



**Verified Carbon  
Standard**

# BRASCARBON METHANE RECOVERY PROJECT BCA-BRA-16



Document Prepared by Colombian Institute for Technical  
Standards and Certification – ICONTEC International

<b>Report ID</b>	76360
<b>Project title</b>	Brascarbon Methane Recovery Project BCA-BRA-16
<b>Project ID</b>	Verra Project ID 2998
<b>Verification period</b>	01-02-2022 to 31-12-2023
<b>Original date of issue</b>	3-05-2024 <i>is the date the audit was completed</i>
<b>Most recent date of issue</b>	17-08-2024
<b>Version</b>	03.0

<b>VCS Standard Version</b>	4.7
<b>Client</b>	Brascarbon Consultoria, Projetos e Representação Ltda
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## Summary:

- A description of the verification of the project

Brascarbon Consultoria, Projetos e Representação Ltda commissioned ICONTEC International to perform the verification assessment of the second monitoring period (01/02/2022 to 31/12/2023 (first and last days included) of the proposed project activity “BRASCARBON Methane Recovery Project BCA-BRA-16, Brazil (Reference Number VCS: 2998), on the basis the scope of the VCS Program that include of UNFCCC criteria contained in Article 12 of the Kyoto Protocol, the approved CDM methodology AMS-III.D. "Methane recovery in animal manure management systems" (version 21.0) is applied to quantify the GHG removals achieved in this project.
- *The purpose and scope of verification*

The purpose of the validation and verification assessment was to have an independent third-party assessment of the proposed the beginning of first crediting period form 02/01/2021 until 01/01/2028.

The verification scope encompassed by the audit team is defined an independent and objective assessment of the GHG emission reductions that have occurred as a result of the implementation of the project activity during a defined monitoring period. The verification process consisted of the following four phases: I. Desk review of the monitoring documentation, validation report and relevant information II. Telephonic interviews with project personnel responsible of the operation and monitoring of the proposed project activity. III. On Site Inspection. IV..Resolution of outstanding issues and the issuance of the final verification and report previously technical review.
- The Verification is conducted using ICONTEC uses a risk-based approach to focus and determine the detailed scope of the verification.
- The key risks and materiality assessment associated with the compliance of the project implementation with the registered project design document, compliance of the monitoring plan with the monitoring methodology including applicable tools, compliance of monitoring activities with the registered monitoring plan, compliance with the calibration frequency requirements for measuring instruments, assessment of data and calculation of emission reductions and post registration changes are elements that are critical for meeting the verification criteria for achieving real, measurable, long- term as well as additional GHG reductions in CDM and Voluntary markets (as VCS inter alia if apply).
- The verification criteria consider the regulatory documents of the carbon standard to be evaluated, primary and secondary information sources and information relevant for executing the project, the procedures in line with the requirements specified in the latest version of the VCS Validation and Verification Manual and applying auditing techniques.
- The verification team assessed the project activity’s compliance against the VCS Program Guide Version 4.4, the selected CDM methodology and the joint project description and monitoring report. The project is eligible under Project Scope 13. The verification criteria followed the guidance documents provided by VCS included the following:
- The VCS Standard develops the project (using VCS v4.5 and 4.6 for the current monitoring period) no obstante por solicitud de Verra se realiza ajuste y nueva revision del proyecto sobre el estandar con su version 4.7 . Furthermore, it complies with Chapter 4 of the standar4 as well since it applies a methodology approved under an approved GHG program (CDM). VCS Program Guide Version 4.4 and the applied CDM methodology "Methane recovery in animal manure management systems" (version 21.0). The following tools were also

used: Methodological Tool 14: "Project and leakage emissions from anaerobic digesters" (version 02)  
Methodological Tool 06: "Project emissions from flaring" (version 04).

- The number of findings raised during verification:

In the course of the verification, 3 Corrective Action Requests (CARs), 6 Clarification Requests (CLs) were raised and successfully closed. The assessment is included in the report.

- Any uncertainties associated with the verification:

There are no restrictions of uncertainty for verification.

- *Summary of the verification conclusion*

Brascarbon. has commissioned the ICONTEC International to carry out the Verified Carbon Standard (VCS) validation joint with 2nd periodical verification of the project, " Brascarbon Methane Recovery Project BCA-BRA-16 " (VCS ID 2998) with regard to the relevant requirements of VCS standard Version 4.7 CTI confirms all verification activities including objectives, scope and criteria, level of assurance, monitoring report adhere to VCS Version 4.3 template and all associated updated as documented in this report, are complete.

ICONTEC concludes that the project activity "Brascarbon Methane Recovery Project BCA-BRA-16 " in Brazil, as described in the Monitoring-Report Template version 4.3 of BCA- BRA \_16v2 of 26 March -2024 (VCS MR Project ID 2998 01022022-31122023.pdf), meets all relevant requirements for VCS verification activity and correctly applied the methodology AMS-III.D. Version 21.0. Hence ICONTEC is able to provide positive verification opinion as per the requirement of VCS and further certify that the GHG emission reduction from the project during the second monitoring period from 01-February-2022 to 31-december-2023 amount to 99,467 tCO<sub>2e</sub> VCU.

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# 1 INTRODUCTION

## 1.1 Objective

Brascarbon Consultoria, Projetos e Representação Ltda commissioned ICONTEC International to conduct the validation and verification for the Verified Carbon Standard (VCS) in conjunction in 2022 (The first crediting period is from 02/01/2021 until 31/01/2028). For the present report, it corresponds to the verification of the second monitoring period (from 01/02/2022 to 01/31/2023, including the first and last day) of the proposed project activity "BRASCARBON Methane Recovery Project BCA-BRA-16, Brazil" (VCS Reference Number: 2998).

This verification report corresponds to the monitoring period from 02/01/2022 until 31/12/2023. This is the second period scope encompassed by the audit team, defined as an independent and objective assessment of the GHG emission reductions that have occurred as a result of the implementation of the project activity during a defined monitoring period.

The verification process consisted of the following four phases I. Desk review of monitoring documentation, validation report and relevant information; ii. Telephone interviews with project personnel responsible for the operation and monitoring of the proposed project activity. III.) On-site inspection at 9 project sites located in the state of Mato Grosso (Brazil). IV.) Resolution of outstanding issues and issuance of final verification report and pre-technical review.

## 1.2 Scope and Criteria

The verification scope involves an independent and objective review to determine that the project design meets the following VCS criteria:

- VCS Standard, v4.5 and V.4.7/10/
- VCS Program Guide, v4.4/9/
- VCS Program Definitions, v4.4/8/
- VCS-Monitoring-Report-Template-v4.3/5/
- VCS- Verification -Report-Template-v4.3/6/
- Methodology: Methane recovery in animal manure management systems. AMS-III.D, version 21.0 and Tools

ICONTEC carries out audits according to its ethics code and internal procedures for carrying out, verification, and certification audits of VCS project activities, which, in turn, are based on the VCS Standard. Likewise, ICONTEC focuses on the identification of significant risks for generation, and verification of the mitigation during its audits.

The verification does not intend to provide any consulting for the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

The scope of the verification is defined as an independent and objective review of the Monitoring Report VCS: Brascarbon Methane Recovery Project BCA- BRA-16\_v2 /1 The verification team, based on the specific instructions in the VVS, employed a risk- based and step-wise approach when conducting the verification, focusing on the identification of significant risks for project implementation and the calculation of the emission reductions.

The project activity examined under this verification on site of the process involves the GHG emission reductions through an animal waste management system. The system was put in place as a mean to treat animal waste generated from swine confined feed operations. Effluents generated from swine production are treated in biodigesters which, on its turn, consists of a covered in-ground anaerobic reactor capable of anaerobically treat effluent originated at the swine production operation. Finally, effluents treated on biodigesters produce biogas to be destroyed through a flaring system.

The verification scope encompassed by the audit team is defined an independent and objective assessment of the GHG emission reductions.

The verification process consisted of the following four phases:

- I. Desk review of the monitoring documentation, registered PD-MR, and relevant information
- II. Remote visit or virtual visit<sup>1</sup> to 9 farms (total project sites): visit to each of the farms identified by numbers 300 to 308, tour of all sites, confirmation of georeferencing, identification of control equipment, flare, biodigester status and recorded field information.

According to VCS Standard / 10/ for this second verification, it was not necessary to conduct an on-site visit: the first verification was carried out together with the validation, it does not correspond to a reassessment of the project, and there are no deviations in the project description or methodological deviations.

- III. Interviews with the director, manager and project staff responsible for the operation and monitoring of the proposed project activity.

- IV. Resolution of outstanding issues and the issuance of the final verification and certification report.

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<sup>1</sup>(VCS Standardv.6) section 4.1.12

ICONTEC confirmed that the PP correctly followed the instructions for filling out the Project Description & Monitoring report form (template) version 4.1 –Brascarbon Methane Recovery Project BCA- BRA-16\_v7 /1/ MRv.2 /2/.

The review of the monitoring documentation, relevant information and follow-up interviews allowed ICONTEC to collect enough evidence to completely assess the verification criteria and conclude that the project has been implemented as planned and as it has been described in the latest version of PD&MR /1/. Lastly, the emission reductions were correctly calculated by PP, and the monitoring equipment with an impact on the claimed emission reductions performed a reliable operation. The monitoring systems are in place and have been calibrated appropriately. ICONTEC concludes that the GHG emission reductions are calculated without material misstatements. Hence, ICONTEC can confirm the following in verification:

VCS project:	BRASCARBON Methane Recovery Project BCA-BRA-16, Brazil (Reference Number: 2998)
Reporting period:	2 January 2022 to the 31st of December 2023
Baseline emissions:	143,888 tCO <sub>2</sub> e (Total Methane destroyed: 112,156 tCO <sub>2</sub> e)
Project emissions:	44,421 tCO <sub>2</sub> e
Leakage:	0 tCO <sub>2</sub> e
Emission Reductions:	99,467 tCO <sub>2</sub> e

ICONTEC as VVB entity in charge of carrying out the verification activity considered as main documents are the Monitoring Report CER Calculations/2/, and tools that requires; the obtained information reviewed against the criteria stated in VCS standard /10/ and the approved baseline and monitoring methodology AMS-III.D. version 21.0/3/.

The verification was based on the requirements VCS Program /5/6/7/8/9/10/51.

The scope of the verification allows to identify the behaviour of a project in full execution, monitoring system and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan; the GHG emission reductions data and express a conclusion with a reasonable level of assurance about whether he reported GHG emission reductions data are free from material misstatement; the reported GHG emissions data is sufficiently supported by evidence.

ICONTEC International likewise have expertise in multiples standards to Verification and auditor is conducted as well as the procedures in line with the requirements specified in the VCS Program and accredited in ISO series, the ISO 14064-3:2019 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.

### 1.3 Level of Assurance

Since the calculated emission reductions in MR/2/ are 99,467 tCO<sub>2</sub>e (699 days), the applicable materiality threshold is 4,973.35 tCO<sub>2</sub>e. Registers and support files were verified using the sampling approach. Data and figures were cross-checked, and the traceability of data was assessed by comparing the different support documents and contrasting figures of baseline emissions, project emissions and emission reductions of GHG.

The verification team is able to confirm that all the parameters are correctly monitored, and the calibration of the meters was assured by calibration procedures defined by the PP. All data reported in the CER calculation file /2/ has been completely verified. The data management system and QA/QC process are carried out appropriately. Thus, the audit team did not detect material errors, omissions or misstatements during the risk assessment stated by UNFCCC on applicable criteria /3/4/19/52/ and VCS Program/5/6/7/8/9/10/51.

### 1.4 Summary Description of the Project

Brascarbon Consultoria, Projetos e Representação Ltda. commissioned ICONTEC in order to perform the verification assessment for of the second monitoring period (02/01/2022 to 31/12/2023 (first and last days included) of the proposed project activity “BRASCARBON Methane Recovery Project BCA-BRA-16, Brazil (Reference Number VCS: 2998), and first credit period located in Brazil the State of in the cities located at the Mato Grosso do Sul state, central Brazil. The verification assessment was carried out through a process of document review based the PD-MR Version 07/01/ dated on 17/02/2023<sup>2</sup>, and the MR /2/ in this verification report, and the subsequent modifications to the MR are visible on the version 02/2/ dated 26/03/2024.

The project activity examined in the validation process /1/ involves the reduction of greenhouse gas emissions through an animal waste management system; the system was implemented as a means to treat animal waste generated by confined swine feeding operations. Effluents generated from swine production are treated in biodigesters, which, in turn, consist of a covered in-ground anaerobic reactor capable of anaerobically treating effluents originating from the swine production operation. Finally, effluents treated in the biodigesters produce biogas that is destroyed through a burning system.

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<sup>2</sup> The baseline of the proposed project activity and the monitoring plan and other relevant documents of the Project are included in the annexes.

The verification for second monitoring period (02/01/2022 to 31/12/20223 (first and last days included) and verification with crediting period included an assessment on those specific features of the project activity with the verification criteria and conclude that the project has been implemented as planned and as it has been described in the latest version of MR /2/. Lastly, the emission reductions were correctly calculated based on the monitoring equipment with an impact on the claimed emission reductions performed a reliable operation. The monitoring systems are in place and have been calibrated appropriately. ICONTEC concludes that the GHG emission reductions are calculated without material misstatements.

In conclusion, the Project Participant and the documents attached as part of the validation for the first crediting period meet all the relevant VCS standards and verifications for the second monitoring period 02/01/2022 to 31/12/2023 (first and last days included) as well as, provided to register of the first crediting period (seven years from 02/01/2021 to 01/01/2028). of the proposed project activity “BRASCARBON Methane Recovery Project BCA-BRA-16, Brazil (Reference Number VCS: 2998),

## 2 VERIFICATION PROCESS

### 2.1 Method and Criteria

ICONTEC, for the development of verification under the VCS standard, takes into account the guidelines established in the ISO standard <sup>3</sup>, such as ISO 14064-3:2019, which states: "Greenhouse gases - Part 3: Specification with guidance for the verification and validation of greenhouse gas statements". Therefore, verification was conducted based on the criteria mentioned in Section 1.2 Scope and Criteria of (this verification report), which are as follows:

- VCS Standard, v4.7/10/
- VCS Program Guide, v4.4/9/
- VCS Program Definitions, v4.4/8/
- VCS-Monitoring-Report-Template-v4.3/5/
- VCS- Verification -Report-Template-v4.3/6/

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<sup>3</sup> • ISO 17029:2019; ISO 14065 2020

• ISO 14064- 2:2019; ISO 14064-3:2019

The verification process derived from all items in verification criteria stated above. Field inspection and techniques based on the project parameters, scope and best professional judgement of the validation and verification team in order to meet a reasonable level of assurance. The verification consisted of the following three phases:

- Document review
- Remote assessment
- The resolution of outstanding issues and the issuance of the final verification report and certification.

The verification process derived from all items in the verification criteria stated above. Field inspection and techniques based on the project parameters, scope and best professional judgement of the validation and verification team in order to meet a reasonable level of assurance.

## 2.2 Document Review

As mentioned in the summary and in Chapter 1 of this report, the verification process is composed of several stages, one of the main ones being the documentary review. This documents review included an examination of the project design details, baseline scenario, additionality, ex ante and monitoring data and parameters, and quantification of GHG emission reductions, and ex- post as monitoring or to the basic conditions and technical data. As part of the activities carried out, the audit team performed documental review of the calculation files /2/ and cross checked the information, data and figures of the calculation file against the data provided in different support documents used for the calculation of GHG emission reductions. In addition, personnel involved in monitoring activities were interviewed, and the QA/QC activities as well as data collection assessed.

The implementation of a project's documentation and registration system is key to respond to the concerns of a third party independent of the project, either on site or remotely.

On the other hand, the traceability of project information is achieved through a valid registration system with updated information, either historical or through follow-up and monitoring if it is for verification.

In this particular case, for this project, which pertains to the verification process, it entails gathering as much information as possible in the verification components. The verification was conducted based on document review and remote inspection, as well as measurements provided by the PP. Additionally, information was cross-referenced with sections 3 and 4 of the Validation and Verification Report /53/ and the detailed current verification report along with the corresponding document review.

In the case of verification, the review includes the monitoring and calculation system, with field verification of the functionality of the registration system, handling of information by the operating

team and traceability of this information, among others. The references used in the course of this verification are summarized in Appendix 3.

### 2.3 Interviews

Describe the interview process and identify personnel, including their roles, who were interviewed and/or provided information additional to that provided in the project description, monitoring report and any supporting documents.

The audit team performed a series of telephonic interviews with the Brascarbon CDM Manager, Mr. David Garcia was interviewed in order to confirm all information provided regarding the Second monitoring period of the first crediting period; With David Garcia, discussions also took place regarding remote audit activities related to operational and monitoring conditions, findings, among other topics, "Furthermore, an interview was conducted with Mr. Mario Pacifico, Director of Brascarbon, to ensure the implementation of the project activity, which allowed to ensure the understanding of the project environment, operation, data acquisition, and comparing these aspects with the MR /2/ as well as the applicable requirements.

ICONTEC maintained ongoing communication with Mr. Mario Silva, Legal Representative of the contracting entity and Mr. David Garcia, Brascarbon CDM Manager, in order to confirm all information provided for registration of the project with VERRA.

The dates and subjects of the discussed email, telephonic and WhatsApp based interviews conducted with the PP are described as follows:

No	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1	Pacifico	Mario	Brascarbon Director	15/02/2024	Introduction to plan verification of the project  General conditions of the monitoring of the project activity  Implementation status of the project	Adriana Bermudez

No	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
2	Garcia	David	Brascarbon CDM Manager	15 /02/2024 / 29 /02/2024	<ul style="list-style-type: none"> <li>- Description and operation of the project activity</li> <li>-Monitoring system</li> <li>Baseline GHG emissions</li> <li>-Project GHG emissions</li> <li>-Leakage GHG emissions</li> <li>-GHG emission reductions</li> <li>-Reviewing of the spread sheets</li> <li>-Materiality basement</li> </ul>	Adriana Bermudez
3				17/03/2024	<ul style="list-style-type: none"> <li>Verification and data cross checking.</li> <li>-Materiality assessment</li> <li>-Calibration performance</li> </ul>	
4				15/02/2024 - 29/02/2024	<ul style="list-style-type: none"> <li>-Monitoring equipment in operation</li> <li>- POPs</li> <li>- data and files</li> <li>- Support documents</li> <li>-Monitoring equipment in operation</li> <li>Verification and data cross checking.</li> </ul>	

## 2.4 Site Visits

The actual project was visited in September 2022 for validation (first crediting period) and verification (first verification); at the time, ICONTEC identified 9 Project sites and adequately described each of them, as can be seen in the Validation and Verification report /53/.

SITE ID PROJECT 16	SITE NAME	SITE OWNER	REGION
BCA-300MS1-16	Fazenda Paraíso do Alto	Mario Pacifico da Silva	Rio Verde De Mato Grosso
BCA-301MS1-16	Fazenda São Sebastião Gleba 6	Maria Ines Caviglioli	Bandeirantes
BCA-302MS1-16	Granja Serra Dourada I	Jair Antonio Borgamann	São Gabriel do Oeste
BCA-303MS1-16	Lote 28 - PA - Assentamento Campanário	Valderi Valentini	São Gabriel do Oeste
BCA-304MS1-16	Lote 55 - Assentamento Campanario	Antenor Barbosa de Oliveira	São Gabriel do Oeste
BCA-305MS1-16	Fazenda Nossa Senhora Aparecida II	Jair Antonio Borgamann	São Gabriel do Oeste
BCA-306MS1-16	Granja Grando	Nilson Jose de Jesus	Rio Verde De Mato Grosso
BCA-307MS1-16	Assentamento Campanario	Edemar Sanagloto	São Gabriel do Oeste
BCA-308MS1-16	Fazenda Quinhão A	Mario Pacifico da Silva	São Gabriel do Oeste

The VCS Standard v.4.7/10/ indicates in its section 4.1.11 that site visits should be conducted when conducting validation and project crediting period renewal validation. Additionally, the VCS Standard 4.7/10/ in its section 4.1.12 indicates that "...A site visit that includes a visit to facilities and/or project areas shall be conducted at verification under the following circumstances: 1) The first verification of the project after validation; 2) Verifications that include project baseline reassessments; and 3) Verifications that assess a project description deviation where the deviation impacts the applicability of the methodology, additionality, or the appropriateness of the baseline..."

Considering the above, the present Project for the second verification did not have an on-site visit because it does not fall under any of the circumstances manifested by the standard/10/ and we received all the information and current photographic field records of the 9 sites, which were thoroughly reviewed and confirmed by georeferencing, in addition to the historical information provided by Brascarbon and that the project has, which ICONTEC has for data cross-checking and verification.

ICONTEC confirms that the sites described in the MR /2/ correspond to what is indicated in the PD-MR/1/ and the supporting documents are consistent with what is identified in the project.

## 2.5 Resolution of Findings

The identification of findings in the verification report or documents is fundamental in a project, because it allows to improve, correct or take a decision that benefits the normal development of the project and fulfils its objective.

The resolution of outstanding issues, the findings raised and described in appendix 4 further in this verification report, and the subsequent modifications to the revised MR version 2/1/ dated 26/03/2024. The Material discrepancies identified in the course of the verification are addressed either as CARs, CLs or FARs

A Corrective Action Request (CAR) is established where:

- The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;
- The VCS Standard Version 4.5 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.

In the course of the verification 3 Corrective Action Requests (CARs), 6 Clarification Requests (CLs) were raised and successfully closed. The assessment is included in the report.

### 2.5.1 Forward Action Requests

No forward action request was raised during the validation for registration purposes, likewise no forward action request was raised during the verification either.

## 2.6 Eligibility for Validation Activities

ICONTEC is currently accredited for sectoral scope 13 to which the Project belongs. See on the VERRA, see <https://verra.org/validation-verification/colombian-institute-for-technical-standards-and-certification-icontec/>.

# 3 VALIDATION FINDINGS

## 3.1 Methodology Deviations

There are not any methodology deviations applied to the project.

## 3.2 Project Description Deviations

There are not deviations applied to the project; there is no methodology deviation, additionality, or appropriateness of the baseline scenario presented.

### 3.3 New Project Activity Instances in Grouped Projects

Not applicable. The project is not a grouped project; it is a single project comprising a total of 9 farms (a fixed number for the entire project crediting period). Therefore, the project is a multiple project activity instance, and additionally, it does not present new project activity instances.

### 3.4 Baseline Reassessment

Did the project undergo baseline reassessment during the monitoring period?

Yes

No

# 4 VERIFICATION FINDINGS

## 4.1 Project Details

Item	Evidence gathering activities, evidence checked, and assessment conclusion:
Audit history	<p>The project is fully implemented and has been in operation since 02/01/2021, the date on which the first farm began the monitoring phase (02-01-2021 to 31-01-2022). A joint validation and verification audit was conducted in September 2022, which allowed its registration with Verra - crediting period 02-01-2021 to 01-01-2028.</p> <p>The current verification corresponds to the second monitoring period of the first crediting period (01-02-2022 to 31-12-2023).</p>
Double counting and participation under other GHG programs	<p>None of the required information has been provided regarding whether the project is registered or seeking registration under any other GHG programs.</p> <p>None of the required information has been provided regarding whether the project has been rejected by another GHG program.</p>
No double claiming with emissions trading programs or binding emission limits	<p>The project activities are not included in an emissions trading program or binding emission limit. The project is compliant with VCS Standard requirements/10/ section 3.24.3 – 3.24.4</p>
No double claiming with other forms of environmental credit	<p>The project does not present double claims; the project is in accordance with VCS Standard requirements. Additionally, ICONTEC conducted searches for information on the Brascarbon Methane Recovery project 16 and found no information related to the project other than the registration made in VERRA /10/ section 3.24.5 - 3.24.6</p>
Supply chain (scope 3) emissions double claiming	<p>Standard VCS v.4.7 /10/ section 3.24.7</p> <p>The project proponent is not part of the supply chain, therefore their emissions footprint is not altered by the project activities.</p>

Sustainable development contributions

The VCS standard, in its section 3.17, clearly determines the importance of the voluntary contribution of the Project Proponent (PP) to sustainable development through the activities of its project. Accordingly, Brascarbon contributes to sustainable development in at least 5 of the 17 Sustainable Development Goals (SDGs). In the MR/2/, the PP indicates: [I would continue with the information provided in the report about how the project contributes to specific SDGs]. “ According with the requirements of the versions 4.7 of the VCS standard, the PP should identify, at least three SDGs which the project comply with. Considering the registered PD as well as the current document, the project has fairly demonstrated its different contributions to the sustainable development. However, in order to comply with the stated requisition, the PP states that the project complies with the following SDGs.

SDG 6 Clean Water and Sanitation – The project complies with this objective since it contributes to a cleaner effluent, after treatment, which is discharged into to a water body as well as it contributes to the prevention of groundwater contamination through the treatment of the effluent.

SDG 9 Industry, Innovation and Infrastructure – The project complies with this objective since it provides an innovation on the wastewater treatment in swine farms, through the construction of new and more technological infrastructures.

SDG 13 Climate Action – The project complies with this objective since it is a project that reduces the GHG emissions in the normal operation in swine farms, as demonstrated in the registered PD and current MR.

SDG 15 Life on Land – The project complies with this objective since it contributes to a better surrounding in overall, by reducing the smell, insects and air quality by preventing a wastewater treatment (and therefore organic matter decomposition) in open lagoons.

	<p>Similarly, in the PD-MR/1/ section 1.12 before the description of the SDGs, the project's natural contribution to environmental matters is adequately described, in accordance with the requirements of environmental authorities such as resource management, odor pollution control, water flows, and general staff welfare, which is also mentioned in the VVR/53</p>
<p>Additional information relevant to the project</p>	<p>Not applicable to this project, there is no commercially sensitive information that has been excluded from the public versions.</p>

## 4.2 Safeguards and Stakeholder Engagement

### 4.2.1 Stakeholder Identification

Item	Evidence gathering activities, evidence checked, and assessment conclusion
<p>Stakeholder identification</p>	<p>For the Project Validation, the Project Proponent (PP) presented the different stakeholder groups that initiated engagements since 2020, such as entities from the sector: environmental authorities, health authorities, suppliers of goods and services related to the project, as well as individuals associated with the project, owners of the sites that make up the Project/49/. Additionally, the public consultation conducted on the Verra website from 01/07/2022 to 31/07/2022 resulted in no comments from the public; this information can be found in the main documents and supports of the PD-MR/1/in the MR actual verification/2/ and in the Validation and Verification Report /53/</p>
<p>Legal or customary tenure/access rights</p>	<p>The PP /2/ confirm that all the project sites in the project activity are within private properties with already existing commercial activities (swine production). All the project sites have contracts with the swine farm owners in order for the PP to have full access to the operation, maintenance and monitoring of the project activity./49/. This was presented in VVR /53/</p>

<p>Stakeholder diversity and changes over time</p>	<p>The PP, present in the region for several years and with the current project for 4 years, demonstrates a stable relationship with stakeholders. On the other hand, the region maintains a constant population, and diversity and changes are not characteristic of the area. However, it is noted that the owners of the sites belonging to the project have appropriate communication that allows for the proper development of the Project.</p>
<p>Expected changes in well-being</p>	<p>The well-being of the Project is integral in strengthening environmental practices on the farms, as well as providing well-being for the project's own operational technicians and farm staff (indirectly). However, the director of Brascarbon and the manager have been identifying risks and critical points that are susceptible to solution or mitigation. In addition to training and constant communication with the team for fault control, technical corrections to any situation in biodigesters, measurement equipment, and variable control are also being made. Furthermore, a training plan for the staff has been structured to ensure regular and relevant training for the project and occupational health for the technical team of both the project and the farms.</p>
<p>Location of stakeholders</p>	<p>Mato Grosso do Sul State</p>
<p>Location of resources</p>	<p>All the sites included in the project activity are within private properties and therefore with limited access to each project site owner. The farms are distributed in rural areas near intermediate cities such as Rio Verde de Mato Grosso, Sao Gabriel de Oeste, and Bandeirantes. The remaining stakeholders are public entities that carry out their work in local offices of the intermediate cities or from the main one in the region called Campo Grande.</p>

#### 4.2.2 Stakeholder Consultation and Ongoing Communication

<p>Item</p>	<p>Evidence gathering activities, evidence checked, and assessment conclusion</p>
<p>Ongoing consultation</p>	<p>The project's relationship with stakeholders involves open and ongoing communication. Both environmental and productive sector entities, as well as the farm owners who are part of the project, can communicate with Brascarbon, the Project Proponent (PP), to request, receive, or provide information related to the project's</p>

	<p>execution. This includes the submission of records, statements, and certifications required for the corresponding monitoring periods.</p>
<p>Date(s) of stakeholder consultation</p>	<p>In 2020, Brascarbon sent an invitation to all the stakeholders mentioned in section 2.2 of version 01 of the PD/1/, which is also referenced in the current verification MR /2/. The invitation letter was sent via email (the PP attaches a copy of it in the MR/2/, but it is also referenced in the PD-MR/1/ and in the present report), and this communication was delivered on May 12, 2020. Additionally, the PP indicates that Brascarbon met individually with the local producer to address their concerns, as well as the commitments of each project site, and to sign the contract, which was also presented to the VVB.</p> <p>Communication with stakeholders is ongoing and open-channel, so the online comment consultation with stakeholders is available for any comments from each of them. Similarly, an open channel was established with local entities; both spaces are available for use by interested parties.</p>
<p>Communication of monitored results</p>	<p>Brascarbon has not received any comments from stakeholders to date, nor during the entire period when the project was under public consultation on the Verra website (public consultation from July 1, 2022, to July 31, 2022). This indicates that local activities with project members who own the farms where the biodigesters were installed have been addressed by the PP's operational team for specific issues that are quickly resolved. This is because everything is directly coordinated, and the response, especially regarding the installation of the biodigester and the monitoring system, is coordinated with the farm owner or administrator.</p>
<p>Consultation records</p>	<p>Any concerns are promptly addressed through two key moments: • Real-time access to email and phone (both forms of contact). • Analyzing and addressing questions within 5 business days. Feedback method, and if nothing is received, follow-up within one month of the response.</p> <p>Overall, there is ongoing communication among the director, site owners, manager, and field technical operational team. Any concerns are communicated directly and resolved promptly. Additionally, monitoring is conducted every 15 days or every month at each project site, facilitating direct communication to address any issues between the parties.</p>

Stakeholder input	The PP did not receive any comments from the. stakeholders. The producers have made comments, especially regarding the biodigester location in order to better assist the flow and therefore the supply of the biodigester, which were attended by Brascarbon.
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#### 4.2.3 Free, Prior, and Informed Consent

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Consent	All the project sites are within private properties with already existing economical and commercial activities so, in order to develop the project activity in all the sites above mentioned, all project sites were dully accommodated in a commodity contract with the property owners for full access to develop maintenance and/or monitoring services PD-MR/1/and VVR/53/.
Outcome of FPIC discussion	As previously mentioned, each farm included in the project activity was subject to an individual contract, with a duration for the entire crediting period. Additionally, since the project is developed in an existing operation, it did not encroach on land, relocate people without consent, and did not cause forced physical or economic displacement.

#### 4.2.4 Grievance Redress Procedure

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Grievance received and steps taken to resolve the grievance including the outcomes of the resolution	Not applicable. The Project has not received any grievances during its implementation; however, the Project Proponent has established a procedure for timely response to any operational situation requiring action. Communication is fluid, as mentioned earlier, and action is immediate. This has been confirmed by the Verification and Validation Body during the previous validation and verification through received communications, conducted interviews, and observation of field activities. During the current verification period, no grievances or complaints have been filed by stakeholders.
Grievance redress procedure	el The Project Proponent has a management and internal control system for handling grievances. If the company receives any complaint from anyone, the Project Proponent has a policy to regularly review

	any case, and according to this policy, any complaint must be responded to and, if possible, resolved within a period of 10 business days.
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#### 4.2.5 Public Comments

Comments received	Actions taken by the project proponent	Evidence gathering activities, evidence checked, and assessment conclusion
No comments received	Not applicable. In this case, since no comments were received during the monitoring period, no actions were taken, and no updates were made to the project design.	Not Applicable

#### 4.2.6 Risks to Local Stakeholders and the Environment

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Risks to stakeholder participation	No risk identified - the main reason being the direct and ongoing communication between the Project Proponent and both internal and external stakeholders of the Project.
Working conditions	No risk identified - This type of project requires a technical team with experience and practice that has been consolidated over the years. The tasks assigned to each employee are clear and precise, and the director maintains a leadership but also a teamwork relationship that allows him to identify and be attentive to any difficulty or disagreement in working conditions. Additionally, the company's internal policies ensure compliance with applicable labor standards. In general, it has been concluded that the working conditions meet the requirements of the VCS standard and no significant risks to the health and safety of workers have been identified. The employees have regular training according with the POP11.

Safety of women and girls	Not applicable - Regarding the Project, women's participation does not currently apply. Both on the farm and in the project, the personnel have always been men.
Safety of minority and marginalized groups, including children	All personnel involved in the project, including those working on the farms and within the project team, are adults, and there are no minority or marginalized groups, including children, engaged in project activities. Therefore, the safety of such groups is not applicable in this context.
Pollutants (air, noise, discharges to water, generation of waste, release of hazardous materials)	No risk identified - The project is implemented precisely as an opportunity to reduce pollution, with the reduction of methane emissions, and pollutants discharged or emitted are avoided by the project activity. In fact, it even improves the environmental conditions of the site, contributing to sustainability.

## 4.2.7 Respect for Human Rights and Equity

### 4.2.7.1 Labor and Work

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Discrimination and sexual harassment	Brascarbon has 3 employees, in addition to the director (2 Regional Technicians and 1 Carbon Manager), the company complies with Brazilian law <sup>4</sup> , no complaints, sexual harassment, or discrimination have been observed by the audit team.
Management experience	Brascarbon has been a leader and pioneer in this type of projects under the small-scale methodology: Methane recovery in animal manure management systems. AMS-III.D, version 21.0/3/, since 2008, using pig manure and complying with UNFCC and VERRA standards.
Gender equity in labor and work	Due to the size of the company and operational needs, it has required a small technical team, and it does not currently have any women on staff. However, Brascarbon provides equal job opportunities and does not discriminate based on gender, nor is gender disparity an issue for the company.

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<sup>4</sup> In Brazil, the law addressing workplace harassment is Federal Law No. 13,467/2017, known as the Labor Reform. This law defines workplace harassment as any abusive conduct aimed at destabilizing, humiliating, intimidating, or discriminating against a worker in the performance of their job. Additionally, it mandates that companies must adopt measures to prevent and penalize workplace harassment in the workplace

<p>Human trafficking, forced labor, and child labor</p>	<p>During the time that Icontec has carried out its validation and verification activities in Brascarbon's projects, no instances of crimes such as human trafficking, forced labor, or child labor have been identified. There is also no knowledge of any complaints related to these issues. Brascarbon's principles include not engaging in any of the mentioned practices.</p>
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#### 4.2.7.2 Human Rights

Item	Evidence gathering activities, evidence checked, and assessment conclusion
<p>Human rights</p>	<p>The project activity complies with applicable international human rights law, the United Nations Declaration on the Rights of Indigenous Peoples, and the ILO Convention 169 on Indigenous and Tribal Peoples. The project proponent declares in its MR its compliance, and considering that it is located on private lands in pig farms, in a region specialized and traditional in the agricultural production of the country (Mato Grosso and Mato Grosso do Sul), it does not intervene or go against territorial, cultural, or social aspects with indigenous peoples, and in general, in the aforementioned in terms of human rights.</p>

#### 4.2.7.3 Indigenous Peoples and Cultural Heritage

Item	Evidence gathering activities, evidence checked, and assessment conclusion
<p>Preservation and protection of cultural heritage</p>	<p>The states of Mato Grosso and Mato Grosso do Sul are located in the Midwest region of the country. They are two of the most productive states in Brazil and, at the same time, the least populated, with a population density of approximately between 4 and 7 inhabitants per square kilometer, respectively, representing approximately between 1.8% and 1.3% of the total population of Brazil. These states are highly specialized in intensive agriculture and livestock farming. The project is developed in these areas, specifically in Mato Grosso do Sul, specifically in private areas of specialized pig farms, and is limited to each designated site on the farm, so it does not intervene in the cultural heritage of the region.</p>

#### 4.2.7.4 Property Rights

Item	Evidence gathering activities, evidence checked, and assessment conclusion
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Disputes over rights to territories and resources	This situation does not apply, as the Project sites are implemented on privately-owned lands of each farm owner, and a lease agreement has been established with each of them for exclusive access to the project area for measurements and maintenance practices required at each site.
Respect for property rights	There are no issues regarding property rights. The PP defined two types of contracts: one related to compensation for emissions reduction and the other for the lease agreement for the installation of the biodigester and equipment. All contracts are duly supported, valid, and clear in their commitments, rights, and agreements between the parties/50/.

#### 4.2.7.5 Benefit Sharing

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Summary of the benefit sharing plan	The project proponent (PP) has, according to the contract, the commitment to allocate 10% of all gross profits from the commercialization of carbon units to each project site owner involved in the project activity, during the project's validity period/50/.
Benefit sharing during the monitoring period	The clause 8a of the contract between the PP and the project site owners, related to the payment of CERs, states: "The parties establish that during the validity of this instrument, the CONTRACTOR must pay the CONTRACTING PARTY the amount corresponding to 10% (ten percent) of the net price obtained from the sale of each unit of paid CERs as remuneration for the license and exclusivity granted to the CONTRACTOR." This means that each owner has a direct benefit, and also improves the water treatment system, consequently enhancing the renewal of the environmental license.

#### 4.2.8 Ecosystem Health

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Impacts on biodiversity and ecosystems	No Risk Identified – The PP develops its projects in designated areas on properties owned by pig farms, as described in the MR. All farms have environmental licenses and operating licenses, authorized by IMASUL (the environmental authority of the state of Mato Grosso do Sul).

	<p>The license granted by IMASUL for a pig farm is awarded to those owners whose properties comply with the applicable environmental regulations. This means that the farm meets, among other aspects, the proper management of waste, the protection of water sources, and the minimization of pollution.</p> <p>Obtaining this license ensures that the farm operates sustainably, addressing the proper management of the local ecosystem and its biodiversity, minimizing negative environmental impact, and operating within the parameters established by environmental legislation</p>
Soil degradation and soil erosion	No Risk Identified - The license granted by IMASUL for a pig farm is awarded to those owners whose properties comply with the applicable environmental regulations. This means that the farm meets, among other aspects, the proper management of waste, the protection of water sources, and the minimization of pollution.
Water consumption and stress	No Risk Identified – The project does not consume any water
Usage of fertilizers	No Risk Identified – The project does not use fertilizer

#### 4.2.8.1 Rare, Threatened, and Endangered species

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Species or habitat	All swine producers in the state of Mato Grosso do Sul are required, by the State Environmental Agency (IMASUL), to have operating licenses in order to continue their activities. The project holds an environmental operating license at each site, which indicates permission from the environmental authority of the state of Mato Grosso. This license has been identified and reviewed in the V&VR report. It ensures compliance with current environmental regulations according to the project's activity.

#### 4.2.8.2 Introduction of Species

Species introduced	Evidence gathering activities, evidence checked, and assessment conclusion
No species introduced	Each site comprising the Project is physically delimited, with strict access control to the farm's production area, and restricted access to the

measurement and operation area designated for the project. The production cycles are closed (all-in all-out system), and the project area is constantly monitored, allowing for the detection of any abnormal situations. The sites do not allow introduced species, and the presence of any foreign species, would negatively impact the productive, sanitary, epidemiological, and environmental development of the farms and, consequently, the sites belonging to the project.

Existing invasive species	Evidence gathering activities, evidence checked, and assessment conclusion
No existing invasive species	Each site comprising the Project is physically delimited, preventing access to the production area of the farms, and in the measurement and operation area of the project, there are no invasive species. As mentioned in the previous point related to introduced species, the system is closed and monitored; invasive species would affect the productive, sanitary, epidemiological, and environmental development of the farms.

#### 4.2.8.3 Ecosystem conversion

Item	Evidence gathering activities and evidence checked
Ecosystem conversion	The georeferencing, satellite images, and photographs per site compared with the photographic record obtained directly by the VVB show that no land clearances or drainage occurred during the monitoring period, confirming that the conditions presented in the PD-MR/1/, VVR/53/, and in the MR of the current verification period are maintained <sup>5</sup> .

### 4.3 Accuracy of Reduction and Removal Calculations

Based on the methodology and criteria used as indicated in item 2.1 of this verification report (see section 2.1), the updated version of the VCS standard, the United Nations methodology AMS III.D version 21.0, along with its corresponding tools, as well as the current ISO regulations for this type of projects, were used. The equations and parameters allowed for the Project Development were used starting from the baseline analysis.

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<sup>5</sup> Brascarbon projects are developed in confined areas, within swine farm properties/ 2/SECTION 2.4.3

The Project Plan (PP), as expressed in the Monitoring and Reporting Project Document (PD-MR/1) and in the MR/2, as well as described in the VVR/53:

*Baseline emissions (Bey) are calculated by using one of the following two options/3/page 6:*

(a) Using the amount of the waste or raw material that would decay anaerobically in the absence of the project activity, with the most recent IPCC tier 2 approach (please refer to the chapter ‘Emissions from Livestock and Manure Management’ under the volume ‘Agriculture, Forestry and other Land use’) of the from 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories/45/. For this calculation, information about the characteristics of the manure and of the management systems in the baseline is required. Manure characteristics include the amount of volatile solids (VS) produced by the livestock and the maximum amount of methane that can be potentially produced from that manure (Bo);

(b) Using the amount of manure that would decay anaerobically in the absence of the project activity based on direct measurement of the quantity of manure treated together with its specific volatile solids (SVS) content.

Option a) was chosen.

- E.1. Calculation of baseline emissions or baseline net removals:

The equation 1 (Methodology AMS-III.D):  $B_{ey}$  Baseline emissions in year y (t CO<sub>2</sub>e):

$$BE_y = GWP_{CH4} \times D_{CH4} \times UF_b \times \sum_{j,LT} MCF_j \times B_{0,LT} \times N_{LT,y} \times VS_{LT,y} \times MS\%_{BL,j}$$

Where:

- $BE_y$  = Baseline emissions in year y (t CO<sub>2</sub>e)
- $GWP_{CH4}$  = Global Warming Potential (GWP) of CH<sub>4</sub> applicable to the crediting period (28) (t CO<sub>2</sub>e/t CH<sub>4</sub>)
- $D_{CH4}$  = CH<sub>4</sub> density (0.00067 t/m<sup>3</sup> at room temperature (20 °C) and 1 atm pressure)
- $LT$ . = Index for all types of livestock
- $j$  = Index for animal manure management system
- $MCF_j$  = Annual methane conversion factor (MCF) for the baseline animal manure management system j
- $B_{0,LT}$  = Maximum methane producing potential of the volatile solid generated for animal type LT (m<sup>3</sup> CH<sub>4</sub>/kg-dm)
- $N_{LT,y}$  = Annual average number of animals of type LT in year y (numbers)
- $VS_{LT,y}$  = Volatile solids production/excretion per animal of livestock LT in year y (on a dry matter weight basis, kg-dm/animal/year)
- $MS\%_{BL,j}$  = Fraction of manure handled in baseline animal manure management

- $UF_b$  = Model correction factor to account for model uncertainties (0.94)

Described by PP in its PD-MR version 5/1/ the methodology refers that the “Volatile solids (VS) are the organic material in livestock manure and consist of both biodegradable and non-biodegradable fractions. For the calculations the total VS excreted by each animal species is required. The preferred method to obtain VS is to use data from nationally published sources. These values shall be compared with IPCC default values and any significant differences shall be explained. If data from nationally published sources are not available, country-specific VS excretion rates can be estimated from feed intake levels, via the enhanced characterisation method (tier 2) described in section 10.2 in from 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4 chapter 10. If country specific VS values are not available IPCC default values from 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4, chapter 10 table 10 A-4 to 10 A-9 can be used provided that the project participants assess the suitability of those data to the specific situation of the treatment site particularly with reference to feed intake levels”/45/.

Brazil does not have any national published values nor sources to obtain the default values need. Hence, the VS values chosen for the current project were the from 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories 4, chapter 10 table 10 A-7 and 10 A-8 for the Region Western Europe since they have proven to be the more suitable for the specific situation of the treatment site particularly with reference to feed intake levels/45/.

The genetics used in the project are originally from that region and the values presented are the more similar when compared with the specific project site values. The same situation occurs with the feed intake level, which is than reflected in the specific animal weight, being the IPCC values for Western Europe swine the more adjusted and suited to the project sites.

Therefore, the parameter  $VSLI_y$  will be calculated according with the following methodology consideration “In case default IPCC values for VS are adjusted for a site-specific average animal weight, it shall be well explained and documented.”.

Where:

(Equation 3 – Methodology AMS III.D v21.0)/3/

$$VS_{LT,y} = \left( \frac{W_{site}}{W_{default}} \right) * VS_{default} * nd_y$$

Where:

$W_{site}$  Average animal weight of a defined livestock population at the project site (kg)

Wdefault Default average animal weight of a defined population, this data is sourced from 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories (kg)/45/

Vsdefault Default value for the volatile solid excretion rate per day on a dry-matter basis for a defined livestock population (kg dm/animal/day)

ndy Number of days in year “y” where the treatment plant was operational.

According to paragraph 17 (d) from AMS-III.D version 21.0, B0 or VS values applicable to developed countries can be used provided the following four conditions are satisfied:

The genetic source of the livestock originates from an Annex I Party;

For this project, the genetics and nutrition adopted for these farms as so as in western Europe. More details or information of the genetics can be obtained at the producers or at the Associação Brasileira dos Criadores de Suínos (Brazilian Swine Association) – <http://www.abcs.org.br/> and also at COOASGO (Cooperativa de São Gabriel do Oeste). The audit team confirmed on-site the type of animals being used and received pig inventory records, genetic, diet and feeding certificates for all the farms that are part of the project. /1/2/3/17/22/25/.

The data used for the baseline emission reduction calculation is the product of the monitoring activities and the meters readings. All the data were issued by automatically systems and crosschecked by the lead auditor with the row data collected by the Regional Technician.

Quantification of project emissions:

According to the simplified baseline and monitoring methodology (AMS.III.D – version 21.0), project emissions consist of:

- (a) Physical leakage of biogas in the manure management systems which includes production, collection and transport of biogas to the point of flaring/combustion or gainful use (PEPL,y);
- (b) Emissions from flaring or combustion of the gas stream (Peflare,y);
- (c) CO<sub>2</sub>emissions from use of fossil fuels or electricity for the operation of all the installed facilities (PEpower,y). (d) CO<sub>2</sub> emissions from incremental transportation distances (Petransp,y)
- (e) Emissions from the storage of manure before being fed into the anaerobic digester (Pestorage,y)

Equation 5 (equation 6 of the meth/3/):

The formula used for the calculations of the project emissions is consistent with the registered PD-MR /1/. According to applicable methodology /3/, PE calculations require the use of this equation number (5) as follows:

$$PE_y = PE_{PL,y} + PE_{flare,y} + PE_{power,y} + PE_{transp,y} + PE_{storage,y}$$

Where:

PE<sub>y</sub> – Project emissions in year “y” (tCO<sub>2e</sub>)

PE<sub>PL,y</sub> – Emissions due to physical leakage of biogas in year “y” (tCO<sub>2e</sub>)

PE<sub>flare,y</sub> – Emissions from flaring or combustion of the biogas stream in the year “y” (tCO<sub>2e</sub>)

PE<sub>power,y</sub> – Emissions from the use of fossil fuel or electricity for the operation of the installed facilities in the year “y” (tCO<sub>2e</sub>)

Nevertheless, there are no emissions due to use of fossil fuels or electricity. ICONTEC confirmed that no electricity was consumed from the grid since the monitoring equipment present in each project site is powered by photovoltaic cells. And the energy generated is stored in 12 volts batteries. The treated effluent is discharged in open lagoons by gravity and the flare operates with biogas at atmospheric pressure. No pump or blower was used, and no fossil fuel was used.

PE<sub>transp,y</sub> – Emissions from incremental transportation in the year y (tCO<sub>2e</sub>), as per relevant paragraph in AMS-III.O

ICONTEC confirmed that there is not transportation and therefore no emissions related.

PE<sub>storage,y</sub> – Emissions from the storage of the manure in the year “y” (tCO<sub>2e</sub>)

ICONTEC confirmed that there is no manure storage and therefore no emissions related. The audit team assessed the operational conditions of the proposed project activity and concluded the management of manure does not include storage or transport of the effluents of swine production operations.

Equation 6 (equation 7 of the meth)/3/ emissions due to physical leakage of biogas can be determinate as follows:

Where:

PE<sub>PL,y</sub> – Emissions due to physical leakage of biogas in year “y” (tCO<sub>2e</sub>)

GWPC<sub>CH4</sub> – Global Warming Potential (GWP) of CH<sub>4</sub> (28)

D<sub>CH4</sub> – CH<sub>4</sub> density (0.00067 t/m<sup>3</sup> at room temperature (20 °C) and 1 atm pressure).

LT – Index for all types of livestock

J – Index for animal waste management system

$B_{0,LT}$  – Maximum methane producing potential of the volatile solid generated for animal type “LT” ( $m^3 CH_4/kg\ dm$ )

$N_{LT,y}$  – Annual average number of animals of type “LT” in year “y” (numbers)

$V_{SLT,y}$  – Volatile solids for livestock “LT” entering the animal manure management system in year “y” (on a dry matter weight basis,  $kg\ dm/animal/year$ )

$MS_{%i,y}$  – Fraction of manure handled in system “i” in year “y”

Emissions from flaring determinate as follows/4/:

According with the tool Project emissions from flaring version 4 /4/, the calculation procedure in this tool determines the project emissions from flaring the residual gas ( $PE_{flare,y}$ ) based on the flare efficiency ( $\eta_{flare,m}$ ) and the mass flow of methane to the flare ( $F_{CH_4,RG,m}$ ). The flare efficiency is determined for each minute  $m$  of year  $y$  based either on monitored data or default values.

The project emissions calculation procedure is given in the following steps:

STEP 1: Determination of the methane mass flow of the residual gas;

STEP 2: Determination of the flare efficiency;

STEP 3: Calculation of project emissions from flaring.

Step 1: Determination of the methane mass flow in the residual gas

The “Tool to determine the mass flow of a greenhouse gas in a gaseous stream” shall be used to determine the following parameters

The following requirements apply:

- (a) The gaseous stream tool will be applied to the residual gas;
- (b) The flow of the gaseous stream will be measured continuously;
- (c)  $CH_4$  is the greenhouse gas  $i$  for which the mass flow will be determined;
- (d) The simplification offered for calculating the molecular mass of the gaseous stream is valid (equations 3 and 17 in the tool); and
- (e) The time interval  $t$  for which mass flow should be averaged is every minute  $m$ .

According with the “Tool to determine the mass flow of a greenhouse gas in a gaseous stream” version 03, The mass flow of a greenhouse gas  $i$  in a gaseous stream ( $F_{i,t}$ ) is determined through measurement of the flow and volumetric fraction of the gaseous stream.

Option A was chosen:

The flow measurement on a dry basis is not doable for a wet gaseous stream. Therefore, it is necessary to demonstrate that the gaseous stream is dry to use this option. According with the tool, there are two ways to do this:

- (a) Measure the moisture content of the gaseous stream ( $CH_{2O,t,db,n}$ ) and demonstrate that this is less or equal to 0.05 kg H<sub>2</sub>O/m<sup>3</sup> dry gas; or
- (b) Demonstrate that the temperature of the gaseous stream ( $T_t$ ) is less than 60oC (333.15 K) at the flow measurement point.
- (c) The temperature of the biogas is less than 60oC, and that will be demonstrated during the monitoring of the parameter, according with the MP.

Step 2: Determination of flare efficiency

The flare efficiency depends on the combustion efficiency of in the flare and the time that the flare is operating. For determining the efficiency of enclosed flares project participants shall choose to determine the efficiency based on monitored data or the option to apply a default value. For open flares a default value must be applied. The time the flare is operating is determined by using a flame detector and, for the case of enclosed flares, in addition the monitoring requirements provided by the manufacturer’s specifications for operating conditions shall be met.

In the case of enclosed flares, project participants may choose between the following two options to determine the flare efficiency for minute  $m$  ( $\eta_{flare,m}$ ) and shall document in the CDM-PD which option is selected:

- (a) Option A: Apply a default value for flare efficiency;
- (b) Option B: Measure the flare efficiency.

Option A was chosen

Option A: Default value

The flare efficiency for the minute  $m$  ( $\eta_{flare,m}$ ) is 90% when the following two conditions are met to demonstrate that the flare is operating:

- (a) The temperature of the flare ( $TEG,m$ ) and the flow rate of the residual gas to the flare ( $FRG,m$ ) is within the manufacturer’s specification for the flare ( $SPEC_{flare}$ ) in minute  $m$ ; and
- (b) The flame is detected in minute  $m$  ( $Flamem$ ).

Otherwise  $\eta_{flare,m}$  is 0%.

It is important to highlight that the flares are considered a low height so, in line with the tool, a conservative approach should be applied, and 10 percentile points should be subtracted to the flare efficiency. Hence the flare efficiency adopted in the current PD will be the default value of 80%.

In line with the monitoring plan, if any minute of any hour presents a temperature value below 500oC the entire hour will be discount form the CER calculation. This discount will be applied to the volume of that specific hour since it is a more conservative approach than to discount in the average of the flare efficiency percentage.

### Step 3: Calculation of project emissions from flaring

Project emissions from flaring are calculated as the sum of emissions for each minute  $m$  in year  $y$ , based on the methane mass flow in the residual gas ( $F_{CH4,RG,m}$ ) and the flare efficiency ( $\eta_{flare,m}$ ), as follows:

Equation 7 (equation 15 of the Tool 6)

$$PE_{flare,y} = GWP_{CH4} \times \sum_{m=1}^{525600} F_{CH4,RG,m} \times (1 - \eta_{flare,m}) \times 10^{-3}$$

Where:

$PE_{flare,y}$  – Project emissions from flaring of the residual gas stream in year  $y$ , tCO<sub>2e</sub>

$GWP_{CH4}$  – Global Warming Potential of methane valid for the commitment period, tCO<sub>2e</sub>/tCH<sub>4</sub>

$F_{CH4,RG,m}$  – Mass flow rate of methane in the residual gas in the minute  $m$ , kg/m

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

### Quantification of leakage:

According to the simplified baseline and monitoring methodology AMS-III.D - version 21/3/ and the tool “Project and leakage emissions from anaerobic digesters” (version 02) /19/, no leakage calculation is required if the storage of digestate or the composting of digestate is occurring within the project boundary, these emissions will be considered as project emissions, (in line with paragraph 25 of the tool).

ICONTEC confirms that no leakage needs to be considered. The verification on- site of the operation features of the project allow the audit team to assure no neither storage nor composting takes place in the proposed project activity.

Summary of net GHG emission reductions or removals:

The verification team assessed the whole set of data and calculations of GHG emission reductions /2/ resulting from the project activity by the application of selected methodology, formulae and default values applied both for the claimed and unclaimed period monitored.

According to PD-MR /1/ the last version, the estimated annual GHG emission reductions/removals of the project are 382.487 tCO<sub>2</sub>e for the first crediting period (7 years) from 02/01/2021 to 01/01/2028, resulting in estimated annual average GHG emission reductions of 55,356 tCO<sub>2</sub>e. These figures were calculated using the methodology AMS-III.D v.21/3/ and the applicable tools /4/.

- Emission Reductions:

The equation 1/3/

$$ER_{y,estimated} = BE_y - PE_y$$

Where:

- ER<sub>y</sub> – Emission reductions in t CO<sub>2</sub>e/year
- BE<sub>y</sub> – The annual baseline methane emissions in t CO<sub>2</sub>e/year
- PE<sub>y</sub> – Project emissions in t CO<sub>2</sub>e/year

The emission reductions which will be achieved by the project activity ex post will be determined through direct measurement of the amount of methane flared. The emission reductions achieved in any year will be the lowest value of the following:

Equation 1.1

$$ER_{y,ex-post} = \min[(BE_{y,ex-post} - PE_{y,ex-post}), (MD_y - PE_{power,y,ex-post})]$$

Where:

ER<sub>y,ex-post</sub> – Emission reductions achieved by the project activity based on monitored values for year y (tCO<sub>2</sub>e)

BE<sub>y ex post</sub> – Baseline emissions calculated using equation 1 (for projects using option in paragraph 17(a) and using ex post monitored values of NLT<sub>y</sub> and if applicable VSLT<sub>y</sub> for year y (tCO<sub>2</sub>e). For projects using option in paragraph 17(b), the ex post monitored values for Q<sub>manure,j,LT,y</sub> and SVS<sub>j,LT,y</sub> are used.

PE<sub>y,ex post</sub> – Project emissions calculated using Equation 5 (equation 6 of the meth) using ex post monitored values of NLT<sub>y</sub>, MS<sub>%i,y</sub> and if applicable VSLT<sub>y</sub> for year y (tCO<sub>2</sub>e)

MD<sub>y</sub> – Methane captured and destroyed or used gainfully by the project activity in year y (tCO<sub>2</sub>e)

$PE_{power,y,ex\ post}$  – Emissions from the use of fossil fuel or electricity for the operation of the installed facilities based on monitored values in the year  $y$  ( $tCO_2e$ )

It was verified that, monitoring procedures as well as collected data represent the actual emission reductions of the Project Activity. It was also verified the emissions calculations file /2/ in order to detect material mistakes or mistakes on calculation procedures; the audit team identified those emission reductions not claimed follow the very same methodological requirements as the claimed emission reductions.

As a general crosscheck of the data, ICONTEC verified the backup system of the company and cross checked the information of the CERs spread-sheet /2/ with the backup files, which include the raw data information generated by the PLC system. The information is reported by the system through .xls files containing all information in the adequate measurement frequencies.

The Methane captured and destroyed (MDy) in the current monitoring period: 68,325 MDy ( $t CO_2e$ ).

Uncertainties associated with the calculation of emissions:

$UF_b$  - the Model correction factor to account for model uncertainties (0.94) (FCCC/SBSTA/2003/10/Add.2,page25) <https://unfccc.int/resource/docs/2003/sbsta/10a02.pdf>. Is a parameter applied by the PP to determinate the Baseline equations.

The calculations of baseline GHG emissions have been carried out in accordance with the formulae and methods described in the PD-MR /1/ and the applied methodology. Appropriate use  $UF_b$  parameter the formulae applied in the MR/2/ and the CER/2/ calculation were correctly justified.

Documentation used as the basis for assumptions and sources of data:

The CER calculation/2/ has been duly checked. ICONTEC has further verified the Joint-PD-MR/1/ against MR/2/ and the latest version of the applicable methodology/3/, as well as the referenced methodological tools /4/19/51/ for consistency.

The validation & verification team assessed whether all data sources and assumptions are appropriate, and calculations are correct and applicable to the proposed CDM project activity, and will result in an accurate or otherwise conservative estimate of the emission reductions. With respect to the data and parameters which will be monitored or estimated on implementation and hence become available only after renewal of the crediting period of the project activity, the validation team confirmed that the estimates provided in the revised PD-MR version 7 /1/ for these data and parameters are reasonable.

The results of applying the equations indicated in methodology AMS-III.D for each of the parameters described in Appendix 5; can be found in the file ER Calculation Spreadsheet BCA-BRA-16-.xls, PD-MR version 07 /1/, MR v.2 – CER v.2 /2/and VVR/53/.

The PP in Figure 3 of PD-MR version 7 /1/ and figure 1 of MR v.2/2/present the details of the use of the biodigester at each project site, as well as the path of the effluent and its final destination once biogas burning takes place. Similarly, the PP corrects the description of the item regarding the emissions from the open lagoons, which are not included, and the emissions from flaring /1/53/.

By means of remote inspection and documents review, ICONTEC can ensure that during 2<sup>nd</sup> monitoring period, the project was implemented in accordance with the -MRv.2 /2/.

This verification covers the period from 01-February-2022 to 31-December-2023 (including both days). 99,467 tCO<sub>2</sub>e emission reductions are achieved during this monitoring period.

The main timeline of the project is as below table, which has been confirmed in the MRv.2/2/, monthly production summary table 11/against current verification of CER spreadsheets CER Calculation MR02 - BCA-BRA-16\_v2” in the folder Bey ex-post – PEy ex-post./2/.

**Activity - dates of project 2998:**

According to table 1 – PD-MR version 7/1/ and table 1 - Relevant dates of project implementation MRv.2/2/:

Start construction: June to September 2020 (all sites)

Start date: 28/12/2020 -date in which the first farm begun the Stat-up and Tests phase.

Start date of the crediting period – 02 January 2021 / First Monitoring Period

The Second Monitoring Period: the current Monitoring Period from 01/02/2022 to 31/12/2023 (First and last date included).

The audit team conducted a remote visit to each of the project sites and found that project /46/, including the biodigester system and the flare, is recently constructed. No evidence of events or situations that could impact the applicability of the applied methodology occurred during this monitoring period. Based on the site visit and the reviewed project documentation, it can be confirmed that the implemented technology, project equipment, as well as the monitoring and metering equipment, have been operated in accordance with the applied monitoring methodology and the monitoring plan described in the Joint-PD-MR/1/ and the current MR/2/. The monitoring system is fully functional to generate Verified Carbon Units (VCUs) without any double counting for this monitoring period from 1 February 2021 to 31 December 2023

Basic technical details of the project have been provided in the MR /2/ which has been verified during sites visit /46/53.

There are no relevant deviations from the methodology.

In conclusion, the verification Team was able to confirm that the project implementation is in accordance with the project description contained in the MR v.2 /2/ and CER v.2/2/ and the reductions provided in this project's GHG statement have been quantified correctly in accordance with the monitoring plan and applied methodology.

#### 4.4 Quality of Evidence to Determine Reductions and Removals

During the verification process, the audit team assessed the whole set of monitoring parameters relevant to the proposed project activity (as listed in chapter 6. 6.1 of the PD-MR /1/, and the figures as reported and the information flow management system have been verified with regard to the appropriateness of the applied measurement and equipment, the correctness of the values applied for calculation of GHG emission reductions, the accuracy and applied QA/QC measures.

The monitored parameters described in Appendix 5, sections 3.4.8/53/, provide detailed assessment of each monitoring parameter, while Appendix 3 contains supporting evidence used to determine the GHG emission reductions. The PD-MR/1/ and MR/2/ in their sections 4 Data and parameters, 5. Quantification of GHG emission reductions and removals also contribute to this assessment. The validation and verification report /53/ describes the application of the methodology AMS-III.D. version 21.0/3/ and the associated tools /4/19/21/52/.

For each reported data, the evidence is provided and verified as sufficient, and quality is appropriate. Also, the cross-checks have 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 the Audit Team for each parameter and also the calibration have been conducted as per the frequency of monitoring equipment defined in the MRv.2/2/ and CERv.2 /2/.

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

#### 4.5 Non-Permanence Risk Analysis

Not Applicable

# 5 VERIFICATION OPINION

## 5.1 Verification Summary

The Project Description: Brascarbon Consultoria, Projetos e Representação Ltda commissioned ICONTEC International to perform the verification assessment of the second monitoring period (01/02/2022 to 31/01/2023 - first and last days included) of the proposed project activity "BRASCARBON Methane Recovery Project BCA-BRA-16, Brazil (Reference Number VCS: 2998). The project is located in Mato Grosso do Sul Brazil, with 9 sites, and is not a grouped project.

Verification Scope: Based on the scope of the VCS Program, which includes UNFCCC criteria contained in Article 12 of the Kyoto Protocol, the approved CDM methodology AMS-III.D. "Methane recovery in animal manure management systems" (version 21.0) is applied to quantify the GHG removals achieved in this project.

Verification Findings: During the verification process, 3 Corrective Action Requests (CARs) and 6 Clarification Requests (CLs) were raised and successfully closed. The assessment is included in the report.

For the Development of the Verification, constant communication was carried out with the PP (Project Proponent), in addition to the reception and analysis of the supporting documents. Consolidated evidence allowed for positive progress in the verification process, leading to corrections and adjustments of the MR (Monitoring Report) document for the current monitoring period.

ICONTEC confirms that the project complies with the verification criteria for projects and their carbon emissions reductions set out in Version 4 of the VCS. This GHG statement is the responsibility of the Brascarbon PP, the project proponent. The project has been implemented according to the project description, its calculations, and has been adjusted based on observations and findings issued by the audit team and technical review. The development of activities, opinions, and analyses for verification by the audit team has been in line with the regulatory conditions applicable to the project, such as ISO/IEC 17029:2019 e ISO 14065:2020 14064-1:2019, 14064-2:2019 and 14064-3:2019.

## 5.2 Verification Conclusion

The audit team carried out a thorough and independent assessment of the implementation, operation and the reported GHG emission reductions of the proposed project activity “BRASCARBON Methane Recovery Project BCA-BRA-16, Brazil (Reference number 2998) as well as the quantitative and qualitative information provided in the. MR version 02 /2/ against the applicable VCS rules and requirements /5 – 10/51/ and the applicable methodological framework /4/ /19/ /21/. The verification process allows the audit team to conclude, the proposed project activity compiles with the VCS requirements. The audit team confirms that, verification activities used as a basis for the assessment of the Second monitoring period (from 1 of February 2022 to the 31st of December 2023).

**Verification period:** From 01-02-2022 to 31-12-2023

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

Vintage period	Baseline emissions (tCO <sub>2</sub> e)	Project emissions (tCO <sub>2</sub> e)	Leakage emissions (tCO <sub>2</sub> e)	Reduction VCUs (tCO <sub>2</sub> e)	Removal VCUs (tCO <sub>2</sub> e)	Total VCUs (tCO <sub>2</sub> e)
01-Feb-2022 to 31-Dec-2022	69,493	23,169	0	46,324	0	46,324
01-Jan-2023 to 31-Dec-2023	74,392	21,245	0	53,147	0	53,147
<b>Total</b>	<b>143,888</b>	<b>44,421</b>	<b>0</b>	<b>99,467</b>	<b>0</b>	<b>99,467</b>

The project is not required to assess permanence risk.

## 5.3 Ex-ante vs Ex-post ERR Comparison

Vintage period	Ex-ante estimated reductions/removals	Achieved reductions/removals	Percent difference	Explanation for the difference
01-Feb-2022 to 31-Dec-2023	106,011	99,467	-6%	The annual emission reductions in the ex-ante calculation of the Project Design are 53,356 tCO <sub>2</sub> e. The PD/1/ value presented is adjusted to 106,011 tCO <sub>2</sub> e, considering that the duration of the monitoring

				<p>period is 699 days. This number of days is secured by the CER Calculation MR02 - BCA-BRA-16_v2/2/, where the number of hours the project was operational is assessed. In any case, the number of operating hours is higher compared to the previous monitoring period /2/ and represents less than 6% of the estimated value in the PD/1/</p>
Total	106,011	99,467	-6%	

# APPENDIX 1: COMMERCIALY SENSITIVE INFORMATION

<i>Section</i>	<i>Information</i>	<i>Justification</i>	<i>Assessment method and conclusion</i>
N/A	Not Applicable	The Project Proponent (PP) in the monitoring report does not present sensitive commercial information.	N/A

## APPENDIX 2: ABBREVIATIONS

Abbreviations	Full texts
BRC	Brascarbon - Brascarbon Consultoria, Projetos e Representação Ltda
CAR	Corrective Action Request
CDM	Clean Development Mechanism
Ers	Emission Reductions
CERs	Certified Emission Reductions
CL	Clarification request
CO <sub>2</sub> e	Carbon dioxide equivalent
DOE	Designated Operational Entity
FAR	Forward Action Request
GHG	Green House Gas
ICONTEC	Colombian Institute of Technical Standards and Certification (Instituto Colombiano de Normas Técnicas y Certificación)
IPCC	Intergovernmental Panel on Climate Change
QA/QC	Quality Assurance/ Quality Control
MP	Monitoring Plan
MR	Monitoring Report
PCL	Programmable Logic Control
POP	Operational Procedure
PP	Project Participants
PRC	Post Registration Changes
PSO	Project Site owner
GWPCH <sub>4</sub>	Global Warming Potential of Methane
UNFCCC	United Nations Framework Convention on Climate Change
PD-MR	Project Description- Monitoring Report VCS
VVB	Validation/Verification Bodies (VVBs)

# APPENDIX 3: DOCUMENTS REVIEWED OR REFERENCED

ID	Author	Title	References to the document	Provider
1	BRASCARBON	PD&MR  Brascarbon Methane Recovery Project BCA- BRA-16_v7  Emission Reductions Calculation:  CER Calculation MR01 - BCA- BRA-16_v.3	Dated on: 17/02/2023:  BCA-BRA-16_v7_tc.pdf  BCA-BRA-16_v7_clean.pdf  Date 13/10/2021  Date 17/02/2023	PP
2	BRASCARBON	Second verification  Monitoring Report  MR version 1  CER Calculation MR02 - BCA- BRA-16.xls  Sampling_Plan_ BCA- BRA_16_MR02.x lsx  MR version 2  CER Calculation MR02 - BCA- BRA-16_v2.xls	Date 10/01/2024  VCS MR Project ID 2998 01022022- 31122023.pdf          Date 26/03/2024  VCS MR Project ID 2998 01022022- 31122023_v2.pdf	Project Participant -PP

ID	Author	Title	References to the document	Provider
		<p>Findings BCA-BRA-16_19.03.2024_BC.docx</p> <p>MR version 3</p>	<p>Date 13/08/2024</p> <p>VCS MR Project ID 2998 01022022-31122023_v3_clean.pdf</p>	
3	UNFCCC	<p>Methodology: Methane recovery in animal manure management systems. AMS-III.D, version 21.0</p> <p>File - EB96_repan09_AMS-III.Dv21.pdf</p>	<p><a href="https://cdm.unfccc.int/methodologies/SSC/methodologies/approved">https://cdm.unfccc.int/methodologies/SSC/methodologies/approved</a></p>	UNFCCC website
4	UNFCCC	<p>Methodological tool (06) “Project emissions from flaring” (Version 04.0)</p> <p>File – am-tool-06-v4.0.pdf</p>	<p><a href="https://cdm.unfccc.int/Reference/tools/index.html">https://cdm.unfccc.int/Reference/tools/index.html</a></p> <p><a href="https://cdm.unfccc.int/methodologies/Parties/methodologies/tools/am-tool-06-v4.0.pdf/history_view">https://cdm.unfccc.int/methodologies/Parties/methodologies/tools/am-tool-06-v4.0.pdf/history_view</a></p> <p><a href="https://cdm.unfccc.int/methodologies/Parties/methodologies/tools/am-tool-06-v4.0.pdf">https://cdm.unfccc.int/methodologies/Parties/methodologies/tools/am-tool-06-v4.0.pdf</a></p>	UNFCCC website
5	VERRA	Template	VCS-Monitoring-Report-Template-v4.3	VCS Website

ID	Author	Title	References to the document	Provider
6	VERRA	Template	Verification Report: VCS Version Template 4.3	VCS Website
7	VERRA	Registration and Issuance Process version 4.4	Registration and Issuance Process version 4.4	VCS Website
8	VERRA	VCS Program Definitions	VCS Program Definitions, v4.4	VCS Website
9	VERRA	VCS Program Guide	VCS Program Guide, v4.4	VCS website
10	VERRA	VCS Standard	VCS Standard v4.5 VCS Standard v4.6 VCS Standard v4.7	VCS website
11	Various	Technical and manufacturer specifications	<p><i>Equipment information through the websites (second sources information):</i></p> <p><a href="https://www.endress.com/en/field-instruments-overview/flow-measurement-product-overview/Product-Thermal-flowmeter-t-mass-65F">https://www.endress.com/en/field-instruments-overview/flow-measurement-product-overview/Product-Thermal-flowmeter-t-mass-65F</a></p> <p><a href="http://www.landtecnica.com">http://www.landtecnica.com:</a></p> <p><i>for the portable biogas analyzer Landtec information</i></p> <p><a href="https://issuu.com/alutal/docs/catalogo-tecnico">https://issuu.com/alutal/docs/catalogo-tecnico</a></p>	<p>Project Participant - PP</p> <p>Others</p>
12	BRASCARBON	Sampling Plan (parameters WCH <sub>4</sub> ,y and fvCH <sub>4</sub> ,RG)	Sampling_Plan_BCA-BRA_16_MR02.xlsx	Project Participant -PP
13	BRASCARBON	Operational Procedure: POP - 08 -	POP 8 - Calculo Da Eficiencia Do Flare.pdf	Project Participant -PP

ID	Author	Title	References to the document	Provider
		<p>The flame detection is assured by following POP 08/13/ as the verification team assessed data collected on form 08.001. In addition the operation conditions of the equipment have been verified by PP</p>		
14	BRASCARBON	Operational Procedure: POP-14	POP 14 – Formulação De Ração rev1.pdf	Project Participant -PP
15	BRASCARBON	Form 01.001. Information with minute by minute temperature and biogas volume data stored in the PLC	<p>225 files</p> <p>BCA-300MS1-16 – Fazenda Paraíso do Alto – TABELA DE DADOS.xls</p> <p>BCA-301MS1-16 – Fazenda São Sebastião Gleba 6 – TABELA DE DADOS.xls</p> <p>BCA-302MS1-16 – Granja Serra Dourada I – TABELA DE DADOS.xls</p> <p>BCA-303MS1-16 – Lote 28 PA Assent. Camp. -TABELA DE DADOS.xls</p> <p>BCA-304MS1-16 – Assentaemnto Campanario – Lote 55 - TABELA DE DADOS.xls</p> <p>BCA-305MS1-16 – Faz. N. Senh. Aparec. II - TABELA DE DADOS.xls</p> <p>BCA-306MS1-01 – Granja Grandó - TABELA DE DADOS.xls</p>	Project Participant -PP

ID	Author	Title	References to the document	Provider
		Operational Procedure: POP-01	<p>BCA-307MS1-16 – Assentamento Campanario - TABELA DE DADOS.xls</p> <p>BCA-308MS1-16 – Quinhao A - TABELA DE DADOS.xls</p> <p>POP 1 – OBTENÇÃO DA TEMPERATURA DE COMBUSTÃO_v8.pdf</p>	
16	BRASCARBON	<p>POP 02 – Operational Procedure: POP – 2</p> <p>INSPEÇÃO DA LOCALIDADE &amp; MS% l,y</p>	POP 2 – INSPEÇÃO DA LOCALIDADE_v6.pdf	Project Participant
17	BRASCARBON	<p>Livestock inventory. Total number of animals, information collected on form 03.001 and 03.003 (the file name is Sistema de Controle de Animais, regarding each project site, nevertheless is the form 03.003)</p>	<p>BCA-300MS1-16 - Fazenda Paraíso do Alto - 30-12-23 - FORMULARIO 03.001.xls</p> <p>BCA-301MS1-01 - Fazenda Sao Sebastiao Gleba 6 - 30-12-23 - FORMULARIO 03.001.xls</p> <p>BCA-302MS1-01 - Granja Serra Dourada I - 30-12-23 - Form 03.001.xls</p> <p>BCA-303MS1-16 - Lote 28 PA Assentamento Campanario - 30-12-23 - Form 03.001.xls</p> <p>BCA-304MS1-16 - Assentamento Campanario - Lote 55 - 30-12-23 - Form 03.001.xls</p> <p>BCA-305MS1-16 - Faz. N. Senh. Aparec. II - 30-12-23 - FORMULARIO 03.001.xls</p>	Project Participant

ID	Author	Title	References to the document	Provider
		<p>POP 3 - CONTAGEM DE ANIMAIS</p> <p>Sistema de Controle de Animais</p>	<p>BCA-306MS1-16 - Granja Grando - 30-12-23 - Form 03.001.xls</p> <p>BCA-307MS1-16 - Assentamento Campanario - 30-12-23 - FORMULARIO 03.001.xls</p> <p>BCA-308MS1-16 - Fazenda Quinhao A - 30-12-23 - Form 03.001.xls</p> <p>BCA-300MS1-16 - Fazenda Paraíso do Alto - 30-12-22 - FORMULARIO 03.001.xls</p> <p>BCA-301MS1-01 - Fazenda Sao Sebastiao Gleba 6 - 30-12-22 - FORMULARIO 03.001.xls</p> <p>BCA-302MS1-01 - Granja Serra Dourada I - 30-12-22 - Form 03.001.xls</p> <p>BCA-303MS1-16 - Lote 28 PA Assentamento Campanario - 30-12-22 - Form 03.001.xls</p> <p>BCA-304MS1-16 - Assentamento Campanario - Lote 55 - 30-12-22 - Form 03.001.xls</p> <p>BCA-305MS1-16 - Faz. N. Senh. Aparec. II - 30-12-22 - FORMULARIO 03.001.xls</p> <p>BCA-306MS1-16 - Granja Grando - 30-12-22 - Form 03.001.xls</p> <p>BCA-307MS1-16 - Assentamento Campanario - 30-12-22 - FORMULARIO 03.001.xls</p> <p>BCA-308MS1-16 - Fazenda Quinhao A - 30-12-22 - Form 03.001.xls</p> <p>POP 3 - CONTAGEM DE ANIMAIS_v6.pdf</p>	

ID	Author	Title	References to the document	Provider
		Operational Procedure: POP-03		
18	BRASCARBON	Form 04.001. Information related to parameters biogas volume, WCH4, Pbiogas and Tbiogas - reports by farm	<p>BCA-300MS1-16 - Fazenda Paraiso do Alto - 03-12-23 - FORMULARIO 04.001.xls</p> <p>BCA-300MS1-16 - Fazenda Paraiso do Alto - 04-01-24 - FORMULARIO 04.001.xls</p> <p>BCA-301MS1-16 - Fazenda Sao Sebastiao Gleba 6 - 03-01-24 - FORMULARIO 04.001.xls</p> <p>BCA-301MS1-16 - Fazenda Sao Sebastiao Gleba 6 - 04-12-23 - FORMULARIO 04.001.xls</p> <p>BCA-302MS1-16 - Granja Serra Dourada I - 02-12-23 - FORMULARIO 04 001.xls</p> <p>BCA-302MS1-16 - Granja Serra Dourada I - 03-01-24 - FORMULARIO 04 001.xls</p> <p>BCA-303MS1-16 - Lote 28 PA Assent. Camp. - 02-12-23 - FORMULARIO 04 001.xls</p> <p>BCA-303MS1-16 - Lote 28 PA Assent. Camp. - 03-01-24 - FORMULARIO 04 001.xls</p> <p>BCA-304MS1-16 - Assentamento Campanario - Lote 55 - 02-12-23 - FORMULARIO 04 001.xls</p> <p>BCA-304MS1-16 - Assentamento Campanario - Lote 55 - 03-01-24 - FORMULARIO 04 001.xls</p> <p>BCA-305MS1-16 - Faz. N. Senh. Aparec. II - 02-12-23 - FORMULARIO 04.001.xls</p>	

ID	Author	Title	References to the document	Provider
			<p>BCA-305MS1-16 - Faz. N. Senh. Aparec. II - 03-01-24 - FORMULARIO 04.001.xls</p> <p>BCA-306MS1-16 - Granja Grando - 03-12-23 - FORMULARIO 04 001.xls</p> <p>BCA-306MS1-16 - Granja Grando - 04-01-24 - FORMULARIO 04 001.xls</p> <p>BCA-307MS1-16 - Assentamento Campanario - 02-12-23 - FORMULARIO 04.001.xls</p> <p>BCA-307MS1-16 - Assentamento Campanario - 03-01-24 - FORMULARIO 04.001.xls</p> <p>BCA-308MS1-16 - Fazenda Quinhao A - 02-12-23 - FORMULARIO 04 001.xls</p> <p>BCA-308MS1-16 - Fazenda Quinhao A - 03-01-24 - FORMULARIO 04 001.xls</p> <p>BCA-300MS1-16 - Fazenda Paraiso do Alto - 01-06-23 - FORMULARIO 04.001.xls</p> <p>BCA-300MS1-16 - Fazenda Paraiso do Alto - 03-12-22 - FORMULARIO 04.001.xls</p> <p>BCA-300MS1-16 - Fazenda Paraiso do Alto - 06-06-22 - FORMULARIO 04.001.xls</p> <p>BCA-301MS1-16 - Fazenda Sao Sebastiao Gleba 6 - 02-06-23 - FORMULARIO 04.001.xls</p> <p>BCA-301MS1-16 - Fazenda Sao Sebastiao Gleba 6 - 04-12-22 - FORMULARIO 04.001.xls</p> <p>BCA-301MS1-16 - Fazenda Sao Sebastiao Gleba 6 - 07-06-22 - FORMULARIO 04.001.xls</p> <p>BCA-302MS1-16 - Granja Serra Dourada I - 02-06-23 - FORMULARIO 04 001.xls</p>	

ID	Author	Title	References to the document	Provider
			BCA-302MS1-16 - Granja Serra Dourada I - 04-12-22 - FORMULARIO 04 001.xls	
			BCA-302MS1-16 - Granja Serra Dourada I - 07-06-22 - FORMULARIO 04 001.xls	
			BCA-303MS1-16 - Lote 28 PA Assent. Camp. - 02-06-23 - FORMULARIO 04 001.xls	
			BCA-303MS1-16 - Lote 28 PA Assent. Camp. - 02-12-22 - FORMULARIO 04 001.xls	
			BCA-303MS1-16 - Lote 28 PA Assent. Camp. - 07-06-22 - FORMULARIO 04 001.xls	
			BCA-304MS1-16 - Assent. Camp. - Lote 55 - 04-12-22 - FORMULARIO 04 001.xls	
			BCA-304MS1-16 - Assent. Camp. - Lote 55 - 07-06-22 - FORMULARIO 04 001.xls	
			BCA-304MS1-16 - Assentamento Campanario - Lote 55 - 02-06-23 - FORMULARIO 04 001.xls	
			BCA-305MS1-16 - Faz. N. Senh. Aparec. II - 02-06-23 - FORMULARIO 04.001.xls	
			BCA-305MS1-16 - Faz. N. Senh. Aparec. II - 04-12-22 - FORMULARIO 04.001.xls	
			BCA-305MS1-16 - Faz. N. Senh. Aparec. II - 07-06-22 - FORMULARIO 04.001.xls	
			BCA-306MS1-16 - Granja Grando - 01-06-23 - FORMULARIO 04 001.xls	
			BCA-306MS1-16 - Granja Grando - 03-12-22 - FORMULARIO 04 001.xls	
			BCA-306MS1-16 - Granja Grando - 06-06-22 - FORMULARIO 04 001.xls	

ID	Author	Title	References to the document	Provider
		Operational Procedure: POP-04	<p>BCA-307MS1-16 - Assentamento Campanario - 02-06-23 - FORMULARIO 04.001.xls</p> <p>BCA-307MS1-16 - Assentamento Campanario - 04-12-22 - FORMULARIO 04.001.xls</p> <p>BCA-307MS1-16 - Assentamento Campanario - 07-06-22 - FORMULARIO 04.001.xls</p> <p>BCA-308MS1-16 - Fazenda Quinhao A - 04-12-22 - FORMULARIO 04 001.xls</p> <p>BCA-308MS1-16 - Fazenda Quinhao A - 07-06-22 - FORMULARIO 04 001.xls</p> <p>BCA-308MS1-16 - Fazenda Quinhao A - 02-06-23 - FORMULARIO 04 001.xls</p> <p>POP 4 - MEDIÇÃO DO VOLUME DE BIOGÁS_v6.pdf</p>	
19	UNFCCC	Tool 14: Methodological tool: "Project and leakage emissions from anaerobic digesters" version 2  EB 96 annex 7	<p><a href="https://cdm.unfccc.int/Reference/tools/index.html">https://cdm.unfccc.int/Reference/tools/index.html</a></p> <p><a href="https://cdm.unfccc.int/methodologies/Partners/methodologies/tools/am-tool-14-v2.pdf">https://cdm.unfccc.int/methodologies/Partners/methodologies/tools/am-tool-14-v2.pdf</a></p>	UNFCCC website
20	BRASCARBON	Form 08.001: flare temperature for all of the project sites /minute per minute	<p>2022 and 2023 - 204 files, each representing a file/site/month, as follows: for example</p> <p>BCA-305MS1-16 - Formulario 08.001 - 02-2022.xlsx</p> <p>BCA-305MS1-16 - Formulario 08.001 - 03-2022.xlsx</p>	

ID	Author	Title	References to the document	Provider
			BCA-305MS1-16 - Formulario 08.001 - 04-2022.xlsx	
			BCA-305MS1-16 - Formulario 08.001 - 05-2022.xlsx	
			BCA-305MS1-16 - Formulario 08.001 - 06-2022.xlsx	
			BCA-305MS1-16 - Formulario 08.001 - 07-2022.xlsx	
			BCA-305MS1-16 - Formulario 08.001 - 08-2022.xlsx	
			BCA-305MS1-16 - Formulario 08.001 - 09-2022.xlsx	
			BCA-305MS1-16 - Formulario 08.001 - 10-2022.xlsx	
			BCA-305MS1-16 - Formulario 08.001 - 11-2022.xlsx	
			BCA-305MS1-16 - Formulario 08.001 - 12-2022.xlsx	
			305 - BCA-305MS1-16 - Formulario 08.001 - 01-2023.xlsx	
			BCA-305MS1-16 - Formulario 08.001 - 02-2023.xlsx	
			BCA-305MS1-16 - Formulario 08.001 - 03-2023.xlsx	
			BCA-305MS1-16 - Formulario 08.001 - 04-2023.xlsx	
			BCA-305MS1-16 - Formulario 08.001 - 05-2023.xlsx	
			BCA-305MS1-16 - Formulario 08.001 - 06-2023.xlsx	
			BCA-305MS1-16 - Formulario 08.001 - 07-2023.xlsx	

ID	Author	Title	References to the document	Provider
			<p>BCA-305MS1-16 - Formulario 08.001 - 08-2023.xlsx</p> <p>BCA-305MS1-16 - Formulario 08.001 - 09-2023.xlsx</p> <p>BCA-305MS1-16 - Formulario 08.001 - 10-2023.xlsx</p> <p>BCA-305MS1-16 - Formulario 08.001 - 11-2023.xlsx</p> <p>BCA-305MS1-16 - Formulario 08.001 - 12-2023.xlsx</p>	
21	UNFCCC	<p>CDM-EB67-A06-GUID</p> <p>Guideline for Sampling and Surveys for CDM Project Activities and Programmes of Activities. Version 04</p>	<p><a href="https://cdm.unfccc.int/Reference/Guidclarif/index.html">https://cdm.unfccc.int/Reference/Guidclarif/index.html</a></p>	UNFCCC website
22	BRASCARBON	<p>Formulated feed ration</p> <p>Animal finishing or fattening feed and CPX feed</p> <p>Operational Procedure: POP-14</p>	<p>01 24 - Formulacao Racao COOASGO 1.pdf (finishing)</p> <p>01 24 - Formulacao Racao COOASGO.pdf</p> <p>POP 14 - FORMULAÇÃO DE RAÇÃO_v4.pdf</p>	<p>Others</p> <p>Project Participant</p>
23	BRASCARBON	Installation records	<p>BCA-300MS1-16 - Instalacao Termopar e Medidor de vazao.pdf</p> <p>BCA-301MS1-16 - Instalacao Termopar e Medidor de vazao.pdf</p> <p>BCA-302MS1-16 - Instalacao Termopar e Medidor de vazao.pdf</p>	Project Participant

ID	Author	Title	References to the document	Provider
			<p>BCA-303MS1-16 - Instalacao Termopar e Medidor de vazao.pdf</p> <p>BCA-304MS1-16 - Instalacao Termopar e Medidor de vazao.pdf</p> <p>BCA-305MS1-16 - Instalacao Termopar e Medidor de vazao.pdf</p> <p>BCA-306MS1-16 - Instalacao Termopar e Medidor de vazao.pdf</p> <p>BCA-307MS1-16 - Instalacao Termopar e Medidor de vazao.pdf</p> <p>BCA-308MS1-16 - Instalacao Termopar e Medidor de vazao.pdf</p> <p>PDD 16 - Instalacao Termopar 2021 - 2022.pdf</p> <p>PDD 16 - Instalacao Termopar 2022 - 2023 FL 1.pdf</p> <p>PDD 16 - Instalacao Termopar 2023 - 2024 FL 1.pdf</p> <p>PDD 16 - Instalacao Termopar 2023 - 2024 FL 2.pdf</p> <p>PDD 16 - Instalacao Termopar 2022 - 2023 FL 2.pdf</p> <p>PDD 16 - Medidor de Vazao 2023 - 2024 FL 1.pdf</p> <p>PDD 16 - Medidor de Vazao 2023 - 2024 FL 2.pdf</p>	
24	BRASCARBON	POP Operational Procedure-15	POP 15 – MONITORAMENTO DA GENÉTICA_v3.pdf	Project Participant
25	COOASGO (Cooperativa Agropecuária)	Purchase record provided by PP and Declarations	<p>01 24 - Declaracao Processo Genetica.pdf</p> <p>01 24 - Declaracao Processo Peso.pdf</p>	Others

ID	Author	Title	References to the document	Provider
	São Gabriel do Oeste),		01 24 - Última Compra Matriz Genética.pdf	
26	ALUTAL / LAURY FRAN	<p>Installation and calibration Thermocouple and Thermopar</p> <p>Calibration records of the thermocouples (installation records)</p> <p>PDD 16 – Medidor de Temperatura 2021 – 2022</p>	<p><b>2021-2022:</b></p> <p>BCA-300MS1-16 - Medidor de Temperatura Serie 320330 e Certificado CA-6912-21.pdf</p> <p>BCA-301MS1-16 - Medidor de Temperatura Serie 320331 e Certificado CA-6913-21.pdf</p> <p>BCA-302MS1-16 - Medidor de Temperatura Serie 320332 e Certificado CA-6914-21.pdf</p> <p>BCA-303MS1-16 - Medidor de Temperatura Serie 320333 e Certificado CA-6915-21.pdf</p> <p>BCA-304MS1-16 - Medidor de Temperatura Serie 320334 e Certificado CA-6916-21.pdf</p> <p>BCA-305MS1-16 - Medidor de Temperatura Serie 320335 e Certificado CA-6917-21.pdf</p> <p>BCA-306MS1-16 - Medidor de Temperatura Serie 320336 e Certificado CA-6918-21.pdf</p> <p>BCA-307MS1-16 - Medidor de Temperatura Serie 320337 e Certificado CA-6919-21.pdf</p> <p>BCA-308MS1-16 - Medidor de Temperatura Serie 320338 e Certificado CA-6920-21.pdf</p> <p><b>2022-2023:</b></p>	Others

ID	Author	Title	References to the document	Provider
			<p>BCA-300MS1-16 - Medidor de Temperatura Serie 83892 e Certificado CA 1684 22.pdf</p> <p>BCA-301MS1-16 - Medidor de Temperatura Serie 83893 e Certificado CA 1686 22.pdf</p> <p>BCA-302MS1-16 - Medidor de Temperatura Serie 83857 e Certificado CA 1692 22.pdf</p> <p>BCA-303MS1-16 - Medidor de Temperatura Serie 83858 e Certificado CA 1693 22.pdf</p> <p>BCA-304MS1-16 - Medidor de Temperatura Serie 83859 e Certificado CA 1694 22.pdf</p> <p>BCA-305MS1-16 - Medidor de Temperatura Serie 83860 e Certificado CA 1695 22.pdf</p> <p>BCA-306MS1-16 - Medidor de Temperatura Serie 83897 e Certificado CA 1697 22.pdf</p> <p>BCA-307MS1-16 - Medidor de Temperatura Serie 83906 e Certificado CA 1698 22.pdf</p> <p>BCA-308MS1-16 - Medidor de Temperatura Serie 83909 e Certificado CA 1700 22.pdf</p> <p><b>2023 - 2024:</b></p> <p>BCA-300MS1-16 - Medidor de Temperatura Serie 455088 e Certificado CA 0613 23.pdf</p> <p>BCA-301MS1-16 - Medidor de Temperatura Serie 455089 e Certificado CA 0614 23.pdf</p> <p>BCA-302MS1-16 - Medidor de Temperatura Serie 455090 e Certificado CA 0615 23.pdf</p> <p>BCA-303MS1-16 - Medidor de Temperatura Serie 455092 e Certificado CA 0616 23.pdf</p>	
		<p>PD 16 - Medidor de Temperatura 2022 - 2023</p>		

ID	Author	Title	References to the document	Provider
		PD 16 – Medidor de Temperatura 2023 – 2024	BCA-304MS1-16 - Medidor de Temperatura Serie 455094 e Certificado CA 0617 23.pdf BCA-305MS1-16 - Medidor de Temperatura Serie 455095 e Certificado CA 0618 23.pdf BCA-306MS1-16 - Medidor de Temperatura Serie 455096 e Certificado CA 0619 23.pdf BCA-307MS1-16 - Medidor de Temperatura Serie 455097 e Certificado CA 0620 23.pdf BCA-308MS1-16 - Medidor de Temperatura Serie 455098 e Certificado CA 0621 23.pdf	
27	Endress+Houser	Declaration: thermal flow meter calibration  Calibration records of the Flow Meter  Formulário Instalação e Calibração  PDD 16 - Medidor de Vazão 2021 2023	Declaracao Medidores Vazao.pdf  BCA-300MS1-16 - Certificado Medidor de Vazão Endress Houser.pdf  BCA-301MS1-16 - Certificado Medidor de Vazão Endress Houser.pdf  BCA-302MS1-16 - Certificado Medidor de Vazão Endress Houser.pdf  BCA-303MS1-16 - Certificado Medidor de Vazão Endress Houser.pdf  BCA-304MS1-16 - Certificado Medidor de Vazão endress Houser.pdf  BCA-305MS1-16 - Certificado Medidor de Vazão Endress Houser.pdf  BCA-306MS1-16 - Certificado Medidor de Vazão Endress Houser.pdf  BCA-307MS1-16 - Certificado Medidor de Vazão Endress Houser.pdf	Others

ID	Author	Title	References to the document	Provider
		PDD 16 - Medidor de Vazao 2023 2025	BCA-308MS1-16 - Certificado Medidor de Vazao Endress Houser.pdf BCA-300MS1-16 - Certificado Medidor de Vazao Endress Houser.pdf BCA-301MS1-16 - Certificado Medidor de Vazao Endress Houser.pdf BCA-302MS1-16 - Certificado Medidor de Vazao Endress Houser.pdf BCA-303MS1-16 - Certificado Medidor de Vazao Endress Houser.pdf BCA-304MS1-16 - Certificado Medidor de Vazao endress Houser.pdf BCA-305MS1-16 - Certificado Medidor de Vazao Endress Houser.pdf BCA-306MS1-16 - Certificado Medidor de Vazao Endress Houser.pdf BCA-307MS1-16 - Certificado Medidor de Vazao Endress Houser.pdf BCA-308MS1-16 - Certificado Medidor de Vazao Endress Houser.pdf	
28	LANDTEC	Calibration records of the gas Analyzer	03 - BM11043_28122021.pdf 04 - BM11043-25062022.pdf 05 - BM11043-19122022.pdf 06 - BM11043-15062023.pdf 07 - BM11043-13122023.pdf	Others
29	BRASCARBON	Training records referring training for calibration and installation of the flow meter, issued by Endress+Hauser	Certificado Treinamento Brascarbon.pdf	Project Participant

ID	Author	Title	References to the document	Provider
		Controle e Automação LTDA.		
30	BRASCARBON	POP 16 – Animal Weight Monitoring.	POP 16 – PESO MÉDIO DOS ANIMAIS EM CONFINAMENTO_v3.pdf	Project Participant
31	BRASCARBON	POP 07- Operational Procedure 07	POP 7 – CALCULO DA DENSIDADE O METANO_v8.pdf	Project Participant
32	BRASCARBON	POP 12- Maintenance Form 12.001 – MANUTENÇÃO PREVENTIVA DA LOCALIDADE – VERIFICAÇÕES MENSAIS	POP 12 – MANUTENÇÃO GERAL_v4.pdf	Project Participant
33	BRASCARBON	Operational Procedure 09	POP 9 – REMOÇÃO DO LODO DO BIODIGESTOR_v5.pdf	Project Participant
34	BRASCARBON	Operational Procedure 13	POP 13 – OBTENÇÃO DA PRESSÃO DO BIOGÁS_v6.pdf	Project Participant
35	BRASCARBON	Operational Procedure 22	POP 22 – CONSUMO DE ENERGIA ELÉTRICA.pdf	Project Participant
36	BRASCARBON	Operational Procedure 5	POP 5 – MEDIÇÃO DA FRAÇÃO DE METANO_v7.pdf	Project Participant
37	BRASCARBON	Operational Procedure 6	POP 6 – OBTENÇÃO DA TEMPERATURA DO BIOGÁS_v6.pdf	Project Participant
38	BRASCARBON	Operational Procedure 8	POP 8 – CALCULO DA EFICIENCIA DO FLARE_v8.pdf	Project Participant
39	BRASCARBON	Operational Procedure 9	POP 9 – REMOÇÃO DO LODO DO BIODIGESTOR_v5.pdf	Project Participant
40	BRASCARBON	Operational Procedure 10	POP 10 – REDUÇÕES DAS EMISSÕES_v5.pdf	Project Participant

ID	Author	Title	References to the document	Provider
41	BRASCARBON	Operational Procedure 11	POP 11 – TREINAMENTO GERAL DAS OPERAÇÕES_v4.pdf	Project Participant
42	BRASCARBON	Operational Procedure 17	POP 17 – REDUÇÕES DAS EMISSÕES EXPOST_v6.pdf	Project Participant
43	BRASCARBON	Operational Procedure 24	POP 24 – DIAS FUNCIONAMENTO_v2.pdf	Project Participant
44	BRASCARBON  Project site Owners / State of Mato Grosso do Sul state, Brazil.	Operation Licenses of the project sites	1 - BCA-300MS1-16 - Fazenda Paraiso do Alto - L. O..pdf 1 - BCA-301MS1-16 - LO - Fazenda Sao Sebastiao Gleba 6.pdf 1 - BCA-303MS1-16 - Lote 28 - PA - Assentamento Campanario - LO.pdf 1 - BCA-305MS1-16 - LO.pdf 1 - BCA-307MS1-16 - Assentamento Campanario - LO.pdf 1 - BCA-308MS1-16 - LO.pdf 2 - BCA-300MS1-16 - Fazenda Paraiso do Alto - Protocolo Renovacao.pdf 2 - BCA-301MS1-16 - Protocolo - Fazenda Sao sebastiao Gleba 6.pdf 2 - BCA-302MS1-16 - Granja Serra Dourada I - LO.pdf 2 - BCA-303MS1-16 - Protocolo Renovacao.pdf 2 - BCA-304MS1-16 - Assentamento Campanario - Lote 55 - LO.pdf 2 - BCA-305MS1-16 - Protocolo Renovacao.pdf 2 - BCA-306MS1-16 - Granja Grand - LO.pdf	Others/ Project Participant -PP

ID	Author	Title	References to the document	Provider
			2 - BCA-308MS1-16 - Protocolo Renovacao.pdf	
45	Intergovernmental Panel on Climate Change	IPCC Guidelines	<p>2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book</p> <p>2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories</p> <p>19R_V4_Ch10_Livestock.pdf</p>	<p><a href="https://www.ipcc.ch">https://www.ipcc.ch</a></p> <p><a href="https://www.ipcc-nggip.iges.or.jp">https://www.ipcc-nggip.iges.or.jp</a></p> <p><a href="https://www.ipcc-nggip.iges.or.jp/public/2019rf/index.html">https://www.ipcc-nggip.iges.or.jp/public/2019rf/index.html</a></p> <p><a href="https://www.ipcc-nggip.iges.or.jp/public/2019rf/pdf/4_Volume4/19R_V4_Ch10_Livestock.pdf">https://www.ipcc-nggip.iges.or.jp/public/2019rf/pdf/4_Volume4/19R_V4_Ch10_Livestock.pdf</a></p>
46	Remote inspection	Photographs of Project Site provided by the Project Proponent 2024 vs. Photographs taken on site at each Project Site in 2022	<p>Photographs of this per site(9), all the monitoring devices and main equipment, farms, documents and forms</p> <p>Photographic records of:</p> <ul style="list-style-type: none"> <li>- GPS -- Coordinates - altitude</li> <li>- Pig production buildings</li> <li>- State of the biodigester</li> <li>- Oxidation lagoons</li> <li>- Burner and torch in operation</li> <li>- Thermocouple in operation</li> <li>-Physical execution -Ultraviolet flame detectors and solar panel</li> </ul>	<p>PP</p> <p>Audit Team</p>

ID	Author	Title	References to the document	Provider
			<ul style="list-style-type: none"> <li>- Alutal recording equipment</li> <li>- Flow meter</li> <li>- piping</li> <li>- installations included</li> <li>- analyzer in implementation</li> <li>- Monitoring (form 04.001 filled out according to POP 04)</li> <li>- Monitoring records by the technician.</li> <li>- Visual observation of the general condition of the area, cleanliness, ease of access.</li> <li>-Physical separation of the methane capture and flaring area.</li> <li>-Signage - identification of the site</li> </ul>	
47	BRASCARBON	Photographs of Project Site	Photographic records taken by the PP PDD 16 - BCA301MS1-16 PDD 16 - BCA302MS1-16 PDD 16 - BCA303MS1-16 PDD 16 -BCA305MS1-16 PDD 16-BCA304MS1-16 PDD 16-BCA306MS1-16 PDD 16-BCA307MS1-16 PDD 16-BCA308MS1-16 RPDD 17- BCA315MS1-16	PP
48	The Sustainable Development Goals (SDGs)	The Sustainable Development Goals (SDGs) are a set of 17 interconnected	<a href="https://www.un.org/sustainabledevelopment/">https://www.un.org/sustainabledevelopment/</a> <a href="https://www.un.org/sustainabledevelopment/">https://www.un.org/sustainabledevelopment/</a>	ICONTEC

ID	Author	Title	References to the document	Provider
		<p>objectives established by the United Nations in 2015 as part of the 2030 Agenda for Sustainable Development. The SDGs serve as a global platform for action in key areas of sustainable development, and their implementation requires the commitment and collaboration of all societal actors, both at the national and international levels.</p> <p>SDGs, Brazil</p>	<p><a href="https://observatorioplanificacion.cepal.org/es/modalidades/estrategia-ods-de-brasil">https://observatorioplanificacion.cepal.org/es/modalidades/estrategia-ods-de-brasil</a></p> <p>Pagina <a href="https://brasil.un.org/pt-br/sdgs">https://brasil.un.org/pt-br/sdgs</a></p> <p><a href="https://brasil.un.org/pt-br/sdgs/13">https://brasil.un.org/pt-br/sdgs/13</a></p> <p><a href="https://www.un.org/sustainabledevelopment/es/sustainable-development-goals/">https://www.un.org/sustainabledevelopment/es/sustainable-development-goals/</a></p> <p><a href="https://www.gov.br/mre/es/temas/desarollo-sostenible-y-medio-ambiente/medio-ambiente-y-cambio-climatico/cambio-climatico">https://www.gov.br/mre/es/temas/desarollo-sostenible-y-medio-ambiente/medio-ambiente-y-cambio-climatico/cambio-climatico</a></p>	
49	BRASCARBON	Communication' s –Stakeholders	<p>1 - Envio Convite Secretaria Agricultura Ban<sup>ª</sup>e –rantes.pdf</p> <p>1A - Confirmação Recebimento Convite Secretaria Agricultura Band –irantes.pdf</p> <p>2 - Envi<sup>a</sup> –onvite.pdf</p> <p>2A - Confirmação Rec –bimento.pdf</p> <p>3 - Envio Convite Ambi<sup>a</sup>n –al SGO.pdf</p> <p>3A - Confirmação recebimento Ambie –tal SGO.pdf</p> <p>4 - Envio Convite Sindic<sup>a</sup>t – Rural.pdf</p>	PP

ID	Author	Title	References to the document	Provider
			<p>4A - Confirmação Recebimento convite sindi-o rural.pdf</p> <p>5 - Envio Convite Camara Municipal ai-Verde.pdf</p> <p>5A - Confirmação recebimento Camara municipal-o verde.pdf</p> <p>6 - Envio Convite Camara muai-al SGO.pdf</p> <p>6A - Confirmação de Recebimento convite camara mun-pal SGO.pdf</p> <p>7 - Envio Convite Impae-sa SGO.pdf</p> <p>7A - Confirmação Recebimento Convite Imprensa SGO.pdf</p>	
50	BRASCARBON	Farm owner contracts	<p>-CA 300 MS1 16 - Contrato de CERs.pdf</p> <p>-CA 300 MS1 16 - Contrato de Comodato.pdf</p> <p>-CA 301 MS1 16 - Contrato de CERs.pdf</p> <p>-CA 301 MS1 16 - Contrato de Comodato.pdf</p> <p>-CA 302 MS1 16 - Contrato de CERs.pdf</p> <p>-CA 302 MS1 16 - Contrato de Comodato.pdf</p> <p>-CA 303 MS1 16 - Contrato de CERs.pdf</p> <p>-CA 303 MS1 16 - Contrato de Comodato.pdf</p> <p>-CA 304 MS1 16 - Contrato de CERs.pdf</p> <p>-CA 304 MS1 16 - Contrato de Comodato.pdf</p> <p>-CA 305 MS1 16 - Contrato de CERs.pdf</p>	

ID	Author	Title	References to the document	Provider
			<p>-CA 305 MS1 16 - Contrato de Comodato.pdf</p> <p>-CA 306 MS1 16 - Contrato de CERs.pdf</p> <p>-CA 306 MS1 16 - Contrato de Comodato.pdf</p> <p>-CA 307 MS1 16 - Contrato de CERs.pdf</p> <p>-CA 307 MS1 16 - Contrato de Comodato.pdf</p> <p>-CA 308 MS1 16 - Contrato de CERs.pdf</p> <p>-CA 308 MS1 16 - Contrato de Comodato.pdf</p>	
51	VCS	VCS	<a href="https://verra.org/project/vcs-program/">https://verra.org/project/vcs-program/</a>	Website
52	UNFCCC	UNFCCC	<a href="https://cdm.unfccc.int">https://cdm.unfccc.int</a>	Website
53	VCS	VVR – Validation and Verification Report  Validation first credit period  Verification first monitoring period	VCS-Joint-Validation-Verification_v.3_BRA 16_27.02.2023_clean.pdf	ICONTEC  PP
54	BRASCARBON	BRASCARBON	RESOLUÇÃO-SEMADE-N.-09-2015-alt-2020.pdf	PP
55	IMASUL	MS oficializa Plano Estado Carbono Neutro em 2030 e vai para COP 26 com metas ousadas	<a href="https://www.imasul.ms.gov.br/ms-oficializa-plano-estado-carbono-neutro-em-2030-e-vai-para-cop-26-com-metas-ousadas/">https://www.imasul.ms.gov.br/ms-oficializa-plano-estado-carbono-neutro-em-2030-e-vai-para-cop-26-com-metas-ousadas/</a>	ICONTEC

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

**Table 1. CL from this verification**

<b>CL ID</b>	01	<b>Section no.</b>	Standard VCS v.4.5 - section 3.5 Project Documentation	<b>Date:</b> 14/03/2024
<b>Description of CL</b>				
VCS Monitoring Report Template, v4.3, in section 1.2, 1.6,1.7:				
Verra requests that the PP must present the project's historical information and its monitoring periods; however, it also identifies that the project has a validation period that should be included, and greater precision regarding the year, which in practice does not have an exact value. Please review and analyze if greater precision in the information to be provided in the report is necessary.				
<b>Project participant response</b>				<b>Date:</b> 26/03/2024
The revised VCS MR Project ID 2998 01022022-31122023_v2 was dully corrected to accommodate the corrections requested.				
<b>Documentation provided by project participant</b>				
VCS MR Project 16v.2 / document				
<b>VVB assessment</b>				<b>Date:</b> 04/04/2024
The MR is checked, ICONTEC confirmed that the clarification has been corrected, CL 01 is closed.				

<b>CL ID</b>	02	<b>Section no.</b>	Standard VCS v.4.5 - section 3.5 Project Documentation - and sections 2.3.3	<b>Date:</b> 14/03/2024
<b>Description of CL</b>				
<p>VCS Monitoring Report Template, v4.3, in sections: 1.3.,1.5,1.13, 2.1,2.3.4,2.3.5, 2.5.1(2.4.1),2.5.2 (2.4.2), 3.2 ,3.4</p> <p>General instructions of the monitoring report template state that no item should be deleted, and in case it does not apply, the reason why it does not apply should be explained:  <b>GENERAL INSTRUCTIONS:</b>          "...Note: .... Where a section is not applicable, explain why the section is not applicable (i.e., do not delete the section from the final document and do not only write "not applicable")."</p> <p>The PP must then explain in sections, which aspect does not apply and the reasons why it does not apply.</p>				
<b>Project participant response</b>				<b>Date:</b> 26/03/2024
<p>The revised VCS MR Project ID 2998 01022022-31122023_v2 was dully corrected to accommodate the corrections requested.</p>				
<b>Documentation provided by project participant</b>				
<p>VCS MR Project 16v.2 / document</p>				
<b>VVB assessment</b>				<b>Date:</b> 04/04/2024
<p>The MR is checked, ICONTEC confirmed that the clarification has been corrected</p> <p>CL 2 is closed</p>				

<b>CL ID</b>	03	<b>Section no.</b>	Standard VCS v.4.5 - sections General requirements 3.1 - Project Documentation - 3.17 Sustainable Development Contributions 3.5.5 Monitoring Report	<b>Date:</b> 15/03/2024
<b>Description of CL</b>				
Standard VCSv.4.5, 3.17, 3.5.5 - VCS Monitoring Report Template, v4.3 / 1.12 Sustainable Development Contributions				
<p>In the monitoring report section 1.12. Sustainable Development Contributions, according to the standard and the monitoring report template, it is indicated that the Sustainable Development contribution should be explained. It requests a brief explanation of the project's contribution to sustainable development and the development of a table detailing the SDG objectives applicable to the project implementation: see the section in the template and review and incorporate related content SDGs: Sustainable Development Goals.</p>				
<b>Project participant response</b>				<b>Date:</b> 26/03/2024
<p>The project does not have, at the time, the measurement of the SDGs in order to complete the mentioned table. Since the section referred is not mandatory, as attested by the registered PD as well as the first MR, it was removed, similarly to what the PP did in the registered PD.</p>				
<b>Documentation provided by project participant</b>				
VCS MR Project 16v.2 / document				
<b>VVB assessment</b>				<b>Date:</b> 05/04/2024
<p>The theme relates to the voluntary declaration of SDGs in a CDM project under a Verra standard and a United Nations methodology: The PP, in its response, explains the reason why it does not consider documenting the project's total contributions in its case because the standard section precisely mentions that information related to voluntary actions implemented throughout the project's life in relation to the Sustainable Development Goals should be reported, and it is true that the PD does not refer to these aspects in the table; however, Brascarbon, adds aspects related to the fulfillment of the objectives in each of the items, providing a general response to the standard's requirement.</p> <p>The CL is closed.</p>				

<b>CL ID</b>	04	<b>Section no.</b>	Standard VCS v.4.5 Project Documentation - 3.5.5 Monitoring Report	<b>Date:</b> 15/03/2024
<b>Description of CL</b>				
Standard VCSv.4.5, section 2.4 in the following sections				
<p>The monitoring report of the PP must correct and adjust, in accordance with template v.4.3, the sequence of the document, its numbering, tables, and aspects considered by the template that must be maintained and clearly identified; this includes updating the table of contents once the entire document has been adjusted. For example, the section on Ecosystem Health is 2.4, not 2.5.</p> <p>Please provide clarification.</p>				
<b>Project participant response</b>				<b>Date:</b> 26/03/2024
The revised VCS MR Project ID 2998 01022022-31122023_v2 was dully corrected to accommodate the corrections requested.				
<b>Documentation provided by project participant</b>				
VCS MR Project 16v.2 / document				
<b>VVB assessment</b>				<b>Date:</b> 05/04/2022
<p>The tables and sections were updated and corrected, in the document. The finding is closed.</p> <p>CL 04 is closed</p>				

<b>CL ID</b>	05	<b>Section no.</b>	Standard VCS v.4.5 Project Documentation 3.16 Monitoring	<b>Date:</b> 18/03/2024
<b>Description of CL</b>				
<p>VCS Monitoring Report Template, v4.3, Monitoring Plan.</p> <p>Although in this item of the Monitoring Plan, Brascarbon has taken into account the conditions that arise in practice and has explained what the Monitoring Plan entails, the template of this monitoring report mentions that it should include, among other aspects:</p> <p>The methods used for measuring, recording, storing, aggregating, collating, and reporting on monitored data and parameters. Where relevant, include the processes used for calibrating monitoring equipment. In this sense, the POPs (OPERATIONAL PROCEDURES FOR MDL PROJECTS - SWINE FARMING) must be updated and adjusted as necessary, allowing compliance with the level of application of basic procedures for fieldwork and for obtaining the required information for analysis and practical usability, while also being sufficient for the information required and the general implementation of the project.</p> <p>Please provide clarification.</p>				
<b>Project participant response</b>				<b>Date:</b> 26/03/2024
The POP was dully updated and sent to the VVB as attachment to the current findings.				
<b>Documentation provided by project participant</b>				
The POPs updated				
<b>VVB assessment</b>				<b>Date:</b> 05/04/2024
<p>The POPs were checked, and ICONTEC confirmed that they were properly updated by the PP. The clarification has been corrected.</p> <p>CL 05 is closed.</p>				

<b>CL ID</b>	06	<b>Section no.</b>	Standard VCS sections 1.1 Version, Project Documentation 3.15 Quantification of GHG Emission Reductions and Carbon Dioxide Removals	<b>Date:</b> 19/03/2024
<b>Description of CL</b>				
VCS MR Project ID 2998 011022022-3112203				
The PP include in the MR to the reference IPCC should it changed and to include the 2019 refinement to 2006 IPCC. Please to adjust through the report.				
<b>Project participant response</b>				<b>Date:</b> 26/04/2024
The revised VCS MR Project ID 2998 01022022-31122023_v2 was dully corrected to accommodate the corrections requested.				
<b>Documentation provided by project participant</b>				
VCS MR Project 16v.2 / document				
<b>VVB assessment</b>				<b>Date:</b> 04/04/2024
The MR is checked, ICONTEC confirmed that the table has been corrected, CL 06 is closed.				

**Table 1. CAR from this verification**

<b>CAR ID</b>	01	<b>Section no.</b>	Standard VCS updated	<b>Date:</b> 15/03/2024
<b>Description of CL</b>				
<p>Verra has released updates for the Verified Carbon Standard (VCS) Program. The changes in version 4.5 of the VCS Standard (PDF) and the updated versions of the documents associated with the VCS Program, as indicated by VERRA, are expected to enhance the program's usability, transparency, and integrity, and align it with major global carbon market initiatives. The update to its VCS standard was in August 2023. Regarding effective dates, it explains that "Effective immediately" means the update applies to all project requests submitted on or after the release date (August 29, 2023). "All project requests" refer to any project request submitted to the Verra Registry, such as project listing requests (under development or validation), project registration requests, and verification approval requests. For updates that are not effective immediately, project proponents may comply with the updated requirements before the effective date. If project proponents choose to make such updates before the effective dates, the validation/verification body must validate or verify the project according to the updated requirements. Therefore, Icontec kindly requests Brascarbon to make the change in the reference to the standard version and adjust the information in accordance with version 4.5 throughout the entire monitoring report document. See: <a href="https://verra.org/verra-releases-version-4-5-of-the-vcs-standard/">https://verra.org/verra-releases-version-4-5-of-the-vcs-standard/</a> and <a href="https://verra.org/wp-content/uploads/2023/09/August-2023-VCS-Program-Updates-General-Overview-Webinar-Slides.pdf">https://verra.org/wp-content/uploads/2023/09/August-2023-VCS-Program-Updates-General-Overview-Webinar-Slides.pdf</a></p>				
<b>Project participant response</b>				<b>Date:</b> 26/03/2024
The revised VCS MR Project ID 2998 01022022-31122023_v2 was dully corrected to accommodate the corrections requested.				
<b>Documentation provided by project participant</b>				
VCS MR Project 16v.2 / document				
<b>VVB assessment</b>				<b>Date:</b> 05/04/2024
<p>The PMR is checked, ICONTEC confirmed that the CAR has been corrected, the project proponent estimates 55,356 tCO<sub>2e</sub> / year and 382,487 tCO<sub>2e</sub>.</p> <p>CAR 01 is closed.</p>				

<b>CAR ID</b>	02	<b>Section no.</b>	Standard VCS Project Documentation 3.16 Monitoring	<b>Date:</b> 18/03/2024
<b>Description of CL</b>				
<p>VCS Monitoring Report Template, v4.3 vs. Section 4.2 Data and Parameters Monitored / Section 4.3 Monitoring Plan:</p> <p>In the monitored data and parameters, it is noted that the monitoring report format requests more items to be analyzed than those provided by the PP; for example, for the parameter Tf (combustion temperature of the flare), the PP includes in the data analysis: Data Parameter - Data unit - Description - Value applied - Monitoring equipment and comments. However, the VCS monitoring report template requests the completion of the following data per parameter: Data Parameter - Data unit - Description - Source of data - Description of measurement methods and procedures to be applied - Frequency of monitoring/recording - Value monitored - Monitoring equipment - QA/QC procedures to be applied - Purpose of the data - Calculation method and comments. ICONTEC kindly to Brascarbon, requests a review of the template and the completion and complementation of each parameter with the corresponding items or data, as indicated in the VCS template for the monitoring report, and review table 5. Monitoring Plan.</p>				
<b>Project participant response</b>				<b>Date:</b> 26/03/2024
<p>The revised VCS MR Project ID 2998 01022022-31122023_v2 was dully corrected to accommodate the corrections requested.</p>				
<b>Documentation provided by project participant</b>				
<p>VCS MR Project 16v.2 / document</p>				
<b>VVB assessment</b>				<b>Date:</b> 05/04/2024
<p>The PD-MR is checked, ICONTEC confirmed that the CAR has been corrected.</p> <p>CAR 02 is closed.</p>				

<b>CAR ID</b>	03	<b>Section no.</b>	Standard VCS Project Documentation 3.15	<b>Date:</b> 19/03/2024
<b>Description of CL</b>				

<p>VCS MR Project ID 2998 011022022-3112203 /CER calculation: Section 5. Baseline Emissions Quantification of GHG Emission Reductions and - section 5 / CER:</p> <p>The PP must review both the CER calculation and confirm in the Monitoring Report everything related to the recorded implementation time for the monitoring period to be declared. Please confirm:</p> <p>i) the total number of days for the quantification monitoring period, whether it is 699 days or 698 days from 1/02/2022 to 31/12/2023.</p> <p>ii) the spreadsheet of BEy ex-post – Pey ex-post: In the CER Calculation, the parameter Ndy does not correspond to the number of days per month. Please provide clarification and make the necessary adjustments in the CER and MR as required, including emission reduction calculations.</p>	
<b>Project participant response</b>	<b>Date:</b> 26/03/2024
<p>The total number of days of the current monitoring period is 699. The CER Calculation MR02 - BCA-BRA-16_v2 was dully revised to correct the number of days wrongly accounted. That meant a change in the overall emission reductions so the VCS MR Project ID 2998 01022022-31122023_v2 was also corrected.</p>	
<b>Documentation provided by project participant</b>	
<p>VCS MR Project 16v.2/ document, and CERv.2/files</p>	
<b>WVB assessment</b>	<b>Date:</b> 04/04/2024
<p>The MR and CER were checked, ICONTEC confirmed that the CAR has been corrected.</p> <p>CAR 03 is closed.</p>	

**Table 3.FAR from this verification**

<b>FAR ID</b>	N/A	<b>Section no.</b>		<b>Date:</b>
<b>Description of FAR</b>				
<b>Project participant response</b>				<b>Date:</b>
<b>Documentation provided by project participant</b>				
<b>WVB assessment</b>				<b>Date:</b>

# APPENDIX 5: DATA AND PARAMETERS

## 1. DATA AND PARAMETERS AVAILABLE AT VALIDATION<sup>6</sup>

Parameter	Description	Value	Source
VS <sub>default</sub>	Default value for the volatile solid excretion rate per day on a dry-matter basis for a defined livestock population	Market Swine: 0.3 Breeding Swine: 0.46 Gilts: 0.46	2019 Refinement to the IPCC 2006, vol 4, chapter 10, Tables 10A-7 – <a href="http://www.abcs.org.br/43">http://www.abcs.org.br/43</a>
MC <sub>Fj</sub>	Annual methane conversion factor for the baseline animal waste management system “j”.	79%	2019 Refinement to the IPCC 2006, vol. 4, chapter 10, Tables 10.17.
MS <sub>%BI,j</sub>	Fraction of manure handled in baseline animal manure management system “j”.	1	PP
GWP <sub>CH4</sub>	Global warming potential of Methane (CH <sub>4</sub> ) – tCO <sub>2</sub> e/tCH <sub>4</sub>	28	The value has been verified by checking IPCC Fifth Assessment Report (AR5)/34/ against the VCS standard version 4.4/41/.
B <sub>0,LT</sub>	Maximum methane producing potential of the volatile solid generated for animal type “LT”.	Sows (breeding swine more than 200 kg mass): 0.45 Finishers (market swine more than 50 kg mass): 0.45 Nursery: 0.45	2019 Refinement to the IPCC 2006, Tables 10-A7 and 10-A8.

<sup>6</sup> Validation and Verification Report v.3 /53 /Section 3.4.8. item,1

Parameter	Description	Value	Source
$W_{\text{default}}$	Default average animal weight of a defined population at the project site.	Boars and Gilts (market swine more than 100 kg mass): 0.45 Sows (breeding swine): 198 kg Finishers (market swine): 50 kg Nursery (market swine): 50 kg Boars (market swine): 50 kg Gilts (breeding swine): 198 kg	2019 Refinement to the IPCC 2006, Tables 10-A.5
$UF_b$	Model correction factor to account for model uncertainties	0.94	FCCC/SBSTA/2003/10/Add.2, page 25. Available on the website: <a href="http://unfccc.int/resource/docs/2003/sbsta/10a02.pdf">http://unfccc.int/resource/docs/2003/sbsta/10a02.pdf</a>
$SPEC_{\text{flare}}$	Manufacturer's flare specifications for temperature, flow rate and maintenance schedule	The flare optimal conditions are, according the manufacturers specifications: Flow: between + 40% of the estimated flow (in m <sup>3</sup> /h) for any giving farm; Temperature: between 500oC and 800oC Maintenance: Annually, recommended by the manufacturer. The PP preforms monthly maintenance, both preventive and	Flare manufacturer

Parameter	Description	Value	Source
		corrective, needed.	if

## 2.DATA AND PARAMETERS MONITORED<sup>7</sup>

1. Parameter:	T <sub>f</sub>
Description:	Combustion temperature of the flare (enclosed flares)
Value:	In the spreadsheet calculation file version 2(CER Calculation MR02 - BCA-BRA-16_v.3/2/ on folder Mdy-Pepower,y,ex-post.
Used Equipment:	ALUTAL Standard Thermocouple, Accuracy Class; ± 1.5 °C or ± 0.25%. . Equipment of each project site is described in section C of the PD-MR/1/MR 2/2/
Source of Data and Frequency:	<p>Flare temperature is measured once per minute through thermocouples and recorded by the PLC system (Programmable Logic Control). On its turn, records are monthly collected by the Regional Technician through flash memory. Data collected is gathered monthly and kept on form: 01.001, also known as “Tabela de Dados” /15/. In addition, the QA/QC officer according to the internal procedure verifies Data collected.</p> <p>Every 1-minute measurement and registration by a Control Logic Program (CLP) According to the Monitoring Operational Procedure POP-01 /15</p>
Data Cross Checking:	<p>Historical data was available and was crosschecked by the audit team. The operational conditions of the monitoring equipment were assessed through interview to David Garcia CDM Manager, and it was verified procedure followed as well as the collect data collection and reporting.</p> <p>The audit team on -site take photographs and received current photographic records taken by the PP and taken, evidence related to equipment in operation, such as panoramic views and records of thermocouples at the project sites / 23/25/26/46.</p> <p>It was also verified collected temperature form 08-001 /20/data by considering methane content of biogas against form 01.001 /15/ as well as the emission reduction calculation file /2/.</p>

<sup>7</sup> Validation and Verification Report v.3 /53 /Section 3.4.8. item,2

Consistency Between the QA/QC defined in the Methodology:	It was verified PP fulfils the proposed QA/QC procedures on applicable methodology and presented PD-MR /1/. The records of temperature /16/ /18/ have been thoroughly examined in order to identify correctness when applying figures. The monitoring equipment operated in the range of the technical specifications defined by the manufacturer /10/, and therefore assuring the monitoring conditions in line with requirements set out on applicable methodology.
Consistency Between the QA/QC established by the Project Participants in the PD:	QA/QC procedures taken by the project activity are in line with the proposed procedures on PD-MR /1/ as well as applicable methodology /3/ /4/ /19/ 51.
Conclusion:	The overall conclusion on the matters of Parameter $T_f$ is that the parameter is properly applied according to the monitoring plan, the PD-MR/1/, MR/2/ and in accordance with the applied methodology. In addition, provided information (data and figures) is consistent with the primary and secondary information source used to verify the information as well as the information verified on-site.

<b>2.Parameter:</b>	$W_{site}$
Description:	Average animal weight of a defined livestock population at the project site
Value:	The values of $W_{site}$ can be found in the calculation file /2/ in the folder Bey ex-post – Pey ex-post, and PD-MR /1/, MR/2/.
Used Equipment:	Not Applicable
Source of Data and Frequency:	The data collection is carried out quarterly by each project site owner and is provided to PP in order to be incorporated in the GHG emission reductions calculations. The quarterly weight of the animals for each producer of the PD-MR is made following internal procedures of each farm and is not under the PP's control. Nevertheless the producers (project site owners), weight animals on a 100% basis since all animals arriving the farm are weighted in order to determine animal production variables, used for production purposes. More important, animals are weighted one again when sold, replaced or transferred. The animal weight data is collected on Brascarbon form 16.001 /30/ after a crosscheck by the PP, using the information collected on-site when each batch of animals leaves each farm; the template was designed to quarterly report animal weight per category (based on sampling following COOASGO (Cooperativa de São Gabriel do Oeste) and provided to the PP. COOASGO is the Pig Producers Association to whom the farms contained in the PD are associated. its main role is to act as a third party responsible for the assurance of all the logistics associated with the swine producers, providing the animal nutrition, genetics and all the overall animal weight.
Data Cross Checking:	Reported data was verified by comparing different figures of calculation file /2/ and raw data on form 16.001 /30/, finding no differences between figures.

	<ul style="list-style-type: none"> <li>• Pig standard weights, available on the website: <a href="https://www.embrapa.br/documents/1355242/0/Curso+Suinocultura+-+Apostila.pdf">https://www.embrapa.br/documents/1355242/0/Curso+Suinocultura+-+Apostila.pdf</a>. Source: EMBRAPA Empresa Brasileira de Pesquisa Agropecuária (as in English: Agricultural Research Brazilian Corporation) allowing a crosscheck of the values provided in the form 16.001, used for the monitoring and control of the parameter <math>W_{site}</math>,</li> <li>• Purchase records /28/ are provided as part of the support documents.</li> <li>• Livestock inventory – form 03.003/17 per site</li> </ul> <p>Through the above primary and secondary sources, PP and VVB confirm the consistency between the reported <math>W_{site}</math> values and the indirect information, in line with the methodological framework /3/. Therefore, values presented by the PP are crosschecked both with literature values (EMBRAPA) as well as the real swine production when each batch of each farm is sold assuring the required consistency.</p>
<p>Consistency Between the QA/QC defined in the Methodology:</p>	<p>Data collection and its subsequent use for calculations follows requirements set out on applicable methodology /3/.</p> <p>ICONTEC confirmed, based on interviews that the data collection is carried out quarterly per year by COOASGO (following the association’s internal procedures) to the PP are cross-checked against two different credible sources:</p> <ul style="list-style-type: none"> <li>- reference figures from EMBRAPA (an undisputed Brazilian Agricultural Research Corporation nationally recognized for the these scope) for each category; and</li> <li>- the figures provided by COOASGO when each of the swine batches exits each farm (each batch stays around 5 to 6 months per farm), as explained below. Here FAZENDAS provides with 100% of the animals weight (and number), allowing a full cross-check with the weight values provided and assuring all the information is accurate.</li> </ul> <p>It is important to highlight farm owners rely on the quality of the values measured weights since their sole professional occupation is the pig production and, therefore, it is within their best interests to have a correct and reliable way to assess the weighting of the animals based on their experience and internal procedures.</p>
<p>Consistency Between the QA/QC established by the Project Participants in the PD:</p>	<p>QA/QC is performed as described in the PD-MR; PP correctly measured the actual animal weight at the various project sites.</p>
<p>Conclusion:</p>	<p>PP correctly measured, reported and usage data for calculations on the matters of the parameter <math>W_{site}</math>. In addition QA/QC procedures follow applied methodology /3/ and provisions on PD-MR</p> <p>Monitoring of the parameter was monitored in accordance with the revised PD -MR and therefore, calculation method as well as frequency were pre-determined on revised monitoring plan and performed</p>

	<p>accordingly for the verification period. Data collection is carried out quarterly by each farm owner and provided to the PP.</p> <p>The business as usual practice of swine production is that each farm performs regular and periodical weighting activities in order to adjust animal nutrition, health issues and general growing conditions. Weight data is required swine operations such as the ones featured on the project sites. Farm owners rely on the quality of the values measured since their sole professional occupation is the pig production and it is within their best interests to have a correct and reliable way to assess the weight of the animals based on their experience and internal procedures.</p> <p>The audit team can confirm the consistency between the reported Wsite values and the indirect information, in line with the paragraph 36 (a) of the methodology AMS-III.D /3/. Therefore, values presented by the PP are crosschecked both with literature values (EMBRAPA) as well as the real swine production when each batch of each farm is sold assuring the required consistency of the methodology AMS-III.D Version 21.0.</p> <p>The audit team confirmed and verified that figures of parameter Wsite considered in the monitoring report are in line the reference figures, the exit values of each batch and that all values are within the admissible weight difference. Therefore, in conclusion, the parameter has been correctly assessed and was monitored in accordance with the revised monitoring plan available in the revised PD-MR /1/, MR/2/</p>
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<b>3.Parameter:</b>	<b>SITE INSPECTION</b>
Description:	Inspection on the site considering relevant regulation and the infra-structure of the site
Value:	<p>Annual follow-up of the documentation to check the expiration date, changes in the production lay-out and surroundings of the digester.</p> <p>Actions within the property and around the biodigesters should be taken both by the contractor and the client Brascarbon. Photos should be attached to the annual inspection report to prove that the system of wastewater management has not changed namely regarding the following items: pipes, gutters, roofs, fences, trees, control panel, flare, terminal boxes and general cleaning.</p> <p>Use of the annex attached at the operational procedure POP-02/16/44</p>

Used Equipment:	Not Applicable
Source of Data and Frequency:	According to the PD-MR/1/, MR/2/ the frequency of site visits is annually; The site inspection is monitored by the use of the form 02.001/14/. In addition, PP visits different project sites once a month in order to collect data and to identify operational conditions of the different project sites in accordance with the monitoring plan.
Data Cross Checking:	Information provided on Form 02.001 and POP 2 /16/ was crosschecked against information by visit on site, relevant sources verified since the archives presented by PP and telephonic interviews and videocall. The audit team received made a field visit on September 13 2022 and took a photographic record of the site of each of the farms, equipment, operating system, status of the biodigestor and records /46/ it also confirmed the georeferenced location of the sites / 36 /.
Consistency Between the QA/QC defined in the Methodology:	Site inspection is performed in the required frequency (according to applicable methodology /3/); furthermore, site inspection is done for each and every project site.
Consistency Between the QA/QC established by the Project Participants in the PD	PP does site inspection on the frequency described on PD-MR/1/: a copy of the documents is submitted to the central office to the Quality Coordinator, who will verify the data, controlling it through an electronic system and ensuring its integrity.
Conclusion:	Based on assessed evidence, the overall conclusion on the matters of SITE INSPECTION is that the entire project sites are inspected as described on the monitoring plan.

<b>4.Parameter:</b>	$N_{LT,y}$
Description:	Annual average number of animals of type "LT" in year "y"
Value:	The values of $N_{LT,y}$ can be found in calculation file for every project site /6/
Used Equipment:	Not Applicable
Source of Data and Frequency:	The actual figure of animals at each of the project sites is done monthly. PSO provides monthly reports using form 03.003 and 03.001 (Animal control system form) /17/, the one presents the daily entrance and exits records (such as purchase, transfers, sales, deaths, and internal transfer); in addition, the previously mentioned forms include information related to number of animals per animal category for each project site, specific for each specific farm. Data aggregation and reporting is monthly /17/ by the owner or manager of each farm. Calculation and reporting is managed through the monitoring system put in place by Brascarbon. The audit team verified all files provided by PP and related to animal figures. Files are listed on reference section /17/.
Data Cross Checking:	Information provided on excel files of the form 03.001 /17/, were cross-checked by comparing figures on Calculation file /6/ as well

	as livestock inventory stated in the MR stated on form 03.003 /17/
Consistency Between the QA/QC defined in the Methodology:	The calculation procedures as well as QA/QC measurements taken by PP are in accordance with requirements.
Consistency Between the QA/QC established by the Project Participants in the PD:	QA/QC measures taken by PP for the different project sites are in line with proposed QA/QC measures described on PD-MR.
Conclusion:	The overall conclusion is that PP correctly applies the parameter, taking into account data collection and reporting. In addition, QA/QC procedures agree with proposed procedures on PD-MR./1/, MR/2/.

<b>5.Parameter:</b>	<b>BG<sub>burnt,y</sub></b>
Description:	Biogas flared or used as a fuel in the year “y”
Value:	The values of BG <sub>burnt,y</sub> can be found in the calculation file /2/.
Used Equipment:	Flow Meter, Endress+Hauser thermal mass flow meter t-trend – ATT12 A99D31A4D1 MODEL, /27/Accuracy class ± 5% of factory full scale. Equipment of each project site is described in section 6.1 of. The PD-MR/1/, MR/2/.
Source of Data and Frequency:	Data related to the parameter is continuously recording,  Collected monthly from the field with a flow meter. On its turn, collected data is gathered by the Regional Technician, Mr Sinomar dosSantos on a monthly basis and stored on forms 04.001 /18/, and 01.001 /15/.  Related equipment measures the actual biogas volume on wet basis. As the flow meter registers the biogas that is directed to the flare cumulatively (and that is also the data registered in the PLC), the BG <sub>burnt,y</sub> is calculated by differential with the previous biogas volume reading.
Data Cross Checking:	Flow meter operation was verified crosschecking the calculation file /2/ against form 04.001 /18/ and form 01.001 /15/, /20/, against. In addition the regional technician confirmed the origin of data and the procedure of collection as described in MR /5/.
Consistency Between the QA/QC defined in the Methodology:	QA/QC procedures follow mandatory requirements from applicable methodology.
Consistency Between the QA/QC established by the Project Participants in the PD:	QA/QC procedures are in line with proposed procedures on PD-MR
Conclusion:	Calculation of the parameter was correctly addressed as the audit team confirmed. Furthermore, PP correctly applied procedures defined on PD-MR/1/. In addition, data related to the parameter has been correctly collected and kept by the project; furthermore, information provided by the equipment (flow meter) has been correctly taken into account for calculation procedures.

<b>6.Parameter:</b>	$W_{CH_4,y}$
<b>Description:</b>	Methane content in biogas in the year “y”
<b>Value:</b>	The values of $W_{CH_4,y}$ can be found in the calculation file /2/ and PD-MR /1/.
<b>Used Equipment:</b>	<p>Biogas Check Portable Digital Analyzer from Geotech/Landtech. Accuracy CH4: <math>\pm 1.5</math> °C or 0,25%</p> <ul style="list-style-type: none"> <li>• CH4: <math>\pm 0.5\%</math> from 0-5% CH4 content; <math>\pm 1.0\%</math> from 5-15% CH4 content; <math>\pm 3.0\%</math> from 15%-full scale CH4 content</li> <li>• Temperature: <math>\pm 0.2</math>oC (Biogas check analyzer accuracy) <math>\pm 0.5</math>oC (temperature probe accuracy)</li> <li>• Pressure: <math>\pm 4</math>mbar typically and <math>\pm 15</math> mbar maximum</li> </ul> <p>Equipment is described in section 5.2 PD-MR/1/, MR/2/.</p>
<b>Source of Data and Frequency:</b>	<p>Data is collected in accordance to the sampling plan by the Regional Technician as set out mandatory on methodological tool. Data is collected through a Portable Gas Analyzer and reported in form 04.001 /18/ at the suitable monitoring frequency: monthly. Since methodology /3/ requires that parameter <math>W_{CH_4,y}</math> to be measured with the confidence level defined on PD-MR /1/ , PP measured the parameter assuring the required confidence level as well as in accordance with the sampling methods required /22/.</p> <p>Monthly measured methane (According with the data/parameter table 6 of the methodology AMS III.D version 21.0 /3/), content (<math>W_{CH_4,y}</math>) is taken as <math>f_{V_{CH_4,RG,h}}</math> (average). This approach is considered to be accurate when calculating <math>PE_{flare,y}</math> since the monthly monitored <math>W_{CH_4,y}</math> (measured on wet basis) assures a 90% confidence and 10% precision level in the methane concentration measurement. As assessed on the Sampling Plan /12/</p>
<b>Data Cross Checking:</b>	Data collected and reported through calculation file /2/ was crosschecked against Form 04.001 /18/ provided for the verification process and regarding all of the project sites, therefore assuring the integrity of data available for the monitoring period. No differences were found between stated figures within the different data sources.
<b>Consistency Between the QA/QC defined in the Methodology:</b>	QA/QC is in line with requirements determined by the applicable methodology /3/ when measuring with a 90% confidence level the parameters $W_{CH_4,y}$ and $f_{V_{CH_4,RG}}$ . The audit team verified the data collection is in line with the confidence level required /3/ and stated /1/
<b>Consistency Between the QA/QC established by the Project Participants in the PD:</b>	QA/QC activities were carried out as defined on PD-MR as well as monitoring plan and, as required by methodology /3/. The audit team performed interview with the personnel on charge of the QA/QC procedures In order to verify the consistency with the procedures.

Conclusion:	The parameter has been measured consequently with mandatory requirements as well as stated on PD-MR/1/, therefore the overall conclusion is that the project activity complies with measurement requirements. Data collection is also reliable and calculations using these data have been taken adequately. Lastly the application of the sampling plan /12/ is in accordance with the methodological requirements for sampling /24/ the methane content of the biogas described in the applicable methodology /3/ /4/52/ and POP 5/36.
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<b>7.Parameter:</b>	$T_{biogas}$
Description:	Temperature of the biogas at ambient conditions
Value:	The values of $T_{biogas}$ can be found in the spread-sheet calculation file /2/ and PD-MR /1/
Used Equipment:	Biogas Check Portable Digital Analyser from Geotech/Landtech. Accuracy Temperature: $\pm 0.2^{\circ}C$ (Biogas check analyser accuracy) $\pm 0.5^{\circ}C$ (temperature probe accuracy) /11/. Equipment is described in section 6.1 of PD-MR/1/, MR/2/.
Source of Data and Frequency:	Data is collected in form 04.001 /18/ and the monitoring frequency is monthly by the regional technician as verified by the audit team through telephonic interview. Since methodology AMS III.D version 21.0 /3/ requires that parameter WCH <sub>4,y</sub> be measured with a 90/10 confidence level, PP correctly designed and applied a sampling plan /12/, the one was developed by using the “Guidelines for sampling and survey” /21/.
Data Cross Checking:	Data collected and reported through calculation file /2/ was crosschecked against Form 04.001 /18/ provided for the verification process and regarding all of the project sites, therefore assuring the integrity of data available for the monitoring period. No differences were found between stated figures within the different data sources.
Consistency Between the QA/QC defined in the Methodology:	QA/QC activities were carried out as defined on PD-MR/1/ as well as monitoring plan and, as required by methodology /3/ and Guidelines for sampling /21/. The audit team performed interview with the personnel on charge of the QA/QC procedures in order to verify the consistency with the procedures.
Consistency Between the QA/QC established by the Project Participants in the PD:	QA/QC activities were carried out as defined on PD-MR as well as monitoring plan and, as required by methodology /3/.
Conclusion:	The parameter has been measured consequently with mandatory requirements as well as stated on PD-MR /1/, MR/2/, therefore the overall conclusion is that the project activity complies with measurement requirements. Data collection is also reliable and calculations using these data have been taken adequately and is used th– POP-05 - at the Brascarbon Operational Procedure Manual.

<b>8.Parameter:</b>	<b>D<sub>CH4,y</sub></b>
<b>Description:</b>	Density of the methane combusted
<b>Value:</b>	<p>The values of the parameter can be found in the calculation file /2/ and MR /1/. Used formula:</p> $D_{CH4,y} = \frac{P_n}{\frac{R_u}{MM_{RG,h}} \times T_n}$ <p>D<sub>CH4,y</sub>: Density of methane in the biogas (kg/m<sup>3</sup>) P<sub>n</sub>: Pressure of biogas (Pa) R<sub>u</sub>: Universal Gas Constant (8314 Pa.m<sup>3</sup>/Kmol.K) M<sub>MRGh</sub>: Molecular mass of methane (16.04 kg/kmol) T<sub>n</sub>: Biogas temperature (K)</p>
<b>Used Equipment:</b>	Not applicable
<b>Source of Data and Frequency:</b>	POP 07.001 /31/ states the monitoring procedure and data regarding pressure and temperature are collected with the frequency determined in the sampling plan /12/, the one is in line with the sampling and survey framework /21/ /24/.
<b>Data Cross Checking:</b>	Formulae used in the calculation file /2/ was crosschecked against mandatory formulae stated in the methodological tool /4/ finding compliance and coherent use of formulae.
<b>Consistency Between the QA/QC defined in the Methodology:</b>	Both, calculation and data collection for calculation were done applying requirements set out on the applicable methodology /3/.
<b>Consistency Between the QA/QC established by the Project Participants in the PD:</b>	QA/QC procedures applied are in line with provisions on PD and applicable requirements.
<b>Conclusion:</b>	Methane density was correctly calculated by PP, applying the and methodological tool /4/ and according to POP 07/31.

<b>9.Parameter:</b>	<b>Q<sub>DM</sub></b>
<b>Description:</b>	Sludge soil application
<b>Value:</b>	N/A. Sludge was not removed during this monitoring period.
<b>Used Equipment:</b>	Not Applicable
<b>Source of Data and Frequency:</b>	Brascarbon Monitoring Report System. The sludge soil application will be reported through form 09.001 and POP 09/33. However, at this time, the project activity has not carried out any sludge application, as verified by the lead auditor
<b>Data Cross Checking:</b>	Not Applicable since there has not been sludge applied, the audit team did verify no sludge application has taken place within the project boundaries.
<b>Consistency Between the QA/QC defined in the Methodology:</b>	Not Applicable since there has not been sludge applied.
<b>Consistency Between the QA/QC established by the</b>	Not Applicable since there has not been sludge applied.

Project Participants in the PD:	
Conclusion:	By the time the verification process was carried out no sludge application was confirmed by the PP, for this reason the parameter has neither been measured nor reported for this monitoring period.

<b>10.Parameter:</b>	<b>FE (<math>\eta_{flare,h}</math>)</b>
Description:	Enclosed Flare Efficiency
Value:	80% (if all the conditions below are met).The values of the parameter can be found in the spread sheet calculation file /2/, /1/, MR/2/..
Used Equipment:	Enclosed Flare, is used in the entire project in addition a thermocouple
Source of Data and Frequency:	<p>Every 1 minute measurement and registration by a CLP of flare temperature and biogas flow rate. Data is recovered monthly for Flare Efficiency hourly calculation.</p> <p>Enclosed flare (low height) is used in the entire project.</p> <p>Brascarbon registers the gas flow sent to the flares and the combustion temperature of the flares every minute.</p> <p>According to the methodology /3/ and Tool 6 /4/: the PP selected option A of tool 6 as follow:</p> <p>A 80% efficiency for a specific hour is considered if the following conditions are met for all minutes in that specifier:</p> <ul style="list-style-type: none"> <li>(i) all temperature records are above or equal to 500o Celsius and</li> <li>(ii) the temperature of the flare (TEG,m) and the flow rate of the residual gas to the flare (FRG,m) are within the manufacturer's specification for the flare (SPECflare).</li> <li>(iii) The flame is detected in minute m (Flamem).</li> </ul> <p>Otherwise, a 0% efficiency for the specific hour is applied if at any minute the records of temperature measurement are below 500o Celsius or the flare is operating outside of the manufacturer's specification (SPECflare).</p> <p>This discount will be applied to the volume of that specific hour since it is a more conservative approach than to discount in the average of the flare efficiency percentage for any giving hour.</p> <p>Information related to flare efficiency of each hour for 24 hours per day is registered on the form 08.001 /20/ and obtained through a macro applied to form 01.001 /15/ (temperature and biogas volume registered minute by minute, data stored in the PLC). The hourly flare efficiency is compounded monthly for emission reduction calculation through monthly weighted average that takes into consideration the number of hours that the flare has operated in each different condition (80%, 50%, 0%).</p>

<p>Data Cross Checking:</p>	<p>As part of the verification activities, the verification team assessed the form 08.001 /20/ of each project site of the proposed project activity; this is to say: the audit team verified each and every hour covering the monitoring period. Data aggregated was crosschecked against data used on calculation file /2/, finding no differences between stated figures.</p> <p>The audit team verified that during the first control period the flare mainly operated within the range of the manufacturer's specifications and when it was below 500°C the VCUs were discounted as indicated in paragraph 18 of tool 6./4/.</p>
<p>Consistency Between the QA/QC defined in the Methodology:</p>	<p>PP took into account applicable requirements as well as registered PD-MR /1/ and performed QA/QC according to applied methodology /3/ and the Tool 06 version 4 /4/. The verification process included a dully assessment on flare temperature records /18/, finding PP correctly applied methodology, those periods of time where temperatures were lower than 500 °C, and therefore 0% flare efficiency, were not claimed by the project as emission reductions. Consequently, all data and parameters that are required to monitor the flare operation within the range of operating conditions according to manufacturer ´s specifications were continuously monitored according to the methodology requirements.</p> <p>Taking into account that the methodology defines in its tool 6/4 the justification for the use of this parameter to determine the combustion efficiency of the FE, the PP selected option A: default value and paragraphs 21, 22 and 23 which sta"l that:...." The flare efficiency for minute m (flare,m) is 90% when the following two conditions are met to demonstrate that the flare is operating:</p> <p>(a) The flare temperature (TEG,m) and the waste gas flow rate to the flare (FRG,m) are within the 'anufacturer's operating specifications for the flare (SPECflare) at minute m; and</p> <p>(b) Flame is detected at minute m (Flamem).</p> <p>22. Otherwise, flare,m is 0%.</p> <p>23. For enclosed flares that are defined as low flare, the flare efficiency will be adjusted, as a conservative approach, by subtracting 10 percentile" points..." For this reason, and although it meets the above conditions, the PP conservatively applied this parameter in that the default applied value is 80%, "instead of 90%."</p> <p>Since manufacturer specifications /11/ have been presented by PP which stated: "system is made to the natural flow of biogas, which works under atmospheric pressure, without forced ventilation systems for biogas once the flare is designed and customized for each farm working exclusively with the atmospheric pressure". The monitoring equipment has been put in operation and, the verification team assesses all relevant information related to the parameter, it is concluded the parameter has been correctly monitored and determined and it follows the proposed monitoring plan described at the revised and approved PD.</p>

Consistency Between the QA/QC established by the Project Participants in the PD:	Q/A/QC included maintenance (replacement) procedures as described on PD, therefore there is consistency for the QA/QC procedures.
Conclusion:	The overall conclusion is that PP correctly determined parameter “Flare Efficiency” on the basis of a reliable data collection system. Furthermore, the parameter measurement methods and calculation follow requirements set out in the methodology and tool /3/ /4/. Since the equipment is operated according to manufacturer’s specifications the audit team confirms that, measurements and flare efficiency parameter are reliable and in monitored in accordance with all the requirements and specifications.

11.Parameter:	ER <sub>y,ex-post</sub>
Description:	Ex-post emission reductions achieved by the project activity based on monitored values for the year “y”.
Value:	The values of ER <sub>y,ex-post</sub> can be found in the spread-sheet calculation file /2/ and PD-MR /1/, MR/2/.
Used Equipment:	Not Applicable. No direct use of equipment
Source of Data and Frequency:	The parameter is calculated on the basis of all collected data. As it was verified, PP uses formula provided on methodology (ER <sub>y,ex-post</sub> = min[(BE <sub>y,ex-post</sub> - PE <sub>y,ex-post</sub> ), (MD <sub>y</sub> -PE <sub>power,y,ex-post</sub> )], in order to calculate the parameter on a yearly basis. Ad in accordance with the methodology /3/.
Data Cross Checking:	<p>Figures of Baseline emissions (Bey,ex-post), project emissions (Pey,ex-post) and methane captured and destroyed (Mdy) Reported on MR and CERs calculation file /3/ were assessed as part of the desk review activities. The assessment involved a review of the raw data necessary to calculate the parameter. Further in this verification report calculations and its verification will be presented.</p> <p>On its turn Pey,ex-post calculations were verified by crosschecking them against records collected on each and every project site. In addition, calculation file provided /6/ was assessed in order to verify compliance with PD and applicable methodology /3/.</p>
Consistency Between the QA/QC defined in the Methodology:	QA/QC activities are in line with the applicable methodology /3/.
Consistency Between the QA/QC established by the Project Participants in the PD:	During the monitored period QA/QC activities have been carried out in accordance to PD.
Conclusion:	Emission reductions calculation comply with mandatory requirements set out on methodology AMS-III.D version 21.0, applicable tool, and revised PD-MR /1/, MR/2/, including the revised monitoring plan for the validation and verification period. The Monitoring operational procedure POP-17/42.

<b>12.Parameter:</b>	<b>FFR</b>
Description:	Formulated feed rations
Value:	Not applicable
Used Equipment:	Not Applicable
Source of Data and Frequency:	Data provided on form 14.001 /14/ (internal control document) was crosschecked by the audit team against records of animal feed rations /22/.
Data Cross Checking:	Information provided on PD-MR, and support documents /1//22/
Consistency Between the QA/QC defined in the Methodology:	Keeping records and supplier evidence are in line with methodology /3/ requirements.
Consistency Between the QA/QC established by the Project Participants in the PD	PP followed proposed QA/QC procedures on PD, therefore the QA/QC procedure complies with pre-established.
Conclusion:	The parameter has been monitored adequately and in accordance to the monitoring plan and the PD /1/, MR/2/; furthermore, information provided by PP is consistent with the secondary information sources used to verify the information. Lastly the technical expertise of the audit team allowed concluding formulated feed rations have been implemented in order to acquire an stable productive cycle in terms of the number the animals are present in the farms. Formulated feed rations allow to standardize the swine productive system being nutritional therefore balanced rations the basis of modern animal production systems.

<b>13.Parameter:</b>	<b>P<sub>biogas</sub></b>
Description:	Pressure of the biogas at operation conditions
Value:	The values of P <sub>biogas</sub> can be found in the spread-sheet calculation file /2/ and PD-MR /1/, MR/2/.
Used Equipment:	Biogas Check Portable Digital Analyzer from Geotech/Landtech. Accuracy. Pressure: ± 4mbar typically and ±15 mbar maximum. Equipment is described in section 6.1/1/
Source of Data and Frequency:	Data is periodical collected in form 04.001 /18/ and the monitoring frequency is monthly by the regional technician as verified by the audit team through telephonic interview. Since methodology /3/ requires that parameter W <sub>CH<sub>4</sub>,y</sub> be measured with a 90% confidence level, based on the statistical analysis performed to determine methane concentration according to the characteristics of data /23/, calibration records of the gas analyzer /31/ the one is in line with methodology /3/.

Data Cross Checking:	Data provided through calculation file /2/ was crosschecked against Form 04.001 for every project site. No differences were found between stated figures on different data sources. Data was also crosschecked against records available on each project site.
Consistency Between the QA/QC defined in the Methodology:	QA/QC is in line with requirements determined by the applicable methodology /3/ and Measurement according with Operational Procedure POP-13 /34/.
Consistency Between the QA/QC established by the Project Participants in the PD:	QA/QC activities were carried out as defined on PD-MR as well as approved monitoring plan and, as required by methodology /3/.
Conclusion:	The parameter has been measured consequently with mandatory requirements as well as stated on PD-MR /1/, MR/2/, therefore the overall conclusion is that the project activity complies with measurement requirements. Data collection is also reliable and calculations using these data have been taken adequately.

<b>14.Parameter:</b>	<b>GENETIC SOURCE</b>
Description:	Genetic source from annex I party
Value:	Western Europe genetic
Used Equipment:	Not Applicable
Source of Data and Frequency:	Genetic source is internally reported (every project site reports) by using form 15.001 /27/. The frequency annually
Data Cross Checking:	Information provided by PP /27/ was crosschecked against support documentation provided /28/. There were no differences among reported information
Consistency Between the QA/QC defined in the Methodology:	Support letter confirms genetic source of each producer /25/ according to Operational Procedure POP-15 /24/. In addition, there is consistency between procedures and provisions on Methodology /3/.
Consistency Between the QA/QC established by the Project Participants in the PD:	Procedures for the monitoring period of reference are in accordance with PD-MR/1/.
Conclusion:	Genetic source is the adequate for the project activity as verified while carrying out the Desk Review stage, furthermore animal genetic supplier confirmed through a letter /25/ genetic source.

<b>15.Parameter:</b>	<b>MS%<sub>i,y</sub></b>
Description:	Fraction of manure handled in system “i”, year “y”.
Value:	1 (100%)
Used Equipment:	Not Applicable
Source of Data and Frequency:	Information related to the manure fraction handled is described on form 02.001 /16/; the actual fraction is monitored on annually based on daily measurement and monthly aggregation

Data Cross Checking:	Information provided on PD- MR /1/, MR/2/. was assessed thanks to interview with relevant personnel evidence suggesting a different fraction of the manure is handled; in fact, manure collection system handles a 100% all over the project sites.
Consistency Between the QA/QC defined in the Methodology:	Procedures are in line with applicable methodology /3/.
Consistency Between the QA/QC established by the Project Participants in the PD:	Site visit inspections are carried out by PP as determined on PD /1/.
Conclusion:	Percentage of manure handled has been correctly determined by PP. On the other hand, the verification process, allowed the lead auditor to state that the figure of 100% is accurate.

<b>16.Parameter:</b>	<b>Nda,y</b>
Description:	Number of days animal is alive in the farm, in year “y”
Value:	The values Nda,y can be found in the calculation file /2/ - same parameter NLT,y
Used Equipment:	Not Applicable
Source of Data and Frequency:	The animal inventory records are kept in formulario 03.003 /17/. The actual figure of animals at each of the project sites is done monthly. PCL provides monthly reports using form 03.003 and 03.001 (Animal control system form) /17/, the form 03.003 (summarized in form 03.001) presents the records regarding livestock entrance and exits (such as purchase, births, internal transfer, sales, deaths, internal transfer); this information helps to determine the number of days the animals are alive in each farm. The Recording frequency is annually, based on monthly records: data aggregation and recording is done monthly by the owner or manager of each farm. Calculation and reporting are made on the Brascarbon Monitoring Report System. The audit team verified all files provided by PP and related to animal figures. Files are listed on reference section as /17/.
Data Cross Checking:	Information provided on excel files of the form 03.001 /17/, were crosschecked by comparing figures on Calculation file /2/ as well as livestock inventory stated in the MR
Consistency Between the QA/QC defined in the Methodology:	The calculation procedure as the QA/QC measures taken by PP are in accordance with requirements.
Consistency Between the QA/QC established by the Project Participants in the PD:	QA/QC measures taken by PP for the different project sites are in line with proposed QA/QC measures described on PD-MR/1/,/2/.
Conclusion:	The overall conclusion is that PP correctly applies the parameter, taking into account data collection and reporting. In addition, QA/QC procedures agree with proposed procedures on PD.

<b>17.Parameter:</b>	$N_{p,y}$
Description:	Number of animals produced annually of type “LT” in year “y”
Value:	The values $N_{p,y}$ can be found in the calculation file /2/
Used Equipment:	Not Applicable
Source of Data and Frequency:	The animal inventory records are kept in formulario 03.003. The actual figure of animals at each of the project sites is done monthly (Annually, based on monthly records). PCL provides monthly reports using form 03.003 and 03.001 (Animal control system form) /17/, the form 03.003 (summarized in form 03.001) presents the records regarding livestock entrance and exits (such as purchase, births, internal transfer, sales, deaths, internal transfer, among others); this information helps to determine the number of days the animals are alive in each farm. Data aggregation and recording is done monthly by the owner or manager of each farm. Calculation and reporting are made on the Brascarbon Monitoring Report System. The audit team verified all files provided by PP and related to animal figures. Files are listed on reference section as /17/.
Data Cross Checking:	Information provided on excel files of the form 03.001 /17/, were crosschecked by comparing figures on Calculation file /2/ as well as livestock inventory stated in the MR
Consistency Between the QA/QC defined in the Methodology:	The calculation procedure as the QA/QC measures taken by PP are in accordance with requirements.
Consistency Between the QA/QC established by the Project Participants in the PD:	QA/QC measures taken by PP for the different project sites are in line with proposed QA/QC measures described on PD The same parameter $N_{LT,y}$ and MR/2/.
Conclusion:	The overall conclusion is that PP correctly applies the parameter, taking into account data collection and reporting. In addition, QA/QC procedures agree with proposed procedures on PD-MR/1/ MR/2/..

<b>18.Parameter:</b>	$nd_y$
Description:	Number of days in year “y” where the treatment plant was operational
Value:	The values of $nd_y$ can be found in the calculation file /2/ and PD-MR/1/, MR/2/.
Used Equipment:	Not Applicable since the parameter is calculated.
Source of Data and Frequency:	The parameter is calculated on a monthly basis (Annually, based on daily records and monthly aggregation). Aggregate information is kept on form 08.001 /20/ as a result of the PLC data collection. Parameter figure is used for calculations on calculations file /2/.

Data Cross Checking:	Reported figures for the different project sites were crosschecked against form 08.001 /20/ in order to verify the total hours of operation of the equipment, finding no significant disturbance such as stops for installation of equipment, ending of productive cycles, among others.
Consistency Between the QA/QC defined in the Methodology:	PP monitored the parameter as requested on the applied methodology /3/
Consistency Between the QA/QC established by the Project Participants in the PD:	The QC officer as defined on PD verifies calculations.
Conclusion:	The parameter was monitored in accordance with the approved PD-MR /1/, MR/2/as well as required by the applicable methodology /7/.

<b>19.Parameter:</b>	<b><math>VS_{LT,y} (SVS_{jLT,y})</math></b>
Description:	Volatile solids for livestock LT entering the animal manure management system in year y
Value:	The values of the parameter can be found in the calculation file /6/. in the folder BEy ex-post – PEy ex-post. and PD-MR /1/, MR/2/.
Used Equipment:	Not applicable since the parameter is calculated
Source of Data and Frequency:	Annually
Data Cross Checking:	The parameter was assessed in the calculation file /2/ and the figures needed for the calculation are verified. Animal weight, VS default according to animal category and the number of days the treatment plant is operational are verified.
Consistency Between the QA/QC defined in the Methodology:	PP calculated the parameter as requested on the applied methodology /3/, using figures applicable to developed countries.
Consistency Between the QA/QC established by the Project Participants in the PD:	The QC officer as defined on PD verifies calculations. QA/QC activities were carried out as defined on PD as well as approved monitoring plan and, as required by methodology /3/. and the PP internal procedure POP 14 /14/, Form 02.001 /16/.
Conclusion:	The verification team assessed the calculations and assumptions of the calculation of the parameter. The fact the animal production system makes use of formulated feed rations in accordance with animal category and, the animal genetics is closer to the expected genetics of developed countries makes the calculation of the parameter accurate. Lastly, the animal weights monitored allow as well the use of the methodological choice defined by the PP for the project. The overall conclusion is that the proposed project activity correctly calculates the parameter in order to calculate the total volatile solids entering the system and therefore, the

	emission reductions calculated on the basis of the parameter are correctly stated.
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20.Parameter:	$Q_{\text{manure LT},y}$
Description:	Quantity of manure treated from livestock type LT at animal manure management system j
Value:	100%
Used Equipment:	Not Applicable
Source of Data and Frequency:	Annually based on daily measurement and monthly aggregation. Form 02.001/16/, Brascarbon Report System
Data Cross Checking:	Data, procedures and figures verified crosschecking information provided on PD-MR/1/, MR/2/, against information provided by relevant personal on telephonic interviews.
Consistency Between the QA/QC defined in the Methodology:	PP determined the parameter as requested on the applied methodology /3/.
Consistency Between the QA/QC established by the Project Participants in the PD:	The regional technician as well as the QA/QC officer used form 02.001 as described in the registered PD-MR /1/ and therefore compiling with the stated QA/QC procedures.
Conclusion:	The animal manure treatment system was in place during the entire monitored period (including the claimed monitored period and the unclaimed monitoring period). The verification team assessed the operation of the treatment system findings no stops in its operation and no changes in the operational conditions.

21.Parameter:	Al
Description:	Annual average interval between manure collection and delivery for treatment at a given storage device l
Value:	Not Applicable During the site inspection (PP), it was confirmed that no changes in the manure management system occurred and all the manure was handled in the project facilities. Value is therefore 1.
Used Equipment:	Not Applicable
Source of Data and Frequency:	N/A -frequency: Annually, based on monthly records
Data Cross Checking:	Not Applicable
Consistency Between the QA/QC defined in the Methodology:	Not Applicable
Consistency Between the QA/QC established by the Project Participants in the PD:	Not Applicable

Conclusion:	The parameter is not used since the proposed project activity does not make use of storage units or storage in order to manage manure. The collection system conducts manure directly to the treatment system.
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<b>22.Parameter:</b>	<b>Flame<sub>m</sub></b>
Description:	Flame detection on flare in the minute m
Value:	Figures reported on form 08.001 /20/ Ultraviolet flame sensor Model C7035
Used Equipment:	Enclosed flare
Source of Data and Frequency:	Monitoring system Brascarbon - Once per minute. Flame detection of flare in the minute m ON/OFF
Data Cross Checking:	The flame detection was crosschecked against form 01.001 “Tabela de dados” of each project with the combustion temperature of the flare /15/
Consistency Between the QA/QC defined in the Methodology:	Calibration procedures and frequencies /27/ /28/29/ /32/ as well as maintenance activities /19/
Consistency Between the QA/QC established by the Project Participants in the PD:	Continuous monitoring of operational conditions within the manufacturers’ specifications and maintenance (maintenance procedures are stated on form 02.001 /16/)
Conclusion:	The flame detection is assured by following POP 08 as the verification team assessed data collected on form 08.001 /23/ and CER /6/.