GROUND-TRUTH AUSTRALIAN ORCHARDS VALIDATION REPORT

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Summary:

Description of the validation and the project:

Carbon Check (India) Private Ltd. has carried out validation of grouped project **"Ground-Truth Australian Orchards"** (hereafter referred to as "grouped project") and the first PAI under VCS Program., with regards to the relevant requirements of VCS Standard Version 4.4 (dated 17/01/2023)/B01/. The VCS project is an Agricultural Land Management (ALM) grouped project under project activity Improved Cropland Management (ICM) and is being implemented by Carbon Friendly PTy Ltd. (hereinafter project proponent).

The goal of the grouped project is to promote improved agriculture land management practices (regenerative farming practices) across Australia, which is the project boundary, to achieve GHG reductions and removals through enhancing the ability of agricultural soils to store carbon, buffering food production systems from environmental changes, improving water and nutrient use efficiency, and removing CO_2 from the atmosphere.

To achieve the GHG reductions and removals, the grouped project involves a combination of the following changes in practice /01/VII/:

- Application of organic materials and mulch to reduce the reliance on synthetic fertilisers and to improve soil health.
- Cover cropping and inter-row biomass generation; establishment of permanent tree crops.
- Improved water management; and others.

The farms enrolled (to be enrolled under future PAIs) in this grouped project are regenerative orchards in Australia, mainly growing macadamias, avocados, cherries, apples, and pears. The farms identified within the project boundary falls under following 3 scenarios (project phases commencing from project start date i.e., 1st February 2023)/01/VII/:

Scenario 1: Young orchards; crop trees are planted after the project start date.

Scenario 2: Mature orchards that start implementing eligible project activities after the project start date.

Scenario 3: Mature orchards that start increasing the intensity of eligible project activities after the project start date.

The project proponent aims to enrol around 17,000 ha of farming area under proposed grouped project. At the time of validation, the first PAI i.e., "Macadamia Farm Holdings" has been established which is covering an area of 71 ha in the Maryborough region of Queensland, Australia and is on 3rd project phase/scenario consisting of mature Macadamia (*Macadamia integrifolia* and *Macadamia tetraphylla,* species native to Australia[1]) orchard. For the first PAI, after joining the project, the farm started to increase the intensity of existing regenerative practices, including the application of compost, establishment of cover crops and recycling of farm residue as mulch/01//VII/.

The total estimated GHG emission reduction and/or removals from the first PAI are 440 tCO_2e over the crediting period of 20 years (1st February 2020 to 31st January 2040, renewal 4 times) with an annual average of 22 tCO_2e.

The VCS grouped project has applied the VCS methodology *VM0042: Methodology for Improved Agricultural Land Management v2.0*/B02/.

- Quantification approach 2: Measure and Remeasure has been applied for direct measurement method has been carried out for assessment of SOC stock in the project region.
- Quantification approach 3: Default Factors: To quantify GHG N_2O emissions from use of nitrogen fertilizers and from fossil fuel using site specific default emission factor data.

Table I: Dates & Timelines of VCS project/01//B03

Start date	1st February 2020
Listing of project on VERRA registry	9th March 2023
Opening of project for public comment	9th March 2023 - 8th April 2023
Crediting Period	1st February 2020 to 31st January 2040 (20 years, renewal 4 times)

Purpose and scope of validation

The purpose of the validation is to have a thorough and independent assessment of the proposed project against the applicable VCS requirements/B01/ the project's baseline/04/, GHG ERRs generated from first PAI/02/, monitoring plan and compliance with the relevant VCS and host Party

[1] https://anpsa.org.au/plant_profiles/macadamia-integrifolia/

criteria. These are validated to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of emission reductions. Carbon Check's objective is to perform a thorough, independent assessment of the validation of the project activity.

Validation scope is defined as an independent and objective review of the VCS Project Description (PD)/01/ against the relevant criteria and guidance documents provided by VCS including the following/B01/:

- VCS Program Guide (v4.3, dated 17/01/2023)
- VCS Standard (v4.4, dated 17/01/2023)
- Program Definitions (v4.3, dated 21/12/2022)
- Registration & Issuance Process (v4.3, dated 17/01/2023)
- AFOLU Non-Permanence Risk Tool (v4.0, dated 19/09/2019)
- VCS Validation and Verification Manual (v3.2, dated 19/10/2016)
- VCS Methodology VM0042: Methodology for Improved Agricultural Management v2.0/B02/.

Following the requirements of above-mentioned documents (guidance and criteria), VVB has ascertained that the project meets all the applicability criteria of the selected baseline/01//04/ and monitoring methodology/B02/. VVB has also assessed the GHG statements and assumptions (for GHG accounting) made in the VCS PD/01/, for accounting of ex-ante ERs generated from the proposed grouped project and confirms them to be valid and applicable.

Method and criteria used for validation

The validation consists of the following four phases:

I. A desk review of the project description documents:
   - A review of data and information.
   - Cross checks between information provided in PD and information from sources with all necessary means without limitations to the information provided by the project proponent.

II. Interviews with project stakeholders
   - Interviews with relevant stakeholders in the host country with personnel having knowledge of the project development via telephone, email, or direct on-site inspections.
   - Cross-checking between information provided by interviewed personnel with all necessary means without limitations to the information provided by the project proponent.

III. Reference to available information relating to projects or technologies similar to projects under validation and review based on the approved methodology being applied for the appropriateness of formulae and accuracy of calculations.

IV. The resolution of outstanding issues and the issuance of the final validation report and opinion.

Number of findings raised during validation

During the validation, a total of 41 findings have been raised, which includes 34 Corrective Action Requests (CARs), **07** Clarification Requests (CLs) and 00 (zero) Forward Action Request (FAR). All the findings have been satisfactorily closed upon the receipt of the revised documents, clarification and/or the documentary evidence.

Uncertainties associated with the validation

Uncertainty deductions have been estimated and applied separately for each ERRs source within the project boundary. The deduction is estimated using a probability of exceedance method as follows for Quantification Approach 2 given in section 8.6.2 of the applied methodology VM0042 v2.0/B02/.

Based on the review of the VCS PD/01/ and supporting document/02/, VVB confirms that the uncertainty associated with the estimation of SOC stock present in the sample points identified within the project boundary (for first PAI) has been appropriately addressed by the. In line with section 4.1.2 of the VCS Standard v4.4 requirement, validation has been performed with an intent to provide optimum reasonableness of the assumption, limitations, and methods that support the outcome of project implementation. To ensure the same VVB's validation plan consists of an evidence gathering plan in the form of list of pertinent documents associated with project implementation.

Validation conclusion

Based on the on-site inspection2.4, the review of the VCS PD/01/, and supporting documents/03-16/, the VVB confirms that the project PD/01/ has been developed taking appropriate assumptions and values in compliance with the requirements of VCS Standard version 4.4/B01/ and the methodology applied/B02/.

Carbon Check (India) Private Limited has been commissioned by the Carbon Friendly Pty Ltd. to perform validation of VCS grouped project and its first project activity instance "Ground-Truth Australian Orchards".

In accordance with the requirements of VCS Standard version 4.4/B01/ and the methodology applied VM0042 version 2.0/B02/, the validation team confirm that all the values and assumption included in the VCS PD/01/ including objectives, scope and criteria, level of assurance, baseline and monitoring plan are valid and applicable.

Table II: Ex-ante GHG reductions and/or removals for the first PAI/01/:

Crediting Period	Total estimated GHG emission reductions and removal (tCO_2e)	Average annual GHG emission reductions and removal (tCO_2e/year)

1st February 2020 to 31st January 2040 (20 years, renewal 4 times)	440	22

Through the review of VCS PD/01/, GHG reductions/removals spreadsheet/02/, supporting documents/03-16/, and on-site inspection/interviews/VII/, VVB confirms that estimated total emission reductions and/or removals from the proposed project activity over the first crediting period (1st February 2020 to 31st January 2040) are valid and appropriate.

VVB has concluded this opinion based on the detailed assessment of the monitoring methodology employed by the PP and the thorough review of the data/parameters, respective value applied, and the peer reviewed literature provided by PP for GHG accounting.

CONTENTS

1 INTRODUCTION

1.1 Objective

Carbon Friendly Pty Ltd. (hereafter referred to as "PP") has appointed Carbon Check (India) Private Ltd. (hereafter referred tso as "VVB"), a VERRA VCS approved VVB, to perform the validation of the VCS Grouped Project “Ground-Truth Australian Orchards”/01/. This report summarizes the findings of validation of the project, performed based on the VCS Program Guide (v4.3, dated 17/01/2023), VCS Standard (v4.4, dated 17/01/2023), Program Definitions (v4.3, dated 21/12/2022), Registration & Issuance Process (v4.3, dated 17/01/2023), VCS Validation and Verification Manual (v 3.2, dated 19/10/2016)/B01/. Validation is required for all VCS project activities intending to register a grouped project under the VCS program. This report contains the findings and resolutions from the validation of the grouped project.

The purpose of this validation audit is to have a thorough and independent assessment of the proposed grouped project to verify project's compliance against the criteria set out in the section 1.2 of this report. This report summarises and document the compliance with the applicable VCS requirements and/or guidelines/B01/ and compliance with the applied methodology VM0042 v2.0/B02/.

Table III: VVB ascertained the following on the VCS grouped project:

VCS category	Agricultural Land Management: (Improved Cropland Management) ICM
Applied methodology	VCS Methodology “VM0042: methodology for Improved Agricultural Land Management, version 2.0/B02/
Sectoral scope	14: Agriculture, Forestry, and Other Land Use (AFOLU)

The objectives for the validation of the project includes:

validation objective of the project includes:

- ✓ Assessment of compliance with the VCS Program Guide/B01/, VCS Standard version 4.4/B01/ andother relevant VCS requirements/B01/.
- ✓ Assessment of compliance with the applied VCS Methodology VM0042 version 2.0/B02/.
- ✓ Assessment of project compliance with the relevant rules including host country legislation.
- ✓ Evaluation of monitoring plan and develop conclusions regarding the monitoring methodology and the collection archiving of data relevant to GHG emissions estimation and baseline emissions.

- ✓ Evaluation of the calculation of GHG reductions, including appropriateness of source, sink, and reservoirs, the correctness and transparency of formula and factor used, assumptions related to estimation of GHG reductions, and uncertainties.
- ✓ To develop conclusions based on validation criteria, submission of corrective action on requests, clarification requests and forward action requests, as applicable.

1.2 Scope and Criteria

The project is an AFOLU project under Sectoral Scope 14 – Agriculture, Forestry, and Other Land Use. The project is an Agricultural Land Management (ALM) project under activity type Improved Cropland Management (ICM). The project is designed as a groped project activity/01/.

The scope of validation is to assess the conformance of the VCS PD/01/ and other relevant supporting documents against the VCS requirements and applied methodology and tools, including the assessment of:

- ✓ Project area for the first PAI
- ✓ Area of proposed project-level adoption of each activity
- ✓ GHG emission reduction and/removal interventions involved in the project.
- ✓ Physical infrastructure, activities, technologies, and processes of the VCS project/01/
- ✓ Project's physical boundaries
- ✓ Project ownership
- ✓ GHG sources and gases/02/
- ✓ Grouped Project eligibility as per VCSA and applied methodology requirement.
- ✓ Eligibility criteria for the inclusion of the new PAIs in future.
- ✓ Stakeholder engagement
- ✓ Environmental impacts
- ✓ Baseline and additionality demonstration
- ✓ Sustainable development contributions
- ✓ Leakage assessment
- ✓ Non-Permanence Risk analysis
- ✓ Monitoring plan and SOPs for project monitoring and field data collection
- ✓ Estimated GHG reduction and/or removals and uncertainty analysis.
- ✓ Calculation of VCUs

The validation criteria follow the guidance documents provided by VCS/B01/ including the following: VCS Standard version 4.4, VCS Program Guide version 4.3, AFOLU Non-Permanence Risk Tool version 4.0 and the applied VCS Methodology VM0042: Methodology for Improved Agricultural Management v2.0/B02/

1.3 Reasonableness of Assumptions

The approach used by VVB for validation of the grouped project is built on a thorough understanding of the risk associated with reported data on GHG emissions and reductions/removals and the controls used to mitigate them. VVB conducted the validation by on-site inspection n project site, reviewing all the evidence and other relevant information, from sources/reference links to provide reasonableness of the assumption, limitations, and methods, that estimated GHG emissions reductions and/or removals are fairly reported in the project description and appropriately substantiated with supporting documents. Validation team checked the criteria of VCS Program guide/B01/ & VCS standards/B01/, criteria of applied methodology/B02/ and project's compliances with relevant applicable laws and regulations present in the host country.

Validation team has followed a risk-based assessment approach based on review of the project description/01/, to evaluate correctness, completeness, and consistency of the data reported. An evidence-gathering plan has been developed to assess and mitigate any risk associated with description and justification for the project particulars. VVB has also evaluated and cross-checked the uncertainty analysis performed by the PP for addressing any sample errors, measurement error of model inputs and model prediction error, and estimation of project area. Further, VVB assessed the relevant data and parameters in section 3.3.8 of this report.

Validation team has conducted an on-site inspection for the respective project activity. (Refer §2.4 for details). All documentary evidence has been checked, and a physical site visit has been conducted in the presence of PP representatives, site personnel and consultants to arrive at a validation conclusion by the assessment team. Validation is carried out in conformity of all above-mentioned details, and it is confirmed that information provided by project proponent is accurate and estimated GHG emissions reductions/removals have been calculated appropriately following the approved baseline and monitoring methodology VM0042 v2.0/B02/ and VCS standard version 4.4/B01/.

VVB confirms that all the assumptions and statements made by PP are valid and appropriate with the possible reasonableness.

1.4 Summary Description of the Project

The grouped project promotes and facilitates the adoption of specific regenerative agricultural practices, via the generation of carbon credit income as a source of funding to enhance and support these activities. The grouped project activities include a combination of following practices, but are not limited to:

Activity 1: Reducing the reliance on synthetic fertilizers: By encouraging the use of organic amendments such as compost, mulch, and manures to replace synthetic fertilizers. These organic amendments improve soil structure, promote microbial activity, and enhance nutrient cycling, which ultimately increase SOC levels.

Activity 2: Cover cropping and inter-row biomass generation: Include establishment of multi-species cover crops to promote inter-row biomass generation. Cover crops help increase SOC by adding organic matter to the soil, improving soil structure, and reducing soil erosion.

Activity 3: Improved irrigation methods and water-use monitoring: By optimizing irrigation and monitoring water use, the project aims to reduce energy consumption and maintain optimal soil moisture. Balanced soil moisture levels are essential for microbial activity and organic matter decomposition, both of which contribute to increased SOC.

Activity 4: Establishment of new permanent tree crops: Involves the plantation of new permanent fruit tree crops and associated canopy growth. These trees help increase SOC by adding root biomass and leaf litter to the soil, fostering an environment conducive to organic matter decomposition and carbon sequestration.

Activity 5: Return of organic crop wastes to the orchard: Recycling organic crop wastes back into the orchard provides an additional source of organic matter to the soil, which increases SOC and improves overall soil health. The project advocated for mulching, pruning, and redistributing the material under the tree line to reduce evapotranspiration losses from the soil. This practice provides an additional source of carbon to the soil, contributing to increased SOC levels.

The first PAI i.e., Macadamia Farm Holdings, is a scenario 3 (mature orchard) that had been applying some regenerative practices prior to joining the grouped project. After the project start date, MFH has increased the intensity of the following activities to an extent that exceeds 5% of previous intensity:

- Applied compost to all orchards (Activity 1)
- Established a mixed species cover crop (Activity 2) consisting of Sweet Smother Grass (*Dactyloctenium australe*) and Couch Grass (*Cynodon dactylon*).
- Returned macadamia (*Macadamia integrifolia* and *Macadamia tetraphylla*) husk & pruning, and grass clippings to the orchards as mulch (Activity 5)

VVB based on the on-site inspection/interviews[/VII/] and supporting document[/04/], and confirms that prior to project implementation, these farms identified within the project boundary applied traditional farming practices which included intensive tillage, burning of crop residue and large-scale application of broad-spectrum of fertilisers and pesticides with non-efficient use of land use resources.

VVB confirms the project involves increase in the intensity of the regenerative practices that were already present in the project region with the combination of improved agricultural

practice i.e., use of organic compost instead of synthetic fertilizers, planting multi-species cover crop to enhance carbon sequestration potential of the region by increasing vegetation cover per unit area and thereby by preventing soil erosion as well, and lastly but not the least use of macadamia husk & pruning residue, and grass residues as mulching material to conserve soil moisture and reducing evapotranspiration from the soil surface[/01//VII//14/]. VVB, further confirms that the activities implemented under first PAI are in line with the requirement of section A1.2 of the VCS Standard v4.4[/B01/] and with the requirement of section 4, applicability condition (1) of the applied methodology VM0042 v2.0[/B02/].

Figure 1: As per the ISO Report (GHG Emission Reductions & Removal Enhancements Report) [/10/]:

Table 2. Summary of key inventory data of farm inputs in the base year and reporting year

Parameter	Unit	Base year (2019/20)	Reporting year (2020/21)
1. Crop details			
Average yield	t/ha	1.8	3.5
Total yield	t	128.2	246.3
Whole farm area	ha	90.8	90.8
Assessed crop area	ha	71	71
2. Fertiliser use			
Nitrogen application rate	kg N/ha	284.2	127.3
Urea application (incl. in the above)	kg/ha	100	-
3. Chemical use			
Insecticides	L or kg	17.0	126.6
Herbicides	L	201.4	767.3
Fungicides	L	120.0	9.6
Adjuvants and others	L	61.8	160.3
4. Energy use			
Diesel	L	20,142	24,815
Petrol and LPG	L	1,734	526
Electricity for irrigation	kWh	123,093	126,869
5. Irrigation			
Total irrigated area	ha	71	71
Water application rate	ML/ha	3.0	3.0
6. Soil organic carbon			
Measured SOC	%	0.92	0.99
Derived SOC	%	0.90	1.01

VVB has verified the start date for the grouped project is the start date of first PAI i.e., 1st February 2020[/01//05/] (detailed assessment has been provided in section 3.1 of this report under subheading Project Start Date), and the validation of the project has been conducted within the timeline set for the completion of project validation (5 years, as indicated in the VCS Standard v4.4, section 3.8.5).

In line with the VCS Standard requirement for AFLOU projects, section 3.9.3 of VCS Standard v4.4, as the first crediting period of the project is of 20 years, starting from 1st

February 2020 to 31st January 2040. The project proponent opts for four times renewal of crediting period with a total project crediting period not exceeding 100 years.

Based on the review of the VCS PD/01/, onsite inspection/interview/VII/, and review of the legal binding agreement in place/06/, VVB confirms that the Carbon Friendly, as the Project Proponent has the rightful ownership of the Carbon Credits from the sale of VCUs generated from the GHG mitigations subjected to project implementation in the region.

Further the project implementing partner i.e., Macadamia Farm Holdings Pty Ltd (MFH) is the landowner for the area subjected to implementation of improved ALM practices. VVB has verified the same by cross-checking the land titles document/06/ issued by the State of Queensland Natural Resources Mines and Energy. VVB confirms that the project area is protected by a legally binding commitment to continue management practices that protect carbon stocks over the length of the project crediting period.

The quantification approach for the accounting of GHG ERRs is in line with the guideline of section 8 of the Applied methodology VM0042 v2.0/B02/. The first PAI after implementing improved agriculture land management practices expect to achieve 22 tCO_2e emission reductions and/or removals annually for the first crediting period/01//02/.

2 VALIDATION PROCESS

2.1 Method and Criteria

The validation assessment has been performed through a combination of document review and interviews with the relevant personnel as discussed in section 2.3 and 2.4 of this report. At all times, the project has been assessed for conformance against the criteria described in section 1.2 of this report. As discussed in section 2.7, findings[APPENDIX:2 FINDING LOG] have been issued to ensure that the project's conformance to all requirements[/B01-B03/].

The validation of the project includes the following assessment activities:

- ✓ Contract review & signing
- ✓ Appointment of team members based on competencies.
- ✓ Assessment Planning including preparation of validation plan (sampling plan) and strategic risk analysis and evidence gathering plan (activities)
- ✓ Desk review on VCS PD[/01/], carbon sequestration calculations (ex-ante)[/01/02/] and other documents
- ✓ A review of data and information presented by the PP to verify their compliance with the evidence gathering plan.
- ✓ A review of the monitoring plan, monitoring and reporting methodology, the competency of personnel performing the monitoring activities along with organizational structure.
- ✓ Assessment of data management system and the QA/QC procedure in place to ensure data transparency and accuracy.
- ✓ Interviews with the parties involved during the on-site inspection/interviews.
- ✓ Reporting and recording of assessment.
- ✓ Findings and their closure[APPENDIX2: FINDING LOG]
- ✓ Technical review of the project description
- ✓ Additional validation activities
- ✓ Submission of final validation report along with VVB's opinion on project particulars.

A project specific validation plan has been developed to guide the auditing process to ensure efficiency and effectiveness. The purpose of the validation plan is to present a risk assessment for determining the nature and extent of validation procedures necessary, thus reducing the risk of auditing error to a reasonable level.

The validation of the VCS PD[/01/] has been conducted in compliance against the requirement documents as stated in Appendix 1: List of documents[/B01-B03/].

VCS Validation Time Frame:

Table IV: A time frame envisaged for this assignment is as follows:

Milestone description	Time

Date of contract signing with the VVB	3rd November 2022
Date of Listing on VERRA Registry	9th March 2023
On-site Audit	24th July 2023 to 26th July 2023

Sampling Plan

No Sampling approach has been used by VVB.

Table V: Validation Team:

S. No.	Role	Type of Resource	Last Name	First Name	Affiliation (e.g., name of central or other office of VCS Validator or Outsourced entity)	Involvement in			
						Desk/document review	On-site inspection	Interviews	Validation findings
1.	Team Leader/ Technical Expert	IR	Anand	Amit	CCIPL	×	×	×	×
2.	Team member	IR	Kapoor	Isha	CCIPL	×	×	×	×
3.	Team member	IR	KV	Kiran	CCIPL	×			×

Table VI: Technical reviewer and approver of the Validation report:

Sr. No.	Role	Type of Resource	Last Name	First Name	Affiliation (e.g., name of centralor other office of VCS Validator and Verifier or Outsourced entity)
1.	Technical Reviewer	IR	Singh	Vikash Kumar	CCIPL

2.2 Document Review

During the document review, VVB has applied standard auditing techniques including but not limited to document reviews and interviews, review of the applicable/applied methodology and its underlying formulae and calculations to assess the quality of information provided.

This report contains the findings and resolutions from the validation and a validation opinion on the proposed grouped project thus confirming the project design as document is sound and reasonable and meets the stated requirements and identified criteria.

The VCS project description, emission reduction calculation spread sheet and supporting documents related to the project design and baseline were reviewed as per VCS standard version 04.4 /B01/ requirements. The desk review included:

- A review of the data and information presented to verify completeness and consistency in accordance with VCS standard version 4.4 requirements.
- A review of the project description and monitoring methodology, paying particular attention to the applicability conditions of the methodology and baseline and additionality related requirements.
- A review of the monitoring plan and the project's compliance with relevant VCS criteria.

Furthermore, the validation team used additional documentation by third parties like host-party legislation, technical reports referring to the project design or to the basic conditions and technical data.

The VCS PD version 1.0 dated 20th January 2023/01/ has been initially reviewed and VVB requested the PP to present the supporting information and documents. The documents reviewed by VVB are listed below in Appendix 1. Through the process of validation, the revised VCS PD and the supporting documents were evaluated to confirm the actions taken by the PP to the CARs and CLs issued by the validation team.

The table in Appendix 1 outlines the documentation reviewed during the validation. Appendix 2: FINDING LOG outlines the finding response from the PP and VVB assessment on each and every finding response/justification and revisions made/evidence provided by PP.

2.3 Interviews

On-site inspection/interview has been performed by the validation team from 24th July 2023 to 28th July 2023 at Marybourough, Australia as part of the validation process to confirm and verify the information provided in the documents (Refer Appendix 1: LIST OF DOCUMENTS).

The table VII below describes the on-site inspection interview process and personnel identified by VVB, including their roles, who were interviewed and/or delivered information additional to that provided in the VCS PD/01/ and any supporting documents.

Table VII: The project representatives and stakeholders interviewed, and the topic discussed:

Sr. No.	Interview			Date	Subject	Audit team
	Last Name	First Name	Affiliation			
/01/	Visser	Francois	Carbon Friendly Pty Ltd.	24rd July 2023 – 28th July 2023	• PP's roles and responsibilities. • VCS, ALM-ICM Eligibility criteria	Amit Nanad (Team leader, technical expert), Isha Kapoor (Team member)
/02/	Devitt	Katharina	Carbon Friendly Pty Ltd.	24rd July 2023 – 28th July 2023	• Grouped Project eligibility and inclusion of new PAIs. • Project Design	Amit Nanad (Team leader, technical expert), Isha Kapoor (Team member)
/03/	Smit	Theunis	Carbon Friendly Pty Ltd.	24rd July 2023 – 28th July 2023	• Baseline Scenario. • Baseline Identification and Additionality of the project	Amit Nanad (Team leader, technical expert), Isha Kapoor (Team member)
/04/	Loots	Maike	Carbon Friendly Pty Ltd.	24rd July 2023 – 28th July 2023	• GHG Qualification • Sustainability and local stakeholders meeting. • Project implementation.	Amit Nanad (Team leader, technical expert), Isha Kapoor (Team member)
/05/	O.ran	Tim	Ag. Plus Pty Ltd.	24rd July 2023 – 28th July 2023	• Future project plans. • Organization structure, roles, and responsibilities.	Amit Nanad (Team leader, technical expert), Isha Kapoor (Team member)
/06/	Smit	Armond	MFM Pty Ltd.	24rd July 2023 – 28th July 2023	• No-net Harm Assessment. • Non-Permanence Risk Assessment. • Reliance of local stakeholders on natural resources within the project area. • Stakeholder meeting process and Mechanism	Amit Nanad (Team leader, technical expert), Isha Kapoor (Team member)

					for ongoing communication. • Ownership of the land titles and carbon credits. • Monitoring methodology and data collection procedures	

2.4 Site Visits

The validation on-site inspection has been conducted from 24th July 2023 to 28th July 2023. VVB has assessed the baseline scenario and project implementation during the on-site inspection and interview in line with the information provided in the VCS PD.

During the on-site inspection/interviews, VVB used the following evidence-gathering activities and techniques in the validation:

- observation;
- inquiry;
- analytical testing;
- confirmation;
- recalculation;
- examination;
- retracing;
- tracing;
- cross-checking
- reconciliation

For the monitoring of change in SOC stock within the project boundary for the first PAI, PP has employed random stratified sampling involving division of project area into homogenous strata. Stratification has been conducted based on remote sensing using online GIS platforms. The factors considered for this stratification were: Topography, Topographical Wetness Index (TWI), Soil bulk density, clay content, soil depth/01//VII//11/.

During on-site inspection validation team members conversed with the MRV personnel involved in the project monitoring and data collection/reporting. VVB confirms that the MRV personnel have project-type specific expertise and academic qualifications, to ensure possible optimum data quality and accuracy.

Validation Plan: To ensure a complete, transparent, and timely execution of the validation process, the team leader had planned the complete sequence of events necessary to arrive at

a substantiated final validation opinion. Various tools have been established to ensure an effective assessment planning.

Step 1- Identification of Materiality threshold

Qualitative materiality threshold: Qualitative and quantitative materiality refers to "errors", "omission" and "misrepresentation" that either individually or in the aggregate form affect the GHG assertion.

As per section 5.1.7 of ISO 14064-3,

"Qualitative materiality refers to intangible issues that affect the GHG statement. Examples include:

a) *control issues that erode the verifier's confidence in the reported data;*
b) *poorly managed documented information;*
c) *difficulty in locating requested information;*
d) *noncompliance with regulations indirectly related to GHG emissions, removals, or storage".*

VVB has conducted assessment of management system of documentation presented by PP, project compliance against the applied methodology requirements and applicable VCS criteria, and correctness of the information given in the VCS PD/01/ in line with VCSA requirements. Furthermore, VVB has assessed the project monitoring procedures to evaluate data collection/reporting procedure, consistency of the data records, risk analysis of the project particulars along with mitigation through cross-checking data/documents sets, and QA/QC procedure employed by PP and ~~confirms~~ that the project description complies with the applicable VCS and methodological requirements.

Quantitative materiality threshold:

As per section 5.1.7 of ISO 14064-3,

"*Quantitative materiality refers to error in value in the GHG statement. Examples include misstatements, incomplete inventories, misclassified GHG emissions or misapplication of calculations*".

As per section 4.1.8. of VCS Standard (version 4.4),

"*The threshold for materiality with respect to the aggregate of errors, omissions and misrepresentations relative to the total reported GHG emission reductions and/or removals shall be five percent for projects and one percent for large projects*".

Table VIII: Materiality threshold applicable to project

Applicable threshold level	Threshold	Category
☐	1%	Large projects: Emission reductions or removals for registered large scale project activities achieving a total removal more than 300,000 tonnes of CO_2e per year

☒	5%	Projects: Emission reductions or removals for registered small-scale project activities achieving total removal of less than or equal to 300,000 tonnes of CO_2e per year

The validation team identified the materiality threshold applicable to the project based on the estimated average annual GHG reduction and/or removals from the project i.e., 22 tCO_2e/year for the first PAI (which is <300,000 tCO_2e/year). Hence, VVB has determined that materiality threshold of 5% i.e., 1 tCO_2e/year is applicable for the first PAI.

Step 2- Identification of risks, their level and assessment

Based on the risk analysis the validation has been planned in accordance with the latest applicable version of CDM Guideline: "Application of materiality in validations". The risk assessment has been used in developing the validation and evidence-gathering plans. Any input into the risk assessment shall be recorded.

Table IX: Risks associated with the project implementation & VVB assessment.

Risk that could lead to material errors, omissions, or misstatements	Assessment of the potential risk		Assessment of the records/information/interview with personnel to check controls/ mitigation measures
	Risk level	Justification	
VCS project activity requirements Adherence to VCS rules and requirements including criteria for inclusion of future project instances.	High	This corresponds to high risk since compliance with the VCS rules and requirements is critical for the project. Also, criteria for inclusion of future project instances are important and criteria as this would be the basis of inclusion of new (future) project instances.	The risk has been mitigated by conducting a thorough desk review of VCS PD and other supporting documents in compliance with the section 3.6.16 and 3.6.17 of VCS standard v.4.4.
Ownership Adherence to ownership and legal right of the project including the proof of right of carbon credits	Medium	Since, this is a grouped project, the evidence of title agreements of PP with each landowner/ farmer (of each project instance) is pertinent, hence, VVB considers this as medium risk.	The ownership and legal rights of the proponents has been verified based on the review of the ownership documents and on-site interviews in compliance with section 3.7.1 of VCS standard 4.4
Baseline methodology	High	This corresponds to high risk since compliance with the applied methodology,	The risk has been mitigated through the analysis of the actual

Adherence to selected baseline protocol as per the applied methodology, VM0042, Version 1.0 and applicability and temporal boundaries.		VM0042, version 1.0 is critical for the project.	baseline scenario observed during the on-site visit and interviews, review of the historic look back period records and other supporting documents including analysis of GIS and remote sensing data.
Time period (for e.g., project start date, start date of crediting period and length of crediting period) covered by Project Report Adherence to the VCS requirements for start date, crediting period, and length of the project.	Medium	Since this is a grouped project, in the opinion of the VVB this risk is considered as medium.	The start date of the project has been cross verified with the actual records/supporting evidence that are obtained during the assessment, including time stamped pictures, contracts, and receipts
Baseline Scenario and Additionally Accuracy of baseline scenario identification and additionality demonstration as per VCS requirements.	High	Since this is a grouped project, the baseline determination and additionality demonstration for all project activity instances under present validation and criteria for future instances forms a high-risk situation.	The risk has been mitigated by identifying the actual baseline scenario through on-site visit interviews and assessment in combination with a thorough desk review including independent research and review of supporting documents.
Baseline assertion Accuracy of baseline assertion	High	Considering the project being among first applying the methodology VM0042, the risk for the baseline assertion including the compliance with determination of schedule of activities in the baseline scenario and the generation of performance benchmark	The risk has been mitigated based on the comparison of actual baseline scenario observed during the on-site visit and desk reviews with the baseline scenario provided in the PD and checking the compliance with the section 6 of applied methodology.

		from baseline study, as stated in the methodology, is considered as high.	Furthermore, the generation of performance benchmark in line with *VCS Guidance for Standardized Methods* shall be analysed and verified.
Correctness of source of data used for emission reduction estimation/calculation. Accuracy of source of default/ex-ante fixed values and allometric equations used for the ex-ante carbon calculation.	High	As per the methodology, various sources for the data such as default values from secondary evidence sources of regional productivity (e.g., peer-reviewed science, industry associations, international databases, government databases. This forms a high risk for overall carbon removals from the project.	The risk has been mitigated by assessment of all sources, sinks and reservoirs that are included in the project report during the on-site inspection. A thorough desk review of all the data sources has been conducted to evaluate the applicability, accuracy, and compliance with the applied methodology.
GHG Removal estimation including future estimate / calculation. Accuracy of default/ex-ante fixed values and allometric equations used for the ex-ante carbon calculation.	High	PP has used various sources for the data such as default values from IPCC, and allometric equations are also used, including and any other literature reports. This forms a high risk for overall carbon removals from the project.	A thorough desk review of all the data sources and emission reduction spreadsheet has been conducted to evaluate the applicability, accuracy, and compliance with the applied methodology.
Monitoring Plan Calculation and monitoring of the grouped project monitoring parameter as per the VCS rules and requirements.	High	Due to the complexity of the methodology including accounting of both reductions and removals and involving large number of calculations and the use of Approach 2 – Measure and Remeasure. Since the performance benchmark, approved by VERRA, is not yet available, PP is	The has been mitigated by reviewing the measurement, calculation, and management /sampling plan of monitoring parameter during the desk review and cross verifying with the raw data sheets during the on-site inspection, as per the applied methodology.

		developing a performance benchmark on its own and hence the risk associated with monitoring and evaluation such data, is considered as high.	The monitoring plan provided in the VCS PD has been cross checked with the required monitoring plan as per methodology, any non-conformities observed has been addressed followed by revision in the monitoring plan in the VCS PD as per the comment raised.
VCS project description Completeness and correctness of project description.	Medium	Since the applied methodology has multiple components for the accounting of reductions and removals, the appropriate description of all the aspects including the development of performance benchmark is pertinent. Hence, In the opinion of VVB, this risk is considered as medium.	The risk has been mitigated by reviewing adherence of the VCS PD to the actual site condition for e.g., the existence of the project; project start date; GHG inventory of sources and sinks; sources and sinks; records kept on site; historical data; GIS and remote sensing data
Non-Permanence Risk Accuracy of assessment of permanence of carbon stock and buffer credits.	High	Since this is a grouped project, developed privately by the farmers, the risk of permanence due to various factors such as financial, pest etc. is High. Loss and reversal could also happen due to quitting of participating farmers.	The risk has been mitigated by cross-checking each risk affecting the permanence nature of carbon stock as per the non- permanence risk tool with evidence provided by the PP. The project management plan (including implementation plan) & ownership of land, roles & responsibility to be checked during the on-site inspection and through document review.
Leakage.	Medium	Since the project includes adoption of improved agricultural land	The leakage assessment provided by PP in the VCS PD has been evaluated

Identification of source of project emissions including leakage associated with new application of manure from outside the project area, is placement of livestock outside of the project boundary and productivity decline.		management practices and the baseline of the project is cropland and the project includes use of organic fertilizers from outside the project activity and thus, in the opinion of the VVB, this risk corresponds to medium category	based on desk review and on-site inspection interviews by VVB and any non-conformities observed will be reported followed by revision in VCS PD to represent actual leakage assessment. Leakage due to productivity decline has been assessed based on comparison of productivity observed in the baseline with estimated productivity in the project scenario. The risk associated with leakage due new application of manure from outside the project area has been mitigated by reviewing the receipts and records of purchases and cross verifying them with the leakage spreadsheet.
Project Area and Eligibility Assessment of eligibility of land and calculation of area for each geographic area specified in the PD.	High	This corresponds to high risk since eligibility and clearance of native ecosystems (within the 10-year period prior to the project start date) and the eligibility for the project area being only either a cropland or grassland, in compliance with the methodology, are critical for the assessment. This also has material impact on overall carbon removals from the project.	The land use change has been evaluated based on historical vegetation analysis by a GIS expert appointed by VVB. The actual present land use has also been evaluated based on on-site visit assessment to check the compliance with the methodology.

Participation under any other GHG Program Risk of double counting of project or carbon credits.	Medium	Since the project is implemented by the farmers, checking of title of land and owner of carbon credits including project's existence in any other GHG program, however, considering the project being one of first-of-its-kind, VVB deemed this as a medium-risk category.	The risk has been mitigated by checking the project database of other standards for any possible double counting. The information like project name, geo coordinates, land ownership details has been cross checked to ensure that no double counting is observed.

2.5 Resolution of Findings

This section summarizes the findings from the validation of the project activity. In this section the findings from the document review, assessments and interviews are provided.

Material discrepancies identified during the validation are addressed either as CARs, CLs or FARs.

Corrective action requests (CARs) are issued, where:

- ✓ Mistakes have been made with a direct influence on project results requiring adjustment of the VERs/VCUs monitoring report.
- ✓ Applicable methodological specific requirements have not been met.

A Clarification request (CL) may be used where additional information is needed to fully clarify an issue or where the information is not transparent enough to establish whether a requirement is met.

In the context of FARs, risks have been identified, which may endanger the delivery of high-quality GHG reductions in the future, i.e., by deviations from standard procedures as defined by the MP. Therefore, such aspects should receive a special focus during the consecutive verification. A FAR may originate from lack of data sustaining claimed GHG reductions.

The VVB on every issue raised during the validation process has used the table format given below:

CAR/CL/FAR ID		**Section no.**		**Date:** DD/MM/YYYY
Description of CAR/CL/FAR				
Project participant response				**Date:** DD/MM/YYYY

Documentation provided by project participant	
VVB assessment	**Date:** DD/MM/YYYY

A total of 41 findings have been raised including 34 CAR and 07 CLs. Please refer to Appendix 2 below for the details of the CARs/CLs and their closure.

PP have addressed all the findings either by providing the audit team with the requested information/documents or by making the appropriate corrections. Based on the review of the information/justification provided by PP, all the findings have been successfully closed.

2.5.1 Forward Action Requests

A forward action request (FAR) should be issued, where:

- ✓ The actual project monitoring and reporting practices requires attention and /or adjustment for the consecutive verification period, or
- ✓ An adjustment of the MP is recommended.

In the context of FARs, risks have been identified, which may endanger the delivery of high-quality emissions reductions in the future, i.e., by deviations from standard procedures as defined by the MP. Therefore, such aspects should receive a special focus during the consecutive verification. A FAR may originate from lack of data sustaining claimed emission reductions.

No FAR has been raised by VVB for this validation assessment.

3 VALIDATION FINDINGS

3.1 Project Details

Project type

Applicable VCS sectoral scope: 14 – Agriculture, Forestry, and Other Land Use.

The grouped project is under VCS project type Agricultural Land Management (ALM) and project activity type Improved Cropland Management (ICM), as the project includes replacement of synthetic fertilizers by application of organic compost in the agricultural and/ or horticultural mixed crop farms, planting mixed species cover crops, and using crop pruning/grass residues as mulching material/01//VII/. Therefore, the first PAI meets the requirement of section 1.2 of the VCS Standard v4.4 and the requirements of the baseline and monitoring methodology (VM0042 v2.0)/B02/.

Based on the review of the VCS PD/01/ and on-site inspection/2.3//2.4/, VVB confirms that the first project instance includes improved agricultural land management practices to improved soil health and thus increase soil carbon sequestration potential in the region and therefore, is following the requirement of the VCSA/B01/.

Technologies and measures implemented

At the time of validation, the first PAI: Macadamia Farm Holdings (consist of mature orchard), has been implemented in the Maryborough region of Queensland, Australia. Since the project start date, the intensity of the following activities has been increased to an extent that exceeded 5% of previous intensity/01//VII/:

i) Applied compost to all orchards (Project Activity1)

ii) Established a mixed species cover crop consisting of Sweet Smother Grass (*Dactyloctenium australe*) and Couch Grass (*Cynodon dactylon*) (Project Activity 2)

iii) Returned macadamia (*Macadamia integrifolia* and *Macadamia tetraphylla*) husk, pruning's, and grass clippings to the orchards as mulch (project activity 5)

VVB, based on the on-site inspection/interviews/2.3//2.4/ confirms that at the time of validation the first project instance has been implemented. Further, to substantiate the information on application of improved agricultural/technological measures in the region, PP has provided supporting documents i.e., purchase receipts of farm machinery & organic amendments, Fuel use records and Fertilizer reports (for the year 2022 and 2023)/05//14/.

Figure 2: As per the ISO Report (GHG Emission Reductions & Removal Enhancements Report) /10/:

2.1 Relevant activities and implementation status

The MFH management team have sought to improve orchard management by focussing on four primary objectives: improved water use efficiency, reduced chemical use, minimising fuel use, and promoting diversity in the orchard. To achieve these goals, the following practices have been introduced:

- Orchards are not mown post-harvest (June/July), and only pesticides are sprayed. In these 6-7 months, weeds and other species are allowed to grow beneath trees and in the inter-row area. This is expected to reduce annual fuel use and promotes diversity in insect and soil microbial communities, and improve SOC
- Beneficial insects are released into the orchards to prey on pest insects and reduce chemical usage
- Orchard scouts indicate when spraying is required, and no broad-spectrum insecticides are used. Softer, targeted sprays are used to combat borer and spotting bug
- Electrostatic sprayers allow insecticides to be applied at a lower rate without compromising their effectiveness, meaning less water and fuel is consumed in the process
- Chemicals are sprayed only at night to reduce drift and protect bee populations
- Orchard has between 300-400 hives of native bees to enhance pollination
- A regulated deficit irrigation scheme to fertigate trees with small, frequent applications of fertiliser to improve water and nutrient use efficiency and reduce leaching as part of the region's reef management strategy
- Large volumes of compost are applied to the orchards each year (~40 m^3 per hectare) to reduce their reliance on chemical fertilisers, prevent evapotranspiration losses and improve SOC content

Based on the on-site inspection/interviews/VIII/ of the project site by VVB, literature review/14/, ISO Report on project implementation/10/, SOPs placed by PP in their management plan/11/, VVB confirms that the technology and measures employed by the PP during implementation of first PAI are appropriate and applicable for the designated project region.

Eligibility criteria of the project activity

Based on the review of the VCS PD/01/, supporting evidence/03-16/ and on-site inspection/interviews/VII/, VVB has assessed the eligibility requirements for VCS Standard v4.4/B01/ (VCS general criteria and ALM criteria) and methodology/B02/ applied as follows:

Table X: Project eligibility under scope of VCS Standard/B01/

VCS Eligibility Criteria/B01/		VVB Assessment
1.	**Project Activity do not convert native ecosystems or degrade hydrological functions to generate GHG credits.**	The project activity involves improved farming and agricultural land management practices in the project region to replace the conventional agricultural land management practices, specifically reducing the use of synthetic fertilizers, and implementation of interventions such as use of organic composting into agricultural farms, cover cropping, mulching, and improved irrigation management.

		VVB confirms through the on-site inspection/interviews/VII/, GIS analysis of the project area/04/, and the region-specific studies/14/, that the project activity does neither convert native ecosystem nor degrade hydrological functions of the project area.
2.	**If clearing or conversion of land by the project activity was done, it took place at least 10 years prior to the proposed project start date.**	Based on the on-site inspection/interviews/VII/, independent GIS analysis by validation team member of CCIPL and supporting GIS image of the project area/04/, VVB confirms that there has been no conversion of the existing vegetation to implement the first project instance in the region.
3.	**If the AFOLU project area was drained or converted, such draining, or conversion took place prior to 1 January 2008**	Based on the on-site inspection/interviews/VII/, review of VCS PD/01/ and supporting document/04/ submitted by the PP, VVB confirms that the project area has not been drained or converted due to implementation of the project as the project includes use of organic composting, mulching, and cover-cropping on lands that were previously subjected to conventional farming practices such as use of synthetic fertilizers, no application of mulching, no application of manure/01//VII/.
4.	**Project Activity is requesting for registration within five years of the project start date**	As the start date of the first project instance is 1st February 2020/01///VII/05/, VVB confirms that the project complies with VCS requirement/B01/ and the project can undergo validation till 31st January 2025.
5.	**The seven Kyoto Protocol greenhouse gases.**	The grouped project during the project implementation indents to account reduction of the CO_2, N_2O, emissions compared to baseline scenario through implementation of improved ALM practices in the project region/01//VII/. VVB confirms project meets the VCS requirement.
6.	**Ozone-depleting substances (ODS).**	The grouped project involves promotion of Improved Agricultural Land Management practices and does not use any Ozone depleting substances. VVB confirms that the project does not includes or generate any ODS.
7.	**Project activities supported by a methodology approved under the VCS Program through the methodology development and review process.**	The baseline and monitoring methodology, VCS approved methodology VM0042, Methodology for Improved Agricultural Land Management, Version 2.0. has been used for the proposed grouped project.

8.	**Project activities supported by a methodology approved under an approved GHG program, unless explicitly excluded (see the Verra website for exclusions).**	
9.	**Jurisdictional REDD+ programs and nested REDD+ projects as set out in the VCS Program document Jurisdictional and Nested REDD+ (JNR) Requirements.**	Based on the review of project description[/01/] and on-site inspection VVB, confirms that the project does not fall under the jurisdiction of a REDD+ project.

Table XI: Project eligibility under VCS project type ALM-ICM[/B01/]

Agricultural Land Management (ALM)[/B01/]		
1.	**Eligible ALM activities are those that reduce net GHG emissions on croplands and grasslands by increasing carbon stocks in soils and woody biomass and/or decreasing CO2, N2O and/or CH4 emissions from soils.**	VVB based on the review of the VCS PD[/01/] and on-site inspection/interviews[/VII/] confirms that the project activity involves regenerative farming practices which are intended to replace the use of synthetic fertilizers and other conventional less eco-friendly farming practices, by farm-level interventions such as organic composting, cover cropping, mulching, and improved irrigation management[/01//VII/.] Hence, VVB confirms that the proposed project is eligible under VCS ALM activity.
2.	**The project area shall not be cleared of native ecosystems within the 10-year period prior to the project start date.**	By cross-checking the GIS images/ satellite imagery[/04/] of the area within project boundary, and on-site inspection/interviews[/VII/], VVB confirms that prior to project implementation the project area was under agricultural/horticultural land-use system. Therefore, VVB confirms that the proposed project does not involve any site preparation and/or clearing of the native ecosystem prior to project start date.
3.	**Eligible ALM activity applicable to project** **Improved Cropland Management (ICM): This category includes practices that demonstrably reduce net**	VVB based on the review of the VCS PD[/01/] and on-site inspection/interviews[/VII/], confirms that the project activity involves regenerative and improved agricultural farming practices which are expected to increase carbon sequestration potential of soil in the project region and reducing reliance on synthetic fertilizers, thus reducing N_2O

	GHG emissions of cropland systems by increasing soil carbon stocks, reducing soil N2O emissions, and/or reducing CH4 emissions.	emissions as well. Hence, VVB confirms that the project activity meets the VCS require/B01/.
4.	**Project activities relating to manure management are eligible under sectoral scope 15 (livestock, enteric fermentation, and manure management), not sectoral scope 14 (AFOLU).**	As per the VCS PD/01/, the project interventions do not include manure management. Based on the desk review of project description/01/ and on-site inspection, VVB confirms that the first PAI does not involve llivestock, enteric fermentation, and manure management, within project boundary. Further PP has provided PIP agreement/05/, including details of farming practices that shall be implemented in area of interest.

Project Design

The proposed project has been designed as a grouped project/01/, VVB has confirms this during the on-site inspection/interviews/VII/.

Grouped project eligibility criteria:

By reviewing the VCS PD/01/ and the supporting evidence, VVB confirms that the eligibility criteria set out by the PP for the inclusion of new project activity instances are in line with the VCS Standard version 4.4/B01/.

Table XII: Eligibility criteria for inclusion of new PAI under the grouped project/01//B01/:

Sr. No.	Applicable eligibility criteria (for all scenarios)	VVB assessment
1)	Grouped projects shall specify one or more clearly defined geographic areas within which project activity instances may be developed. All new instances must be within the designated geographic area. Justification/Evidence: Provide KML files for each PAI as well as geographic boundaries set out in section 1.12 below.	VVB has reviewed the KML/04/ file to cross-verify the geographical boundary of first project instance i.e., Macadamia Farm Holding has been provided by the PP and confirms it to be consistent with the information provided in the VCS PD/01/ on project location.
2)	Multiple project activities: Each new instance shall implement or increase in intensity one or several of the defined PA. Justification/Evidence: Each new instance must provide evidence of the new/increased activities, such as fertilizer reports, fuel use records, invoices	PP has provided all the supporting documents i.e., purchase receipts of farm machinery & organic amendments, Fuel use records and Fertilizer reports (for the year 2022 and

	for new equipment, water use records, photographic evidence of new trees and cover crops, GHG assessments, SOC measurements.	2023)/05//14/, subjected to implementation of the first PAI.
3)	The baseline scenario for a project activity shall be determined for each designated geographic area. Justification/Evidence: Each new instance must meet the criteria defined for one of the three baseline scenarios. Evidence includes a written statement, satellite imagery and baseline GHG assessments including SOC.	PP has provided GIS image/04/ of the project region to support the claim that the project area was subjected to agricultural land management prior to project implementation. This has been further verified during on-site inspection/2.3//2.4/.
4)	As per quantification approach 2 (measure and re-measure) of SOC stock, each project instance will have a soil sampling and measurement plan for ongoing monitoring. Justification/Evidence: Each new instance would have a GIS map with soil sampling points and be required to measure SOC as set out by the Carbon Friendly SOC sampling SOP.	VVB confirms that for the first PAI GIS map including soil sampling points/04/ has been provided by the PP.
5)	Evidence of ownership Justification/Evidence: Land title, PIP agreement, Company Registration Documents.	PP has provided all the supporting documents/05//06/.
6)	Start date must be the same or later than grouped project start date. Justification/Evidence: All new instances will start their activities on or after the project start date as evidenced in the PIP agreement and provided supporting evidence.	The start date for the first PAI is same as the start date of the grouped project i.e.,1st February 2020/01//VII//05/.
7)	Not be or have been enrolled in another VCS project. Justification/Evidence: A statement will be provided for each PAI confirming that the instance is not nor has been enrolled in another VCS project.	PP has provided the declaration/xx/ to ensure that proposed project is not seeking registration under other GHG program.
8)	Activity-shifting, market leakage and ecological leakage assessments. Justification/Evidence: Leakage assessment will be provided for each new instance according to section 4.3 in PD.	VVB, confirms that the supporting evidence/02/ for leakage assessment for the first PAI has been provided by the PP.

9)	Land use will always be a permanent, fruit-type bearing crop in Australia. Justification/Evidence: Remote sensing/GIS image evidence for crop type will be delivered at verification for each instance. PAI that change their land use to a non-permanent crop type will be excluded from further verification and crediting periods.	The first project instance involves plantation of Macadamia nut species (***Macadamia integrifolia*** and ***Macadamia tetraphylla***) within the identified project boundary.
10)	Stakeholders and management must be committed to introducing regenerative farming practices in managing the orchard. Justification/Evidence: PIP agreements outline commitments of both parties for the duration of the contract, in writing.	PP has provided PIP agreement/05/, including details of farming practices that shall be implemented in area of interest.
11)	Compared to the baseline information, the orchards will be site-specifically assessing each year to determine if there is a long-term improvement in the soil carbon levels due to the implementation of the additional improved agricultural land management (ALM) practices. Justification/Evidence: As outlined in the PIP agreement, "The PIP must carry out soil sampling and testing and monitoring in accordance with the Carbon Friendly Standard Operating Procedure for Soil Sampling".	PP has provided supporting documents/03//11/ for the first PAI including the data analysis and SOC calculation of identified soil samples withing project boundary.
12)	The PAI has not been converted from intensive livestock production systems. Justification/Evidence: GIS images of the ten years predating the project start date prove that the area has not been converted from intensive livestock production systems.	PP has provided the GIS image for the year 2010 and 2023/04/ of the project boundary.
13)	Minimum Agricultural Input Documentation. Justification/Evidence: Records of fuel use, fertilizer and organic amendment application and purchase receipts for machinery and cover crop seeds (where applicable)	PP has provided all the supporting documents i.e., purchase receipts of organic amendments & farm machinery, Fuel use records, and Fertilizer reports (for the year 2022 and 2023)/05//14/.
14)	Each new instance shall be included in the monitoring report with sufficient technical, financial, geographic, and other relevant information to demonstrate conformance with the	The relevant information will be demonstrated by the PP at the time of verification of each new project instance.

	applicable set of eligibility criteria and enable evidence gathering by the validation/verification body. Justification/Evidence: We will provide the required information and evidence for each new instance in the MR at verification.	
15)	Each new instance shall be included in an updated project description, with updated project location information (as set out in Section 3.11), which shall be validated at the time of verification against the applicable set of eligibility criteria. Justification/Evidence: We will update the PD with the required information at time of verification.	
16)	Each new instance shall be eligible for crediting from the start date of the project activity instance through to the end of the project crediting period (only). Justification/Evidence: We will provide evidence of the eligibility of each instance for the entire crediting period as stated.	
17)	New instances will only be eligible for crediting from the start of the verification period in which they were added to the grouped project. Justification/Evidence: New instances shall only receive credits from the start of the verification period when they were added.	

Additional eligibility criteria for scenario 1 (young orchards)/01/

Criteria	VVB assessment
Established new orchards after the project starting date	Based on the on-site inspection interviews with the participating stakeholders VVB confirms that the new Macadamia orchards were implemented after project start date.

Additional eligibility criteria for scenario 3 (Mature orchards that increase the intensity of project activities)/01/

Criteria	VVB assessment
PAI must provide evidence of an	Project Proponent has provided evidential documentation to substantiate the increase in the intensity of project activities under

increase in intensity of at least 5% of any eligible project activities.	proposed first PAI i.e., activity reports and receipts for purchase of organic amendments and machinery/equipment used for project implementation/03//05//14/.

Considering the above-mentioned assessment and evidence, VVB confirms that definition of eligibility criteria complies and meets the requirement of section 3.6.16 & 3.6.17 of the VCS Standard version 4.4.

Table XIII: Project proponent and other entities involved in the project/01//VII/:

Name/Title	Organization/Community	Role
Mariki Visser (COO)	Carbon Friendly Pty Ltd	Project Proponent
Scott Allcott (Director)	Macadamia Farm Holdings Pty Ltd (MFH)	Other Entity

During on-site inspection/interviews/VII/, VVB has been informed regarding roles and responsibilities of PP and other entities. Furthermore, based on the desk review/01/, VVB confirms that the information on project proponent and other entities involved in the project is appropriate.

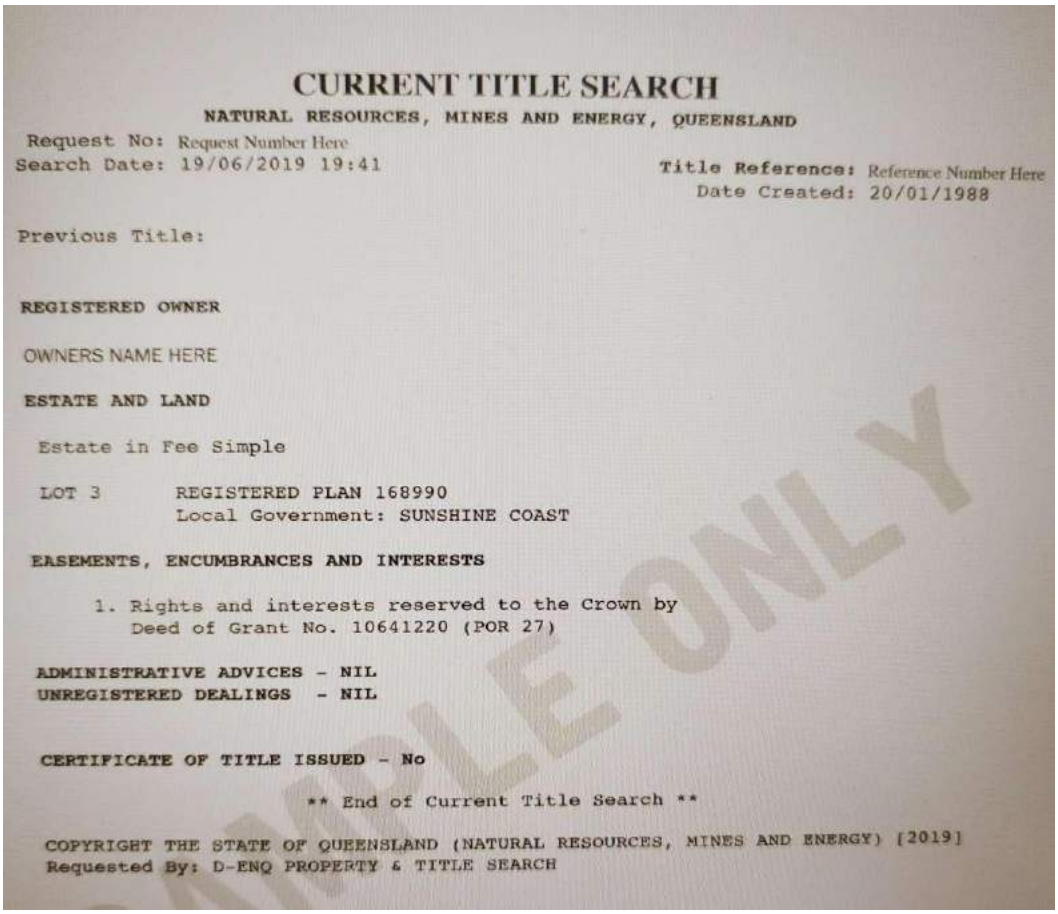
Ownership

Project proponent has provided the detailed structure of ownership in section 1.7 of project description/01/. Carbon Friendly Pty Ltd., who is the project proponent, is in legal binding agreement ("Project Implementation Partner Agreement")/06/ with Project Implementation Partner (Land Owner / Land Lessee), whereby the project implementation partner agrees that the Project Proponent has the ownership and legal right of developing and presenting the projects leading to the GHG emission reduction and removals (GHG ERRs) to VERRA on behalf of each Project Implementation Partner, who in turn, has the legal right to control and operate the project activities occurring at farm level/01//VII/.

For the first project instance's ownership, PP has provided the contractual agreement i.e., PIP agreement/08/ signed between PP and project implementing partner to ensure that the legal right over the VCUs generated from the first PAI remains with the PP (Carbon Friendly Pty Ltd. and the authorization of Macadamia Farm Holdings Pty Ltd. to operate and manage the project activities in the region over the reported project crediting period of 20 years/01//VII//06/.

The PIP is the owner of the land and holds the interest in the land/06//08/. PP has provided appropriate information on land titles for the Lot 235, 237, and 120 in format as given in regional government authority[2].

[2] https://www.australianlandtitlesearch.com.au/title-search-product/



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ESTATE AND LAND

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LOT 3 REGISTERED PLAN 168990
Local Government: SUNSHINE COAST

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by Deed of Grant No. 10641220 (POR 27)

ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

CERTIFICATE OF TITLE ISSUED - No

** End of Current Title Search **

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Requested By: D-ENQ PROPERTY & TITLE SEARCH

SAMPLE ONLY

The Project ownership has been verified during the onsite inspection/interviews[/VII/], and by the review of the PIP agreement[/08/] and the supporting document for land titles[/06/] provided to the VVB.

Project start date

As per the section 3.8 of VCS Standard v4.4,

"The project start date of an AFOLU project is the date on which activities that led to the generation of GHG removals are implemented (e.g., preparing land for seeding, planting, changing agricultural or forestry practices, rewetting, restoring hydrological functions, or implementing management or protection plans)."

As per the VCS PD, the project start date is 1st February 2020, which is the commencement date of implementing regenerative agriculture practices. This is in line with § 3.8 of the VCS standard v4.4.[/BO1/]

For the first PAI, the start date is the date on which the intensity of the project activities was increased by at least 5% compared to the intensity of activities before the start date[/01//VII//05/].

Evidence for the increase in activity provided by PP are in the form of:

- Financial investment (purchase of specialised equipment such as compost spreaders, mulchers, new harvesters)
- Purchase receipts of organic amendments such as compost and manure
- Activity logs such as GPS tracking and records of activities in the orchards (e.g., evidence of compost application and mulching of crop residues)

VVB, based on the review of supporting document/05/, confirms that the start date for the first project instance is 1st February 2020, as this is earliest date on which the project started increasing the intensity of project activities. This has been further verified during on-site inspection/interviews/VII/. PP has also provided purchase/investment summary (dates) for the organic amendments and the machinery/equipment used in implementation of project activity/05/.

In the opinion of VVB, the start date is following the VCS requirement, as project validation is being carried out within the time-period set out in VCS standard v4.4 section 3.8.5.

Project crediting period

Th As per section 3.9.3 of VCS Standard v4.4,

"For all AFOLU projects other than such ALM projects described in 3.9.2, the project crediting period shall be a minimum of 20 years up to a maximum of 100 years, which may be renewed at most four times, with a total project crediting period not to exceed 100 years".

VVB confirms that the project crediting period is conforming with the VCS requirement, as the crediting period for the first project instance is 20 years (renewable 4 times) starting from 1st February 2020 to 31st January 2040/01//VII/.

VVB has further verified this by reviewing the PIP agreement/08/ signed between Carbon Friendly Pty Ltd (PP) and Macadamia Farm Holdings Pty Ltd, that the agreement between the parties involved means to be valid for a period of 20 years. Thus, VVB confirms that the project will remain viable over the length of the reported project crediting period.

Project scale and estimated GHG emission reductions or removals
As per section 3.10.1 of VCS Standard v4.4,
"*Project size categorizations are as follows:*
1) Projects: Less than or equal to 300,000 tonnes of CO_2e per year.
2) Large projects: Greater than 300,000 tonnes of CO_2e per year."

Based on the review of the VCS PD/01/, and carbon calculation spreadsheet/02/, VVB confirms that the estimated annual GHG reductions generated from the project are 440 tCO_2e and for first project instance over the crediting period of 20 years (1st February 2020 to 31st January 2040), with an annual average of 22 tCO_2e. Therefore, the project scale is at "Projects" level.

Project location

Based on the review of the VCS PD[/01/] and through on-site inspection/interviews[/VII/], VVB confirms that the first project instance has been implemented in the Maryborough region of Queensland, Australia. At the time of validation, the first project instance covers an area of 71 ha[/01//VII//04/].

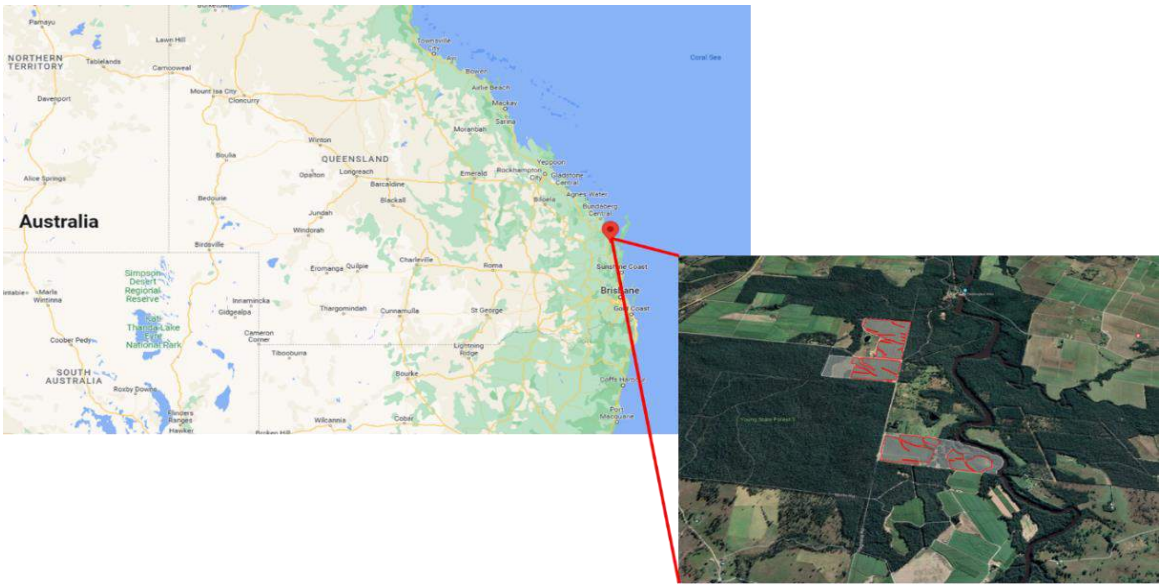


Figure 3: Location of first project instance

Based on the review of the Geo-tagged KML files[/04/] with the coordinates for the areas under the grouped project and further verified during on-site inspection and through GIS analysis performed by the GIS expert of validation team, VVB confirms that the information relevant to the project location for first PAI and extent of project area for the reported crediting period is valid and appropriate.

Conditions prior to project initiation

Based on the review of VCS PD[/01/], supporting document[/04//], and on-site inspection and through interviews with the participating stakeholder (PIP)[/VII/], VVB confirms that prior to project implementation the project area was subjected to conventional farming practices for large scale orchards in the region. These practices included the burning of pruning and waste biomass in the orchards, poor utilization of crop wastes, and accompanying emissions, largely bare inter-row areas, and a limited use of biological supplements. The conditions before project initiation are the same as the baseline scenario, which is continuation of pre ALM practices.

Project compliance with applicable laws, statutes, and other regulatory frameworks

As per the section VCS PD[/01/], there are no laws or regulations that would prevent the implementation of the project on a project participant's land or prevent ALM practices in the host country i.e., Australia.

Each state and Territory within Australia have its own planning laws that govern land use, zoning, and approval process. For this project, the anticipated Project Activity Instances will be within zoning areas that already support and protect agricultural land use. No scheduled activities within this project would be contrary to laws relating to agriculture or planning within Australia.

Similarly, each State and Territory has its respective laws regarding carbon sequestration rights of the land and through which mechanisms (e.g., trees, soil, etc.). This project intends to follow all applicable legal and regulatory requirements regarding carbon sequestration associated with the land. As this project is national, laws and regulations will be followed for each jurisdiction the Project Activity Instances are located in. Australia also participates in several international climate agreements, as detailed below:

- The Paris Agreement (2015)
- Protocol to the United Nations Framework Convention on Climate Change (Kyoto Protocol) (1997)
- United Nations Framework Convention on Climate Change (1992)

Australia is also member party under the following:

- World Trade Organization (WTO)
- Food and Agricultural Organization of the United Nations (FAO)
- International Plant Protection Convention (IPPC)
- The Office International des Epizooties (IOE)/World Animal Health Organization

There are no contradicting laws to the proposed project activity exists in the territory covering the project activity instances, which is confirmed based on the On-site inspection/interviews[VII], and independent research[3,4,5,6,7] . The project follows all applicable legal and regulatory requirement regarding carbon sequestration associated with the land.

Participation under other GHG programs

[3] https://uk.practicallaw.thomsonreuters.com/1-608-5865?transitionType=Default&contextData=(sc.Default)&firstPage=true

[4] https://papers.ssrn.com/sol3/papers.cfm?abstract_id=86708

[5] https://www.cleanenergyregulator.gov.au/About/Legislation-and-regulations

[6] https://www.legislation.gov.au/Details/C2011A00101

[7] https://www.fao.org/faolex/results/details/en/c/LEX-FAOC112294/#:~:text=Australia-,Carbon%20Credits%20(Carbon%20Farming%20Initiative)%20Act%202011%20(No.,gases%2C%20and%20for%20other%20purposes.

Projects registered (or seeking registration) under other GHG program(s)

The project activity is not seeking registration under any other GHG program/01/. This has been further confirmed by checking on other registries (CDM/GS/GCC/Plan Vivo)/B03/ and has been verified by reviewing the declaration provided by project proponent, that the project is not seeking registration under other GHG program.

Rejection by other GHG programs

The project activity has not been rejected by any other GHG programs/01/. Based on the review of VCS PD/01/, declaration by PP, and own research/B03/, VVB confirms that the project has neither applied for nor has been rejected by any other GHG program.

Other forms of credit and supply chain (Scope 3) emission

Emissions trading programs and other binding limits

This project does not reduce GHG emissions from activities included in an emissions trading program or any other mechanism that includes GHG allowance trading/01/.

Based on the review of the VCS PD/01/, further verified with the declaration provided by PP, VVB confirms that the project is not included in any emissions trading program or any other mechanism that allows GHG allowance trading, therefore, GHG emission reductions and/or removals generated by this project will not be used for compliance under any other program or mechanism.

Other forms of environmental credit sought or received and eligible to be sought or received.

This project has not sought or received another form of GHG-related credit, including renewable energy certificates/01/. Based on facts and discussions during on-site inspection/interviews/VII/, VVB confirms that the project has not sought or received another form of GHG related credit, including renewable energy certificates.

This has been further confirmed by receiving a declaration, signed by the project proponent that the project is not bounded by any Emission Trading program and that the project does not intend to generate any other kind of environmental credits for GHG emission reductions.

Issuance of public statement(s) to help prevent scope 3 emissions double claiming.

As per the section 3.23.7 of the VCS Standard v4.4,

"Where a project's GHG emission reductions or removals are in a supply chain (see the VCS Program document VCS Program Definitions for the definition of supply chain), and the producer(s) or retailer(s) of the impacted goods or services are involved in the project, the project proponent shall require the producer(s) or retailer(s)14 to post a public statement on their website. The statement shall say: "VCUs may be issued for the greenhouse gas emission reductions and removals associated with [organization name(s)] [name of good or

service].” The public statement shall be issued at the project’s start date and remain posted for the project crediting period”.

As per the VCS PD[/01/], a public statement about the participation in the project has been made by the project proponent and the first PAI implementation partner. Since the first PAI does not supply directly to retail, no retailers or consumers will be directly impacted by Scope 3 emissions double claiming, and a statement regarding this was therefore not applicable.

VVB based on the on-site inspection/interviews[/VII/] and by reviewing the declaration/public notice by PP confirm that the VCUs generated by the proposed project are intended towards GHG offsetting under GHG trading mechanism and the project does not involve.

Sustainable development contributions

Australia is a signatory to the United Nations 2030 Agenda for Sustainable Development. The project activities aim to reduce GHG emissions and enhance SOC sequestration with a focus on the improvement of soil health and the resilience of agricultural systems. The implementation of this project will therefore contribute to several of the UN Sustainable Development Goals. In particular, the first PAI, through the implementation of PA1 (reduced synthetic fertilizer), PA2 (cover crops) and PA5 (recycled organic farm waste), is contributing to the following SDGs[/01/]:

Table XIV: First project activity instance's contributions towards SDGs goal:

SDGs	Project Contribution	VVB Assessment
SDG 2: Zero Hunger, **Target indicator 2.4.1: Proportion of agricultural area under productive and sustainable agriculture:** increasing sustainable practices over the project area of 71 ha.	An overall increase of SOC in the project area by 0.1 – 0.2 % per annum is expected as a result of the project activities, thereby **contributing** to Goal 2 by enhancing soil fertility, increasing agricultural productivity and incomes of food producers, and ensuring sustainable food production systems through resilient agriculture practices by improving land and soil quality.	VVB based on the review of the soil organic carbon calculation spreadsheet[/03/] and the soil analysis data/reports provided by the PP[/07/], Confirms that the SOC % in the project region has increased after implementation of the project activities in the region and thus lead to enhancing the soil fertility and/or productivity.

Target indicator SDG 12: Responsible consumption and production, **Target indicator 12.6.1: Number of companies publishing sustainability reports.**	The project proponent has (on behalf of the first PAI), conducted a full GHG assessment in accordance with ISO 14064/1 and GHG protocol.	By reviewing the supporting document[/10/] (CF ISO Report Macadamia Farm Holdingsv1.1.pdf) and based on the on-site inspection/interviews[/VII/], VVB confirms that the GHG assessment for the first PAI has been carried out in line with the ISO 14064-2 guideline.
SDG 13: Climate action, **subsection 13.2.2: Total greenhouse gas emissions per year.**	At time of validation, the first PAI has reduced and removed from the atmosphere a total of 66.11 t CO_2e. it is anticipated that over the lifetime of the project, this project instance will achieve a total GHG reduction and removal of 440 t CO_2e.	Based on the review of the VCS PD[/01/], carbon calculation spreadsheet[/02/] and on-site inspection/interviews[/VII/], VVB confirms that the project instance has contributed towards climate action through generation of GHG reductions and/or removals by implementing ALM-ICM activities in the project region.

As per IEA's last review in 2018, Australia has passed the Climate Change Act in 2022, which doubles the target for emissions reductions by 2030 and sets the goal of reaching net zero emissions by 2050[8].

Considering the assessment and review of the supporting evidence[/03-16/] during the on-site inspection and region-specific studies[/14/], VVB confirms that the project activities implemented under the first PAI has and/or will have positive contributions towards SDG goals.

Additional information relevant to the project, including:

Leakage management for AFOLU projects

As per the VCS PD[/01/], the only primary source of leakage within the project boundary considered is from the use of imported organic material for the purpose of composting under fist PAI and this has been accounted by the PP following the equation 34 of applied

[8] https://www.iea.org/news/australia-has-raised-its-climate-targets-and-now-needs-to-accelerate-its-clean-energy-transition-says-new-iea-review

methodology VM0042 version 2.0 /B02/. The calculation approach and leakage assessment has been detailed in the section 3.3.6 of this report.

The leakage from livestock displacement is negligible for this PAI as both the baseline scenario and the project scenario are free from any type of livestock production/01//VII/.

Market leakage is likely to be negligible because the land remains in agricultural production in the project scenario. Further, producers are unlikely to implement and maintain ALM practices that result in productivity declines, since their livelihoods depend on crop harvests and/or livestock outputs as a source of income. Nevertheless, to ensure leakage is not occurring, the following steps will be completed every 10 years:

Step 1: Demonstrate that the productivity of each crop/livestock product has not declined by more than 5 percent in the project scenario by:

Comparing average with project productivity (excluding years with extreme weather events) during the project period to average baseline productivity during the historical lookback period, by crop using Equation 35 of VM0042 v2.0 as follows:

$$\Delta P = \left(\frac{P_{wp,p} - P_{bsl,p}}{P_{bsl,p}} \right) \times 100 \quad (35)$$

Where:

ΔP	=	Change in productivity (%)
$P_{wp,p}$	=	Average productivity for product p during the project period (output/ha)
$P_{bsl,p}$	=	Average productivity for product p during the historical look-back period (output/ha)
p	=	Crop/livestock product

Step 2: Determine whether the crop productivity decline was caused by a short-term productivity decrease by repeating the calculation in Step 1 excluding all data inputs from the first three years of project implementation. Where the with-project productivity of the crop product with the first three years removed is within 5 percent of the baseline productivity of the same crop product, no further action is needed. Where a reduction in productivity of greater than 5 percent is still observed in one or more crop products, Step 3 is to be completed for these products.

Step 3: Determine whether the productivity decline is limited to a certain combination of factors by stratifying the analysis by:

1) Practice change category,

2) Practice change category combinations,

3) Crop type,

4) Soil type, and/or

5) Climatic zone.

Where the productivity decline is limited to a certain combination of factors, that combination will become ineligible for future crediting. For example, where a 10 percent decline in macadamia (*Macadamia integrifolia* and *Macadamia tetraphylla*) yields was observed and stratification showed that the yield decline was linked to fertilizer rate reductions, rate reduction practices on macadamia fields would no longer be eligible for future crediting. Where the project proponent is unable to isolate the source(s) of leakage through stratification the entire crop product will become ineligible for future crediting.

VVB confirms that the identification of the source of leakage due to project implementation and assessment/accounting of the leakage has been performed following the requirement of applied methodology VM0042 v2.0[B02/], is valid and appropriate. The leakage assessment for subjected to imported organic amendments has been assessed/detailed in the section 3.3.6 of this report.

Commercially sensitive information

Based on the review of the VCS PD[/01/] and supporting documents[/02-16/], VVB confirms that no commercially sensitive information has been excluded from the public version of the project description.

The validation team comes to the conclusion that the project description complies with the project description v4.2 and VCS Standard v4.4 and is accurate, comprehensive, and gives an appropriate explanation of the nature of the project.

3.2 Safeguards

3.2.1 No Net Harm

This project shall not cause net harm to the environment or the community. Rather the implementation of this project is anticipated to be beneficial to the environment and to surrounding communities by incentivizing and facilitating sustainable farm practices; such benefits include healthier waterways from reduced runoff loads and economic stimulus to local businesses[/01/].

As per the ISO Report: Greenhouse Gas Emission Reductions & Removal Enhancements Report[/10/], Macademia Farm Holdings (PIP) has sought to improve the environmental outcomes of the orchard and surrounding ecosystems by focusing on four primary objectives: improved water use efficiency, reduced chemical use, avoidance of fuel use, and promoting diversity in the orchard.

Furthermore, as the project description (VCS PD section 1.8)/01/ states that the project commencement date i.e., 1st February 2020 is the date on which the intensity of the project activities was increased by at least 5% compared to the intensity of activities before the start date. This indicated that only the intensity of the improved ALM practices has been enhanced in the project area, therefore no site preparation activities were involved which may have led to negative environmental impacts.

Based on the literature review[9,10,11,12,13,14 etc.], on-site inspection/interviews/VII/, the validation team confirms that for the project does not pose any negative environmental and socio-economic impacts in the project region instead the regenerative agricultural activities involved under the project activity are expected to improve the soil health and productivity in the project region.

3.2.2 Local Stakeholder Consultation

During the on-site inspection of the project site and interviews with the parties involved in the proposed grouped project, VVB has ascertained that for the first PAI there are no local stakeholders and/or local community that is reliant on the natural resources of the designated project area, within the range of 20 Km surrounding the project boundary.

However, to get an understanding of the challenges and needs faced by the farmers and the agricultural industry. To further explore the potential for such projects, Carbon Friendly (project proponent) has informally reached out to prominent and progressive farmers in the main agricultural production regions. This initial outreach was conducted from early 2019 on via phone calls and emails to gauge their interest and gather preliminary feedback.

Project proponent reached out to potential stakeholders (landowners, farmers, agronomists, agriculture technology leaders) in the main agriculture production region through phone calls and emails. During this informal consultation, the project implementation partner agreement has been introduced which provide a better understanding about change in ownership, cost involved in GHG assessments and soil sampling, carbon credit demand and their potential value.

[9] Macadamia farmer focuses on cover crops, soil health, diversity (farmingtogether.com.au)

[10] https://farmingtogether.com.au/eight-groundbreaking-soil-research-projects-revealed-by-southern-cross/?cid=1

[11] https://era.daf.qld.gov.au/id/eprint/7647/

[12] https://www.publications.qld.gov.au/ckan-publications-attachments-prod/resources/76587ac2-fb21-4483-bc61-1a5088d02712/macadamia_industry_benchmark_report_2009-2021.pdf?ETag=d31abce4ebbce254691363517d01b5d1

[13] https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0229588

[14] https://www.researchgate.net/publication/305524320_Impact_of_Compost_Application_during_5_Years_on_Crop_Production_Soil_Microbial_Activity_Carbon_Fraction_and_Humification_Process

Following the positive response from farmers, Carbon Friendly organized several formal presentations to explain the project details, for example at the Macadamia Australia Growers Day in April 2021 and in front of the Bundaberg Fruit and Vegetable Growers Association in October 2021. The purpose of these public presentations was for Carbon Friendly to address concerns related to potential implications in the case of a change in ownership, the annual cost involved for GHG emissions assessments and soil sampling, the current demand for carbon credits, and the potential value of credits. These terms are laid out in the Project Implementation Partner Agreement, which outlines the agreement between the legal landholders and Carbon Friendly as the project proponent and is provided to each project partner. Furthermore, Carbon Friendly provided its proprietary information package to each interested stakeholder party for further information.

Carbon Friendly has continued its public engagement by providing further workshops such as the Dirt Work workshop, which was offered in Biloela, Queensland, on June 1st, 2023, and in South Yaamba, Queensland, on June 2nd. These workshops were intended to provide information about the project to interested growers and members of the public. Feedback and comments were collected after the workshop along with contact details of the attendants. Carbon Friendly followed up with the attendants via email to provide further information about soil sampling.

Farmers expressed concerns about the economic viability of participating in the carbon project and the return on their investment. As the concept of carbon projects was relatively new to most farmers, Carbon Friendly invested significant time into educating them through workshops and informational sessions. The objective was to ensure that the farmers had a clear understanding of the project's benefits and how it could contribute to the long-term sustainability goals of their land and improve the quality of their produce. Despite initial concerns, the farmers demonstrated a general spirit of cooperation and a keen interest in participating in the initiative. All instances that are currently or will in future be enrolled in the project will undergo a full GHG assessment of their operations which will be followed by a comprehensive forecast and cost-benefit analysis by Carbon Friendly to ensure that the project proponents understand the likely economic risks and benefits resulting from participating in the project. These assessments and forecasts are documented by Carbon Friendly and will be provided for each new project instance at time of verification.

In addition to engaging with farmers, Carbon Friendly also made efforts to involve local agronomists in the consultation process. These agronomists played a vital role in understanding the current adoption of sustainable farming practices and how the carbon project could benefit their businesses in the long run. Many agronomists had already begun exploring alternative farming practices and had invested significantly in research and development. This existing interest and effort further strengthened the case for implementing the Ground-Truth Australian Orchards project.

Overall, the stakeholder consultation process involved proactive engagement with farmers, agronomists, and agricultural industry leaders. Carbon Friendly conducted initial discussions, formal presentations, and educational workshops to address stakeholders' concerns and gather their input. The feedback received during this process helped shape

the design and implementation of the carbon project, ensuring that it aligned with the needs and aspirations of the stakeholders involved.

Carbon Friendly has furthermore provided information to the public by posting information about the project, including contact details and links to the Carbon Friendly website and Verra registry, on the CF website and social media accounts.

Since project inception, Carbon Friendly has been proactively communicating with its project partners and stakeholders about the project implementation stage and progress, monitoring results and anticipated timeframes for VCU issuance. For each project partner, a formal communication procedure is followed which includes:

- Initial in-person or online meeting to discuss the project.
- Providing Carbon Friendly's detailed info pack and Partnership Agreement
- Follow-up discussion to address questions and concerns.
- Formal contract agreement
- Regular follow-up emails and phone calls to keep the project partners informed and gather annual monitoring data.
- Providing annual Monitoring Report to each partner

Carbon Friendly manages all client communications in a cloud-based Client Tracker for future reference.

Carbon Friendly has informed the project partners about the outcomes of the recent validation visit and the impending verification process via email on 4th August 2023.

Following supporting documents provided by the PP has been reviewed to assess the process public engagement and consideration of stakeholder consultation for the proposed grouped project:

- PUBLIC NOTICE FOR VCS PROJECT 4118 GROUND-TRUTH AUSTRALIAN ORCHARDS (Project Notice): To enlighten the public on the VCS project's implementation and the ALM activities to be implemented under the project.
- Email to the regional governmental authority (info@qwalc.org.au): To facilitate public engagement and comments from interested individuals and organizations on the project.
- Information Session Invitation: To provide information on key points related to project as follows:
    a) Roles and obligations of participants

b) Project financials

c) What if they lease their farms

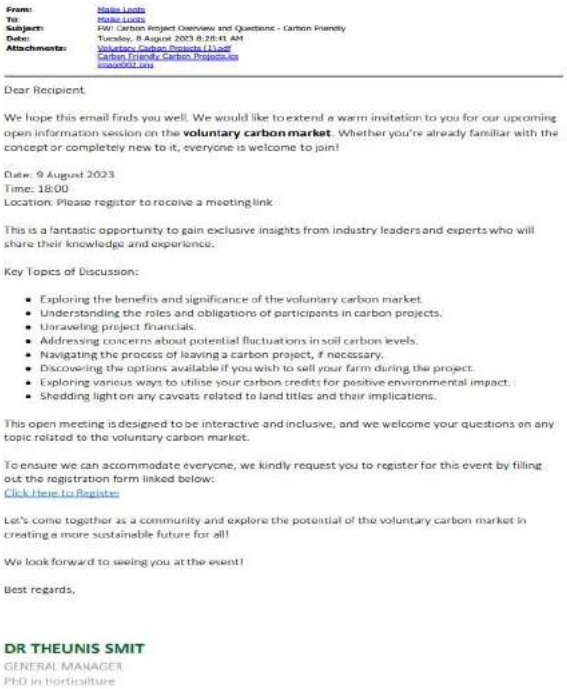
d) Change in SOC level (negative as well)

e) Carbon credits and their use

f) Selling of farm

g) Quitting from project

- Invitation mail example:



From: Maike Loots
To: Maike Loots
Subject: FW: Carbon Project Overview and Questions - Carbon Friendly
Date: Tuesday, 8 August 2023 8:26:41 AM
Attachments: Voluntary Carbon Projects (1).pdf
Carbon Friendly Carbon Projects.ics
image002.png

Dear Recipient,

We hope this email finds you well. We would like to extend a warm invitation to you for our upcoming open information session on the **voluntary carbon market**. Whether you're already familiar with the concept or completely new to it, everyone is welcome to join!

Date: 9 August 2023
Time: 18:00
Location: Please register to receive a meeting link

This is a fantastic opportunity to gain exclusive insights from industry leaders and experts who will share their knowledge and experience.

Key Topics of Discussion:

- Exploring the benefits and significance of the voluntary carbon market.
- Understanding the roles and obligations of participants in carbon projects.
- Unraveling project financials.
- Addressing concerns about potential fluctuations in soil carbon levels.
- Navigating the process of leaving a carbon project, if necessary.
- Discovering the options available if you wish to sell your farm during the project.
- Exploring various ways to utilise your carbon credits for positive environmental impact.
- Shedding light on any caveats related to land titles and their implications.

This open meeting is designed to be interactive and inclusive, and we welcome your questions on any topic related to the voluntary carbon market.

To ensure we can accommodate everyone, we kindly request you to register for this event by filling out the registration form linked below:
Click Here to Register

Let's come together as a community and explore the potential of the voluntary carbon market in creating a more sustainable future for all!

We look forward to seeing you at the event!

Best regards,

DR THEUNIS SMIT
GENERAL MANAGER
PhD in Horticulture

- PIP Project Status Update: To keep project implementing partner informed on project validation status.

- PUBLIC NOTICE: GRIEVANCE MECHANISM FOR VCS PROJECT 4118 GROUND-TRUTH AUSTRALIAN ORCHARDS: To reflect the information regarding grievance redressal mechanism employed by PP.

By reviewing the supporting evidence/documents/08/ for the stakeholder meeting provided by the PP, VVB confirms that the approach of the PP to identify the stakeholders is appropriate and that the rationale supporting it are fitting to the context of the project. Therefore, VVB deems that process applied by PP has properly identified all stakeholders who might be impacted by the project activities. VVB, confirms that the mechanism for redressal of future

grievances from the project stakeholders (project implementing partners) is in place and deemed to be valid & appropriate for the proposed project instance.

3.2.3 Environmental Impact

It foreseen that no environmental impact assessment will be undertaken prior to project implementation as it is a requirement that project sites was pre-existing farmland, and which will remain farmland for the duration of the project/01/.

Based on the review of the VCS PD/01/, on-site inspection and interviews with the project stakeholders/VII/, and the supporting documents/03-16/, VVB confirms that the project activities implemented under first PAI are expected to have net positive impacts on the environment. VVB based on its sectoral expertise and web-research on host country legislation on EIA[15] confirms that the project type does not require an environmental clearance in the host country and considers the justification in the VCS PD/01/ as appropriate and valid.

3.2.4 Public Comments

The propose grouped project was open for public comment from 9th March 2023 to 8th April 2023(Verra Search Page).

The single anonymous comment received is as follows.

“This project includes contradictory information which should have rectified before it being approved for public comment. On one hand it claims 900698 annual emission reductions, but in the document 205,786 annual emission reductions. Furthermore, there is no details on how this project addresses SDGs, only copy and paste information on what SDG actually is. Also, no monitoring data of SDGs included.”

The PP has rectified the projected annual average GHG reductions and removals and revised/updated the VCS PD section detailing the SDG contributions.

Based on the review of the supporting documentation and PP’s response to the comment, VVB confirms that the public comment received on estimated GHG mitigations from the project has been addressed appropriately.

3.2.5 AFOLU-Specific Safeguards

The ownership of the land area that is included in each project activity instances will be vested with individual landowners. An ownership agreement between the project proponent and each landlord has been made which clearly outline the total land area with freedom of association. There is no adverse risk associated with the project for local or national stakeholders/01/VII/.

[15] https://www.epa.wa.gov.au/eia-process#

For the first PAI, PP has provided the land title document for the area subjected to project implementation/06/, VVB confirms that the project implementing partner i.e., Macadamia Farm Holdings Pty Ltd.

Table XV: In line with the VCS PD template instructions, VVB has analyzed the project-specific safeguards as summarized below:

The local stakeholder identification process and the description of results.	During the on-site inspection of the project site and interviews with the parties involved in the proposed grouped project, VVB has ascertained that for the first PAI there are no local stakeholders and/or local community that is reliant on the natural resources of the designated project area, within the range of 20 Km surrounding the project boundary. However, to get an understanding of the challenges and needs faced by the farmers and the agricultural industry. To further explore the potential for such projects, Carbon Friendly (project proponent) has informally reached out to prominent and progressive farmers in the main agricultural production regions. The stakeholder identified by the PP for the first PAI is the project implementing partner involved in the project instance, as PIP is the sole landowner of the farms involved under first PAI. Further the public engagement conducted by the PP to get familiar with the regional agricultural conditional and opportunities included the following: a) Farmers/landowners b) Agronomists c) ALM experts d) Local land care groups e) Network of growers f) National and regional (Queensland) Water and Land Carers Based on the desk review/01//08/, VVB confirms that all the stakeholders relevant to the project activity have been identified/addressed as required and no party/individual has been overlooked. VVB confirms that the local stakeholder identification process is valid and applicable.

Risks to local stakeholders due to project implementation and how the project will mitigate such risks.	By reviewing VCS PD[/01/] and on-site inspection/interviews[/VII/], literature review[/16/], VVB confirms that the project does not expect any negative impact on the environment as well as on the local stakeholders which indirectly may be affected by the implementation of the project instance in the region.
Risks to local stakeholder resources due to project implementation and how the project will mitigate such risks, including plans to ensure the project will not impact local stakeholders' property rights without the free, prior and informed consent.	As per the review of VCS PD[/01/], VVB has ascertained that the project expects to beneficially impact the local stakeholder, through contributing towards UN SDGs i.e., **SDG/Goal-2 Zero Hunger:** By increasing SOC of soil in the project region and thereby soil productivity. **SDG/Goal-12 - Responsible Consumption and Production -** PP has provided the sustainability report[/10/] for the first PAI including the information on the purpose and objectives of the project activity along with procedure to achieve net positive GHG mitigation through implementation of improved ALM activities. **SDG/Goal-13 Climate Action-** GHG emission reductions and/or removals generated by the implementation of the improved ALM practices. Considering the on-site inspection/interviews[/VII/], supporting evidence[/10/], and VVB assessment on project's contribution towards SDG goals, VVB confirms that the project imposes net positive impacts on the stakeholders. Furthermore, the PIP agreement[/05/] details the rights of the stakeholder involved in the first PAI. VVB confirms that the project does not impact local stakeholders' property rights without the free, prior, and informed consent.
Processes to ensure ongoing communication and consultation, including a grievance redress procedure to resolve any conflicts that may arise between the project proponent and local stakeholders.	Project proponent has provided several public notices and opportunities for local communities, neighbours, land care groups and citizens to become informed about and address their views on the project. These include[/01/]: • Public notice on the farm gate • Public notice on the Carbon Friendly website • MFH internal email and email to investors including grievance mechanisms.

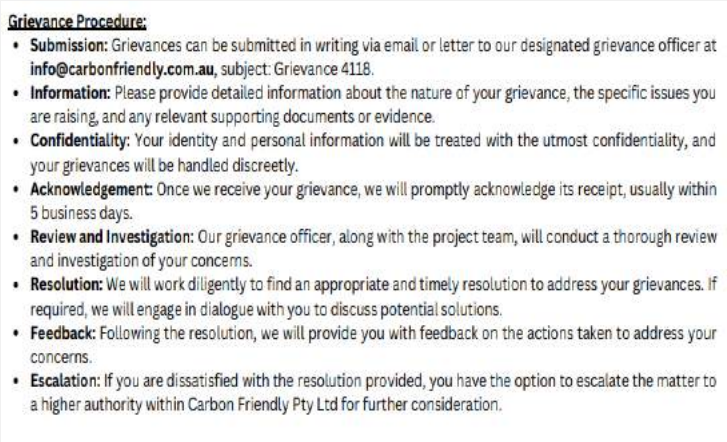
All these written notices provide information about the project, the project ID, a contact email, and links to the Verra registry and the Carbon Friendly website.

A grievance mechanism has been established which includes:

- A grievance procedure notice displayed at the farm office.
- A grievance notices on the Carbon Friendly website
- A dedicated grievance officer, Ms Maike Loots, who will be responsible for handling any grievances and responding to the complainant.

This grievance redress procedure is additional to the conflict resolution procedure that is detailed in the PIP agreement and serves as a means for farm personnel, suppliers, customers, and members of the public to voice their concerns, ask questions or make complaints related to the project/01/.

The document "Grievance farm notice"/08/ provide information on grievance redressal mechanism employed by PP:



Grievance Procedure:

- **Submission:** Grievances can be submitted in writing via email or letter to our designated grievance officer at **info@carbonfriendly.com.au**, subject: Grievance 4118.
- **Information:** Please provide detailed information about the nature of your grievance, the specific issues you are raising, and any relevant supporting documents or evidence.
- **Confidentiality:** Your identity and personal information will be treated with the utmost confidentiality, and your grievances will be handled discreetly.
- **Acknowledgement:** Once we receive your grievance, we will promptly acknowledge its receipt, usually within 5 business days.
- **Review and Investigation:** Our grievance officer, along with the project team, will conduct a thorough review and investigation of your concerns.
- **Resolution:** We will work diligently to find an appropriate and timely resolution to address your grievances. If required, we will engage in dialogue with you to discuss potential solutions.
- **Feedback:** Following the resolution, we will provide you with feedback on the actions taken to address your concerns.
- **Escalation:** If you are dissatisfied with the resolution provided, you have the option to escalate the matter to a higher authority within Carbon Friendly Pty Ltd for further consideration.

Based on the review of the supporting documentation/08/ presented by the PP, and on-site inspection/interviews/VII/, VVB confirms that the grievance redressal procedure used by project proponent during stakeholder consultations is in line with the VCSA requirements and for future grievances from stakeholders and/or public including suggestion regarding project implementation.

Identify, discuss and justify a conclusion regarding whether the project has been designed and, as appropriate, is implementing, plans and processes to ensure the project will not create any negative impacts on local stakeholders or mitigates such impacts where necessary.	Based on the information on project implementation and the monitoring process/01//08//11//16/, and on-site inspection-interviews/VII/ VVB confirms that the project will not lead to any negative impact on local stakeholders.
For AFOLU projects that have claimed to have no impacts on local stakeholders, provide an assessment of the evidence provided and identify, discuss and justify a conclusion as to whether the project has no impacts on local stakeholders.	Based on assessment of the abovementioned details against of the VCS requirement/B01/ including review of relevant documents, VVB confirms that the project will have positive impacts on the environment as well as on the local stakeholders (that indirectly may be affected from project implementation). VVB confirms that the project activity will lead to overall positive impacts along with enhancing the soil health and productivity leading the net GHG mitigations in the region.

3.3 Application of Methodology

3.3.1 Title and Reference

The project has applied the VCS methodology VM0042: Methodology for Improved Agricultural Land Management Version 2.0; dated: 30 May 2023 - Sectoral Scope 14/B02/.

Tools:

- CDM A/R methodological Tool for testing significance of GHG emissions in A/R CDM project activities.
- CDM A/R Tools Estimation of carbon stocks and change in carbon stocks of trees and shrubs.

3.3.2 Applicability

Applicability criteria for the baseline line methodology are assessed by the validation team by means of document review and interview. Validation team confirms that the project activity meets the criteria of the applied methodology, the assessment has been summarized below:

Table XVI: Project compliance in line with applied methodology VM0042 v2.0/B02/:

Sr. No.	Applicability Conditions	VVB Assessment
1.	Projects must introduce or implement one or more new changes to pre-existing agricultural management practices which: a) Reduce fertilizer (organic or inorganic) application. b) Improve water management/irrigation. c) Reduce tillage/improve residue management. d) Improve crop planting and harvesting (e.g. improved agroforestry, crop rotations, cover crops); and /or e) Improve grazing management. Appendix 1 provides a non-exhaustive list of eligible ALM practices. A change in practice constitutes adoption of a new practice, cessation of a pre-existing practice or adjustment to a pre-existing practice that results in GHG emissions reduction or removal. **Justification:** The proposed project activities PA1-5 as described in section 1.11 addresses points a) to d), point e) does not apply.	Based on the review of the VCS PD/01/, supporting evidence/04/, and on-site inspection/interviews/VII/, VVB confirms that prior to project implementation the project region was subjected to conventional agricultural/ horticultural land management practices. The proposed ALM grouped project has introduced the following interventions for the first PAI: Replacing/reducing fertilizer application by use of organic composting, mixed species cover-cropping and use of grass/crop residues as mulching material in the farms within designated project area. Therefore, the project meets the applicability condition.
2.	Projects that introduce or implement quantitative adjustments (e.g., decrease in fertilizer application rate) must exceed five percent of the pre-existing value, calculated as the average value over the historical look-back period, developed for the baseline schedule of activities (see Section 6). Appendix 1 gives additional details and guidance on practices and on determining practice change. **Justification:** The first PAI has implemented quantitative adjustments of existing ALM practices by increasing the amount of mulch	Based on the review of VCS PD/01/, on-site inspection interviews with the local stakeholders/VII/ and supporting evidence (purchase receipts for organic amendments & machinery, Fuel use records, and Fertilizer reports for the year 2022 and 2023)/05//14/, VVB confirms that the intensity of the ALM activities has been increased after the project implementation since project start date. VVB has further reviewed the ISO Report: GHG ERR Enhancements Report/10/, with information on

	applied, increasing the cover crop ratio, increasing the amount of crop residue and cuttings that are mulched and returned to the orchard and reducing synthetic fertilizers. The changes are quantified through logbook entries, purchase receipts and photographs.	project activities during base year (2019-20) and during reporting year (2020-21). VVB confirms that the project meets applicability condition.
3.	Project activities must be implemented on land that is either cropland or grassland at the project start date and remains cropland or grassland throughout the project crediting period except under the scenarios detailed in the Methodology. **Justification:** The land of the first PAI was a mature orchard at the project start date and will remain cropland throughout the project crediting period as evidenced by annual satellite imagery.	Based on the review VCS PD/01/, supporting documents (GIS imagery)/04/, and on-site inspection, VVB confirms that the project has been implemented on the agricultural croplands. Further by reviewing the contractual agreement signed between the project implementing partner and PP/08/, VVB confirms that the ALM practices will be continued within the designated project region for the reported project crediting period of 20 years (1st February 2020 to 31st January 2040).
4.	Empirical or process-based models used to estimate stock change/emissions via Quantification Approach 1 must be: (Refer Methodology section 4 point 4). **Justification:** This point does not apply since we are using Approach 2: Measure and Remeasure in this project.	VVB, based on the review of the VCS PD/01/, on-site inspection/interviews/VII/, and supporting documents/03//07//11//14/, confirms that project meets the applicability condition as for the first PAI/01/: a) Quantification approach 2: Measure and Remeasure has been applied for direct measurement method has been carried out for assessment of SOC stock in the project region. b) Quantification approach 3: Default Factors: To quantify GHG N_2O emissions from use of nitrogen fertilizers and from fossil fuel using site specific default emission factor data.
The methodology is not applicable under following condition:		
5.	The project area has been cleared of native	By cross-checking the GIS image/04/ of the area within project boundary

	ecosystems within the 10-year period immediately prior to the project start date. **Justification** The GIS images will be provided as evidence that the project area has not been cleared of native ecosystems within 10 years prior to the start date.	for the first PAI and based on on-site inspection interviews/VII/, VVB confirms that prior to project implementation the project area was under agricultural/horticultural land management. Therefore, VVB confirms that the native ecosystem remains unchanged even after project implementation as project activities implemented only intend to introduce the improved ALM practices in the region.
6.	The project activity is expected to cause a sustained reduction in productivity of greater than 5 percent, as demonstrated by peer-reviewed and/or published studies on the activity in the region or a comparable region. **Justification:** The Project activities will result in a more productive food system and improved soil and environmental conditions, enhancing the resilience of the crop. The use of organic amendments has been shown to improved yield and tree health in orchards (Leonel and Tecchio 2009); (Jindo, et al. 2016); (Baldi, et al. 2010). Studies have demonstrated that improved irrigation can improve the yield in orchards (Yunasa, Zeppel and Nuberg 2008); (Zelenke and Ayton 2014). Cover cropping was shown to be beneficial to orchard fertility (Firth, Whalley and Johns 2003), topsoil retention, and soil moisture retention (Novara, et al. 2021) and enhance soil N availability (Ângelo Rodrigues, et al. 2013).	Based on the desk-review/01/, on-site inspection/interviews/, VVB confirms that the first PAI does not fall in the applicability condition as the following has achieved after project implementation: • Increase in the SOC stock in the project region/03//04/. • Replacement of fertilizer application by use of organic composting material/VII//14/. • Cover-cropping in the farms withing the project boundary/VII/.
7.	The project activity is biochar application. Biochar may be applied as a soil amendment in the project area provided that the total organic carbon content of the biochar applied is subtracted from the estimated SOC stock change in the project scenario at each verification event.	Based on the desk-review/01/ and on-site inspection interviews/VII/, VVB confirms that no biochar application has been included in the first project instance.

	Justification: This project does not use biochar application as a project activity**.**	
8.	The project activities occur on a wetland; this condition does not exclude crops subject to artificial flooding where it is demonstrated that crop cultivation does not impact the hydrology of any nearby wetlands. **Justification:** The first PAI is not located on a wetland, nor will any of the following PAIs be on a wetland. This will be evidenced by GIS images.	Based on the KML shapefiles/04/ provided by the PP and on-site inspection, VVB confirms that the project is being implemented on agricultural/horticultural cropland and the project area does not fall under any of the wetland category.

Considering the confirmation of all the above-mentioned applicability conditions of the applied methodology, VVB confirms that the project activity follows the respective requirements[B02/], thus has been implemented following valid and acceptable project design.

3.3.3 Project Boundary

The project boundary is accurately established in the VCS PD/01/ and follows the applied methodology/B02/. The sources of greenhouse gases have been appropriately documented and considered appropriate.

Table XVII: Selected Carbon Pools included or excluded from the project boundary:

Source		Gas	Included ?	Justification/Explanation
Baseline Scenario	**Soil organic carbon**	CO_2	Yes – all scenarios	Major sink. Project activities are projected to increase SOC storage and quantify as a stock change in the pool.
	Aboveground woody biomass	CO_2	Yes – all scenarios	Major sink. Project activities are projected to increase tree biomass and will be quantified as a stock change in the pool in qualifying orchards. Including the conversion of open field crops to permanent tree crops.
	Aboveground non-woody biomass	CO_2	No	Carbon pool does not have to be included because it is not subject to significant changes, or potential changes are transient in nature, per the VCS rules.
	Belowground woody biomass	CO_2	Optional	Project activities are projected to increase tree biomass and will be quantified as a stock change in the pool in qualifying orchards. Including the

				conversion of open field crops to permanent tree crops.
	Belowground non-woody biomass	CO_2	No	Carbon pool does not have to be included because it is not subject to significant changes, or potential changes are transient in nature, per the VCS rules.
	Dead wood	CO_2	No	Carbon pool does not have to be included because it is not subject to significant changes, or potential changes are transient in nature, per the VCS rules.
	Litter	CO_2	No	Carbon pool does not have to be included because it is not subject to significant changes, or potential changes are transient in nature, per the VCS rules.
	Wood products	CO_2	No	Carbon pool is optional for ALM project methodologies and may be excluded from the project boundary per the VCS rules.
Project Scenarios	**Soil Organic Carbon**	CO_2	Yes – all scenarios	Major sink. Project activities are projected to increase tree biomass and will be quantified as a stock change in the pool in qualifying orchards. Including the conversion of open field crops to permanent tree crops.
	Aboveground woody biomass	CO_2	Yes – all scenarios	Major sink. Project activities are projected to increase tree biomass and will be quantified as a stock change in the pool in qualifying orchards. Including the conversion of open field crops to permanent tree crops.
	Aboveground non-woody biomass	CO_2	No	Carbon pool does not have to be included because it is not subject to significant changes, or potential changes are transient in nature, per the VCS rules.
	Belowground woody biomass	CO_2	Optional	Project activities are projected to increase tree biomass and will be quantified as a stock change in the pool in qualifying orchards. Including the

				conversion of open field crops to permanent tree crops.
	Belowground non-woody biomass	CO_2	No	Carbon pool does not have to be included because it is not subject to significant changes, or potential changes are transient in nature, per the VCS rules.
	Dead wood	CO_2	No	Carbon pool does not have to be included because it is not subject to significant changes, or potential changes are transient in nature, per the VCS rules.
	Litter	CO_2	No	Carbon pool does not have to be included because it is not subject to significant changes, or potential changes are transient in nature, per the VCS rules.
	Wood products	CO_2	No	Carbon pool is optional for ALM project methodologies and may be excluded from the project boundary per the VCS rules.

Table XVIII: GHG sources included in or excluded from the project boundary in baseline and project scenarios (for orchards in all 3 scenarios as per VCS PD section 3.3)[/01/]:

Source	Gas	Included?	Justification/Explanation
Soil organic carbon	CO_2	Yes	Quantified as stock change in the pool, rather than an emissions source.
Fossil fuel	CO_2	Yes	Project activities aim to reduce emissions from fossil fuel use (non-renewable electricity, fuel, scope 3 emissions) relative to the baseline scenario. The sources of fossil fuel emissions are vehicles (mobile sources, such as trucks, tractors, etc.) and mechanical equipment required by the ALM activity.
Liming	CO_2	No	The project activities are not expected to increase by more than 5% with regards to liming.
Soil methanogenesis	CH_4	No	The project activities are not expected to increase or reduce soil methanogenesis.

Enteric fermentation	CH_4	No	Livestock are not present in the project or baseline scenario, therefore, CH_4 emissions from enteric fermentation will not be included in the project boundary.
Manure deposition	CH_4	No	Livestock are not present in the project or baseline scenario, therefore, CH_4 emissions from manure deposition will not be included in the project boundary.
	N_2O	No	Livestock are not present in the project or baseline scenario, therefore, N_2O emissions from manure deposition will not be included in the project boundary.
Use of nitrogen fertiliser	N_2O	Yes	If in the baseline scenario the project area would have been subject to nitrogen fertilization, or If nitrogen fertilization is greater in the project scenario relative to the baseline scenario, N_2O emissions from nitrogen fertilizers must be included in the project boundary
Use of nitrogen fixing species	N_2O	No	No nitrogen fixing species are planted in the project, N_2O emissions from nitrogen-fixing species is therefore excluded in the project boundary as it would seen as de minimis.
Biomass burning	CO_2	Excluded	However, carbon stock decreases due to burning are accounted as a carbon stock change.
	CH_4	Excluded	Must be included where the project activity may significantly increase emissions compared to the baseline scenario and may be included where the project activity may reduce emissions compared to the baseline scenario.
Woody biomass	CO_2	Yes	Quantified as stock change in the pool, rather than an emissions source.

Carbon pool selected for GHG accounting of the first PAI is SOC and is valid and acceptable to the VVB. The emission sources identified and associated GHG gases selected for both baseline and project scenarios are same i.e., soil organic carbon (CO_2), fossil fuel (CO_2), use of nitrogen fertilizer (N_2O). The change in woody biomass has been selected as GHG source but has not been quantified for the first PAI as this GHG source is include for the

project activity (PA4) where new permanent trees are established in the project region as part of the improved ALM practices[/01//VII/].

Considering the desk-review[/01//02/], supporting information provided[/03-16/] by PP, and on-site inspection, VVB confirms that the project boundary has been demonstrated appropriately, all the inclusions/exclusions made by PP are complying against the applied methodology[/B02/] and VCS requirements[/B01/].

3.3.4 Baseline Scenario

The baseline scenario for the project is the "continuation of conventional orchard management or the incomplete implementation of regenerative practices". The baseline scenario can also be determined by applying a historic lookback period. In this case the schedule of activities, beginning with year t = -3, will be applied in the baseline scenario from t = 1 onward. Evidence to establish the baseline scenario has been collected following the hierarchy of admissible evidence described in Box 1, Section 9 of the applied methodology (VM0042, version 2.0)[/01//B02/].

As per the VCS PD[/01/], in the orchards, no crop rotation is taking place. During the interval over which the baseline scenario was assessed (t = -3), fruit bearing trees were harvested annually in mature orchards. In young and newly established orchards, no fruit were harvested during the baseline assessment period.

Quantification approaches[/01//VII/]:

- Changes in SOC stock change will be determined through Quantification Approach 2: Measure and Remeasure, using actual historic SOC data from the orchards to determine the baseline SOC conditions, with subsequent annual testing to determine the changes in SOC as a result of project activities. Changes in baseline SOC stocks will be monitored in the baseline control sites. The CF team will adhere to the criteria and requirements with regards to the identification and selection of suitable monitoring sites for each farm or area, as described in the revised Methodology. Detailed SOC data will be made available at time of validation.
- Changes in aboveground and belowground woody biomass will be determined using Quantification Approach 1: Measure and Model, using CDM A/R Tools Estimation of carbon stocks and change in carbon stocks of trees and shrubs, as per methodology guidelines.
- The change in GHG emissions between the baseline scenario and the years following project implementation will be calculated using the equations set out in VM0042 (Quantification Approach 3: Default) and using site-specific input data. Detailed input data will be made available at time of validation.

VVB, based on the review of the VCS PD[/01/], on-site inspection/interviews[/VII/], and supporting documents[/03//07//11//14/], confirms that for the first PAI following has been applied[/01/]:

a) Quantification approach 2: Measure and Remeasure has been applied for direct measurement method has been carried out for assessment of SOC stock in the project region.

b) Quantification approach 3: Default Factors: To quantify GHG N_2O emissions from use of nitrogen fertilizers and from fossil fuel using site specific default emission factor data.

The first PAI enrolled at time of validation is a mature orchard with fruit-bearing trees that had been applying some ALM practices in the baseline scenario (scenario 3 orchard)[/01//VII/].

Table XIX: The schedule of activities in the baseline scenario for first PAI (scenario 3 orchard)

ALM Practice	Qualitative	Quantitative
Crop Planting and Harvesting	Macadamia	Fruit-bearing trees planted before the project start date Harvested from March to July Annually Yield dependent on variety
Nitrogen Fertilizer Application	No manure application Some compost application Primarly fertilized using synthetic Nitrogen	109 kg of synthetic N per hectare. 60% of N derived from synthetic sources.
Tillage and/or Residue Management	No tillage in orchard Crop redidues removed from field where applicable	Pruning not mulched and incorporated into the orchards
Water Management/Irrigation	Irrigated orchards using an array of methods	7.1 ML/ha
Grazing Practices	No grazing present in the operation	N/A

Orchards in scenario 1 will be young orchards that started planting trees after the project start date. The baseline scenario of these orchards is therefore fallow land that had been cleared of other crops previously.

Table XX: Schedule of Activities in the Baseline Scenario – Scenario 1 orchards

ALM Practice	Qualitative	Quantitative
Crop Planting and Harvesting	Various agricultural production systems	Based on previous agricultural land use
Nitrogen Fertilizer Application	No manure application Primarly fertilized using synthetic Nitrogen	Based on previous agricultural land use. >60% of N derived from synthetic sources.
Tillage and/or Residue Management	Dependent on previous agricultural land use practice Crop redidues removed from field where applicable	Based on previous agricultural land use
Water Management/Irrigation	Dependent on previous agricultural land use practice	Dependent on previous agricultural land use practice

Grazing Practices	No grazing present in the operation	N/A

Orchards in scenario 2 will be mature orchards with fruit-bearing trees that have not used regenerative ALM practices prior to the project start date. The baseline scenario of these orchards is therefore traditional orchard management practices.

Table XXI: Schedule of Activities in the Baseline Scenario – Scenario 2 orchards

ALM Practice	Qualitative	Quantitative
Crop Planting and Harvesting	Various orchards	Fruit-bearing trees planted before the project start date Yield dependent on crop
Nitrogen Fertilizer Application	No manure application No compost application Primarly fertilized using synthetic Nitrogen	100% of N derived from synthetic sources.
Tillage and/or Residue Management	No tillage in orchard Crop redidues removed from field where applicable	Prunning not mulched and incorporated into the orchards and harvest residue removed from orchard.
Water Management/Irrigation	Irrigated orchards using an array of methods	Dependent on orchard/crop
Grazing Practices	No grazing present in the operation	N/A

The orchards in scenario 3 consist of fruit-bearing trees planted prior to the project start date who have been applying some regenerative practices prior to the project start date but will increase the intensity of the activities after the project start date, as outlined in table below.

Table XXII: Schedule of Activities in the Baseline Scenario – Scenario 3 orchards

ALM Practice	Qualitative	Quantitative
Crop Planting and Harvesting	Various Orchards	Mature trees – planted before the project start date Yield dependent on crop
Nitrogen Fertilizer Application	Some Manure Application Some Compost Application Primarly Fertilized using Synthetic Nitrogen	>50% of N derived from Synthetic Sources.
Tillage and/or Residue Management	No Tillage in Orchard Crop Redidues Removed from Field where applicable	Prunning not mulched and incorporated into the orchards
Water Management/Irrigation	Irrigated Orchards using an array of methods	Dependent on orchard/crop
Grazing Practices	No grazing present in the operation	N/A

Since the project activity that apply the indicative VCS Methodology "VM0042: Methodology for Improved Agricultural Land Management -Version 2.0/B02/, the baseline scenario for this project activity is the one indicated by this methodology, i.e., "continuation of pre-project agricultural management practices is the most plausible baseline scenario."

VVB, based on review of the VCS PD/01/, and on-site inspection of the project site, confirms that the above baseline scenario is relevant, and correctly quoted and interpreted in the project description. The baseline scenario for the first PAI has been also confirmed through interviews with the end users of technologies and representatives of PP. The validation team confirms that the baseline scenario opted by the project activity is in accordance with the requirements of the applied methodology /B02/ and thus is valid & applicable.

3.3.5 Additionality

As per VCS methodology requirements v4.3, section 3.5.3 and VM0042 V2.0 methodology requirements/B02/, the additionality of the first project instance is demonstrated below.

Step 1: Regulatory Surplus

The project unequivocally demonstrates regulatory surplus as it operates outside the purview of any mandatory legal requirements, statutes, or regulatory frameworks in Australia. There are no existing laws, policies, or regulations in Australia that enforce the adoption or improvement of regenerative agricultural practices, which are incentivized by this project. The decision to voluntarily embrace and commit to the Project Implementation Partner Agreement (PIP Agreement), along with the associated regenerative practices, is entirely discretionary and not compelled by any regulatory obligations.

VVB based on the independent research[16,17,18,19,20], confirms that the proposed project activity is the voluntary commitment of the project proponent to improve the existing land management practices in the region through new intervention. Therefore, VVB confirms that the project meets the regulatory surplus following the host country legislation.

Step 2: Identify barriers that would prevent the implementation of a change in pre-existing agricultural management practices.

As per the methodology, the project proponent must determine whether there are cultural and/or social barriers (e.g., cultural practices and social norms, attitudes and beliefs) to the

[16] https://uk.practicallaw.thomsonreuters.com/1-608-5865?transitionType=Default&contextData=(sc.Default)&firstPage=true

[17] https://papers.ssrn.com/sol3/papers.cfm?abstract_id=86708

[18] https://www.cleanenergyregulator.gov.au/About/Legislation-and-regulations

[19] https://www.legislation.gov.au/Details/C2011A00101

[20] https://www.fao.org/faolex/results/details/en/c/LEX-FAOC112294/#:~:text=Australia-,Carbon%20Credits%20(Carbon%20Farming%20Initiative)%20Act%202011%20(No.,gases%2C%20and%20for%20other%20purposes.

proposed change(s) in ALM expected that prevent implementation of the change without the intervention of the project proponent and the resulting revenue from the sale of VCUs.

In the VCS PD/01/, project proponent has identified the following barriers preventing the implementation of project activity, namely:

1. Lack of awareness / real case studies: The traditional approach for large scale farmers is to mainly rely on standard inputs and practices that are again mainly based on chemical inputs and applications, as the most cost effective and outcome effective options. Non- chemical / biological products and related practices are perceived as more costly and less effective in terms of quality and quantity of output. Farmers need proven examples of how more environmentally friendly alternatives can still present a good overall business case, coupled with financial support, before they will alter their practices, which is exactly what this project and interventions aim to achieve. As discussed below in step 3, very few studies exist to date that investigate the effects of cover cropping, application of organic amendments, crop residue recycling and water management in Macadamia orchards specifically, and in Australian horticulture more generally. The absence of case studies and research-derived recommendations presents a barrier to increased adoption of those practices.

   Literature referred: (Sambell, et al. 2019), (Bennett 2021), (Marit E. Kragt 2017), (Page and Witt 2022), (Baumber Alex 2020) and (Kimberly Brown 2022).

2. Financial barrier: Most regenerative practices require a high initial outlay of funding, e.g., compost, microbial products, and specialized equipment. As the cost of inputs rises and farmgate returns fall, regenerative practices are often the first practices to be cut back by farmers. Lack of financial support for environmentally minded farmers has led to limited adoption of environmentally beneficial practices.

   Literature referred: (Bennett 2021), (Marit E. Kragt 2017) and (Kimberly Brown 2022).

3. Institutional barrier: There are insufficient economic incentives from Government in Australia for farmers to reduce their GHG emissions through the implementation of such new practices.

   Literature referred: (Mokaddes Ahmed Dipu 2022); discuss on the lack of supportive policies for farmers in South-East Queensland.

4. Access to information and industry-body support: In Australia, the interaction between the agricultural industry bodies and experts in regenerative agriculture has been minimal. This has prevented the dissemination of information to farmers and reduced the adoption of regenerative practices. Regenerative farming is knowledge-intensive, and farmers require increased engagement from industry bodies to lead the way to a net-zero future. Unfortunately, there is a lack of awareness in the agricultural industry of how farmers can be part of the solution, rather than part of the problem.

   Literature referred: (Mokaddes Ahmed Dipu 2022)

5. Social/cultural barrier: There is the perception that following the conventional methods is the only responsible way to manage and operate a large-scale

agribusiness. There is often a stigma related to implementing regenerative practices or farming in an environmentally conscious manner as not being serious or responsible business.

Literature referred: (Kimberly Brown 2022) and (Page and Witt 2022)

6. Labor/time: Many regenerative practices are labour and time intensive, e.g., integrated pest management and the use of spotters, additional passes with fertiliser spreaders, more frequent irrigation applications, and specialized soil sampling for SOC. It is difficult to justify this additional labour on top of the work already required to run a commercial agricultural operation, without sufficient financial support and improved outcomes to make it viable and feasible.

The available peer reviewed literature/ published studies[/16/] provided as the reference to substantiate the identified barrier has been reviewed by VVB and it has been identified that without the intervention of the project proponent and the resulting revenue from sale of VCUs, the proposed changes in the ALM practices would not occur in the designated project region.

Step 3: Demonstrate that the adoption of the suite of proposed project activities is not common practice.

As per the methodology, the project proponent must determine whether the proposed project activity or suite of activities are common practice in each region included within the project spatial boundary. Common practice is defined as greater than 20 percent adoption. To demonstrate that a project activity or suite of activities is not common practice, the project proponent must show that the weighted mean adoption rate of the two (or more) predominant proposed project activities within the project spatial boundary is below 20 percent.

As per the VCS PD[/01/], the project seeks to enhance regenerative agricultural practices through several key actions along with the adoption rate of each activities detailed as below:

- **<u>Reducing reliance on synthetic fertilizers (PA1)</u>:**

  EA_{a1} – Compost Application – 3.1%

  "There is substantial potential for compost to replace synthetic fertilizers in the Great Barrier Reef catchments" (where a large portion of the project participants are located, including the first PAI), "as there is about 1.1 million hectares under crop production in the Great Barrier Reef catchments, of which only **1.4%** has some form of [organic matter or organic nitrogen] application." (Walsh 2020)

  According to the Australian Bureau of Statistics (ABS 2023), the overall rate of organic amendment application in Australian crop and pasture cultivation was **2.1%** in 2017 (209,072 ha applied compost; 14,549 ha applied mulch; 254,485 ha applied poultry manure; of a total area of 23,191,000 ha). Furthermore, this proportion was 5% lower than in the previous reporting period.

  In Queensland, organic amendments were applied at a rate of 3.1% (44,998 ha compost; 5,564 ha mulch; 18,454 ha poultry manure which amounts to an area of 69,016 ha of applied organic amendments; of 2,164,838 ha total crop area) in 2017. In the absence of industry standards for Macadamia orchards, or horticulture in

Queensland more generally, PP has assumed their adoption rate as 3.1% in line with the principle of conservativeness.

- Cover cropping and inter-row biomass generation (PA2):

  EA_{a2} – Cover Cropping – 2%

  Zulauf and Brown (Zulauf 2017) describe a nation-wide summary of cover crops in the United States of America, indicating adoption by 3–7% of farms in the Midwestern states. For Australia, the rate of cover cropping seems to be even lower, especially in dry areas. In crop areas with limited rainfall and water availability, planting non-cash crops is often perceived as detrimental since the assumption is that the cover crops would compete with the cash crops for water and nutrients. According to the Australian Bureau of statistics, the total cropping area in Australia in 2017 was 23,191,000 ha, of which only 189,000 ha used cover cropping (ABS 2023). This equates to a rate of **0.8%** of cover cropping in crop production in Australia. For Queensland, with a total area used for crops of 2,164,838 ha and area with cover crops of 23,328 ha, the rate is **1.1%.**

  Research trials into cover cropping have begun only recently in Australia with some studies investigating the effects of cover cropping on water availability, crop yield and other effects (Erbacher 2021, Nordblom, et al. 2023).

  Taking together the information from the Australian Bureau of Statistics and the emergence of research trials into cover cropping in Australia, we can assume that the cover cropping rate in Australian cropping and horticulture overall is <2%.

  For Macadamia horticulture, no data on cover cropping could be identified. From current studies and reports, (for example [21,22]) it can be concluded that cover cropping is an emerging practice and not common in Macadamia farming.

  In conclusion, precise data on the adoption rate of cover cropping in Australian Macadamia farming is not available to date. We therefore make a reasonable and conservative assumption, based on the above information, that the adoption rate is 2%.

- Improved irrigation methods and water-use monitoring (PA3):

  EA_{a3} – Improved Irrigation Management – 35%

  A survey of over 7,280 Australian irrigators (Montagu 2008) indicates that objective irrigation scheduling tools, such as soil water monitoring and evaporation techniques, have not been widely adopted by two-thirds of irrigators. The low adoption of these available tools can be attributed to two root causes. Firstly, the technologies being

[21] Eight groundbreaking soil research projects revealed by Southern Cross - Farming Together

[22] Macadamia farmer focuses on cover crops, soil health, diversity (farmingtogether.com.au)

promoted may be perceived as expensive, risky, or complex, without providing a significant advantage over existing practices, especially considering that water is often a small proportion of input costs. Secondly, the compatibility of these technologies with the broader goals of farm families or managers is influenced by social, cultural, and historical factors.

The cotton, fruit, and grape sectors stand out as users of these tools, with approximately **25-35%** adoption rates based on the available data. These industries share a common characteristic where water significantly influences crop yield and quality, and mismanagement of water during crucial periods can impact profitability. Therefore, irrigation management has become an integral tool for crop management in these sectors, motivating leading growers to overcome barriers and embrace objective tools.

No specific data about the adoption rate of water management in Macadamia farming or orchards more broadly, nor horticulture-specific data for the project region, was available at this time. We can therefore only infer the adoption rate from the available data cited above.

It is important to note that the data source providing the adoption rate is not recent, and it is reasonable to assume that the adoption of scheduling techniques has increased since the date of publication. Considering this, the project has taken a conservative approach by assuming a **35%** adoption rate in Australia, which accounts for the potential increase in adoption over time. Although the exact current adoption rate may be higher, the project's conservative assumption ensures a cautious estimate that allows for any advancements in adoption rates since the data was collected. For the calculation of the project level activity, we have used the entire area of irrigated nut and fruit orchards in Queensland, irrespective of the type of water management. This is because we do not have data available for the actual implementation of improved irrigation management in Queensland. The area or irrigated fruit and nut orchards in Queensland, according to the Bureau of Statistics, is 57,701 ha.[23]

- Establishment of new permanent tree crops (PA4):

  EA_{a4} – Establishment of new tree crops – 0.33%

  The rapid growth of the Australian macadamia industry, expanding at a rate of 1,500 hectares per annum, serves as a strong motivation for considering this expansion rate as a benchmark for the rate of increase in tree plantings across Australia (reviewed in the Macadamia industry benchmark report 2017, published by the Australian Macadamia Society (Society 2017)). This growth rate showcases the significant demand for permanent tree crops and highlights the economic benefits, market potential, and long-term sustainability associated with such crops.

[23] (ABS, Water Use on Australian Farms – Data item list, 2015-16 to 2020-21 2022)

By utilizing the macadamia industry's expansion rate as a benchmark, our carbon project aims to demonstrate the additionality of our efforts to promote tree planting and the adoption of permanent tree crops. We recognize that this benchmark represents a tangible and achievable rate of increase, reflecting the feasibility and practicality of transitioning from annual crops to long-term carbon sequestering tree plantations.

The success and momentum of the macadamia industry's growth also serve as a positive example to inspire and incentivize other farmers and stakeholders to consider similar transitions. By showcasing the benefits of long-term investments in tree crops, such as increased carbon sequestration, improved soil health, and diversified revenue streams, our project aims to foster a broader culture of sustainable agriculture and carbon mitigation in Australia.

Moreover, by incorporating the benchmark expansion rate into our project's additionality section, we demonstrate our commitment to driving genuine emission reductions beyond business-as-usual practices. The calculated rate of expansion for the Australian macadamia industry, which is 1,500 hectares per annum, represents approximately **0.33%** of the current orchard area in Australia (1500 ha/458600 ha).

- Return of organic crop waste and residues to orchards (PA5):

  EA_{a5} – Return of organic crop waste and residues to orchards – 3.1%

  Very limited information is available on crop residue and clippings recycling in Australian orchards. This allows for the conclusion that this is not a common practice in orchard systems. In California, USA, whole orchard recycling (WOR) is an emerging practice where trees at the end of their productive phase are chipped and incorporated into the soil instead of being burned as is common practice[24,25] (Wolff 2020, Jahanzad E 2020). The WOR has started to gain some traction in the Californian almond industry, and a first trial is underway in Australia[26,27] to recycle an almond orchard in Victoria.

  The project proponent has made a thoughtful decision to utilize the same adoption rate that has been used for compost application (3.1%) as a benchmark for the return of organic crop waste to orchards. This choice is motivated by the recognition that both crop waste and compost are valuable sources of organic material in orchard systems, contributing to soil health, nutrient cycling, and overall sustainability.

  By aligning the adoption rate with compost application, the project proponent acknowledges the parallel benefits and considerations associated with the utilization

[24] (Wolff 2020)

[25] (Jahanzad E 2020)

[26] Hort Innovation | Pathway to carbon neutral – whole orchard recycling in almond orchards (AL21000) (horticulture.com.au)

[27] Australian almond industry trials carbon-friendly recycling as an alternative to burning old trees - ABC News

of organic materials in orchard management. Both compost and organic crop waste offer opportunities to enhance soil fertility, promote microbial activity, improve water retention, and reduce the need for synthetic fertilizers. They also align with the principles of circular economy and resource efficiency by recycling organic matter back into the orchard ecosystem.

Moreover, utilizing the same adoption rate for both compost application and returning organic crop waste underscores the consistency and coherence of the project's approach. By drawing from established data and adopting a standardized rate, the project proponent ensures a harmonized evaluation of the impact and additionality of their efforts.

Additionally, using the same adoption rate for both practices allows for easier comparison and benchmarking within the agricultural industry. It facilitates the assessment of the project's contribution to organic waste management practices in orchards, enabling meaningful analysis and identification of best practices across different orchard systems.

Based on the review of the regional/site-specific and host country's governmental database and available literature review as mentioned above, VVB finds the adoption rate applied to be valid and applicable for the project region.

To calculate the weighted mean adoption rate in each region covered by the project area Equation 1 of applied methodology[/B02/] has been used.

AR=(($EAa1 \times PAa1$) +($EAa2 \times PAa2$) +⋯+ ($EAay \times PAay$)

Where:

$PAa1$= $Areaa1(Areaa1 + Areaa2 + \cdots + Areaay)$

$PAa2$= $Areaa2(Areaa1 + Areaa2 + \cdots + Areaay)$

$PAay$= $Areaay$ $(Areaa1 + Areaa2 + \cdots + Areaay)$

AR = Weighted average adoption rate in the region

EAay = Existing adoption rate of proposed project activity a y in the region

PA a y = Ratio of proposed project level adoption of activity a y relative to proposed project level adoption of all activities in the region

Areaay = Area of proposed project level adoption of activity ay in the region hectares

ay = 1,…, ay proposed project activities ranked by area covered in the region where 1 = largest area covered

Proposed project level adoption (area) of each project activity:

PA1: 69,016 ha

PA2: 23,328 ha

PA3: 52,701 ha

PA4: 1500 ha

PA5: 69,016 ha

Ratio of proposed project level adoption per activity:

PA_{a1} = 69,016 ÷ 215,561 = 0.32

PA_{a2}= 23,238 ÷ 215,561 = 0.11

PA_{a3}= 52,701 ÷ 215,561 = 0.24

PA_{a4}= 1,500 ÷ 215,561 = 0.007

PA_{a5}= 69,016 ÷ 215,561 = 0.32

At time of validation, the first PAI had implemented PA1, PA2 and PA5. Therefore, the weighted average adoption rate has been calculated as follows/01//VII/.

Weighted average adoption rate within the project boundary:

Equation 1, VM0042 V2.0

$AR = ((EAa1 \times PAa1) + (EAa2 \times PAa2) + \cdots + (EAay \times PAay)$

= (3.1% x 0.32) + (2% x 0.11) + (35% x 0.24) +(0.33% x 0.007) + (3.1% x 0.32)

AR = 11%

Where:

EA_{a1} = 3.1%

EA_{a2} = 2%

EA_{a3} = 35%

EA_{a4} = 0.33%

EA_{a5} = 3.1%

PA_{a1} = 0.32

PA_{a2} = 0.11

PA_{a3} = 0.24

PA_{a4} = 0.007

PA_{a5} = 0.32

As the abovementioned calculation clearly indicates that the weighted average adoption rate for the first PAI is below 20%, thus VVB confirms that following the methodology requirement the project activities implemented are additional in the designated project region.

3.3.6 Quantification of GHG Emission Reductions and Removals

VVB confirms that the PP has incorporated the methods for quantifying the GHG removals generated by the project in accordance with the methodology/B02/. VVB has performed review of all input data, parameters, formulas, calculations, conversions, statistics, and output data to ensure consistency with the documentation/01//02/, methodology/B02/, associated and tools/B02/.

Furthermore, where applicable, references for analysis methods or default values were checked against relevant scientific literature for best practice. The GHG removals by sinks has been calculated as follows:

In accordance with the applied methodology/B02/, PP has demonstrated the quantification approach applied for GHG accounting of the selected carbon pools as follows/01//VII/:

Table XXIII: Summary of quantification approaches utilized by PP (Carbon Friendly Pty Ltd.):

GHG/Pool	Source	Quantification Approach 1: Measure and Model*	Quantification Approach 2: Measure and Remeasure	Quantification Approach 3: Default
CO_2	Soil organic carbon		Annual site-specific measurements	
	Aboveground woody biomass*	Annual monitoring and estimation		
	Belowground woody biomass*	Annual monitoring and estimation		
	Fossil fuel			Site-specific data and default EFs
N_2O	Use of nitrogen fertilizers			Site-specific data and default EFs

*CDM A/R Tool: Estimation of carbon stocks and change in carbon stocks of trees and shrubs

I. Quantification of Baseline Emissions.

Emissions resulting from the schedule of agricultural management activities in the baseline scenario (described above) are estimated using default emission factors and site-specific data gathered from each participant before and at validation.

Soil organic carbon sequestration:

Quantification Approach 2: Measure and Remeasure.

Changes in baseline SOC stocks has been monitored in the baseline control sites identified within the project boundary/01//03//04//VII/. These sites are inter-row headlands without fruit trees that are otherwise identical to the project sites and located in the same climate zone/01//VII/.

Quantification of baseline SOC has been performed using Walkley-Black (wet) oxidation and Loss-on-ignition (LOI) methodology as these were common practice at the time (2020). Future laboratory analyses are to be performed with Dry Combustion (Dumas method) to comply with VM0042 v2.0.

Table XXIV: Control site similarity criteria

As per Table 15 of VCS PD:		**Evidence by PP**
Control Site Similarity Criterion	**Threshold**	
Topography	Gently Slopy	Australia's topographic relief (sec 1.13 VCS PD)
Soil texture to depth of project boundary (minimum 30 cm)	Sandy loam	-
Soil group	Durisols (Du)	Australian Soil Types: **Podosol** (sec 1.13 VCS PD) Soil group: **Durisol** (table 15 VCS PD
Average SOC percent by dry weight to depth of project boundary (minimum 30 cm)	0.65	Soil lab report by and independent expert i.e., Ag Plus
Historical ALM activities	Depending on scenario	Traditional agricultural management practice (sec 1.13 of VCS PD, GIS data, "Land Management and Farming in Australia-2016-17" report by Australian Bureau of Statistics, and Table 1: Australian land use[28] (VCS PD)
Average SOC percent by dry weight to depth	0.65	Soil lab report by and independent expert i.e, Ag Plus

[28] DAFF. (2016). *ABARES*. Retrieved from Department of Agriculture, Fisheries and Forestry. https://www.agriculture.gov.au/abares/aclump/land-use

of project boundary (minimum 30 cm)		
Native vegetation	None	The relevant ecosystems in the area consist **of temperate broadleaf and mixed forest** with only moderate elevations of less than 300 m. (section 1.13 VCS PD)
Climate zone	Subtropical	Subtropical; Australian climate classification by Bureau of Meteorology (sec 1.13 VCS PD)
Precipitation	Same as project site, 1134.5 mm[29]	Annual rainfall in the monitoring period averaged 852 mm (sec 1.13 VCS PD)

To ensure that changes in SOC stocks do not solely arise from a temporal change in bulk density (related to management practices), SOC stock changes will be calculated on an equivalent soil mass (ESM) basis. The SOC mass of each depth layer or increment per unit area is calculated as the product of soil mass and OC concentration, where soil mass is the division of the dry sample mass in each depth layer by the area sampled by the probe or auger.

The cumulative SOC mass per unit area is then calculated by adding all sampled depth increments, at least down to 30 cm depth. Baseline SOC stocks will be reported for the baseline control sites and each stratum within the project area whenever stratification is applied as a sampling strategy.

The calculation used to calculate SOC stock at each depth per unit area is as follows:

Equation 4, VM0042 V2.0

$$M_{n,dl,SOC} = \left(\frac{M_{n,dl,sample}}{\pi \left(\frac{D}{2}\right)^2 \times N} \times 10\,000 \right) \times OC_{n,dl}$$

Where:

$M_{n,dl,SOC}$	=	SOC mass in soil sample *n* in depth layer *dl* (kg/ha)
$M_{n,dl,sample}$	=	Soil mass of sample *n* in depth layer *dl* (g)
D	=	Inside diameter of probe or auger (mm)
N	=	Number of cores sampled (unitless)
$OC_{n,dl}$	=	Organic carbon content in sample *n* in depth layer *dl* (g/kg)
10 000	=	Conversion factor from g/mm^2 to kg/ha

The baseline control sites were developed according to the stratification of the project site as described in the CF soil sampling SOP. For the first project instance, MFH, the strata and the accompanying sampling points for the control sites are displayed below and the GIS

[29] Climate statistics for Australian locations (bom.gov.au)

documents for stratification and sampling point coordinates are supplied in the supplementary documentation.

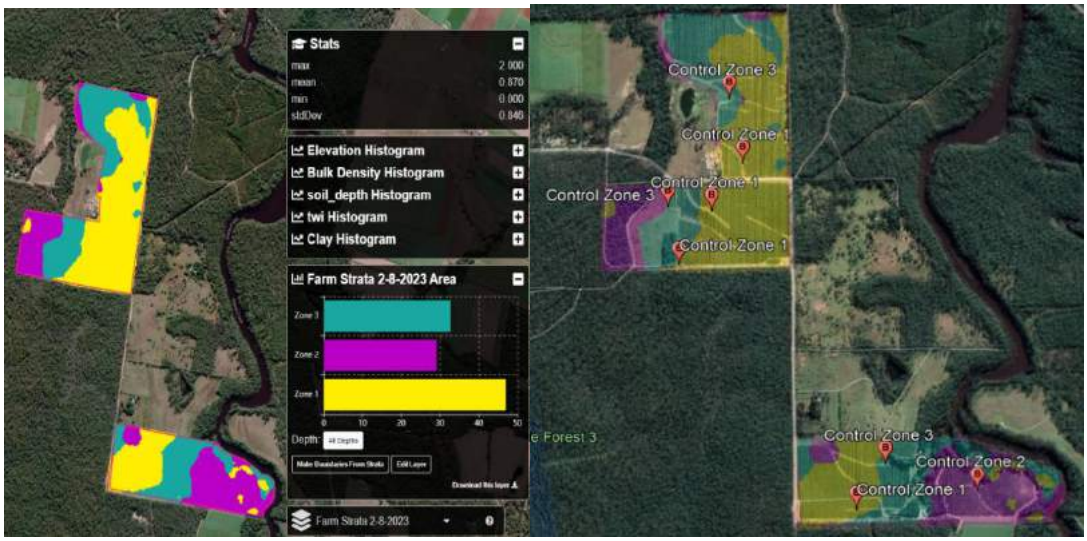


Figure 4: Stratification and sampling points for the first PAI project area.

The details regarding each of the zones for the control sites and associated strata for the first project instance (MFH) are as follows:

Table XXV: Sampling zones and number of baseline sampling points for the first PAI project area

Strata	Area of Strata (ha)	Number of Control Sites
Zone 1	47 (41 within project area)	4
Zone 2	29 (9 within project area)	1
Zone 3	33 (21 within project area)	3

The number of control site sampling points is dependent on the area of the respective zone.

The sample weight, SOC concentration and OC mass for each control site are listed below.

Table XXVI: SOC Stock Zone 1 – New Control Sites

Depth (cm)	Profile ID	Sample weight (g)	Soil OC conc. (g/kg)	Incr. soil mass (Mg/ha)	Cum soil mass (Mg/ha)	Incr. OC mass (Mg/ha)	Cum OC mass (Mg/ha)
30	1962258	582.94	5.8	3624.1	3624.1	21.0	21.0
30	1962259	514.57	7.0	3199.1	3199.1	22.4	22.4
30	1962262	584.11	8.1	3631.4	3631.4	29.4	29.4

30	1962263	637.68	4.0	3964.5	3964.5	15.9	15.9
Average		**579.8**	**6.2**	**3604.8**	**3604.8**	**22.2**	**22.2**

Table XXVII: SOC Stock Zone 2 – New Control Sites

Depth (cm)	Profile ID	Sample weight (g)	Soil OC conc.	Incr. soil mass	Cum soil mass	Incr. OC mass	Cum OC mass
			(g/kg)	(Mg/ha)	(Mg/ha)	(Mg/ha)	(Mg/ha)
30	1962260	596.83	9.1	3710.5	3710.5	33.8	33.8
Average		**596.8**	**9.1**	**3710.5**	**3710.5**	**33.8**	**33.8**

Table XXVIII: SOC Stock Zone 3 – New Control Sites

Depth (cm)	Profile ID	Sample weight (g)	Soil OC conc.	Incr. soil mass	Cum soil mass	Incr. OC mass	Cum OC mass
			(g/kg)	(Mg/ha)	(Mg/ha)	(Mg/ha)	(Mg/ha)
30	1962261	605.61	6.8	3765.1	3765.1	25.6	25.6
30	1962264	584	5.1	3630.7	3630.7	18.5	18.5
30	1962265	576.45	5.8	3583.8	3583.8	20.8	20.8
Average		**441.5**	**5.9**	**3659.9**	**3659.9**	**21.6**	**21.6**

For each zone, the baseline SOC is calculated according to the above average increase in OC mass over the stratum's total area using the following equation:

$SOC_{bsl,t}$ = avg. SOC (C/ha) x area (ha)

Table XXIX: Baseline SOC – New Control Sites

Zone	Area (ha)	Average $SOC_{bsl,2023}$ (t C/ha)	Total $SOC_{bsl,2023}$ (t C/ha)
1	41	22.2	910.2
2	9	33.8	304.2
3	21	21.6	453.6
Total		**1,668**	

As described in the proposed deviation in section 3.6, the control sites were newly established and stratified in 2023. The original baseline SOC carbon analysis was done on samples collected throughout the orchard across all zones. The baseline SOC measured in 2020 at the project start date are listed below.

Table XXX: Baseline SOC – Original Control Sites

Zone	Area (ha)	Average $SOC_{bsl,2020}$ (t C/ha)	Total $SOC_{bsl,2020}$ (t C/ha)
1	41	24.27	995.1
2	9	25.1	225.9
3	21	19.9	417.9
Total	**1,638.9**		

From the above comparison between the original control sites and the newly established control sites, we conclude that the newly established, methodology-compliant control sites are suitable since the SOC of the individual zones closely resembles the values obtained three years earlier.

VVB has reviewed the following supporting documents/03/04/:

i. ESM Control Sites MFH 2023.xlsm
ii. MFH 2019 Control Sites.xlsm
iii. MFH Sample Points.kmz
iv. MFH_Sample_Points.csv
v. MFH GIS.qgz
vi. MFH - Macadamia Farm Holdings.kmz

Based on the review of above-mentioned documents and on-site inspection/interviews/VII/, VVB confirms that the identified control sites detailed above are within the project's geographical boundary and have been used to select sample points (through stratified random sampling) for field-level data collection and monitoring.
VVB, confirms that the data/value provided by PP relevant to SOC stock in the project region is consistent with the supplementary documentation.

Further VVB has reviewed the SOP employed by PP (SOP for Soil Sampling using measure-remeasure methodology)/11/ this include the details on following:

- Sampling Design: Stratified Random Sampling
- Stratification factors taken into consideration: Topography, topographical wetness index, soil bulk density, clay content, soil depth, calculation of
- Number of soil samples required per strata: Following the quantification methodology in the applied methodology VM0042 v2.0
- Data/parameter monitored and/or recorded from each soil sample point: Geographical location (geographic coordinates), sampling date, depth from which soil sample has been taken, soil mass, SOC content, bulk density, field observations (physical condition of the soil), sample handling and storage information.

VVB, confirms that the monitoring methodology for the soil sampling and field-level data collection and further for calculation of SOC stock in the region, employed by PP for the proposed project is in line with the requirement of section 8.2.1 of the applied methodology/B02/.

Aboveground biomass and carbon sequestration:

The change in carbon stocks in trees is calculated using the CDM A/R Tools Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities. Given that the project only intends to account for additional biomass (i.e., planting of new orchards) from project implementation partners that have adopted project activity (PA4) and has not been cleared of native vegetation as per the eligibility criteria, the baseline woody biomass stock for these sites will be equal to zero in the baseline scenario.

At the time of validation there has been no establishment/planting of new tree species in the project boundary of first project instance, therefore woody biomass stock has not been calculated[/01//VII/]. However, SOP for for Direct Estimation of Tree Biomass using Measure and Re-measure Methodology[/11/] is in place for the time scenario when, the project instance may incorporate tree plantation in the designated project region.

Carbon dioxide emissions from fossil fuel combustion

Quantification Approach 3, site-specific data and default EFs.

Carbon dioxide emissions from fossil fuels in the project boundary are quantified in the baseline scenario under Quantification Approach 3, using equations 7 and 8 as specified in the VM0042 v2.0 methodology.

Parameter $CO_{2\_ffbsl,i,t}$ is estimated using the following equation 7 of VM0042 v2.0:

$$\overline{CO_{2\_ff_{bsl,i,t}}} = (\sum_{j=1}^{J} EFF_{bsl,j,i,t})/A_i$$

Where:

$\overline{CO_{2\_ff_{bsl,i,t}}}$	=	Areal mean carbon dioxide emissions from fossil fuel combustion in the baseline scenario for sample unit *i* in year *t* (t CO_2e/ha)
$EFF_{bsl,j,i,t}$	=	Carbon dioxide emissions from fossil fuel combustion in the baseline scenario in vehicle/equipment type *j* for sample unit *i* in year *t* (t CO_2e)
A_i	=	Area of sample unit *i* (ha)
j	=	Type of fossil fuel (gasoline or diesel)

The parameter $EFF_{bsl,j,i,t}$ is estimated using the following equation 8 of VM0042 v2.0:

$$EFF_{bsl,j,i,t} = FFC_{bsl,j,i,t} \times EF_{CO2,j}$$

Where:

$FFC_{bsl,j,i,t}$	=	Consumption of fossil fuel type *j* for sample unit *i* in year *t* (liters)
$EF_{CO2,j}$	=	Emission factor for combustion of fossil fuel type *j* (t CO_2e/liter)

Table XXXI: Baseline diesel emissions for the first project instance MFH

Diesel	Value	Unit	Source
FFC $b_{sl,diesel,MFH,2020}$	21246	Liters	
$EF_{CO2,diesel}$	0.0027	t CO_2e/Liter	[30]
$EFF_{bsl,diesel,MFH,2020}$	57	t CO_2e	
Ai	71	ha	
j	Diesel	N/A	
$CO_2FF_{bsl,diesel,2020}$	0.807946	t CO_2e/ha	

Table XXXII: Baseline gasoline emissions for the first project instance MFH

Gasoline	Value	Unit	Source
$FFC_{bsl,gasoline,MFH,2020}$	1434	Liters	
$EFCO_{2,gasoline}$	0.0023	t CO_2e/Liter	[31]
$EFF_{bsl,gasoline,MFH,2020}$	3.2982	t CO_2e	
A_i	71	ha	
j	Gasoline	N/A	
$CO_{2FFbsl,gasoline,2020}$	0.46453521	t CO_2e/ha	

Factors $FFC_{bsl,diesel}$ and $FFC_{bsl,gasoline}$ used above were derived from values obtained in the baseline year (2020) and the years following the project start date (2021-2022) since no diesel and gasoline records were available for the look-back period preceding the project start date. Following the quantitative information hierarchy described in Box 1, section 9 of VM0042 v2.0, we provide the following evidence to substantiate the validity of the provided data:

- On-farm economic analysis in the Australian macadamia industry (O'Hare 2010)
- Macadamia industry benchmark report 2009-2021, Queensland Government (Q. Government 2021)

As per the above sources, the industry standard fuel use per hectare in Southeast Queensland in 2021 was 15,831 L, derived from the following values:

Total on-farm cost: $9,291/ha

Fuel cost of total cost: 4.2 % (= $390)

Average cost of diesel in 2021: $1.75

Farm size: 71 ha

Since the actual fuel data obtained from the first PAI's records is higher than the industry standard, we will use the higher value going forward to avoid overestimation of GHG reductions.

[30] https://www.dcceew.gov.au/sites/default/files/documents/national-greenhouse-accounts-factors-2022.pdf

[31] https://www.dcceew.gov.au/sites/default/files/documents/national-greenhouse-accounts-factors-2022.pdf

VVB based on the review of the VCS PD[/01/], on-site inspection interviews[/VII/], and review of supporting documents[/02//14/], confirms that the estimation of Carbon dioxide emissions from fossil fuel combustion in the baseline has been carried out in line with the section 8.2.3 of the applied methodology VM0042 v2.0[/B02/]. Further, the emission factors and/or relevant default values used for the accounting are based on either the latest available host country database or from the IPCC 2019 guidelines, thus valid and appropriate to the VVB.

N_2O Emissions from use of nitrogen fertilizer:

Quantification Approach 3: site-specific data and default EFs.

Nitrous oxide emissions due to nitrogen inputs to soils from nitrogen fertilizers are included in the project boundary and are quantified in the baseline scenario using the following equations 17 of VM0042 v2.0:

$$N2O\_soil_{bsl,i,t} = N2O\_fert_{bsl,i.t}$$

The project excludes all livestock as well as the implementation of nitrogen fixing species. Baseline nitrous oxide emissions are therefore limited to emissions linked to nitrogen fertilizer applications. Nitrous oxide emissions from fertilizer applications are calculated following equation 18 of VM0042 v2.0:

$$N2O\_fert_{bsl,i,t} = N2O\_fert_{bsl,direct,i,t} + N2O\_fert_{bsl,indirect,i,t}$$

Where:

$N2O\_fert_{bsl,direct,i,t}$ = Direct nitrous oxide emissions due to fertilizer use in the baseline scenario for sample unit *i* in year *t* (t CO_2e/ha)

$N2O\_fert_{bsl,indirect,i,t}$ = Indirect nitrous oxide emissions due to fertilizer use in the baseline scenario for sample unit *i* in year *t* (t CO_2e/ha)

Direct nitrous oxide emissions due to fertilizer use in the baseline scenario are quantified in the following equations 19-21 of VM0042 v2.0:

$$\overline{N2O\_fert_{bsl,direct,i,t}} = \left(\left(FSN_{bsl,i,t} + FON_{bsl,i,t}\right) \times EF_{Ndirect} \times 44/28 \times GWP_{N2O}\right)/A_i$$

$$FSN_{bsl,i,t} = \sum_{SF} M_{bsl,SF,i,t} \times NC_{SF}$$

$$FON_{bsl,i,t} = \sum_{OF} M_{bsl,OF,i,t} \times NC_{OF}$$

Where:

$\overline{N2O\_fert_{bsl,direct,i,t}}$	=	Areal mean direct nitrous oxide emissions due to fertilizer use in the baseline scenario for sample unit *i* in year *t* (t CO_2e/ha)
$FSN_{bsl,i,t}$	=	Synthetic N fertilizer applied to sample unit *i* in year *t* in the baseline scenario (t N)
$FON_{bsl,i,t}$	=	Organic N fertilizer applied to sample unit *i* in year *t* in the baseline scenario (t N)
$EF_{Ndirect}$	=	Emission factor for nitrous oxide emissions from N additions from synthetic fertilizers, organic amendments and crop residues (t N_2O-N/t N applied)
$M_{bsl,SF,i,t}$	=	Mass of N-containing synthetic fertilizer type *SF* applied to sample unit *i* in year *t* in the baseline scenario (t fertilizer)
NC_{SF}	=	N content of synthetic fertilizer type *SF* (t N/t fertilizer)
$M_{bsl,OF,i,t}$	=	Mass of N-containing organic fertilizer type *OF* applied to sample unit *i* in year *t* in the baseline scenario (t fertilizer)
NC_{OF}	=	N content of organic fertilizer type *OF* (t N/t fertilizer)
SF	=	Synthetic N fertilizer type
OF	=	Organic N fertilizer type
44/28	=	Molar mass ratio of N_2O to N applied to convert N_2O-N emissions to N_2O emissions

Indirect nitrous oxide emissions due to fertilizer use in the baseline scenario are quantified in the following equations 22-24 of VM0042 v2.0:

$$\overline{N2O\_fert_{bsl,indirect,i,t}} = (N2O\_fert_{bsl,volat,i,t} + N2O\_fert_{bsl,leach,i,t})/A_i$$

$$N2O\_fert_{bsl,volat,i,t} = \left[\begin{matrix}(FSN_{bsl,i,t} \times Frac_{GASF,l,S}) + \\ (FON_{bsl,i,t} \times Frac_{GASM,l,S})\end{matrix}\right] \times EF_{Nvolat} \times 44/28 \times GWP_{N2O}$$

$$N2O\_fert_{bsl,leach,i,t} = \left(\begin{matrix}FSN_{bsl,i,t} + \\ FON_{bsl,i,t}\end{matrix}\right) \times Frac_{LEACH,l,S} \times EF_{Nleach} \times \frac{44}{28} \times GWP_{N2O}$$

Where:

$\overline{N2O\_fert_{bsl,indirect,i,t}}$	=	Areal mean indirect nitrous oxide emissions due to fertilizer use in the baseline scenario for sample unit *i* in year *t* (t CO_2e/ha)
$N2O\_fert_{bsl,volat,i,t}$	=	Indirect nitrous oxide emissions produced from atmospheric deposition of N volatilized due to fertilizer use in the baseline scenario in sample unit *i* in year *t* (t CO_2e)
$N2O\_fert_{bsl,leach,i,t}$	=	Indirect nitrous oxide emissions produced from leaching and runoff of N, in regions where leaching and runoff occurs, due to fertilizer use in the baseline scenario in sample unit *i* in year *t* (t CO_2e)
$Frac_{GASF,l,S}$	=	Fraction of all synthetic N added to soils that volatilizes as NH_3 and NO_x for manure management system *S* and livestock type *l* (dimensionless)
$Frac_{GASM,l,S}$	=	Fraction of all organic N added to soils and N in manure and urine deposited on soils that volatilizes as NH_3 and NO_x for manure management system *S* and livestock type *l* (dimensionless)
EF_{Nvolat}	=	Emission factor for nitrous oxide emissions from atmospheric deposition of N on soils and water surfaces (t N_2O-N/(t NH_3-N + NO_x-N volatilized))
$Frac_{LEACH,l,S}$	=	Fraction of N (synthetic or organic) added to soils and in manure and urine deposited on soils that is lost through leaching and runoff, in regions where leaching and runoff occurs, for manure management system *S* and livestock type *l* (dimensionless)
EF_{Nleach}	=	Emission factor for nitrous oxide emissions from leaching and runoff (t N_2O-N/t N leached and runoff)

Table XXXIII: Baseline fertilizer emissions for the first project instance MFH

	Value	Unit	Source
$N2O\_{fertbsl,direct,MFH,2020}$	0.384277	t CO_2e/ha	
$FSNb_{sl,i,t}=\Sigma Mbsl,SF,MFH,2020\times NCSF$	7.47548	tonne	
$FONb_{sl,i,t}=\Sigma Mbsl,OF,MFH,2020\times NCOF$	0.23254	tonne	
Mbsl,SF,Ammonium Sulfate,2020	8.70	tonne	
NCSF,Ammonium Sulfate,2020	21	%	
Mbsl,SF,Dunder Urea,2020	6.94	tonne	
NCSF,Dunder Urea,2020	46	%	
Mbsl,SF,Macabor,2020	5.70	tonne	
NCSF,Macabor,2020	15%	%	
Mbsl,SF,Horti Plus,2020	8.40	tonne	
NCSF,Horti Plus,2020	12	%	
Mbsl,SF,Rootfeed,2020	4.04	tonne	
NCSF,Rootfeed,2020	12	%	
Mbsl,SF,Seasol Ca,2020	1.75	tonne	
NCSF,Seasol Ca,2020	6	%	
Mbsl,OF,Compost,2020	1661	tonne	
NCOF,Compost,2020	0.014	%	
EF Ndirect	0.0085		[32]

[32] https://www.dcceew.gov.au/sites/default/files/documents/national-inventory-report-2021-volume-1.pdf

GWPN_2O	265		[33]
Ai	71	ha	
$N_2O\_fertbsl,indirect$,MFH,2020	0.1	t CO_2e/ha	
Molar Mass N_2O	1.57	N/A	
$N_2O\_fertbsl,volat$,MFH,2020	3.62766	t CO_2e	
$N_2O\_fertbsl,leach$,MFH,2020	5.777712	t CO_2e	
Frac GASF,I,S	0.11		[34]
Frac GASM,I,S	0.21		(footnote: 46)
EF Nvolat	0.01		(footnote: 46)
Frac LEACH,I,S	0.24		(footnote: 46)
EF Nleach	0.0075		(footnote: 46)
Mbsl,OF,Compost,2020	1661	tonne	
NCOF,Compost,2020	0.014	%	
EF Ndirect	0.0085		[35]
GWPN_2O	265		[36]
Ai	71	ha	
Molar Mass N_2O	1.57	N/A	
$N2O\_fertbsl$,MFH,2020	1	t CO_2e/ha	

The nitrogen input data used above was derived from values obtained in the baseline year (2020) and the years following the project start date (2021-2022) since no fertilizer records were available for the look-back period preceding the project start date.

Total N application in 2020 equates to

$N_{total,2020}$ = 7.47 t + 0.23 t = 7.70 t

Over an area of 71 ha, this equates to

$N_{bsl,i,2020}$ = 0.10981 t = 108.5 kg/ha/y

Following the quantitative information hierarchy described in Box 1, section 9 of VM0042 v2.0, we use the industry standard described in (Huett D. O. 2006) to substantiate the validity of our data.

As per the above sources, the industry standard N application rate per hectare in Australia is 109-144 kg/ha/y. We can therefore assume that the 108.5 kg/ha/y applied by the first PAI

[33] https://ghgprotocol.org/sites/default/files/ghgp/Global-Warming-Potential-values%20%28Feb%2016%202016%29_1.pdf

[34] Eight groundbreaking soil research projects revealed by Southern Cross - Farming Together

[35] https://www.dcceew.gov.au/sites/default/files/documents/national-inventory-report-2021-volume-1.pdf

[36] Macadamia farmer focuses on cover crops, soil health, diversity (farmingtogether.com.au)

in 2020 is a representative value that can be assumed as an annual average in the baseline scenario.

VVB based on the review of the VCS PD[/01/], on-site inspection interviews[/VII/], and review of supporting documents (carbon calculation spreadsheet, literature review)[/02//14/], confirms that the estimation of N_2O emissions from use of fertilizers in the baseline has been carried out in line with the section 8.2.9 of the applied methodology VM0042 v2.0[/B02/].

II. Quantification of project emissions.

Project emissions has been calculated as follows[/01//VII/]:

Project emissions are calculated in the same manner and using the same formulae as utilised in the baseline emission calculation. For all equations, the subscript bsl has been substituted by wp to make it clear that the relevant values are being quantified for the project scenario.

Soil organic carbon sequestration

To ensure that changes in SOC stocks do not solely arise from a temporal change in bulk density (related to management practices), SOC stock changes will be calculated on an equivalent soil mass (ESM) basis. The SOC mass of each depth layer or increment per unit area is calculated as the product of soil mass and OC concentration, where soil mass is the division of the dry sample mass in each depth layer by the area sampled by the probe or auger.

The cumulative SOC mass per unit area is then calculated by adding all sampled depth increments, at least down to 30 cm depth. Baseline SOC stocks will be reported for the baseline control sites and each stratum within the project area whenever stratification is applied as a sampling strategy.

The baseline control sites were developed according to the stratification of the project site as described in the CF soil sampling SOP. For the first project instance, MFH, the strata and the accompanying sampling points for the project sites is displayed below and the GIS documents for stratification and sampling point coordinates are supplied in the supplementary documentation.

The details regarding each of the zones for the project sites and associated strata for the first project instance (MFH) as shown below:

Table XXXIV: Stratified zone sampling points for project area of the first PAI

Strata	Area of Strata (ha)	Number of Sampling Sites
Zone 1	47 (41 within project area)	4
Zone 2	29 (9 within project area)	4
Zone 3	33 (21 within project area)	4

The number of sampling sites per strata was determined by means of the following equation with standard deviation of each stratum being determined using pre-sampling prior to the establishment of sampling sites for the first project instance.

$$MDD \geq \frac{S}{\sqrt{n}} \times (t_{\alpha,v} + t_{\beta,v})$$

$$n \geq \left(\frac{S \times (t_{\alpha} + t_{\beta})}{MDD}\right)^2$$

Where:

MDD	=	Minimum detectable difference
S	=	Standard deviation of the difference in SOC stocks between t_0 and t_1
n	=	Number of samples
t_α	=	Two-sided critical value of the t-distribution at a given significance level (α) frequently taken as 0.05 (5 percent)
t_β	=	One-sided quartile of the t-distribution corresponding to a probability of type II error β (e.g., 90 percent)

Sample Number Zone 1 - MFH

S = 0.135

n = 4

tα = 2.13

tβ = 2.77

MDD = 0.335

n ≥ 4

Total samples needed = 4

Sample Number Zone 2 - MFH

S = 0.057

n = 4

tα = 2.13

tβ = 2.77

MDD = 0.140

n ≥ 4

Total samples needed = 4

Sample Number Zone 3 - MFH

S = 0.41

n = 4

tα = 2.13

tβ = 2.77

MDD = 1.022

n ≥ 4

Total samples needed = 4

The sample weight, SOC percentage and total OC mass of each zone of the first PAI's project area are listed in tables 26-28 below.

Table XXXV: $SOC_{wp,\ 2023}$ – Stock Zone 1

Depth (cm)	Profile ID	Sample weight (g)	Soil OC conc. (g/kg)	Incr. soil mass (Mg/ha)	Cum soil mass (Mg/ha)	Incr. OC mass (Mg/ha)	Cum OC mass (Mg/ha)
30	1962238	564.65	8.0	3510.4	3510.4	28.1	28.1
30	1962244	554.57	6.0	3447.8	3447.8	20.7	20.7
30	1962246	603.41	6.0	3751.4	3751.4	22.5	22.5
30	1962249	539.69	7.0	3355.2	3355.2	23.5	23.5
Average		**565.6**	**6.8**	**3516.2**	**3516.2**	**23.7**	**23.7**

Table XXXVI: $SOC_{wp,\ 2023}$ – Stock Zone 2

Depth (cm)	Profile ID	Sample weight (g)	Soil OC conc. (g/kg)	Incr. soil mass (Mg/ha)	Cum soil mass (Mg/ha)	Incr. OC mass (Mg/ha)	Cum OC mass (Mg/ha)
30	1962253	552.26	8.0	3433.4	3433.4	27.5	27.5
30	1962254	519.57	9.7	3230.2	3230.2	31.3	31.3
30	1962255	565.26	12.0	3514.2	3514.2	42.2	42.2
30	1962257	445.62	14.2	2770.4	2770.4	39.3	39.3
Average		**520.7**	**11.0**	**3237.0**	**3237.0**	**35.1**	**35.1**

Table XXXVII: $SOC_{wp,\ 2023}$ – Stock Zone 3

Depth (cm)	Profile ID	Sample weight (g)	Soil OC conc. (g/kg)	Incr. soil mass (Mg/ha)	Cum soil mass (Mg/ha)	Incr. OC mass (Mg/ha)	Cum OC mass (Mg/ha)
30	1962248	621.59	3.0	3864.4	3864.4	11.6	11.6

30	1962250	585.94	8.9	3642.8	3642.8	32.4	32.4
30	1962251	630.75	7.0	3921.4	3921.4	27.4	27.4
30	1962252	562.93	4.9	3499.7	3499.7	17.1	17.1
Average		**600.3**	**6.0**	**3732.1**	**3732.1**	**22.2**	**22.2**

Table XXXVIII: Total $SOC_{wp,\ 2023}$ across the total project area of the first PAI

Zone	Area (ha)	Average $SOC_{wp,\ 2023}$ (t C/ha)	Total $SOC_{wp,\ 2023}$ (t C/ha)
1	41	23.7	971.7
2	9	35.1	315.9
3	21	22.2	466.2
Total		**1,753.8**	

VVB, based on the review of the VCS PD/01/, supporting document/03/, confirms the demonstration and estimation of "Soil organic carbon sequestration" in the project scenario is following the requirement of the applied methodology VM0042/B02/.

Aboveground and below ground woody biomass carbon sequestration.

No woody biomass will be harvested. Therefore, the long-term average GHG benefit does not need to be calculated for woody biomass. Instead, Quantification Approach 1: Measure and Model using CDM A/R Tools Estimation of carbon stocks and change in carbon stocks of trees and shrubs will be applied. It should be noted that the quantification of Aboveground and below ground woody biomass would only be applicable to project implementation partners that have adopted project activity (PA4).

The project will utilise direct estimation of change by re-measurement of sample plots as outlined in CDM A/R Tools Estimation of carbon stocks and change in carbon stocks of trees and shrubs. Under this method, the same sample plots are measured on two successive occasions and the plot-level change in biomass is obtained by subtracting the plot biomass on the first occasion from the plot biomass on the second occasion. This is method is efficient when there is a significant correlation between the plot biomass values on the two occasions (e.g. when there has been no harvest or disturbance in a stratum and therefore no significant spatial re-distribution of biomass has occurred in the stratum after the first estimation). Under this method, the change in carbon stock and the associated uncertainty are estimated as follows:

$$\Delta C_{TREE} = \frac{44}{12} \times CF_{TREE} \times \Delta B_{TREE}$$

$$\Delta B_{TREE} = A \times \Delta b_{TREE}$$

$$\Delta b_{TREE} = \sum_{i=1}^{M} w_i \times \Delta b_{TREE,i}$$

$$u_{\Delta C} = \frac{t_{VAL} \times \sqrt{\sum_{i=1}^{M} w_i^2 \times \frac{s_{\Delta,i}^2}{n_i}}}{|\Delta b_{TREE}|}$$

Where:

ΔC_{TREE}	=	Change in carbon stock in trees between two successive measurements; t CO_2e
CF_{TREE}	=	Carbon fraction of tree biomass; t C (t d.m.)$^{-1}$ A default value of 0.47 is used unless transparent and verifiable information can be provided to justify a different value.
ΔB_{TREE}	=	Change in tree biomass within the biomass estimation strata; t d.m.
A	=	Sum of areas of the biomass estimation strata; ha
Δb_{TREE}	=	Mean change in tree biomass per hectare within the biomass estimation strata; t d.m. ha^{-1}
w_i	=	Ratio of the area of stratum *i* to the sum of areas of biomass estimation strata (i.e. $w_i = A_i/A$); dimensionless
$\Delta b_{TREE,i}$	=	Mean change in carbon stock per hectare in tree biomass in stratum *i*; t d.m. ha^{-1}
$u_{\Delta C}$	=	Uncertainty in ΔC_{TREE}
t_{VAL}	=	Two-sided Student's *t*-value for a confidence level of 90 per cent and degrees of freedom equal to $n - M$, where n is total number of sample plots within the tree biomass estimation strata, and M is the total number of tree biomass estimation strata
$s_{\Delta,i}^2$	=	Variance of mean change in tree biomass per hectare in stratum *i*; (t d.m. ha^{-1})^2
n_i	=	Number of sample plots, in stratum *i*, in which tree biomass was re-measured

Mean change in tree biomass per hectare in a stratum and the associated variance are estimated as follows:

$$\Delta b_{TREE,i} = \frac{\sum_{p=1}^{n_i} \Delta b_{TREE,p,i}}{n_i}$$

$$s_{\Delta,i}^2 = \frac{n_i \times \sum_{p=1}^{n_i} \Delta b_{TREE,p,i}^2 - \left(\sum_{p=1}^{n_i} \Delta b_{TREE,p,i}\right)^2}{n_i \times (n_i - 1)}$$

Where:

$\Delta b_{TREE,i}$	=	Mean change in tree biomass per hectare in stratum *i*; t d.m. ha^{-1}
$\Delta b_{TREE,p,i}$	=	Change in tree biomass per hectare in plot *p* in stratum *i*; t d.m. ha^{-1}
$s^2_{\Delta,i}$	=	Variance of mean change in tree biomass per hectare in stratum *i*; $(t\ d.m.\ ha^{-1})^2$
n_i	=	Number of sample plots, in stratum *i*, in which tree biomass was re-measured

Plot biomass values are estimated from direct or indirect measurements conducted on trees in the sample plot. The sample plots will be fixed area plots where individual tree dimensions (e.g. diameter at breast height, diameter at root collar, tree height) will be measured. Details regarding biomass quantification and construction of sample plots will be provided in the CF Tree biomass SOP.

At the time of validation there has been no establishment/planting of new tree species in the project boundary of first project instance, therefore woody biomass stock has not been calculated/01//VII/. However, SOP for for Direct Estimation of Tree Biomass using Measure and Re-measure Methodology/11/ is in place for the time scenario when, the project instance may incorporate tree plantation in the designated project region.

Carbon dioxide emissions from fossil fuel combustion

Quantification Approach 3, site-specific data, and default EFs.

Carbon dioxide emissions from fossil fuels in the project boundary are quantified in the project scenario under Quantification Approach 3, using the above equations as specified in the VM0042 v2.0 methodology.

Table XXXIX: Project diesel emissions for the first project instance MFH

Diesel	Value	Unit	Source
FFCwp,diesel,MFH,2021	20142	Liters	
FFCwp,diesel,MFH,2022	24815	Liters	
FFCwp,diesel,MFH,2023	25874	Liters	
$EFCO_2$,diesel	0.0027	t CO_2e/Liter	[37]
EFFwp,diesel,MFH,2021	54.3843	t CO_2e	
EFFwp,diesel,MFH,2022	67.0005	t CO_2e	
EFFwp,diesel,MFH,2023	69.8598	t CO_2e	
Ai	71	ha	
J	Diesel	N/A	
$CO2FF_{wp,diesel,\ 2021}$	0.765963	t CO_2e/ha	
$CO2FF_{wp,diesel,\ 2022}$	0.943669	t CO_2e/ha	
$CO2FF_{wp,diesel,\ 2023}$	0.983941	t CO_2e/ha	

[37] https://www.dcceew.gov.au/sites/default/files/documents/national-greenhouse-accounts-factors-2022.pdf

Table XXXX: Project gasoline emissions for the first project instance MFH

Gasoline	Value	Unit	Source
$FFC_{wp,gasoline,MFH,2021}$	1734	Liters	
$FFC_{wp,gasoline,MFH,2022}$	526	Liters	
$FFC_{wp,gasoline,MFH,2023}$	0	Liters	
$EFCO_{2,gasoline}$	0.0023	t CO_2e/Liter	[38]
$EFF_{wp,gasoline,MFH,2021}$	3.9882	t CO_2e	
$EFF_{wp,gasoline,MFH,2022}$	1.2098	t CO_2e	
$EFF_{wp,gasoline,MFH,2023}$	0	t CO_2e	
Ai	71	ha	
J	Gasoline	N/A	
$CO_{2FFwp,gasoline,\ 2023}$	0.56171831	t CO_2e/ha	
$CO_{2FFwp,gasoline,\ 2023}$	0.17039437	t CO_2e/ha	
$CO_{2FFwp,gasoline,\ 2023}$	0	t CO_2e/ha	

The accounting of "Carbon dioxide emissions from fossil fuel combustion" has been done in the same manner as for the baseline estimation, considering the VVB assessment of the same VVB confirms that the calculation/estimation carried out by PP is valid and applicable.

Emissions from the use of nitrogen fertiliser

Quantification Approach 3: site-specific data and default EFs.

Nitrous oxide emissions due to nitrogen inputs to soils from nitrogen fertilizers are included in the project boundary and are quantified in the project scenario as above. The source data and calculations of nitrogen fertiliser emissions is supplied in the supplementary documentation. Emissions for the first project instance is listed in the table below:

Table XXXXI: Project fertilizer emissions for the first project instance MFH

Gasoline	Value	Unit	Source
$N2O\_fert_{wp,MFH,2021}$	0.5	t CO_2e/ha	/02/
$N2O\_fert_{wp,MFH,2022}$	0.5	t CO_2e/ha	/02/
$N2O\_fert_{wp,MFH,2023}$	0.8	t CO_2e/ha	/02/

Based on the review of carbon calculation spreadsheet[/02/], the estimation of emissions from use of N_2 Fertilizers in the project is valid and appropriate to the VVB. The calculations have been carried out in line with the applied methodology VM0042 v2.0[/B02/].

III. Quantification of leakage.

Leakage will be assessed on an annual basis for each individual Project Activity Instance, according to the formulae and methodology detailed in Section 8.4.1 – 8.4.3, Equations 34 – 36.

[38] https://www.dcceew.gov.au/sites/default/files/documents/national-greenhouse-accounts-factors-2022.pdf

For the first PAI, no leakage from productivity decline was observed. Leakage from livestock displacement does not apply for this project. The only observed source of leakage was leakage resulted from imported organic amendments.

Specifically, organic matter leakage for the first PAI was calculated following equation 34 of VM0042 v2.0:

$$LE_{OA,t} = \sum_{l} \left(M\_manure_{wp,l,t} \times CC_{wp,l,t} \times 0.12 \times \frac{44}{12} \right)$$

Where:

$LE_{OA,t}$	=	Leakage from organic amendments in year *t* (t CO_2e)
$M\_OA_{wp,l,t}$	=	Mass of organic amendment applied as fertilizer in the project area in year *t* (tonnes)
$CC_{wp,l,t}$	=	Carbon content of organic amendment applied as fertilizer in the project area in year *t* (t C/t manure)
0.12	=	Fraction of manure (i.e., organic amendment) carbon expected to remain in project area soils (unitless)
$\frac{44}{12}$	=	Ratio of molecular weight of carbon dioxide to carbon

The methodology employed here utilizes Equation (34) of the VM0042 v2.0 methodology to estimate leakage from imported substances such as manure, compost, or biosolids. These substances, if not used in the project activity, could potentially contribute to an increase in Soil Organic Carbon (SOC) beyond the project boundary.

Taking into account the global manure Carbon retention coefficient from *(Maillard 2014)*, we anticipate that only 12% of the total applied carbon will remain in the project area soils. This coefficient represents the expected fraction of manure carbon that will be retained in the project soils.

In the context of our project, Equation 34 from the VM0042 v2.0 methodology refers to the mass of organic amendment applied as fertilizer in the project area. To clarify, our project refers to the dry weight of any organic amendment, as opposed to its total weight. This definition of weight as dry weight applies to all organic amendments used in this project and is necessary to eliminate any potential confusion regarding the weight measurement in use. In the majority of project instances, the organic amendment should have a moisture content of around 35% (https://library.dpird.wa.gov.au/cgi/viewcontent.cgi?article=1197&context=bulletins, See Table 2). Any deviation from this standard will be documented, ensuring the preservation of accuracy and transparency in our records and calculations. It should be noted that this is not a deviation from the prescribed methodology and merely serves as a clarification seeing that the true intent of the methodology is to account for the leakage of carbon from externally applied sources. The accuracy of the carbon calculation is to be based on dry mass to avoid any overestimation of carbon brought about by moisture contained within the organic material applied.

For the sake of conservativeness, this equation and its underlying assumptions will also be applied to the compost or biosolids utilized within the project. This approach allows us to maintain accuracy in our calculations, mitigating potential carbon leakage from the application of these organic substances.

At time of validation, the participating project instance (Macadamia Farm Holdings) had applied compost to their orchards for three successive monitoring years. The organic matter leakage for the years 2021, 2022 and 2023 was calculated to be 56 tCO_2e, 60 tCO_2e and 84 tCO_2e, respectively. Detailed calculation for the first project instance is listed below:

$LE_{OA,2021} = M\_OA_{wp,I,2021} \times CC_{wp,I,2021} \times 0.12 \times 44/12$

$LE_{OA,2021} = 553.8\ (t) \times 23\% \times 0.12 \times 44/12$

$LE_{OA,2021} = 56\ t\ CO_2e$

$LE_{OA,2022} = M\_OA_{wp,I,2022} \times CC_{wp,I,2022} \times 0.12 \times 44/12$

$LE_{OA,2022} = 585.0\ (t) \times 23\% \times 0.12 \times 44/12$

$LE_{OA,2022} = 60\ t\ CO_2e$

$LE_{OA,2023} = M\_OA_{wp,I,2023} \times CC_{wp,I,2023} \times 0.12 \times 44/12$

$LE_{OA,2023} = 830.7\ (t) \times 23\% \times 0.12 \times 44/12$

$LE_{OA,2023} = 84\ t\ CO_2e$

No leakage from productivity decline has been reported for the first project instance. As per VM0042 V2 Section 8.4.3, the assessment of leakage due to productivity decline is required only every 10 years. While the initial instance does not necessitate this assessment. PP has detailed steps for calculating leakage are comprehensively documented in Section 1.18.1.3 of the PD

Based on the review of the carbon calculation spreadsheet (Organic Matter Leakage)[/02/] and the VCS PD[/01/], VVB confirms that assessment of activity shifting leakage from imported organic material within the project boundary, has been done in line with section 8.4.1 of the applied methodology VM0042 v2.0[/B02/]. The leakage assessment for the first PAI has been carried out on an annual basis. Thus, VVB confirms the leakage assessment process and quantification to be valid and appropriate.

IV. Summary of net GHG emission reductions or removals

Net GHG emission reductions and removals are calculated according to VM0042 v2.0 Section 8.5 using the following equation 37 of VM0042 v2.0:

Net GHG reductions are calculated as follows:

$$E_{red,t} = \Delta CO2\_ff_t + \Delta N2O\_soil_t$$

Where:

$E_{red,t}$ = Estimated net GHG emissions reductions in year t (t CO_2e)

$\Delta CO_2\_ff_t$ = Total carbon dioxide emission reductions from fossil fuel combustion in year t (t CO_2e)

$\Delta N2O\_soil_t$ = Total nitrous oxide emission reductions from nitrification/denitrification in year t (t CO_2e)

For the first project instance:

$E_{red,2021}$ = 2-0.4 t CO_2e

$E_{red,2022}$ = -7.6 - 4.7

$E_{red,2022}$ = -12 t CO_2e

$E_{red,2023}$ = -9 - 17

$E_{red,2023}$ = -26 t CO_2e

Net GHG removals are calculated following equation 38 0f VM0042 v2.0:

$$E_{rem,t} = \left(\left(\Delta CO2_{soil_t} - LE_{OA_t}\right) \times \left(1 - UNC_{t,CO2}\right)\right) + \Delta C_{tree,t}$$

Where:

$E_{rem,t}$ = Estimated net GHG emissions removal in year t (t CO_2e)

$\Delta CO_{2soil,t}$ = Total carbon dioxide emission removals from increasing the SOC pool in year t (t CO_2e)

$LE_{OA,t}$ = Leakage emissions from the application of organic amendments in year t (t CO_2e)

$\Delta UNC_{t,CO2}$ = Uncertainty deduction in year t associated with modelling or measuring SOC stock changes (fraction between 0 and 1)

$\Delta C_{tree,t}$ = Total carbon dioxide emission removals from increasing tree biomass in year t (t CO_2e)

For the first project instance:

$E_{rem,2021}$ = (101.8 – 56.29) x (1 – 2.37%)

$E_{rem,2021}$ = 44 t CO_2e

$E_{rem,2022}$ = (101.8 – 59.46) x (1 – 2.37%)

$E_{rem,2022}$ = 41 t CO_2e

$E_{rem,2023}$ = (101.8 – 84.43) x (1 – 2.37%)

$E_{rem,2023}$ = 17 t CO_2e

Net GHG emission reductions and removals are quantified following equation 39 0f VM0042 v2.0:

$$ERR_t = E_{red,t} + E_{rem,t}$$

Where:

$ERR_{n,t}$ = Estimated net GHG emissions reductions and removals in year t (t CO_2e)

For the first project instance:

$ERR_{MFH,2021}$ = 46 t CO_2e

$ERR_{MFH,2022}$ = 29 t CO_2e

$ERR_{MFH,2023}$ = - 9 t CO_2e

VVB based on the review of the supporting document[/02/] and VCS PD[/01/] confirms, that the estimation of the "Net GHG emission reductions and removals" has been carried out is in compliance with the section 8.5 of the applied methodology VM0042 v2.0[/B02/].

Carbon Dioxide Emission Reductions and Removals

Carbon dioxide emission removals by enhancing the SOC pool for sample unit i in year t are quantified using the following equation 40 of VM0042 v2.0:

$$\Delta CO2\_soil_t = \sum_{i=1}^{n} \left(\left(\left(\overline{SOC_{wp,i,t}} - \overline{SOC_{wp,i,t-1}} \right) - \left(\overline{SOC_{bsl,i,t}} - \overline{SOC_{bsl,i,t-1}} \right) \right) \times \frac{44}{12} \right) \times A_i$$

Where

$\overline{SOC_{wp,i,t}}$ = Areal mean carbon stocks in the SOC pool in the project scenario for sample unit *i* at the end of year *t* (t CO_2e /ha)

$\overline{SOC_{wp,i,t-1}}$ = Areal mean carbon stocks in the SOC pool in the project scenario for sample unit *i* at the end of year *t* − 1 (t CO_2e/ha)

$\overline{SOC_{bsl,i,t}}$ = Areal mean carbon stocks in the SOC pool in the baseline scenario for sample unit *i* at the end of year *t* (t CO_2e/ha)

$\overline{SOC_{bsl,i,t-1}}$ = Areal mean carbon stocks in the SOC pool in the baseline scenario for sample unit *i* at the end of year *t* − 1 (t CO_2e/ha)

The initially measured SOC at t=0 determined through direct measurements is the same in both the baseline and project scenarios at the outset of the project (i.e., SOCwpi,0 = SOCbsl,i,0). As a result, the first calculation of Equation 40 for sample unit i simplifies to SOCwp,i,t–SOCbsl,i,t for the first year.

Carbon dioxide emission removals by enhancing the SOC pool for sample unit I in year t are compared to the estimated SOC stock change in baseline control sites. The average SOC stock per hectare of each “project site–baseline control site” combination should be used. Where measurements are conducted less frequently than every year, the results will be divided by the number of years to calculate an annual SOC stock change.

$\Delta CO_{2soil,2023,\ Zone\ 1}$ = ((23.7 - 22.2) x 44/12) x 41

$\Delta CO_{2soil,2023,\ Zone\ 1}$ = 225 t CO_2e

$\Delta CO_{2soil,2023,\ Zone\ 2}$ = ((35.1 – 33.8) x 44/12) x 9

$\Delta CO_{2soil,2023,\ Zone\ 2}$ = 34 t CO_2e

$\Delta CO_{2soil,2023,\ Zone\ 1}$ = ((22.2 - 21.6) x 44/12) x 21

$\Delta CO2_{soil,2023,\ Zone\ 1}$ = 46 t CO_2e

$\Delta CO_{2soil,2023,\ Total}$ = 306 t CO_2e

$\Delta CO_{2soil,2021\text{-}2023,\ Aeverage}$ = 102 t CO_2e/annum

Carbon dioxide emission reductions from fossil fuel combustion

Equation 41, VM0042 V2.0

$$\Delta CO2\_ff_t = \sum_{i=1}^{n}\left(\overline{CO2\_ff_{wp,i,t}} - \overline{CO2\_ff_{bsl,i,t}}\right) \times A_i$$

Where:

$\overline{CO2\_ff_{wp,i,t}}$ = Areal mean carbon dioxide emissions from fossil fuel combustion in the project scenario for sample unit *i* in year *t* (t CO_2e/ha)

For the first project instance:

$\Delta CO_2\_ff_{2021}$ = (0.82 - 0.85) x 71

$\Delta CO_2\_ff_{2021}$ = -2 t CO_2e

$\Delta CO_2\_ff_{2022}$ = (0.96 - 0.85) x 71

$\Delta CO_2\_ff_{2022}$ = 8 t CO_2e

$\Delta CO_2\_ff_{2023}$ = (0.98 - 0.85) x 71

$\Delta CO_2\_ff_{2023}$ = 9 t CO_2e

Carbon dioxide emission removals in tree biomass are quantified

Equation 42, VM0042 V2.0

$$\Delta C_{TREE,t} = \sum_{i=1}^{n}\left(\overline{\Delta C_{TREE,wp,i,t}} - \overline{\Delta C_{TREE,bsl,i,t}}\right) \times A_i$$

Where:

$\overline{\Delta C_{TREE,wp,i,t}}$ = Areal mean project scenario carbon stock change in tree biomass for sample unit *i* in year *t* (t CO_2e/ha)

$\overline{\Delta C_{TREE,bsl,i,t}}$ = Areal mean baseline carbon stock change in tree biomass for sample unit *i* in year *t* (t CO_2e/ha)

Nitrous oxide emission reductions from nitrification/denitrification

Equation 49, VM0042 V2.0

$$\Delta N2O\_soil_t = \sum_{i=1}^{n} \left(\overline{N2O\_soil_{bsl,i,t}} - \overline{N2O\_soil_{wp,i,t}}\right) \times A_i \quad ($$

Where:

$\overline{N2O\_soil_{bsl,i,t}}$ = Areal mean nitrous oxide emissions from nitrogen inputs to soils in the baseline scenario for sample unit *i* in year *t* (t CO_2e/ha)

$\overline{N2O\_soil_{wp,i,t}}$ = Areal mean nitrous oxide emissions from nitrogen inputs to soils in the project scenario for sample unit *i* in year *t* (t CO_2e/ha)

For the first project instance

$\Delta N2O\_Soil_{2021}$ = (0.52 - 0.52) x 71

$\Delta N2O\_Soil_{2021}$ = 0 t CO_2e

$\Delta N2O\_Soil_{2022}$ = (0.52 - 0.58) x 71

$\Delta N2O\_Soil_{2022}$ = -5 t CO_2e

$\Delta N2O\_Soil_{2023}$ = (0.53 - 0.75) x 71

$\Delta N2O\_Soil_{2023}$ = -17 t CO_2e

V. Calculation of Uncertainty

Uncertainty deductions are estimated and applied separately for each ERR source within the project boundary. This deduction is estimated using a probability of exceedance method as follows for Quantification Approach 2.

Equation 65, VM0042 V2.0

$$UNC_{\overline{\Delta},t} = Uncertainty \times t_{\alpha=0.666}$$

$$Uncertainty = \frac{\sqrt{s^2_{\overline{\Delta},t}}}{\overline{\Delta}_t} \times 100$$

Where:

$UNC_{\overline{\Delta},t}$	=	Uncertainty deduction for gas or pool • to be applied in verification period *t* (%)
Uncertainty	=	Half-width of the one standard deviation interval as a percentage of the mean of the ERR estimate for gas or pool • in verification period *t* (%)
$\overline{\Delta}_t$	=	Mean estimated emissions reduction for gas or pool • across the entire project area in year *t* (t CO_2e/ha)
$s^2_{\overline{\Delta},t}$	=	Variance of the estimate of mean emission reductions from gas or pool • at time *t*. See Figure 3 to determine how this is estimated based on the methods employed in the project (t CO2e/ha)^2
$t_{\alpha=0.666}$	=	Critical value of a one-sided student's t-distribution at significance level α = 0.666 (66.6%) with degrees of freedom appropriate to the sampling design used. Equal to approximately 0.4307 at large sample sizes (dimensionless)

Variance of the estimate of mean SOC stock changes is calculated following Equations 61 Equations 61-62, VM0042 V2.0:

$$s^2_{\overline{\Delta SOC,t}} = \frac{1}{A^2}\sum_{i=1}^{n} s^2_{\Delta SOC,h,t}$$

Where:

$$s^2_{\Delta SOC,h,t} = s^2_{\Delta SOC,wp,h,t} + s^2_{\Delta SOC,bsl,h,t}$$

And:

$s^2_{\overline{\Delta SOC,t}}$ = Variance of the estimate of mean SOC stock changes in verification period *t* across the entire project area, calculated as the difference in net change between the project and baseline scenarios over period *t* (t CO_2e/ha)^2

$s^2_{\Delta SOC,h,t}$ = Variance of the estimate of total SOC stock changes in verification period *t* in stratum *h*, calculated as the difference in net change between the project and baseline scenarios over period *t* (t CO_2e)^2

$s^2_{\Delta SOC,wp,h,t}$ = Variance of the estimate of total SOC stock changes in the project plots in verification period *t* in stratum *h*, calculated as the difference in SOC stocks at the beginning and end of period *t* (t CO_2e)^2

$s^2_{\Delta SOC,bsl,h,t}$ = Variance of the estimate of total SOC stock changes in baseline (control) plots paired with project stratum *h* in verification period *t*, calculated as the difference in SOC stocks at the beginning and end of period *t* (t CO_2e)^2

$$s^2_{\Delta SOC,wp,h,t} = s^2_{SOC,wp,h,f} + s^2_{SOC,wp,h,s} - 2COV(SOC_{wp,h,f}\ ;\ SOC_{wp,h,s})$$

Where:

$$s^2_{SOC,wp,h,f} = \frac{A_h^2}{n_h(n_h-1)}\sum_{i=1}^{n_h}\left(SOC_{wp,h,ip,f} - \overline{SOC}_{wp,h,f}\right)^2$$

$$s^2_{SOC,wp,h,s} = \frac{A_h^2}{n_h(n_h-1)}\sum_{ip=1}^{n_h}\left(SOC_{wp,h,ip,s} - \overline{SOC}_{wp,h,s}\right)^2$$

$$COV(SOC_{wp,h,f}\ ;\ SOC_{wp,h,s}) = \frac{A_h^2}{n_h(n_h-1)}\sum_{ip=1}^{n_h}\left(SOC_{wp,h,ip,s} - \overline{SOC}_{wp,h,s}\right)\left(SOC_{wp,h,ip,f} - \overline{SOC}_{wp,h,f}\right)$$

And:

$s^2_{SOC,wp,h,f}$	=	Variance of the estimate of SOC stocks in the project scenario at t_{final} in stratum h (t $CO_2e)^2$
$s^2_{SOC,wp,h,s}$	=	Variance of the estimate of SOC stocks in the project scenario at t_{start} in stratum h (t $CO_2e)^2$
$COV(SOC_{wp,h,f}\ ;\ SOC_{wp,h,s})$	=	Covariance of estimates of SOC stocks at t_{final} and t_{start} in the project scenario in stratum h (t $CO_2e)^2$
$\overline{SOC}_{wp,h,f}$	=	Mean estimate of SOC stocks across all points in the project scenario at t_{final} in stratum h (t CO_2e/ha)
$\overline{SOC}_{wp,h,s}$	=	Mean estimate of SOC stocks across all points in the project scenario at t_{start} in stratum h (t CO_2e/ha)
$SOC_{wp,h,ip,f}$	=	Estimate of SOC stock on an area basis at point ip in the project scenario at t_{final} in stratum h (t CO_2e/ha)
$SOC_{wp,h,ip,s}$	=	Estimate of SOC stock on an area basis at point ip in the project scenario at t_{start} in stratum h (t CO_2e/ha)

Uncertainty calculation for the first project instance:

$$s^2_{\Delta SOC,h,t} = s^2_{\Delta SOC,wp,h,t} + s^2_{\Delta SOC,bsl,h,t}$$

Zone 1

$S^2_\Delta soc, wp, zone\ 1{,}2023$ = 7.4

$S^2_\Delta soc, bsl, zone\ 1{,}2023$ = 23.4

$S^2_\Delta soc, zone\ 1{,}2023$ = 30.9

Zone 2

$S^2_\Delta soc, wp, zone\ 2{,}2023$ = 35.1

$S^2_\Delta soc, bsl, zone\ 2{,}2023$ = 0.0

$S^2_\Delta soc, zone\ 2{,}2023$ = 35.1

Zone 3

$S^2_\Delta soc, wp, zone\ 3{,}2023$ = 67.5

$S^2_\Delta soc, bsl, zone\ 3{,}2023$ = 8.7

$S^2_\Delta soc, zone\ 3{,}2023$ = 76.2

$s^2_{\Delta soc,2023}$ = (1/71^2) x (30.8 + 35.1 + 76.2)

$s^2_{\overline{\Delta soc,2023}}$ = 0.03

Uncertainty = $\sqrt{0.03}$ / 306 x 100

Uncertainty = 0.05

$UNC_{\overline{\Delta soc}, 2023}$ = 0.05 x 0.43

$UNC_{\overline{\Delta soc}, 2023}$ = 2.4%

Uncertainty calculation for the first project instance:

$$s^2_{\Delta SOC,h,t} = s^2_{\Delta SOC,wp,h,t} + s^2_{\Delta SOC,bsl,h,t}$$

Zone 1

$S^2_\Delta soc, wp, zone$ 1,2023 = 7.4

$S^2_\Delta soc, bsl, zone$ 1,2023 = 23.4

$S^2_\Delta soc, zone$ 1,2023 = 30.9

Zone 2

$S^2_\Delta soc, wp, zone$ 2,2023 = 35.1

$S^2_\Delta soc, bsl, zone$ 2,2023 = 0.0

$S^2_\Delta soc, zone$ 2,2023 = 35.1

Zone 3

$S^2_\Delta soc, wp, zone$ 3,2023 = 67.5

$S^2_\Delta soc, bsl, zone$ 3,2023 = 8.7

$S^2_\Delta soc, zone$ 3,2023 = 76.2

$s^2_{\overline{\Delta soc,2023}}$ = (1/71^2) x (30.8 + 35.1 + 76.2)

$s^2_{\overline{\Delta soc,2023}}$ = 0.03

Uncertainty = $\sqrt{0.03}$ / 306 x 100

Uncertainty = 0.05

$UNC_{\overline{\Delta soc}, 2023}$ = 0.05 x 0.43

$UNC_{\overline{\Delta soc}, 2023}$ = 2.4%

Uncertainty calculation for the first project instance:

$$s^2_{\Delta SOC,h,t} = s^2_{\Delta SOC,wp,h,t} + s^2_{\Delta SOC,bsl,h,t}$$

Zone 1
$S^2_{\Delta} soc, wp, zone\ 1{,}2023$ = *7.4*
$S^2_{\Delta} soc, bsl, zone\ 1{,}2023$ = *23.4*
$S^2_{\Delta} soc, zone\ 1{,}2023$ = *30.9*

Zone 2
$S^2_{\Delta} soc, wp, zone\ 2{,}2023$ = *35.1*
$S^2_{\Delta} soc, bsl, zone\ 2{,}2023$ = *0.0*
$S^2_{\Delta} soc, zone\ 2{,}2023$ = *35.1*

Zone 3
$S^2_{\Delta} soc, wp, zone\ 3{,}2023$ = *67.5*
$S^2_{\Delta} soc, bsl, zone\ 3{,}2023$ = *8.7*
$S^2_{\Delta} soc, zone\ 3{,}2023$ = *76.2*

$s^2_{\overline{\Delta soc,2023}}$ = *(1/71²) x (30.8 + 35.1 + 76.2)*
$s^2_{\overline{\Delta soc,2023}}$ = *0.03*

Uncertainty = $\sqrt{0.03}$ / 306 x 100
Uncertainty = 0.05

$UNC_{\overline{\Delta soc}, 2023}$ = *0.05 x 0.43*
$UNC_{\overline{\Delta soc}, 2023}$ = *2.4%*

Table XXXXII. Estimated baseline GHG emissions, project removals, and emissions leakage

Year	Hectares (ha)	Estimated baseline emissions (t CO_2e)	Estimated project emissions (t CO_2e)	Estimated project removals (t CO_2e)	Estimated leakage emissions (t CO_2e)	Estimated net GHG emission reductions or removals (t CO_2e)
2021	71	97	95	103	56	46
2022	71	97	110	103	59	29

2023	71	97	124	103	84	-9
2024	71	97	110	103	67	22
2025	71	97	110	103	67	22
2026	71	97	110	103	67	22
2027	71	97	110	103	67	22
2028	71	97	110	103	67	22
2029	71	97	110	103	67	22
2030	71	97	110	103	67	22
2031	71	97	110	103	67	22
2032	71	97	110	103	67	22
2033	71	97	110	103	67	22
2034	71	97	110	103	67	22
2035	71	97	110	103	67	22
2036	71	97	110	103	67	22
2037	71	97	110	103	67	22
2038	71	97	110	103	67	22
2039	71	97	110	103	67	22
2040	71	97	110	103	67	22

VI. Calculation of Verified Carbon Units

The number of VCU's that are issued in year t is calculated following equation 66 of VM0042 v2.0:

$$VCU_t = E_{red,t} + (E_{rem,t} - Buffer_t)$$

VCU_{2021} = 1.93 + (44.43 – (44.43 x 11%))

VCU_{2021} = 41

$Buffer_{2021}$ = 5

VCU_{2022} = -12.25 + (41.34 – (41.34 x 11%))

VCU_{2022} = 25

$Buffer_{2022}$ = 5

VCU_{2023} = -26.31 + (16.96 – (16.96 x 11%))

VCU_{2023} = -11

$Buffer_{2023}$ = 2

VVB, based on the review of VCS PD/01/and carbon calculation spread sheet/02/, and supporting documents/03-16/ confirms that the calculation of emission reductions and removals subjected to project implementation and the VCUs determined are in line with the VCS requirement/B01//B02/ and deemed valid and acceptable by the VVB.

3.3.7 Methodology Deviations

The project proponent has proposed a methodology deviation from the methodology VM0042 version 2.0 in monitoring SOC stocks. The deviation arises due to the establishment of baseline control sites. Through the deviation, the project proponent will determine the baseline SOC stocks within the project area (i.e., SOCwp,i,0 = SOCbsl,i,0) by using directly measured SOC content at the start of each project instance. By assuming that there has been no change in the baseline SOC stock throughout the assessment period (ΔSOCbsl = 0), the project implies that the baseline conditions did not experience significant deterioration or improvement during the initial phase. Consequently, Equation 40 in VM0042 V2 will be modified to account for the difference between SOCwp,I,t and SOCwp,I,t-1. To capture the net change between t and t-1, the project will employ regression analysis to determine the conservative increase in SOC within the project area, without considering changes in the SOC -baseline scenario. This deviation is applicable only to instances that occurred prior to the release of VM0042 V2 (30th May 2023), while instances occurring after this date will align with the methodology and require no deviation.

The proposed deviation from methodology for retrospective analysis of SOC stock difference will be calculated as given below.

SOC stock $(t\ C\ ha{-}1)$ =100 ×[bulk density $(gc$m−3)×$s$oil depth $(c$m)×$c$arbon concentration(%/100]

The difference in SOC stocks for all project instances which have implemented project activities as outline in section 1.11 before the 30th of May 2023 will be calculated as follows:

SOC stock change $(t\ C\ ha{-}1)$ =SOC stock$t$ – SOC stock$t{-}1$

The rate of change will be determined by dividing the stock change by the number of years between carbon stock determination and reported as t C ha-1y-1. Furthermore, conversion from C to CO_2e will be done by multiplying the C stock by the standard 44/12.

Likewise, due to the inherent connection between SOC stock in monitoring sites and project scenarios, the project will deviate from the prescribed uncertainty calculations for SOC stock in all instances occurring before 30th May 2023, as outlined in Section 8.6.2 of VM0042 V2. The uncertainty calculation procedure described in the Soil Organic Carbon MRV Sourcebook for Agricultural Landscapes (Bank, 2021) (Box 3.3, pg. 53) will be applied to calculate the uncertainty of all SOC increases occurring before 30th May 2023.

Furthermore, the soil sampling procedures and calculation methods specified in the latest version of the methodology will be fully incorporated into the project for all instances occurring after 30th May 2023. For instances before this date, the concept of conservativeness will be applied, and uncertainty will be adjusted to accommodate the deviation from the newest standard.

3.3.8 Monitoring Plan

The grouped project employs baseline and monitoring methodology namely VM0042 Methodology for Improved Agricultural Land Management Version 2.0/B02/. According to section 5.1 of VCS PD/01/ the data/parameters following the requirements of the methodology are given below:

Table XXXXIII: Data and Parameters available (Subject to closure of all finding)

Data / Parameter	Value applied	VVB Assessment
Weighted average adoption rate (*AR*)	11 %	Considering the assessment in section 3.3.5 of this report, the value applied is found to be valid and applicable to the VVB.
Area of proposed project-level adoption of each activity ($Area_{an}$)	PA1: 69,016 ha PA2: 23,328 ha PA3: 52,701 ha PA4: 1,500 ha PA5: 69,016 ha	The area of applied activity has been obtained from Australian Bureau of statistics, which is verified by VVB and is deemed to be acceptable.
Adoption rate of the n largest most common proposed project activity in the region (EA_{an})	35%	Considering the assessment in the section 3.3.5 of this report, the value applied is found to be valid and applicable to the VVB.
Project Area (A_0)	71 ha	Based on the review of the VCS PD/01/, through KML shapefile of project boundary/04/ VVB confirms that the first project instance covers an area of 71 ha.
Global warming potential (GWP) of CH_4 (GWP_{CH4})	28 t CO_2e	Since the value is a default value as per the IPCC Fifth Assessment Report, its valid and applicable.

Global warming potential (GWP) of N_2O (GWP_{N2O})	265 t CO_2e	Since the value is a default value as per the IPCC Fifth Assessment Report, its valid and applicable.
Fraction of all organic N added to soils and N in manure and urine deposited on soils that volatilizes as NH_3 and NOx. ($Frac_{GASM}$)	0.21	Since the value is a default value following the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4, Chapter 11, Table 11.3, its valid and applicable.
Fraction of synthetic N added to soils that volatilizes as NH_3 and NOx ($Frac_{GASF}$)	0.11	Since the value is a default value following the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4, Chapter 11, Table 11.3, its valid and applicable.
Emission factor for direct nitrous oxide emissions from N additions from synthetic fertilizers, organic amendments and crop residues ($EF_{Ndirect}$)	0.0085 t N_2O-N or t N applied	Since the value is a default value following the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4, Chapter 11, Table 11.1, its valid and applicable.
Emission factor for N_2O emissions from atmospheric deposition on soils and water surfaces (EF_{Nvolat})	0.01 t N_2O-N or t NH_3-N + NOx-N volatized	Since the value is a default value following the IPCC 2019, Volume 4, Chapter 11, Table 11.3, the value applied is valid and applicable.
Fraction of N applied to soils that is lost through leaching and runoff, in regions where leaching and runoff occurs ($Frac_{LEACH}$)	Wet climates or land under irrigation (other than drip irrigation), = 0.24 For dry climates, a value of zero is applied.	Since the value is a default value following the IPCC 2019, Volume 4, Chapter 11, Table 11.3, the value applied is valid and applicable.
Emission factor for nitrous oxide emissions from leaching and runoff (EF_{Nleach})	0.011 t N_2O-N or t N leached and runoff	Since the value is a default value following the IPCC 2019, Volume 4, Chapter 11, Table 11.3, the value applied is valid and applicable.
Emission factor for the type of fossil fuel j (gasoline or diesel) combusted ($EF_{CO2,j}$)	For gasoline EF_{CO2}=0.002810 t CO_2e per liter.	The value applied is valid and appropriate to the VVB as it's a default value following the IPCC 2019, Volume 2, Chapter 3, Table 3.3.1.

	For diesel EF_{CO2}=0.002886 t CO_2e per liter	
Consumption of fossil fuel type *j* (gasoline or diesel) for sample unit *i* in year *t* (FFCbsl,j,i,t)	$FFC_{bsl,diesel,2020}$ = 21246 $FFC_{bsl,gasoline,2020}$ = 1434	Value has been sourced as per Box 1 of VM0042 v2.0
Average productivity for product *p* during the historical baseline period ($P_{bsl,p}$)	Variable (productivity; Kg/ha	Value has been sourced as per Box 1 of VM0042 v2.0
Average regional productivity for product *p* during the same years as the historical baseline period. ($RP_{bsl,p}$)	Conditional on data source (productivity; Kg/ha	Value has been sourced as per Box 1 of VM0042 v2.0
Mass of agricultural residues of type c burned in the baseline scenario for sample unit *i* in year *t* ($MB_{bsl,c,i,t}$)	0 Kg	Peer-reviewed published data may be used to estimate the aboveground biomass prior to burning.
Mass of baseline N containing synthetic fertilizer applied for sample unit *i* in year *t* ($M_{bsl,SF,i,t}$)	35.53 t fertiliser	Value has been sourced as per Box 1 of VM0042 v2.0
N content of baseline synthetic fertiliser applied ($NC_{bsl,SF,i,t}$)	depending on fertilizer type t N or t fertilizer	Value has been sourced as per Box 1 of VM0042 v2.0
Mass of baseline N containing organic fertiliser applied for sample unit *i* in year *t* ($M_{bsl,OF,i,t}$)	1661 t fertilizer	Value has been sourced as per Box 1 of VM0042 v2.0
N content of baseline organic fertiliser applied ($NC_{bsl,OF,i,t}$)	23.25	Data source: Peer-reviewed published data may be used. For example, default manure N contents may be selected from (Edmonds et al., 2003) cited in (US EPA, 2011) or other regionally appropriate sources such as the European Environment Agency.

Table XXXXIV: Data and Parameters to be monitored:

Data / Parameter	Value applied	VVB Assessment
Weighted average adoption rate (*AR*)	11 %	Calculated Considering the assessment in section 3.3.5 of this report, the value applied is found to be valid and applicable to the VVB.
Area of proposed project-level adoption of each activity ($Area_{an}$)	PA1: 69,016 ha PA2: 23,328 ha PA3: 52,701 ha PA4: 1,500 ha PA5: 69,016 ha	The area of applied activity has been obtained from Australian Bureau of statistics, which is verified by VVB and is deemed to be acceptable.
Adoption rate of the n largest most common proposed project activity in the region (EA_{an})	35%	Calculated Considering the assessment in section 3.3.5 of this report, the value applied is found to be valid and applicable to the VVB.
Area of sample unit I (A_i)	Variable	Determined in project area
Sample unit; defined area that is selected for measurement and monitoring, such as a field or stratum (*i*)	Variable	Determined in project area
Global warming potential (GWP) of CH_4 (GWP_{CH4})	28 t CO_2e	Since the value is a default value as per the IPCC Fifth Assessment Report, its valid and applicable.
Global warming potential (GWP) of N_2O (GWP_{N2O})	265 t CO_2e	Since the value is a default value as per the IPCC Fifth Assessment Report, its valid and applicable.
Fraction of all organic N added to soils and N in manure and urine deposited on soils that volatilizes as NH_3 and NOx. ($Frac_{GASM}$)	0.21	Since the value is a default value following the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4, Chapter 11, Table 11.3, its valid and applicable.
Fraction of synthetic N added to soils that volatilizes as NH_3 and NOx ($Frac_{GASF}$)	0.11	Since the value is a default value following the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4, Chapter 11,

		Table 11.3, its valid and applicable.
Emission factor for direct nitrous oxide emissions from N additions from synthetic fertilizers, organic amendments and crop residues ($EF_{Ndirect}$)	0.0085 t N_2O-N or t N applied	Since the value is a default value following the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4, Chapter 11, Table 11.1, its valid and applicable.
Emission factor for N_2O emissions from atmospheric deposition on soils and water surfaces (EF_{Nvolat})	0.01 t N_2O-N or t NH_3-N + NOx-N volatized	Since the value is a default value following the IPCC 2019, Volume 4, Chapter 11, Table 11.3, the value applied is valid and applicable.
Fraction of N applied to soils that is lost through leaching and runoff, in regions where leaching and runoff occurs ($Frac_{LEACH}$)	Wet climates or land under irrigation (other than drip irrigation), = 0.24 For dry climates, a value of zero is applied.	Since the value is a default value following the IPCC 2019, Volume 4, Chapter 11, Table 11.3, the value applied is valid and applicable.
Emission factor for nitrous oxide emissions from leaching and runoff (EF_{Nleach})	0.011 t N_2O-N or t N leached and runoff	Since the value is a default value following the IPCC 2019, Volume 4, Chapter 11, Table 11.3, the value applied is valid and applicable.
Emission factor for the type of fossil fuel j (gasoline or diesel) combusted ($EF_{CO2,j}$)	For gasoline EF_{CO2}=0.002810 t CO_2e per liter. For diesel EF_{CO2}=0.002886 t CO_2e per liter	The value applied is valid and appropriate to the VVB as it's a default value following the IPCC 2019, Volume 2, Chapter 3, Table 3.3.1.
Consumption of fossil fuel type *j* (gasoline or diesel) for sample unit *i* in year *t* (FFCbsl,j,i,t)	$FFC_{bsl,diesel,2020}$ = 21246 $FFC_{bsl,gasoline,2020}$ = 1434	Value has been sourced as per Box 1 of VM0042 v2.0
Average productivity for product *p* during the historical baseline period ($P_{bsl,p}$)	Variable (productivity; Kg/ha	Value has been sourced as per Box 1 of VM0042 v2.0
Average regional productivity for product *p* during the same years as the historical baseline period. ($RP_{bsl,p}$)	Conditional on data source (productivity; Kg/ha	Value has been sourced as per Box 1 of VM0042 v2.0

Mass of agricultural residues of type c burned in the baseline scenario for sample unit *i* in year *t* ($MB_{bsl,c,i,t}$)	0 Kg	Peer-reviewed published data may be used to estimate the aboveground biomass prior to burning.
Mass of baseline N containing synthetic fertilizer applied for sample unit *i* in year *t* ($M_{bsl,SF,i,t}$)	35.53 t fertiliser	Value has been sourced as per Box 1 of VM0042 v2.0
N content of baseline synthetic fertiliser applied ($NC_{bsl,SF,i,t}$)	depending on fertilizer type t N or t fertilizer	Value has been sourced as per Box 1 of VM0042 v2.0
Mass of baseline N containing organic fertiliser applied for sample unit *i* in year *t* ($M_{bsl,OF,i,t}$)	1661 t fertilizer	Value has been sourced as per Box 1 of VM0042 v2.0
N content of baseline organic fertiliser applied ($NC_{bsl,OF,i,t}$)	23.25	Data source: Peer-reviewed published data may be used. For example, default manure N contents may be selected from (Edmonds et al., 2003) cited in (US EPA, 2011) or other regionally appropriate sources such as the European Environment Agency.
Type of fossil fuel combusted (*j*)	Variable	Will be measured, determined and/or assessed at the time of project's periodic verification.
Type of synthetic N fertilizer (*SF*)	Variable	
Type of organic N fertilizer (*OF*)	Variable	
Areal-average soil organic carbon stocks in the baseline scenario for sample unit i in year t (*SOCbl,I,t*)	Variable	
Areal-average soil organic carbon stocks in the baseline scenario for sample unit i in year t-1 (*SOCbl,I,t-1*)	Variable	
Areal-average soil organic carbon stocks in the project scenario for sample unit i in year t (*SOCwp,I,t*)	Variable	
Areal-average soil organic carbon stocks in the project scenario for sample unit i in year t-1 (*SOCwp,I,t-1*)	Variable	

Change in carbon stocks in trees and shrubs in the baseline (*ΔCTREE,bsl,i,t and ΔCSHRUB,bsl,i,t*)	Variable	
Change in carbon stocks in trees and shrubs in the project (*ΔCTREE,wp,i,t and ΔCSHRUB,wp,i,t*)	Variable	
Consumption of fossil fuel type j in the project for sample unit i in year t (*FFCwp,j,I,t*)	Various	
Mass of N containing synthetic fertiliser applied in the project sample unit I in year t (*Mwp,SF,I,t*)	Various	
Mass of N containing organic fertilizer applied in the project for sample unit i in year t (*Mwp,OF,i,t*)	Various	
Leakage in year t (*LE,t*)	Various	
Number of buffer credits to be contributed to the AFOLU pooled buffer account in year t ($Buffer_{,t}$)	Various	

The on-site inspection of the first project instance has been conducted by validation team from 24th July 2023 to 28th July 2023. VVB has learned that all the monitoring activities have been carried out by the MRV personnels with project-type specific expertise and academic qualifications, to ensure possible optimum data quality. VVB has ascertained that the PP has demonstrated the precise organizational structure along with the on-site/field level roles and responsibility of each monitoring personnel, thereby ensuring regular and appropriate data collection, measurement and/or monitoring, and reporting of project particulars.

The monitoring activities has been conducted following a comprehensive and structured schedule to ensure data and parameters are captured accurately and consistently. This schedule encompasses:

- Regular data collection and recording through manual or automated methods, as required by the specific parameter being monitored.
- Periodic site visits conducted by the Head of Business Development or other designated personnel to verify data, ensure adherence to project guidelines, and evaluate progress.
- Internal audits performed by the Senior Sustainability Analyst to guarantee accurate and consistent reporting of GHG emissions and other relevant parameters.

- Ongoing communication among team members to address discrepancies, challenges, or changes in project activities proactively.

PP has provided enclosed Appendix in the VCS PD/01/ including details of the following:

1. Standard Operating Procedure for Soil Sampling Using Measure and Re-measure Methodology.
    i. Sampling Design
    ii. Stratification Factors Used by Carbon Friendly
    iii. Calculating the number of soil samples required per strata.
    iv. Establishment and measurement of SOC stock in baseline control/monitoring sites
    v. Method for Soil Sampling Using Core Soil Sampling Machinery
    vi. Method of analysis for soil organic carbon (Dumas Method)
    vii. Method of analysis for soil organic carbon (Walkley-Black Method) – Not recommended.
    viii. Method of analysis for soil Bulk density (Core Sampling Method)
2. Standard Operating Procedure (SOP) for Direct Estimation of Tree Biomass using Measure and Re-measure Methodology.
    i. Preparation: Materials and Equipment, Personnel Training
    ii. Initial Tree Biomass Measurement: Plot Establishment, Tree Measurement, Data Recording
    iii. Re-measure of Tree Biomass
    iv. Data Analysis

VVB has reviewed the SOP for soil sampling and data collection and SOP for estimation of woody biomass (where applicable) and confirm that the SOPs are valid and applicable for the proposed project.

PP has employed quality control and quality assurance procedure to ensure accuracy and transparency of the on-field data collect followed by monitoring and reporting.

Based on the review of the VCS PD, evidential documentation/02-16/ and on-site inspection/interviews/VII/, VVB confirms that the monitoring plan stated in the VCS PD is valid and appropriate.

3.4 Non-Permanence Risk Analysis

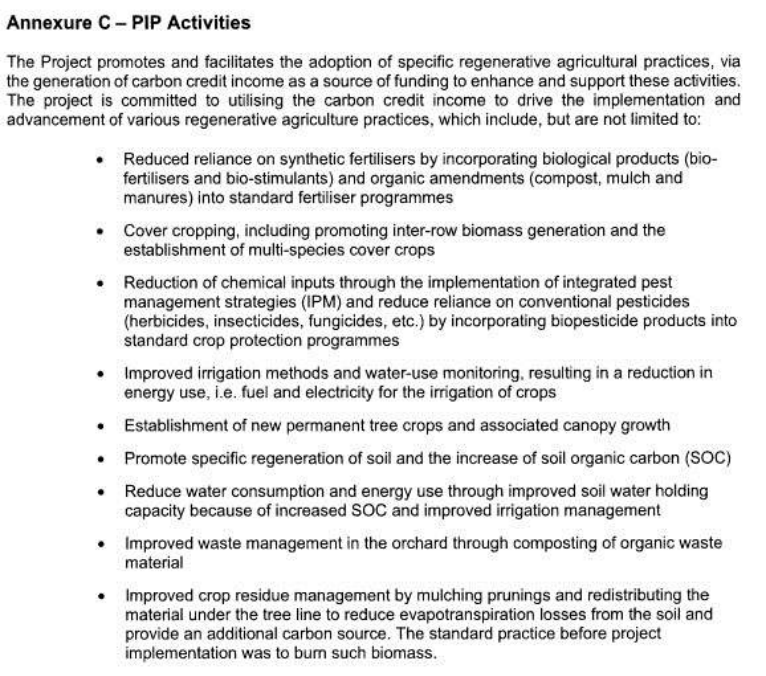
VVB has reviewed the non-permanence risk report[/09/] in compliance with the VCS standard v4.4[/B01/] and AFOLU Non permanence risk tool v4.0[/B01/]. The risks identified along with the risk score and VVB assessment are as mentioned in the table below:

Table XXXXV: Risk associated with project implementation and their assessment:

	Risk	VVB assessment and Justification
Internal risk	**Project management (PM)**	As per the NPR report[/09/], the species selected for planting in the designated project region are the species native to the host country i.e., *Macadamia integrifolia* and *Macadamia tetraphylla.* Based on the review of the project description[/01/], and on-site inspection of the project site[/VII/], further after cross verifying the same through web search[39], VVB confirm that the species selected by project proponent for the plantation are native to the host country (Australia). **Mitigation:** Management team includes individuals with significant experience in AFOLU project design and implementation, carbon accounting and reporting (e.g., individuals who have successfully managed projects through validation, verification, and issuance of GHG credits) under the VCS Program or other approved GHG programs. Hence the risk rating for this factor is -2. PP has provided comprehensive organizational structure including responsibility and competencies of the personnel for the project monitoring in section 5.3.5 of the VCS PD[/01/]. PP has demonstrated project monitoring and reporting plan in the section 5.3 and Appendix of the VCS PD[/01/], reflecting information on: SOPs for soil sampling and data collection, woody biomass measurement, sampling methodology, GHG data collection reporting process, data management process, and QA/QC procedure to ensure data accuracy and transparency. Considering the abovementioned assessment VVB confirms that the risk score of -2 for project management risk is appropriate and acceptable.
	Financial Viability	**Mitigation:** Project has available as callable financial resources at least 50% of total cash out before project reaches breakeven.

[39] Macadamia integrifolia - Australian Native Plants Society (Australia) (anpsa.org.au)

		As per the NPR report[/09/], the project implementation partners pay a signup fee to join the project (see PIP agreement provided for each project instance); these cumulative fees fund the registration fees of the Verra grouped project. Ongoing implementation of project activities will be funded through VCUs issued after each verification. VVB has cross-verified the same by reviewing section 8 of the PIP agreement[/08/] which states: *"The PIP agrees that CFPL is entitled to receive the portion of all Project VCUs arising from its participation in the Grouped Project and the Activities it undertakes as part of the Grouped Project and Release Buffer VCUs as specified in Annexure E as consideration for the performance of its obligations under this Agreement".* Here PIP refers to Macadamia Farm Holdings Pty Ltd and CFPL refers Carbon Friendly Pty Ltd i.e., project proponent for the proposed project activity. PP has provided the purchase receipts of farm machinery & organic amendments, Fuel use records and Fertilizer reports (for the year 2022 and 2023)[/05//14/]. As per section 1.1 of the PIP agreement[/08/] the contractual agreement will remain valid for the period of 20 years from the start of the project crediting period. Therefore, VVB confirms that project activity is financially viable for the reported crediting period. Hence the risk score of -2 is valid and appropriate to the VVB
	Opportunity Cost (OC)	NPV from the most profitable alternative land use is expected to be between 20% more than and up to 20% less than from project activities; or where baseline activities are subsistence-driven, net positive community impacts are demonstrated. **Mitigation:** Project is protected by legally binding commitment to continue management practices that protect the credited carbon stocks over the length of the project crediting period (see project longevity). Based on the review of the PIP agreement[/08/] provided by PP, VVB confirms that the project management and operating activities will be continues over the period of at least 20 years (project crediting period: 1st February 2020 to 31st January 2040) from the project start date. Further Annexure C of the PIP agreement has enlisted the regenerative agricultural practices established or to be included over the project lifetime in the region.

		Figure 5:  **Annexure C – PIP Activities** The Project promotes and facilitates the adoption of specific regenerative agricultural practices, via the generation of carbon credit income as a source of funding to enhance and support these activities. The project is committed to utilising the carbon credit income to drive the implementation and advancement of various regenerative agriculture practices, which include, but are not limited to: • Reduced reliance on synthetic fertilisers by incorporating biological products (bio-fertilisers and bio-stimulants) and organic amendments (compost, mulch and manures) into standard fertiliser programmes • Cover cropping, including promoting inter-row biomass generation and the establishment of multi-species cover crops • Reduction of chemical inputs through the implementation of integrated pest management strategies (IPM) and reduce reliance on conventional pesticides (herbicides, insecticides, fungicides, etc.) by incorporating biopesticide products into standard crop protection programmes • Improved irrigation methods and water-use monitoring, resulting in a reduction in energy use, i.e. fuel and electricity for the irrigation of crops • Establishment of new permanent tree crops and associated canopy growth • Promote specific regeneration of soil and the increase of soil organic carbon (SOC) • Reduce water consumption and energy use through improved soil water holding capacity because of increased SOC and improved irrigation management • Improved waste management in the orchard through composting of organic waste material • Improved crop residue management by mulching prunings and redistributing the material under the tree line to reduce evapotranspiration losses from the soil and provide an additional carbon source. The standard practice before project implementation was to burn such biomass. VVB has reviewed the land title document (consisting of details on registered landowner and property address)/06/ for the area under first PAI and confirms that Macadamia Farm Holdings Pty Ltd is landowner and has rights to farm and manage the land (within the project area) over the reported crediting period. Based on the abovementioned assessment, VVB confirms that the risk score of -2 is acceptable to the VVB.
	Project longevity (PL)	As per the VCS Non-Permanence Risk Report/09/ PP has identified the project longevity of 80 years. As per the NPR report and discussion with PP during on-site inspection/interviews/VII/, VVB has ascertained that the project longevity is based on the contractual agreement signed between landowners (project implementing partner; PIP) and the project proponent i.e., Carbon Friendly Pty. Ltd. is extendable. Section 2 of the PIP agreement/08/ entails that the contract signed is subject to renewal upon the agreement of the parties of consideration. Therefore, VVB confirms that legal agreement is in place to continue the implementation of regenerative agricultural activities es and management practice over the time of project longevity.

		The risk score of -10 for project longevity is acceptable to the VVB.
	Total internal risk (PM+ FV + OC + PL)	In conclusion, VVB confirms that the total internal risk for the VCS project gives 0, which is deemed appropriate and valid
External risk	**Land Tenure and Resource Access/Impacts (LT)**	As per the NPR report/09/, Ownership and resource access/use rights are held by different entity(s) (e.g., land is government owned, and the project proponent holds a lease or concession) Thus, the risk score of 2 has been considered. Based on the review of the VCS PD/01/, onsite inspection/interview/VII/, and review of the legal binding agreement in place/06/, VVB confirms that the Carbon Friendly, as the Project Proponent has the rightful ownership of the Carbon Credits from the sale of VCUs generated from the GHG mitigations subjected to project implementation in the region. Further the project implementing partner i.e., Macadamia Farm Holdings Pty Ltd (MFH) is the landowner for the area subjected to implementation of improved ALM practices. VVB has verified the same by cross-checking the land titles document/06/ issued by the State of Queensland Natural Resources Mines and Energy. VVB confirms that the project area is protected by a legally binding commitment to continue management practices that protect carbon stocks over the length of the project crediting period. Hence, VVB confirms that the risk score of 2 is valid and acceptable.
	Community Engagement (CE)	As per the PP's response to the finding raised related to community engagement in the project activity (CL07 and CAR 10)/Appendix II: Finding Log/: The PP has scored both the applicable risks under community engagement as "0" (not applicable) since there are no households living within the project area, and no households, other than the PIP, living within 20 km of the project area that are reliant on the project area. PIPs were consulted extensively, as described in section 2 of the PD. Based on the review of the VCS PD/01/ and the on-site inspection of the project site and interviews with the parties involved in the proposed grouped project, VVB confirms that there are no local stakeholders and/or local community that is

<table>
<tr><td></td><td></td><td>reliant on the project area, within the range of 20 Km surrounding the project boundary.

Therefore, VVB confirms that the justification provided by the PP for irrelevance community engagement is complying with the requirement of section 2.3.2 of the VCS AFOLU NPR Tool v4.0

VVB confirms that the risk score identified by PP i.e., 0 (zero) is valid and appropriate.</td></tr>
<tr><td></td><td>Political Risk (PC)</td><td>Governance score of 0.82 or higher.

PP has provided the Governance Scores across the six indicators of the, averaged over the years 2012, 2017, and 2022.

<table>
<tr><th>Indicator</th><th>Country</th><th>Year</th><th>Number of Sources</th><th>Governance (-2.5 to +2.5)</th><th>Percentile Rank</th><th>Standard Error</th></tr>
<tr><td>Voice and Accountability</td><td>Australia</td><td>2012</td><td>12</td><td>1.50</td><td>95.77</td><td>0.13</td></tr>
<tr><td></td><td></td><td>2017</td><td>12</td><td>1.38</td><td>94.09</td><td>0.14</td></tr>
<tr><td></td><td></td><td>2022</td><td>10</td><td>1.32</td><td>93.24</td><td>0.14</td></tr>
<tr><td>Rule of Law</td><td>Australia</td><td>2012</td><td>12</td><td>1.76</td><td>95.77</td><td>0.15</td></tr>
<tr><td></td><td></td><td>2017</td><td>10</td><td>1.64</td><td>93.33</td><td>0.16</td></tr>
<tr><td></td><td></td><td>2022</td><td>9</td><td>1.51</td><td>91.04</td><td>0.17</td></tr>
<tr><td>Regulatory Quality</td><td>Australia</td><td>2012</td><td>8</td><td>1.78</td><td>97.16</td><td>0.23</td></tr>
<tr><td></td><td></td><td>2017</td><td>8</td><td>1.92</td><td>98.10</td><td>0.22</td></tr>
<tr><td></td><td></td><td>2022</td><td>7</td><td>1.89</td><td>99.53</td><td>0.23</td></tr>
<tr><td>Government Effectiveness</td><td>Australia</td><td>2012</td><td>7</td><td>1.61</td><td>93.84</td><td>0.22</td></tr>
<tr><td></td><td></td><td>2017</td><td>7</td><td>1.50</td><td>91.43</td><td>0.22</td></tr>
<tr><td></td><td></td><td>2022</td><td>6</td><td>1.53</td><td>92.92</td><td>0.27</td></tr>
<tr><td>Control of Corruption</td><td>Australia</td><td>2012</td><td>11</td><td>1.98</td><td>95.73</td><td>0.14</td></tr>
<tr><td></td><td></td><td>2017</td><td>11</td><td>1.75</td><td>92.86</td><td>0.13</td></tr>
<tr><td></td><td></td><td>2022</td><td>9</td><td>1.76</td><td>95.28</td><td>0.16</td></tr>
</table>

VVB has calculated the governance score for the host country from the mean of Governance Scores across the six indicators of the World Bank Institute's Worldwide Governance Indicators (WGI), averaged over the most recent five years of available data (year 2017 to 2021)[40]. The governance calculated is 2.695 (i.e., higher than 0.82), thereby the risk score of 0 is valid and appropriate.</td></tr>
<tr><td></td><td>Total external risk (LT + CE + PC)</td><td>In conclusion, VVB confirms that the total external risk for the VCS project gives 2, which is deemed appropriate and valid</td></tr>
<tr><td>Natural</td><td>Fire (F)</td><td>Significance: Major (25% to less than 50% loss of carbon stocks)

Likelihood: Every 25 to less than 50 years</td></tr>
</table>

[40] https://info.worldbank.org/governance/wgi/Home/Reports

		Score (LS): 2 Mitigation: None of the above (1.00) Risk Score (LS × M): 2
	Pest and Disease outbreaks (PD)	Significance: Minor (5% to less than 25% loss of carbon stocks) Likelihood: Every 25 to less than 50 years Score (LS): 1 Mitigation: Both of the above (0.50) Risk Score (LS × M): 0.50 As per the NPR report/09/, some Prevention measures applicable to the risk factor are implemented following the guideline from the regional governmental authority (i.e, Department of Primary Industries New Soth Wales) in the region with similar climatic and environmental condition as in the project region i.e., Maryborough which is part of Queensland region of Australia. The New South Wales Department of Primary Industries (NSW DPI) and other government bodies play a crucial role in preventing pest and disease outbreaks in horticulture through the development and dissemination of comprehensive plant protection guides. These guides, utilized by project implementation partners, provide detailed information on identifying, preventing, and managing a range of potential threats to plant health. The Macadamia plant protection guide is provided as evidence for pest and disease outbreak management/09/. Based on the review of the document "Macadamia-plant-protection-guide-2023"/09/41, including the information on all aspects of protecting Macadamia orchards from pests and disease. VVB confirms the risk score of 1 as valid and appropriate.
	Extreme Weather (W)	Significance: Devastating (50% to less than 70% loss of carbon stocks) Likelihood: Every 25 to less than 50 years Score (LS): 5

[41] http://www.dpi.nsw.gov.au/content/agriculture/horticulture/nuts/growing-guides/macadamia-protection-guide

		Mitigation: None of the above (1.00) Risk Score (LS × M): 5
	Geological risk (G)	Significance: Devastating (50% to less than 70% loss of carbon stocks) Likelihood: Once every 100 years or more, or is not applicable to the project area Score (LS): 0 Mitigation: None of the above (1.00) Risk Score (LS × M): 0
	Other natural risk (ON)	Significance: Major (20% to less than 50% loss of carbon stocks) Likelihood: Every 50 to less than 100 years Score (LS): 1 Mitigation: None of the above (1.00) Risk Score (LS × M): 1
	Total natural risk (F + PD + W + G + ON)	In conclusion, VVB confirms that the total natural risk for the VCS project gives 8.5, which is deemed appropriate and valid

Table xx: Overall Non-performance risk rating and buffer determination

	Risk Category	Rating
a)	Internal Risk	0
b)	External risk	2
c)	Natural Risk	8.5
Overall risk rating (a+b+c)		11

In total, the project faces minor risks and if certain risks are there, mitigation measures are in place. This is validation of the project. In the opinion of VVB, the overall project plantation and management is sound and reasonable. Thus, the VVB confirms that the applied risk score of 11% is adequate for the project activity.

4 VALIDATION OPINION

The Project Participant, Carbon Friendly Pty Ltd has commissioned the VVB, Carbon Check (India) Private Limited to perform an independent validation of the VCS Grouped Project "**Ground-Truth Australian Orchards"**. This report summarizes the findings from the validation of the project and their resolutions, performed based on VCS criteria, as well as criteria given to provide for consistent project operations, monitoring, and reporting.

The validation process has been performed based on all guidance and criteria as provided in VCS Standard version 4.4/B01/, VCS Program Guide version 4.3/B01/, VCS Validation and Verification Manual version 3.2/B01/ and Registration & Issuance Process version 4.0/B01/.

The project activity provides the information in PD/01/ as required by the VCS Standard /B01/ and Validation and Verification Manual /B01/ and in VVB's opinion meets the requirements of the applied baseline and monitoring methodology VM0042 Methodology for Improved Agricultural Land Management Version 2.0/B02/ and is likely to achieve the estimated emission reductions and/or removals.

VVB, based on the desk review/01-16/, as well as on-site inspection/interviews/VII/, confirms that the project activity is designed to generate GHG reductions and/or removals from the project through implementation of improved agricultural land management practices in the region.

The validation assessment has been conducted to indicate the reasonableness of assumptions, limitations, and methods supporting the statement made by project proponent regarding the ex-ante i.e., constant values for the relevant data and parameters. Based on the review of the VCS PD/01/, carbon calculation spreadsheets/02/, and relevant supporting evidence (i.e., peer review literature/14/, IPCC default values, region specific research studies), VVB confirms that all the assumptions and statements made by PP area valid and appropriate with the possible reasonableness. Further, VVB has assessed the relevant data and parameters in section 3.3.8 of this report.

During the validation total of 41 findings have been raised by VVB, including 34 CARs, 07 CLs, and 00 FAR and upon the receipt of request clarification and/or supporting evidence all the findings have been satisfactorily closed.

Carbon Check (India) Private Ltd concludes the validation with a positive opinion that the VCS Project Activity "Ground-Truth Australian Orchards", as described in the latest revised PD /01/, meets all the applicable VCS requirements, including those specified in the Project Standard, relevant methodology, tools, and guidelines.

The selected baseline and monitoring methodology (VM0042 Methodology for Improved Agricultural Land Management Version 2.01) is applicable to the project and correctly applied. Carbon Check (India) Private Ltd therefore requests the registration of the project as a VCS project activity.

The validation has been performed using a risk- based approach, as described above. The total estimated GHG reductions and/or removals from the first project activity instance are

440 tCO_2e over the crediting period of 20 years (1st February 2020 to 31st December 2040; 4 times renewal)) with an annual average of 22 tCO_2e.

Table XXXXVI: Break-up of the ex-ante reductions over the crediting period for first project instance:

Year	Estimated GHG emission reductions or removals (tCO_2e)
2021	46
2022	29
2023	-9
2024	22
2025	22
2026	22
2027	22
2028	22
2029	22
2030	22
2031	22
2032	22
2033	22
2034	22
2035	22
2036	22
2037	22
2038	22
2039	22
2040	22
Total estimated ERs	**440**
Total number of crediting years	**20**

Average annual ERs	**22**

VVB, based on the desk-review/01//02/ and on-site inspection confirms that the projected ex-ante emission reductions and/or removals generated from the first project activity instance are in line with the methods and criteria and assumptions as mentioned in the VCS PD/01/.

APPENDIX 1: ABBREVIATIONS

AFOLU	Agriculture, Forestry, and other Land Use
AGB	Above Ground Biomass
AR	Adoption Rate
ALM	Agriculture Land Management
BE	Baseline Emission
BGB	Below Ground Biomass
CAR	Corrective Action Request
CCIPL	Carbon Check (India) Private Ltd.
CF	Combustion Factor
CL	Clarification Request
CO_2e	Carbon Dioxide Equivalent
DBH	Diameter at Breast Height
DR	Document Review
DW	Dead Wood
EF	Emission Factor
EIA	Environment Impact Assessment
FA	Final Approval
FAR	Forward Action Request
FFC	Fossil Fuel Consumption
FVR	Final Validation Report
GHG	Green House Gas(es)
GIS	Geographical Information System
GWP	Global Warming Potential
ICM	Improved Cropland Management
IPCC	Intergovernmental Panel on Climate Change
IR	Internal resource

KML	Keyhole Markup Language
LE	Leakage Emission
MP	Monitoring Plan
NC	Nitrogen Content
N_2O	Nitrogen Di Oxide
OF	Organic Fertilizer
PAI	Project Activity Instance
PD	Project Description
PIP	Project Implementation Partner
PP	Project Proponent
QC/QA	Quality control/Quality assurance
RP	Regional Productivity
SOC	Soil Organic Carbon
SDGs	Sustainable Development Goals
SF	Synthetic Fertilizer
TOF	Tree Outside Forest
VCS	Verified Carbon Standard
VCU	Verified Carbon Unit
VVB	Validation & Verification Body

APPENDIX 2: LIST OF DOCUMENTS

Sr. No.	Documents	Reference
/01/	**VCS PD** a) VCS_PD_4118_Carbon Friendly_GTAO_FINAL_29.11.2023 b) VCS_Project-description_ORCHARDS_20.01.2023 (Listed)	a) Version 2.2 dated 29th November 2023 b) Version 1.0 20th January 2023
/02/	**ERR calculations.** a) Corresponding to /01-a/: MFH Calculations VM0042v2.xlsxV b) Corresponding to /01-b/: Project Level Net GHG Red&Rem - 11.05.2023.xls x	11th April 2023
/03/	**Calculations** a) ESM Control Sites MFH 2023.xlsm b) ESM Project Sites MFH 2023.xlsm c) MFH 2019 Control Sites.xlsms	-
/04/	**GIS Data (Folder: Section 3.2 and 4 - GIS and sampling points)** a) GIS Image for year 2010 and year 2023 b) Section 3.2 and 4 - GIS and sampling points c) MFH GIS.qgz d) MFH No Clearing.pdf e) MFH Sample Points.kmz f) MFH_Sample_Points.csv g) Folder: Zones; zones_129901.tif, zones_129902.tif	
/05/	**Proof of Start date** a) CAR11 - MFM_MFH1 PIP Agreement V1.1.pdf (Includes project start date i.e., 01/02/2020) b) Project activity expenses: i. Compost & Machine Exp Summary ii. MFH Composting Expenses to date iii. MMC-FORMATT-5500818 iv. MMC-MFM-2455 v. MMC-RDO-151534 vi. MMC-SCHULTE-2968 vii. MMC-SCHULTE-5069 viii. Summary - PA expenses	-
/06/	**Ownership**	

	MFH1 PIP Agreement V1.1 - Signed.pdf **First PAI information** a) MFH - Macadamia Farm Holdings-Australian Business Register_ABN_20 163 047 121.pdf b) MFH Land Titles 50856747 13937033 & 13744176.pdf c) MFH-Company Registration Certificate-163047121.pdf	
/07/	**Soil Data Analysis** **Folder**: SOC lab reports: i. Compost Analysis.pdf (Baseline) ii. pribyl2010.pdf iii. Sample results including data on: Farm, dates (of sampling, testing), sample ID, area, crop, growing stage, sample depth, soil volume, soil density & gravel content, SOC % (Reported by Ag-Plus)	-
/08/	**Stakeholder Meeting (Folder: Section 2)** a) Admin - PIP Project Status Update.pdf b) CAR10&13 - Grievance farm notice.pdf c) CAR10&13 - Information Session Invitation.pdf d) CAR10&13 - Invitation Email Example.pdf e) CAR10&13 - Project notice.pdf f) CAR10&13 - Public Group notice QLD Landcarers.pdf g) CAR11 - MFM_MFH1 PIP Agreement V1.1.pdf h) Public notice at farm gate_Sept 23.jpg i) Public Notice Farm gate - With Date 1 j) Public Notice Farm gate - With Date 2 k) Public Notice Farm gate - With Date 3 l) Public Notice Farm gate - With Date 4	-
/09/	**Non-Permanence Risk** a) VCS-Non-Permanence-Risk-Report CF V3 20.11.2023 b) VCS-Risk-Report-Calculation-Tool-v4.0 CF Hypo rev0.1 c) Macadamia-plant-protection-guide-2023 d) VCS-Non-Permanence-Risk-Report CF V1 11.05.2023.docx e) VCS-Non-Permanence-Risk-Report CF V1 11.05.2023.pdf	Toll (xlsx); 20th November 2023 Version 1.0 20th January 2023
/10/	CL02 -CF ISO Report Macadamia Farm Holdings v1.1.pdf	
/11/	**Project Operation and Monitoring Manual (SOPs)** a) Folder: Section 5 - CF SOPs i. CF_SOP_Soil Sampling_V1.4_2023.08.16.pdf ii. CF_SOP_TreeBiomass_V1.0_2023.08.16.pdf b) j	-
/12/	**Declarations** a) AgPlus PA Adoption Rate Declaration - SIGNED.pdf	-
/13/	**Public Comment Summary** a) Public_Comments_Summary_ID_4118_	11th April 2023

/14/	**Fuel and Fertilizers** a) MFH fert exmpl b) MFH Fuel Usage c) MMC CF Report 2022 d) MMC CF Report 2023 e) Note on fuel, fertilizer. f) Screenshots Agworld	
/15/	**Adoption Rate** a) Adoption rate carbon project Nov 2023.doc b) AgPlus PA Adoption Rate Declaration - SIGNED c) Research Articles: i. ABS 2016-2017 (xlsx) ii. Erbacher et al. 2021 iii. Jahanzad 2020 iv. Montagu and Stirzaker 2008 v. Nordblom et al., 2023 vi. Walsh et al. 2020 vii. Wolff 2020 viii. Zulauf and Brown 2019 **Evidence for barrier and adoption rate** a) Aus Bureau of Stat 2021-2022 b) Baumber et al. 2020 c) Bennett 2021 d) Brown et al. 2022 e) Kragt et al. 2017 f) Page and Witt 2022 g) Sambell et al. 2019	
/16/	**Literature Review** Research Articles: a. pribyl2010.pdf (A critical review of the conventional SOC to SOM conversion factor); Douglas W. Pribyl, 2010. b. 2006 IPCC Guidelines for National Greenhouse Gas Inventories c. BOM 2011 d. ISO 14064-2 (2019) guidelines e. Carbon Credits (Carbon Farming Initiative) Act 2011 f. Walkley-Black (wet) oxidation and Loss-on-ignition (LOI) methodology g. Dry Combustion (Dumas method) h. IPCC Fifth Assessment Report i. 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4 j. IPCC 2019 k. IEA, 2004 l. 2019 Refinement to IPCC 2006 Volume 2 m. default manure N contents may be selected from (Edmonds et al., 2003) cited in (US EPA, 2011) or other regionally appropriate sources such as the European Environment	

	Agency n. Soil Sampling: equivalent soil mass, ESM approach; Ellert and Bettany, 1995 **Links for literature reviews referred** o. Australian Land Title Search Website:https://www.australianlandtitlesearch.com.au/title-search-product/ p. DAFF (2016): ABARES. Retrieved from Department of Agriculture, Fisheries and Forestry. https://www.agriculture.gov.au/abares/aclump/land-use q. Home - Landcare Australia Landcare Australia r. Queensland Water & Land Carers | (qwalc.org.au) s. Eight groundbreaking soil research projects revealed by Southern Cross - Farming Together t. Macadamia farmer focuses on cover crops, soil health, diversity (farmingtogether.com.au) u. Hort Innovation | Pathway to carbon neutral – whole orchard recycling in almond orchards (AL21000) (horticulture.com.au) v. Australian almond industry trials carbon-friendly recycling as an alternative to burning old trees - ABC News w. https://www.dcceew.gov.au/sites/default/files/documents/national-greenhouse-accounts-factors-2022.pdf x. https://www.dcceew.gov.au/sites/default/files/documents/national-inventory-report-2021-volume-1.pdf y. https://ghgprotocol.org/sites/default/files/ghgp/Global-Warming-Potential-values%20%28Feb%2016%202016%29_1.pdf z. https://library.dpird.wa.gov.au/cgi/viewcontent.cgi?article=1197&context=bulletins b) ABS. 2023. "Land Management and Farming in Australia." (2016-17). 14 08. https://www.abs.gov.au/statistics/industry/agriculture/land-management-and-farming-australia/2016-17. c) Ângelo Rodrigues, M, C.M Correia, A Marilia Claro, I.Q Ferreira, J.C Barbosa, J.M Moutinho-Pererira, E.A Bacelar, A.A Fernandes-Silva, and M Arrabos. 2013. “Soil nitrogen availability in olive orchards after mulching legume cover crop residues.” Scientia Horticulturae 158 45-51. d) ASE. 2016. Groundwater resources. https://soe.environment.gov.au/theme/inland-water/topic/2016/groundwater-resources. e) Baldi, E, M Toselli, D.M Eissenstat, B Marangoni, and P Millard. 2010. “Organic fertilization leads to increased peach root production and lifespan.” Tree Physiology 30 (11) 1373-1382. f) Bank, World. 2021. Soil Organic Carbon MRV Sourcebook for Agricultural Landscapes. Washington, DC: World Bank. g) Baumber Alex, Waters Cathy, Cross Rebecca, Metternicht Graciela, Simpson Marja. 2020. “arbon farming for resilient	

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/B01/	**VCS requirements/guidelines (Background documents)** a) VCS Program Guide (v4.3, dated 17/01/2023) VCS-Program-Guide-v4.3-FINAL.pdf (verra.org) b) VCS Standard (v4.4, dated 17/01/2023) VCS-Standard-v4.4-FINAL.pdf (verra.org) c) VCS Methodology Requirements (v4.3, dated 17/01/2023) VCS-Methodology-Requirements-v4.3-FINAL.pdf (verra.org) d) Program Definitions (v4.3, dated 21/12/2022) VCS Program Definitions v4.2 (verra.org) e) Registration & Issuance Process (v4.3, dated 17/01/2023) Registration and Issuance Process (verra.org) f) AFOLU Non-Permanence Risk Tool (v4.0, dated 19/09/2019) AFOLU_Non-Permanence_Risk-Tool_v4.0.pdf (verra.org) g) VCS Validation and Verification Manual (v3.2, dated 19/10/2016) VCS_Validation_Verification_Manual_v3.2.pdf (verra.org)	Others
/B02/	**Methodology applied** VCS Methodology VM0042 v2.0 Methodology for Improved Agricultural Land Management, VM0042-Improved-ALM-v2.0.pdf (verra.org) **Tool applied** • CDM A/R methodological Tool for testing significance of GHG emissions in A/R CDM project activities. • CDM A/R Tools Estimation of carbon stocks and change in carbon stocks of trees and shrubs	Others

/B03/	**a) Other GHG programs**: **CDM:** CDM: Project Activities (unfccc.int) **GCC:** GCC PROJECTS PORTAL (globalcarboncouncil.com) **GSF:** GSF Registry (goldstandard.org) **Plan Vivo:** Projects | Plan Vivo Foundation **b) VERRA project page:** https://registry.verra.org/app/projectDetail/VCS/4118	Others

APPENDIX 3: VALIDATION FINDINGS

Table 1. CL from this validation

CL	01	**Section no.**	1.8, VCS PD	**Date:** 20/07/2023
Description of CL				
As per section 3.8 of the VCS Standard, version 04.4: *"The project start date of an AFOLU project is the date on which activities that led to the generation of GHG emission reductions or removals are implemented (e.g., preparing land for seeding, planting, changing agricultural or forestry practices, rewetting, restoring hydrological functions, or implementing management or protection plans)."* It has been observed that, in the section 1.8 of VCS PD, the start date of the project is indicated as 01/02/2020. PD is requested to provide documentary evidence to VVB to substantiate the same in line with the start date definition of VCS Standard, version 04.4.				
Project participant response				**Date:** 05/09/2023
Evidence for the start date (i.e., increase in intensity of the project activities by first PAI) provided				
Documentation provided by project participant				
VVB assessment				**Date:** 08/09/2023
PP has updated the section 1.8 of the VCS PD, to demonstrate the selection of start date for first PAI. VVB has reviewed the "PIP Agreements" provided by PP and confirms that these agreements indicate the project start date i.e., 01 February 2020. However, in line with the section 1.8 of the VCS PD, to substantiate the statements, PP shall provide evidence for the increase in activity in the form of: • Financial investment (purchase of specialised equipment such as compost spreaders, mulchers, new harvesters) • Purchase receipts of organic amendments such as compost and manure • Activity logs such as GPS tracking and records of activities in the orchards (e.g., evidence of compost application and mulching of crop residues) **CL is still open.**				
ROUND 2				
Project participant response				**Date:** 24/10/2023
The evidence has now been added to the supporting document folder "project activity expenses".				
Documentation provided by project participant				

Project activity expenses: *ix. Compost & Machine Exp Summary* *x. MFH Composting Expenses to date* *xi. MMC-FORMATT-5500818* *xii. MMC-RDO-151534* *xiii. MMC-SCHULTE-2968* *xiv. MMC-SCHULTE-5069* *Summary - PA expenses*
VVB assessment **Date:** 24/10/2023
PP has now provided the requisite documents i.e., purchase/investment summary (dates) for the organic amendments and/or the machinery used in implementation of project activity. **CL is closed.**

CL	02	**Section no.**	1.17, VCS PD	**Date:** 20/07/2023
Description of CL				
1. Project Proponent is requested to clarify the basis of the selection of SDG indicator 3.9 mentioned in section 1.17 of VCS PD, as the indicator is not defined by UN SDGs. 2. Project Proponent is requested to clarify how the SDG indicator 12.3.1 is applicable as any activity regarding food loss reduction is not included in the project activity. 3. For justification for contribution of SDG 12.6.1, Project Proponent has mentioned that "*All parties involved to date have conducted a full GHG assessment in accordance with ISO 14064/1 and the GHG Protocol.*". Project Proponent is requested to provide the mentioned document as proof of evidence to VVB. 4. The SDG indicator 15.a.1.b states that "*Revenue generated, and finance mobilized from biodiversity-relevant economic instruments". For the justification of current project contribution, PD has mentioned that "More than 75% of total income generated through the generation of carbon credits will be passed onto the project implementation partners.*" Project Proponent is requested to clarify how the finance has been generated from biodiversity relevant economic instrument.				
Project participant response				**Date:** 05/09/2023
We have reconsidered and edited the relevant section referring to SDGs. We have provided more detail on how the PAI at time of validation contributes to goals 2, 12 and 13, and have deleted goals 6 and 15 since we are not confident that the project instance will deliver sufficient evidence to prove the contributions to these goals.				
Documentation provided by project participant				
We have provided the full GHG assessment for the first PAI in the supplementary information.				
VVB assessment				Date: 08/09/2023

1. The section 1.17 of the VCS PD has been revised and/or updated with the requested clarification/justification. 2. PP has revised the SDG contributions by the project. 3. PP has provided **"Greenhouse Gas Emission Reductions & Removal Enhancements Report"**, which has been further verified by the VVB. 4. PP has removed the indictor, considering it not relevant. However, it has been observed that PP has provided the name "subsections" instead of SDG indicators" for all the SDG indicators that is expected to be achieved through the project activity. PP is requested to provide the naming appropriately. **CL is open.**
ROUND 2
Project participant response **Date:** 10/10/2023
We have corrected the nomenclature.
Revised PD
VVB assessment **Date:** 24/10/2023
The requested correction/revision has been made by PP in the revised VCS PD. **CL is closed.**

CL	03	**Section no.**	1.18.1, VCS PD	**Date:** 20/07/2023
Description of CL				
As per the section 8.4.1 of the applied methodology (VM0042, version 02.0), the accounting of leakage from new application of organic amendments from outside the project area is provided in the equation 34 that uses mass of organic amendments applied as fertilizer in the project area, while VCS PD has provided an amendment in the calculation and the leakage is accounted based on the dry weight of the organic amendments. Project proponent is requested to clarify how it is in compliance with the applied methodology (VM0042, version 02.0).				
Project participant response				**Date:** 05/09/2023
It should clearly be noted that the aforementioned modification is not a deviation from the prescribed methodology and merely serves as a clarification seeing that the true intent of the methodology is to account for the leakage of carbon from externally applied sources. The accuracy of the carbon calculation is to be based on dry mass so as to avoid any overestimation of carbon brought about by moisture contained within the organic material applied. We have tried to explain this more clearly in the relevant sections.				
Documentation provided by project participant				
(https://library.dpird.wa.gov.au/cgi/viewcontent.cgi?article=1197&context=bulletins, *See Table 2) used as a reference for moisture content of compost*				
VVB assessment				**Date:** 08/09/2023

In section 4.3 of the VCS PD, PP has provided the justification for calculating the dry mass of organic amendment accounting for leakage from imported carbon sources (Compost/manure etc.). VVB has further reviewed the literature reference (https://library.dpird.wa.gov.au/cgi/viewcontent.cgi?article=1197&context=bulletins) supporting the justification by PP. VVB confirms that the justification provided by PP is valid and appropriated. However, PP is requested to revise the statement "The organic matter leakage for the years 2021 and 2022 was calculated to be 128.74 t CO2e and 182.7 t CO2e, respectively", by providing the organic matter leakage calculated for the year 2021, 2022 and 2023 and providing consistent values throughout the VCS PD. **CL is still open**
ROUND 2
Project participant response **Date:** 10/10/2023
We have corrected the erroneous values.
Documentation provided by project participant
Revised PD
VVB assessment **Date:** 24/10/2023
For the year 2021, PP has provided the value 52 tCO2e in the statement and 56 tCO2 in the calculation provided below. The inconsistency is requested to be rectified. Also, the values provided in the PSF is not consistent with the values provided in ER sheet "(equation 34 of VM0042 version 2.0)", tab "Organic Matter Leakage". PP is requested to maintain the consistency between the ER sheet and PD. **CL is open.**
Round 3
Project participant response **Date:** 20/11/23
We have corrected the erroneous value.
Documentation provided by project participant
VVB assessment **Date:** 20/11/2022
PP has now provided consistent values for organic matter leakage for the reported monitoring period (2021-2023) in the updated VCS PD. **The CL has been closed.**

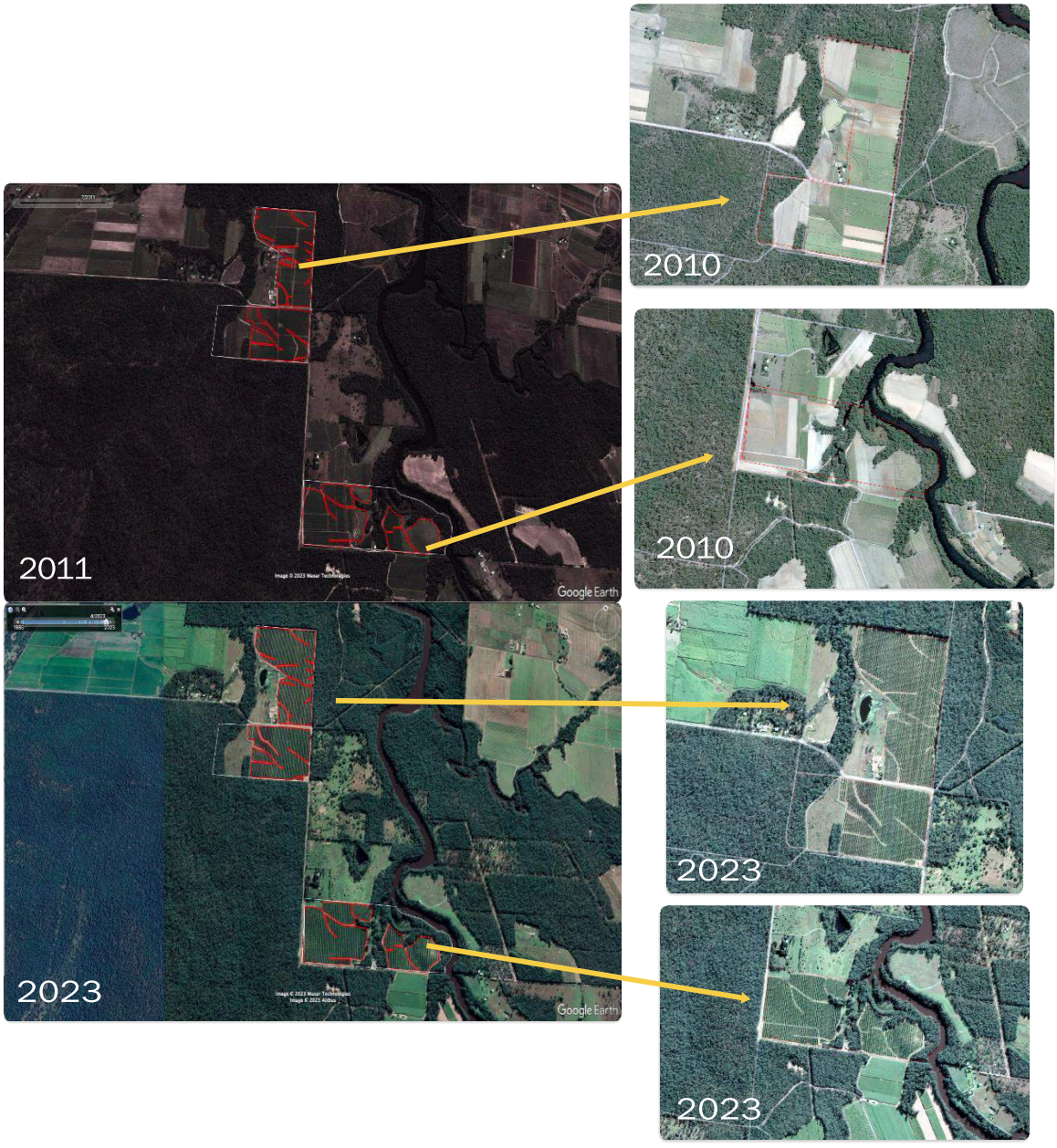
CL	04	**Section no.**	3.2, VCS PD	**Date:** 20/07/2023
Description of CL				
Project proponent is requested to provide evidence to the VVB to substantiate that the project area has not been cleared of native ecosystem within 10 years of the project start date.				
Project participant response				**Date:** 05/09/2023

We have now provided GIS images to prove that the area of the first PAI had not been cleared of native vegetation within 10 years before the project start date.
Documentation provided by project participant
GIS image

VVB assessment	**Date:** 08/09/2023

PP has provided the GIS based data to demonstrate that there was no clearance of existing vegetation prior to project start date due to project implementation.

VVB has performed the GIS analysis to cross-check the vegetation status prior to project implementation and confirms that prior to project start date there was no clearing of the native ecosystem.



CL is closed

CL	05	Section no.	3.3 & 4.1, VCS PD	Date: 20/07/2023
Description of CL				
1. In the section 4.1 of VCS PD, Project proponent has provided quantification approach for methane emission from biomass burning and nitrous emission from biomass burning, while in the table 7, section 3.3 of VCS PD, project proponent has not included N_2O in biomass burning in the project boundary, PP is requested to clarify the discrepancy. 2. Moreover, use of nitrogen fixing species is included in the project boundary as per table 7, however, which is not considered in other section of the VCS PD. Project proponent is requested to clarify the discrepancy. 3. Also, liming as a source is found to be missing in the table, project proponent is requested to add the same in the table with justification for inclusion or exclusion. The content in the table to be made consistent with methodology.				
Project participant response				**Date:** 05/09/2023
We have removed the emissions sources that do not apply to this project and revised the sections to ensure consistency.				
Documentation provided by project participant				
VVB assessment				**Date:** 08/09/2023
1. PP has removed the emission of N2O from biomass burning from the relevant sections. However, VVB has observed that the Carbon pool **"SOC"** for project scenarios is missing in the table 8 of the PD. 2. PP has removed the statement for cropping of nitrogen fixing species. 3. Liming as a source for emission is still missing from the VCS PD. As per the section 5 of the applied methodology VM0042 v2.0, *"S* – Must be included where the project activity significantly increases emissions (i.e., by more than five percent) compared to the baseline scenario and may be included where the project activity reduces emissions compared to the baseline scenario."* The table 33 of the VCS PD clearly shows >5% increase in the project emissions compare to baseline emissions. PP shall clarify how the project is viable. In the table 9 of the VCS PD, PP shall mention all the GHG sources as per the methodology and provide justification for inclusion and/or exclusion of the GHG sources. **CL is still open**				
ROUND 2				
Project participant response				**Date:** 10/10/2023

1. SOC has been added to Table 8
2. The project does not claim to implement the large-scale inclusion of any nitrogen fixing cover crops for the purpose of claiming a reduction in Nitrogen emissions within the project scenario and it is therefore unlikely that the project scenario would significantly contribute to this carbon pool. This source has therefore been removed from the list.
3. Missing emission sources have been included into Table 9 as suggested by the VVB.

An increase (>5%) in project emissions compared to the baseline is to be expected in most project scenarios given that project activities require an intensification in practice to deliver increases in soil organic carbon and above ground biomass (largest sequestration sources) and the net total emissions would still be negative compared to the baseline. It should, however, be noted that the project remains viable. Further, we could not find reference within the VCS or methodology of a requirement to justify the viability of the project based on increased emissions values.

Documentation provided by project participant

Revised VCS PD

VVB assessment	**Date:** 25/10/2023

PP has provided the revised VCS PD with requisite information on all the GHG sources and/or gases identified withing the project boundary (in line with VM0042 v2.0), along with the justification for the inclusion in or exclusion from baseline as well as in project scenario.

Liming has not been considered as a GHG sources in baseline and/or project scenario as the GHG emissions due to liming does not exceeds >5% under the project activity. The justification provided by PP is valid and applicable to the VVB.

The GHG emissions quantified in the project scenario shows an increase > 5% compared to the baseline emissions within the designated project boundary, however the net GHG ERRs from the project activity remains on the positive side (as per VCS PD and carbon calculation sheet). Therefore, the justification provided by PP is valid and appropriate to the VVB.

CL is closed.

CL	06	**Section no.**	3.5, VCS PD	**Date:** 20/07/2023

Description of CL

In the section 1.11 of VCS PD, the following observations requires clarification from project proponent.

1. Adoption rate calculation of 1st PAI (Reducing reliance on synthetic fertilizers): As per the section 1.11 of PDD, the practices included under this category are, application of bio-fertilizers, bio-stimulants, compost, mulch, and manure. while, in section 3.5, under the category 1st PAI, application of compost is only considered for calculation of adoption rate. Project Proponent is requested to clarify on the discrepancy in the selection of ALM practices in both scenarios.

Based on the review of the source provided, the existing adoption rate at 2003 were 25-35%, Project proponent is requested to clarify how the value can be consider as conservative at the current period.

Moreover, the study is based on cotton, fruit and grape sector. Project proponent is requested to clarify, how it is applicable to the grouped project activity.

2. In the section 3.5, step 3 of additionality demonstration, project proponent has provided the area of proposed project level adoption of activities. (Page number 24). However, the justification for selection of the value (area) and its source is requested to be added.

Project participant response	**Date:** 05/09/2023

We have removed the mention of bio-fertilizers and bio-stimulants from section 1.11 since it is unlikely that these will be applied and quantified in this project. The calculated adoption rates in 3.5 now reflect the project activities mentioned in section 1.11.

The mention of conservativeness refers to our approach to assume the higher adoption rate of 35% instead of 25% to avoid overestimation of GHG reductions and removals based on a lower adoption rate. "Conservative" in this context does not refer to the rate of adoption itself.

We have made every effort to identify reliable, recent and relevant sources to estimate the current adoption rate of project activities in orchards in the region. However, as explained in section 3.5, very limited (or no) data was available at this time, which reflects that these practices are uncommon in the industry. We have therefore reported the data that we were able to identify and made reasonable inferences from other regions and industries to inform the adoption rates applied in our project.

The area used for calculating the adoption rate is the area of the first PAI. We have clarified this in section 3.5.

Documentation provided by project participant

Revised VCS PD version 2.0

AgPlus PA Adoption Rate Declaration - SIGNED.pdf

VVB assessment	**Date:** 08/09/2023

PP has revised/updated the section 1.11 of the VCS PD, which now include the practices i.e., which Is consistent with section 3.5 of PD.

It has been observed that PP provided the adoption rate in the PD as per following

Activity	**Adoption rate**
Reducing reliance on synthetic fertilizers (PA1)	3.1%
Cover cropping and inter-row biomass generation (PA2	2%
Improved irrigation methods and water-use monitoring (PA3)	35%
Establishment of new permanent tree crops (PA4)	0.33%
Return of crop waste to orchards	3.1%
Weighted average	2.05%

PP has provided the supporting document "AgPlus PA Adoption Rate Declaration - SIGNED.pdf" an Independent Observations on Low Adoption Rate and Barriers to Implementation of Ground Truth Australian Orchards Carbon Project Activities by an independent agronomist from Ag Plus Consultancy.

However, the provided document is not found to be signed or sealed. PP is requested to provide a signed document to VVB.

CL is open.

ROUND 2

Project participant response	**Date:** 24/10/2023

We are awaiting the signature of the agricultural consultant.
Documentation provided by project participant
VVB assessment **Date:** 27/10/2023
PP has provided the signed statement from the independent agriculture consultant in the file "Adoption rate carbon project Nov 2023.doc", however, there the estimation of adoption rate for weighted mean calculation is not provided in the report as required by methodology. Also, the region specified in the report is Maryborough region, which is not a region included in the first PAI. The statement provided by the independent consultant in the report is also found to be contrary to the adoption rate mentioned in the PD. PP is requested to clarify the relevance of providing the above mentioned report. **CL is open**
Round 3
Project participant response **Date:** 20/11/23
We have removed the letter from the agronomist since the opinion stated therein does not align with our research findings nor the data obtained from the Bureau of Statistics, nor our own experience and observations of practices in the area and in Australia.
Documentation provided by project participant
VVB assessment **Date:** 20/11/2023
PP has provided the weighted average adoption rate calculation based on the publicly available data and is deemed to be acceptable to VVB. **CL is closed.**

CL	07	**Section no.**	NPR report	**Date:** 20/07/2023
Description of CL				
The demonstration in NPR report is anecdotal and needs to be supported by documentary evidences.				
Project participant response				**Date:** 05/09/2023
We have provided evidence for internal and external risk factors as requested in the NPR report template, see NPR report in the supplementary documents.				
Documentation provided by project participant				
Revised NPR report.				
VVB assessment				**Date:** 08/09/2023

PP is requested to provide the revised NPRR report including the following:

1. PP shall revise and/or correct the **monitoring period** (01 February 2020 to 31 January 2040) given in the Title Page of the report. In VVB's opinion PP has mention the project crediting period instead of monitoring period.
2. Addressing the points under different specifics that may be relevant to the project.

   For example: Under **"Project Management"** in point (a) of the table PP shall mention abound the species included under the 1st PAI and its native/non-native nature and then justification for the selecting the risk score as 0 (Zero).

3. VVB has observed as per the NPRR report **Project Longevity** is found to be < 30 years.PP needs to keep in mind that as per the AFOLU NPR tool 4.0, section 2.2.4 point (6), *Where AFOLU project longevity is less than 30 years, the project fails the risk assessment, and it is not eligible for crediting.*

   Therefore, PP is requested to revise the same along with the evidence to demonstrate the project longevity as well as that the project region will be managed for the stated project longevity.

4. **Community Engagement**: Justification for risk core selection i.e., 0 (Zero).
5. **Political Risk**: PP shall provide the latest (average over the last 5 year) governance score/WGI value for the host country, in the report.
6. Evidence supporting risk score selection under section 3 of the NPRR Report, as VVB has observed the following information during web-search (https://uk.practicallaw.thomsonreuters.com/1-608-5865?transitionType=Default&contextData=(sc.Default)&firstPage=true#co_anchor_a354125)

DAWE has provided support and concessions to Australian farmers in the following forms:

- *Bushfire recovery: financial support, including funding to help farmers and rural communities.*

Drought and rural support: funds to help manage current drought-related conditions and prepare for future drought.

- *Tax concessions for donations to eligible organisations that work to conserve and protect the natural environment.*

PP is requested to clarify whether above-mentioned financial assistance/support is to be considered as mitigation strategies present in the host country.

CL is open

ROUND 2	
Project participant response	**Date:** 05/10/2023

1. We have corrected the monitoring period in the NPR report. 2. We have selected the risk score 0 (not applicable) in the NPR tool because none of the species planted or seeded as part of the project activities are non-native species. We believe that the selected risk score is appropriate. 3. We respectfully ask the VVB to revisit the NPR report. The longevity period indicated there is 80 years. 4. Please see our response to CAR 10 for the selection of the risk score regarding community engagement. 5. The 5-year average scores for Australia have been provided now in the updated NPR report. 6. We would like to point out that the Dep. Of Agriculture, Water and Environment (DAWE) does not exist anymore and has been superseded by the Dep. Of Agriculture, Fisheries, and Forestry (DAFF) and the Dep. Of Climate Change, Energy, the Environment and Water (DCCEEW). We are aware that both the federal government as well as state governments provide some disaster relief in the form of low-interest loans and household hardship support for specific local natural disasters. This was factored into our initial risk mitigation score in section 3, Natural risk mitigation, of the NPR Tool. We therefore believe that the natural risk score was determined appropriately and does not require adjustment.
Documentation provided by project participant
Revised NPR Report

VVB assessment	**Date:** 25/10/2023

1. The monitoring period has been revised and corrected in the revised NPR report i.e., 01 February 2023 to 30 September 2023.

2. VVB confirms that the risk core of 0 (zero) for “Project management" is valid and applicable for the project activity as the species planted are native to the region.

   However, PP is requested to mention the species involved in the project activity in the relevant section of NPR report to justify PP’s statement/risk selection and that the species planted are native species, considering it part of protocol filling.

3. By reviewing the NPR report VVB confirms that the project longevity identified by PP is 80 years.

   PP has selected the risk score of -10 (With legal agreement or requirement to continue the management practice). However as per the PIP agreement provided by PP the agreement is valid for the time of 20 years only.

   Expiry Date means the earlier of:

   (a) the date which is at least twenty (20) years from the start of the project crediting period and on which all outstanding obligations of CFPL (including, for the avoidance of doubt, CFPL's obligations to transfer Project VCUs and Released Buffer VCUs in accordance with this Agreement) have been completed; and

   (b) the date on which this Agreement is terminated in accordance with clause 13.5 14.

   As per the AFOLU NPR tool:

   VCS 2 Risk Analysis and Buffer Determination

   Table 4: Project Longevity

Project Longevity		
a)	Without legal agreement or requirement to continue the management practice	= 24 - (project longevity/5)
b)	With legal agreement or requirement to continue the management practice	= 30 - (project longevity/2)
Total Project Longevity (PL) Total may not be less than zero		

   Considering the same, PP is requested to provide justification and/or basis (along with supporting document) for identifying the project longevity as 80 years in the NPR report and further justification for selecting the risk score as -10.

4. As per the PP’s justification under CAR 10 of this finding log, there is no household living within the project boundary and only "Project Implementing Partners” are living within the 20 Km of the project area which have been consulted during LSC conducted by PP.

VVB confirms the risk score identified by PP is valid and appropriate.

5. PP has provided the Governance Scores across the six indicators of the, averaged over the years 2012, 2017, and 2022.

   VVB has also calculated the governance score for the host country from the mean of Governance Scores across the six indicators of the World Bank Institute's Worldwide Governance Indicators (WGI), averaged over the most recent five years of available data (year 2017 to 2022)[42]. The governance calculated is 2.695, thereby the risk score of 0 is valid and appropriate.

6. VVB confirms that the response of the PP on considering the mitigation strategies present in the host country relevant to natural risk associated to project region is valid and appropriate.

   PP is requested to provide information relevant to mitigation strategy for the natural risk of "**Pest and Disease outbreaks**" in the NPR report and in the NPR calculation tool in consistence with section 2.4.1 of the AFOLU NPR tool v4.0.

7. In line with VCS-Non-Permanence-Risk-Report-Template-v4.0,
   "Where a section is not applicable, explain why the section is not applicable (i.e., do not delete the section from the final document and do not only write "not applicable".

8. As per VCS Risk Report tool, 4.0
   "This document may be included as an annex to the Non-Permanence Risk Report (long or short form) and should be provided to a validation/verification body at the time of validation or verification".

   PP is requested to provide NPR Risk Calculation Tool, to demonstrate the process applied for identification of risks applicable to the project under relevant risk factors and selection of risk score for the same in line with the AFOLU Non-Permanence Risk Tool v4.0.

CL is open.

7) Round 3	
Project participant response	**Date:** 20/11/23

[42] https://info.worldbank.org/governance/wgi/Home/Reports

We have provided the species names.
The PIP agreement term is for an initial 20 years. As per section 2 (b) of the PIP agreement, the agreement can be renewed if agreed by both parties.
N/A
N/A
Upon reflection, we have amended the risk mitigation score for Pest and Disease outbreaks in the NPR tool. We have provided the updated tool in the document folder. In addition, we have provided evidence for the risk prevention.

We have provided more detail in the NPR report to distinguish between a score of 0 for low risk and a score of 0 for "not applicable". However, the template provides the following instruction for filling in the NPR report: "Document and substantiate the risk and/or mitigation for each risk factor applicable to the project. Include any relevant documentary evidence. Where a risk or mitigation is not relevant to the project, please write "Not applicable". We interpret this to mean that we must provide evidence for all applicable risks and mitigation factors. However, we do not understand this to mean that we must justify each factor that is not applicable.
We have provided the updated NPR tool in the document folder.

Documentation provided by project participant

i. *VCS-Non-Permanence-Risk-Report CF V3 20.11.2023 (Word),*
ii. *VCS-Risk-Report-Calculation-Tool-v4.0 CF Hypo rev0.1 (Excel)*
iii. *Macadamia-plant-protection-guide-2023*

VVB assessment | **Date:** 20/11/2023

1. PP has provided information on the species selected for planting in the project region. The details on project management and relevant PD sections have been updated in the NPR report (word doc).

2. VVB cross-checked that the statement provided by PP on renewal of PIP agreement is appropriate. Therefore VVB, confirms that the project will continue the management practice and thus meets VCS AFOLU NPR Tool requirement.

3. PP has provided details on prevention measure present in the project region to mitigate the risk from "Pest and Disease outbreaks" along with revision in risk score identified for the same. As per the NPR report, some Prevention measures applicable to the risk factor are implemented following the guideline from the regional governmental authority in the region with similar climatic and environmental condition as in the project region. The justification is deemed valid and appropriate by the VVB.

4. PP has provided updated NPR report (word doc) to reflect the requisite correction in the report which deems appropriate by the VVB.

5. The updated NPR risk calculation tool (xlsx) has been provided by PP.

CL is closed

Table 2. CAR from this validation

CAR	01	**Section no.**	1.1, VCS PD	**Date:** 20/07/2023
Description of CAR				

As per the VCS PD template filling guideline, the following information are missing in this section 1.1 of the VCS PD. 1. Location of the project 2. A brief description of the scenario existing prior to the implementation of the project. Also, Project proponent is requested to provide the reference of the published literature in the footnote. Project proponent is requested to add the above details in the PDD.
Project participant response **Date:** 05/09/2023
We have added the requested information regarding project and PAI location and scenarios existing prior to the implementation of the project. We have shortened section 1.1 to ensure it contains relevant information while remaining succinct.
Documentation provided by project participant
N/A
VVB assessment **Date:** 08/09/2023
PP has provided the land-use scenario prior to project implementation. PP shall indicate the region of the host country consisting of the project's geographical boundary and/or location of the 1st PAIs included at the time of validation i.e., Maryborough region of Queensland. Further PP shall specify the date and month for the given crediting period in the VCS PD section 1.1. **CAR is open.**
ROUND 2
Project participant response **Date:** 03/10/2023
The region had already been stated in the PD section 1.1: "At time of validation, the project had one project instance, Macadamia Farm Holdings, a 75-hectare mature macadamia orchard in the Maryborough region (scenario 3 orchard)." We have now also mentioned the crediting period in section 1.1.
Documentation provided by project participant
Revised VCS PD
VVB assessment **Date:** 25/10/2023
The requisite correction/revision has been made by PP in the section 1.1 of the revised VCS PD. **CAR is closed.**

CAR	02	**Section no.**	1.3, VCS PD	**Date:** 20/07/2023
Description of CAR				

In the section 1.3 of the VCS PD, Project proponent is requested to describe and justify how the project is eligible under the scope of the VCS Program. Project proponent is requested to refer to section 2.1.1 of VS standard version 4.4 for the scope of VCS program. The eligibility of ALM requirements as per section A 1.2 of VCS Standard, version 04.4 needs to be demonstrated in the VCS PD.
Project participant response **Date:** 05/09/2023
We have updated section 1.3 according to the requirements set out in the VCS standard v4.4.
Documentation provided by project participant
VVB assessment **Date:** 08/09/2023
PP has revised/updated the section 1.3 of the VCS PD demonstrating project eligibility under the scope of VCS program activity as well as under ALM activity along with the justification for the requirements. **CAR is closed**

CAR	03	**Section no.**	1.4, VCS PD	**Date:** 20/07/2023
Description of CAR				
In the section 1.4 of the VCS PD, Project proponent has mentioned that the proposed project will be a grouped project activity. However, the section has been found to be filled not as per the VCS PD template guideline. The requirements of the project design as per the grouped project provided in the section 3.6 of the VCS standard is found to be missing in the VCS PD provided. Project proponent is requested to provide the requirement and the justification for meeting the requirement as mentioned in the para 3.6.10 - 3.6.22 of VCS standard version 4.4. The eligibility criteria for the applied methodology must a detailed further including but not limited to pertinent requirements of the applied methodology such as applicability criteria, quantification approach (using approach 2 and 3), baseline determination, additionality demonstration, monitoring and sampling plan including determination of baseline control sites.				
Project participant response				**Date:** 05/09/2023
We have updated section 1.4 according to the requirements set out in the VCS standard v4.4.				
Documentation provided by project participant				
VVB assessment				**Date:** 08/09/2023

PP has updated the section 1.4 of the VCS PD to reflect the conformance with the requirement set out in the VCS Standard v4.4 for Grouped Projects. However, PP shall also demonstrate the project eligibility in line with the section 3.6.17 of the VCS standard v4.4 for the inclusion of future instances under the project (point 3,4, 7-9). Also, PP is requested to provide a justification that how the control sites and samples units for determination of SOC stocks will be identified as given in table 7 of methodology version 2.0 **CAR is open**
ROUND 2
Project participant response **Date:** 06/10/2023
We have added the requested points of section 3.6.17 of the VCS to table 2 of the PD. We ask the VVB to refer to table 15 of the PD for the similarity criteria of the control sites, as well as refer to the Carbon Friendly Soil Sampling SOP for a detailed description of how control sites and sampling points will be identified.
Documentation provided by project participant
Revised PD
VVB assessment **Date:** 25/10/2023
PP has now provided the requested information on previously missing points of eligibility criteria for the inclusion of new project instances along with appropriate justification. VVB has reviewed the table 15 given in the VCS PD as well as the SOP for the Soil Sampling provided PP and confirms that the both the information appropriately depicts the criteria forming basis for identification of the control sites within the project boundary. However, the information provided in table 15 of PD is found to be incomplete and does not state how the similarity criteria of first PAI is defined. PP is requested to enrich the table with the similarity criteria identified for first PAI. **CAR is open.**
Round 3
Project participant response **Date:** 20/11/23
We have completed table 15.
Documentation provided by project participant
Revised VCS PD
VVB assessment **Date:** 20/11/2023
The table 15 of the VCS PD has been updated with requested details for Control Site Similarity Criterion and the information is found to be appropriate by the VVB. **CAR has been closed.**

CAR	04	**Section no.**	1.5, VCS PD	**Date:** 20/07/2023
Description of CAR				

In the section 1.5 of the VCS PD, Project proponent is requested to revise the first column in the table provided to maintain consistency with the VCS PD template.
Project participant response **Date:** 05/09/2023
We have revised the column.
Documentation provided by project participant
N/A
VVB assessment **Date:** 08/09/2023
The VCS PD section 1.5, has been revised to reflect the correction by PP. **CAR is closed.**

CAR	05	**Section no.**	1.9, VCS PD	**Date:** 20/07/2023
Description of CAR				
In the section 1.9 of the VCS PD, Project proponent has provided reference to the section 3.8.3 of VCS standard which is found to be incorrect as per the latest version of the VCS standard (version 4.4). Project proponent is requested to correct the same.				
Project participant response				**Date:** 05/09/2023
We have adjusted the reference to the correct version of the VCS in section 1.9.				
Documentation provided by project participant				
N/A				
VVB assessment				**Date:** 08/09/2023
The section 1.9 of the VCS PD has been revised to reflect the correction. **CAR is closed**				

CAR	06	**Section no.**	1.11, VCS PD	**Date:** 20/07/2023
Description of CAR				
Referring to the para 3.2.3 of VCS standard version 4.4, "*Where an implementation partner is acting in partnership with the project proponent, the implementation partner shall be identified in the project description. The implementation partner shall identify its roles and responsibilities with respect to the project, including but not limited to implementation, management, and monitoring of the project, over the project crediting period*.". It has been observed that such information is missing in the section 1.11 (Description of project activity) of VCS PD and is therefore requested to be added.				
Project participant response				**Date:** 05/09/2023
We have added the requested information.				
Documentation provided by project participant				

Revised/updated VCS PD v2.0
VVB assessment **Date:** 08/09/2023
The section 1.11 of the VCS PD has been revised and updated by providing the requested details on PIP involved in the project. As per the section 1.11 of the VCS PD it is stated that: "Landowners/farmers will provide details of farm inputs/outputs/areas and soil testing data, allowing for calculating GHG emission sources and sinks". Further in section 1.7 of the PD, PP shall include the information about the land ownership, **CAR is open.**
ROUND 2
Project participant response **Date:** 10/10/2023
We have added the requested detail about ownership in section 1.7 of the PD.
Documentation provided by project participant
Revised VCS PD
VVB assessment **Date:** 26/10/2023
As per the section 1.7 of VCS PD, it has been stated that: "The project proponent is either the landowner who has rights to farm and manage the land, or the land lessee that has the rights to farm and manage the land under a long-term lease agreement with the landowner. In the case of the first PAI, the project proponent is the landowner." However as per the supporting document for land title (i.e., MFH Land Titles 50856747 13937033 & 13744176), Macadamia Farm Holdings PTY LTD (which is project implementation partner and is not Project Proponent) have the ownership over the land titles. PP is requested to correct the statement and provide consistent information on the land ownership under relevant sections of the VCS PD. **CAR is open.**
Round 3
Project participant response **Date:** 20/11/23
We have corrected the statement in section 1.7.
Documentation provided by project participant
Revised VCS PD
VVB assessment **Date:** 20/11/2023
The requested revision has been made in the VCS PD section 1.7 for the details on project ownership. **CAR has been closed.**

CAR	07	Section no.	1.13, VCS PD	Date: 20/07/2023
Description of CAR				
Project proponent is requested to provide the reference to the source of information provided in the table 3 of VCS PD as footnote.				
Project participant response				**Date:** 05/09/2023
We have provided the reference as a footnote.				
Documentation provided by project participant				
Revised PD v2.0				
VVB assessment				**Date:** 08/09/2023
The reference of host country data base from Department of Agriculture, Fisheries and Forestry has been provided. **CAR is closed.**				

CAR	08	Section no.	1.16.2, VCS PD	Date: 20/07/2023
Description of CAR				
In the section 1.16.2 of VCS PD, it has been observed that Project proponent has not filled the section as per the VCS PD template guideline, Project proponent is requested to include all the questionnaire with the responses in the check boxes, including Supply chain (scope 3) emissions.				
Project participant response				**Date:** 05/09/2023
Section 1.16.2 of the VCS PD template, version 4.2, specifies: "When completing a draft project description for the purpose of listing on the pipeline as under development, complete the following information; otherwise, delete this text" Since this project DOES NOT seek listing on the pipeline as under development, the project proponent shall not fill out the questionnaire here. We have followed the guideline as set out in the template which says: "In all other cases, demonstrate that a public statement(s) by the owner(s) or retailer(s) of the impacted good(s) or service(s) or project proponent (as applicable) has been made throughout the project crediting period. Where applicable, also demonstrate that the impacted good or service's producer(s) or retailer(s) have been notified of the project and the potential risk of Scope 3 emissions double claiming via email. Evidence of the public statement(s) and email(s) must be provided in this report or attached as an appendix." We have included more detail in this section as well as provided evidence in the supplementary folders.				
Documentation provided by project participant				
Revised PD v2.0				

VVB assessment	Date: 08/09/2023
The section 1.16.2 of the VCS PD has been revised to reflect the requirement fulfilling of the VCS PD template v4.2. **CAR is closed.**	

CAR	09	Section no.	1.18.1, VCS PD	Date: 20/07/2023
Description of CAR				
In the section 1.18.1 of VCS PD, Project proponent has provided the detailed assessment procedure for "*leakage from new application of organic amendments from outside the project area*". However, the procedure for assessment of other leakage parameters provided in the para 8.4.2-8.4.4 of methodology is not provided. Project proponent is requested to provide the same. Justification is to be provided if the leakage parameter is not applicable.				
Project participant response				**Date:** 05/09/2023
We have included the required sections within the PD.				
Documentation provided by project participant				
Revised PD v2.0				
VVB assessment				**Date:** 08/09/2023
PP has revised section 4.3 of the VCS PD by providing the quantification approach followed by PP for accounting of leakage from imported organic material in the project scenario. **CAR is closed.**				

CAR	10	Section no.	2.2, VCS PD	Date: 20/07/2023
Description of CAR				
In the section 2.2 of the VCS PD, the following information are found to be mission as per VCD PD template guideline. 1. The procedures or methods used for engaging local stakeholders (e.g., dates of announcements or meetings, periods during which input was sought). 2. The procedures or methods used for documenting the outcomes of the local stakeholder consultation. 3. The mechanism for on-going communication with local stakeholders. 4. How due account of all and any input received during the consultation has been taken. Include details on any updates to the project design or justify why updates are not appropriate. 5. For AFOLU projects, also demonstrate how the project has or will communicate the following: a. The project design and implementation, including the results of monitoring. b. The risks, costs and benefits the project may bring to local stakeholders. c. All relevant laws and regulations covering workers' rights in the host country.				

d. The process of VCS Program validation and verification and the validation/verification body's site visit.

Project proponent is requested to fill the section 2.2 considering the above points

Project participant response	**Date:** 05/09/2023

We have amended section 2.2 according to the requirements and have added more detail about the stakeholder consultation process.

Documentation provided by project participant

Revised PD v2.0

VVB assessment	**Date:** 08/09/2023

Section 2.2 of the VCS PD has been revised/updated including the following:

1. Procedure for engaging stakeholders for initial discussion on project: Starting from early 2019 Via phone calls and emails to gauge their interest and gather preliminary feedback.
2. Docs
3. The on-going communication mechanism between PP and stakeholders in section 2.5 of the VCS PD.
4. Considering the positive response from farmers, PP organized formal public presentations to explain the project details.
5. Through workshops and informational sessions, PP has provided information about the project to interested growers and members of the public.

   PP has provided document (email: Admin - PIP Project Status Update.pdf/dated: 4th August 2023) to substantiate that the Project implementing partner has been updated on the status and process of the project validation and the outcomes of the VVB's on-site visit.

During the review of the section 2.2 of the VCS PD and supporting document relevant to stakeholder consultation, VVB has observed the following:

1. All the evidence for the public invitations/community engagement (i.e., CAR10&13 - Public Group notice QLD Landcarers.pdf, CAR10&13 - Project notice.pdf, CAR10&13 - Invitation Email Example.pdf, CAR10&13 - Information Session Invitation.pdf) are dated later than project start date.

   And the Public notice as photographed (on orchard fencing: Public notice at farm gate_Sept 23.jpg) is not visible enough to verify the date of notice.

   As these abovementioned invitations were for the continued public engagement and are **dated after project implementation**, PP shall justify how the local stakeholder subjected to project implementation were involved for LSC prior to project implementation. For example, by providing email invitations for the initial discussion over the project particulars with the stakeholders/farmers and PIPs.

   PP shall also clarify whether the local community or farmers were part of the stakeholder consultation thereby shall also update the information on Community Engagement under section 2 of the NPR report.

2. PP shall provide MOM of the LSC including:
   - Time and place of LSC,
   - LSC presentations,
   - List of attendees with signatures

• LSC feedbacks from stakeholders and PP's response for the same **CAR is open.**
ROUND 2
Project participant response | **Date:** 05/10/2023
1.We have provided a new photograph of the public notice at the farm gate that shows the date. With regards to the timing of the stakeholder consultation, we would like to refer the VVB to section 3.18.3 of the VCS v4.4: "The project proponent shall conduct a local stakeholder consultation prior to validation as a way to inform the design of the project and maximize participation from stakeholders.[…]" The LSC dated after the start date but before validation therefore complies with the VCS. Further, the NPR tool requires scoring of the following criteria regarding Community Engagement in Section 2: a) Less than 50 percent of households living within the project area who are reliant on the project area, have been consulted. b) Less than 20 percent of households living within 20 km of the project area, and who are reliant on the project area, have been consulted. The PP has scored both of these as "0" (not applicable) since there are no households living within the project area, and no households, other than the PIP, living within 20 km of the project area that are reliant on the project area. PIPs were consulted extensively, as described in section 2 of the PD. We can therefore confirm that we have scored the NPR tool diligently and truthfully and have provided the required information. In our opinion, no revision of the NPR tool or report section 2 is required. 2.Please see our current version of the PD, section 2, for a detailed description of the LSC process and outcomes. We have provided therein all the relevant information as required per sections 3.18.3-3.18.5 and 3.18.11-3.18.20 of the VCS v4.4. As detailed in the PD, we did not identify any impacted stakeholders and groups other than the ones mention in section 2. Neither the VCS nor the PD template require the provision of meeting minutes, attendee lists and signatures of local stakeholders. We therefore believe that we have sufficiently addressed and detailed the LSC process and outcomes to comply with the requirements.
Documentation provided by project participant
- *Photographs of public notice*
VVB assessment | **Date:** 26/10/2023
1. PP has now provided clear photographs of the public notice at the farm gate with the dates on which notice were distributed. 8) 9) VVB confirms that the PP's justification regarding conduction of LSC meeting after the project start date is following the requirement of section 3.18.3 of the VCS Standard v4.4, and thus is valid and appropriate. **CAR is closed**

CAR	11	**Section no.**	2.2, VCS PD	**Date:** 20/07/2023
Description of CAR				

Project proponent has not provided the Project implementation partner agreement of all the stakeholders. Project proponent is requested to provide the same to VVB.
Project participant response **Date:** 05/09/2023
We have provided the Project Implementation Partnership agreement for the first PAI in the supplementary folder.
Documentation provided by project participant
PIP agreement for first PAI in folder "Section 2"
VVB assessment **Date:** 08/09/2023
PP has provided PIP agreement (CAR11 – MFM_MFH1 PIP Agreement V1.1.pdf) between PP and the project implementing partner involved in the 1st PAI. **CAR is closed.**

CAR	12	**Section no.**	2.5, VCS PD	**Date:** 20/07/2023
Description of CAR				
In the section 2.5 of the VCS PD, Project proponent has mentioned that a public comment has been received during the consultation phase and its resolution has also been provided in the section. However, Project proponent is requested to state the exact comment received, in the section 2.2 of PDD. Also, the number of sections from is found to be incorrect from section 2.4 to 2.5 of VCS PD, Project proponent is requested to correct the same.				
Project participant response				**Date:** 08/09/2023
We have now included the comment in the PD and have also corrected the section numbering.				
Documentation provided by project participant				
Revised PD v2.0				
VVB assessment				**Date:** 05/09/2023
PP has provided details of the public comment received during project comment period i.e., 09/03/2023 to 08/04/2023 (Verra Search Page) and provided the justification for the same. Further the numbering of sections has been revised/corrected aligning with the VCS PD template v4.2. **CAR is closed**				

CAR	13	**Section no.**	2.6, VCS PD	**Date:** 20/07/2023
Description of CAR				
Referring to the section 2.6 of VCS PD template guideline, "*For AFOLU projects, provide details on the following:* • *Local stakeholder identification process and a description of results.* • *Risks to local stakeholders due to project implementation and how the project will mitigate such risks.*				

- *Risks to local stakeholder resources due to project implementation and how the project will mitigate such risks, including the plans to ensure the project will not impact local stakeholder's property rights without the free, prior and informed consent.*
- *Processes to ensure ongoing communication and consultation with local stakeholders, including a grievance redress procedure to resolve any conflicts which may arise between the project proponent and local stakeholders.*
- *For AFOLU projects with no impacts on local stakeholders, provide evidence of such.*
- *For non-AFOLU projects, this section is not required".*

In the section 2.6 of VCS PD, Project proponent has mentioned that *"Monitoring processes are in place to ensure ongoing communications and consultation with impacted stakeholders, including a grievance redress procedure to resolve any conflicts between the project proponent and local stakeholders."*. Project proponent is requested to state the exact grievance redress procedures, with the local stakeholder identification process and description of results.

Moreover, in the same section, Project proponent has mentioned that *"The proponent does not anticipate adverse risks associated with the project for local or national stakeholders"*. Project proponent is requested to clarify the basis on which such conclusion has been arrived from, considering some of risk like decrease in productivity, or increased cost of production etc. as described in the section 3.5 of the VCS PD.

Project participant response	**Date:** 05/09/2023

We believe that this finding refers to section 2.5 in the PD, not 2.6.

We have added more information to section 2.5 outlining the AFOLU-specific safeguards.

Documentation provided by project participant

Examples of updates and communication with PIP

Sample invitation to info event

Public project notice

Grievance notice

Email to landcare groups in the area

Photographs of notices at farm gate/farm office of first PAI

VVB assessment	**Date:** 08/09/2023

The section 2.5 of the VCS PD has been revised to reflect the requested information regarding AFOLU specific safeguards employed by PP. Further PP has provided the grievance redressal mechanism (CAR10&13 – Grievance farm notice.pdf), which deemed valid and appropriate by the VVB.

However following information is still required to be provided by PP:

1. PP shall provide the **"stakeholder matrix"** employed by PP for stakeholder identification as given in the PD section 2.5.
2. Justification/evidence how the Feedback and comments received from local communities and the public to ensure that the risks resulting from the project will be low.

10) Furthermore, PP shall identify potential risk that may arise due to project implementation and may affect local community despite the impact is not negative.

CAR is open.

ROUND 2

Project participant response	**Date:** 05/10/2023

We have described the relevant and affected stakeholders as per VCS v4.4 section 3 in the PD. We kindly ask the VVB to provide us with reference to the section in the VCS and/or PD template that requires the provision of the "stakeholder matrix". We believe that the provision of such matrix is not required. Further, as outlined in the PD, no formal feedback or comments were received from the local community and the public. Hence, we cannot provide any more information regarding this aspect. We believe that we have sufficiently addressed why we do not foresee any impact on local communities.
Documentation provided by project participant
N/A
VVB assessment **Date:** 26/10/2023
VVB confirms that PP has provided the required information in section 2.5 of PD which is in line with the section 3 of VCS standard 4.4. **CAR is closed.**

CAR	14	**Section no.**	3.2, VCS PD	**Date:** 20/07/2023
Description of CAR				
In the table 6, section 3.2 of the VCS PD, in the justification of project applicability column, for each condition, PD is requested to mention if the applicability condition of methodology has been met or not. Also, it has been observed that the applicability conditions 1 to 8 mentioned in the section 4 of the methodology has not been stated in the VCS PD consistently and condition number 2, as per methodology is not provided in the VCS PD. Project proponent is requested to state the applicable condition in the PDD in consistence with methodology. In the first row of table 6, an editorial mistake has been observed. Point "e" to be stated separately.				
Project participant response				**Date:** 05/09/2023
We have added the table to section 3.2 as per the methodology.				
Documentation provided by project participant				
Revised PD v2.0				
VVB assessment				**Date:** 08/09/2023
PP has revised the table 7 in the VCS PD v2.0 under section 3.2. However, PP shall state all the applicability conditions (complete eligibility criteria) in the VCS PD as given in the methodology. **CAR is open.**				
ROUND 2				
Project participant response				**Date:** 10/10/2023
We have previously provided all the applicability conditions in table 7, section 3.2 of the PD. For spatial reasons, we have abbreviated the table content to the most relevant parts. The full conditions are freely available to read in the VM0042 v2.0. We believe that listing the conditions in their full length text in table 7 would exceed the reasonable limits of the table, and is furthermore neither necessary nor required by the methodology.				

Documentation provided by project participant	
N/A	
VVB assessment	**Date:** 26/10/2023
The justification provided by PP for shortening (written form) the applicability conditions of the methodology applied, is found to be rational and thus applicable to the VVB. **CAR is closed.**	

CAR	15	**Section no.**	3.4, VCS PD	**Date:** 20/07/2023
Description of CAR				
It has been observed that, in the section 3.4 of VCS PD, Project proponent has mentioned that "*Given the grouped structure of our project, each project instance will have a unique baseline scenario, along with a distinct schedule of activities. These aspects will be determined individually for each instance and comprehensively reported during the project validation phase*". Project proponent has not provided baseline practices implemented in the historical -look back period of the project activity instances, considering that 1 project activity instances has already been implemented. The evidence to prove the annual schedule of activities during the baseline period is also requested to provide to VVB. The requested evidence should be based on the requirement set in in Box 1 (section 9, page number 78) of the applied methodology (VM0042, version 02.0).				
Project participant response				**Date:** 05/09/2023
We have added detail on the schedule of activities in the baseline scenario for each scenario and for the first PAI. Evidence for the schedule of activities of the first PAI is provided in the supplementary information. Evidence for each new instance shall be provided at time of verification.				
Documentation provided by project participant				
Revised PD v2.0				
VVB assessment				**Date:** 08/09/2023
The section 3.4 of the VCS PD has been revised to reflect the information on baseline practices implemented in the historical -look back period of the 1st project activity instance. However, the **folder Section 3.4 Baseline ALM Schedule**, provided by PP, has been found empty (without any document/evidence). PP shall provide the requested evidence. **CAR is open.**				
ROUND 2				
Project participant response				**Date:** 10/10/2023
We have provided the required evidence in the folder "Fuel and fertilizer".				
Documentation provided by project participant				

Folder Fuel and Fertilizer *g) MFH fert exmpl* *h) MFH Fuel Usage* *i) MMC CF Report 2022* *j) MMC CF Report 2023* *k) Note on fuel, fertilizer* *l) Screenshots Agworld*
VVB assessment **Date:** 26/10/2023
PP has now provided evidential documentation for fuel use records and fertilizers report subject to project implementation and further PP has provided ISO report (Greenhouse Gas Emission Reductions & Removal Enhancements Report) to demonstrate the ALM practices during base year (2019-20) and during reporting year (2020-21). **CAR is closed.**

CAR	16	**Section no.**	3.4, VCS PD	**Date:** 20/07/2023
Description of CAR				
Referring to the statement provided in section 6 of the applied Methodology (VM0042, version 02.0), "*For each sample unit, a schedule of activities in the baseline scenario will be determined by assessment of practices implemented during the period prior to the project start date. The interval over which practices are assessed, x years, must be a minimum of three years and must include at least one complete crop rotation, where applicable. Where a crop rotation is not implemented in the baseline, x= 3 years. For each year, t= −1 to t= −x, information on ALM practices must be determined, per the requirements presented in Table 4. "* In the section 3.4 of VCS PDD, Project proponent has mentioned that "Determining the baseline scenario will involve a historical lookback period, applying the schedule of activities from three years prior (t = -3) to the baseline scenario starting from the present (t = 0)". VCS PD must provide baseline scenario demonstration as per table 4 (Minimum specifications for ALM practices in the baseline scenario) of the section 6 of the applied methodology. Project proponent has not provided any information on the crop rotation period that is included in the baseline scenario. Project proponent is requested to provide the same with the justification for the selection of interval over which the baseline practices are assessed.				
Project participant response				**Date:** 05/09/2023
We have added more information about the baseline scenario as requested to section 3.4.				
Documentation provided by project participant				
Revised PD v2.0				
VVB assessment				**Date:** 08/09/2023

Section 3.4 has been revised by providing the Minimum specifications for ALM practices in the baseline scenario in line with table 4 under section 6 of the methodology. Project proponent has not provided any information on the crop rotation period for species that is included in the baseline scenario. Project proponent is requested to provide the same with the justification for the selection of interval over which the baseline practices are assessed. PP has not provided the description of scenario 1 consistently with the data provided in the table 10 in the section. PP is requested to correct the same. PP is also requested to provide the purpose of provide the baseline scenario into 3 different scenarios in the PDD. PP is requested to provide appropriate values for the quantitative information provided in the table 10 to 13 of PSF. Moreover, The evidence of all the qualitative and quantitative information is requested to be provided as stated in Box 1 of methodology VM0042 version 2.0. PP is also requested to provide in this section how the baseline control site linked to the sample units has been managed for PI1. The procedure for selection of baseline control site and sample units for future instances is also requested to be added. **CAR is open.**
ROUND 2
Project participant response **Date:** 05/09/2023
We have added information about the crop rotation in the baseline scenario. The table 10 refers to scenario 3, not scenario 1. We have corrected an editorial mistake where the description referred to scenario 2 instead of scenario 1. No discrepancies in the description versus the information in the tables were observed by us. Additional motivation and clarification has now been provided in section 3.3 of the PD as requested by the VVB. It should be noted that quantitative information cannot be provided for tables 11-13 as these serve as templates for new project instances and would require project specific information. We have now provided evidence in the supporting document folders “Project activity expenses” and “Fuel and fertilizer”. The control site management plan in general, and specifically for the first PAI, is described in section 5.3.2 of the PD. The procedure for the selection of baseline control sites and sample units is described in the Carbon Friendly soil sampling SOP and in sections 3.6 and 4.1 of the PD.
Documentation provided by project participant
Revised VCS PD *Folder: “Fuel and Fertilizer” and “Project activity expenses”.* *SOP for Soil Sampling*
VVB assessment **Date:** 27/10/2023

PP has provided the revised VCS PD with updated details on (section 3.4):

- Crop rotation followed during baseline scenario in the project region: No crop rotation with annual harvesting (mature orchard). In young and newly established orchards, no fruit were harvested during the baseline assessment period.
- Interval over which the baseline practices have been assessed: t = -3.
- The editorial errors have been addressed by PP.

- Purposes of providing baseline scenario into 3 different scenarios has been clarified in the VCS PD section 3.4:
  Scenario 1: young orchards; that **started planting trees** after the project start date.
  Scenario 2: mature orchards; with fruit-bearing trees that have **not used regenerative ALM practices** prior to the project start date.
  Scenario 3: Mature orchards; consist of fruit-bearing trees planted prior to the project start date who have been applying some regenerative practices prior to the project start date but **will increase the intensity of the activities after the project start date.**

The general "control site management plan" has been provided in the section 5.3.2 of the VCS PD. The similarity criteria for the control sites linked to the project sites of the first PAI have been provided in section 4.1 of the VCS PD.

The procedure for the selection of baseline control sites and sample units for the first PAI and for the future project instances has been described in the section 3.6 and 4.1 of the VCS PD.

Furthermore, PP has provided supporting documents for identification/selection of control sites for the first PAI:

- KML file including sample points identified within project boundary.
- "ISO Report" and "SOP for Soil Sampling" detailing the criteria and the procedure followed for sample/control site selection.

CAR is closed.

CAR	17	**Section no.**	3.5, VCS PD	**Date:** 20/07/2023
Description of CAR				
In the step 1 of section 3.5 of VCS PD, Project proponent is requested to provide the list of laws, statutes currently existing in the country (eg: Carbon Credits (Carbon Farming Initiative) Act 2011) and justify that the existing laws meet the regulatory surplus requirement mentioned in the methodology and VCS standard, para 3.14.1.				
Project participant response				**Date:** 05/09/2023
We have added some information to this section.				
Documentation provided by project participant				
Revised PD v2.0				
VVB assessment				**Date:** 08/09/2023
PP has updated the section 3.5 of the PD with the requested revision/correction to demonstrate that the project conforms to regulatory surplus in the host country. **CAR is closed.**				

CAR	18	Section no.	3.5, VCS PD	Date: 20/07/2023

Description of CAR

As per the methodology, while demonstrating the step 2 of the additionality, demonstration of cultural and/or social barriers must be supported by peer-reviewed and/or published studies specific to the project region. Where evidence is not available for the project region, evidence from other regions may be used where justification is given demonstrating how those cultural and/or social barriers are also applicable to the project region.

In the section 1.12 of VCS PD, Project proponent has mentioned that "*The project will be conducted at fruit and nut orchards in various location across Australia* ", and the location of 1 project activity instances available at the time of validation, whose details provided to VVB is in the eastern part of Australia.

Project participant response — **Date:** 05/09/2023

We have added the statement as requested. Regarding the justification for the relevance of the cited literature, please see response to CL06 above.

Documentation provided by project participant

VVB assessment — **Date:** 08/09/2023

PP has provided the statement below for barries of "Lack of awareness / real case studies "

" *...very few studies exist to date that investigate the effects of cover cropping, application of organic amendments, crop residue recycling and water management in Macadamia orchards specifically, and in Australian horticulture more generally. The absence of case studies and research-derived recommendations presents a barrier to increased adoption of those practices.*"

As mentioned in the finding above, where evidence is not available for the project region, evidence from other regions may be used where justification is given demonstrating how those cultural and/or social barriers are also applicable to the project region.

The same applies to all other barriers, for which no evidence has been provided by the PP.

CAR is open

ROUND 2

Project participant response — **Date:** 10/10/2023

As described in detail in section 3.5, step 2 and 3, very limited evidence and case studies, benchmark reports, research studies and guidelines for the project activities and their adoption rate exist. This absence of data is not specific to the Maryborough region, nor to horticulture. After extensive and thorough desktop research we have concluded that there is a lack of data regarding these practices in agriculture globally. Where available, we have drawn conclusions from data we gathered from other areas, countries and cropping systems. We have provided all the results and conclusions from our comprehensive desktop research in section 3.5 and have nothing further to add to this section. We would like to ask the VVB to clarify how we can provide evidence for the absence of data.

Documentation provided by project participant

N/A

VVB assessment — **Date:** 27/10/2023

As per section 7 of Vm0042 version 2.0 "*Demonstration of cultural and/or social barriers must be supported by peer reviewed and/or published studies specific to the project region . Where evidence is not available for the project region, evidence from other regions may be used where justification is given demonstrating how those cultural and/or social barriers are also applicable to the project region.*"

PP is requested to provide the justification for all the barriers.

CAR is open.

Round 3	
Project participant response	**Date:** 20/11/23
We have added evidence for each barrier.	
Documentation provided by project participant	
Revised VCS PD	
VVB assessment	**Date:** 20/11/2023
The VCS PD has been updated to reflect the information on supporting literature/reference to demonstrate barriers present in the project region that may prevent project implementation. **CAR is closed.**	

CAR	19	**Section no.**	3.5, VCS PD	**Date:** 20/07/2023

Description of CAR

In the step 3 of the additionality demonstration (step 3, section 3.5), Project proponent has provided the set of activities as mentioned below.

- Reducing reliance on synthetic fertilizers (PA1)
- Cover cropping and inter-row biomass generation (PA2)
- Improved irrigation methods and water-use monitoring (PA3)
- Establishment of new permanent tree crops (PA4)
- Return of organic crop waste and residues to orchards (PA5),

While in the section 1.11 of the VCS PD, Project proponent has mentioned that increase in SOC is also done through incorporation of microbiological stimuli, which is not included as a set of activity in the step 3, section 3.5 of VCS PD. Project proponent is requested to clarify the discrepancy.

As per the applied methodology (VM0042, version 02.0), "*To demonstrate common practice, the project area must be stratified to the state or provincial level (or equivalent second-order jurisdiction) in the countries where the project is being developed. Where supporting evidence is unavailable at the state/provincial level (e.g., in developing countries), aggregated data or evidence at a national or regional level may be used with justification. Where stratification based on geopolitical boundaries is impractical (e.g., due to lack of data), other forms of stratification, such as major soil types or cropping zones, may be used with justification. The same stratification approach and data sources must be applied across the entire project to maintain the integrity of the common practice demonstration. Where a data source is unavailable for a subset of the project region, justification must be provided for use of a different data source.*

Where evidence for a single proposed project activity in the region is not available from any of these sources, the project proponent may obtain a signed and dated attestation statement from a qualified independent local expert (e.g., agricultural extension agent, accredited agronomist) estimating the

adoption rate for the weighted mean calculation. Where evidence on the suite of proposed activities is unavailable, a qualified independent local expert may provide a signed and dated attestation statement stating whether the proposed suite of project activities is common practice in the region". It has been observed that for the demonstration of common practice, the project area, Project proponent has chosen for each of the above-mentioned activities are not same, while in the section 1.2 of VCS PD, Project proponent has mentioned that the project location will be the whole country of Australia and the project locations shared with the VVB during validation is in the eastern part of Australia. Project proponent is requested to comply with the methodology requirement and provide the signed and dated attested statement from a qualified independent local expert for the estimation of the adoption rate and revise the VCS PD accordingly.
Project participant response **Date:** 05/09/2023
We have adjusted the PA described in the Summary description (section 1.1) to reflect the actual activities implemented by the project. We have revised the document to reflect that the first PAI is located in the eastern part of Australia and have specified the requirements (including local adoption rate estimates) for future instances that might be located elsewhere across Australia. We have provided the requested statement by an independent local expert for the estimation of the adoption rate in the area where the first project instance is located.
Documentation provided by project participant
Statement by local agronomist about regional adoption rates and barriers.
VVB assessment **Date:** 08/09/2023

PP has made required correction in the relevant sections of the VCS PD document to reflect the location of the first PAI which fall in the east region of Australia.

PP has provided **"AgPlus PA Adoption Rate Declaration - SIGNED.pdf"** as evidence for statement by an Independent Observations on Low Adoption Rate and Barriers to Implementation of Ground Truth Australian Orchards Carbon Project Activities.

Based on the review of the adaption rate calculation provided in PD, it has been observed that,

1. For $EA_{a1,}$

PP is requested to clarify why the area under green manure, Biochar, and BioDundar given in the Australian bureau of statistics spreadsheet is not considered under organic amendments adoption rate calculation.

2.PP has provided the Australia Bureau of Statistics 46270DO001_201617 Land Management and Farming in Australia-2016-17 released on 26 June 2018 to VVB, PP is requested to provide the latest available data to VVB with its weblink.

3. PP is requested to provide the document "Macadamia industry benchmark report 2017, published by the Australian Macadamia Society (Society 2017)" to VVB.

4. For EA_{a5}

PP has stated in PSF that "*The project proponent has made a thoughtful decision to utilize the same adoption rate that has been used for compost application (3.1%) as a benchmark for the return of organic crop waste to orchards"*

Considering that compost has already been considered for EAa1, PP is requested to clarify how it will be applicable in this scenario as well.

5. PP has revised the value of area (ha) applied for the accounting of "Weighted average adoption rate within the project boundary". However, PP has not provided the value for all the parameters included in equation 1 of methodology in PD. Therefore, PP is requested to provide the value for EA_{a1}, EA_{a2}, EA_{a3}, EA_{a4}, EA_{a5}, $Area_{a1}$, $Area_{a2}$, $Area_{a3}$, $Area_{a4}$, $Area_{a5}$ in the PD along with the equation 1 of the methodology and its calculation. The source of the value applied for all the parameters is requested to be added in the footnote as well.

6. Furthermore, VVB has observed inconsistency in the project area included at the time of validation, throughout the VCS PD i.e., **71 ha** under section 1.10, 3.5, 4.1, and table 33. whereas **75 ha** under section 1.1, 1.12, and 1.17.

CAR is open.

ROUND 2	
Project participant response	**Date:** 10/10/2023

The areas under green manure, Biochar and BioDundar are not included in our analysis, since they do not compare to or represent project activities used in this project. Green manure is derived from fast-growing cover crops that are sown specifically for the purpose of generating such green manure. They are commonly ploughed into the ground, a practice that is not in line with the desired improved ALM activities we try to encourage. Biochar application is not an eligible activity as per the applicability conditions of VM0042 v2.0. BioDundar is not a freely available resource; it is specifically produced by and used in the sugarcane industry which is not part of this grouped project. The provided source is the latest available data published by the Australian Bureau of Statistics in 2023. Please see the weblink in the Bibliography as well as the downloaded spreadsheet in folder "Section 3.5 Adoption rate". Both had been supplied with our submission previously. We have corrected a mistake in the citation (the report is dated 2022, not 2017) and have added the report to the folder "Section 3.5 Adoption rate). We have expanded on our reasoning for applying the same adoption rate for the return of organic crop waste as for compost in section 3.5. We have added the requested values and factors to the equation. In addition to the previous Bibliography in section 6, we have now also provided the sources as footnotes. We have corrected the sections where it read 75 ha. The correct area is 71 ha.
Documentation provided by project participant
Revised VCS PD
VVB assessment | **Date:** 27/10/2023

1. The justification for exclusion of green manure, biochar, BioDundar from calculation on adoption rate calculation (under organic amendments), provided by PP is found to be valid and appropriate to the VVB as:
   - In line with the requirement of applicability condition 7 of the VM0042 v2.0 (section 4), the first project instance does not apply biochar as soil amendments in the project region.
   - The grouped project does not involve green manuring for the first PAI.
   - BioDunar (coproduct of Sugarcane fermentation) and has not been applied under the project activity.

2. PP has provided the latest data to VVB
3. PP has provided the reference document to VVB

4. PP has provided an appropriate justification for selecting adoption rate for PA% same as PA1 (3.1) which is found to be valid and applicable to the VVB.

5. PP has now provided values for the requested parameters under relevant PD sections (3.5, 5.1).
   The value for "Area of proposed project-level adoption of activity ay in the region" for the project activities that have been implemented at the time of validation (i.e., $Area_{a1}$, $Area_{a2}$, and $Area_{a5}$) have been provided.

   However, as per methodology, the parameter Areaay is

   Areaay = Area of proposed project level adoption of activity ay in the region hectares. While, in the calculation, PP has considered the area of the first PAI and not the area in which the adoption rate has been defined. PP is requested to correct the same. PP is requested to revise the data/ parameter table 35 accordingly

   Also, the value for Adoption rate of the n largest most common proposed project activity in the region is given as 3.1 in table 36 (section 5.1) of PD. While the largest most common project activity identified in section 3.5 is 35 % for PA3. PP is requested to maintain consistency

6. PP has now provided correct and consistent value for the project area included under the first PAI at the time of validation i.e., 71 ha, throughout the VCS PD document.

CAR is open

Round 3	
Project participant response	**Date:** 20/11/23
We have updated the calculations and the tables as requested.	
Documentation provided by project participant	
Revised VCS PD	
VVB assessment	**Date:** 20/11/2023

- PP has now provided "Area of proposed project level adoption of activity ay in the region" for each project activity i.e.,
  11) PA1: 69,016 ha
  12) PA2: 23,328 ha
  13) PA3: 52,701 ha
  14) PA4: 1,500 ha
  PA5: 69,016 ha
- the value for "Adoption rate of the n largest most common proposed project activity in the region" in table 36, section 5.1 of PD has been revised/corrected to 35%. VVB confirm the value provided is consistent with the value provide in section 3.5 of the VCS PD.

CAR is closed.

CAR	20	**Section no.**	3.5, VCS PD	**Date:** 20/07/2023
Description of CAR				
In section 3.5, step 3, demonstration of common practice, Project proponent has used "EA_{PA1}, EA_{PA2}, etc. to represent the existing adoption rate of proposed project activity in the region, while as per the methodology, it should be represented as EA_{a1}, EA_{a2}, EA_{a3},etc. Project proponent is requested to correct the discrepancy				
Project participant response				**Date:** 05/09/2023
We have corrected the nomenclature of the factors.				
Documentation provided by project participant				
Revised PD v2.0				
VVB assessment				**Date:** 08/09/2023
PP has made requisite corrections in the VCS PD section 3.5. **CAR is closed.**				

CAR	21	**Section no.**	3.6, VCS PD	**Date:** 20/07/2023
Description of CAR				
It has been observed that, Project proponent has provided a methodology deviation as mentioned in the section 3.6 of VCS PD for the calculation of SOC stock in the project instances up to 30 May 2023. However, Project proponent has not provided any justification on how the compliance with the para 3.19.1 and 3.19.2 of VCS standard version 4.4. Project proponent is requested to add the same in the section 4.1 of VCS PD.				
Project participant response				**Date:** 05/09/2023
We have added detail on how the proposed deviation complies with the VCS v4.4.				
Documentation provided by project participant				
Revised PD v2.0				

VVB assessment	Date: 08/09/2023

The section 3.6 and 4.1 has been revised/updated to reflect the details on methodology deviation for SOC stock accounting and further justification for complying with the requirement of section 3.19.1 and 3,19.2 of the VCS Standard 4.4.

PP has stated in PS that "Carbon Friendly will determine the baseline SOC stock within the project area (i.e., SOCwp,i,0 = SOCbsl,i,0) by using directly measured SOC content at the start of each project instance", and therefore it can be observed that the baseline SOC stock are directly measured within the project area instead of baseline control sites. PP is requested to provide further information on the dates in which these measures will be carried for the determination of baseline SOC stocks and it is requested to state how PP has ensured that the proposed approach shall not negatively impact the conservativeness of the quantification of GHG emission reductions or removals,

CAR is open.

Project participant response	Date: 05/09/2023

VM0042 V2.0 methodology states the following:

The initially measured SOC (at t = 0 determined through direct measurements or (back-) modeled to t = 0 from measurements collected within ±5 years of t = 0) is the same in both the baseline and project scenarios at the outset of the project (i.e., $SOC_{wp,i,0} = SOC_{bsl,i,0}$) for Quantification Approach 1. As a result, the first calculation of Equation (40) for sample unit i simplifies to $SOC_{wp,i,t} - SOC_{bsl,i,t}$.

At the onset of the project (i.e. t=0) no practice improvement would have taken place and the SOC stock within the project site and the control site (which is located within the project site) is therefore presumed to be the same. The comparison to the baseline site would only commence once t+1 has commenced.

The PP is confident that in accordance with VM0042 V2.0 this is the most accurate and prescribed method of determining SOC at t=0 and should therefore also be the most conservative approach.

Documentation provided by project participant

N/A

VVB assessment	Date: 27/10/2023

Considering that the control site has been established after the project start date and the proposed method of SOC determination can be considered the most accurate. The justification provided by PP is deemed to be acceptable.

CAR is closed.

CAR	22	Section no.	4.1, VCS PD	Date: 20/07/2023

Description of CAR

In the section 4.1 of VCS PD, It has been observed that only the reference of the equation for baseline calculation is provided. Project proponent is requested to include all relevant equation used in the quantification.

Project participant response	Date: 05/09/2023

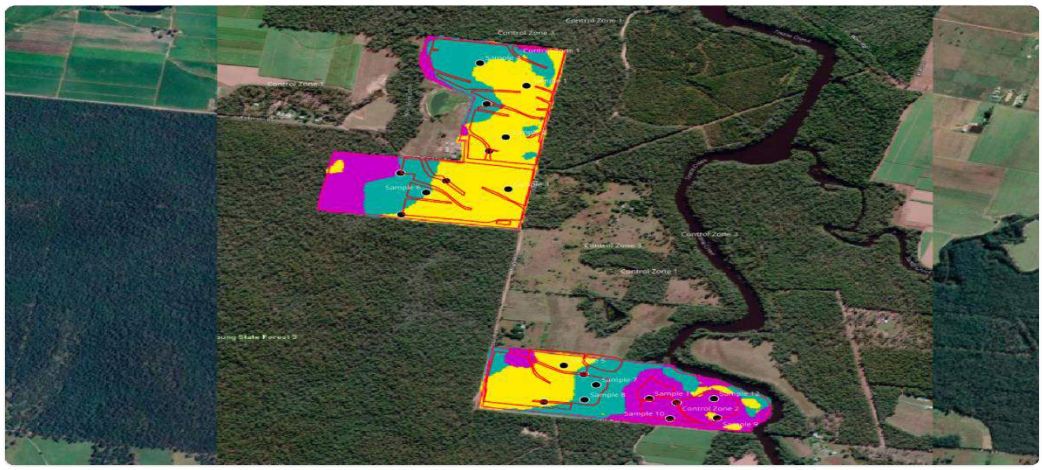
We have now included all relevant equations.

Documentation provided by project participant	
Revised PD v2.0	
VVB assessment	**Date:** 08/09/2023
The section 4.1 of the VCS PD has been updated by PP. However, following equation/ Eq. No. are missing in the VCS PD, • Equation used for SOC sequestration/stock calculation is missing. • N_2O Emissions from use of nitrogen fertilizer: equation number missing. Carbon dioxide emissions from fossil fuel combustion equation and Eq. no. missing. • Eq. No. for uncertainty calculation is missing. PP shall also include the equation along with equation no. in line with the methodology applied VM0042 v2.0 for all the sub-sections (under section 4) in the VCS PD. **CAR is open.**	
Project participant response	**Date:** 10/10/2023
We have now included all relevant equation numbers	
Documentation provided by project participant	
Revised VCS PD	
VVB assessment	**Date:** 27/10/2023
PP has now provided all the relevant equations/equation no. (wherever applicable), used for the GHG accounting. **CAR is closed.**	

CAR	23	Section no.	4.1, VCS PD	Date: 20/07/2023
Description of CAR				
It has been observed that Project proponent has chosen to quantify SOC stock change using Quantification approach 2. However, in the VCS PD, section 4.1 it has not been mentioned how the baseline control site will be managed during the project scenario. Also, the similarity criteria for the selection of baseline control site with respect to the sample units are not mentioned as the project activity has already been operational since 01 February 2020, and 1 Project activity instance has been established so far, Project proponent is requested to provide information on how the selection of baseline control sites and sample units, including the sampling design has been applied in these project areas. The set of procedures given in the para 8.2.1.1 – 8.2.1.6 of the applied methodology (VM0042, version 02.0) applicable to the project activity to be documented in the VCS PD for the SOC stock calculation				
Project participant response				**Date:** 05/09/2023
We have added detail on the control sites in section 4.1 and added the baseline control site management plan to section 5.3.				

Documentation provided by project participant	
KML files of sampling points and control sites *Stratification analysis*	
VVB assessment	**Date:** 08/09/2023

The section 4.1 of the VCS PD has been revised/updated to reflect the requisite information on sampling design and stratification procedure followed to select project control sites. The same has been verified through GIS analysis, the sampling site and sample units are evidenced according to the provided GIS information.



Further for baseline control sites, PP has provided explanation in the section 3.6 of the VCS PD stating the requirement for the methodology deviation. The project proposes a deviation from the VM0042 v2.0 methodology due to its conversion from the previous version, VM0042 v1.0., as the proposed project predates the updated methodology and requirements for control sites therein.

PP has provided SOP employed for "Soil Sampling Using Measure and Re-measure Methodology" which includes the information on:

- Sampling requirements
- Sampling design

- Stratification method and factors used.
- Soil sample collection and calculation of no. of soil samples per strata

In section 4.1, PP has mentioned that "*As per the deviation described above, the baseline SOC stock will be derived from control sites located within the orchard (see KML files in supplementary folder).*", whereas, in the section 3.6 for methodology deviation, the proposed deviation is given as "*Carbon Friendly will implement a methodology deviation specifically for baseline SOC monitoring of instances that joined the project prior to the release of VM0042 v2.0. Carbon Friendly will determine the baseline SOC stock within the project area (i.e., SOCwp,i,0 = SOCbsl,i,0) by using directly measured SOC content at the start of each project instance*", it has been observed that the deviation mentioned in section 4.1 of PD is not in line with the deviation proposed in section 3.6 of PD. Therefore PP is requested to clarify on this discrepancy.

Also, in section 4.1, PP has mentioned that "*These sites are interrow headlands without fruit trees that are otherwise identical to the project sites and located in the same climate zone*". As per the methodology, . Control sites are managed by applying schedules of activities established in the baseline scenario for the corresponding sample unit (derived in Section. Therefore, PP is requested to clarify how the baseline control site mentioned in section 4.1, first paragraph of PD is is in line with the methodology.

Information on procedure/methodology for measurement of **SOC content, Soil Bulk Density, and calculation of SOC stocks** is still missing. It is mentioned in section 4.1 that baseline SOC has been quantified using Walkley-Black method, but the process has not been demonstrated in the VCS PD or SOP. Furthermore, demonstration of Dumas method (to be used for future SOC analysis) shall be provided by PP.

PP is requested to provide all the data in the table 15, where some are given as "same as project site". The correct data is requested to be provided. The information about the control site is also requested to be added as description to the table.

It has been observed that PP has provided 3 control sites for PI-1. PP is also requested to provide the information on the linked sample units corresponding to the identified control sites with their similarity criteria.

PP is requested to document the procedures required for SOC stock calculation as mentioned in the para 8.2.1 to 8.2.1.6 of methodology in the section 4.1 and 4.2 of PD.

CAR is open.

ROUND 2

Project participant response	**Date:** 05/09/2023

Changes have been made to the PD to better reflect the true situation of the analysis and to motivate the deviation as well as some of the points raised by the VVB.

The Project Proponent believes that the methodologies for determining soil bulk density and SOC using the Walkley-Black and Dumas methods are well-documented in the VM0042 v2 methodology and are widely recognized in the public domain. Given this widespread understanding, we have chosen not to include a detailed description in the VCS PD but have included it in the SOP. We understand the importance of clear documentation and will ensure that all methodologies and procedures are referenced appropriately, though they might not be elaborated upon in all our documents.

With regards to the linkage of control sites to project sites, these sites are all linked based on the stratification of the site and are clearly labelled in the PD as Zone 1-3. PP is of the opinion that no further clarification is needed with regards to the linkage of these sites.

PP has included the formula for the calculation of SOC Stock using the ESM method into the PD. The rest of the procedure in the methodology is provided in the Soil Sampling SOP and has been referenced within the sections and will therefore not be repeated in the PD itself.

Documentation provided by project participant

VVB assessment	**Date:** 27/10/2023
The clarification provided in section 4.1 regarding selection of baseline control site is deemed to be acceptable to VVB. Information on procedure/methodology for measurement of SOC content, Soil Bulk Density, and calculation of SOC stocks is a part of monitoring and therefore PO is requested to demonstrate the same in the PD as appendix if it can't be included in the main body of the PD. PP is also requested to document the Tree biomass SOP in PD. **CAR is open.**	
Round 3	
Project participant response	**Date:** 20/11/2023
The relevant sections have been added to the appendix as requested by the VVB	
Documentation provided by project participant	
Revised VCS PD	
VVB assessment	**Date:** 20/11/2023
PP has updated the VCS PD with enclosure of Appendix including details of the following: 1. Standard Operating Procedure for Soil Sampling Using Measure and Re-measure Methodology. i. Sampling Design ii. Stratification Factors Used by Carbon Friendly iii. Calculating the number of soil samples required per strata. iv. Establishment and measurement of SOC stock in baseline control/monitoring sites v. Method for Soil Sampling Using Core Soil Sampling Machinery vi. Method of analysis for soil organic carbon (Dumas Method) vii. Method of analysis for soil organic carbon (Walkley-Black Method) – Not recommended. **viii.** Method of analysis for soil Bulk density (Core Sampling Method) 2. Standard Operating Procedure (SOP) for Direct Estimation of Tree Biomass using Measure and Re-measure Methodology v. Preparation: Materials and Equipment, Personnel Training vi. Initial Tree Biomass Measurement: Plot Establishment, Tree Measurement, Data Recording vii. Re-measure of Tree Biomass viii. Data Analysis **CAR is closed.**	

CAR	24	**Section no.**	4.1, VCS PD	**Date:** 20/07/2023
Description of CAR				
In the section 4.1, Project proponent has provided the quantification approach for aboveground and belowground carbon sequestration.				

As per the applied methodology (VM0042, version 02.), "*Where woody biomass is included in the project boundary, the relevant Afforestation, Reforestation and Revegetation (ARR)requirements in the latest version of the VCS Methodology Requirements apply. Where woody biomass is harvested, projects must calculate the long-term average GHG benefit following guidance in the latest version of the VCS Methodology Requirements Section 3.6, and the latest version of the VCS Standard Section 3.2*.".

Project proponent is requested to clarify and provide justification in the VCS PD how the compliance with the applied methodology (VM0042, version 02.0) has been met.

Project participant response	**Date:** 05/09/2023

We have created an SOP for the quantification of woody biomass which complies with the methodology (see supplementary documents) and have added justification in section 4.1.

Documentation provided by project participant

Woody biomass SOP

VVB assessment	**Date:** 08/09/2023

PP is requested to clarify the following:

i. Macadamia species identified for the 1st PAI.

ii. Information on species present within the project boundary and/or will be used under project activities for cover cropping. As its state in the section 1.11 of the VCS PD: "*Multi-species cover crops were established to promote inter-row biomass generation*".

iii. To justify the statement: *"The project supports the planting of new permanent tree crops and associated canopy growth"* mentioned in the section 1.11, PP shall provide information of the identified species and relevant evidential documentation.
15)

iv. PP shall clarify whether project instance will be subjected to tree harvesting. In case project involves harvesting, PP shall provide calculation for long-term average GHG benefit following guidance in the latest version of the VCS Methodology Requirements Section 3.6, and the latest version of the VCS Standard Section 3.2.".

v. It has been observed that PP has mentioned that "*No woody biomass will be harvested. Therefore, the long-term average GHG benefit does not need to be calculated for woody biomass. Instead, Quantification Approach 1: Measure and Model using CDM A/R Tools Estimation of carbon stocks and change in carbon stocks of trees and shrubs will be applied.*" However, calculation using CDM A/R tool does not comes under any of the quantification approach provided in the methodology as per table 5 of methodology. Therefore PP is requested to correct the statement.

CAR is open.

ROUND 2

Project participant response	**Date:** 10/10/2023

3. Scientific name of species have been added.
4. The species have been added for the first project instance
5. PP has added a sentence to state that this could be any tree species used within the horticultural industry in Australia.
6. The PP has made it clear that no biomass is to be harvested in the project within section 4.2 of the PD as the harvesting of biomass is only application to afforestation projects.
7. The statement has been altered to mirror the methodology.

Documentation provided by project participant	
Revised VCS PD	
VVB assessment	**Date:** 27/10/2023
1. Macadamia species used for the first PAI has been included in the project description i.e., *Macadamia integrifolia* and *Macadamia tetraphylla*. 2. Species used as cover crop now has been provided in PD section 1.11: Sweet Smother Grass (*Dactyloctenium australe*) and Couch Grass (*Cynodon dactylon*). 3. As per the VCS PD for PA4 (future instances), the tree species allowed in the project will be any fruit bearing tree used within the horticultural industry in Australia. 4. Based on VCS PD review, supporting evidence, and PIP agreement, for the first PAI no harvesting practice has been (will be involved). 5. Requisite change has been made by PP in the VCS PD. **CAR is closed.**	

CAR	25	**Section no.**	4.1, VCS PD	**Date:** 20/07/2023
Description of CAR				
In the section 4.1 of VCS PD, Project proponent has provided the quantification method for Carbon dioxide emission from fossil fuel combustion, emission from use of nitrogen fertilizer, and emissions from biomass burning. The reference of the equation provided is found to be mismatching with the equation number provided in the applied methodology (VM0042, version 02.0). Project proponent is requested to correct the discrepancy.				
Project participant response				**Date:** 05/09/2023
We have corrected the reference to the relevant equation.				
Documentation provided by project participant				
Revised PD v2.0				
VVB assessment				**Date:** 08/09/2023
PP has made the requested corrections in the section 4.1 of the VCS PD and has provided. However, the reference/number of equations used for **"Emissions from the use of nitrogen fertilizer"** has not been provided. PP is also requested to provide evidence for all the input parameters. **CAR is open.**				
ROUND 2				
Project participant response				**Date:** 10/10/2023
Equations numbers have been added.				
Documentation provided by project participant				
Evidence has been provided in folder "Fuel and fertilizer"				
VVB assessment				**Date:** 27/10/2023

PP now provided the requisite evidential documents along with the information on equations/formula used to quantify “Emissions from the use of nitrogen fertilizer" in the VCS PD.

CAR is closed.

CAR	26	**Section no.**	4.3, VCS PD	**Date:** 20/07/2023
Description of CAR				
It has been observed that in section 4.3 of PD, PP has provided the leakage emission assessments. However, VCS PD has not provided the leakage parameters (8.4.1 – 8.4.4 of the applied methodology, VM0042, version 02.0) that will be considered. Project proponent is requested to provide the same in the VCS PD along with their equations and calculation as mentioned in methodology.				
Project participant response				**Date:** 05/09/2023
We have updated the equations and calculations for leakage in section 4.3.				
Documentation provided by project participant				
Revised P v2.0				
VVB assessment				**Date:** 08/09/2023
The section 4.3 of the VCS PD has been revised to provide details on leakage assessment/calculation associated with leakage from the imported organic material in the project boundary. PP has also provided the equation use to estimate leakage from imported substances such as manure, compost, or biosolids in line with the applied methodology. PP has also provided that no leakage from productivity decline was observed. However, PP is requested to substantiate this using the procedure mentioned in section 8.4.3 of methodology. **CAR is open.**				
Round 2				
Project participant response				**Date:** 9/10/2023
According to VM0042 V2 Section 8.4.3 the assessment of leakage from productivity decline is only to be completed every 10- years and given that the project has not progressed to this point, the project proponent is of the opinion that this is not currently relevant to the project.				
Documentation provided by project participant				
N/A				
VVB assessment				**Date:** 27/10/2023
PP is requested to add the calculation procedure of leakage from productivity losses in PD as the leakage has to be demonstrated in the current crediting cycle which will refer to the latest PD available at the time of Validation. **CAR is open**				
Round 3				
Project participant response				**Date:** 20/11/2023

This has been addressed and the following statement has been added to section 4.3. “No leakage from productivity decline is to be reported for the first project instance. As per VM0042 V2 Section 8.4.3, the assessment of leakage due to productivity decline is required only every 10 years. While the initial instance does not necessitate this assessment, detailed steps for calculating leakage are comprehensively documented in Section 1.18.1.3 of the PD.”
Documentation provided by project participant
Revised VCS PD
VVB assessment **Date:** 20/11/2023
The requisite revision has been made by PP in the section 4.3 of the VCS PD to reflect the information on assessment of leakage from productivity decline subjected to implementation of the first project instance. **CAR is closed.**

CAR	27	**Section no.**	4.4	**Date:** 20/07/2023
Description of CAR				
Referring to the VCS PD template guideline, section 4.4, "*Describe the procedure for quantification of net GHG emission reductions and removals. Include all relevant equations. For AFOLU projects, include equations for the quantification of net change in carbon stocks. Provide the ex-ante calculation (estimate) of baseline emissions/removals, project emissions/removals, leakage emissions and net GHG emission reductions and removals in the table below. Specify the breakdown of GHG emissions reductions and removals by calendar year.* *For data and parameters monitored, use estimates. Document how each equation is applied, in a manner that enables the reader to reproduce the calculation. Provide example calculations for all key equations, to allow the reader to reproduce the calculation of estimated net GHG emission reductions or removals*". It has been observed that in section 4.4 of VCS PD, Project proponent has not included the equation for quantification of net change in carbon stocks, leakage emissions values, example calculations of all key equations. Project proponent is requested to add the same in the VCS PD. The data provided in the table 10 of the VCS PD is unable to trace in the ER sheet provided to the VVB. Project proponent is requested to provide the calculation of the values (in the VCS PD) in the carbon calculation spread sheet. Also, Project proponent is requested to document the uncertainty (section 8.6 of the applied methodology, VM0042, version 02.0) and Calculation of verified carbon units (section 8.7 of the applied methodology, VM0042, version 02.0) in the section 4.4 of VCS PD.				
Project participant response				**Date:** 05/09/2023
We have added the calculations for the first PAI as requested and have provided the carbon calculation spread sheet in the supplementary documentation.				
Documentation provided by project participant				
ERR calculation spreadsheet.				

VVB assessment	Date: 08/09/2023
The section 4.4 of the VCS PD has been revised to present the equation used for quantification. PP has made requested revision/correction in the table 33 under section 4.4. of the VCS PD. The spreadsheet **MFH Calculations VM0042v2.xlsx** includes calculations for uncertainty associated with SOC increase/decrease and calculation that may be verified for the 1st PAI. PP is requested to provide the equation number of methodology for all the equations provided in section 4.4 of PD. **CAR is open.**	
Round 2	
Project participant response	**Date:** 9/10/2023
All equation references have been added as requested by the VVB	
Documentation provided by project participant	
Revised VCS PD	
VVB assessment	**Date:** 27/10/2023
PP has provided the requisite equations used for quantification of "Net GHG Emission Reductions and Removals". **CAR is closed.**	

CAR	28	Section no.		Date: 20/07/2023
Description of CAR				
During the on-site inspection, project proponent has clarified that only one project activity instance (PAI) shall be part of the VCS validation. The complete information of the 1st PAI needs to be provided in the VCS PD. Also, the emission reduction quantification shall be done for the 1st PAI only.				
Project participant response				**Date:** 05/09/2023
We have adjusted the PD accordingly to provide the specifics of the first PAI and have provided all supporting evidence in supplementary documents.				
Documentation provided by project participant				
ERR calculation spreadsheet *PIP agreement* *Land title* *Company registration certificate* *Australian Business Registration*				
VVB assessment				**Date:** 08/09/2023

Based on the review of the VCS PD, VVB confirms that PP has provide the revised VCS PD v2.0 consisting of details on the 1st PAI that has been implemented at the time of validations and made requisite revisions/updates in the relevant sections of the VCS PD.

Further PP has provided required evidential documentation to substantiate the information relevant to implementation of the 1st PAI which include the following:

i. MFH - Macadamia Farm Holdings-Australian Business Register_ABN_20 163 047 121.pdf
ii. MFH Land Titles 50856747 13937033 & 13744176.pdf
iii. MFH-Company Registration Certificate-163047121.pdf
iv. Folder: Section 3.2 and 4 - GIS and sampling points
v. Folder: SOC lab reports
vi. CL02 -CF ISO Report Macadamia Farm Holdings v1.1.pdf
vii. MFH Calculations VM0042v2.xlsx
viii. CAR11 - MFM_MFH1 PIP Agreement V1.1.pdf

CAR is closed.

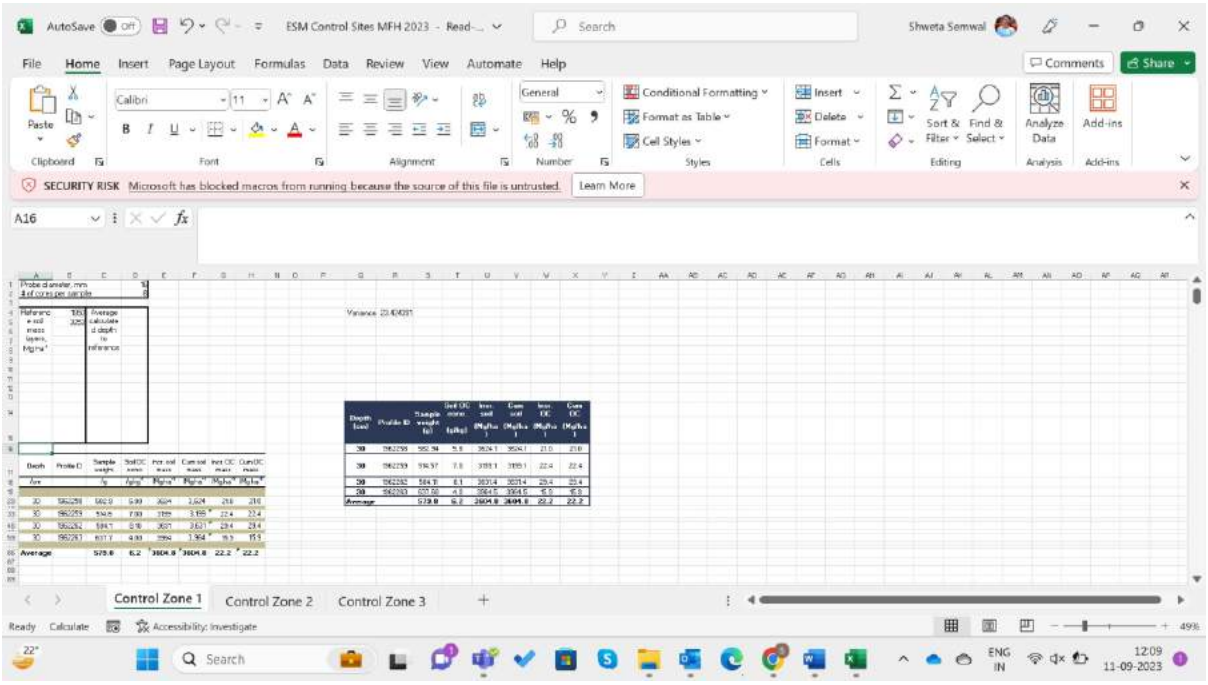
CAR	29	**Section no.**		**Date:** 20/07/2023
Description of CAR				
Project proponent is requested to provide a detailed sampling plan as per section 8.2.1.1 to 8.2.1.3 of the applied methodology. The SOP of project proponent needs revision inline with the specific requirements of the applied methodology (VM0042, version 02.0). During the on-site inspection interview, it was clarified by the project proponent that for measurement of Measurements of SOC Content, Walkley-Black (wet) oxidation and loss on ignition (LOI) are used. As per the applied methodology, the use of this method is not recommended due to accuracy and can only be used if other methods are not available. Project proponent is requested to substantiate the use of this method and how it is appropriate for the project under consideration. Furthermore, the applied methodology under section 8.2.1.6 provides an illustration for the Calculation of SOC Stocks using a spread sheet. Project proponent is requested to substantiate this for the 1st PAI.				
Project participant response				**Date:** 08/09/2023
We have revised the sampling plan and SOP to comply with the updated methodology. We have added justification for the use of methodology for baseline SOC quantification. We have provided the calculations in the recommended format for the first PAI.				
Documentation provided by project participant				
Updated SOP *Spreadsheet with SOC and GHG reductions/removals calculation*				
VVB assessment				**Date:** 05/09/2023

PP has provided details on requirement and sample design for soil sampling and soi sample calculation methodology in supplementary document i.e., **CF_SOP_Soil Sampling_V1.4_2023.08.16.pdf.** PP has further provided the same in the revised VCS PD v2.0 under section 5.3.1.

PP has provided justification for selecting the Walkley Black method for baseline SOC calculation in section 5.3.1 of the VCS PD.

PP has provided the requested spreadsheets including baseline and project SOC calculations in line with requirement of section 8.2.1.6 of the applied methodology.

Format of spreadsheet provided by PP:



CAR is closed.

CAR	30	Section no.	6.1 of the VCS PD	Date: 20/07/2023
Description of CAR				
VCS PD, under section 6.1, should provide the values for 1st PAI under validation.				
Project participant response				**Date:** 05/09/2023
We believe that this CAR refers to section 5.1. We have added the relevant values for the first PAI in this section.				
Documentation provided by project participant				
Revised PD v2.0				
VVB assessment				**Date:** 08/09/2023

The section 5.1 has been revised by PP by providing the value applied and justifications for data/parameters for the 1st PAI at the time of validation. **CAR is closed.**

CAR	31	**Section no.**		**Date:** 20/07/2023
Description of CAR				
Under section 4 of the VCS PD, the project proponent is requested to provide a table as per Table 5: Summary of allowable quantification approaches of the applied methodology and using Figure 1: Equation map of this methodology.				
Project participant response				**Date:** 05/09/2023
We have provided the table as requested in section 4.				
Documentation provided by project participant				
VVB assessment				**Date:** 08/09/2023
PP has provided "Summary of quantification approaches utilized by Carbon Friendly" in table 14 under section 4 of the VCS PD. **CAR is closed.**				

CAR	32	**Section no.**	Section 4	**Date:** 20/07/2023
Description of CAR				
Project proponent has opted approach 2 for SOC quantification. It is important to identify and provide description of baseline control sites as per Table 7: Similarity criteria for linking baseline control sites to sample units under Quantification Approach 2.				
Project participant response				**Date:** 05/09/2023
We have added detail on the similarity criteria of the control sites in section 4.				
Documentation provided by project participant				
Revised PD v2.0, ESM Control Sites MFH 2023.xlsm, ESM Project Sites MFH 2023.xlsm, MFH 2019 Control Sites.xlsm				
VVB assessment				**Date:** 08/09/2023
PP has provided details on baseline control site for accounting change SOC in the project scenario compared to baseline. PP has also provided spreadsheet for calculation of SOC stock and relevant parameters in year 2019 (prior to project start date) and for year 2023 after project implementation. **CAR is closed.**				

CAR	33	**Section no.**	4	**Date:** 20/07/2023
Description of CAR				

Review of VCS PD reveals that buffer has not been discounted as per equation 66 under section 8.7 of the applied methodology (VM0042, version 02.0). Requirement of section 8.6.2 Quantification Approach 2, 8.6.3 Quantification Approach 3 and section 8.6.4 of the applied methodology (VM0042, version 02.0). Uncertainty Deductions needs to detailed under the VCS PD and for the carbon calculation of the 1st PAI.	
Project participant response	**Date:** 05/09/2023
We have added the relevant calculations for buffer deduction and uncertainty.	
Documentation provided by project participant	
Revised PD v2.0, MFH Calculations VM0042v2.xlsx	
VVB assessment	**Date:** 08/09/2023

The number of VCUs has been now calculated in line with equation 66 of the applied methodology.

The requirement of quantification approach 2 and approach 3 has been detailed in the revised VCS PD under section 4 by providing information on uncertainty calculation associated with SOC stock increase/decrease for the 1st PAI and emission factors used for the project region along with the literature reference.

Calculation for uncertainty deduction associated Emission reduction/removals sources has been provided under section 4.4 of the VCS PD.

However, the following particulars are subjected to further revision/updates:

1. All the numerical values resulted from ERRs calculations and/or calculation for VCUs from project shall be provided as whole number (in digits up to nearest whole number).

2. PP shall provide the value for % of uncertainty deduction calculated at the time of validation in the VCS PD and a spreadsheet including calculations.

3. PP shall provide consistent values resulted from calculations under relevant sections of the VCS PD.

4. VVB has observed that in the carbon calculation spreadsheet MFH Calculations VM0042v2.xlsx: the spreadsheet namely **Table 33** the value for Estimated Baseline Emissions , Estimated project removals, is hardcoded which shall be appropriately referenced for ease of reviewing to the reader.

5. As per the equation 39 of VM0042 v2.0, **Net GHG emission reductions and removals are quantified as:**

$$ERRt = Ered,t + Erem,t$$

Where:

ERRn,t = Estimated net GHG emissions reductions and removals in year t (t CO2e)

However, VVB has observed that the net GHG ERRS accounting by PP is not correct. The formula used for ERR calculations in the spreadsheet provided by PP is: **=Erem!B1 - Ered!B1**

This means the ERR has been calculated by subtracting Emission reductions from the Emission removals. The calculation formula found to be misleading to the VVB and further leads to miscalculations of the VCUs that may be issued.

PP shall revise and correct the same in line with the applied methodology.

CAR is open.

ROUND 2	
Project participant response	**Date:** 24/10/2023

1. All ERR values have been updated to a whole number

2. Uncertainty calculations are provided within the MFH Calculation VM0042v2 sheet and ESM Control Sites MFH 2023 and ESM Project Sites MFH 2023. The value was 2.37% as per the sheet labelled "SOC Uncertainty Calculations". The calculations are also inserted within the PD as requested.

3. Transcription errors have been corrected; all values are now consistent.

4. This has been updated.

5.The calculation has been updated as suggested by the VVB. The project proponent would like to bring it to the attention of the VVB that there is an error in the methodology (see equation 41 of VM0042 V2) where Fossil fuel emissions are stated as being project emissions minus baseline emissions which leads to the generation of GHG reductions in the event of increased fossil fuel use. This was modified within the project proponent's calculations and should be amended in the methodology as well. We have now provided the calculation as described in the methodology although we do not believe that the VCUs are calculated correctly in this way. We kindly ask the VVB for clarification on this point.

Documentation provided by project participant

Revised VCS PD

VVB assessment	**Date:** 27/10/2023

1. Values resulted from ERRs/VCUs calculations has been provided as whole number.
2. The procedure for uncertainty calculation including formula/equation used and resulted % uncertainty has been provided in the VCS PD.
3. The requisite change has been made in the project document.
4. The values in the supporting spreadsheet (sheet: Table 33) have been references as requested by VVB.

The following observations require further corrections.

1. In line with VCS PD template v 4.2 section 4.4 PP shall provide vintage wise breakup of reported data i.e., Year A **(DD-Month-YYYY-- DD-Month-YYYY).**
2. Some of the parameters whose values which will be obtained through monitoring is made available in section 5.1 of PD. The parameter remain fixed throughout the project crediting period should be added in section 5.2 of PD. Data and parameters monitored during the operation of the project should be included in Section 5.2.

CAR is open.

Round 3

Project participant response	**Date:** 20/11/23

1. We have provided the vintage wise breakup in table 33.
2. We have provided the parameters that are listed in section 5.1 in 5.2 now.

Documentation provided by project participant

Revised VCS PD

VVB assessment	**Date:** 20/11/2023

1. The table 33 (section 4.4) of the VCS PD now has been updated with requisite revision. 2. The requested revision has been made for the Data/Parmeter information subjected to first PAI implementation in the section 5.1 and 5.2 of the VCS PD. **CAR is closed.**

CAR	34	**Section no.**		**Date:** 08/09/2023
Description of CAR				
In the file "CF_SOP_Soil Sampling_V1.4_2023.08.16", PP has provided the sampling procedure for SOC determination. The stratification factor used by PP includes only topography, bulk density, clay content, and soil depth. As per section 8.2.1.2, "easily estimated in the field. Since land use and management history frequently align with existing fields, field boundaries should be taken into account when delineating strata" PP is requested to clarify why the factors such as land use and management history as mentioned, climate, vegetation, soil texture, drainage, parent material, soil type, cropping and tillage, and cultivation practices etc.. which affect the SOC stock were not considered while identifying the homogenous strata. PP has provided the procedure for determination of homogeneous strata, however, the process for determination of sampling plot corresponding to each baseline control site is not provided, therefore it also requested to be added. In step 3 of Sampling Design: Stratified Random Sampling in "CF_SOP_Soil Sampling_V1.4_2023.08.16", PP has provided the procedure for collection of samples. However, it has not mentioned which sampling method will be used. (referring to para 2 of section 8.2.1 of methodology version 2.0). Referring to methodology version 2.0 section 8.2.1.1, *"Standard QA/QC procedures for soil inventory including field data collection and data management must be applied. Use or adaptation of QA/QC procedure s available from published handbooks is recommended, such as those produced by FAO and available on the FAO Soils Portal, the ISO standards on soil sampling (including ISO 18400ISO 18400--104 Soil quality 104 Soil quality —– Sampling—– Part 104: Strategies Part 104: Strategies)) or the IPCC PCC Good Practice Guidance LULUCF 2003LULUCF 2003."*. It is not clear, how PP has considered the QA/QC in the SOP for soil sampling. PP is requested to document the detailed sample design in the PD section 5.3. PP is requested to provide the complete procedure i.e., selection of baseline control sites, sample plots, homogenous strata, soil sampling procedures carried out for the PAI1 in the section 4 of PD.				
Project participant response				**Date:** 10/10/2023

With regards to the inclusion of factors (climate, drainage etc.) mentioned by the VVB, these factors are firstly indirectly captured in the factors used by the proponent in the provided stratification (i.e. the interactions between clay content, topographical wetness index and soil texture and drainage) and has therefore not been included as another stratification factor. Secondly, given the size of the typical project instance, it is unlikely that climatic changes would play a significant role in contributing to variation in landscape scale SOC. The stratification used is therefore the most appropriate for project sites which are small and independent from other larger landscapes. Furthermore, the methodology states that "To determine strata, the best available data on factors expected to affect the response of SOC stocks to the project activities must be used" and it does not explicitly state that the factors mentioned by the VVB need to be used.

Furthermore, the guidelines provided for ISO18400 for standard have been followed in the SOP provided by the project proponent. Our current soil sampling SOP is fully aligned with the ISO 18400-104:2018 standard on soil quality and sampling strategies. We have incorporated the standard's guidelines on sampling design, depth, sample number, and data analysis. Our QA/QC measures and documentation practices also comply with the standard's recommendations.

We would like to note that the sample design details have been addressed within our Standard Operating Procedure (SOP) and are referenced in section 5.3 of the Project Description (PD). We believe that the SOP provides comprehensive information on this matter and, as such, we don't deem it necessary to further elaborate on it within this section.

Regarding the detailed procedure for the selection of baseline control sites, sample plots, homogenous strata, and soil sampling for PAI1, our position is that the existing project description template does not explicitly require the inclusion of these factors in section 4 of the PD.

The soil sampling SOP has been updated to incorporate requested changes to the selection and linkage of the baseline control/monitoring sites.

Documentation provided by project participant

VVB assessment	**Date:** 27/10/2023

The justification provided by PO is deemed to be acceptable.

The SOP has been revised to include the required details.

Since soil sampling is a monitoring procedure, PP is requested to document the SOP in the relevant section of PD or as appendix.

CAR is open.

Round 3

Project participant response	**Date:** 20/11/2023

The relevant sections have been added to the appendix as requested by the VVB

Documentation provided by project participant

Revised VCS PD

VVB assessment	**Date:** 20/11/2023

PP has provided the updated VCS PD with demonstration of methodology and/or procedure followed for soil sampling for the first PAI (to be followed for future PAIs in the region).

CAR has been closed.

APPENDIX 3: CERTIFICATE OF COMPETENCE

Carbon CHECK

Carbon Check (India) Private Limited

Certificate of Competency

Mr. Amit Anand

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS (V7.0), ISO/IEC14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

☒ Validator	☒ Verifier	☒ Team Leader	☒ Technical Expert
☒ Technical Reviewer	☐ Health Expert	☐ Gender Expert	☒ Plastic Waste Expert
☒ SDG+	☒ Social no-harm(S+)	☒ Environment no-harm(E+)	☒ CCB Expert
☒ Financial Expert	☐ Local Expert for India and South Africa		

in the following Technical Areas:

☒ TA 1.1	☒ TA 1.2	☐ TA 2.1	☒ TA 3.1	☐ TA 4.1
☐ TA 4. n	☐ TA 5.1	☐ TA 5.2	☒ TA 7.1	☒ TA 8.1
☐ TA 9.1	☐ TA 9.2	☐ TA 10.1	☒ TA 13.1	☒ TA 13.2
☒ TA 14.1	☒ TA 15.1			

Issue Date	Expiry Date
1st January 2023	31st December 2023

Mr. Vikash Kumar Singh
Compliance Officer

CCIPL_FM 7.9 Certificate of Competency_V2.1_012023

Carbon CHECK

Carbon Check (India) Private Limited

Certificate of Competency

Ms. Isha Kapoor

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS (V7.0), ISO/IEC14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

☒ Validator	☒ Verifier	☒ Team Leader	☒ Technical Expert
☐ Technical Reviewer	☐ Health Expert	☐ Gender Expert	☐ Plastic Waste Expert
☐ SDG+	☐ Social no-harm(S+)	☐ Environment no-harm(E+)	☐ CCB Expert
☐ Financial Expert	☒ Local Expert for India		

in the following Technical Areas:

☐ TA 1.1	☐ TA 1.2	☐ TA 2.1	☐ TA 3.1	☐ TA 4.1
☐ TA 4. n	☐ TA 5.1	☐ TA 5.2	☐ TA 7.1	☐ TA 8.1
☐ TA 9.1	☐ TA 9.2	☐ TA 10.1	☐ TA 13.1	☐ TA 13.2
☒ TA 14.1	☐ TA 15.1			

Issue Date
1st January 2023

Expiry Date
31st December 2023

Mr. Vikash Kumar Singh
Compliance Officer

Mr. Amit Anand
CEO

CCIPL_FM 7.9 Certificate of Competency_V2.1_012023

Carbon CHECK

Carbon Check (India) Private Limited

Certificate of Competency

Mr. Kiran K V

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS (V7.0), ISO/IEC14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

☒ Validator	☒ Verifier	☐ Team Leader	☒ Technical Expert
☐ Technical Reviewer	☐ Health Expert	☐ Gender Expert	☐ Plastic Waste Expert
☒ SDG+	☒ Social no-harm(S+)	☒ Environment no-harm(E+)	☐ CCB Expert
☐ Financial Expert	☒ Local Expert for India		

in the following Technical Areas:

☐ TA 1.1	☒ TA 1.2	☐ TA 2.1	☒ TA 3.1	☐ TA 4.1
☐ TA 4. n	☐ TA 5.1	☐ TA 5.2	☐ TA 7.1	☐ TA 8.1
☐ TA 9.1	☐ TA 9.2	☐ TA 10.1	☐ TA 13.1	☒ TA 13.2
☐ TA 14.1	☐ TA 15.1			

Issue Date
1st January 2023

Expiry Date
31st December 2023

Mr. Vikash Kumar Singh
Compliance Officer

Mr. Amit Anand
CEO

CCIPL_FM 7.9 Certificate of Competency_V2.1_012023

Carbon CHECK

Carbon Check (India) Private Limited

Certificate of Competency

Mr. Vikash Kumar Singh

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS (V7.0), ISO/IEC14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

☒ Validator	☒ Verifier	☒ Team Leader	☒ Technical Expert
☒ Technical Reviewer	☐ Health Expert	☐ Gender Expert	☒ Plastic Waste Expert
☒ SDG+	☒ Social no-harm(S+)	☒ Environment no-harm(E+)	☒ CCB Expert
☒ Financial Expert	☒ Local Expert for India, South Africa, and Spanish speaking countries		

in the following Technical Areas:

☒ TA 1.1	☒ TA 1.2	☐ TA 2.1	☒ TA 3.1	☒ TA 4.1
☒ TA 4. n	☐ TA 5.1	☐ TA 5.2	☒ TA 7.1	☐ TA 8.1
☐ TA 9.1	☐ TA 9.2	☐ TA 10.1	☒ TA 13.1	☒ TA 13.2
☒ TA 14.1	☒ TA 15.1			

Issue Date
1st January 2023

Expiry Date
31st December 2023

Mr. Amit Anand
CEO

CCIPL_FM 7.9 Certificate of Competency_V2.1_012023