Gold Standard
for the Global Goals

TEMPLATE

VALIDATION REPORT FOR PROJECT ACTIVITIES (STANDALONE PROJECT)

SUMMARY

This document contains the following sections:
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KEY PROJECT INFORMATION

GS ID	GS11728	
Title of Project	Manaus Landfill Gas Project	
Version number of the Validation Report	1.0	
Completion Date of Validation Report	16/03/2024	
Version number and completion date of the PDD to which this report applies	14, 10/03/2024	
Project Developer	Conestoga-Rovers Engenharia Ltda	
Project Representative	Diego Boechat Mondelo Prada	
Project Participants and any communities involved	Conestoga-Rovers Engenharia Ltda	
Host Country (ies)	Brazil	
Activity Requirements applied	☒ Renewable Energy Activity Requirements ☐ Community Services Activity Requirements ☐ Land-Use & Forests Activity Requirements ☐ New project types ☐ Others (Energy Efficiency - Domestic)	
Scale of the project activity	☐ Microscale ☐ Small scale ☒ Large scale ☐ Others	
Methodology (ies) applied and version number	☒ Gold Standard approved methodology, including any specific Gold Standard applicability criteria. ☐ A project-specific methodology (Applicable to Microscale Project only)	
	Title(s) of methodology (ies)	ACM0001: Flaring or use of landfill gas
	The version number of the methodology (ies)	19.0
Product Requirements applied	☒ GHG Emissions Reductions & Sequestration ☐ Renewable Energy Label ☐ Others *For all other Certification Statements, Certified SDG Impact Statements or Products*. Please specify: ☐ N/A	

Deviation applicable to the project (accepted and rejected both)	Deviation ID	-
	Applicable section of validation report	-
Project cycle	☐ Regular ☒ Retroactive	

VVB information

Name of the VVB	APPLUS+ CERTIFICATION (LGAI TECHNOLOGICAL CENTER, S.A.)
GS accreditation expiry date	30/06/2024
Is the VVB accredited for the applicable sectoral scope?	Yes
Name, position of the approver of the validation report	Mr. Agustín Calle de Miguel, Technical Manager
Signature (Final version only)	

Table 1 – Validated Sustainable Development Contributions

SUSTAINABLE DEVELOPMENT GOALS TARGETED	SDG IMPACT	ESTIMATED ANNUAL AVERAGE	UNITS OR PRODUCTS
13 Climate Action (mandatory)	Yearly emission reductions	474,911 tCO_2e/year	13 Climate Action (mandatory)
5 Gender Equality	Quantity of women in managerial positions	At least one woman in leadership and decision-making positions by showing signed company functional organizational chart in the determined year.	5 Gender Equality
7 Affordable and clean energy	Amount of electricity generated using LFG by the project activity in year y	Yearly estimated 56,807 MWh of electricity generation	7 Affordable and clean energy

8 Decent Work and Economic Growth	Total jobs generated as a result of the project.	At least one onsite employee in the determined year.	8 Decent Work and Economic Growth

PART I – EXECUTIVE SUMMARY

LGAI Technological Center, S.A. (hereafter referred to as Applus+ Certification) has been contracted by 'Conestoga-Rovers Engenharia Ltda' to perform the Renewal of the Crediting Period of the project "Manaus Landfill Gas Project".

The scope of the validation is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents.

The validation is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design. The validation process did not find any uncertainties related to the validation.

The validation consisted of following three phases:

i) A desk review of the project design and the baseline and monitoring plan;
ii) Follow-up interviews with project stakeholders;
iii) The resolution of outstanding issues and the issuance of the final validation report and opinion.

The validation report is filled by the validation team that is based on standard auditing practices and latest version of GS rules, to report the assessment of applicable GS requirements. The validation report provides transparent means to record the validation observations and opinion and the non-conformities, if any.

The validation was performed in accordance with the GS4GG requirements, latest version of Validation and Verification Standard and related Standards/Guidance and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The project correctly applies CDM methodology: ACM0001: Flaring or use of landfill gas, v19.0.

The purpose of this project activity is to is to collect landfill gas (LFG) at the Manaus Landfill and to combust the extracted LFG over a seven year-period, using a high efficient enclosed flare, thereby generating electricity and reducing greenhouse gas emissions (GHG). The project activity is located in the North region of Brazil, in the city of Manaus, capital of Amazonas state. The geographical coordinates are -2.88437751383781, -60.0183531450905.

The proposed GS project activity will result in reductions of greenhouse gas (GHG) emissions that are real, measurable and give long-term benefits to the mitigation of climate change. In our opinion, the project meets all relevant Gold Standard, and host country criteria.

The emission reduction calculations have been checked by the CP renewal validation team and it is deemed likely that the stated amount is achievable given the underlying assumptions do not change.

The project activity meets the applicable GS requirements and procedures. The information transferred to the updated version of the template is the same as the certified project design. The most updated version of the applied methodology has been correctly applied. The Baseline Scenario is still valid and it is not necessary to be updated. The information provided has been correctly assessed for accuracy and adequacy and the project activity has demonstrated the finances derived from Gold Standard Certification are important to the ongoing sustainability of the registered project. The GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner and in line with the applicable methodology, and the project activity is expected to achieve the estimated emission reductions.

The project will hence be recommended by Applus+ Certification for renewal of the crediting period with the Gold Standard for Global goals

PART II – VALIDATION TEAM, TECHNICAL REVIEW TEAM AND APPROVER

2.1 | Validation team member(s)

S.NO.	FULL NAME	ROLE(S)	TYPE OF RESOURCE	TYPE OF ACTIVITY(IES) CARRIED OUT
1	Raul Gonzalez Mitre	Team leader/Technical Expert/Local Expert	External	Desk review Remote assessment Interviews

2.2 | Technical Reviewer(s) and approver(s) of the validation report

S.NO.	FULL NAME	ROLE(S)	TYPE OF RESOURCE	TYPE OF ACTIVITY(IES) CARRIED OUT
1	Miguel Cortes	Technical Reviewer	External	Internal Technical Review

PART III – MEANS OF VALIDATION

3.1 | Desk review/Planning

The validation is performed primarily as a document review of the first PD version and the final PDD version.. The cross checks between information provided in the PDs and information from sources other than those used, if available, the validation team's sectoral or local expertise and, if necessary, independent background investigations. See Appendix 3 for further references.

In accordance with § 5.1.47 of the GS Validation and Verification Standard v 1.0, the Design Certification Renewal follows the same process as Validation and Design Review (Design Certification) though the scope of assessment is limited to:

a) Changes in the project as related to the General Eligibility Criteria;
b) Any relevant updates to the GS4GG rules and requirements;
c) Any relevant updates to the Gold Standard activity, product and methodology-specific requirements;
d) Any relevant updates to obligatory templates and tools that apply to the project;
e) Re-definition of the Baseline Scenario (including ex-ante parameters) and any impact of change on the Eligibility Principles, Criteria and requirements, and
f) Demonstration of Ongoing Financial Need, where relevant.

In particular, the assessment of project's baseline, the monitoring plan (MP) and the project's compliance with relevant GS requirements are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. The validation is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of verified emission reductions (VERs).

3.2 | On-site inspection and list of interviewees

According to the site visit and remote audit requirements and procedures, V2.0, The VVB may consider a project developer's request for a remote audit/assessment following the below listed qualifying criteria:

a) A minimum physical site visit is not mandated as per GS4GG requirements or not required/recommended as per VVB's previous audit findings: As per GS rules it is not mandatory to perform the on-site inspection during the renewal of the CP process, so that a remote inspection was performed.

b) The VVB can create a feasible audit plan that covers all aspects of a project design validation/project performance verification with suitable auditing techniques: a feasible audit plan has been created, including a risk analysis for conduction of remote inspections to ensure the quality of the process. Regarding the audit techniques and aligned with annex 2 of the site visit and remote audit requirements and procedures, V2.0, a video call using zoom has been used for conducting interviews of project developer representative and any other involved stakeholder (see section 3.3). A virtually guided site tour has been done. Interviews were also performed during the guided site tour. Furthermore, live documentary review with project developer's participation has been also done. Moreover, the VT assessed several documents (See appendix 3) shared by the PD remotely through e-mail attachment and reviewed by the VT.

c) The VVB can perform a risk assessment according to Annex 1 – Risk Assessment Guidelines and its own risk assessment procedure: the VT performed a risk analysis before taking the decision to proceed with the remote inspection. This is part of the procedures of Applus+ Certification. The risk analysis for conduction of remote inspections have been prepared following the guidelines included in the Annex 1 Risk Assessment Guidelines of the site visit and remote audit requirements and procedures, V2.0.

d) The VVB is confident that any identified significant risk/issue can be addressed and assessed/audited by the VVB using technology/ electronic means to attain a reasonable level of assurance: it can be confirmed that no significant risks have been identified during the risk analysis for conduction of remote inspections. Some risks not considered as significant but plausible were identified. For this case, mitigation measures have been determined. Hence, the determined level of assurance have been attain as planned.

e) The VVB can confirm before the audit commences that:
   i. The VVB and the project developer can provide representatives who can communicate proficiently in the same language: The selected VT is fluently in Portuguese.
   ii. The VVB has the capability and aptitude to conduct the remote assessment in the chosen medium/forum: The selected VT is well experienced and has the right capability and aptitude to conduct the remote assessment.

iii. The PD, including all interviewees, has the capability and aptitude to undergo the remote assessment in the chosen medium/forum. The PD has also previous experience in remote assessment. This is the renewal of the 3rd crediting period. Hence, the PD, including all interviewees, has the capability and aptitude to undergo the remote assessment as planned.

iv. A list of activities, areas, information and personnel to be involved in the remote assessment is available: this information was available and it has been considered as part of the assessment process and the preparation of the Validation Report.

v. The infrastructure required for the chosen auditing techniques/media as well as secure data storage is available: infrastructure and data storage was available to conduct the remote assessment as previously mentioned.

vi. A confidentiality agreement is in place between the VVB and the project developers, and the remote audit does not contradict any confidentiality agreements between the project developers: a confidentiality agreement has been signed following the procedures of Applus+ Certification.

vii. In case of a verification audit, the project developer has implemented the registered monitoring plan and has a data management system where records, data, etc. and can be audited remotely: not applicable as this is the renewal of the 3rd crediting period.

It can be concluded that the remote assessment was feasible and the alternative means of validation were sufficient for the purpose of the validation.

3.3 | Remote audit (if applicable)

DURATION OF REMOTE INSPECTION: 23/10/2023 TO 25/10/2023

NAME	ROLE	REMOTE AUDITING MEANS/METHODS	TOPICS COVERED
Raúl González Mitre (RGM)	Team Leader	Document Review Video call Interviews Cross check with publicly available information	a) Changes in the project as related to the Eligibility Principles, Criteria and Requirements; b) Incorporation of any relevant updated to the GS requirements; c) Confirmation of the re-definition of the baseline scenario and any impact of change on the eligibility principles; d) Any GS activity, product and methodology-specific requirements; e) Demonstration of Ongoing Financial Need, where relevant. f) Any relevant updates to the GS4GG rules and requirements; g) Any relevant updates to obligatory templates and tools that apply to the project;

Table below is the list is people interviewed from the PD and the project consultant during the remote assessment:

S.NO	INTERVIEWEE		DATE	SUBJECT	TEAM MEMBER INVOLVED
	Name	Affiliation			
01	Joao Sprovieri	Consultant	20/12/2023	PDD & ER calculation	RGM
02	Dejoces Castro	Consultant	20/12/2023	PDD & ER calculation	RGM

03	Mariana Boechat	Legal Executive Director	20/12/2023	Baseline assessment	RGM
04	Nelson Longhi	Commercial Director	20/12/2023	General project description	RGM
05	Olga Corona	Project Manager	20/12/2023	General project description	RGM
06	Fernando Camargo	Engineer	20/12/2023	On field arrangements	RGM
07	Kadson Veiga	Field Responsible	20/12/2023	On field arrangements	RGM
08	Paulo Castro	Technical Assistant	20/12/2023	On field arrangements	RGM
09	Jhony Gomes	General assistant	20/12/2023	On field arrangements	RGM

3.4 | Sampling approach

No sampling approach has been used.

PART IV - VALIDATION ASSESSMENT

For design change, head directly to the section 4.7 and for design certification renewal, go directly to section 4.8 below.

4.8 Validation of design certification renewal

Start date and end date of the <u>previous</u> crediting period	08/07/2018 – 07/07/2023
Start date and end date of the <u>renewed</u> crediting period	08/07/2023 - 07/07/2026
Is there a delay in the renewal of crediting period?	☐ Yes ☒ No

ASSESSMENT QUESTIONS

1. Have the following sections of the PDD been updated (as applicable)? - Changes in the project as related to the General Eligibility Criteria - Any relevant updates to the GS4GG rules and requirements - Any relevant updates to the Gold Standard activity, product, and methodology specific requirements - Any relevant updates to obligatory templates and tools that apply to the project - Redefinition of the Baseline Scenario (including ex-ante parameters) and any impact of change on the eligibility principles, criteria, and requirements - Demonstration of Ongoing Financial Need (OFN), where relevant	☒ Yes ☐ No ☐ N/A

Means of validation (MOV) *Mention the means of validation (MoV) used to validate this information*	The VT has checked the updated PDD against the registered PDD[/7/] to confirm the following sections have been correctly updated: - **Changes in the project as related to the General Eligibility Criteria:** Eligibility criteria has been considered in the updated version of the PDD. The Eligibility criteria described in the most updated version of the Principles and Requirements[/1/] and the applied methodology[/4/] have been considered in the updated PDD. The VT has cross checked the updated PDD version against the most before mentioned documents. No changes in the project as related to the General Eligibility Criteria were identified. - **Any relevant updates to the GS4GG rules and requirements:** When necessary, relevant rules were considered when updating the PDD. The most updated version of the the GS Principles and Requirements[/1/], the GHG Emission Reduction & Sequestration Product Requirements[/1/], the Renewable Energy Activity Requirements[/1/], the Validation and Verification Standard[/2/], the Site Visit and Remote Audit Requirements and Procedures[/3/], the last version of the applied methodology[/4/] and tools[/12/] have been considered in the updated PDD. No discrepancies were identified. - **Any relevant updates to the Gold Standard activity, product, and methodology specific requirements:** The most updated version of the applied methodology has been used and the Renewable Energy Activity Requirements, v1.4 has been considered. - **Any relevant updates to obligatory templates and tools that apply to the project:** the new PDD template[/6/] has been now used. Furthermore, the most updated methodology version has been also applied. - **Redefinition of the Baseline Scenario (including ex-ante parameters) and any impact of change on the eligibility principles, criteria, and requirements:** the PD has followed the TOOL11 Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period to demonstrate the validity of the original baseline. See item 4 below for further details of the assessment. - **Demonstration of Ongoing Financial Need (OFN), where relevant:** The PP has provided a signed company

	statement regarding Ongoing Financial Need (OFN) which includes information related to: a) Ongoing Financial Need; b) Cash flow analysis, and c) Revenue analysis. Relevant evidence/13/ was provided to demonstrate OFN. A provision of the project revenues, project expenses and project results have been provided for years 2020 till 2023. There is not income due to sale of electricity as the LFG electricity generation and exporting plant has not been implemented yet and therefore not able to export electricity to the grid. The VVB can conclude that even the project activity is connected to the national grid, it has still not implemented the generation part due to several factors. It is still expected to be implemented and the estimate date would be 01/06/2026. As a result, it can be confirmed that the project requires the carbon revenues for equilibrate the project expenses. The signed company statement regarding ongoing Financial Need (OFN) was closely checked by the VT and assessed as correct and plausible. Interviews were also used for cross check purposes.
Justification of the MOV *Justify how the used MoV was appropriate for the aspect validated.*	While reviewing the updated PDD against the GS Principles and Requirements/1/, the GHG Emission Reduction & Sequestration Product Requirements/1/, the Renewable Energy Activity Requirements/1/, the Validation and Verification Standard/2/, the Site Visit and Remote Audit Requirements and Procedures/3/, the last version of the applied methodology/4/, tools/12/ and the registered PDD/8/, it can be confirmed that the relevant sections of the PDD been correctly updated. Relevant evidence was provided to demonstrate OFN. This evidence was closely checked by the VT and assessed as correct and plausible. Interviews were also done for cross check purposes. Hence, it can be concluded that the selected MOVs were appropriate in the context of the project activity.
2. Is the appropriate form and its version used to create the updated PDD?	☒ Yes ☐ No ☐ N/A

Means of validation (MOV) *Mention the means of validation (MoV) used to validate this information*	The VT has checked the updated PDD against the Key Project Information & Project Design Document (PDD) template[/7/].
Justification of the MOV *Justify how the used MoV was appropriate for the aspect validated.*	While reviewing the updated PDD against the Key Project Information & Project Design Document (PDD) template[/6/] it can be confirmed that the appropriate form and its version has been used to create the updated PDD. Hence, it can be concluded that the selected MOVs were appropriate in the context of the project activity.

3. Is the information transferred to the updated version of the template same as the certified project design?	☒ Yes ☐ No ☐ N/A

Means of validation (MOV) *Mention the means of validation (MoV) used to validate this information*	The VT has checked the updated PDD against the registered PDD[/7/].
Justification of the MOV *Justify how the used MoV was appropriate for the aspect validated.*	While reviewing the updated PDD against the registered PDD[/7/] it can be confirmed that the information transferred to the updated version of the template is the same as the certified project design. Hence, it can be concluded that the selected MOVs were appropriate in the context of the project activity.

4. Is the validity of the original baseline(s) or its update evaluated? Please refer to section 10 of the Validation and Verification Standard	☐ Yes ☐ No ☒ N/A

Means of validation (MOV) *Mention the means of validation (MoV) used to validate this information*	Assessment of the validity The VT has checked the updated PD against the Tool11 which is the most acceptable approach for the assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period. . The sequence of the tool was applied to assess the continued validity of the baseline and/or the update of the baseline at the renewal of the crediting period: **Step 1: Assess the validity of the current baseline for the next crediting period** *Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies* VT confirms that there have been no changes in the relevant national and/or sectoral regulations in the context of the project activity. There are no policies regarding mandatory LFG capture or destruction requirements neither local environmental regulations nor policies which promote the productive use of LFG. The following regulations were checked: - Federal regulation: Resolution CONAMA nº 237, 19/12/1997 (Environmental License) - National Plan of solid waste– Decree Nº 11.043, from 13/04 2022 - National Solid Waste Policy– Law 12.305, 2/08/ 2010. - National Policy of Climate change - Law 12.187/2009 The Operations License No. 228/14-04 to Conestoga Rovers Engenharia Ltda. for gas exploration from Manaus landfill has been made available to the VT. it is valid for 2 years since it has been issued on 29/11/2023. Furthermore, other public sources were also checked by the VT for cross check purposes: - https://www.worldbiogasassociation.org/country-profile-brazil/ - https://cibiogas.org/en/blog/biogas-no-brasil-historia-e-perspectiva-de-futuro/ - https://www.biogasworld.com/companies/gef-biogas-brasil/ There are no relevant changes in legislation in Brazil which can affect the project activity. It can be confirmed that there are no relevant mandatory national and/or sectoral policies which affects the operation of the project activity.

	Step 1.2: Assess the impact of circumstances There are no new national/sectoral policies or circumstances that could affect the baseline scenario during the renewal of the crediting period. The validation team confirmed that the current baseline identified in the registered PDD for the previous crediting period is still valid for the new crediting period. Since there is no change in the circumstance and hence, the circumstance will not have any impact on the current baseline emission. Hence, no need to update the current baseline for the next crediting period. The emission factor in the previous monitoring period was 0.2430 and for this 3rd crediting period is now 0.2202 which is considered as marginal change. Hence, it can be concluded that circumstance related to the generation of electricity in the host country remain have slightly changed but in general remain the same. *Step 1.3: Assess whether the continuation of the use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which renewal is requested* According to the step 1.3 of the Methodological Tool "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period" Version 03.0.1: *"This sub-step should only be applied if the baseline scenario identified at the validation of the project activity was the continuation of use of the current equipment(s) without any investment and, the projects proponents or third party (or parties) would undertake an investment later due, for example, to the end of the technical lifetime of the equipment(s) before the end of the crediting period or the availability of a new technology".* As the project activity was a greenfield project, this step is not applicable. Nevertheless, according to the registered PDD, the expected operational lifetime of the project activity is 25 years. Therefore, the power plant can operate for another crediting period without any rehabilitation or retrofit. *Step 1.4: Assessment of the validity of the data and parameters* The project activity has applied the last version of the applied methodology ACM0001. Parameters established as fixed ex-ante such as the emission factor, has been correctly updated. The VT has checked the last version of the applied

	methodology against the updated PDD. No discrepancies were identified. All parameters determined ex-ante included in the PD have been cross checked against the applicable methodology and tools. No discrepancies were identified. All values were checked directly from the source. No discrepancies were also identified. Values of parameters determined ex-ante have been correctly applied in the ER calculation. It can be concluded that relevant data of parameter determined ex-ante have been correctly updated. **Step 2: Update the current baseline and the data and parameters** *Step 2.1: Update the current baseline* The baseline remains unchanged as discussed above. Only the baseline, project and leakage emissions have been updated for the 3rd crediting period, without re-assessing the baseline scenario, based on the latest approved version of the applied methodology. *Step 2.2: Update the data and parameters:* The project activity has applied the last version of the applied methodology ACM0001. Parameters established as ex-post needed for the monitoring of the project have been correctly updated. The VT has checked the last version of the applied methodology against the updated PDD. No discrepancies were identified. All values were checked directly from the source. No discrepancies were also identified. Values of parameters determined ex-post have been correctly applied in the ER calculation. It can be concluded that relevant data of parameter determined ex-post have been correctly updated.
Justification of the MOV *Justify how the used MoV was appropriate for the aspect validated.*	It can be confirmed that the Baseline Scenario is still valid and it is not necessary to be updated. As the updated PDD has been cross checked against the new version of the applied methodology, it can be concluded that the selected MOVs were appropriate in the context of the project activity.
5. If the project developer selected another methodology, is it evaluated if it meets all the requirements of the selected methodology, the methodological tool and/or the standardized baseline?	☐ Yes ☐ No ☒ N/A
Means of validation (MOV) *Mention the means of validation (MoV) used to validate this information*	This is not applicable as the project is using the same methodology but the most updated version.

Justification of the MOV *Justify how the used MoV was appropriate for the aspect validated.*	While reviewing the updated PDD against the applicable most updated methodology/4/ it can be confirmed that the project developer has not selected another methodology than the one used for initial registration. Hence, it can be concluded that the selected MOVs were appropriate in the context of the project activity.

6. Is the information provided assessed for accuracy and adequacy as to whether the finances derived from Gold Standard Certification are important to the ongoing sustainability of the registered project?	☒ Yes ☐ No ☐ N/A
Means of validation (MOV) *Mention the means of validation (MoV) used to validate this information*	The VT has checked the updated PDD for accuracy and adequacy for all applicable requirements such as but not limited to the GS Principles and Requirements/1/, the GHG Emission Reduction & Sequestration Product Requirements/1/, the Renewable Energy Activity Requirements/1/, the Validation and Verification Standard/2/, the Site Visit and Remote Audit Requirements and Procedures/3/, the last version of the applied methodology/4/, tools/12/ and the registered PDD/7/. Furthermore, the demonstration of Ongoing Financial Need (OFN) to the ongoing sustainability of the registered project has been checked through the OFN Report/15/ which includes information related to a) Ongoing Financial Need; b) Investment Analysis, and c) Revenue Analysis. Relevant evidence/13/ was provided to demonstrate OFN. A provision of the project revenues, project expenses and project results have been provided for years 2020 till 2023. There is not income due to sale of electricity as the LFG electricity generation and exporting plant has not been implemented yet and therefore not able to export electricity to the grid. The VVB can conclude that even the project activity is connected to the national grid, it has still not implemented the generation part due to several factors. It is still expected to be implemented and the estimate date would be 01/06/2026. The signed company statement regarding ongoing Financial Need (OFN) was closely checked by the VT and assessed as correct and plausible. Interviews were also used for cross check purposes.

Justification of the MOV *Justify how the used MoV was appropriate for the aspect validated.*	Relevant evidence was provided to demonstrate OFN. This evidence was closely checked by the VT and assessed as correct and plausible. Interviews were also used for cross check purposes. Hence, it can be concluded that the selected MOVs were appropriate in the context of the project activity.

7. Does the next crediting period of the project activity commence on the day immediately after the expiration of the current crediting period? (It can begin at a later date too e.g. due to delay in validation)	☒ Yes ☐ No ☐ N/A

Means of validation (MOV) *Mention the means of validation (MoV) used to validate this information*	The VT has checked the updated PDD against the registered PDD[7] and the project activity web site. Furthermore, interviews were performed during remote assessment. As a result, it has been assessed the following: Start date and end date of the previous crediting period: 08/07/2018 – 07/07/2023 Nevertheless, at the time of the current assessment of the 3rd and last CP, the previous one is already finished. Hence, CL was raised accordingly. Please refer to it.
Justification of the MOV *Justify how the used MoV was appropriate for the aspect validated.*	While reviewing the updated PDD, it is not possible to commence the following crediting period the day immediately after the expiration of the current one. This is because at the time of the current assessment of the 3rd and last CP, the previous one is already expired (07/07/2023). Hence, a CL was raised accordingly. It can be concluded that the selected MOVs were appropriate in the context of the project activity.

8. Is the estimated impact in the updated PDD calculated conservatively and appropriately in line with the applicable methodology?	☒ Yes ☐ No ☐ N/A

Means of validation (MOV) *Mention the means of validation (MoV) used to validate this information*	The VT has checked the updated PDD and the updated ex-ante ER calculation against the most recent version of the applied methodology to confirm that all assumptions and calculations were conservatory and appropriately in line with the applicable methodology.

Justification of the MOV *Justify how the used MoV was appropriate for the aspect validated.*	While reviewing the updated PDD and calculation against the updated methodology, it can be confirmed that all assumptions and calculations were conservatory and appropriately in line with the applicable methodology. Hence, it can be concluded that the selected MOVs were appropriate in the context of the project activity.
9. Is the estimated emission reduction calculated conservatively and appropriately in line with the applicable methodology?	☒ Yes ☐ No ☐ N/A
Means of validation (MOV) *Mention the means of validation (MoV) used to validate this information*	The VT has checked the updated ER calculation spread sheet against the most recent version of the applied methodology and the updated PDD to confirm that all assumptions and calculations were conservatory and appropriately in line with the applicable methodology. All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PDD.
Justification of the MOV *Justify how the used MoV was appropriate for the aspect validated.*	While reviewing the updated ER calculation spread sheet against the updated methodology and updated PDD, it can be confirmed that all assumptions and calculations were conservatory and appropriately in line with the applicable methodology. Hence, it can be concluded that the selected MOVs were appropriate in the context of the project activity.
10. Is the determined Monitoring Plan appropriate and in line with the applicable methodology?	☒ Yes ☐ No ☐ N/A

Means of validation (MOV)

Mention the means of validation (MoV) used to validate this information

The monitoring plan is sufficiently detailed, and procedures for measurement and control of each parameter have been correctly mentioned.

All the monitoring parameters relevant with those described within the methodology were included as follow.

Data and parameters fixed ex ante:

Parameter	Description
ACM0001: Flaring or use of landfill gas	
1. OX_{top_layer}	Fraction of methane that would be oxidized in the top layer of the SWDS in thebaseline.
2. η_{PJ}	Efficiency of the LFG capture system that is be installed in the project activity.
3. GWP_{CH4}	Global warming potential of CH_4.
4. $SPEC_{flare}$	Manufacturer's flare specifications for temperature, flow rate andmaintenance schedule.
Tool to determine the mass flow of a greenhouse gas in a gaseous stream	
5. R_u	Methodological "*Tool to determine the mass flow of a greenhouse gas in a gaseous stream*".
6. MM_i	Molecular mass of greenhouse gas *i*
7. MM_k	Molecular mass of gas *k.*
8. MM_{H2O}	Molecular mass of water.
9. P_{ref}	Atmospheric pressure at reference conditions.
10. T_{ref}	Temperature at reference conditions.
11. $\varphi_{default}$	Default value for the model correction factor to account for model uncertainties.
12. OX	Oxidation factor (reflecting the amount of methane from SWDS that is oxidized in the soil or other material covering the waste).
13. F	Fraction of methane in the SWDS gas (volume fraction).
14. $DOC_{f,default}$	Default value for the fraction of degradable organic carbon (DOC) in MSW thatdecomposes in the SWDS.
15. $MCF_{default}$	Methane correction factor
16. DOC_j	Fraction of degradable organic carbon in the waste type j (weight fraction)
17. k_j	Decay rate for waste type *j*

18. Waste composition	Waste composition
Tool to calculate the emission factor for an electricity system	
19. $EF_{grid,BM,2016}$	Build margin emission factor for the grid in year y.
20. $EF_{grid,OM-dis,y}$ **(2022)**	Dispatch data analysis operating margin CO_2 emission factor in year y.

All parameters followed the requirements from the applied methodology, applicable tools and/or IPCC default values regarding description, unit, source of data, value applied, measurement method and purpose of data. No discrepancies were identified.

Data and parameters to be monitored ex post:

Parameter	Description
Baseline, project and/or leakage emission from electricity consumption and monitoring of electricity generation	
1. TDLy	Average technical transmission and distribution losses in the grid in year *y* forthe voltage level at which electricity is obtained from the grid at the project site.
2. $EC_{PJ1,y}$ = $EG_{EC1,y}$	Quantity of electricity consumed from the grid by the project activity during the year y
3. $EC_{PJ2,y}$ = $EG_{EC2,y}$	Quantity of electricity consumed from diesel generator by the project activity during the year y.
ACM0001: Flaring or use of landfill gas	
4. Management of SWDS	Management of SWDS.
5. $EG_{PJ,y}$ = $EC_{BL,k,y}$	Amount of electricity generated using LFG by the project activity in year y.
6. $O_{pj,h}$	Operation of the equipment that consumes the LFG.
7. $V_{t,db}$	Volumetric flow of the gaseous stream in time interval t on a dry basis.
8. $V_{t,wb}$	Volumetric flow of the gaseous stream in time interval t on a wet basis.
9. $v_{i,t,db}$	Volumetric fraction of greenhouse gas *i* in a time interval t on a dry basis.
10. $v_{i,t,wb}$	Volumetric fraction of greenhouse gas *i* in a time interval t on a wet basis.

11. T_t	Temperature of the gaseous stream in time interval t.
12. P_t	Pressure of the gaseous stream in time interval t.
13. Status of biogas destruction device	Operational status of biogas destruction devices.
14. $P_{H2O,t,Sat}$	Saturation pressure of H_2O at temperature T_t in time interval t.
Methodological tool "Project emissions from flaring"	
15. $V_{i,RG,m}$	Volumetric fraction of component i in the residual gas on a dry basis in the minute m where i = CH4, CO, CO2, O2, H2, H2S, NH4, N2.
16. $V_{RG,m}$	Volumetric flow of the residual gas on a dry basis at reference conditions in the minute m.
17. $M_{RG,m}$	Mass flow of the residual gas on a dry basis at reference conditions in the minute m.
18. $v_{O2,EG,m}$	Volumetric fraction of O2 in the exhaust gas on a dry basis at reference conditions in the minute m.
19. $fc_{CH4,EG,m}$	Concentration of methane in the exhaust gas of the flare on a dry basis at reference conditions in the minute m.
20. $Flame_m$	Flame detection of flare in the minute m
21. Maintenance$_y$	Maintenance events completed in year y.
22. $T_{EG,m}$	Temperature in the exhaust gas of the enclosed flare in minute m.
Tool to calculate project or leakage CO2 emissions from fossil fuel combustion	
23. $FC_{i,j,y}$	Quantity of fuel type i combusted in process j during the year y.
24. $NCV_{i,y}$	Weighted average net calorific value of fuel type i in year y (i = LPG).
25. $EF_{CO2,I,y}$	Weighted average CO2 emission factor of fuel type i in year y (i = LPG).
SDGs	
26. Quantity of women in managerial positions	Refers to number of female management employees (managers) (full - time) at the organization as of the end of the reporting period.

	27. Total number of jobs. — Refers to total jobs generated as a result of the project. 28. Labour Health Assistance — Provides Labor Health Assistance to all its onsite employees 29. Environmental Permit — Provides Environmental Permit of the Project Activity. All parameters followed the requirements from the applied methodology, applicable tools, IPCC default values and/or internal project activity records regarding description, unit, source of data, value applied, measurement method and QA/QC procedures. No discrepancies were identified. The quality assurance and control (QA/QC) procedures that will be applied in the monitoring plan are clearly described and aligned with the applicable methodology, tools and registered PDD. Any other element of the monitoring plan, including operational and management structure, data archiving arrangements, responsible person, among others are clearly described while mentioning the parameters and measurement methods. The VT has checked the updated PDD against the most recent version of the applied methodology to confirm that all monitoring assumptions were appropriate and in line with the applicable methodology. The VT confirms that monitoring plan for the 3rd CP provides reliable measurements for all parameters involved in the ER´s calculation. From the verification of the monitoring procedure provided in the updated PDD, the VT could conclude that the project participant is able to implement the monitoring plan for the 3rd crediting period.
Justification of the MOV *Justify how the used MoV was appropriate for the aspect validated.*	While reviewing the updated PDD against the updated methodology ad tools, it can be confirmed that all assumptions of the monitoring plan are appropriate and in line with the applicable methodology. Hence, it can be concluded that the selected MOVs were appropriate in the context of the project activity.
11. Is the determined SDG outcomes appropriate and in line with the applicable rules?	☒ Yes ☐ No ☐ N/A

Means of validation (MOV) *Mention the means of validation (MoV) used to validate this information*	It was confirmed during remote interviews and through the estimated outcomes of the project implementation that the project contributes in achieving the SDG 5, SDG 7 and SDG 8 in addition to SDG 13 as required by Principle-1 of GS for Global Goals. The VT has checked the updated PDD against the GS Principles and Requirements/1/, the GHG Emission Reduction & Sequestration Product Requirements/1/, the Renewable Energy Activity Requirements/1/, the Validation and Verification Standard/2/, the Site Visit and Remote Audit Requirements and Procedures/3/, the last version of the applied methodology/4/ and tools/12/ to confirm that all monitoring assumptions were appropriate and in line with the applicable rules and requirements. The project is expected to be resulted in environmental, social and economic benefits.
Justification of the MOV *Justify how the used MoV was appropriate for the aspect validated.*	While reviewing the updated PDD against the applicable rules and requirements, it can be confirmed that the project is expected to be resulted in environmental, social and economic benefits. Hence, it can be concluded that the selected MOVs were appropriate in the context of the project activity.

Findings	
☒ CL	CL 01,
☒ CAR	CAR 01, CAR 02, CAR 03, CAR 04, CL 03.
☐ FAR	None

Assertion statement

The project activity "Manaus Landfill Gas Project" meets the applicable GS requirements and procedures and the requirements of the host country (Brazil). The GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner and in line with the applicable methodology. Hence, the project activity is expected to achieve the estimated emission reductions. The Validation opinion is the project will be recommended by Applus+ Certification for renewal of its crediting period with the GS.

PART V – VALIDATION OPINION

Final opinion ☒Positive

☐Negative

LGAI Technological Center, S.A. (hereafter referred to as Applus+ Certification) has been contracted by 'Conestoga-Rovers Engenharia Ltda' to perform the Renewal of the Crediting Period of the project "Manaus Landfill Gas Project".

The scope of the validation is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents.

The validation was performed in accordance with the GS4GG criteria for project activities and related GS Standards/Guidance and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The project correctly applies CDM methodology: ACM0001: Flaring or use of landfill gas, v19.0.

In the course of the VCS Verification, 3 Clarification Requests (CL), 4 Correction Action Requests (CAR) and No Forward Action Requests (FAR) have been raised.

The report is based on the assessment of the last version of the PDD/9/ undertaken through application of standard auditing techniques including but not limited to desk review, follow up actions (e.g., electronic (telephone or e-mail) interviews) and also the review of the applicable approved methodological and relevant tools.

As a result of this validation, the VT concludes that:

- The project activity meets the applicable GS requirements and procedures;
- The information transferred to the updated version of the template is the same as the certified project design;
- The most updated version of the applied methodology has been correctly applied;
- The Baseline Scenario is still valid and it is not necessary to be updated.
- The information provided has been correctly assessed for accuracy and adequacy and the project activity has demonstrated the finances derived from Gold Standard Certification are important to the ongoing sustainability of the registered project.
- The GHG emission reductions are calculated without material misstatements

in a conservative and appropriate manner and in line with the applicable methodology, and

- The project activity is expected to achieve the estimated emission reductions.

The project will hence be recommended Applus+ Certification for renewal of its crediting period with the GS.

GHG emissions reductions and removals validated according to the design document (PDD):

YEAR	ESTIMATED BASELINE ANNUAL GHG EMISSIONS. (tCO_2e)	ESTIMATED PROJECT ANNUAL GHG EMISSIONS. (tCO_2e)	ESTIMATED AMOUNT OF ANNUAL GHG EMISSION REDUCTIONS OR GHG REMOVALS (tCO_2e)
Year 2023	233,019	253	232,766
Year 2024	485,183	522	484,661
Year 2025	489,986	522	489,464
Year 2026	218,113	270	217,842
Total estimated ERs	**1,426,302**	**1,567**	**1,424,733**
Total number of crediting years	3	3	3
Annual average over the crediting period	475,434	522	474,911

APPENDIX 1: ABBREVIATIONS

S.NO	ABBREVIATIONS	FULL TEXTS
1.	BM	Build Margin
2.	CAR	Corrective Action Request
3.	CDM	Clean Development Mechanism
4.	CL	Clarification Request
5.	CM	Combined Margin
6.	Conestoga/CRE	Conestoga-Rovers Engenharia Ltda
7.	CP	Crediting Period
8.	DNA	Designed National Authority
9.	DOE	Design Operational Entity
10.	ER	Emission Reduction
11.	FAR	Further Action Request
12.	GHG	Green House Gases
13.	GS	The Gold Standard for the Global Goals
14.	MOV	Means of Validation
15.	MP	Monitoring Period
16.	NRB	Baseline non-renewable biomass
17.	OFN	Ongoing Financial Need
18.	OM	Operative Margin
19.	OVV	Validation and Verification Body
20.	PA	Project Activity
21.	PD	Project Participant: Conestoga-Rovers Engenharia Ltda
22.	V	Version
23.	VT	Validation Team

APPENDIX 2: COMPETENCE OF TEAM MEMBERS AND TECHNICAL REVIEWERS

The curricula vitae of the VVB's validation team members are provided below:

Mr. Raúl G. Mitre	**Lead Auditor Verifier Technical Expert**	Mr. Raul G. Mitre is a professional with more than 17 years of experience in climate change and sustainability, specialized in Monitoring, Reporting and Verification (MRV) evaluating more than 300 projects in more than 20 countries all over the globe. Raul has a degree in Industrial Administration, specializing in productivity and quality from the National Polytechnic Institute of Mexico. He holds a Master's degree in Quality Management from the University La Salle of México City, a Master's degree in Project Management from the University Ramon Llull of Barcelona, a postgraduate degree in Integrated Management Systems from the University of Wismar in Germany, an MBA from the University La Salle of Andorra and a PhD in Sustainability - Climate Change with the Pan American Center for Higher Education in Mexico. He is also an international auditor of ISO 9001 (quality), ISO 14001 (environment), ISO 45001 (occupational safety), ISO 37001 (anti-bribery), ISO 50001 (energy efficiency), ISO 14064-1 (GHG quantification & reporting for organizations) ISCC (International Sustainability Carbon Standard and RSB (Roundtable of Sustainable Biomaterials). Currently he is associated with NOVA CERT, LLC (Applus+ Certification's Outsourced Entity). Dr. Raul G. Mitre is based in Germany.
Mr. Miguel A. Cortés	**Technical Reviewer Technical Expert**	Mr. Miguel Cortés holds a Bachelor's Science Degree on Civil and Environmental Engineering, being specialized on Hydric Resources. He has worked as CDM/VCS/GS and environmental consultant for different industries of multidisciplinary sectors world widely.

		Mr. Miguel Cortés counts with several years of GHG assessment experience, working and being qualified as Lead Auditor and Technical Reviewer for different DOEs world widely, as well as has been part of Gold Standard expert's committees and has been approved as a member of the UNFCCC RIT in 2019. Furthermore, he has performed his professional GHG assessment portfolio career worldwide and focusing in Latin America, developing assessments for projects in Argentina, Mexico, Panama, Colombia and Chile, among others. Mr. Miguel Cortés is based in Bogota, Colombia. Mr. Miguel Cortés may participate as part of the Technical Review experts' panel.

APPENDIX 3: DOCUMENTS/EVIDENCE REVIEWED OR REFERENCED

S.NO	AUTHOR	TITLE	REFERENCE TO THE DOCUMENT	PROVIDER
1.	Gold Standard	- Principles and Requirements, v1.2 - GHG Emission Reduction & Sequestration Product Requirements, v2.2 - Renewable Energy Activity Requirements, v1.4	https://www.goldstandard.org/project-developers/standard-documents	Public available
2.	Gold Standard	Validation and verification standard, V1.0	https://www.goldstandard.org/project-developers/standard-documents	Public available
3.	Gold Standard	Site visit and remote audit requirements and procedures, V2.0	https://www.goldstandard.org/project-developers/standard-documents	Public available
4.	CDM	ACM0001: Flaring or use of landfill gas, V19.0	https://cdm.unfccc.int/methodologies/DB/JPYB4DYQUXQPZLBDVPHA87479EMY9M	Public available
5.	Gold Standard	Key Project Information & Project Design Document (PDD) template, v1.5	https://www.goldstandard.org/project-developers/standard-documents	Public available
6.	Gold Standard	REGISTERED Key Project Information & Project Design Document (PDD), version 11, 28/09/2023. Transition Request Form – Project Project Annual Report Form	https://platform.sustain-cert.com/public-project/2975	Public available
7.	Earthood	Design Review & Performance Review No. 1: Gap Validation and Verification Report, V2.1, 28/09/2023.	https://platform.sustain-cert.com/public-project/2975	Public available

		Initial version: Key Project Information & Project Design Document (PDD), V12, 15/12/2023		
8.	PP	Final version: Key Project Information & Project Design Document (PDD), V14, 10/03/2024	-	PD
9.	PP	Ex-Ante ER Calculation: "3rd CP GS4GG Manaus_VERs spreasheet_01 2024_v1_JAS"	-	PD
10.	PP	SDG Impact Tool, (V1.6, 01/11/2023)	-	PD

11.	PP	a. TOOL02-Combined tool to identify the baseline scenario and demonstrate additionality (Version 07.0) b. TOOL 03-Tool to calculate project or leakage CO2 emissions from fossil fuel combustion (Version 03) c. TOOL 04-Emissions from solid waste disposal sites (Version 08.1) d. TOOL 05-Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation (Version 03.0) e. TOOL 06-Project emissions from flaring (Version 04.0) f. TOOL 07-Tool to calculate the emission factor for an electricity system (Version 07.0) g. TOOL08- Tool to determine the mass flow of a greenhouse gas in a gaseous stream (Version 03.0) h. TOOL09- Determine the baseline efficiency of thermal or electric energy generation systems (Version 03.0) i. TOOL10-Tool to determine the remaining lifetime of equipment (Version 01) j. TOOL11-Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period (Version 03.0.1) k. TOOL12-Project and leakage emissions from transportation of freight (Version 01.1.0)	-	PD

12.	PP	Signed company statement regarding ongoing Financial Need (OFN) Report, containing: a) Ongoing Financial Need; b) Cash flow analysis, and c) Revenue analysis.	-	PD
13.	PP	Declaration of tons of waste received in the landfill, 01/09/2023.	-	PD
14.	PP	Operations License No. 228/14-04 to Conestoga Rovers Engenharia Ltda. for gas exploration from Manaus landfill. Valid for 2 years, issued 29/11/2023.	-	PD
15.	PP	Vaccination Cards: - Alessandro Nacimento - Jhony Gomes - Kadson Veiga de Oliveira - Paulo Henrique Castro	-	PD
16.	PP	Organizational Chart CRE	-	PD
	PP	Contract Data of employees	-	PD
17.	PP	Financial Data of employees	-	PD
18.	PP	Life Insurance of employees	-	PD
19.	PP	List of social security insured employees	-	PD
20.	PP	Fire protection approval, valid till 05/06/2024.	-	PD
21.	PP	Trainings attendance lists of environmental, occupational and safety	-	PD
22.	PP	Certificates of training in fire protection	-	PD
23.	PP	Records of delivery of Personal Safety Equipment to the employees	-	PD
24.	PP	Records of medical checkups.	-	PD

25.	PP	Reports of Environmental working conditions by Consultancy of work safety.	-	PD
26.	PP	Plan of Occupational Health and Safety for the operation and maintenance of the biogas system Manaus Landfill, by CRE, April 2021.	-	PD
27.	PP	Emergency Plan - Occupational Health and Safety Manaus Landfill, by CRE, April 2021.	-	PD
28.	PP	Medical Control of Occupational Health Program by CRE.	-	PD
29.	PP	Environmental risks prevention Program by CRE.	-	PD
30.	PP	Risk Management Program – Control and measurement of gases by CRE	-	PD
31.	PP	Applicable legislation: - Federal regulation: Resolution CONAMA nº 237, 19/12/1997 (Environmental License) - National Plan of solid waste– Decree Nº 11.043, from 13/04 2022 - National Solid Waste Policy– Law 12.305, 2/08/ 2010. - National Policy of Climate change - Law 12.187/2009	-	PD
32.	Sustain Cert	E-mail from Sustain Cert dated 06/11/2023 regarding the possibility to renew the project till 25/04/2024	-	PD
33.	Gov.br	Operating margin emission factors using the dispatch analysis method Dispatch Analysis method calculation spread sheet: "Despacho_2022_jandez_corrigidojulho2022_1"	https://www.gov.br/mcti/pt-br/acompanhe-o-mcti/sirene/dados-e-ferramentas/fatores-de-emissao	PD

34.	IPCC	IPCC 2006 Guidelines for National Greenhouse Gas Inventories.	-	PD

APPENDIX 4: FINDINGS

Section 1: CLs from this validation

CL ID	01
Section no.	Table 1
Date	20/12/2023
Status	☐ Open ☒ Closed ☐ Turned to a FAR
Description of CL	According to the GS4GG and the registered PDD, the 2nd (current) project crediting period finished 07/07/2023. Considering the Principles and Requirements, section 5.1.45 (page 27): 5.1.45 To maintain Gold Standard Certified Project status beyond five years, a Project must undergo Design Certification Renewal. This process shall begin (defined by the submission of a Renewal opinion by a VVB for Design Review to Gold Standard) no later than the last date of current certification cycle. Note that review of the Design Certification Renewal may complete after the last date of current crediting period. In this case, the renewal date shall be the first day after the end date of the current certification cycle. And 5.1.46 (page 27): 5.1.46 Delay in the completion of re-validation beyond the last date of current certification cycle shall result in a reduction of any issuance of Certified Products and/or Impact Statements available during following certification cycle (for example, a delay of 1 year beyond the first cycle shall mean that no Certified Impact Statements shall be issued for the period of delay). clarification is required about the delay in the current validation of the 3rd crediting period as the previous one is already finished on 07/07/2023.
Project developer response	According to evidence email received from GS, immediately after the Date of Design Certification on 25/10/2023, it was stated that: "Our Certification officer reached out with the clarification regarding crediting period renewal process for GS11728. The design certification renewal request must be submitted within 6 months from the date of transition review completion or before the end date of year 14 year under CDM crediting cycle, whichever is earlier. Transition was completed on 25 Oct 2023 and 14 year ends on 08 Jul 2025. Your CP renewal shall be submitted by 25 Apr 2024. If not, credits will be lost"
Documentation provided by PD	E-mail from Sustain Cert dated 06/11/2023 regarding the possibility to renew the project till 25/04/2024
VVB assessment	According to the E-mail from Sustain Cert dated 06/11/2023 it is possible to renew the crediting period of the project activity till 25/04/2024. This is because the transition to GS was completed on 25/10/2023 and the 14th year of the CDM CP ends on 08/07/2025. Hence, the design certification must be submitted within 6 months from any of those dates. The VT reviewed the e-mail and found it as correct. No discrepancies were identified. **CL is closed.**

CL ID	02
Section no.	B.5.2
Date	20/12/2023
Status	☐ Open ☒ Closed ☐ Turned to a FAR
Description of CL	Clarification is required regarding the ongoing financial needs (OFN) of the project activity. Evidence shall be provided to demonstrate this. The information included in the PDD does not provide strong justification that the finances derived from the GS4GG certification are material to the ongoing sustainability of the registered project.
Project developer response	Section B.5.2 Ongoing Financial Need has been modified to include information regarding the signed company statement detailing project history and cashflow
Documentation provided by PD	Version 13 of the PDD and signed company statement regarding ongoing Financial Need (OFN).
VVB assessment	Relevant evidence/13/ was provided to demonstrate OFN. A provision of the project revenues, project expenses and project results have been provided for years 2020 till 2023. As a result, it can be confirmed that the project requires the carbon revenues for equilibrate the project expenses. The signed company statement regarding ongoing Financial Need (OFN) was closely checked by the VT and assessed as correct and plausible. Interviews were also used for cross check purposes. **CL is closed.**

CL ID	03
Section no.	B.2 & B.5.2
Date	20/03/2024
Status	☒ Open ☐ Closed ☐ Turned to a FAR
Description of CL	As a result of Technical Review (TR), the following has been raised: 1. What does it mean in page 19 of the PDD "The electricity would be generated in the grid"? Are there other alternatives? Please detail and confirm methodology applicability conditions, which says grid supply. 2. According to the PDD: "Since the beginning of Manaus Landfill Gas Project ("Manaus Project") until today, the sale of the carbon credits have been the only source of income of the Project The project developer shall explain and confirm what happened with electricity sales.
Project developer response	1. Text amended to: "In the project activity, the LFG is used to generate electricity which in the absence of the project activity, the electricity would be generated in the grid by a mix of sources (including fossil fuels plants which composes of Brazilian Interconnected Electrical System - SIN)". There are no other alternatives for this PA. Applicability condition confirmed as being: The methodology is applicable because: • The most plausible baseline scenario is released the LFG to atmosphere from the SWDS, and; • In the project activity, the LFG is used to generate electricity which in the absence of the project activity, the electricity would be generated in the grid by a mix of sources (including fossil fuels plants which composes of Brazilian Interconnected Electrical System - SIN) 2. Text included: • The installed generator CHP300 uses biogas as fuel to generate electricity only to supply biogas plant demand. • Electricity sales were not performed until the present moment (Renewal of 3rd Crediting Period) since the LFG electricity generation and exporting plant has not been implemented yet and therefore not able to export electricity to the grid. Please refer to: CRE - Manaus - Company Statement - Ongoing Financial Need (Revalidation Crediting Period) VF - 20.12.23.pdf)
Documentation provided by PD	3rd CP GS11728 Manaus T-PreReview_V1.5-Project-Design-Document v14 02 2024_track changes_JAS.docx CRE - Manaus - Company Statement - Ongoing Financial Need (Revalidation Crediting Period) VF - 20.12.23.pdf

VVB assessment	1. Appropriate clarification has been provided and the applicability condition have been aligned with the applied methodology. No further discrepancies were identified. 2. There is a confusion because the project activity description is not consistent within the PDD. The PDD says: *"The power generation system will be comprised of around 12 engines - 1.6 MW each. The electricity generated by the Project will supply Manaus Electricity Grid, which was interconnected with the National Interconnected System ("SIN" from the Portuguese Sistema Interligado Nacional) on July 2013".* *Footnote #5: Estimated to start on 01/01/2022.* And also stated: *"The delineation considered for the project is Manaus Electricity Grid (isolated and independent system)".* Please clarify if the project is or was connected to the grid. If it was, when this change occurred. If it has not been never connected to the grid, please explain the reasons as the estimation was in year 2022. Any changes or differences in project activity according to original description might need PRC requirements. (Correction or Design Changes) **CL remains open.**

Project developer response	2 – The confusion was probably caused because of a different interpretation of the last part of the above-mentioned sentence "(…) which is interconnected with the National Interconnected System ("SIN" from the Portuguese expression Sistema Interligado Nacional) since July 2013". This sentence was a reference to Manaus Electricity Grid and not the Project itself, meaning that, although everything that was previously connected to Manaus Electricity Grid (including the Project) was indirectly connected to SIN in July 2013, the Project was only connected for consuming electricity, was never able to provide/inject electricity to the grid. This is evidenced by the fact that no LFG electricity generation plant has been installed at the project site until the present moment. Please see the following website link (and printscreen attached) from the Brazilian Electricity Agency (ANEEL) showing all energy generation plants in Brazil - the Project is not listed there: (https://app.powerbi.com/view?r=eyJrIjoiNjc4OGYyYjQtYWM2ZC00YjllLWJlYmEtYzdkNTQ1MTc1NjM2IiwidCI6IjQwZDZmOWI4LWVjYTctNDZhMi05MmQ0LWVhNGU5YzAxNzBlMSIsImMiOjR9). Please note that the inscription of electricity plants to ANEEL is mandatory. As for the explanation for the non-implementation of the power generation plant, please note that such implementation depends on a great number of financial, legal, economic, and political conditions that must be aligned at the same time. In this case, the main impeding factor was due to bureaucratic and political reasons of the authorities and public institutions involved in the region of the Project. As reported in "Ongoing Financial Need Company Statement", although great efforts were made by CRE with the aim of implementing additional projects (such as electricity generation), reaching final stage of negotiations, the parties did not achieve a conclusion and implementation. Additionally, the connection of the Amazonas State to SIN in 2013 caused an increase of the energy offer, and consequently, the reduction of the energy price, which resulted in a less attractive scenario for implementing power generation system, considering the high level of investments involved. Considering all the above, the project activity description has been amended in order to be consistent with the PDD: • Footnote 5 has been amended to: "Estimated to start on 01/06/2026. However, conditions to implement the LFG electricity generation plant may vary according to regulatory and market availability conditions. Electricity sales were not performed until the present moment (Renewal of 3rd Crediting Period) since the LFG electricity generation and exporting plant has not been implemented yet and therefore not able to export electricity to the grid." • Amazonas state was connected to the National Interconnected System ("SIN" from the Portuguese, Sistema Interligado Nacional) in July 2013, item f) has been amended to: "The electricity generated by the Project will supply Manaus Electricity

	Grid, which is interconnected with the National Interconnected System ("SIN" from the Portuguese expression Sistema Interligado Nacional) since July 2013". • Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectorial policies has been amended, just below the Alternatives table: "The delineation considered for the project is Manaus Electricity Grid, which is connected to the National Interconnected System ("SIN" from the Portuguese, Sistema Interligado Nacional) since July 2013. In this third crediting period, the delineation for CO2 emission factor calculation purposes is SIN following the Brazilian DNA delineation." And footnote: "It is important to highlight that Manaus Electricity Grid was already connected to the National Interconnected System by the time of the renewal of its 2nd Crediting Period. Thus, no changes were identified in the national grid between the 2nd and the 3rd Crediting Periods."
Documentation provided by PD	CRE - Manaus - Company Statement - Ongoing Financial Need (Revalidation Crediting Period) VF - 20.12.23.pdf Manaus Project - Evidence - List of Electricity Plants - Website ANEEL - 08.03.24.pdf
VVB assessment	Proper clarification was provided. As a result, the VVB can conclude that even the project activity is connected to the national grid, it has still not implemented the generation part due to several factors. It is still expected to be implemented and the estimate date would be 01/06/2026. Hence, the confusion in the statements included in the PDD has been corrected and now it is clear and it has been understood by the VVB. No further discrepancies were identified. **CL is closed.**

Section 3: CARs from the validation

CAR ID	01
Section no.	Impact tool
Date	20/12/2023
Status	☐ Open ☒ Closed ☐ Turned to a FAR
Description of CAR	The Impact Tool has not been provided. According to the SDG Impact Tool Manual: https://www.goldstandard.org/project-developers/standard-documents section 3.1.3: *"The version 1.1 of the SDG Impact manual is applicable to GS Standard approved SDG tool which comes in effect on 14.03.2022. The SDG Impact Tool application is mandatory for all new projects submitted certification under GS4GG for Preliminary Review after 14.03.2022 and projects (including new PoAs and their VPAs) submitted for design certification review and renewal after 14.03.2022".*
Project developer response	The SDG impact Tool has been developed for the crediting period renewal and now made available to the VVB
Documentation provided by PD	SDG Impact Tool, (V1.6, 01/11/2023)
VVB assessment	The impact tool/11/ has been provided by the PP. It has been used the most recent version available which is V1.6, dated 01/11/2023. Information included are aligned with information provided in the updated PDD. No discrepancies were identified. **CAR is closed.**

CAR ID	02
Section no.	B.4
Date	20/12/2023
Status	☐ Open ☐ Closed ☐ Turned to a FAR
Description of CAR	Please provide the calculation spread sheet used to calculate the EF of the Brazilian grid to assess if it follows the methodological approach of the Tool07. Furthermore, please clarify why data from years 2014 to 2016 are used for Operating Margin (OM) and the most recent data available at the time of submission of the PDD to the DOE for validation (15/12/2023) was not used instead as required by the applied tool. Moreover, during remote assessment, another method to calculate the EF has been used (dispatch data analysis). Please clarify why it has been changed from the method used in the registered PDD (simple adjusted method)
Project developer response	The Emission Factor calculation for the 3rd CP has been fully reassessed. For EF,gridOM: the simple adjusted operating margin (same as the previous CP) was chosen to determine the grid emission factor for the project activity, option b) of the tool. The Brazilian DNA made available the operating margin emission factor calculated following TOOL07, approved by the CDM Executive Board. Therefore, the ex-post data vintage is considered. For EF,gridBM: the Option 1 from TOOL07 has been chosen, where: For the third crediting period, the build margin emission factor calculated for the second crediting period should be used. This option does not require monitoring the emission factor during the crediting period. For EF,gridCM: Weighted calculation EF,gridCM = (EF,gridOM x 0.25) + (EF,gridBM x 0.75)
Documentation provided by PD	Version 13 of the PDD. ER calculation spread sheet: "3rd CP GS4GG Manaus_VERs spreasheet_22 12 2023_v1_JAS".

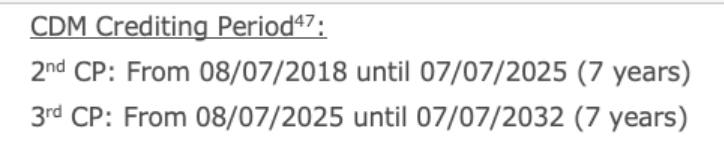
VVB assessment	The ER calculation spread sheet, tab "Emission Factor", has been checked. As a result, the VT concludes that the EF is calculated by the DNA of Brazil and it is public available through: https://www.gov.br/mcti/pt-br/acompanhe-o-mcti/sirene/dados-e-ferramentas/fatores-de-emissao The method used by the Brazilian DNA is the Dispatch Analysis method. Using this information, the VT has calculated the CM emission factor, following the requirements of the applied tool 07/12-f/. No discrepancies were identified. Nevertheless, the following shall be further corrected. - The method used to calculate the OM by the Brazilian DNA is the Dispatch Analysis method, whereas in the PDD is stated as simple adjusted method (page 79 & 83). Correction is necessary. - It is still mentioned in page 83 and 84 the previous calculation of the EF which is incorrect. CAR remains open.
Project developer response	No response provided by the PP
Documentation provided by PD	Version 13 of the PDD.
VVB assessment	The results of the EF have been updated considering $EF_{OM\ simple,\ 2022}$ is 0.4068 tCO2/MWh and the EFgrid,BM,2016 is 0.1581 tCO2/MWh. This is aligned with the data published officially by the Brazilian DNA. No discrepancies were identified. Nevertheless, as mention before, it is still mention in page 79 and 83 of the PDD the following: Page 79: Description | Simple adjusted operating margin CO_2 emission factor in year y Page 83: **Emission Factor calculation** The Brazilian DNA is responsible for calculating the OM and BM emission factor in Brazil. It uses the method b) Simple adjusted OM. The method used to calculate the OM by the Brazilian DNA is the Dispatch Analysis method, and not the simple adjusted method (page 79 & 83). Correction is still necessary. CAR remains open.

Project developer response	Thank you for the finding raised. Corrections have been made in PD: - Pg 79: Description amended to Dispatch data analysis operating margin CO2 emission factor in year y Pg 83/84: Method amended to c) Dispatch data analysis OM.
Documentation provided by PD	3rd CP GS11728 Manaus T-PreReview_V1.5-Project-Design-Document v13 02 2024_track changes_JAS.docx
VVB assessment	Correction has been done in the PD. No further discrepancies were identified. **CAR is closed.**

CAR ID	03
Section no.	Several
Date	20/12/2023
Status	☐ Open ☐ Closed ☐ Turned to a FAR
Description of CAR	The following shall be corrected in the PDD 1. **Front Page:** Name of project representative shall be a person and not a company again. 2. **Section C.2:** The 3rd CP under CDM is not yet visible in the CDM web site. Hence, there is no 3rd CDM Crediting period. Moreover, the current crediting period under GS4GG is missing (08/07/2018-07/07/2023). 3. **Section B.4:** the following link is not working: https://www.camara.leg.br/sileg/integras/501911.pdf 4. **Section B.4:** EF calculation and results shall be updated in the PDD as a result of CL 02. 5. **Section B.6:** total emission reductions shall be updated in the PDD as a result of CL 01 and CAR. 02
Project developer response	1. OK – By the time of the GS account opening for PP Conestoga-Rovers Engenharia Ltda, João Sprovieri from consultancy company BENG Engenharia Ltda. was defined as Project Representative. 2. CP information has been introduced in C.2. <u>CDM Crediting Period[1]:</u> 2nd CP: From 08/07/2018 until 07/07/2025 (7 years) There is no 3rd crediting period for the project under CDM until this moment. <u>GS4GG Crediting Period[2]:</u> 2nd CP: From 08/07/2018 until 07/07/2023 (5 years - expired) 3rd CP: From 08/07/2023 until 07/07/2026 (3 years) 3. The link has been refreshed 4. EF calculation and results have been presented in ERs spreadsheet and PD. 5. All calculations affected by the new EF were updated
Documentation provided by PD	Version 13 of the PDD.

[1] Source: https://cdm.unfccc.int/Projects/DB/SGS-UKL1291802325.34/view
[2] The total crediting period cannot exceed 15 years

VVB assessment	None of the mistakes have been corrected in the PDD. Furthermore, the version and date shall be updated in each review round. Moreover, please provide the document in track changes. CAR remains open.
Project developer response	No response provided by the PP
Documentation provided by PD	Version 13 of the PDD.

VVB assessment	1. **Front Page:** Name of project representative shall be a person and not a company again. This is still not corrected. If João Sprovieri from consultancy company BENG Engenharia Ltda. was defined as Project Representative, this name shall be included here:  Instead of "Conestoga-Rovers Engenharia Ltda" 2. **Section C.2:** The 3rd CP under CDM is not yet visible in the CDM web site. Hence, there is no 3rd CDM Crediting period. **Please eliminate it.**  3. Moreover, the current crediting period under GS4GG is missing (08/07/2018-07/07/2023). **Please include it.** 4. **Section B.4 (page 25, footnote 21):** the link is still not working: https://www.camara.leg.br/sileg/integras/501911.pdf it shows the following message:  **please correct.** 5. **Section B.6:** total emission reductions have not been updated in the PDD as a result of CL 01 and CAR. 02 PDD, page 87:

B.6.4 Summary of ex ante estimates of each SDG Impact

Year	Baseline estimate	Project estimate	Net benefit
08/07/2023	230,443	214	230,229
2024	478,524	441	478,082
2025	481,978	441	481,537
07/07/2026	213,294	228	213,065
Total	**478,524**	**441**	**478,082**
Total number of crediting years	**3**		
Annual average over the crediting period	**468,080**	**441**	**467,638**

ER, tab "emission reduction":

Second crediting period

Year	Estimation of baseline emissions (tCO_2)	Estimation of project activity emissions (tCO_2)	Estimation of leakage (tCO_2)	Estimation of overall emission reductions (tCO_2)
08/07/23	233,019	253	0	232,766
2024	485,183	522	0	484,661
2025	489,986	522	0	489,464
07/07/26	218,113	270	0	217,842
Total estimated reductions (tCO_2e)	**1,426,302**	**1,567**	**0**	**1,424,733**
Total number of crediting years (tCO_2e)	3	3	3	3
Annual average over the second crediting period (tCO_2e)	475,434	522	0	474,911

6. **Excel:** it is stated in tab "emission reduction" still second crediting period. Please correct it as this is the renewal of the 3rd CP.

Please provide adequate response in this findings and provided updated PDD. Pease remember to update date ad version.

CAR remains open.

Project developer response	1 – Project developer amended to: João Sprovieri (BENG) 2 – 3rd CP from CDM deleted 3 – 2nd CP GS included accordingly 4- Footnote text link amended to "https://www.planalto.gov.br/ccivil_03/_ato2007-2010/2010/lei/l12305.htm." 5 – All emission reduction calculation results were updated according to the last version of the ex-ante VERs spreadsheet 6 – Amended in the last version of the ex-ante VERs spreadsheet
Documentation provided by PD	3rd CP GS4GG Manaus_VERs spreasheet_01 2024_v1_JAS.xlsx 3rd CP GS11728 Manaus T-PreReview_V1.5-Project-Design-Document v13 02 2024_track changes_JAS.docx

VVB assessment	1. **Front Page:** Name of project representative has been updated; 2. **Section C.2:** CDM 3rd crediting period has been correctly eliminated. 3. **Section C.2:** the current crediting period under GS4GG has been included. 4. Link has been updated and now it works. 5. **Section B.6:** total emission reductions have been correctly updated. 6. **Excel:** error has been corrected. **CAR is closed.**

CAR ID	04
Section no.	B.4
Date	20/02/2024
Status	☒ Open ☐ Closed ☐ Turned to a FAR
Description of CAR	As a result of Technical Review (TR), the following has been raised: 1. Section B.4, step 1.2 (page 28) it is mentioned: "circumstances related to CO2 emission factor of the grid have changed" Please clarify how has been changed the circumstances if the EF for the 2nd crediting period is 0.2430 and for the 3rd crediting period is now 0.2202? This is a marginal change. 2. Section B.4, step 1.3 (page 29) According to the step 1.3 of the Methodological Tool "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period" Version 03.0.1: *This sub-step should only be applied if the baseline scenario identified at the validation of the project activity was the continuation of use of the current equipment(s) without any investment and, the projects proponents or third party (or parties) would undertake an investment later due, for example, to the end of the technical lifetime of the equipment(s) before the end of the crediting period or the availability of a new technology".* As the project activity was a greenfield project, this step is not applicable. Correction is necessary.
Project developer response	1. Text amended to: "As mentioned above, the applied values for CO2 emission factor of the grid have slightly changed and, therefore, it was reviewed in this PDD" 2. Text amended to: "Not applicable since Project Activity was a greenfield project and investments were made to make possible its implementation and operation."
Documentation provided by PD	Key Project Information & Project Design Document (PDD), V14, 21/02/2024
VVB assessment	1. The emission factor in the previous monitoring period was 0.2430 and for this 3rd crediting period is now 0.2202 which is considered as marginal change. Hence, it can be concluded that circumstance related to the generation of electricity in the host country have slightly changed but in general remain the same. 2. The step has been modified as not applicable. **CAR is closed.**

Section 3: FARs from the validation

~~FAR ID~~	None
~~Section no.~~	
~~Date~~	
~~Status~~	☐ ~~Open~~ ☐ ~~Closed~~ ☐ ~~Turned to a FAR~~
~~Description of FAR~~	
~~Project developer response~~	
~~Documentation provided by PD~~	
~~VVB assessment~~	

DOCUMENT HISTORY

Version	Date	Description
1.0	06/11/2023	Initial adoption