. 3. The project boundary should include the electricity supply from the PEA grid.					
Project participant response (1st round)				Date	19/07/2021
1. The table of implemented technology has been added and updated in the section 3.1 of the MR. The following information has been mentioned; technology implemented, Manufacturer, Capacity, & Number of units. 2. The project diagram has been updated, the wording of "biogas buffer" has been added. it is noted that the duty of the tank is for gas storage. 3. The flow of electricity consumption by the project has been added. The source of the power is from PEA grid.					
Documentation provided by project participant (1st round)					
☒	Changes in the MR	Section(s):	3.1	New version No.:	2
☐	Changes in XLS	Worksheet(s):		New version No.:	
☐	Other:				
DOE assessment (1st round)				Date	19/07/2021
MR version 2.0, Section 3.1:					
1. A table is added to describe the project main equipment of the digester capacity, no of units, no. of boilers, type, manufacturer, flare system, etc., 2. Figure 2 is updated to biogas buffer tank. 3. The project boundary has include the electricity supply from the PEA grid.					
Conclusion Tick the appropriate checkbox		☐ Additional action should be taken (finding remains open) ☒ The finding is closed			

CAR ID	4-6	Section no.	4.2	Date	28/05/2021
Description of CAR					
MR version 1.0, Section 4.2, Parameter Q _{ww,y} : QA / QC procedure: The description is inconsistent with the approved revised PD.					
Project participant response (1st round)				Date	19/07/2021

The QA/QC procedure has been updated and is now consistent with the approved revised PD.			
Documentation provided by project participant (1st round)			
☒	Changes in the MR	Section(s):4.2	New version No.: 2
☐	Changes in XLS	Worksheet(s):	New version No.:
☐	Other:		
DOE assessment (1st round)			Date 19/07/2021
MR version 2.0, Section 4.2, Parameter $Q_{ww,y}$: QA / QC procedure: The description is corrected and consistent with the approved revised PD.			
Conclusion Tick the appropriate checkbox		☐ Additional action should be taken (finding remains open) ☒ The finding is closed	

CAR ID	4-7	Section no.	4.2	Date	28/05/2021
Description of CAR					
MR version 1.0, Section 4.2, Parameters $COD_{ww,untreated,y}$ and $COD_{ww,treated,y}$:					
- The dates for the calibration gap shall be 03/03/2020 until 09/03/2021 - The data from 10/03/2021 to 30/04/2021 has included the calibration gap is incorrect - The calibration conducted on 09/03/2021 is not reported					
Project participant response (1st round)					Date 19/07/2021
- The date of calibration gap has been revised to 03/03/2020 to 09/03/2021. - The data from 10/03/2021 to 30/04/2021 has been revised and is now not affecting from the calibration adjustment. - Kindly find the calibration of Colorimeter attached in Att03 Calibration					
Documentation provided by project participant (1st round)					
☒	Changes in the MR	Section(s):4.2	New version No.:2		
☐	Changes in XLS	Worksheet(s):	New version No.:		
☒	Other:Att03 Calibration				
DOE assessment (1st round)					Date 19/07/2021
MR version 2.0, Section 4.2, Parameters $COD_{ww,untreated,y}$ and $COD_{ww,treated,y}$:					
- The dates for the calibration gap corrected to 03/03/2020 until 09/03/2021 - The data from 10/03/2021 to 30/04/2021 have been revised accordingly. - The calibration conducted on 09/03/2021 is reported accordingly as per test report.					
Conclusion Tick the appropriate checkbox		☐ Additional action should be taken (finding remains open) ☒ The finding is closed			

CAR ID	4-8	Section no.	4.2	Date	28/05/2021
Description of CAR					
MR version 1.0, Section 4.2, Parameters $BG_{burnt,y}$ and $BG_{combusted,y}$:					
- The accuracy is not consistent with the manufacturer specification of $\pm 0.5\%$. - QA / QC procedure: The description is no according to approved revised PD.					
Project participant response (1st round)					Date 19/07/2021
- The accuracy of the $BG_{burnt,y}$ and $BG_{combusted,y}$ has been updated to $\pm 0.5\%$. The accuracy value is now consistent with the manufacturer specification. - QA/QC procedure has been updated and is now in line with the approved revised PD.					
Documentation provided by project participant (1st round)					
☒	Changes in the MR	Section(s): 4.2	New version No.: 2		
☐	Changes in XLS	Worksheet(s):	New version No.:		

☐ Other:			
DOE assessment (1st round)		Date	19/07/2021
MR version 2.0, Section 4.2, Parameters BG _{burnt,y} , and BG _{combusted,y} :			
- The accuracy is corrected and consistent with the manufacturer specification of $\pm 0.5\%$. - QA / QC procedure: The description is updated and according to the approved revised PD.			
Conclusion <i>Tick the appropriate checkbox</i>		☐ Additional action should be taken (finding remains open) ☒ The finding is closed	

CAR ID	4-9	Section no.	4.2	Date	28/05/2021
Description of CAR					
MR version 1.0, Section 4.2, Parameter W _{CH4} :					
- The value shall be corrected to read with 2 decimals and consistent with value in ER spreadsheet. - QA / QC Procedure: The description is not in accordance to approved revised PD.					
Project participant response (1st round)				Date	19/07/2021
- The value of W_{CH4} has been corrected and updated with the 2 decimals which is consistent with the value in the ER spreadsheet. - QA/QC procedure has been updated and is now in line with the approved revised PD.					
Documentation provided by project participant (1st round)					
☒ Changes in the MR		Section(s): 4.2		New version No.: 2	
☐ Changes in XLS		Worksheet(s):		New version No.:	
☐ Other:					
DOE assessment (1st round)				Date	19/07/2021
MR version 2.0, Section 4.2, Parameter W _{CH4} :					
- The value are corrected to read with 2 decimals and consistent with value in ER spreadsheet. - QA / QC Procedure: The description revised and according the approved registered PD.					
Conclusion <i>Tick the appropriate checkbox</i>		☐ Additional action should be taken (finding remains open) ☒ The finding is closed			

CAR ID	4-10	Section no.	4.2	Date	28/05/2021
Description of CAR					
MR version 1.0, Section 4.2, Parameter V _{RG,h} :					
- The parameter nomenclature is inconsistent with the approved revised PD. - The accuracy describe is inconsistent with the specification. - QA/ QC procedures to be applied: The description is not in accordance with the approved revised PD.					
Project participant response (1st round)				Date	19/07/2021
- The parameter of V_{RG,CH4} has been updated to V_{RG,h} and is now consistent with the approved revised PD. - The accuracy as described in the MR has been updated to 0.50%. It is now in line with the manufacturer specification. - QA/QC procedure has been updated and is now in line with the approved revised PD.					
Documentation provided by project participant (1st round)					
☒ Changes in the MR		Section(s): 4.2		New version No.: 2	
☐ Changes in XLS		Worksheet(s):		New version No.:	
☐ Other:					
DOE assessment (1st round)				Date	19/07/2021

MR version 2.0, Section 4.2, Parameter $V_{RG,h}$:	
1. The parameter nomenclature is corrected and consistent with the approved revised PD. 2. The accuracy describe is corrected and consistent with the specification. 3. QA/ QC procedures to be applied: The description is revised and according to the approved revised PD	
Conclusion Tick the appropriate checkbox	☐ Additional action should be taken (finding remains open) ☒ The finding is closed

CAR ID	4-11	Section no.	4.2	Date	28/05/2021
Description of CAR					
MR version 1.0, Parameter $EG_{thermal,y}$:					
1. The description for the value monitored for the approaches are inconsistent with Section 2.3.1. 2. Calculation method: Section 2.6 is not traceable.					
Project participant response (1st round)					Date
					19/07/2021
1. The description of the approaches has been revised to Fuel Energy Input Approach & Historical Production Approach in line with as explained in section 3.2.1 of the MR. 2. The referred section under calculation method has been updated to section 3.2.1.					
Documentation provided by project participant (1st round)					
☒ Changes in the MR		Section(s): 4.2		New version No.:2	
☐ Changes in XLS		Worksheet(s):		New version No.:	
☐ Other:					
DOE assessment (1st round)					Date
					19/07/2021
MR version 2.0, Parameter $EG_{thermal,y}$:					
1. The description for the value monitored for the approaches are corrected and consistent with Section 3.2.1. 2. Calculation method: Section 2.6 is revised to Section 3.2.1 of the MR.					
Conclusion Tick the appropriate checkbox		☐ Additional action should be taken (finding remains open) ☒ The finding is closed			

CAR ID	4-12	Section no.	4.2	Date	28/05/2021
Description of CAR					
MR version 1.0, Section 4.2, Parameter EC_y : The data for period 01/01/2021 to 30/04/2021 does not include March and April data.					
Project participant response (1st round)					Date
					19/07/2021
The PEA joint meter reading report of March and April has been provided in Att04. The project ER has been updated and the value as mentioned as in section 4.2 of the MR has been updated accordingly.					
Documentation provided by project participant (1st round)					
☒ Changes in the MR		Section(s): 4.2		New version No.:2	
☒ Changes in XLS		Worksheet(s): ER calculation & PEA bill		New version No.:2	
☒ Other: Att04 Log sheet					
DOE assessment (1st round)					Date
					19/07/2021
MR version 2.0, Section 4.2, Parameter EC_y : The data for period 01/01/2021 to 30/04/2021 updated to include March and April data.					
Conclusion Tick the appropriate checkbox		☐ Additional action should be taken (finding remains open) ☒ The finding is closed			

CAR ID	4-13	Section no.	4.2	Date	28/05/2021
Description of CAR					

MR version 1.0, Section 4.2, Parameter TDL _y , Value Monitored: The value is more than 5 years based on the footnote 6 the year for the data is 2014. Therefore not in compliance to Frequency of Monitoring / recording: that described "In the absence of data from the relevant year, most recent figures have been used, but not older than 5 years.		
Project participant response (1st round)	Date	19/07/2021
The TDL _y has been updated to the value of 7.68%. This is based on the calculation of the available value of electricity transmission/ distribution in Thailand since 2003 to 2020. Such calculation has been provided in Att02TDL calculation. ER & MR has been updated accordingly.		
Documentation provided by project participant (1st round)		
☒ Changes in the MR	Section(s):4.2	New version No.: 2
☒ Changes in XLS	Worksheet(s): ER calculation	New version No.: 2
☒ Other: Att02 TDL calculation		
DOE assessment (1st round)	Date	19/07/2021
MR version 2.0, Section 4.2, Parameter TDL _y , Value Monitored: The value is revised to 7.68% based on the year 2020 transmission loss calculated based on the data obtained from Thailand national grid authority.		
Conclusion <i>Tick the appropriate checkbox</i>	☐ Additional action should be taken (finding remains open) ☒ The finding is closed	

CAR ID	4-14	Section no.	4.2	Date	28/05/2021
Description of CAR					
MR version 1.0, Section 4.2: According to the parameter EG _{thermal,y} the quantity of thermal energy supplied by the project activity during the year is calculated using the amount of biogas combusted in the boiler to dry the quantities of starch produced. However, the parameter to monitor Q _{starch} is not in the monitoring plan.					
Project participant response (1st round)					Date
					19/07/2021
The deviation regarding additional of the parameter Q _{starch,y} has been added in the section 3.2.2 of the MR. Q _{starch,y} is used as one of the parameter to calculate thermal energy, under historical approach of deviated AMS-I.C methodology. The parameter has already been added as one of Data and Parameters Monitored under section 4.2. Kindly see the updated MR.					
Documentation provided by project participant (1st round)					
☒ Changes in the MR	Section(s):4.2		New version No.: 2		
☐ Changes in XLS	Worksheet(s):		New version No.:		
☐ Other: Att02 TDL calculation					
VVB assessment (1st round)					Date
					19/07/2021
MR version 2.0, Section 4.2: Parameter Q _{starch} is added as monitoring parameter to monitor the amount of starch production for this monitoring period in order to determine EG _{thermal} .					
The PP has made justification for adding this parameter as from this monitoring period onwards in section 3.2.2 of MR and accordance to VCS V.4.1 § 3.1.8.2 (2).					
Therefore, is appropriately added.					
Further assessment in Section 3.3 of the report.					
Conclusion <i>Tick the appropriate checkbox</i>	☐ Additional action should be taken (finding remains open) ☒ The finding is closed				

CAR ID	5-2	Section no.	5.1 & 5.2	Date	28/05/2021
Description of CAR					
MR version 1.0, Sections 5.1 and 5.2: The baseline and project emissions to be corrected with the corrections of the data in ER spreadsheet.					
Project participant response (1st round)					Date
					19/07/2021

Section 5.1 baseline emission and section 5.2 project emission, in the monitoring report, has been updated with the corrected value as per the ER spreadsheet.			
Documentation provided by project participant (1st round)			
☒ Changes in the MR	Section(s): 5.1 & 5.2	New version No.: 2	
☒ Changes in XLS	Worksheet(s): ER calculation	New version No.: 2	
☐ Other:			
DOE assessment (1st round)			Date 19/07/2021
MR version 2.0, Sections 5.1 and 5.2: The baseline and project emissions are corrected with the corrections of the data in ER spreadsheet.			
Conclusion Tick the appropriate checkbox		☐ Additional action should be taken (finding remains open) ☒ The finding is closed	

CAR ID	5-3	Section no.	5.4	Date	28/05/2021
Description of CAR					
MR version 1.0, Section 5.4: The selected baseline emissions either COD or MD approaches need to be demonstrated to calculate the ex-post emissions reductions.					
Project participant response (1st round)					Date 19/07/2021
The section 5.4 of the MR has been updated. The clarification of the conservative baseline emission under AMS-III. H has been added. It was noted that the COD approach is lower than the MD approach. Therefore, it has been selected for the ER calculation.					
Documentation provided by project participant (1st round)					
☒ Changes in the MR	Section(s): 5.4		New version No.: 2		
☐ Changes in XLS	Worksheet(s):		New version No.:		
☐ Other:					
DOE assessment (1st round)					Date 19/07/2021
MR version 2.0, Section 5.4: The selected baseline emissions either COD or MD approaches are demonstrated appropriately with COD approach selected for the calculation of the ex-post emissions reductions.					
Conclusion Tick the appropriate checkbox		☐ Additional action should be taken (finding remains open) ☒ The finding is closed			

CAR ID	5-4	Section no.	ER	Date	28/05/2021
Description of CAR					
ER version 1.0,					
1. Starch production & fuel oil tab:					
a. The heading for Average HFO consumption L/kg of dry starch at the Baseline Data table inconsistent with approved revised PD and table in MR section 2.3.1					
b. The data representation in the column Average HFO consumption L/kg of dry starch are inconsistent with MR and approved revised PD.					
c. Cell B8 shall be corrected according to the data in the logsheet					
2. PEA Bill tab: March and April data are not reported					
3. ER calculation tab:					
a. Data in Cell E31 does not include March and April data.					
b. ER calculation tab: Baseline and Project emissions to be corrected accordingly for all parameters.					
Project participant response (1st round)					Date 19/07/2021

1. Starch production & fuel oil: a. Heading for average HFO consumption has been revised to “Litre of HFO/ tonne of dry starch” the heading is now consistent with the approved revised PD and table in section 3.2.1 of the MR. b. The data of the average HFO has been revised to Litre of HFO/tonne of dry starch. It is now in line with the MR and approved revised PD. c. The quantity of the starch has been updated with the value as found in the log sheet.		
2. PEA bill table: Data for March 2021 and April 2021 data has been updated.		
3. ER calculation a. The data in cell E31 has been updated and now reflect the electricity consumption of the 2021 period: 01/01/2021 to 30/04/2021. b. All relevant parameters of BE, PE have been corrected as all above comments. The parameters reflect the same parameters as written in the approved revised PD.		
Documentation provided by project participant (1st round)		
☐ Changes in the MR	Section(s):	New version No.:
☒ Changes in XLS	Worksheet(s): ER_calculation, Data 2020, Data 2021, Starch production & fuel oil	New version No.: 2
☐ Other:		
DOE assessment (1st round)		Date 19/07/2021
ER version 2.0,		
1. Starch production & fuel oil tab: a. The heading for Average HFO consumption L/kg of dry starch at the Baseline Data table is corrected and consistent with approved revised PD and table in MR section 3.2.1 b. The data representation in the column Average HFO consumption L/kg of dry starch are corrected and consistent with MR and approved revised PD. c. Cell B8 corrected and according to the data in the logsheet		
2. PEA Bill tab: March and April data are updated accordingly		
3. ER calculation tab: a. Data in Cell E31 updated and according to March and April data. b. ER calculation tab: Baseline and Project emissions corrected accordingly for all parameters.		
Conclusion Tick the appropriate checkbox	☐ Additional action should be taken (finding remains open) ☒ The finding is closed	

CAR ID 5-5	Section no.	ER spreadsheet	Date 28/05/2021
Description of CAR			
ER version 1.0, Data2020 and Data2021 tabs: 1. Count: The number of data days shall not include days when the plant is not operation for both COD and W_{CH4}. 2. Alpha: Shall be corrected based on above 3. All data shall be corrected based on above 1 and 2. 4. The data from 10/03/2021 to 30/04/2021 shall be corrected since not affected by delay in calibration 5. The nomenclature for cell J7 V_{RG,CH4} inconsistent with the MR and approved revised PD.			
Project participant response (1st round)			Date 19/07/2021

1. PP has revised the formular, to “countif” function under excel for both COD and CH ₄ value. The days without data has not been included in the calculation. 2. The alpha has been updated in correspondent to the change above. 3. All data relevant to the change of point 1 & 2 has been updated. 4. The calibration error of 2.55% has been applied to the value only to the value monitored during the calibration gap in 2021, until 09/03/2021. Kindly check the revised ER, sheet Data 2021. 5. The nomenclature biogas sent for flaring has been updated to V _{RG,h} and is now consistent with the MR and approved revised PD.		
Documentation provided by project participant (1st round)		
☐ Changes in the MR	Section(s):	New version No.:
☒ Changes in XLS	Worksheet(s): ER_calculation, Data 2020, Data 2021	New version No.: 2
☐ Other:		
DOE assessment (1st round)		Date 19/07/2021
ER version 1.0, Data2020 and Data2021 tabs: 1. PP has revised the formula, to “countif” function under excel for both COD and W _{CH₄} value. 2. Alpha value corrected based on above 3. All data related to above 1 and 2 are corrected. 4. The data from 10/03/2021 to 30/04/2021 corrected since not affected by delay in calibration 5. The nomenclature for cell J7 revised to V _{RG,h} and consistent with the MR and approved revised PD.		
Conclusion Tick the appropriate checkbox		☐ Additional action should be taken (finding remains open) ☒ The finding is closed

CAR ID	1-2	Section no.	1.7	Date	10/12/2021
Description of CAR					
MR version 4.0, Section 1.7 did not state the country in which the project is located.					
Project participant response (1st round)					Date 13/12/2021
Section 1.7 of the Monitoring Report has been updated with the project country location.					
Documentation provided by project participant (1st round)					
☒ Changes in the MR	Section(s): 1.7		New version No: 4.1		
☐ Changes in XLS	Worksheet(s):		New version No:		
☐ Other:					
VVB assessment (1st round)					Date 14/12/2021
MR version 4.1, Section 1.7 is updated to include the country where the project is located. The MR is correctly filled. The location has been checked during audit and against the VCS project website.					
Conclusion Tick the appropriate checkbox		☐ Additional action should be taken (finding remains open) ☒ The finding is closed			

CAR ID	4-15	Section no.	4.1	Date	10/12/2021
Description of CAR					
MR version 4.0, Section E.4.1, Parameter GWP _{CH₄} : The value as from 01/01/2021 is not included according to VCS Standard v 4.1					
Project participant response (1st round)					Date 13/12/2021
The latest GWP values (AR5) has been updated					
Documentation provided by project participant (1st round)					
☒ Changes in the MR	Section(s): E.4.1		New version No: 4.1		
☐ Changes in XLS	Worksheet(s):		New version No:		
☐ Other:					

VVB assessment (1st round)		Date	14/12/2021
MR version 4.1, Section E.4.1, Parameter GWP _{CH4} : The value as from 01/01/2021 is updated as 28 tCO2/tCH4. The MR is correctly filled..			
Conclusion <i>Tick the appropriate checkbox</i>		☐ Additional action should be taken (finding remains open) ☒ The finding is closed	

CAR ID	5-6	Section no.	5.1, 5.2, 5.4 & ER	Date	10/12/2021	
Description of CAR						
MR version 4.0, Sections 5.1, 5.2, 5.4 and ER calculations: The GWP _{CH4} value for monitoring period from 01/01/2021 to 30/04/2021 shall be according to AR5.						
Project participant response (1st round)					Date	13/12/2021
The latest GWP values (AR5) applied to monitoring data from 01/01/2021 to 30/04/2021, Section 5.1, 5.2 and 5.4 of MR and ER calculation sheet updated for GHG emissions reduction and removals achieved						
Documentation provided by project participant (1st round)						
☒	Changes in the MR	Section(s): E.5., 5.1, 5.4			New version No: 4.1	
☒	Changes in XLS	Worksheet(s): ER calculation			New version No:4.1	
☐	Other:					
VVB assessment (1st round)					Date	14/12/2021
MR version 4.1, Sections 5.1, 5.2, 5.4 and ER calculation: The GWP _{CH4} value is applied to the monitoring data for period from 01/01/2021 to 30/04/2021 according to AR5. The vintage ERs for 2021 have been revised accordingly.						
Conclusion <i>Tick the appropriate checkbox</i>		☐ Additional action should be taken (finding remains open) ☒ The finding is closed				

Table 5. FAR from this verification

FAR ID	xx	Section No.		Date: DD/MM/YYYY
Description of FAR				
NA				
Project participant response				Date: DD/MM/YYYY
Documentation provided by project participant				
VVB assessment				Date: DD/MM/YYYY

APPENDIX 5 MONITORED PARAMETERS

Table 5: Periodic Verification Checklist – Monitored Parameters

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.						
1. $Q_{ww,y}$		Description: Volume of wastewater treated in year y								
a) Measurement / Determination method (VWS, §§ 363-367) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DALO)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.	/MR/ /PD1/ /AMSIH/ /ER/ /WW/	Description: The parameter monitors the volume of wastewater treated by the digester, measured by a flow meter continuously and daily recorded in the logsheet, aggregated monthly. Verifier´s action: The recorded data in the logsheet is crosschecked with the data ER spreadsheet for consistency. Conclusion: It is concluded the parameter is monitored in accordance with the approved revised PD and applied methodology <table><tr><td>☒</td><td>In this context the following findings have been raised:</td></tr><tr><td>☒</td><td>CL 4-1</td></tr><tr><td>☒</td><td>CAR 4-6</td></tr></table>	☒	In this context the following findings have been raised:	☒	CL 4-1	☒	CAR 4-6	~~CL 4-1~~ ~~CAR 4-6~~	OK
☒	In this context the following findings have been raised:									
☒	CL 4-1									
☒	CAR 4-6									
b) Accuracy, correctness and QA/QC Procedure (VWS, §§ 368-374) In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this	/MR/ /PD1/ /ER/ /WW/ /C1/	<table><tr><td>☒</td><td>It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan</td></tr><tr><td>☒</td><td>For details regarding the accuracy and calibration details please refer to Appendix 6</td></tr><tr><td>☒</td><td>No delayed calibration has occurred</td></tr></table>	☒	It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan	☒	For details regarding the accuracy and calibration details please refer to Appendix 6	☒	No delayed calibration has occurred	OK	OK
☒	It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan									
☒	For details regarding the accuracy and calibration details please refer to Appendix 6									
☒	No delayed calibration has occurred									

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.
case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs. Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance. Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.		☒	As per the initial assessment the monitored value is deemed to be correct.		
		☒	Based on calibration certificates checked it can be confirmed that the monitoring equipment has been duly calibrated for this entire monitoring period.		
		☐	Based on calibration certificates checked a delay in calibration has been identified for the following period: Start date of delay: DD/MM/YYYY End date of delay: DD/MM/YYYY		
		☐	A delay in calibration has been identified, the PP applied related actions and therefore the DOE can confirm that the:		
		☐	The maximum permissible error of the instrument has been applied to the values during the period between scheduled date of calibration and the actual date of calibration		
		☐	The result of the delayed calibration did not identify an error beyond the maximum permissible error of the instrument		
		☐	The error as identified during the delayed calibration has been applied as the error is beyond the maximum permissible error of the instrument		
		☐	The error has been applied in a conservative manner, such that the adjusted measured values of the delayed calibration shall result in fewer claimed GHG emission reductions or net anthropogenic GHG removals		
		☐	The error has been applied all measured values taken during the period between the scheduled date of calibration and the actual date of calibration.		
		☐	In this context the following findings have been raised:		

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.
		☐			
2. COD_{ww,untreated,y}		Description: The chemical oxygen demand of the wastewater before the treatment system affected by the project activity			
a) Measurement / Determination method (VWS, §§ 363-367) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DALO)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.	/MR/ /ER/ /PD1/ /COD/ /AMSIH/	Description: The parameter monitor the COD content of the wastewater before entering the biodigester on daily basis and recorded in the COD logsheets. The parameter is measured using calorimetric lab analysis method, where samples are taken and analysed 90/10 confidence/precision level on a daily basis. Verifier's action: The test data in the logsheet was reviewed to verify the results are average of the 3 aggregated values for each day. The data in the ER spreadsheet was crosschecked for the input data from the logsheet for correctness. However, the calculation for the average result to apply for ER calculation is incorrect. Conclusion: The parameter is monitored in accordance with the approved PD and applied methodology ☒ In this context the following findings have been raised: ☒ CAR 4-7 ☐		CAR 4-7	OK
b) Accuracy, correctness and QA/QC Procedure (VWS, §§ 368-374) In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is	/MR/ /PD1/ /C2/ /ER/	☐ It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan ☒ For details regarding the accuracy and calibration details please refer to Appendix 6		CAR 4-7	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.
<i>controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i> <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i> <i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.</i>		☐	No delayed calibration has occurred		
		☐	As per the initial assessment the monitored value is deemed to be correct.		
		☐	Based on calibration certificates checked it can be confirmed that the monitoring equipment has been duly calibrated for this entire monitoring period.		
		☒	Based on calibration certificates checked a delay in calibration has been identified for the following period: Start date of delay: 03/03//2020 End date of delay: 09/03/2021		
		☒	A delay in calibration has been identified, the PP applied related actions and therefore the DOE can confirm that the:		
		☐	The maximum permissible error of the instrument has been applied to the values during the period between scheduled date of calibration and the actual date of calibration		
		☐	The result of the delayed calibration did not identify an error beyond the maximum permissible error of the instrument		
		☒	The error as identified during the delayed calibration has been applied as the error is beyond the maximum permissible error of the instrument		
		☒	The error has been applied in a conservative manner, such that the adjusted measured values of the delayed calibration shall result in fewer claimed GHG emission reductions or net anthropogenic GHG removals		
		☒	The error has been applied all measured values taken during the period between the scheduled date of calibration and the actual date of calibration.		

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.
		☒	In this context the following findings have been raised:		
		☒	CAR 4-7		
3. COD _{ww,treated,y}		Description: The chemical oxygen demand of the wastewater after the treatment system affected by the project activity			
a) Measurement / Determination method (VVS, §§ 363-367) <i>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DALO)).</i> <i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i> <i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i>	/MR/ /ER/ /PD1/ /COD/ /AMSIH/	<i>Description:</i> This parameter monitored the COD of the wastewater after the biodigester system on daily basis and recorded in the COD logsheets. The parameter is measured using calorimetric lab analysis method, where samples are taken and analysed 90/10 confidence/precision level on a daily basis <i>Verifier´s action:</i> The test data in the logsheet was reviewed to verify the results are average of the three aggregated values for each day. The data in the ER spreadsheet is crosschecked for the input data from the logsheets for correctness. However, the calculation for the average result to apply for ER calculation is incorrect. <i>Conclusion:</i> The parameter is monitor in accordance to the approved revised PD and applied methodology. ☒ In this context the following findings have been raised: ☒ CAR 4-7 ☐		CAR 4-7	OK
b) Accuracy, correctness and QA/QC Procedure (VVS, §§ 368-374)	/MR/ /PD1/	☐	It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan	CAR 4-7	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.
<i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i> <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i> <i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.</i>	/C2/ /ER/	☒	For details regarding the accuracy and calibration details please refer to Appendix 6		
		☐	No delayed calibration has occurred		
		☐	As per the initial assessment the monitored value is deemed to be correct.		
		☐	Based on calibration certificates checked it can be confirmed that the monitoring equipment has been duly calibrated for this entire monitoring period.		
		☒	Based on calibration certificates checked a delay in calibration has been identified for the following period: Start date of delay: 03/03/2020 End date of delay: 09/03/2021		
		☒	A delay in calibration has been identified, the PP applied related actions and therefore the DOE can confirm that the:		
		☐	The maximum permissible error of the instrument has been applied to the values during the period between scheduled date of calibration and the actual date of calibration		
		☐	The result of the delayed calibration did not identify an error beyond the maximum permissible error of the instrument		
		☒	The error as identified during the delayed calibration has been applied as the error is beyond the maximum permissible error of the instrument		
		☒	The error has been applied in a conservative manner, such that the adjusted measured values of the delayed calibration shall result in fewer claimed GHG emission reductions or net anthropogenic GHG removals		

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.
		☐	The error has been applied all measured values taken during the period between the scheduled date of calibration and the actual date of calibration.		
		☒	In this context the following findings have been raised:		
		☒	CAR 4-7		
4. S _{final,PJ,y}		Description: Amount of dry matter in the sludge			
a) Measurement / Determination method (VVS, §§ 363-367) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.	.MR. /PD1/ /ER/ /AMSIHH/	Description: This parameter monitors the amount of dry matter in the sludge removed from the digester system. There is no dry matter from sludge generated during this monitoring period. Verifier´s action: The ER spreadsheet is review with no data input since no dry matter sludge removed from the digester system. The project owner is interview to crosscheck for any removal. Conclusion: The parameter is monitored in accordance with the approved revised PD and applied methodology ☐ In this context the following findings have been raised: ☐ ☐		OK	OK
b) Accuracy, correctness and QA/QC Procedure (VVS, §§ 368-374)	.MR. /PD1/	☒	It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.
<i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i> <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i> <i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.</i>	/ER/ /AMSIH/ /C3/	☒	For details regarding the accuracy and calibration details please refer to Appendix 6		
		☒	No delayed calibration has occurred		
		☒	As per the initial assessment the monitored value is deemed to be correct.		
		☒	Based on calibration certificates checked it can be confirmed that the monitoring equipment has been duly calibrated for this entire monitoring period.		
		☐	Based on calibration certificates checked a delay in calibration has been identified for the following period: Start date of delay: End date of delay:		
		☐	A delay in calibration has been identified, the PP applied related actions and therefore the DOE can confirm that the:		
		☐	The maximum permissible error of the instrument has been applied to the values during the period between scheduled date of calibration and the actual date of calibration		
		☐	The result of the delayed calibration did not identify an error beyond the maximum permissible error of the instrument		
		☐	The error as identified during the delayed calibration has been applied as the error is beyond the maximum permissible error of the instrument		
		☐	The error has been applied in a conservative manner, such that the adjusted measured values of the delayed calibration shall result in fewer claimed GHG emission reductions or net anthropogenic GHG removals		

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)			Draft Concl.	Final Concl.	
			☐	The error has been applied all measured values taken during the period between the scheduled date of calibration and the actual date of calibration.			
			☐	In this context the following findings have been raised:			
			☐				
5. BG _{burnt,y}		Description: Biogas volume in year y					
a) Measurement / Determination method (VWS, §§ 363-367) <i>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DALO)).</i> <i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i> <i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i>	/MR/ /PD1/ /BD/ /AMSIHH/	<i>Description:</i> The parameter measured the biogas generated by the digester with a flow meter and daily recorded in the logsheet. The daily amount is calculated by subtracting the recorded value with the previous day data. <i>Verifier´s action:</i> The data in the ER was crosschecked with the data in the logsheet. The daily calculated value is crosscheck for consistency. <i>Conclusion:</i> The parameter is monitored in accordance with the approved revised PD and applied methodology ☒ In this context the following findings have been raised: ☒ CAR 4-8			~~CAR 4-8~~	OK	
b) Accuracy, correctness and QA/QC Procedure (VWS, §§ 368-374) <i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this</i>	/MR/ /PD1/ /BD/ /AMSIHH/ /C4/	☒	It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan ☒ For details regarding the accuracy and calibration details please refer to Appendix 6 ☒ No delayed calibration has occurred			~~CAR 4-8~~	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.
case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs. Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance. Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.		☒	As per the initial assessment the monitored value is deemed to be correct.		
		☒	Based on calibration certificates checked it can be confirmed that the monitoring equipment has been duly calibrated for this entire monitoring period.		
		☐	Based on calibration certificates checked a delay in calibration has been identified for the following period: Start date of delay: DD/MM/YYYY End date of delay: DD/MM/YYYY		
		☐	A delay in calibration has been identified, the PP applied related actions and therefore the DOE can confirm that the:		
		☐	The maximum permissible error of the instrument has been applied to the values during the period between scheduled date of calibration and the actual date of calibration		
		☐	The result of the delayed calibration did not identify an error beyond the maximum permissible error of the instrument		
		☐	The error as identified during the delayed calibration has been applied as the error is beyond the maximum permissible error of the instrument		
		☐	The error has been applied in a conservative manner, such that the adjusted measured values of the delayed calibration shall result in fewer claimed GHG emission reductions or net anthropogenic GHG removals		
		☐	The error has been applied all measured values taken during the period between the scheduled date of calibration and the actual date of calibration.		
		☒	In this context the following findings have been raised:		

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.
		☒	CAR 4-8		
6. W_{CH4}		Description: Methane content in the biogas in the year y			
a) Measurement / Determination method (VVS, §§ 363-367) <i>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DALO)).</i> <i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i> <i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i>	/MR/ /PD1/ /AMSIHH/ /ER/ /CH4/	Description: This parameter monitors the CH₄ content of the generated biogas using a portable gas analyser. The data is measure hourly on daily basis and recorded in the logsheet. Since the data is captured on periodic basis, it is recalculated with a 90/10 confidence/precision level to obtain the average value for the monitoring period Verifier´s action: The measured data is review and crosschecked with ER spreadsheet for the recalculation for correctness. The recalculation of the data is incorrectly determined. Conclusion: The parameter is monitored in accordance with the approved revised PD and applied methodology ☒ In this context the following findings have been raised: ☒ CL 4-2 ☒ CAR 4-9		~~CL 4-2~~ ~~CAR 4-9~~	OK
b) Accuracy, correctness and QA/QC Procedure (VVS, §§ 368-374) <i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this</i>	/MR/ /PD1/ /AMSIHH/ /ER/ /CH4/	☒ It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan ☒ For details regarding the accuracy and calibration details please refer to Appendix 6 ☐ No delayed calibration has occurred		~~CL 4-2~~ ~~CAR 4-9~~	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.
<i>case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i> <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i> <i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.</i>	/C5/	☐	As per the initial assessment the monitored value is deemed to be correct.		
		☐	Based on calibration certificates checked it can be confirmed that the monitoring equipment has been duly calibrated for this entire monitoring period.		
		☐	Based on calibration certificates checked a delay in calibration has been identified for the following period: Start date of delay: End date of delay:		
		☐	A delay in calibration has been identified, the PP applied related actions and therefore the DOE can confirm that the:		
		☐	The maximum permissible error of the instrument has been applied to the values during the period between scheduled date of calibration and the actual date of calibration		
		☐	The result of the delayed calibration did not identify an error beyond the maximum permissible error of the instrument		
		☐	The error as identified during the delayed calibration has been applied as the error is beyond the maximum permissible error of the instrument		
		☐	The error has been applied in a conservative manner, such that the adjusted measured values of the delayed calibration shall result in fewer claimed GHG emission reductions or net anthropogenic GHG removals		
		☐	The error has been applied all measured values taken during the period between the scheduled date of calibration and the actual date of calibration.		
		☒	In this context the following findings have been raised:		

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.
		☒	CL 4-2		
		☒	CAR 4-9		
7. BG_{combusted,y}		Description: Amount of biogas sent to boiler in year y			
a) Measurement / Determination method (VVS, §§ 363-367) <i>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DALO)).</i> <i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i> <i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i>	/MR/ /PD1/ /ER/ /AMSIHH/ /BD/	Description: The parameter monitors the amount of biogas sent to the boiler for combustion and measured by a flow meter, recorded on daily basis in the logsheet. The daily amount is calculated by subtracting the recorded value with the previous day data. Verifier's action: The data in the ER was crosschecked with the data in the logsheet. The daily calculated value is crosscheck for consistency. Conclusion: The parameter is monitored in accordance with the approved revised PD and applied methodology ☒ In this context the following findings have been raised: ☒ CAR 4-8		CAR 4-8	OK
b) Accuracy, correctness and QA/QC Procedure (VVS, §§ 368-374) <i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i>	/MR/ /PD1/ /ER/ /AMSIHH/ /BD/ /C4/	☒ It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan ☒ For details regarding the accuracy and calibration details please refer to Appendix 6 ☒ No delayed calibration has occurred ☒ As per the initial assessment the monitored value is deemed to be correct.		CAR 4-8	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.
<i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i> <i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.</i>		☐	Based on calibration certificates checked it can be confirmed that the monitoring equipment has been duly calibrated for this entire monitoring period.		
		☐	Based on calibration certificates checked a delay in calibration has been identified for the following period: Start date of delay: DD/MM/YYYY End date of delay: DD/MM/YYYY		
		☐	A delay in calibration has been identified, the PP applied related actions and therefore the DOE can confirm that the:		
		☐	The maximum permissible error of the instrument has been applied to the values during the period between scheduled date of calibration and the actual date of calibration		
		☐	The result of the delayed calibration did not identify an error beyond the maximum permissible error of the instrument		
		☐	The error as identified during the delayed calibration has been applied as the error is beyond the maximum permissible error of the instrument		
		☐	The error has been applied in a conservative manner, such that the adjusted measured values of the delayed calibration shall result in fewer claimed GHG emission reductions or net anthropogenic GHG removals		
		☐	The error has been applied all measured values taken during the period between the scheduled date of calibration and the actual date of calibration.		
		☒	In this context the following findings have been raised:		
		☒	CAR 4-8		

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.										
8. V _{RG,h}		Description: Volumetric flow of the residual gas (methane) on dry basis at reference conditions in the minute m												
a) Measurement / Determination method (VVS, §§ 363-367) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DALO)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.	/MR/ /PD1/ /ER/ /BD/ /AMSIHH/	Description: This parameter measures the residual gas (methane) flow rate on dry basis using a gas flow meter and daily recording in the logsheets Verifier´s action: The data in the ER spreadsheet is reviewed to crosscheck with the daily logsheets. The monitored value is inconsistent with the ER spreadsheet. Conclusion: The parameter is monitored in accordance with the approved revised PD <table><tr><td>☒</td><td colspan="2">In this context the following findings have been raised:</td></tr><tr><td>☒</td><td>☒</td><td>CAR 4-10</td></tr><tr><td>☐</td><td>☐</td><td></td></tr></table>	☒	In this context the following findings have been raised:		☒	☒	CAR 4-10	☐	☐		CAR 4-10	OK	
☒	In this context the following findings have been raised:													
☒	☒	CAR 4-10												
☐	☐													
b) Accuracy, correctness and QA/QC Procedure (VVS, §§ 368-374) In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs. Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring	/MR/ /PD1/ /ER/ /BD/ /AMSIHH/ /C4/	<table><tr><td>☒</td><td>It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan</td></tr><tr><td>☒</td><td>For details regarding the accuracy and calibration details please refer to Appendix 6</td></tr><tr><td>☒</td><td>No delayed calibration has occurred</td></tr><tr><td>☐</td><td>As per the initial assessment the monitored value is deemed to be correct.</td></tr><tr><td>☐</td><td>Based on calibration certificates checked it can be confirmed that the monitoring equipment has been duly calibrated for this entire monitoring period.</td></tr></table>	☒	It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan	☒	For details regarding the accuracy and calibration details please refer to Appendix 6	☒	No delayed calibration has occurred	☐	As per the initial assessment the monitored value is deemed to be correct.	☐	Based on calibration certificates checked it can be confirmed that the monitoring equipment has been duly calibrated for this entire monitoring period.	CAR 4-10	OK
☒	It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan													
☒	For details regarding the accuracy and calibration details please refer to Appendix 6													
☒	No delayed calibration has occurred													
☐	As per the initial assessment the monitored value is deemed to be correct.													
☐	Based on calibration certificates checked it can be confirmed that the monitoring equipment has been duly calibrated for this entire monitoring period.													

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.
<i>equipment has been carried out in line with the latest EB guidance.</i> <i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.</i>		☐	Based on calibration certificates checked a delay in calibration has been identified for the following period: Start date of delay: End date of delay:		
		☐	A delay in calibration has been identified, the PP applied related actions and therefore the DOE can confirm that the:		
		☐	The maximum permissible error of the instrument has been applied to the values during the period between scheduled date of calibration and the actual date of calibration		
		☐	The result of the delayed calibration did not identify an error beyond the maximum permissible error of the instrument		
		☐	The error as identified during the delayed calibration has been applied as the error is beyond the maximum permissible error of the instrument		
		☐	The error has been applied in a conservative manner, such that the adjusted measured values of the delayed calibration shall result in fewer claimed GHG emission reductions or net anthropogenic GHG removals		
		☐	The error has been applied all measured values taken during the period between the scheduled date of calibration and the actual date of calibration.		
		☒	In this context the following findings have been raised:		
		☒	CAR 4-10		
	☐				
9. FC _{HFO,y}		Description: Quantity of fuel type i (HFO) combusted in process j during the year y			

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
a) Measurement / Determination method (VVS, §§ 363-367) <i>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DALO)).</i> <i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i> <i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i>	/MR/ /PD1/ /AMSIc/ /ER/ /HFO/	<i>Description:</i> This parameter monitors the amount of HFO consumed by two thermal boilers using a flow meter and daily recorded in the loghseet.	CL 4-3	OK
		<i>Verifier´s action:</i> The data in the ER spreadsheet is crosschecked with the daily logsheet. There is no HFO consumed during this monitoring period.		
		<i>Conclusion:</i> The parameter is monitored in accordance with the approved revised PD and applied methodology		
		☒ In this context the following findings have been raised:		
		☒ CL 4-3 ☐		
b) Accuracy, correctness and QA/QC Procedure (VVS, §§ 368-374) <i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i> <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i>	/MR/ /PD1/ /AMSIc/ /ER/ /BD/ /C6/	☒ It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan	OK	OK
		☒ For details regarding the accuracy and calibration details please refer to Appendix 6		
		☒ No delayed calibration has occurred		
		☒ As per the initial assessment the monitored value is deemed to be correct.		
		☒ Based on calibration certificates checked it can be confirmed that the monitoring equipment has been duly calibrated for this entire monitoring period.		
		☐ Based on calibration certificates checked a delay in calibration has been identified for the following period:		

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.
Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.			Start date of delay: End date of delay:		
		☐	A delay in calibration has been identified, the PP applied related actions and therefore the DOE can confirm that the:		
		☐	The maximum permissible error of the instrument has been applied to the values during the period between scheduled date of calibration and the actual date of calibration		
		☐	The result of the delayed calibration did not identify an error beyond the maximum permissible error of the instrument		
		☐	The error as identified during the delayed calibration has been applied as the error is beyond the maximum permissible error of the instrument		
		☐	The error has been applied in a conservative manner, such that the adjusted measured values of the delayed calibration shall result in fewer claimed GHG emission reductions or net anthropogenic GHG removals		
		☐	The error has been applied all measured values taken during the period between the scheduled date of calibration and the actual date of calibration.		
		☐	In this context the following findings have been raised:		
		☐			
		☐			
10. EF _{FF,HFO}		Description: Emission factor of fossil fuel replaced-residual fuel oil			
a) Measurement / Determination method	/MR/ /PD1/	Description: The parameter monitors the emission factor of fossil fuel..		OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
(VVS, §§ 363-367) <i>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DALO)).</i> <i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i> <i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i>	/ER/ /ipcc/	The fuel used by the thermal heater. There is no instrument used to measure the data The value is based on IPCC default value.		
		Verifier´s action: The value applied by the project owner is the default value from IPCC. Therefore, is applied appropriately		
		Conclusion: The parameter is monitored in accordance with the approved PD and applied methodology		
		☐ In this context the following findings have been raised:		
		☐ ☐		
b) Accuracy, correctness and QA/QC Procedure (VVS, §§ 368-374) <i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i> <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i>	/MR/ /PD1/ /ER/ /ipcc/	☐ It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan	OK	OK
		☐ For details regarding the accuracy and calibration details please refer to Appendix 6		
		☐ No delayed calibration has occurred		
		☒ As per the initial assessment the monitored value is deemed to be correct.		
		☐ Based on calibration certificates checked it can be confirmed that the monitoring equipment has been duly calibrated for this entire monitoring period.		
		☐ Based on calibration certificates checked a delay in calibration has been identified for the following period:		

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.
Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.			Start date of delay: End date of delay:		
		☐	A delay in calibration has been identified, the PP applied related actions and therefore the DOE can confirm that the:		
		☐	The maximum permissible error of the instrument has been applied to the values during the period between scheduled date of calibration and the actual date of calibration		
		☐	The result of the delayed calibration did not identify an error beyond the maximum permissible error of the instrument		
		☐	The error as identified during the delayed calibration has been applied as the error is beyond the maximum permissible error of the instrument		
		☐	The error has been applied in a conservative manner, such that the adjusted measured values of the delayed calibration shall result in fewer claimed GHG emission reductions or net anthropogenic GHG removals		
		☐	The error has been applied all measured values taken during the period between the scheduled date of calibration and the actual date of calibration.		
		☐	In this context the following findings have been raised:		
		☐			
		☐			
11. NCV _{HFO}		Description: Weighted average net calorific value of fuel type i (HFO) in year y			
a) Measurement / Determination method	/MR/	Description:		OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.												
(VVS, §§ 363-367) <i>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DALO)).</i> <i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i> <i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i>	/ER/ /PD1/ /AMSIC/ /ipcc/	The parameter monitors the weighted average net calorific value of fuel type i in year y for the fuel used by the thermal boiler. There is no instrument used to measure the data. The value is based on IPCC Volume 2: Energy, Table 1.2 default value. Verifier´s action: The default value in the ER spreadsheet is verified as correct. Conclusion: The parameter is monitored in accordance with the approved revised PD and applied methodology <table><tr><td>☐</td><td>In this context the following findings have been raised:</td></tr><tr><td>☐</td><td></td></tr><tr><td>☐</td><td></td></tr></table>	☐	In this context the following findings have been raised:	☐		☐									
☐	In this context the following findings have been raised:															
☐																
☐																
b) Accuracy, correctness and QA/QC Procedure (VVS, §§ 368-374) <i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i> <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i> <i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.</i>	/MR/ /ER/ /PD1/ /AMSIC/ /ipcc/	<table><tr><td>☐</td><td>It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan</td></tr><tr><td>☐</td><td>For details regarding the accuracy and calibration details please refer to Appendix 6</td></tr><tr><td>☐</td><td>No delayed calibration has occurred</td></tr><tr><td>☒</td><td>As per the initial assessment the monitored value is deemed to be correct.</td></tr><tr><td>☐</td><td>Based on calibration certificates checked it can be confirmed that the monitoring equipment has been duly calibrated for this entire monitoring period.</td></tr><tr><td>☐</td><td>Based on calibration certificates checked a delay in calibration has been identified for the following period: Start date of delay:</td></tr></table>	☐	It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan	☐	For details regarding the accuracy and calibration details please refer to Appendix 6	☐	No delayed calibration has occurred	☒	As per the initial assessment the monitored value is deemed to be correct.	☐	Based on calibration certificates checked it can be confirmed that the monitoring equipment has been duly calibrated for this entire monitoring period.	☐	Based on calibration certificates checked a delay in calibration has been identified for the following period: Start date of delay:	OK	OK
☐	It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan															
☐	For details regarding the accuracy and calibration details please refer to Appendix 6															
☐	No delayed calibration has occurred															
☒	As per the initial assessment the monitored value is deemed to be correct.															
☐	Based on calibration certificates checked it can be confirmed that the monitoring equipment has been duly calibrated for this entire monitoring period.															
☐	Based on calibration certificates checked a delay in calibration has been identified for the following period: Start date of delay:															

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.
			End date of delay:		
		☐	A delay in calibration has been identified, the PP applied related actions and therefore the DOE can confirm that the:		
		☐	The maximum permissible error of the instrument has been applied to the values during the period between scheduled date of calibration and the actual date of calibration		
		☐	The result of the delayed calibration did not identify an error beyond the maximum permissible error of the instrument		
		☐	The error as identified during the delayed calibration has been applied as the error is beyond the maximum permissible error of the instrument		
		☐	The error has been applied in a conservative manner, such that the adjusted measured values of the delayed calibration shall result in fewer claimed GHG emission reductions or net anthropogenic GHG removals		
		☐	The error has been applied all measured values taken during the period between the scheduled date of calibration and the actual date of calibration.		
		☐	In this context the following findings have been raised:		
		☐			
		☐			
12. EG _{thermal,y}		Description: Net quantity of thermal energy supplied by the project activity during the year y			
a) Measurement / Determination method (VVS, §§ 363-367)	/MR/ /PD1/ /ER/	Description: The parameter measure the amount of thermal energy supplied by the project activity used by the starch plant using biogas during the monitoring period, as compared to the historical data using HFO.		CAR 4-11	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DALO)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.	/AMSIC/ /BD/ /SP/	Verifier's action: The data applied is in the ER calculations is crosschecked with the amount of biogas combusted at the thermal boiler and quantity of starch produced for correctness. During this monitoring period, there is no HFO combusted and no data recorded. The amount of starch produced and amount of biogas combusted are verified. Conclusion: The parameter is monitored in accordance with the approved PD and applied methodology ☒ In this context the following findings have been raised: ☒ CAR 4-11		
b) Accuracy, correctness and QA/QC Procedure (VWS, §§ 368-374) In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs. Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance. Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.	/MR/ /PD1/ /ER/ /AMSIC/ /BD/ /SP/	☐ It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan ☐ For details regarding the accuracy and calibration details please refer to Appendix 6 ☐ No delayed calibration has occurred ☒ As per the initial assessment the monitored value is deemed to be correct. ☐ Based on calibration certificates checked it can be confirmed that the monitoring equipment has been duly calibrated for this entire monitoring period. ☐ Based on calibration certificates checked a delay in calibration has been identified for the following period: Start date of delay: DD/MM/YYYY	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.
			End date of delay: DD/MM/YYYY		
		☐	A delay in calibration has been identified, the PP applied related actions and therefore the DOE can confirm that the:		
		☐	The maximum permissible error of the instrument has been applied to the values during the period between scheduled date of calibration and the actual date of calibration		
		☐	The result of the delayed calibration did not identify an error beyond the maximum permissible error of the instrument		
		☐	The error as identified during the delayed calibration has been applied as the error is beyond the maximum permissible error of the instrument		
		☐	The error has been applied in a conservative manner, such that the adjusted measured values of the delayed calibration shall result in fewer claimed GHG emission reductions or net anthropogenic GHG removals		
		☐	The error has been applied all measured values taken during the period between the scheduled date of calibration and the actual date of calibration.		
		☐	In this context the following findings have been raised:		
		☐			
13. EC _y		Description: Quantity of electricity consumed by the project electricity consumption source j in year y			
a) Measurement / Determination method (VVS, §§ 363-367) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level	/MR/ /PD1/ /ER/ /AMSIH/	Description: The parameter measured the electricity consumed by the project activity. The electricity is supply from Thai national grid and monitored by a meter owned by the grid operator Provincial Electricity Authority (PEA)		CAR-4-12	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.
<i>(ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DALO)).</i> <i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i> <i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i>	/EI/	Verifier´s action: The data in ER is crosschecked with the electricity invoice for correctness.			
		Conclusion: The parameter is monitored in accordance with the approved revised PD and applied methodology			
		☒	In this context the following findings have been raised:		
		☒	CAR 4-12		
b) Accuracy, correctness and QA/QC Procedure (VVS, §§ 368-374) <i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i> <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i> <i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.</i>	/MR/ /PD1/ /ER/ /AMSIH/ /EI/ /C7/	☐	It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan	CAR 4-12	OK
		☐	For details regarding the accuracy and calibration details please refer to Appendix 6		
		☐	No delayed calibration has occurred		
		☒	As per the initial assessment the monitored value is deemed to be correct.		
		☐	Based on calibration certificates checked it can be confirmed that the monitoring equipment has been duly calibrated for this entire monitoring period.		
		☐	Based on calibration certificates checked a delay in calibration has been identified for the following period: Start date of delay: DD/MM/YYYY End date of delay: DD/MM/YYYY		
		☐	A delay in calibration has been identified, the PP applied related actions and therefore the DOE can confirm that the:		
		☐	The maximum permissible error of the instrument has been applied to the values during the period between		

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.
			☐ scheduled date of calibration and the actual date of calibration ☐ The result of the delayed calibration did not identify an error beyond the maximum permissible error of the instrument ☐ The error as identified during the delayed calibration has been applied as the error is beyond the maximum permissible error of the instrument ☐ The error has been applied in a conservative manner, such that the adjusted measured values of the delayed calibration shall result in fewer claimed GHG emission reductions or net anthropogenic GHG removals ☐ The error has been applied all measured values taken during the period between the scheduled date of calibration and the actual date of calibration.		
		☒	In this context the following findings have been raised:		
		☒	CAR 4-12		
14. TDL _{j,y}		Description: Average technical transmission and distribution losses for providing electricity to source j in year y			
a) Measurement / Determination method (VWS, §§ 363-367) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DALO)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been	/MR/ /ER/ /PD1/ /AMSIH/ /O1/	Description: The parameter is monitor the transmission and distribution losses of an electricity system supply electricity to the project activity. Verifiers' action: The data describe in the MR is no longer valid since it has exceeds the 5 years period as described in the approved revised PD. The ER spreadsheet is review to crosschecked the value applied is incorrect Conclusion:		~~CAR 4-13~~	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.
<i>used. Furthermore, verify the frequency of measurements as per the requirements.</i> <i>Assess whether the 28/08/2016 to 0 measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i>		The parameter is monitored in accordance with the approved revised PD and applied methodology			
		☒	In this context the following findings have been raised:		
		☒	CAR 4-13		
b) Accuracy, correctness and QA/QC Procedure (VVS, §§ 368-374) <i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i> <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i> <i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.</i>	/MR/ /ER/ /PD1/ /AMSIH/ /O1/	☐	It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan	CAR 4-13	OK
		☐	For details regarding the accuracy and calibration details please refer to Appendix 6		
		☐	No delayed calibration has occurred		
		☐	As per the initial assessment the monitored value is deemed to be correct.		
		☐	Based on calibration certificates checked it can be confirmed that the monitoring equipment has been duly calibrated for this entire monitoring period.		
		☐	Based on calibration certificates checked a delay in calibration has been identified for the following period: Start date of delay: DD/MM/YYYY End date of delay: DD/MM/YYYY		
		☐	A delay in calibration has been identified, the PP applied related actions and therefore the DOE can confirm that the:		
		☐	The maximum permissible error of the instrument has been applied to the values during the period between scheduled date of calibration and the actual date of calibration		

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.	
			☐	The result of the delayed calibration did not identify an error beyond the maximum permissible error of the instrument		
			☐	The error as identified during the delayed calibration has been applied as the error is beyond the maximum permissible error of the instrument		
			☐	The error has been applied in a conservative manner, such that the adjusted measured values of the delayed calibration shall result in fewer claimed GHG emission reductions or net anthropogenic GHG removals		
			☐	The error has been applied all measured values taken during the period between the scheduled date of calibration and the actual date of calibration.		
		☒	In this context the following findings have been raised:			
			☒	CAR 4-13		
15. Flame _m		Description: Flame detection of flare in the minute m				
a) Measurement / Determination method (VVS, §§ 363-367) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DALO)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.	/MR/ /ER/ /PD1/ /AMSIHH/ /BD/ /TL/	<i>Description:</i> The parameter monitors the flame when the flare is in operation to capture the operation time in minutes. According to the approved revised PD and applied tool, the data will captured every minute. However, there is no flame detector installed at the flare and zero operating time is applied. <i>Verifier´s action:</i> The loghseet is review and there is no data captured when the flare is operating although there are biogas sent to the flare. The ER spreadsheet is review with zero is applied.		CL 4-4	OK	

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.
Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.		Conclusion: The monitoring of the parameter is in accordance to the approved PD.			
		☒	In this context the following findings have been raised:		
		☒	CL D.4-3		
b) Accuracy, correctness and QA/QC Procedure (VWS, §§ 368-374) <i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i> <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i> <i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.</i>	/MR/ /ER/ /PD1/ /AMSIHH/ /BD/ /TL/	☐	It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan	OK	OK
		☐	For details regarding the accuracy and calibration details please refer to Appendix 6		
		☐	No delayed calibration has occurred		
		☒	As per the initial assessment the monitored value is deemed to be correct.		
		☐	Based on calibration certificates checked it can be confirmed that the monitoring equipment has been duly calibrated for this entire monitoring period.		
		☐	Based on calibration certificates checked a delay in calibration has been identified for the following period: Start date of delay: DD/MM/YYYY End date of delay: DD/MM/YYYY		
		☐	A delay in calibration has been identified, the PP applied related actions and therefore the DOE can confirm that the:		
		☐	The maximum permissible error of the instrument has been applied to the values during the period between scheduled date of calibration and the actual date of calibration		

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.	
			☐	The result of the delayed calibration did not identify an error beyond the maximum permissible error of the instrument		
			☐	The error as identified during the delayed calibration has been applied as the error is beyond the maximum permissible error of the instrument		
			☐	The error has been applied in a conservative manner, such that the adjusted measured values of the delayed calibration shall result in fewer claimed GHG emission reductions or net anthropogenic GHG removals		
			☐	The error has been applied all measured values taken during the period between the scheduled date of calibration and the actual date of calibration.		
		☒	In this context the following findings have been raised:			
			☒	CL 4-4		
16. $\eta_{\text{Flare-h}}$		Description: Flare efficiency in the minute m				
a) Measurement / Determination method (VVS, §§ 363-367) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DALO)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.	/MR/ /ER/ /PD1/ /BD/ /TL/ /AMSIHH/	<i>Description:</i> The parameter monitors the flare efficiency according to the tool “project emission from flaring” of 50% For this monitoring period, the efficiency is consider as zero since there is no captured data from Flame_m (flame detector) parameter the flare is in operation. <i>Verifier´s action:</i> The loghseets were reviewed and there is no data captured for how long the flare is operating although there are biogas sent to the flare. In this aspect, 0% is applied. The ER spreadsheet is review on the efficiency applied is zero. The biogas flare is considered as PE.		CL 4-5	OK	

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.
Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.		Conclusion: The parameter is monitored in accordance with the approved revised PD.			
		☒	In this context the following findings have been raised:		
		☐	CL 4-5		
b) Accuracy, correctness and QA/QC Procedure (VWS, §§ 368-374) <i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i> <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i> <i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.</i>	/MR/ /ER/ /PD1/ /BD/ /TL/ /AMSIHH/	☐	It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan	CL 4-5	OK
		☐	For details regarding the accuracy and calibration details please refer to Appendix 6		
		☐	No delayed calibration has occurred		
		☐	As per the initial assessment the monitored value is deemed to be correct.		
		☐	Based on calibration certificates checked it can be confirmed that the monitoring equipment has been duly calibrated for this entire monitoring period.		
		☐	Based on calibration certificates checked a delay in calibration has been identified for the following period: Start date of delay: DD/MM/YYYY End date of delay: DD/MM/YYYY		
		☐	A delay in calibration has been identified, the PP applied related actions and therefore the DOE can confirm that the:		
		☐	The maximum permissible error of the instrument has been applied to the values during the period between scheduled date of calibration and the actual date of calibration		

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.
			☐ The result of the delayed calibration did not identify an error beyond the maximum permissible error of the instrument		
			☐ The error as identified during the delayed calibration has been applied as the error is beyond the maximum permissible error of the instrument		
			☐ The error has been applied in a conservative manner, such that the adjusted measured values of the delayed calibration shall result in fewer claimed GHG emission reductions or net anthropogenic GHG removals		
			☐ The error has been applied all measured values taken during the period between the scheduled date of calibration and the actual date of calibration.		
		☒	In this context the following findings have been raised:		
		☒	CL 4-5		
17. Q _{starch}		Description: Quantity of dry starch produced			
a) Measurement / Determination method (VWS, §§ 363-367) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DALO)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.	/MR/ /ER/ /PD1/ /SP/ /TL/ /AMCIC/	Description: The parameter monitors the quantity of dry starch produced on a daily basis Verifier's action: The logsheets were reviewed to crosscheck for the amount of starch produced on the daily basis and aggregated monthly The ER spreadsheet is review on the data applied for correctness, Conclusion: The parameter is added to the monitoring plan from 01/01/2020 in order to monitor the amount of starch produced to calculate the historical thermal energy using fossil fuel to dry the starch as per the deviation approach describe in the MR		CAR 4-14	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl.	Final Concl.
Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.		☒	In this context the following findings have been raised:		
		☒	CAR 4-14		
b) Accuracy, correctness and QA/QC Procedure (VVS, §§ 368-374) <i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i> <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i> <i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.</i>	/MR/ /ER/ /PD1/ /SP/ /TL/ /AMSIC/	☐	It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan	CAR 4-14	OK
		☒	For details regarding the accuracy and calibration details please refer to Appendix 6		
		☐	No delayed calibration has occurred		
		☐	As per the initial assessment the monitored value is deemed to be correct.		
		☐	Based on calibration certificates checked it can be confirmed that the monitoring equipment has been duly calibrated for this entire monitoring period.		
		☐	Based on calibration certificates checked a delay in calibration has been identified for the following period: Start date of delay: DD/MM/YYYY End date of delay: DD/MM/YYYY		
		☐	A delay in calibration has been identified, the PP applied related actions and therefore the DOE can confirm that the:		
		☐	The maximum permissible error of the instrument has been applied to the values during the period between scheduled date of calibration and the actual date of calibration		
		☐	The result of the delayed calibration did not identify an error beyond the maximum permissible error of the instrument		

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)			Draft Concl.	Final Concl.
			☐	The error as identified during the delayed calibration has been applied as the error is beyond the maximum permissible error of the instrument		
			☐	The error has been applied in a conservative manner, such that the adjusted measured values of the delayed calibration shall result in fewer claimed GHG emission reductions or net anthropogenic GHG removals		
			☐	The error has been applied all measured values taken during the period between the scheduled date of calibration and the actual date of calibration.		
		☒	In this context the following findings have been raised:			
		☒	CAR 4-14			

APPENDIX 6: Calibration Dates and Validity of Installed Monitoring Equipment

Monitoring equipment	Related monitoring parameter as per applicable registered monitoring plan	Serial number	Type	Accuracy or accuracy class	Previous calibration date	Current Calibration date(s)	Frequency of calibration	Delay in calibration: yes/no	Period of delayed calibration
Flow Meter	Q _{ww,y}	6B00F220000	Endress+Hauser - Promag 10W	±0.50%	07/06/2019	18/05/2020	Annual	☒ No ☐ Yes	From: To:
COD Tester HACH	COD _{ww,untreated,y}	041090C53333	HACH - DR890	±0.24%	11/01/2019	09/03/2021	Annual	☐ No ☒ Yes	From: 03/03/2020 To: 09/03/2021
	COD _{ww,treated,y}								
Weighbridge	S _{final,PJ,y}	2015024	Liner Instrument - D2002	±0.01%	16/05/2019	05/12/2019	2 years	☒ No ☐ Yes	From: To:
		2015003	Liner Instrument – PM7	±0.01%	16/05/2019	05/12/2019	2 years	☒ No ☐ Yes	From: To:
Flow Meter	BG _{burnt,y}	9A070602000	Endress+Hauser - T-mass 65	0.5	07/06/2019		2 years	☒ No ☐ Yes	From: To:
Handheld Gas Analyser	W _{CH4}	ARAM-0090	Draeger - X-am 7000	0 –5% vol	26/11/2019	28/10/2020	Annually	☒ No ☐ Yes	From: To:
Flow Meter	BG _{combusted,y}	EA033D02000	Endress+Hauser - T-mass 65	0.5%	07/06/2019		2 years	☒ No ☐ Yes	From: To:
Flow Meter	V _{Rgh}	N413E702000	Endress+Hauser - T-mass 65	0.5%	07/06/2019	-	2 years	☒ No ☐ Yes	From: To:
Flow Meter	FC _{HFO,y}	92093 ID: TMC-4-1-0068-44	ABB 25 RC	1.0%	10/06/2019	-	2 years	☒ No ☐ Yes	From: To:
		4164890 ID: TMC-0157-43						☒ No ☐ Yes	From: To:

Electricity Meter	EC _y	6001693334	TTC - ST-33TL	0.5s	-	-	-	☐ No ☐ Yes	From: To:
Weighbridge	Q _{starch,y}	2015024	Liner Instrument - D2002	±0.01%	16/05/2019	05/12/2019	3 years	☒ No ☐ Yes	From: To:
		2015003	Liner Instrument - PM7	±0.01%	16/05/2019	05/12/2019		☒ No ☐ Yes	From: To: