



Final Audit Report

Audited Body	
Puro.earth Project Proponent	Alcom Pte Ltd
Name of Contact for Puro.earth Project Proponent	Siddharth Kaul
Production Facility Operator	Alcom Pte Ltd
Name of Contact for Production Facility Operator	Jose De Jesus
Production Facility Location	Brgy. Singalat, Palayan City, Nueva Ecija

Audit Description	
Type of Audit	Production Facility and Output Audit
Reporting Period Covered by Audit	10 June 2022 to 26 January 2023
Objective of Audit Engagement	Provide assurance opinion against requirements of Puro.earth Rules v3.0 (Edition 2022)
Date of Auditor Engagement	21 April 2023
Date of Audit Report Submission	10 July 2023

Reporting Requirements	
Number of CORCs under audit	22
Dry biochar volume covered by this audit	26.162 tonnes
CORC conversion factor	0.862 tCO ₂ e per tonne dry biochar
Calculation method	Biochar Methodology

Auditing Body	
Auditor	EnergyLink Services Pty Ltd
Lead Auditor	Rodrigo Pardo
Additional Audit Personnel	Hugo Crespo
Peer Reviewer	Katherine Simmons

This document details the nature and scope of the services provided by a member of EnergyLink Services in respect of the eligibility of the CO₂ Removal Supplier Production Facility under the requirements of Annex A: Biochar Methodology to the Puro Standard General Rules v3.0 (Edition 2022).

This document is issued to Puro.earth detailing audit procedures conducted and the auditor's opinion in relation to the eligibility of the Production Facility. It should not be used for any other purpose.

Because of the inherent limitations in any internal control structure, it is possible that fraud, error, or non-compliance with laws and rules may occur and not be detected. Further, the audit was not designed to detect all weakness or errors in internal controls so far as they relate to the requirements set out above as the audit has not been performed continuously throughout the period and the procedures performed on the relevant internal controls were on a test basis. Any projection of the evaluation of control procedures to future periods is subject to the risk that the procedures may become inadequate because of changes in conditions, or that the degree of compliance with them may deteriorate.

The audit opinion expressed in this report has been formed on the above basis.

Copies of relevant documentation are available on the Puro.earth website: puro.earth

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Abbreviation	Description
'H'	Hydrogen
'O'	Oxygen
CO ₂	Carbon Dioxide
CORC	CO ₂ Removal Certificate
C _{org}	Organic Carbon
GHG	Greenhouse Gas
LCA	Life Cycle Assessment
OC	Overcalculation
UC	Undercalculation
The Puro Rules	the Puro Standard General Rules v3.0 (Edition 2022)
The Biochar Methodology	Edition 2022 v2 Annex A: of the Puro Rules

Part A: Auditor's Report

To: Puro.earth

Dear Sir / Madam,

EnergyLink Services Pty Ltd (EnergyLink Services) was engaged to perform a reasonable assurance audit of Alcom Pte Ltd's CO₂ Removal calculation from the production of biochar for the period from 10 June 2022 to 26 January 2022 against the eligibility requirements of 'the Puro Standard General Rules v3.0 Edition 2022' (hereafter referred to as "the Puro Rules").

Details of Audited Bodies

Puro.earth Project Proponent	Alcom Pte Ltd
Production Facility Operator	Alcom Pte Ltd GSRN: 643002406801000848
Production Facility location	Brgy. Singalat, Palayan City, Nueva Ecija, Philippines

Responsibility of the Audited Body's Management

The management of the audited body (Alcom Pte Ltd) is responsible for the application of the requirements of 'Annex A: Biochar Methodology of the Puro Rules Edition 2022 v2' (hereafter referred to as "the Biochar Methodology") in quantifying CO₂ Removal Certificates (CORCs) from the production of biochar, which is reflected in the proof provided to EnergyLink Services.

The management of the audited body is responsible for preparation and presentation of the evidence in accordance with Section 5 the Biochar Methodology. This responsibility includes the design, implementation, and maintenance of internal controls relevant to the preparation and presentation of proofs that are free from material misstatement, whether due to fraud or error.

Our independence and quality control

EnergyLink Services have complied with the relevant ethical requirements relating to assurance engagements, which include independence and other requirements founded on fundamental principles of integrity, objectivity, professional competence, due care, confidentiality, and professional behaviour. These include all of the requirements defined in the *Fortum – Supplier Code of Conduct*¹.

Furthermore, EnergyLink Services maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards, and applicable legal and regulatory requirements, in accordance with *ISQC 1 Quality Control for Firms that Perform Audits and Reviews of Financial Reports and Other Financial Information*.

Our responsibility

EnergyLink Services' responsibility is to express an opinion on the audited body's Production Facility and Output compliance with the *Puro Rules* based on the procedures we have performed and the evidence we have obtained.

¹ Fortum (2020), Fortum – Supplier Code of Conduct, available at: www.fortum.com/about-us/contact-us/suppliers/code-of-conduct

We have conducted a reasonable assurance engagement in accordance with the *Puro Rules* and relevant international standards, as listed below:

- International Standards on Assurance Engagements ISAE 3000 Assurance Engagements other than Audits or Reviews of Historical Financial Information.
- ISQC 1 Quality Control for Firms that Perform Audits and Reviews of Financial Reports and Other Financial Information, and Other Assurance Engagement.

A reasonable assurance engagement in accordance with relevant international standards involves performing procedures to obtain evidence about the Production Facility process controls and quantification of CORCs in accordance with the Puro Rules. The nature, timing and extent of procedures selected depend on the assurance practitioner's judgement, including the assessment of the risks of material misstatement, whether due to fraud or error. In making those risk assessments, we considered internal controls relevant to the audited bodies' preparation of proofs. We believe that the assurance evidence we have obtained is sufficient and appropriate to provide a basis for our assurance conclusion.

Summary of procedures undertaken

The procedures we conducted in our reasonable assurance engagement included:

- reviewing evidence provided by the audited body;
- assessing the audited body against eligibility criteria;
- conducting interviews and a virtual site visit to validate the evidence provided;
- analysing procedures that the audited body proposed to use to gather data;
- testing of the calculations methods that the audited body performed; and
- identifying and testing assumptions supporting the calculations.

Use of our reasonable assurance engagement report

This audit report has been prepared for use by the audited body and Puro.earth for the sole purpose of reporting on the audited body quantification of CORCs and compliance with the Puro Rules. Accordingly, EnergyLink Services expressly disclaim and do not accept any responsibility or liability to any party other than Puro.earth and the audited body for any consequences of reliance on this report for any purpose.

Inherent limitations

There are inherent limitations in performing assurance audits - for example, assurance engagements are based on selective testing of the information being examined - and because of this, it is possible that fraud, error, or non-compliance may occur and not be detected. An assurance engagement is not designed to detect all misstatements, as an assurance engagement is not performed continuously throughout the period that is the subject of the engagement, and the procedures performed are based on a test basis. The conclusion expressed in this report has been formed on the above basis.

Additionally, non-financial data may be subject to more inherent limitations than financial data, given both its nature and the methods used for determining, calculating, and sampling or estimating such data.

Recommendations and Suggestions for Improvement

During the audit process, the auditor issued one Recommendation and one Suggestion for Improvement.

Recommendation 1

Finding

The Life Cycle Assessment (LCA) prepared by Alcom was based on an 18-day period and made some assumptions related to the energy consumption. Whilst these assumptions are conservative, Alcom should enhance their procedures to incorporate actual data to their claim.

Recommendation

EnergyLink Services recommends that Alcom enhance their record keeping procedures to measure and monitor the GHG emissions associated with the biochar production over time and revisit the data inputs from its LCA to reflect the actual energy consumption and production data, including:

- Electricity consumption from the facility;
- Fuel consumption for the pre-heating of the gasifier and mobile equipment;
- Documenting all production information (incl. feedstock consumption) in a daily log;
- Ensure that every biochar produced bag is properly labelled, including implementing a bag number control; and
- Periodically monitor and record the moisture levels from biochar.

Suggestion for Improvement 1

EnergyLink Services suggests that Alcom implement a procedure to ensure that the weighting systems are properly calibrated, as per the manufacturer's requirements.

Overall Conclusion

Positive Conclusion (Production Facility Audit and Production Output Audit)

Production Facility Audit

Below is a summary of the eligible CO₂ removal per tonne of biochar.

Eligible CO ₂ Removal
0.862 tCO ₂ e per tonne dry biochar

Production Output Audit

The auditor is able to express a reasonable assurance opinion that, in all material respects, the quantification of **22 CO₂ Removal Certificates (CORCs)** for the reporting period 10 June 2022 to 26 January 2023 by the audited body was correct.

Biochar	CORCs Under Audit	Abs. Error (CORCs)	Net Error (CORCs)	Eligible CORCs	Abs. Error Rate (%)	Net Error Rate (%)
Total	22	0	0	22	0%	0%

Sincerely,



Rodrigo PARDO PATRON | Principal
EnergyLink Services Pty Ltd
Lead Auditor
10 July 2023

Part B: Detailed Findings

Audit Findings and Conclusions

Table 1 to Table 5 summarise the findings from the Production Facility Audit. As part of audit procedures, the auditor performed interviews with site representatives and a virtual site visit of the Production Facility. Where possible, the findings from these procedures were used to validate that the eligibility criteria under the methodology had been met, that the proof and evidence provided by the audited body were accurate (for details refer to Appendix A).

Eligibility Assessment

Table 1: Eligibility Assessment

Requirement	Requirement Met?	Verification Remarks	Corrective Action Request / Recommendations
Confirm that the biochar is used in applications other than energy.	Y	The auditor confirmed that Alcom provided sufficient evidence to demonstrate that its produced biochar is used as a soil additive in local agricultural applications and not for energy purposes.	N/A.
Confirm that the biochar is produced from sustainable forest or waste biomass raw materials.	Y	The auditor confirmed that the biochar was produced from waste biomass. The feedstock was composed of rice husks obtained from the production of rice. The rice husks came from existing piles located in the rice mill.	N/A.
Confirm that the producer demonstrates net-negativity with results from a LCA that shows: – carbon footprint of the biomass production and supply. – emissions from the biochar production process. – carbon footprint of the biochar end use. – cradle to grave.	Partially	The LCA provided had projected data (e.g. electricity and fuel consumption, feedstock consumption, biochar production, etc.) from an 18-day trial period. Therefore, the supplied LCA is "forward-looking" and has projected biochar production rates assuming that the plant starts up on Monday mornings and operates continuously until the end of Friday. The LCA is conservative and consider a cradle to grave approach. Nevertheless, the auditor recommends Alcom revisit periodically the LCA inputs to confirm their applicability for ongoing biochar production operations.	Recommendation 1

Requirement	Requirement Met?	Verification Remarks	Corrective Action Request / Recommendations
Confirm that the producer demonstrates net-negativity with results from a LCA that shows: – carbon footprint of the biomass production and supply. – emissions from the biochar production process. – carbon footprint of the biochar end use. – cradle to grave. (Cont.)	Finding	The auditor identified that the audited body miscalculated the GHG emissions associated with the transport to end-users and application phase from the LCA. The source of error was the usage of kilograms of feedstock, instead of the biochar weight to calculate the GHG emissions from transporting and applying the biochar. Additionally, the auditor observed that the same GHG emissions factor was used by the audited body to calculate the GHG emissions associated with diesel consumption for transport and stationary usage. The auditor re-calculated the GHG emissions using the appropriate GHG emissions factor for stationary usage. This correction did not affect the number of CORCs and therefore a recommendation was not made.	N/A.
Confirm that the biochar production process meets requirements 1.1.4 to 1.1.6 of the Biochar Methodology, namely that: – no fossil fuel is used for heating the pyrolysis reactor – the pyrolysis gases are recovered or combusted – the molar H/C_{org} ratio is less than 0.7	Partially	The auditor confirmed that although the gasification system is an auto thermal process in which the thermal energy required to run the process is created from the feedstock being processed, the system used diesel to pre-heat the process up to the required temperature. Once this was achieved, the heat required to sustain the reaction is taken from the combustion of the pyrolysis syngas and the recovery of waste heat generated within the process. The auditor suggests that Alcom enhance their record-keeping procedure to monitor the actual consumption of diesel for pre-heating.	Recommendation 1
	Y	The auditor confirmed during the virtual site visit that the pyrolysis gases were recovered and combusted. The heat from the combustion of the syngas was recovered and used to heat the pyrolysis reactor. Additionally, the heat leaving the kiln case is passed through a heat exchanger for use in the adjacent dryers.	N/A.
		The auditor confirmed that the molar H/C_{org} ratio was less than 0.7, being 0.4998.	N/A.

Requirement	Requirement Met?	Verification Remarks	Corrective Action Request / Recommendations
Confirm that measures are taken for safe handling and transport of biochar to prevent fire and dust hazards.	Y	During the virtual site visit, it was shown that the biochar was manually lied down in the floor of the enclosed production facility for cooling. Posteriorly, it was manually packaged in 18kg bags and transported by truck to the application site. The auditor also recommended that Alcom implements a procedure to periodically measure the moisture content of biochar.	Recommendation 1

Standing Data

Table 2: Record Keeping

Requirement	Requirement Met?	Verification Remarks	Corrective Action Request / Recommendations
Confirm that the standing data of the Production Facility and the CO ₂ Removal Supplier was collected and checked.	Y	The auditor confirmed that the standing data of the Production Facility and the CO ₂ Removal Supplier was collected and checked.	N/A.

Production Facility Assessment

Table 3: Production Facility assessment

Requirement	Requirement Met?	Verification Remarks	Corrective Action Request / Recommendations
Confirm the Production Facility Eligibility under the general rules of Puro Standard.	Y	The auditor confirmed that the Production Facility is eligible under the general rules of Puro Standard, and all necessary evidence had been provided.	N/A.

Requirement	Requirement Met?	Verification Remarks	Corrective Action Request / Recommendations
Confirm that the Production Facility demonstrate Environmental and Social Safeguards.	Y	The auditor confirmed that the CO ₂ Removal Supplier showed sufficient evidence to demonstrate that the Production Facility does no significant harm to the surrounding natural environment and local communities. The auditor confirmed the local government (the Nueva Ecija government) has approved the biochar production project.	N/A.
Confirm that the Production Facility demonstrate additionality, that the CO ₂ removals are a result of carbon finance, and that the project is not required by existing regulations or other obligations.	Y	The auditor confirmed that the CO ₂ Removal Supplier showed sufficient evidence to demonstrate that the project meets the requirements of Clause 1.2.3 of Puro Standard Biochar Methodology.	N/A.
Confirm that the quantity of biochar produced and sold is documented via appropriate processes.	Y	The auditor noted, through discussions with Alcom personnel and additional evidence, that Alcom does have procedures implemented for managing its biochar production data. However, the auditor observed that additional record-keeping procedures could be implemented to ensure reliable and accurate monitoring of biochar production data.	Recommendation 1
Confirm that metering infrastructure is in place to determine: – the production output. – the energy use of the Production Facility.	Partially	The auditor noted, during the virtual site visit and through additional evidence provided by the audited body, that the production facility is shared with a rice husk drying facility and share the electricity account. Whilst the LCA conservatively considered the electricity consumption of the biochar production, it is recommended for Alcom to implement a robust procedure to accurately measure the actual electricity and fuel consumption over time.	Recommendation 1

Requirement	Requirement Met?	Verification Remarks	Corrective Action Request / Recommendations
Confirm that metering infrastructure is in place to determine: – the production output. – the energy use of the Production Facility. (Cont.)	Y	The auditor noted that Alcom used a new weight cell to measure the weight of every sack produced. Nevertheless, Alcom did not have a procedure in place to properly calibrate the weight cells going forward. Based on manufacturer specifications, the auditor confirmed that the calibration was not necessary during the audited period. However, the auditor suggests Alcom to implement a procedure to continually calibrate the weight cells used to quantify the production input and output.	Suggestion for Improvement 1
Confirm the calculations used to quantify emissions from the process. These must account for: – The energy created by the biochar. – The energy source used in the production process. – Cultivating and harvesting of raw materials (forest vs other biomass). – Transporting of raw materials to the Production Facility (based on distance transported and fuel used).	Partially	The auditor confirmed that the Production Facility has appropriately estimated and reported the electricity and fuel consumed by its operations during the trial period. However, the auditor recommends Alcom to implement a robust procedure to accurately measure the actual electricity and fuel consumption over time.	Recommendation 1
	Y	The auditor confirmed that the feedstock was categorised as waste material (rice husks). As such, the auditor was able to confirm that the emissions associated with the cultivating and harvesting of raw material did not need to be accounted for. Moreover, the auditor confirmed that the emissions associated with transporting the feedstock were considered within the emissions boundary of the LCA, and the emissions per unit for the projected production were estimated in a reliable manner.	N/A.

Requirement	Requirement Met?	Verification Remarks	Corrective Action Request / Recommendations
Confirm the CO ₂ Removal Supplier is able to calculate the CO ₂ Removal independently.	Y	The auditor reviewed the evidence provided by the audited body and confirmed that the CO ₂ Removal Supplier was able to calculate the CO ₂ removal independently.	N/A

Quantification of CO₂ Removal

Table 4: Quantification of CO₂ Removal - Calculation Methodology

Requirement	Requirement Met?	Verification Remarks	Corrective Action Request / Recommendations
Confirm that the quantification of CO ₂ removal is calculated using the Calculation formula of CO ₂ removal.	Y	The auditor examined the CORC calculator provided by the audited bodies and confirmed that the formulas applied in the quantification of CO ₂ removal for both biochar streams were in accordance with the Puro Rules.	N/A.
Confirm that the inputs to the Calculation formula of CO ₂ removal are appropriate and consistent with the evidence provided.	Y	The auditor reviewed the evidence provided by the audited body and confirmed that the inputs to the calculation formula of CO ₂ removal had been correctly determined.	N/A.

Verification of Proofs

Table 5: Verification of proofs and documentation

Requirement	Requirement Met?	Verification Remarks	Corrective Action Request / Recommendations
Confirm that the standing data for the Production Facility meets the requirements of the Biochar Methodology and is consistent with other evidence.	Y	The auditor reviewed and validated the standing data provided by the audited body and confirmed this was consistent with desktop testing and the virtual site visit.	N/A.
Confirm that the necessary proof and evidence documents are maintained by the Production Facility as per Section 5 of the Biochar Methodology ² .	Y	The auditor confirmed all necessary evidence has been provided as per Section 5 of the Biochar Guidelines	N/A.

² Information in Section 5 of the Biochar Methodology includes:

- Proof of sustainability of raw material for forest and/or waste biomass.
- LCA data for biomass and biochar production.
- Justification on the soil temperature used for the calculation of the biochar sequestration.
- Proof of product quality, production volume, sales and end use of biochar.
- Proof of no double counting/C positive marketing.

Peer Reviewer Conclusion

Name of the peer reviewer	Katherine Simmons
Peer reviewer's credentials	· Bachelor of Engineering (Honours) in Polymer Engineering (minoring in Chemical Engineering). · Category 1 Registered Greenhouse and Energy Auditor with the Clean Energy Regulator (Australia). · Climate Active Registered Consultant. · Integrated Management Systems Lead Auditor ISO 19011, ISO 9001:2015, ISO 14001:2015, ISO 45001:2018.
Peer reviewer contact details	Email: katherine@energylinkservices.com.au Phone: +61 431 612 950
Outcome of the evaluation undertaken by the peer reviewer	Minor amendments to the report.

Appendix A: Table Site Visit Findings

Table 6: Site visit summary table

Requirement	Requirement Met?	Verification Remarks	Corrective Action Request / Recommendations
Check that the raw material is of eligible type and sustainably sourced.	Y	The auditor confirmed that the biochar was produced from waste biomass. The feedstock was composed of rice husks obtained from the production of rice. The rice husks came from existing piles located in the rice mill which were transported to the Production Facility by truck.	N/A.
Check that the LCA provided is consistent with observations on site.	Y	The auditor confirmed during the virtual site visit that the LCA specifics and emissions boundary were consistent with the observations on site.	N/A.
Confirm that no fossil fuel is used for heating the pyrolysis reactor, and the pyrolysis gases are recovered or combusted.	Y	The auditor confirmed, via the virtual site visit that the biochar production process had met the requirements of the Biochar Methodology.	N/A.
Check that the Production Facility's documentation system is accurate and reliable for recording the quantity of biochar produced and sold.	Partially	The auditor noted that appropriate metering infrastructure is present to quantify the Production Facility output. Nevertheless, the auditor has issued a recommendation to ensure Alcom enhance their record keeping procedures to ensure the quantity of biochar produced and sold is appropriately documented.	Recommendation 1
Check that appropriate metering infrastructure is in place and calibrated correctly to quantify the Production Facility output and the energy use of the Production Facility.	Partially	The auditor noted during the site visit and through additional evidence provided by the audited body, that Alcom did not have appropriate metering infrastructure to quantify the energy use of the Production Facility, as Alcom used an estimated value for the LCA. The auditor has issued a recommendation for Alcom to implement a robust procedure to accurately measure the actual electricity and fuel consumption over time.	Recommendation 1

Requirement	Requirement Met?	Verification Remarks	Corrective Action Request / Recommendations
Check that appropriate processes are in place to quantify the inputs to the Calculation formula of CO ₂ removal for the purpose of Preparing the Output Report and calculating CORCs.	Y	The auditor reviewed the evidence provided by the audited body for the projected production and confirmed that the CO ₂ Removal Supplier had appropriate procedures in place to quantify the inputs to the Calculation formula of CO ₂ removal and was able to calculate the CO ₂ removal independently.	N/A.