



**Verified Carbon
Standard**

JOINT VALIDATION AND VERIFICATION REPORT FOR THE ORIZON CARBONCROP REWARDS PROGRAMME PROJECT



Document Prepared by SCS Global Services

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Client	Orizon Agriculture (Pty) Ltd
Prepared by	SCS Global Services (SCS)
Approved by	Christie Pollet-Young
Work carried out by	Lead Auditor: Doug Baldwin

Auditor: Saroop Sandhu

Technical Expert: Diana Rietz

Independent Modeling Expert: Gerard Ros and Tessa van der Voort (Nutrient Management Institute, Netherlands)

Technical Reviewer: Carolin Judd

Summary:

This report describes the validation and verification of the Orizon CarbonCrop Rewards Programme project (“the project”), a grouped Agricultural Land Management (ALM) project located in South Africa, that was conducted by SCS. The purpose of the validation engagement was to conduct an independent assessment of the project to determine whether the project complies with the VCS Program rules. The purpose of the verification engagement was to conduct, in accordance with the VCS rules, an ex-post independent assessment of the GHG emission reductions and removals that have occurred as a result of the project during the monitoring period 01-Aug-2018 to 31-Jul-2022 (“the verification period”). The validation and verification engagements were carried out through a combination of document review, interviews with relevant personnel, and on-site inspections. As part of the validation and verification engagement, 51 findings were raised: 8 Non-Conformity Reports, 42 New Information Requests and 1 Observation. These findings have been closed and are described in Appendix 2 of this report. The project complies with the validation and verification criteria, and SCS holds no restrictions or uncertainties with respect to the compliance of the project with the validation and verification criteria.

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1 INTRODUCTION

1.1 Objective

The validation and verification assessment objectives were established in accordance with Section 4.1 of the Verified Carbon Standard (VCS) (see the below Section 1.2.2 for full reference) and Section 2.1.1 and 2.1.2 of the VCS Validation & Verification Manual, V3.2, for validation and verification, respectively, as set out below:

1.1.1 Objective of Validation

In accordance with the VCS Standard and the Validation & Verification Manual, SCS conducted an independent ex-ante assessment of the project to determine whether the project complies with the VCS Program rules. The objectives of the validation engagement were to assess:

- The project's conformance to the VCS rules.
- The project's conformance to the applied methodology, including the procedures for the demonstration of additionality specified in the methodology.
- The likelihood that the methods and procedures set out in the project description will generate verifiable GHG data and information when implemented.

1.1.2 Objective of Verification

In accordance with the VCS Standard and the Validation & Verification Manual, SCS conducted an independent ex-post assessment of the GHG emission reductions and removals that have occurred because of the project during the verification period. The objectives of the verification engagement were to assess:

- The extent to which methods and procedures, including monitoring procedures, have been implemented in accordance with the validated project description which included an assessment of the project's conformance with the monitoring plan.
- The extent to which GHG emission reductions and removals reported in the monitoring report are materially accurate.

1.2 Scope and Criteria

1.2.1 Scope

As defined in accordance with Section 5.1.6 of ISO 14064-3:2019, the scope included:

- The project and its activities.
- The baseline scenario(s) applicable to the project.
- The carbon pools and/or greenhouse gases included in the project boundary.

- The crediting and verification periods.

1.2.2 Criteria

In accordance with Section 4.1.10(2) of the VCS Standard (see below for full reference), the criteria for validation and verification were the VCS Standard, version 4, including the following documents:

- VCS Program Guide, v4.4
- VCS Program Definitions, v4.5
- VCS Standard, v4.7
- VM0042: Methodology for Improved Agricultural Land Management v2.0
- VMD0053 Module: Model Calibration Validation and Uncertainty Guidance for the Methodology for Improved Agricultural Land Management v2.0
- AFOLU Non-Permanence Risk Tool, v4.2

1.3 Reasonableness of Assumptions and Level of Assurance

In accordance with Section 4.1.2(1) of the VCS Standard, the validation evaluated the reasonableness of assumptions, limitations, and methods that support the statement about the outcome of future activities. In accordance with Section 4.1.2(2) of the VCS Standard, the level of assurance for the verification was reasonable. The materiality threshold was assessed at 5%.

1.4 Summary Description of the Project

This project is located in South Africa, with the initial project instances located in North West, Free State, Gauteng, Mpumalanga and KwaZulu-Natal Provinces. This is a grouped project consisting of 22 farms with 905 fields and a total of 15,547 hectares during the first verification period. In this project, Orizon Agriculture (Pty) Ltd. (hereafter referred to as “Orizon”) aims to reduce greenhouse gas emissions and increase soil organic carbon stocks on participating farms by supporting and incentivizing the adoption of improved agricultural land management (ALM) practices such as reduced fertilizer application, improved irrigation management, reduced tillage, improved residue management and improved grazing management. Of these incentivized improved management practices, the three predominant practice activities adopted by the initial project instances include cover cropping, reduced tillage (no till and minimum tillage) and increasing organic input applications.

2 VALIDATION AND VERIFICATION PROCESS

2.1 Method and Criteria

The joint validation and verification engagement was conducted through a combination of document review, interviews with relevant personnel and on-site inspections, as discussed in Sections 2.2 through 2.4 of this report. At all times, an assessment was made for conformance to the criteria described in Section 1.2.2 of this report. As discussed in Section 2.5 of this report, findings were issued to ensure conformance to all requirements.

The audit team created an evidence-gathering plan following proprietary evidence-gathering plan template developed by SCS. The audit team identified areas of “residual risk”—those areas where there existed risk of a material discrepancy (either in terms of non-conformance to the validation and verification criteria or in terms of errors, omissions and misrepresentations that, in aggregate, exceeded the materiality threshold established for the project as a percentage of the total reported GHG emission reductions and removals) that was not prevented or detected by the controls of the project. Sampling and data testing activities were planned to address areas of residual risk. The audit team then created an audit plan in accordance with the evidence-gathering plan. This approach is justified as it has been designed in accordance with Section 6.1.1-6.1.3 of ISO 14064-3:2019 and the guidance provided in Sections B.3 and B.4 of the same document.

The validation and verification included the assessment of the project description and monitoring report, ex-ante and ex-post emission reductions and removals (ERR) calculations, supporting data records, the management systems, and non-permanence risk report. An overview of the validation and verification schedule, including key milestones and corresponding dates, is listed in the table below:

Milestone	Date	Description
Kick-Off Meeting	19 Dec 2023	Introduction to the audit team and audit process. Review of project scope, criteria, and objectives. Discussion of initial documentation requests.
Desk Review	20 Dec 2023 to 21 Mar 2024	Assessment of project documentation against the requirements specified within the applicable criteria. Interviews conducted remotely with project personnel.
Site Visit	12-16 Feb 2024	Onsite assessment against the requirements specified within the applicable criteria.

Findings Responses and Corrective Actions	22 Mar 2024 to 19 Sep 2024	Submission of findings to client and client responses to findings until all findings are closed.
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2.2 Document Review

The joint project description and monitoring report (VCS PDMR 3368 01082018_31072022 30072025.docx; “PDMR”) and non-permanence risk report (VCS_NPR_REP_3368_01_08_2018_31_07_2022.pdf; “NPRR”) were carefully reviewed for conformance to the validation and verification criteria. The following additional documentation, provided by project personnel in support of the aforementioned documents, was also reviewed by the audit team:

Document	File Name	Ref #
Calculation workbook	Collective Farmer Data (Redacted)(with additional calcs for VVB).xlsx	1
Calculation workbook	VCS 3368 ERR Calculations Spreadsheet (Redacted) 30_07_2025 (20% Buffer).xlsx	2
Calculation workbook	Multiple Files for Emission Summaries (Per Farmer)	3
Calculation workbook	Orizon CarbonCrop Programme - Cover Crop Biomass.xlsx	4
Calculation summary	Orizon CarbonCrop Programme - QA3 Emission Calculations.pdf	5
Regional baseline support	Agronomist_Attestation (Foxcroft).pdf	6
Regional baseline support	Agronomist_Attestation (Ottermann).pdf	7
Regional baseline support	Agronomist_Attestation (White).pdf	8
Regional baseline support	Orizon CarbonCrop Programme - Regional Baseline Development.pdf	9
Regional baseline support	Regional Baseline Development.xlsx	10
Calculation assumptions support	Ag Aircraft Operations.pdf	11
Calculation assumptions support	Cost of aerial and ground sprayings.pdf	12
Calculation	DAFF Guide to machinery costs 2014-15.pdf	13

assumptions support		
Calculation assumptions support	Sustainable Aviation Fuel Metrics.pdf	14
Calculation assumptions support	Multiple Files for Silage Moisture Content	15
Calculation assumptions support	Non destructive biomass estimate (1).pdf	16
Calculation assumptions support	Useful Statistics for Beef production.pdf	17
Spatial data	Hectares from QGIS - EPSG 9221 - 04.06.2024.xlsx	18
Spatial data	All_Fields_by_Strata.shp; All_Fields_by_Strata.shp.kml	19
Spatial data	2023 Submission All Farmers (Included Fields Only) [NAMES REDACTED with UNIQUE ID].kml	20
Spatial data	Field shapefiles (905 fields including fieldID).shp; Field shapefiles (905 fields including fieldID).kml	21
Attestations about Farm Records	Multiple Grower Attestations	22
Farm Data Records	Multiple Files for Grower Instances	23
Farm Data Records	Farmer Process _ Field Records.pdf	24
Report supporting methodology deviation	Orizon CarbonCrop Programme - Methodology Deviation 24.04.2024.pdf	25
Report about project area soil carbon modeling	Project and Validation Implementation of Model Confirmation 09092024.pdf	26
Files related to project area soil carbon modeling	Multiple Modeling Related Spreadsheets	27
Files related to project area soil carbon modeling	Multiple Model Input and Output Files	28
Files related to project area soil carbon modeling	Orizon CarbonCrop Programme - Calculations _ Modelling Process Flow.pdf	29
Files related to project area soil carbon modeling	Orizon CarbonCrop Programme - RothC CSV Generation Rules.pdf	30
Support for NPRT claims	Multiple Supporting Files for Travel Times to Project Instances	31
Support for NPRT	Orizon_Carbon_Credit_Development_Agreemen	32

claims	t.pdf	
Support for NPRT claims	Financial documents shared with SCS including a loan agreement, cash flow budget Excel workbook, farmer production budget Excel workbook	33
Support for NPRT claims	Orizon team curriculum vitae	34
Support for NPRT claims	Files submitted to Verra Project Hub for NPRT	35
Support for NPRT claims	ORIZON NPRT Natural Risks Further Evidence.xlsx	36
Support for NPRT claims	Adaptive Management Plan.pdf	37
Model Validation Report	ModelValidationReport2023_v4.1_Resubmission.pdf	38
Model Validation documents	Multiple Spreadsheets and R files	39
Model Validation documents	Orizon 2023 Hyun Yoo MVR Resubmission Information Pack IME Guide.pdf	40
Model Validation documents	Instructions & GHG SOC Comparisons.xlsx	41
Project area modeling	Multiple Files for Example of Model Calibration and Validation	42
Project area modeling	Multiple Files for R and Excel Model Implementation	43
Project area modeling	R RothC functions for SCS meeting 20240229.R	44
Project area modeling	Steps to test the Orizon implementation of RothC.docx	45
Project area modeling	Files in folder 'RothC Instances\3rd Submission - 16-08-2024 (HYUN Model)'	46
Project area modeling	Bodenstein et al 2022.pdf	47
Project area modeling	Sensitivity Analysis of the RothC Soil Carbon Model (Ver. 26.3 Excel).pdf	48
Eligibility support	Orizon CarbonCrop Programme - Land Conversion Assessment.pdf	49
Eligibility support	Orizon CarbonCrop Programme - Wetland Assessment Methodology & Results.pdf	50
Additionality support	Orizon CarbonCrop Programme - Additionality.pdf	51
Additionality support	Additionality Calculation Workbook.xlsx	52
Additionality support	An assessment of the adoption of conservation	53

	agriculture in annual crop-livestock systems in South Africa Smith 2021.docx	
Additionality support	Findlater et al 2019	54
Additionality support	Derpsch et al 2010	55
Additionality support	Kooper 2020	56
Additionality support	Regional Adoption Rates Calculation Workbook.xlsx	57
Additionality support	Updated Additionality Calculation Workbook.xlsx	58
Ownership documentation	Orizon CarbonCrop Programme - Land Ownership Assessment Summary.pdf	59
Ownership documentation	Multiple Files for Title Deeds	60
Ownership documentation	Farm ownership assessment.xlsx	61
Leakage claim support	Orizon CarbonCrop Programme - Manure Leakage Assessment.pdf	62
QAQC procedure summary	QA _ QC.pdf	63
Stakeholder outreach report	Orizon CarbonCrop Programme - Stakeholder Safeguards.pdf	64
Soil Sampling protocol	Orizon CarbonCrop Programme - Soil Sampling and Stratification (updated 13.04.2024).pdf	65
Soil sample list for monitoring period	Strata and sample lists - Orizon July 2022 Submission.xlsx	66
Project start date support	Farmer Instance Start Dates - Orizon Agriculture CarbonCrop 13.05.2024 v2.pdf	67
Grievance redress procedure	Orizon CarbonCrop Programme - Grievance Redress Process 26.04.2024.pdf	68
Sustainable Development Goals support	Lindeque_2015_Mapping_degradation_in_the_terrestrial_environment_methodology_and_results_from_the_LADA_Land_Degrad (1).pdf	69
Letter from Verra	VCS_PL_EXEMPTION-APPROVED_3368_22JUL2024.pdf	70
IME Review of Model Validation Report	Orizon_VMD0053_v4_Evaluation_240916_Hyun_TRM.pdf	71
Farmer lease contracts	Files in folder 'Leases-Ownership'	72
Project start date support	Tax Invoice - IO0165 - 03_08_2018.pdf	73
Stakeholder consultation summary	OrizonCarbonCrop_Consultation_Process_Summary.pdf	74

Additionality support	https://www.dailymaverick.co.za/opinionista/2020-03-23-elevated-farm-debt-levels-in-times-of-covid-19/	75
Additionality support	Swanepoel 2018	76
Additionality support	Mnkeni PNS et al 2019	77
Qualified Independent Local Expert CV	CV_Helga Ottermann_2025.pdf	78
Leakage support	Thierfelder and Wall 2009	79
Leakage support	Blignaut et al 2015	80
Outlier Analysis	Orizon_tSOC_ChangeAnalysis.xlsx	81

2.3 Interviews

2.3.1 Interviews of Project Personnel

The process used in interviewing project personnel was a process wherein the audit team elicited information from project personnel regarding (1) the work products provided to the audit team in support of the PDMR and NPRR; (2) actions undertaken to ensure conformance with various requirements and (3) project activities as planned and implemented.

The following personnel associated with the project proponent and/or implementing partner were interviewed.

Individual	Affiliation	Role	Date(s) Interviewed
Michael Lilje	Orizon	Director	Throughout
Heinz Ortmann	Orizon	Carbon Project Manager	Throughout
Douw Bodenstein	Orizon	Technical Manager	Throughout
Reinard van der Vyer	Orizon	Agronomist	Feb 2024
Willem van der Westhuizen	Orizon	Manager	Feb 2024

2.3.2 Interviews of Other Individuals

The process used in interviewing individuals other than project personnel was a process wherein the audit team made inquiries to confirm the validity of the information provided to the audit team. The following personnel not associated with the project proponent were interviewed.

Individual	Affiliation	Role	Date(s) Interviewed
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D. Slabbert	Program Participant	Farmer	15 Feb 2024
R. van Wyk	Program Participant	Farmer	12 Feb 2024
H. Beneke	Program Participant	Farmer	13 Feb 2024
J. Woest	Program Participant	Farmer	13 Feb 2024
P. Beneke	Program Participant	Farmer	13 Feb 2024
H. Odendaal	Program Participant	Farmer	14 Feb 2024
J. Steenkamp	Program Participant	Farmer	19 Mar 2024
J. Keeve	Program Participant	Farmer	13 Feb 2024
J. F. Keet	Program Participant	Farmer	12 Feb 2024
JP Van Reenen	Program Participant	Farmer	15 Feb 2024
P. de Kock	Program Participant	Farmer	14 Feb 2024
S. Du Preez	Program Participant	Farmer	14 Feb 2024
F. Du Preez	Program Participant	Farmer	14 Feb 2024
G. Du Preez	Program Participant	Farmer	14 Feb 2024

2.4 Site Visits

The objectives of the on-site inspections were as follows:

- Select samples of data and information from field observations in order to meet a reasonable level of assurance and to meet the materiality requirements of the project, as required by Section 4.1.2 of the VCS Standard
- Perform a risk-based review of the project area and project activities to ensure that the project, and the monitoring and quantification of GHG emission reductions and removals for the verification period, conforms to the validation and verification criteria.
- Confirm the project boundary including the GHG types and GHG sources.
- Confirm the validity of information presented in the non-permanence risk report.

In fulfilment of the above objectives, the audit team performed an on-site inspection of the project area on the dates 12 Feb 2024 through 16 Feb 2024. The main activities undertaken by the audit team were as follows:

- Interviewed project personnel (see Section 2.3.1 of this report) to gather information regarding the project activities, the baseline scenario, and the demonstration of additionality.
- Interviewed farmers involved with implementing project activities across participating field instances.
- Carried out on-site inspections of the project's measurement and/or monitoring methodologies through the following activities:

- Confirmed that the project's soil sampling protocol aligns with best practice guidance discussed in section 8.2.1.3 of the methodology. The audit team witnessed the project team responsible for soil sampling conduct soil sampling at a location chosen by the audit team on the Van Wyk farm (i.e., first farm visited).
- Chose a representative selection of 11 out of 22 farms to visit using a stratified random selection based upon environmental characteristics (Clay content, SOC stock, field area), geographic position across the region, and five metrics representing farm management practice changes. A conditional Latin hypercube algorithm¹ was used to select 18 random points in 18 different fields that the audit team visited, whereby these 18 points were representative of all variables used in the selection criteria. The algorithm was applied in the R statistical computing environment using the 'clhs' package².
- Augured soils at 18 random points in 18 fields down to 30 cm. Conducted a USDA-NRCS field soil texture test³ to identify the soil texture class of the soil at the sampling location. Also, notes were taken on soil color, and the audit team assessed whether any redoximorphic features were present, which would indicate presence of wetland conditions.
- Took GPS measurements to document the audit team's soil sample locations across the project area during the site visit. Took GPS measurements at field boundaries to verify physical boundaries of each visited field.
- Took pictures of fields at/adjacent to sampling for recording physical characteristics of the soil at each sampling point.
- Observed stated tillage and other conservation practices for a particular sampling point.
- Assessed official documentation to verify claims about project ownership and common practice.
- Requested records directly from farmers to corroborate project activity claimed by the project for field instances at each farm visited. Assessed each farmer's system for gathering and recording monitoring data and assessed the farmer's procedure for sending data to project personnel during site visit interviews.

2.5 Resolution of Findings

Any potential or actual discrepancies identified during the audit process were resolved through the issuance of findings. The types of findings typically issued by SCS during this type of validation and verification engagement are characterized as follows:

- **Non-Conformity Report (NCR):** An NCR signified a discrepancy with respect to a specific requirement. This type of finding could only be closed upon receipt by SCS of evidence

¹ Minasny, B. and McBratney, A.B. 2006. A conditioned Latin hypercube method for sampling in the presence of ancillary information. *Computers and Geosciences*, 32:1378-1388.

² <https://cran.r-project.org/web/packages/clhs/clhs.pdf>

³ <https://www.nrcs.usda.gov/sites/default/files/2022-11/texture-by-feel.pdf>

indicating that the identified discrepancy had been corrected. Resolution of all open NCRs was a prerequisite for issuance of a validation and verification statement.

- **New Information Request (NIR):** An NIR signified a need for supplementary information in order to determine whether a material discrepancy existed with respect to a specific requirement. Receipt of an NIR did not necessarily indicate that the project was not in compliance with a specific requirement. However, the resolution of all open NIRs was a prerequisite for issuance of a validation and verification statement.
- **Observation (OBS):** An OBS indicates an area where immaterial discrepancies exist between the observations, data testing results or professional judgment of the audit team and the information reported or utilized (or the methods used to acquire such information) within the GHG assertion. A root cause analysis and corrective action plan are not required, but highly recommended. Observations are considered by the audit team to be closed upon issuance, and a response to this type of finding is not necessary.

As part of the audit process, 8 NCRs, 42 NIRs and 1 OBS were issued. All findings issued by the audit team during the audit process have been closed. In accordance with Section 4.1.20 of the VCS Standard, all findings issued during the audit process, and the impetus for the closure of each such finding, are described in Appendix 2 of this report.

2.5.1 Forward Action Requests

This section is not applicable, as no forward action requests have been issued.

3 VALIDATION FINDINGS

3.1 Project Details

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Audit history	The audit team reviewed the Verra Registry and PDMR to confirm that this is the first monitoring period with the initial validation of the project. The validation period coincides with 25 years of the first crediting period from 01-Aug-2018 to 31-July-2043. Additionally, the first monitoring and verification period is from 01-Aug-2018 to 31-Jul-2022.
Sectoral scope	The evidence gathering activities involved reviewing the PDMR and applied methodology (see section 3.4.1 of this report). The audit team concludes that this project applies the methodology VM0042 that is a sectoral scope 14 (Agriculture,

	Forestry and Other Land Use), which was further confirmed through interviews and observations during the site visit.
AFOLU project category, if applicable	The evidence gathering activities involved reviewing the PDMR, NPRR, methodology and observations during the site visit. The audit team concludes that the project proponent has identified the AFOLU project category correctly as “Agricultural Land Management (ALM)”.
Project activity type	The evidence gathering activities involved reviewing the PDMR, supporting documents (Ref. 1, 22- 24) and applicable methodology, as well as observations during the site visit, and interviewing the farmers to confirm the project activity types. The audit team concludes that the project activity type is the implementation of improved agricultural land management practices such as reduced tillage, reduced fertilizer application, improved water management, improved crop planting & harvesting and improved grazing management.
General eligibility of the project to participate in the VCS Program	The evidence gathering activities involved reviewing the Verra registry, PDMR, and supporting documents (Ref. 49-50, 67, 70) as well as on-site inspections to confirm the general eligibility of the project to participate in the VCS program. The audit team concludes the following: • The project is not excluded under table 1 of the VCS Standard, v4.7. • The project conforms to the listing requirements. As per the Verra registry, the project description was submitted to Verra on 30 June 2022. The opening meeting with SCS was held on 19 December 2023. The project start data is 01 August 2018 and as outlined in sections 3.8.2 and 3.8.4 of the standard, “AFOLU projects shall initiate the pipeline listing process within three years of the project start date and shall complete validation within five years of the project start date”. However, it is noted that the audit team confirmed that the project proponent obtained a 1.5- year extension from Verra to submit the project for validation by 31 December 2024 (Ref. 70). • As per the Verra registry, the public comment period lasted from 05 August 2022 to 04 September 2022 and concluded before the opening meeting with the VVB on 20 December 2023.

	- The project uses VM0042 which is an eligible methodology under the VCS program. This methodology contains no scale or capacity limits. - The project is not located within a jurisdiction covered by a jurisdictional REDD+ program. - The project is not fragmented or part of a larger project. Overall, the audit team concludes that the project meets all the general eligibility requirements to participate in the VCS Program.
AFOLU project eligibility, if applicable	The evidence gathering activities involved reviewing the PDMR and supporting documents (Ref. 49-50, 67, 70) as well as on-site inspections to confirm the AFOLU project eligibility of the project to participate in the VCS program. The audit team concludes the following: - The project proponent has identified the AFOLU project category correctly as “Agricultural Land Management (ALM)” and all the ALM category requirements are met as per the VM0042 methodology. - Sufficient evidence has been provided by Orizon to demonstrate that native ecosystems have not been converted, cleared, drained, or degraded to generate GHG credits, and that clearing, or conversion did not take place within 10 years of the project start date (Ref. 49-50). Overall, the audit team concludes that the project meets all the AFOLU eligibility requirements to participate in the VCS Program.
Transfer project eligibility, if applicable	This section is not applicable as the project is not seeking transfer to the VCS project from another GHG program.
Project design	The evidence gathering activities involved reviewing the PDMR, supporting documentation, interviewing the farmers and observations from the site visit to confirm the project design. The audit team reviewed the project documentation provided against the requirements of section 3.6.16 of the standard. The audit team concludes the following: The project follows a grouped project design which will have multiple project instances across South Africa. The initial project instances are located in North West,

	Free State, Gauteng, Mpumalanga and KwaZulu-Natal Provinces of South Africa (Ref. 18-21). • The initial project instances meet the applicability criteria of applied methodology (see section 3.4.2 below). • The initial project instances have successfully implemented improved ALM practices listed in section 2 of the methodology (Ref. 67), which include the following: 1) improved fertilizer (organic/inorganic) and inputs management, 2) reduced tillage and improved residue management/retention, 3) improved crop planting and harvesting, and 4) improved grazing practices. • The initial project instances are subject to the use of conventional management practices in the baseline scenario (Ref. 67). • The initial project instances meet the additionality requirements including regulatory surplus, barrier analysis and common practice test as specified by the applied methodology (see section 3.4.5 below; Ref. 51-58). As a result, the audit team concludes that the project conforms to the eligibility criteria for new instances of grouped projects as set out in the VCS standard and methodology.
Project ownership	The evidence gathering activities involved reviewing the PDMR and supporting documents (Ref. 32, 59-61) regarding project ownership. The audit team concludes that the project ownership arises by an enforceable and irrevocable agreement with the holder of the statutory, property or contractual right in the land, vegetation or conservational or management process that generates GHG emission reductions or carbon dioxide removals which vests project ownership in the project proponent. Orizon is the sole owner of all environmental attributes from the adoption of improved agricultural management practices. The improved ALM practices are implemented by each farmer and Orizon will have the rights to any VCUs that occur from the implementation of these practices in each instance. Orizon has established signed contractual agreements (Ref. 32) with all participating landowners/farmers enrolled during the first verification period. The audit team reviewed a sample of lease

	agreements from farms visited during the site visit (see section 2.4 for a justification of the sampling strategy; Ref 72), and concludes that i) all reviewed lease agreements allow farmers to implement practice changes in the fields, ii) the lease agreements are applicable between the farmer lessees and landowner lessors, and iii) that the lease agreements do not interfere with the project proponent's ownership of the project and that VCU rights remain invested in the project proponent. As a result, the project conforms to the ownership requirements outlined in section 3.7 of the VCS Standard.
Project start date	The evidence gathering activities involved reviewing the PDMR and supporting documents (Ref. 67), as well as interviewing the project proponent and farmers to confirm the project start date. Additionally, the audit team reviewed the project proponent's response to finding #22. The audit team concludes that the project start date of 01 August 2018 coincides with the preparation of the fields for the main planting season in the summer rainfall regions of South Africa. Due to the nature of the grouped project, some project instances began recording improved management activities after the initial project date of 01 August 2018. The audit team verified that the project start date of individual instances were based on actual data and were not earlier than 1 August 2018, ensuring consistency in project calculations and reporting. Furthermore, the project provided an invoice (Ref 73) to support a specific activity that may be linked to 1 August 2018 (i.e., "purchase of 311.9 cubes of beef manure from a feedlot in Bergville by a participating farmer to initiate a composting operation"), which is described in section 1.9 of the PDMR. The audit team concludes that the project start date complies with the VCS Standard.
Project crediting period	The evidence gathering activities involved reviewing the PDMR and interviewing the project proponent. The crediting period for this project is from 01 August 2018 to 31 July 2043. The audit team concludes that the start date of the crediting period coincides with the project start date, which is the date that project proponent began generating emission reductions and removals via the preparation of the fields for the main planting season. The audit team concludes that the project

	crediting period of 25 years complies fully with section 3.9 of the VCS standard.
Project scale	The evidence gathering activities involved reviewing the PDMR and Ex-ante projections (Ref. 2). The estimated average annual GHG emission reductions and removals, during the crediting period from 01 August 2018 to 31 July 2043 have been calculated at 91,605 tonnes of CO ₂ e per year, as reported in section 1.11 of the PDMR. Therefore, the audit team concludes that the project has been correctly classified as a project, as per Section 3.10.1 of the VCS Standard.
Likelihood of achieving estimated GHG emission reduction or removals	The evidence gathering activities involved reviewing the PDMR and supporting documents (Ref. 1-5), as well as interviewing the project proponent and observations during the site visit. The audit team concludes from a review of documentation and evidence from the site visit that the project has a high likelihood of achieving the estimated GHG emission reductions and removals.
Technologies and measures implemented by the project activity	The evidence gathering activities involved reviewing the PDMR, supporting documents (Ref. 1 & 22-24), and observations during the site visit. The audit team concludes that the technologies and measures used in the project such as implementation of improved agricultural land management practices such as reduced tillage, reduced fertilizer application, improved water management, improved crop planting & harvesting and improved grazing management conform to the requirements of the methodology.
Implementation schedule of the project activity or activities	The evidence gathering activities involved reviewing the PDMR, interviewing the farmers, and observations during the site visit. The audit team concludes that the project activities will be implemented on multiple fields to be enrolled in the project, while initial project instances enrolled at the time of validation are located in North West, Free State, Gauteng, Mpumalanga and KwaZulu-Natal Provinces of South Africa (Ref. 18-21), which have adopted improved agricultural management practices such as reduced tillage, cover cropping, and organic inputs as improved fertilizer usage. Thus, the implementation schedule of the project activity conforms to the requirements of the methodology.

Project location	The evidence gathering activities involved reviewing the PDMR, GIS files (Ref. 18-21), and observations during the site visit. The audit team concludes that the location of the project is South Africa, where initial project instances enrolled at the time of validation are located in North West, Free State, Gauteng, Mpumalanga and KwaZulu-Natal Provinces of South Africa.
Conditions prior to project initiation	The evidence gathering activities involved reviewing the PDMR, supporting documents (Ref. 22-24, 67), and interviewing the farmers. The audit team confirmed that conditions prior to project initiation were the following: • South Africa includes nine different biomes. The project instances included in the first monitoring period all occur within the savanna and grassland biomes. Most rainfall occurs from October to March in South Africa. • South Africa has a well-established commercial agriculture sector including extensive grazing and arable land, with significant portions used for crops like maize and soybeans. • South Africa's commercial agriculture has intensified conventional farming practices due to rising input costs and reduced agricultural land. The audit team received raw data about fertilizer applications and other management activities (Ref. 22-24) from farmers visited during the site visit and corroborated this data with the project's records (Ref. 1). Therefore, the baseline scenario is the continuation of use of conventional agricultural practices which conforms fully with the applied methodology. • South Africa has a wide range of soil types, driven by varying climates, topographies, and historic natural events. • The soil organic carbon (SOC) levels in project areas range from 0.5% to 3% and are influenced by factors such as climate, topography, soil type, depth, land use, and management practices. Overall, the audit team concludes that the conditions prior to project initiation are accurately and/or conservatively

	represented by the project throughout the documentation and calculations.
Project compliance with applicable laws, statutes and other regulatory frameworks	The evidence gathering activities involved reviewing the PDMR and relevant laws, and regulatory frameworks in South Africa as listed in section 1.15 of the PDMR. The audit team's in-country technical expert checked the project's compliance with regulatory statutes and found no objections with South Africa's legal regulations regarding environmental and agriculture-related laws. The audit team is reasonably assured and concludes that this project follows the applicable laws, statutes, and regulations.
Double counting and participation under other GHG programs	The evidence gathering activities involved reviewing the PDMR, ownership document (Ref. 32), interviewing the project proponent, and reviewing other GHG program registries. This was done through a search of the project type and project proponents name in the project database for the Gold Standard. In conclusion, the audit team determined that: • The project is not receiving or seeking credit for reductions and removals from a project activity under another GHG program. • Double counting is avoided in conformance with the VCS Standard as the terms of the ownership agreement (Ref. 32) states that the farmer will work exclusively with Orizon and will not enroll the project area in any carbon offset project operated by a third party. • No credits are sold as offsets on the voluntary market and generated in a country participating in a compliance mechanism. • The project has provided all information required to demonstrate that it is neither registered nor seeking registration under any other GHG programs or other social/environmental credit generation or trading program or mechanism. • The project has provided all the information required to demonstrate that it has not been rejected by another GHG program.

No double claiming with emissions trading programs or binding emission limits	The evidence gathering activities involved reviewing the PDMR and interviewing the project proponent. In conclusion, the audit team determined that no project reductions and removals or project activities are also included in an emission trading program or binding emission limit.
No double claiming with other forms of environmental credit	The evidence gathering activities involved reviewing the PDMR and interviewing the project proponent. Further, all the farmers interviewed during the site visit confirmed that they have not been seeking or participating in other forms of environmental credits. In conclusion, the audit team determined that the project has not sought, received, or is planning to receive credit from another GHG-related environment credit system.
Supply chain (Scope 3) emissions double claiming	The evidence gathering activities involved reviewing the PDMR and interviewing the project proponent. In conclusion, the audit team confirmed that the project proponent is not a buyer or seller of a product whose emissions footprint is changed by the project activities.
Sustainable development contributions	The evidence gathering activities involved reviewing the PDMR and interviewing the project proponent. Additionally, the audit team reviewed project proponent's response to finding #6 and #7. The audit team concludes that the project activities will contribute to the United Nations's SDG's (Sustainable Development Goals) as well as South Africa's National Development Plan (NDP). The project will contribute to the following six SDG's: • SDG number 2 (Zero Hunger) by increasing the area under productive and sustainable agriculture activities. • SDG number 6 (Clean Water and Sanitation) by reducing erosion and improving soil water retention due to the adoption of sustainable agriculture activities. • SDG number 9 (Industry Innovation and Infrastructure) by reducing the amount of carbon emitted per unit value added due to the adoption of sustainable agriculture activities. • SDG number 12 (Responsible Consumption and Production) by reducing the fossil fuel, liming and

	fertilizer usage due to the adoption of sustainable agriculture activities. • SDG number 13 (Climate Action) by increasing the carbon removal as soil organic carbon and reducing the GHG emissions due to the adoption of sustainable agriculture activities. • SDG number 15 (Life on Land) by increasing the conversion of degraded land to productive croplands due to the adoption of sustainable agriculture activities.
Additional information relevant to the project	The evidence gathering activities involved reviewing the PDMR, supporting documentation (Ref. 62) and interviewing the project proponent. The audit team concludes: • Section 1.19 of the PDMR discusses the relevant leakage processes in detail. All four identified sources of leakage are in accordance with the applied methodology. The audit team reviewed the project's leakage deduction calculations related to manure application, re-ran calculations at sampled farms, and cross-checked with the underlying data (Ref. 1-3). The audit team inquired about how livestock populations and productivity are being tracked by the project through interviews with farmers. • The audit team is reasonably assured that the data underlying the project's stated leakage management claims is being collected and applied appropriately in an approach that satisfies methodology requirements. • The project proponent has excluded (i) the commercially sensitive contractual documentation pertaining to the ownership and transfer of the GHG emissions reductions, (ii) locations of soil samples, and (iii) locations of field-level practice management changes. The audit team confirms these 3 components meet the VCS Program Definitions of Commercially Sensitive Information, as it refers to "trade secrets or confidential business information that, if disclosed, could result in commercial or competitive harm to the project proponent or project participants." Disclosure of the exact soil sampling results per field along with exact practice management changes per field in a public document would enable Orizon's competitors to correlate stock changes (as more sampling data becomes publicly available over time) to practice

	changes, thereby enabling them to calibrate their own soil carbon models. This would undermine the significant investments made by the project proponent by allowing competitors to freely take advantage of soil carbon sequestration information that is not possible to obtain without incurring expensive soil sampling costs (arguably one of the costliest components incurred by VM0042 project proponents). The audit team further confirms that all necessary information was fully reviewed during validation and verification and is also available to Verra in a confidential submission procedure. Only the information considered commercially sensitive has been redacted from public documents.
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Overall, the audit team concludes that the project description is accurate and complete.

3.2 Project Activity Instances in Grouped Projects

The evidence gathering activities involved reviewing the PDMR, supporting documentation (Ref. 22-24, 60, 67), GIS files (Ref. 18-21), as well as interviewing the farmers and observations from the site visit to confirm the inclusion of project activity instances into the grouped project. During the first monitoring period from 1 August 2018 to 31 July 2022, the project activities were implemented on 22 farms including 905 fields and 15,547 hectares. The three predominant project activities implemented during the first monitoring period included reduced tillage, cover cropping and organic inputs as improved fertilizer usage. The audit team confirmed the initial project instances (fields) enrolled during the first monitoring period follow the eligibility criteria and project design (see section 3.1 for more details). The audit team concludes that the inclusion of the initial project activity instances (fields) is valid and follows all relevant VCS standard and methodology requirements.

3.3 Safeguards

3.3.1 Stakeholder Engagement and Consultation

3.3.1.1 Stakeholder Identification

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Stakeholder identification	The evidence gathering activities involved reviewing the PDMR and supporting documentation (Ref. 64), as well interviewing the project

	proponent, farmers and farm workers. Additionally, the audit team reviewed the project proponent's response to finding #1. The audit team confirmed that the stakeholders identified for this project include farm owners, farm managers and permanently employed farm workers. Further, the audit team reviewed the contractual agreement (Ref. 32, 59-61) and interviewed the farmers and confirms that only the identified stakeholders live and derive their income and livelihood from the project areas. The project conducted a due diligence approach for ascertaining whether contractors and seasonal farm workers would affect or be affected by project activities through farm visits and conversations with potential project participants. The project concluded that the contractors and seasonal workers do not affect or are not affected by project activities and fulfill roles such as financial consultants, contractors to build on-farm facilities not located in the project area, contractors for commercial forestry plantations, and seasonal workers involved in the harvest of other crops not included in the project, such as Macadamia nuts. The audit team corroborated the project's conclusions through interviews with farmers during site visits. When asked questions about who implements activities on project fields, farmers responded that workers with long-term employment contracts are responsible for implementing agricultural practices in the project fields. The farmers confirmed that all staff have legally required contracts, and that their farms are audited by the South African Dept of Labor. The farm owners and managers are stakeholders, as well, as the project correctly identified. Therefore, the audit team is reasonably assured that the project has adequately identified stakeholders of this project. The audit team also confirms that there are no communal lands present in the project areas. The audit team concludes that the stakeholder identification is comprehensive for this project type and is in conformance with the VCS standard.
Legal or customary tenure/access rights	The evidence gathering activities involved reviewing the PDMR and contracts between the project proponent and farmers (Ref. 32 & 60). The audit team confirmed that all the project activities are implemented on private property that are either owned or leased by farmers and Orizon has the legal rights to environmental credits generated from these fields through contractual agreements with the farmers (Ref. 32). The audit team concludes that the project

	conforms to the legal or customary access rights requirements of the VCS standard.
Stakeholder diversity and changes over time	The evidence gathering activities involved reviewing the PDMR and supporting documentation (Ref. 32, 64) as well as interviewing the project proponent and farmers. The audit team confirmed that the stakeholder's diversity and changes over time for this project will be minimal as the interviewed farmers confirmed that they operate on a family farm owned for generations. The audit team concludes that the project has included the information about stakeholder diversity in conformance with the VCS standard.
Expected changes in well-being	The evidence gathering activities involved reviewing the PDMR and supporting documentation (Ref. 32, 64), as well as interviewing the project proponent and farmers. The audit team concludes that this project will bring positive impacts on health, profitability and well-being of stakeholders through the adoption of improved agricultural management practices. These regenerative practices have shown to build a more resilient farming system that improves soil health, increase crop yields over time and provide other ecosystem services (Ref. 51-58).
Location of stakeholders	The evidence gathering activities involved reviewing the PDMR and supporting documentation (Ref. 18-21, 32, 64) as well interviewing the stakeholders and observations during the site visit. The audit team concludes that all stakeholders are located in South Africa. Furthermore, there are no indigenous people or local communities residing in the project areas or affected by the project activities. Therefore, they are not impacted by the project.
Location of resources	The evidence gathering activities involved reviewing the PDMR and supporting documentation (Ref. 32, 64) as well interviewing the stakeholder and observations during the site visit. The audit team concludes that the project has adequately identified stakeholder groups and where they reside and that areas outside the project area will not be negatively impacted by project activities.

3.3.1.2 Stakeholder Consultation and Ongoing Communication

Item	Evidence gathering activities, evidence checked, and assessment conclusion
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Stakeholder engagement process	The evidence gathering activities involved reviewing the PDMR and supporting documents (Ref. 32, 64) as well as interviewing the project proponent and stakeholders. The audit team confirmed that Orizon approached farmers and farm managers through local agronomists, neighbour farmers, and farmer events. Orizon conducted farm visits for interested farmers to provide more information about the project. The farmers who agreed to join the project then signed a contract agreement with Orizon (Ref. 32).
Consultation outcome	The evidence gathering activities involved reviewing the PDMR and supporting documentation (Ref. 64), as well as interviewing the project proponent and farmers. The audit team confirmed that Orizon discussed the project implementation, risks, costs, benefits along with the site visit and other validation and verification requirements with the stakeholders. Furthermore, Orizon developed an information booklet that provide the stakeholder with comprehensive information about the project design including the concept of carbon credits, potential revenues, project costs, profit sharing, contractual arrangements, data collection, ethics surrounding carbon credits, risks of the market, non-permanence risks, buffer credits, etc. Orizon also conducted consultations through surveys (Ref. 64) to collect relevant information from each farm owner or manager regarding their number of generations in farming, farming experience, and labor employment. The audit team concludes that Orizon's consultation outcome conforms to VCS standard requirements.
Ongoing communication	The evidence gathering activities involved reviewing the PDMR and supporting documentation (Ref. 64), as well as interviewing the project proponent and other stakeholders. The audit team confirmed that Orizon regularly communicates with the identified stakeholders through farm visits, online meetings, WhatsApp communication, emails, phone calls, and engagement is done in a culturally appropriate manner. The audit team concludes that Orizon has established mechanisms for ongoing communication with stakeholders and conforms to VCS standard requirements.
Stakeholder input	The evidence gathering activities involved reviewing the PDMR, Verra registry for public comments as well as interviewing the project proponent and farmers. The audit team confirmed that stakeholder information was gathered during in-person meetings with the stakeholders. Based on the consultation, Orizon received input from the stakeholders and made adjustments in the process. These

	adjustments included gathering information about farm workers and their rights, as well as providing additional information and explanations about certain concepts of carbon credits, such as buffer credits, permanence, and additionality. The audit team concludes that Orizon took due account of all input received during the stakeholder consultation and through on-going communications and conforms to VCS standard requirements.
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3.3.1.3 Free, Prior, and Informed Consent

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Obtaining consent	The evidence gathering activities involved reviewing the PDMR, ownership agreements (Ref. 32) and interviewing the project proponent and farmers. The audit team confirmed that Orizon provided all information to stakeholders including risks, costs, benefits, potential revenues, and obtained consent as part of the contractual agreements. Additionally, the audit team confirmed that the enrolled project instances are on private farmland properties and there are no ongoing or unresolved conflicts over property right, usage or resources. The audit team concludes that the project is in conformance with FPIC requirements.
Outcome of FPIC discussion	The evidence gathering activities involved reviewing the PDMR, ownership agreements and documentation (Ref. 32, 59-61) and interviewing the project proponent and farmers. The audit team confirmed that Orizon provided all information to stakeholders including nature, size, scope, purpose and duration of the project activities and obtained consent as part of the contractual agreements. Additionally, the audit team confirmed that the enrolled project instances are on the private farmland properties and no displacement or relocation of any people took place. The audit team concludes that the project is in conformance with FPIC requirements.

3.3.1.4 Grievance Redress Procedure

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Development process	The evidence gathering activities involved reviewing the PDMR and the grievance redress procedure (Ref. 68), as well as interviewing the

	project proponent and other stakeholders. Additionally, the audit team reviewed the project proponent's response to finding #2. The audit team confirmed that Orizon has developed the grievance redress procedure after internal discussions and consultations with stakeholders. All stakeholders were informed regarding the grievance process. Additionally, Orizon encourages grievances to be submitted through the contact information and web form provided on their website⁴. The stakeholders can submit any grievance directly to Orizon by following the procedure and have the option to submit grievance to Verra via a link provided in the process document. The audit team reviewed the website details and concluded that the development process conforms to the VCS standard requirements.
Grievance redress procedure	The evidence gathering activities involved reviewing the PDMR and the grievance redress procedure (Ref. 68) as well as interviewing the project proponent and other stakeholders. Additionally, the audit team reviewed the project proponent's response to finding #2. The audit team confirmed that all stakeholders can submit grievances by following the procedure. Orizon will acknowledge receipt of a grievance within three business days, and a senior staff member will review it. The potential resolution will be communicated directly to the stakeholder via text message, phone call, or in-person meeting. Additionally, the audit team confirmed through interviews with farmers that no grievances were submitted during the first monitoring period. The audit team concludes that the grievance redress procedure conforms to VCS standard requirements.

3.3.1.5 Public Comments

Comments received	Actions taken by the project proponent	Evidence gathering activities, evidence checked, and assessment conclusion
No public comments were received	Not applicable as there were no public comments received during the public comment period for this project.	The evidence gathering activities involved reviewing the PDMR and Verra Registry. The audit team concludes that no comments were received during the public comment period of this

⁴ <https://orizonagriculture.com/>

project from 04 August 2022 to 04 September 2022.

3.3.2 Risks to Local Stakeholders and the Environment

3.3.2.1 Management Experience

The evidence gathering activities involved reviewing the PDMR, as well as interviewing the project proponent and farmers. The audit team confirmed that although this is the first voluntary carbon market project for Orizon, the management team has experience in managing projects and collectively has a highly relevant technical background in both finance and agricultural science (Ref. 34). The audit team concludes that no risks are identified as this project conforms to the requirements of management experience and do not require mitigation measures due to the lack of management experience.

3.3.2.2 Risk Assessment

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Natural and human-induced risks to stakeholders' wellbeing	The evidence gathering activities involved reviewing the PDMR and contractual agreements (Ref. 32) as well as interviewing the project proponent and farmers. The audit team concludes that natural and human-induced risks to stakeholder wellbeing, including working conditions, safety, and pollutants are identified. However, mitigation measures are in place to address these identified risks (as written in section 2.2 of the PDMR). The audit team agrees with the type of risks identified for working conditions and concludes that mitigation measures are in place for these identified risks.
Risks to stakeholder participation	The evidence gathering activities involved reviewing the PDMR and contractual agreements (Ref. 32) as well as interviewing the project proponent and other stakeholders. The audit team confirmed that all stakeholders are voluntarily participating under the terms and conditions of the contractual agreements. The project proponent identified risks to stakeholder participation, including fluctuation in carbon credit price and resistance to transitioning to more sustainable practices. However, measures such as ensuring highest possible price (as stated in Ref. 32) and providing

	evidence of farmer implementing project activities (Ref. 22-24) are in place to mitigate identified risks. The audit team agrees with the type of risks identified for stakeholder participation and concludes that mitigation measures are in place for these identified risks.
Working conditions	The evidence gathering activities involved reviewing the PDMR and interviewing the project proponent and stakeholders during the site visit. The project proponent identified risks related to working conditions, such as working with heavy machinery and hot, dry or unclean farm facilities. The audit team confirmed that the Labor department of South Africa audits the working conditions for farmers and workers at commercial farms to ensure safety and wellbeing (Ref. 64). The audit team agrees with the identified risks related to working conditions and concludes that mitigation measures are in place for these identified risks.
Safety of women and girls	The evidence gathering activities involved reviewing the PDMR and interviewing the project proponent and stakeholders during the site visit. The project proponent identified risks to safety of women and girls during the farm operations. The audit team confirmed that the Labor department of South Africa requires farmers to provide information on their employees to ensure no child labor occurs on the farms. Furthermore, safety measures are in place to ensure good working conditions. The audit team agrees with the identified risks to the safety of women and girls and concludes that mitigation measures are in place for these identified risks.
Safety of minority and marginalized groups, including children	The evidence gathering activities involved reviewing the PDMR and interviewing the project proponent and stakeholders during the site visit. The audit team concludes that no risks are identified for the safety of minority and marginalized groups as all enrolled project instances are on the private farmland properties and does not impact any minority or marginalized groups.
Pollutants (air, noise, discharges to water, generation of waste,	The evidence gathering activities involved reviewing the PDMR interviewing the project proponent and other

release of hazardous materials, and chemical pesticides and fertilizers)

stakeholders during the site visit and inspecting farm equipment during the site visit. The audit team confirmed that risk of pollutants is identified, which includes fertilizer leaching into groundwater and water bodies. However, mitigation measures such as planting cover crops, retaining residue, and adding manure instead of inorganic fertilizers reduce the risk of runoff and leaching. The audit team agrees with the type of risks identified for pollutants and concludes that mitigation measures are in place for these identified risks.

3.3.3 Respect for Human Rights and Equity

3.3.3.1 Labor and Work

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Discrimination	The evidence gathering activities involved reviewing the PDMR and interviewing the project proponent and stakeholders during the site visit. The audit team confirmed that stakeholders can communicate and file any case of discrimination using the grievance redress procedure. The audit team concludes that sufficient policies in place to ensure that discrimination does not occur in the project.
Sexual harassment	The evidence gathering activities involved reviewing the PDMR and interviewing the project proponent and stakeholders during the site visit. The audit team confirmed that stakeholders can communicate and file any case of sexual harassment using the grievance redress procedure. The audit team concludes that sufficient policies in place to ensure that sexual harassment does not occur in the project.
Equal pay for equal work	The evidence gathering activities involved reviewing the PDMR, contractual agreements (Ref. 32) and interviewing the project proponent and stakeholders during the site visit. The audit team confirmed that stakeholders are voluntarily participating under the terms and conditions of the contractual agreements and get paid based on the area enrolled and project activities implemented on their field regardless of gender and work.
Gender equity in labor and work	The evidence gathering activities involved reviewing the PDMR, contractual agreements (Ref. 32), and interviewing the project

	proponent and stakeholders during the site visit. The audit team confirmed that stakeholders are voluntarily participating under the terms and conditions of the contractual agreements regardless of their gender.
Forced labor	The evidence gathering activities involved reviewing the PDMR and interviewing the project proponent and stakeholders during the site visit. The audit team confirmed that the Labor department of South Africa prohibits forced labor. Additionally, stakeholders are voluntarily participating under the terms and conditions of the contractual agreements. The audit team concludes that the risk of forced labor is low in the project.
Child labor	The evidence gathering activities involved reviewing the PDMR and interviewing the project proponent and stakeholders during the site visit. The audit team confirmed that Labor department of South Africa prohibit child labor and requires farmers to provide information about their employees to ensure that no child labor occurs on the farms. Additionally, stakeholders are voluntarily participating under the terms and conditions of the contractual agreements. The audit team concludes that the risks of child labor is low in the project.
Human trafficking,	The evidence gathering activities involved reviewing the PDMR and interviewing the project proponent and stakeholders during the site visit. The audit team confirmed that the Labor department of South Africa strictly prohibit human trafficking. The audit team concludes that the risks of human trafficking is low in the project.

3.3.3.2 Human Rights

Risks identified	Evidence gathering activities, evidence checked, and assessment conclusion
No risks identified	The evidence gathering activities involved reviewing the PDMR, contractual agreement (Ref. 32), and interviewing the project proponent and stakeholders during the site visit. The audit team confirmed that no risks are identified as the stakeholders are voluntarily participating under the terms and conditions of the contractual agreements and all the project activities are implemented on private property that are either owned or leased by farmers. There are no communal lands present in the project areas which might

impact any IPs, LCs or customary rights holders. Additionally, the project proponent has included the information in section 2.3.2 of the PDMR, which will be applied if any IPs, LCs, or customary right holders are included in the project for future project instances.

3.3.3.3 Indigenous Peoples and Cultural Heritage

Risk identified	Evidence gathering activities, evidence checked, and assessment conclusion
No risks identified	The evidence gathering activities involved reviewing the PDMR, contractual agreement (Ref. 32), and interviewing the project proponent and stakeholders during the site visit. The audit team concludes that no risks are identified as the stakeholders are voluntarily participating under the terms and conditions of the contractual agreements and all the project activities are implemented on private property that are either owned or leased by farmers. There are no communal lands present in the project areas which might impact any IPs, LCs or customary rights holders. Additionally, the project proponent has included the information in section 2.3.2 of the PDMR, which will be applied if any IPs, LCs, or customary right holders are included in the project for future project instances.

3.3.3.4 Property Rights

Risks identified	Evidence gathering activities, evidence checked, and assessment conclusion
No risks identified	The evidence gathering activities involved reviewing the PDMR, contractual agreement (Ref. 32) and interviewing the project proponent and stakeholders during the site visit. The audit team concludes that no risks are identified as the stakeholders are voluntarily participating under the terms and conditions of the contractual agreements and all the project activities are implemented on private property that are either owned or leased by farmers. There are no communal lands present in the project areas which might impact any IPs, LCs or customary rights holders.

3.3.3.5 Benefit Sharing

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Process used to design the benefit sharing plan	The evidence gathering activities involved reviewing the PDMR, contractual agreement (Ref. 32), and interviewing the project proponent and farmers. The audit team concludes that although Indigenous Peoples, local communities, and customary rights holders are not affected by project activities, farmers receive revenue based on the sale of carbon credits under the contract terms. Therefore, this can be considered a benefit sharing plan between the project and the farmer stakeholder group that participates in project activities. The audit team reviewed section 2.3.5 of the PDMR and found it to be in conformance with section 3.19.22 of the VCS Standard.
Summary of the benefit sharing plan	The evidence gathering activities involved reviewing the PDMR, contractual agreement (Ref. 32), and interviewing the project proponent and farmers. The audit team concludes that the benefit sharing mechanism as summarized in section 2.3.5 of the PDMR to be in alignment with VCS Standard requirements in section 3.19.22.
Approval and dissemination of benefit sharing plan	The evidence gathering activities involved reviewing the PDMR, contractual agreement (Ref. 32), and interviewing the project proponent and farmers. The audit team concludes that the benefit sharing mechanism as summarized in section 2.3.5 of the PDMR to be in alignment with VCS Standard requirements in section 3.19.22, and that this benefit sharing plan is part of the contract that farmers sign prior to participation in the program. All farmers interviewed understood the terms of the benefit sharing plan.
Benefit sharing during the monitoring period	The evidence gathering activities involved reviewing the PDMR, contractual agreement (Ref. 32), and interviewing the project proponent and farmers. The audit team concludes that the benefit sharing mechanism (relevant for the first monitoring period and future monitoring periods) as summarized in section 2.3.5 of the PDMR to be in alignment with VCS Standard requirements in section 3.19.22. All farmers interviewed understood the terms of the benefit sharing plan.

3.3.4 Ecosystem Health

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Impacts on biodiversity and ecosystems	The evidence gathering activities involved reviewing the PDMR and interviewing the project proponent and farmers. The audit team confirmed that risks to biodiversity and ecosystem health of wetlands and grassland areas near the fields are identified. However, mitigation measures are in place to address these risks, including excluding fields with wetlands (Ref. 49-50), avoiding the clearing of native ecosystems in the past 10 years, and converting croplands to grasslands only on degraded lands (Ref. 49). The audit team agrees with the identified risks to biodiversity and ecosystems and concludes that appropriate mitigation measures are in place.
Soil degradation and soil erosion	The evidence gathering activities involved reviewing the PDMR and supporting documents (Ref. 49) as well as interviewing the project proponent and farmers. The audit team confirmed that risks to soil degradation and erosion on the enrolled fields are identified. However, mitigation measures such as planting cover crops, residue retention and no-tillage are in place to mitigate these risks. The audit team agrees with the type of risks identified for soil degradation and erosion and concludes that mitigation measures are in place for these identified risks.
Water consumption and stress	The evidence gathering activities involved reviewing the PDMR and interviewing the project proponent and farmers. The audit team confirmed that risk of stress on water resources due to irrigation is identified. However, mitigation measures such as precision irrigation system and scheduling as well as improving soil water retention ability are in place to mitigate these risks. The audit team agrees with the type of risks identified for water consumption and stress and concludes that mitigation measures are in place for these identified risks.

3.3.4.1 Rare, Threatened, and Endangered species

Risk identified	Evidence gathering activities, evidence checked, and assessment conclusion
Species and habitat	The evidence gathering activities involved reviewing the PDMR, as well as interviewing the project proponent and farmers. The audit team confirmed that risks to rare, threatened and endangered species and habitat located in or adjacent to the project area are identified. However, mitigation measures such as excluding fields with wetlands (Ref. 50) and excluding fields which were cleared of native ecosystems within the past 10 years (Ref. 49) and converting croplands to grasslands only on degraded lands

	(Ref. 49) are in place to mitigate these risks. Additionally, Orizon confirmed the presence of several threatened bird species which are listed in section 2.4.1 of the PDMR. During the first monitoring period, Orizon provided all enrolled farmers with a Biodiversity and Wetland Assessment (Ref. 50) that outlines potential Red Data species of mammals and birds, as well as threatened wetland types present on the property. The audit team agrees with the risks to rare, threatened and endangered species and habitat that are identified and concludes that mitigation measures are in place for these identified risks.
Areas needed for habitat connectivity	The evidence gathering activities involved reviewing the PDMR, as well as interviewing the project proponent and other stakeholders. The audit team confirmed that risks to rare, threatened and endangered species and habitat located in or adjacent to the project area are identified. However, mitigation measures such as excluding fields with wetlands (Ref. 50) and excluding fields which were cleared of native ecosystems within the past 10 years (Ref. 49) and converting croplands to grasslands only on degraded lands (Ref. 49) are in place to mitigate these risks. Additionally, Orizon confirmed the presence of several threatened bird species which are listed in section 2.4.1 of the PDMR. During the first monitoring period, Orizon provided all enrolled farmers with a Biodiversity and Wetland Assessment (Ref. 50) that outlines potential Red Data species of mammals and birds, as well as threatened wetland types present on the property. The audit team agrees that the risks to rare, threatened and endangered species and habitat are identified and concludes that mitigation measures are in place for these identified risks.

3.3.4.2 Introduction of Species

Species introduced	Evidence gathering activities, evidence checked, and assessment conclusion
Not Applicable	The evidence gathering activities involved reviewing the PDMR, as well as interviewing the project proponent and farmers. The audit team concludes that no invasive species are introduced or planted in the project as part of the project activity. Only the cash crops such as maize, soybeans, wheat, sorghum, etc. are planted in the project area along with some cover crops which do not include any invasive species.

Existing invasive species	Evidence gathering activities, evidence checked, and assessment conclusion
Not Applicable	The evidence gathering activities involved reviewing the PDMR, interviewing the project proponent and stakeholders during the site visit, and making observations on site. The audit team concludes that no invasive species are introduced or planted in the project area as part of the project activity. Only the cash crops such as maize, soybeans, wheat, sorghum, etc. are planted in the project area along with some cover crops which do not include any invasive species.

Invasive species	Evidence gathering activities, evidence checked, and assessment conclusion
Not Applicable	The evidence gathering activities involved reviewing the PDMR, interviewing the project proponent and stakeholders during the site visit, and making observations on site. The audit team concludes that no invasive species are introduced or planted in the project as part of the project activity. Only the cash crops such as maize, soybeans, wheat, sorghum, etc. are planted in the project area along with some cover crops which do not include any invasive species.

3.3.4.3 Ecosystem conversion

Risks Identified	Evidence gathering activities and evidence checked
Ecosystem conversion	The evidence gathering activities involved reviewing the PDMR, supporting documentation, and interviewing the project proponent and farmers. The audit team confirmed that the project meets the applicability condition of the methodology, which requires that the project area has not been cleared of native ecosystems within the 10-year period immediately prior to the project start date. This was verified through the review of historic land use assessment report (Ref. 49). Furthermore, the audit team confirmed that the project meets another applicability condition of the applied methodology which allows for once-off conversion from grassland to cropland or vice versa if the project proponent can prove that the land that was converted is

degraded. This was verified through the review of land conversion assessment (Ref. 49). The audit team concludes that no ecosystem conversion occurred in the project area.

3.4 Application of Methodology

3.4.1 Title and Reference

The title and reference of the methodology applied by the project (referred to hereafter as “the methodology”) and any tools applied by the project are identified in the table below. The audit team affirms that the methodology and any applied tools, and the specific versions of them applied by the project, were valid at the time of issuance of this joint validation and verification report.

Type*	VCS ID	Title	Version	Notes regarding validity
M	VM0042	Methodology for Improved Agricultural Land Management v2.0	2.0	Current version
MD	VMD0053	Model Calibration Validation and Uncertainty Guidance for the Methodology for Improved Agricultural Land Management v2.0	2.0	Current version
T	AFOLU NPRT	AFOLU Non-Permanence Risk Tool	4.2	Current version

*M=methodology; T=tool; MD=module

3.4.2 Applicability.

The steps taken to assess compliance of the project with each of the relevant applicability conditions of the methodology are described below.

Methodology ID	Applicability condition	Assessment and conclusion
VM0042	1) Projects must introduce or implement one or more new changes to pre-existing ALM practices which:	The audit team interviewed the project proponent and farmers, conducted an on-site inspection and reviewed the PDMR to

	a) Improve fertilizer (organic or inorganic) management 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) e) Improve grazing practices Appendix 1 provides a non-exhaustive list of eligible ALM practices.	assess the project's practice changes for each project instance and cross-checked project data (Ref. 22-24, 67) to confirm reported practice changes. The audit team concludes that the project is implementing one or more improved management practices to pre-existing ALM practices and thus meets this applicability condition.
VM0042	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.	The audit team reviewed the project's emissions data and calculations (Ref. 1-3) to confirm that the project is tracking the net reduction of emissions for each field relative to the historical look-back period. The project calculated quantitative adjustments related to each practice change, and the audit team verified that these adjustments have been calculated accurately (Ref 1). The audit team concludes that the project meets this applicability condition.
VM0042	3) Project activities must be implemented on land that is either cropland or grassland at the project start date. The land must remain cropland or grassland throughout the project crediting period except under the following scenarios: a) Introduction of temporary grassland into cropland where it is demonstrated, prior to the project start date and to the addition of new project activity instances, that the integration of forage crops (e.g., annual/perennial grasses, legumes) into	The audit team interviewed with the project proponent and farmers, conducted an on-site inspection and reviewed the GIS files (Ref. 18-21) and supporting land conversion assessment document (Refs. 49, 69) to confirm that project activities are implemented on land that is either cropland or grassland except for degraded lands which allows for a one-time conversion for the long-term productivity.

	annual crops is part of a planned, long-term ALM system(e.g., integrated crop-livestock system).Project proponents must provide documentation of the long-term management plans, covering the duration of the project, that describe proposed practices, crops and expected benefits and outcomes of integrated grassland-cropland management. b) A one-time conversion from grassland to cropland or vice versa where it is demonstrated, prior to project validation, that project lands in the baseline scenario are degraded and the introduction of improved land use change practices would significantly improve soil health. Project proponents must provide documentation demonstrating that lands are degraded at the start of the project and degradation will continue in the baseline scenario due to the presence of degradation drivers or pressures in the baseline scenario. See Appendix 2 for procedures on how to propose this type of land use change.	During the review process, the audit team reviewed in detail how the project identified degradation at converted fields in any of the 11 out of 22 farms visited during the site visit using data from a local degradation study used by the project (Ref. 69). The degradation index designations applied to each field by the project was corroborated by the audit team's assessment. The audit team concludes that project activities are implemented on 905 fields, which are either cropland or grasslands, and that 12 farms contain fields that are considered degraded (49/905 fields considered degraded across the entire project) and have hence been converted (Ref. 49). The audit team concludes that the project meets this applicability condition and the requirements specified in Appendix 2 of the methodology.
VM0042	4) Empirical or process-based models used to estimate stock change/emissions via Quantification Approach 1 must be: a) Publicly available, though not necessarily free of charge, from a reputable and recognized source (e.g., the model developer's website, IPCC or government agency). Sufficient conceptual documentation of inputs, outputs and information on how the model functionally represents SOC dynamics must be accessible to the public. Providing the	The independent modelling expert (IME) and the audit team reviewed the model validation report (Ref. 38) provided by the project proponent and confirmed the following: - The Roth C model used by the project proponent is publicly available with all the documentation about the model available on their website

	source code or an API for independent replication of calculations is not required. b) Shown in peer-reviewed scientific studies to successfully simulate changes in SOC and trace gas emissions resulting from the changes in ALM practices included in the project description. c) Able to support repetition of the project model simulations. This includes clear versioning of the model used in the project and stable software support, as well as fully reported sources and values for all parameters used with the project version of the model. Where multiple sets of parameter values are used in the project, clearly identify the sources of varying parameter sets and how they were applied to estimate stock change/emissions in the project. Acceptable sources include peer-reviewed literature and statements from appropriate expert groups that demonstrate evidence of expertise with the model via authorship of peer-reviewed model publications or authorship of reports for entities supporting climate-smart agriculture. These sources must describe the datasets and statistical processes used to set parameter values. d) Validated per datasets and procedures detailed in Section 5.2 of <i>VMD0053 Model Calibration and Validation Guidance for the Methodology for Improved Agricultural Land Management</i>. Model prediction error must be calculated using datasets as described in Section 5.2.5 of VMD0053 and must use the same parameters or sets of parameters applied to estimate stock change/emissions in the project. e) Using the same model version in the baseline and project scenarios. Further, the same parameters/parameter sets must be	(https://www.rothamsted.ac.uk/rothamsted-carbon-model-rothc) - The Roth C model has been used in numerous peer-reviewed studies to successfully simulate changes in SOC resulting from the ALM practice changes included in the project (Ref. 38). - The model validation report (Ref. 38) has appropriately documented the model version and other specifications associated with the requirements as discussed in the IME review of model validation report (Ref. 71). - The model validation report review (Ref. 71) provided by the IME confirmed that the project appropriately validated the RothC model for use in Quantitative Approach 1. - The audit team reviewed the R based model and associated model files (Ref. 26-30, 42-48) to confirm that same Roth C model version and parameters were used in the baseline and project scenarios. Overall, the audit team concludes that the project meets this applicability condition.
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	used in the baseline and project scenarios. Model input data must be derived following guidance in Table 6 and Table 8. Model uncertainty must be quantified following guidance in Section 8.6. Models may be recalibrated or revised based on new data, or a new model may be applied, provided the above requirements are met.	
VM0042	This methodology is not applicable under the following conditions: 5) The project area has been cleared of native ecosystems within the 10-year period immediately prior to the project start date.	The audit team interviewed the project proponent and farmers and reviewed the historic land use assessment report (Ref. 49) provided by the project proponent to confirm that project area has not been cleared of native ecosystems within the 10-year period immediately prior to the project start date. The audit team concludes that the project meets this applicability condition.
VM0042	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.	The audit team interviewed the project proponent and farmers and reviewed literature to confirm that although there may be a risk for initial production losses when transitioning to project activities, the project activities have no major impact on crop yields over time (see section 1.19 of the PDMR). The audit team concludes that the project meets this applicability condition.
VM0042	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 content₂ of the biochar applied is subtracted from the estimated SOC stock change in the project scenario at each verification event.	The audit team interviewed the project proponent and farmers during the site visit to confirm that project activities do not include application of biochar. The audit team concludes that

		the project meets this applicability condition.
VM0042	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.	The audit team interviewed the project proponent and farmers and reviewed the wetland assessment report (Ref. 50) provided by the project proponent to confirm that project activities do not occur wetlands. The audit team concludes that the project meets this applicability condition.
VMD0053	1) Publicly available, though not necessarily free of charge, from a reputable and recognized source (e.g., the model developer's website, IPCC or government agency). Sufficient conceptual documentation of inputs, outputs and information on how the model functionally represents SOC dynamics must be accessible to the public. Providing the source code or an API for independent replication of calculations is not necessary.	The independent modelling expert (IME) and the audit team reviewed the model validation report (Ref. 38) provided by the project proponent to confirm that the Roth C model used by the project proponent is publicly available with all the documentation about the model available on their website (https://www.rothamsted.ac.uk/rothamsted-carbon-model-rothc) The audit team concludes that the project meets this applicability condition.
VMD0053	2) Appropriately reviewed, tested and shown in peer-reviewed scientific studies to successfully simulate changes in SOC and trace gas emissions resulting from changes in ALM introduced by the project activity.	The independent modelling expert (IME) and the audit team reviewed the model validation report (Ref. 38) provided by the project proponent to confirm that the Roth C model has been used in numerous peer-reviewed studies to successfully simulate changes in SOC resulting from the changes in ALM practices included in the project (Ref. 71). The audit team concludes that

		the project meets this applicability condition.
VMD0053	3) Able to support repetition of the project model simulations. This includes clear versioning of the model used in the project and stable software support of that version, as well as fully reported sources and values for all parameters used with the model version and the project activity. The same model version must be used in the baseline and project scenarios. For stochastic models, the seeding sequence to the random number generator must be provided so that model runs may be reproduced. Where multiple sets of parameter values are used in the project, full reporting must include clear identification of the sources of varying parameter sets as well as how they were applied to estimate stock change/emissions in the project. Acceptable sources include peer reviewed literature and statements from appropriate expert groups (i.e., that demonstrate evidence of expertise with the model via authorship of peer reviewed model publications or authorship of reports for entities supporting climate smart agriculture, such as FAO or a comparable organization) Project proponents must describe the datasets and statistical processes used to set parameter values (i.e. the parameterization or calibration procedure).	The independent modelling expert (IME) and the audit team reviewed the model validation report (Ref. 38) which has appropriately documented the model version and other specifications associated with the requirements of the applied methodology and the module. Additionally,, the audit team reviewed the R based model and associated files (Ref. 27-30, 38 & 71) to confirm that same Roth C model version and parameters were used in the baseline and project scenarios. The audit team concludes that the project meets this applicability condition.
VMD0053	4) Validated per datasets and procedures detailed in Section 5.2. Model prediction error is calculated using datasets described in Section 5.2.5, using the same parameter sets applied to estimate stock changes/emissions in the project. Note that	The independent modelling expert (IME) and the audit team reviewed the model validation report (Ref. 38) provided by the project proponent to confirm that the project appropriately

	this means every parameter set must be validated separately.	validated the RothC model for use in Quantitative Approach 1, as described in the model validation review report of the IME (Ref. 71). The audit team concludes that the project meets this applicability condition.
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In conclusion, the project meets all applicability conditions of the methodology and any tools or modules selected by the project proponent.

3.4.3 Project Boundary

The project boundary conforms to the boundary as stated in the methodology and detailed below in the following table. This is a grouped project located in South Africa. The project fields enrolled during the first monitoring period are located in North West, Free State, Gauteng, Mpumalanga and KwaZulu-Natal Provinces of South Africa. The audit team validated the boundary through a detailed review of the PDMR, GIS files (Ref. 18-21), raw data (Ref. 22-24), emission reductions and removals calculations (Ref. 1-5), and observations during the site visit (Section 2.4 above). The audit team ensured that each emission source's inclusion was supported by data at the farm-level (Ref 1), whereby requirements in section 5 of the methodology are met by each participating farm to enable specific emissions reductions to be quantified *at each particular farm*. The GHG sources and pools included in the project are listed below:

Source		Included?	Assessment and conclusion
Baseline	Aboveground woody biomass	Yes	The audit team interviewed the project proponent to confirm that this pool is included for the project fields where new or existing agroforestry practices will increase this pool compared to the baseline. Additionally, the audit team reviewed the project's data (Ref. 1-5, 22-24) to confirm that all the fields enrolled during the first monitoring period do not include any agroforestry practices. The audit team concludes that the inclusion of this pool is in line with the applied methodology.
	Aboveground non-woody biomass	No	Not Included as per the applied methodology
	Belowground woody biomass	Yes	The audit team interviewed the project proponent to confirm that this pool is included for the project fields where new or existing agroforestry practices will increase

Source		Included?	Assessment and conclusion
			this pool compared to the baseline. Additionally, the audit team reviewed the data (Ref. 1-5, 22-24) to confirm that all the fields enrolled during the first monitoring period do not include any agroforestry practices. The audit team concludes that the inclusion of this pool is in line with the applied methodology.
	Belowground non-woody biomass	No	Not Included as per the applied methodology
	Dead wood	No	Not Included as per the applied methodology
	Litter	No	Not Included as per the applied methodology
	Soil Organic Carbon	Yes	As per the applied methodology, this is the major carbon pool affected by the project activities. The audit team interviewed the farmers and reviewed the project's data (Ref. 1-5, 66) to confirm that the project activities have been implemented on field enrolled during the first monitoring period. The audit team concludes that the inclusion of this pool is in line with the applied methodology.
	Wood products	No	Not Included as per the applied methodology
Project	Aboveground woody biomass	Yes	The audit team interviewed the project proponent to confirm that this pool is included for the project fields where new or existing agroforestry practices will increase this pool compared to the baseline. Additionally, the audit team reviewed the project's data (Ref. 1-5, 22-24) to confirm that all the fields enrolled during the first monitoring period do not include any agroforestry practices. The audit team concludes that the inclusion of this pool is in line with the applied methodology.
	Aboveground non-woody biomass	No	Not Included as per the applied methodology
	Belowground woody biomass	Yes	The audit team interviewed the project proponent to confirm that this pool is included for the project fields where new or existing agroforestry practices will increase this pool compared to the baseline. Additionally, the audit team reviewed the project's data (Ref. 1-5, 22-24) to confirm that all the fields enrolled during the first monitoring period do not include any agroforestry practices. The audit team concludes that the inclusion of this pool is in line with the applied methodology.

Source	Included?	Assessment and conclusion
Belowground non-woody biomass	No	Not Included as per the applied methodology
Dead wood	No	Not Included as per the applied methodology
Litter	No	Not Included as per the applied methodology
Soil Organic Carbon	Yes	As per the applied methodology, this is the major carbon pool affected by the project activities. The audit team interviewed the farmers and reviewed the data (Ref. 1-5, 66) to confirm that the project activities have been implemented on field enrolled during the first monitoring period. The audit team concludes that the inclusion of this pool is in line with the applied methodology.
Wood products	No	Not Included as per the applied methodology

Source		Gas	Included?	Assessment and conclusion
Baseline	Soil Organic Carbon	CO ₂	Yes	As per the methodology, this source is quantified as stock changes in the pool, rather than an emission source (see table above). The audit team concludes that the inclusion of this pool is in line with the applied methodology.
		CH ₄	No	Not Included as per the applied methodology
		N ₂ O	No	Not Included as per the applied methodology
	Fossil Fuel	CO ₂	Yes	The audit team interviewed the farmers and reviewed the data (Ref. 1-5, 22-24) to confirm that the project activities result in a change in fossil fuel consumption in the fields enrolled during the first monitoring period. The audit team concludes that the inclusion of this pool is in line with the applied methodology.
		CH ₄	No	Not Included as per the applied methodology
		N ₂ O	No	Not Included as per the applied methodology
	Liming	CO ₂	Yes	The audit team interviewed the farmers and reviewed the data (Ref. 1-5, 22-24) to confirm that the project activities include application of liming on some fields enrolled during the first monitoring period. The audit

Source	Gas	Included?	Assessment and conclusion
			team concludes that the inclusion of this pool is in line with the applied methodology.
	CH ₄	No	Not Included as per the applied methodology
	N ₂ O	No	Not Included as per the applied methodology
	CO ₂	No	Not Included as per the applied methodology
	Soil Methanogenesis		
	CH ₄	No	The audit team interviewed the farmers and reviewed the data (Ref. 50) to confirm that the project activities do not result in Anoxic conditions in the fields enrolled during the first monitoring period. The audit team concludes that the exclusion of this pool is in line with the applied methodology.
	N ₂ O	No	Not Included as per the applied methodology
	Enteric Fermentation		
	CH ₄	Yes	The audit team interviewed the farmers and reviewed the data (Ref. 1-5) to confirm that livestock are present one some fields enrolled during the first monitoring period. The audit team concludes that the inclusion of this pool is in line with the applied methodology.
	N ₂ O	No	Not Included as per the applied methodology
	Manure Deposition		
	CO ₂	No	Not Included as per the applied methodology
	CH ₄	Yes	The audit team interviewed the farmers and reviewed the data (Ref. 1-5, 22-24) to confirm that livestock are present on some fields enrolled during the first monitoring period. The audit team concludes that the inclusion of this pool is in line with the applied methodology.
	N ₂ O	Yes	The audit team interviewed the farmers and reviewed the data (Ref. 1-5, 22-24) to confirm that livestock are present on some fields enrolled during the first monitoring period. The audit team concludes that the inclusion of this pool is in line with the applied methodology.
	CO ₂	No	Not Included as per the applied methodology

Source		Gas	Included?	Assessment and conclusion
	Use of Nitrogen Fertilizers	CH ₄	No	Not Included as per the applied methodology
		N ₂ O	Yes	The audit team interviewed the farmers and reviewed the data (Ref. 1-5, 22-24) to confirm that organic manure application occurs in some fields enrolled during the first monitoring period. The audit team concludes that the inclusion of this pool is in line with the applied methodology.
	Use of Nitrogen Fixing Species	CO ₂	No	Not Included as per the applied methodology
		CH ₄	No	Not Included as per the applied methodology
		N ₂ O	Yes	The audit team interviewed the farmers and reviewed the data (Ref. 1-5, 22-24) to confirm that nitrogen fixing species are planted on some fields enrolled during the first monitoring period. The audit team concludes that the inclusion of this pool is in line with the applied methodology.
	Biomass Burning	CO ₂	No	Not Included as per the applied methodology
		CH ₄	Yes	The audit team interviewed the farmers and reviewed the data (Ref. 1-5, 22-24) to confirm that biomass burning did not occur on initial instances during the first monitoring period, and the project has conservatively excluded any historic biomass burning events. However, there is a chance biomass burning could occur on future instances. The audit team concludes that the inclusion of this pool is in line with the applied methodology.
		N ₂ O	Yes	The audit team interviewed the farmers and reviewed the data (Ref. 1-5, 22-24) to confirm that biomass burning did not occur on initial instances during the first monitoring period, and the project has conservatively excluded any historic biomass burning events. However, there is a chance biomass burning could occur on future instances. The audit team concludes that the inclusion of this pool is in line with the applied methodology.

Source		Gas	Included?	Assessment and conclusion
Project	Woody Biomass	CO ₂	Yes	As per the methodology, this source is quantified as stock changes in the pool, rather than an emission source (see table above). The audit team concludes that the inclusion of this pool is in line with the applied methodology.
		CH ₄	No	Not Included as per the applied methodology
		N ₂ O	No	Not Included as per the applied methodology
	Soil Organic Carbon	CO ₂	Yes	As per the methodology, this source is quantified as stock changes in the pool, rather than an emission source (see table above). The audit team concludes that the inclusion of this pool is in line with the applied methodology.
		CH ₄	No	Not Included as per the applied methodology
		N ₂ O	No	Not Included as per the applied methodology
	Fossil Fuel	CO ₂	Yes	The audit team interviewed the farmers and reviewed the data (Ref. 1-5, 22-24) to confirm that the project activities result in a change in fossil fuel consumption in the fields enrolled during the first monitoring period. The audit team concludes that the inclusion of this pool is in line with the applied methodology.
		CH ₄	No	Not Included as per the applied methodology
		N ₂ O	No	Not Included as per the applied methodology
	Liming	CO ₂	Yes	The audit team interviewed the farmers and reviewed the data (Ref. 1-5, 22-24) to confirm that the project activities include application of liming on some fields enrolled during the first monitoring period. The audit team concludes that the inclusion of this pool is in line with the applied methodology.
		CH ₄	No	Not Included as per the applied methodology
		N ₂ O	No	Not Included as per the applied methodology
	Soil Methanogenesis	CO ₂	No	Not Included as per the applied methodology
		CH ₄	No	The audit team interviewed the farmers and reviewed the data (Ref. 50) to confirm that the project activities do not result in Anoxic conditions in the fields enrolled during the

Source	Gas	Included?	Assessment and conclusion
			first monitoring period. The audit team concludes that the exclusion of this pool is in line with the applied methodology.
	N ₂ O	No	Not Included as per the applied methodology
	CO ₂	No	Not Included as per the applied methodology
	CH ₄	Yes	The audit team interviewed the farmers and reviewed the data (Ref. 1-5, 22-24) to confirm that livestock are present on some fields enrolled during the first monitoring period. The audit team concludes that the inclusion of this pool is in line with the applied methodology.
	N ₂ O	No	Not Included as per the applied methodology
	CO ₂	No	Not Included as per the applied methodology
	CH ₄	Yes	The audit team interviewed the farmers and reviewed the data (Ref. 1-5, 22-24) to confirm that livestock are present on some fields enrolled during the first monitoring period. The audit team concludes that the inclusion of this pool is in line with the applied methodology.
	N ₂ O	Yes	The audit team interviewed the farmers and reviewed the data (Ref. 1-5, 22-24) to confirm that livestock are present on some fields enrolled during the first monitoring period. The audit team concludes that the inclusion of this pool is in line with the applied methodology.
	CO ₂	No	Not Included as per the applied methodology
	CH ₄	No	Not Included as per the applied methodology
	N ₂ O	Yes	The audit team interviewed the farmers and reviewed the data (Ref. 1-5, 22-24) to confirm that organic manure application occurs in some fields enrolled during the first monitoring period. The audit team concludes that the inclusion of this pool is in line with the applied methodology.
	CO ₂	No	Not Included as per the applied methodology
	CH ₄	No	Not Included as per the applied methodology
	N ₂ O	Yes	The audit team interviewed the farmers and reviewed the data (Ref. 1-5, 22-24) to confirm that nitrogen fixing species are planted on some fields enrolled during the

Source	Gas	Included?	Assessment and conclusion
			first monitoring period. The audit team concludes that the inclusion of this pool is in line with the applied methodology.
	CO ₂	No	Not Included as per the applied methodology
	CH ₄	Yes	The audit team interviewed the farmers and reviewed the data (Ref. 1-5, 22-24) to confirm that biomass burning did not occur on enrolled fields during the first monitoring period. However, there is a chance that biomass burning may occur in future instances. The audit team concludes that the inclusion of this pool is in line with the applied methodology.
	N ₂ O	Yes	The audit team interviewed the farmers and reviewed the data (Ref. 1-5, 22-24) to confirm that biomass burning did not occur on enrolled fields during the first monitoring period. However, there is a chance that biomass burning may occur in future instances. The audit team concludes that the inclusion of this pool is in line with the applied methodology.
	CO ₂	Yes	As per the methodology, this source is quantified as stock changes in the pool, rather than an emission source (see table above). The audit team concludes that the inclusion of this pool is in line with the applied methodology.
	CH ₄	No	Not Included as per the applied methodology
	N ₂ O	No	Not Included as per the applied methodology

The audit team concludes, overall, that the project boundary is appropriately specified, and the selected sources are appropriately justified for the project.

3.4.4 Baseline Scenario

As per the methodology, the project's baseline scenario is the Continuation of pre-project ALM practices. For each field, a schedule of activities in the baseline scenario is determined by assessment of practices implemented during the period prior to the project start date (historic look-back period). This historic look-back period should be a minimum of 3 years and must include at least one crop rotation. Table 3.4.1 of the PDMR lists the specifications and measures for ALM practices in the baseline scenarios. This table includes the sources of data for each ALM practice.

Overall, the identified baseline scenario is justified. The audit team's high-level assessment of the baseline scenario is included in the table below.

Item assessed	Audit Team Assessment
Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable.	• The audit team conducted interviews with the project proponent and farmers as well as reviewed the attestations (Ref. 22) to confirm the baseline conditions. • The audit team reviewed historic management data (Refs. 22-24) to assess conditions and management practices during the historic look-back period. • The land use history has been established as more conventional agriculture, with generally higher amounts of synthetic fertilizer application, less soil cover, and more intensive tillage practices. • The audit team interviewed the farmers and reviewed the baseline data (Ref. 22-24) to confirm that baseline data is directly provided by the farmers through field records and confirmed using satellite imagery (i.e. tillage, cover crops etc.) . Additionally, the audit team reviewed the regional baseline development process along with an attestation from a qualified local independent expert (Ref. 7) and the project proponent's response to finding #24 to confirm the baseline conditions where no historic data is available from the fields.
Documentary evidence used in determining the baseline scenario is relevant, and correctly quoted and interpreted in the project description.	The baseline scenario is correctly quoted and interpreted in the PDMR. The audit team conducted the checks mentioned above along with reviewing relevant evidence to confirm this.
Relevant national and/or sectoral policies and circumstances have been considered and are listed in the project description.	Section 1.15 of the PDMR adequately lists relevant policies (assessment is provided in section 3.1 of this report).
The procedures for identifying the baseline scenario have been correctly followed and the identified scenario	• The audit team reviewed historical data (Refs. 23-24), farmers attestations (Refs. 22), the project's regional baseline development process (Ref. 10) along with an attestation from a qualified

Item assessed	Audit Team Assessment
reasonably represents what would have occurred in the absence of the project.	independent local expert (Ref. 7) to confirm conditions prior to the start of project activities. The audit team confirms that the procedures are appropriate and that the scenario represents what would likely have occurred in absence of the project.

3.4.5 Additionality

The project is using the project method for the demonstration of additionality as stated in the applied methodology. Overall, additionality is justified for the project. A high-level summary of steps taken to assess additionality is provided below.

Steps taken to assess...	Audit Team Assessment
Adherence to regulatory surplus requirements.	The alternatives to the project (conventional agricultural practices) are legal. The project activity goes above and beyond the alternative scenario with respect to sequestering carbon and reducing GHG emissions. The audit team's in-country expertise and interviews with stakeholders on site confirmed that the alternatives are legal.
The appropriateness of data and parameters used in financial calculations and sensitivity analyses, including those taken from feasibility study reports.	N/A - Additionality method does not consider financial calculations
The suitability of the benchmark used for investment analysis.	N/A - Additionality method does not consider investment analysis.
The credibility of each barrier identified in the barrier analysis.	The audit team interviewed farmers and reviewed peer-reviewed studies (Ref. 53, 55-56, 75-77) referenced in step 2 (Barrier analysis) of section 3.5 of the PDMR to confirm that the following barriers exist in South Africa that prevent the adoption of improved agricultural land management practices: Financial, Perception/Educational, Social/Cultural.

	Grower interviews corroborated the project's claims in section 3.5 of the PDMR concerning barriers to regenerative agriculture practice adoption. Growers expressed concerns that they would be able to scale up or sustain practice changes in their operations without additional financial support. Project personnel and affiliates of the project have consulted growers since the project start date (August 1, 2018), and the project maintains regular communication and consultations regarding the effective implementation of practices. All growers remarked that there is a perception in which regenerative agricultural practices are inherently risky to their yield (and therefore revenue and finances), and that other growers may perceive that practices such as no till or cover cropping may lead to 'dirty' or 'unkempt' looking fields, which is a culturally-related perception for the region. The audit team confirms that these barriers have existed prior to the project start date, and that these barriers may be likely be countered by the project's ongoing stakeholder outreach and financial support from carbon funding.
The appropriateness of the geographical region used in the common practice analysis.	The geographical regions used in the common practice analysis are the different provinces of South Africa, and this is appropriate for the common practice analysis as per the applied methodology. The adoption rates used in the common practice equation (see section 3.5 of the PDMR) are based on the state/provincial level, and they are sourced from FAO statistics relevant to South Africa (Ref. 53), the peer reviewed literature (Ref. 54, 56), and an attestation from a qualified independent local expert (Refs. 7, 78).
Information regarding similar projects identified in the common practice analysis, including essential distinctions between similar projects and the proposed project.	After interviewing project personnel, receiving insights from the audit team's in-country expert and reviewing the Verra registry, the audit team noted that there are multiple conservation agriculture projects in South Africa at this scale with the objective of reducing and removing GHG emissions. Those projects are similar to

	this proposed project, and all are utilizing the VM0042 methodology to conduct common practice analysis.
The reasonableness of assumptions made in the demonstration of additionality.	The audit team issued and reviewed the project proponent's response to finding #12 related to the common practice analysis. Additionally, after interviewing project personnel and reviewing the relevant literature and adoption rate calculations (Refs 51-58), the audit team concludes that assumptions made in the additionality demonstration are reasonable. The audit team reviewed the additionality calculations and peer-reviewed studies/government data (Ref. 51-58) used to obtain the adoption rate of project activities in different provinces of South Africa and confirmed that the adoption rate was calculated using equation 1 of the methodology. The audit team concludes that the adoption rate of all project activities (stacked) is less than 20% for all provinces and hence additional.

3.4.6 Quantification of GHG Emission Reductions and Carbon Dioxide Removals

The project was assessed to ensure compliance with the methodology regarding the quantification methods used for GHG emission reductions and removals. The audit team conducted interviews with the project team and reviewed section 5 of the PDMR to assess the quantification of baseline emissions, project emissions, leakage emissions, uncertainty, and estimated net GHG emission reductions and removals. It is noted that 14 findings (5, 10, 11, 13, 14, 15, 19, 21, 29, 30, 31, 33, 34, and 36) were issued during the review of the project's quantification spreadsheets for emission reduction calculations using the quantification approach 3 of the methodology. Additionally, 13 findings (37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, and 49) were issued related to the model validation report and quantification of SOC stocks using Roth C model for quantification approach 1 of the methodology. These findings were adequately addressed by the project proponent and closed.

Quantification of Baseline Emissions

The quantification methods that will be used for calculating baseline emissions during the project crediting period are summarized as follows:

- Baseline soil organic carbon (SOC) stocks will be quantified using the measure and model approach (Quantification approach 1) described in the methodology. The project will use the

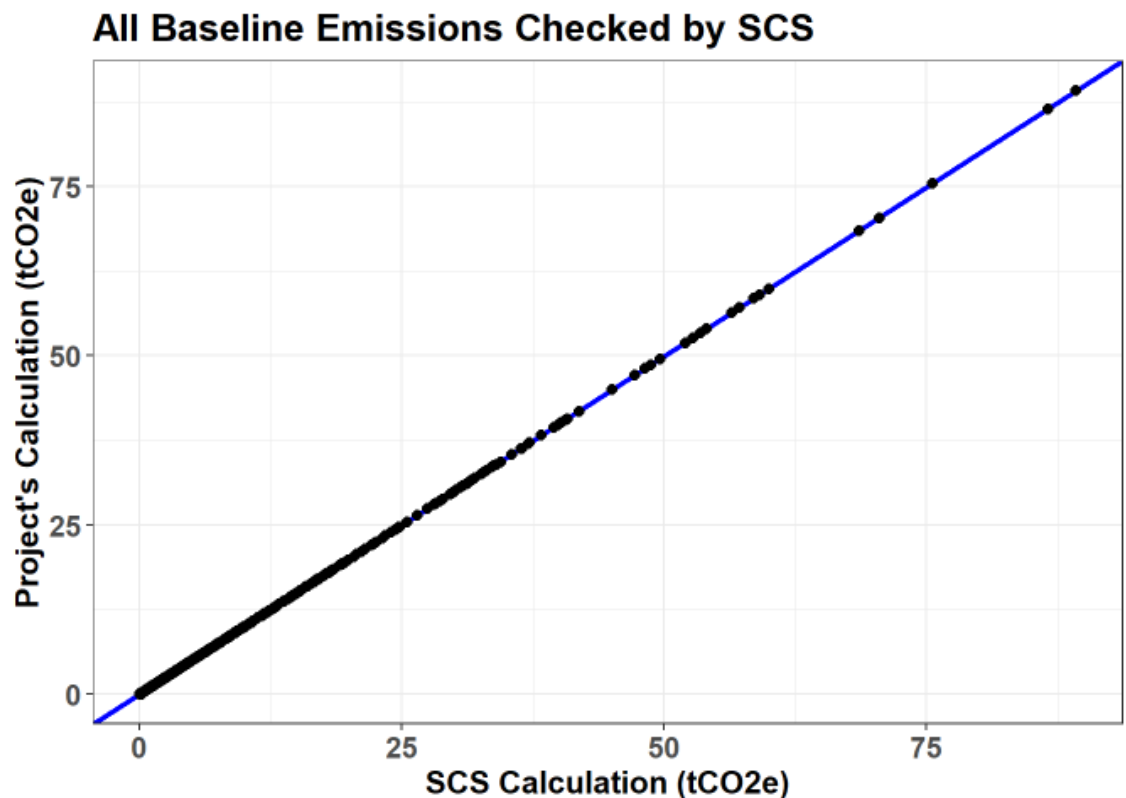
Roth C model to estimate baseline SOC stocks. This model meets all the applicability conditions of the applied module (as described in section 3.4.2 above). Baseline SOC stocks will be quantified using the RothC model following Quantification Approach 1 and following Equation 6 of the methodology.

- Baseline carbon stocks in the aboveground and below ground woody biomass will be quantified using the relevant CDM A/R tools as listed in the applied methodology.
- Baseline CO₂ emissions from fossil fuel combustion will be quantified using equations 7 and 8 of the applied methodology.
- Baseline CO₂ emissions from liming will be quantified using equations 9 and 10 of the applied methodology.
- Baseline methane emissions from livestock enteric fermentation will be quantified using equation 13 of the methodology.
- Baseline methane emissions from manure deposition will be quantified using modified equation 13 and 14 of the methodology when certain conditions are met (see section 3.4.7 below for more details regarding this methodology deviation). However, default equations 13 and 14 of the applied methodology will be used to quantify the baseline methane emissions when conditions are not met.
- Baseline methane emissions from biomass burning will be quantified using equation 15 of the methodology.
- Baseline nitrous oxide emissions from nitrogen fertilizer application and nitrogen fixing species will be quantified using quantification approach 3 and equations 17 to 25 of the applied methodology.
- Baseline nitrous oxide emissions from manure deposition will be quantified using equations 27 to 32 of the applied methodology.
- Baseline nitrous oxide emissions from biomass burning will be quantified using equation 33 of the applied methodology.

The following steps have been taken to validate the quantification methods described above.

- The audit team reviewed section 5.1 of the PDMR to confirm that all the relevant equations, justifications for choosing the relevant emission factors, default values and methodological choices for the estimation of the baseline emissions has been included for all the sources included in the project boundary (see section 3.4.3 above).
- The audit team interviewed the farmers and reviewed the baseline data (Ref. 1-5, 22-24) to confirm that project activities do not include woody biomass or burning of biomass at any of the fields enrolled during the first monitoring period.

- The audit team reviewed the model validation report (Ref. 38) provided by the project proponent and the model validation report review written by the independent modeling experts Dr. Tessa Van Der Voort and Dr. Gerard Ros (Ref. 71) to confirm that the Roth C model met all the required criteria for model calibration and validation. Furthermore, the audit team confirmed that the Roth C model is valid and used appropriately to quantify baseline SOC stocks in the project as per the requirements specified in the applied methodology and module.
- The audit team independently recalculated baseline SOC stocks for a sample of fields based upon the project's database using R, which is an alternative tool to Excel. The following graph shows a comparison between Quantitative Approach 3 baseline emissions calculated by SCS and the project, where SCS used the project's management data as inputs to our own R script:



- The audit team assessed and independently recalculated baseline methane, nitrous oxide, and carbon dioxide emissions outputs from various sources using raw baseline data (Ref. 1-5) and quantitative 3 equations from the methodology in R and cross-checked them with the project's outputs for a sample of farms. The audit team confirmed that the relevant equations along with the values of the data and parameters used in the calculations are valid and correctly applied.

- The audit team confirmed the project instance areas (Ref. 18-21) and assessed the chosen projection system with an analysis of the project's geodetic polygons in GIS.

A description of the steps taken to validate the baseline parameters and data used in the PDMR is listed below. Please note that the baseline methane, nitrous oxide, and carbon dioxide emissions and baseline SOC stocks were calculated per hectare using the data and parameters outlined in the table below. A description of the steps taken to validate the baseline data and parameters used in the PDMR follows.

Parameter	Description	Value	Step(s) taken to validate the value
$fSOC_{bsl,1,t}$	Modeled baseline SOC stocks in year t	Various across fields	Reviewed the model validation report review (Ref. 71), baseline data used for modeling, and model schedule files, and model outputs (Ref. 27-30) for randomly selected fields enrolled during the first monitoring period
$fSOC_{bsl,1,t-1}$	Modeled baseline SOC stocks in year $t-1$	Various across fields	Reviewed the model validation report review (Ref. 71), baseline data used for modeling, and model schedule files, and model outputs (Ref. 27-30) for randomly selected fields enrolled during the first monitoring period
$FFC_{bsl,j,i,t}$	Consumption of fossil fuel type j during the baseline scenario	Various across fields	Reviewed the baseline data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
$EF_{CO2,j}$	Emission factor for fossil fuel j	0.002886	Confirmed from Table 3.3.1 Chapter 3 Volume 2 of the IPCC 2019 report.
$M_{Limestone,bsl,i,t}$ and $M_{Dolomite,bsl,i,t}$	Amount of calcitic limestone ($CaCO_3$) and dolomite ($CaMg(CO_3)_2$) applied during the baseline scenario	Various across fields	Reviewed the baseline data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
$EF_{limestone}$	Emission factor for calcitic limestone	0.12	Confirmed from Section 11.3, Chapter 11, Volume 4 of the IPCC 2019 report.
$EF_{Dolomite}$	Emission factor for dolomite (0.13)	0.13	Confirmed from Section 11.3, Chapter 11, Volume 4 of the IPCC 2019 report.
I	Type of livestock	Cattle - Beef	Reviewed the baseline data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
$Pop_{bsl,i,i,t,P}$	Population of grazing livestock	Various across fields	Reviewed the baseline data and QA3 emission quantification spreadsheets

	during the baseline scenario		(Ref. 1-5) for various fields during the first monitoring period
GWP_{CH4}	Global warming potential for CH ₄	28	Confirmed from the IPCC 2019 report.
$EF_{ent,i,P}$	Enteric fermentation emission factor	52	Confirmed from Table 10.11 Volume 4 Chapter 10 of the IPCC 2019 report.
$W_{bsl,i,i,t,P}$	Average weight of livestock during the baseline scenario	550 kg for mature animals and 275 kg for young animals	Reviewed the baseline data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
Days	No. of days animals were present on the fields	Various across fields	Reviewed the baseline data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
$EF_{CH4,md,i,P,S}$	Emission factor for methane emissions from manure deposition	0.6	Confirmed from Table 10.11 Volume 4 Chapter 10 of the IPCC 2019 report.
$AWMS_{i,i,t,P,S}$	Fraction of total annual volatile solids	1.0	Reviewed the baseline data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
$VS_{rate,i,P}$	Default volatile solids excretion rate	12	Confirmed from Table 10.13a Volume 4 Chapter 10 of the IPCC 2019 report.
GWP_{N2O}	Global warming potential for N ₂ O	265	Confirmed from IPCC 2019 report.
$EF_{Ndirect}$	Emission factor for nitrous oxide emissions from N additions from	0.005	Confirmed from Table 11.1 Volume 4 Chapter 11 of the IPCC 2019 report.
$M_{bsl,SF,i,t}$	Mass of N-containing synthetic fertilizer during the baseline scenario	Various across fields	Reviewed the baseline data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
$M_{bsl,OF,i,t}$	Mass of N-containing organic fertilizer during the baseline scenario	Various across fields	Reviewed the baseline data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
NC_{SF}	N content of synthetic fertilizer type SF	Various across fields	Reviewed the baseline data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period

NC _{OF}	N content of organic fertilizer type OF	Various across fields	Reviewed the baseline data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
MS _{bsl,i,i,t}	Fraction of nitrogen excretion by livestock during the baseline scenario	Various across fields	Reviewed the baseline data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
Frac _{GASF,I,S}	Fraction of all synthetic N added to soils that volatilizes as NH ₃ and NO _x for manure management system	0.011	Confirmed from Table 11.3 Volume 4 Chapter 11 of the IPCC 2019 report.
Frac _{GASM,I,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	0.21	Confirmed from Table 11.3 Volume 4 Chapter 11 of the IPCC 2019 report.
EF _{Nvolat}	Emission factor for nitrous oxide emissions from atmospheric deposition of N on soils and water surfaces	0.005	Confirmed from Table 11.3 Volume 4 Chapter 11 of the IPCC 2019 report.
Frac _{LEACH,I,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	0 if field is not irrigated; 0.24 if field is irrigated	Confirmed from Table 11.3 Volume 4 Chapter 11 of the IPCC 2019 report.
EF _{nleach}	Emission factor for nitrous oxide emissions from leaching and runoff	0.11	Confirmed from Table 11.3 Volume 4 Chapter 11 of the IPCC 2019 report.

MB _{g,bsl,i,t}	Annual aboveground and belowground dry matter of N-fixing species during the baseline scenario	Various across fields	Reviewed the baseline data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
N _{content,g}	Fraction of N in dry matter for N-fixing species	Aboveground N: 0.008 Belowground N: 0.008	Confirmed from Table 11.1a Volume 4 Chapter 11 of the IPCC 2019 report.
N _{exl,p}	Average annual nitrogen excretion per head of livestock type	0.44	Confirmed from Table 10.19 Volume 4 Chapter 10 of the IPCC 2019 report.
EF _{N2O,md,l,s}	Emission factor for nitrous oxide from manure and urine deposited on soils by livestock type	0.002	Confirmed from Table 11.1 Volume 4 Chapter 11 of the IPCC 2019 report.
A	Project area during the baseline scenario	15,547 ha	Recalculated polygon areas in GIS for all project fields (Ref. 18-21) during the first monitoring period

Quantification of Project Emissions

The quantification methods that will be used for calculating project emissions during the project crediting period are summarized as follows:

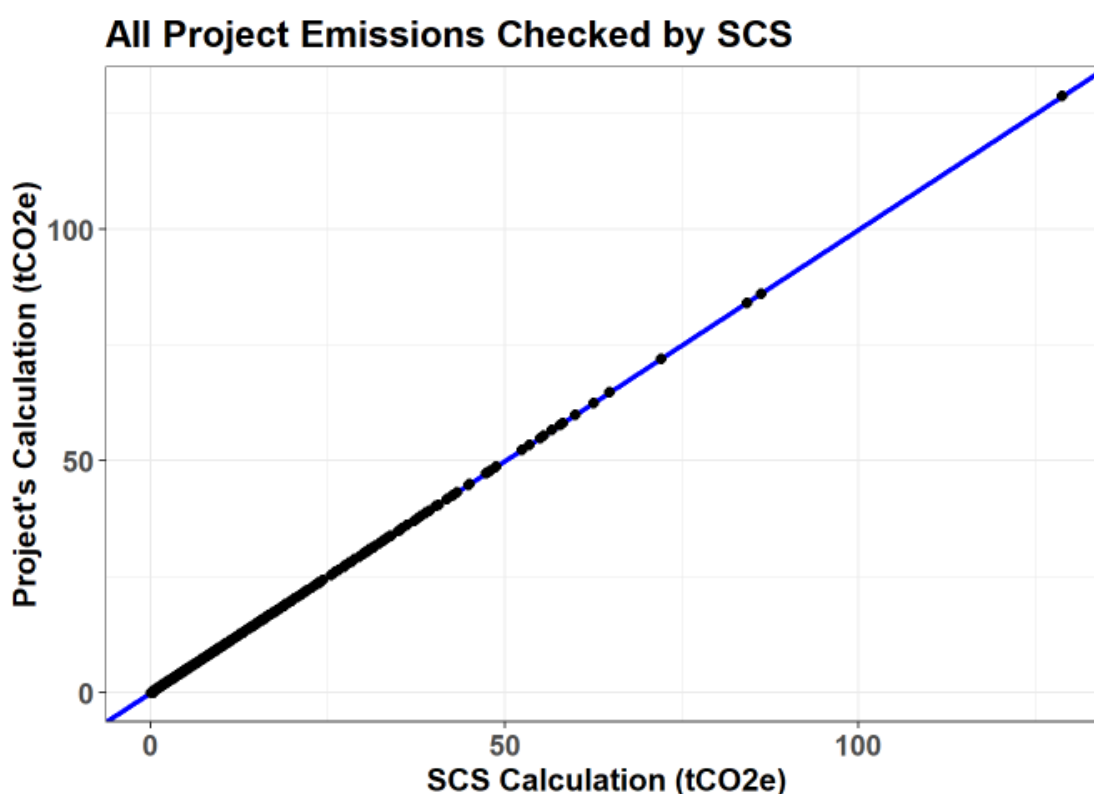
- Project soil organic carbon (SOC) stocks will be quantified using the measure and model approach (Quantification approach 1) described in the methodology. The project will use the Roth C model to estimate project SOC stocks. This model meets all the applicability conditions of the applied module (as described in section 3.4.2 above). Project SOC stocks will be quantified using the RothC model following Quantification Approach 1 and following Equation 6 of the methodology.
- Project carbon stocks in the aboveground and below ground woody biomass will be quantified using the relevant CDM A/R tools as listed in the applied methodology.
- Project carbon dioxide emissions from fossil fuel combustion will be quantified using equations 7 and 8 of the applied methodology.
- Project carbon dioxide emissions from liming will be quantified using equations 9 and 10 of the applied methodology.

- Project methane emissions from livestock enteric fermentation will be quantified using equation 13 of the methodology.
- Project methane emissions from manure deposition will be quantified using modified equation 13 and 14 of the methodology when certain conditions are met (see section 3.4.7 below for more details regarding this methodology deviation). However, default equations 13 and 14 of the applied methodology will be used to quantify the emissions when conditions are not met.
- Project methane emissions from biomass burning will be quantified using equation 15 of the methodology.
- Project nitrous oxide emissions from nitrogen fertilizer application and nitrogen fixing species will be quantified using quantification approach 3 and equations 17 to 26 of the applied methodology.
- Project nitrous oxide emissions from manure deposition will be quantified using equations 27 to 32 of the applied methodology.
- Project nitrous oxide emissions from biomass burning will be quantified using equation 33 of the applied methodology.

The following steps have been taken to validate the quantification methods described above.

- The audit team reviewed section 5.2 of the PDMR to confirm that all the relevant equations, justifications for choosing the relevant emission factors, default values and methodological choices for the estimation of the project emissions have been included for all the sources included in the project boundary (see section 3.4.3 above).
- The audit team interviewed the farmers and reviewed the project data (Ref. 1-5) to confirm that project activities do not include woody biomass or burning of biomass at any of the fields enrolled during the first monitoring period.
- The audit team reviewed the model validation report (Ref. 38) provided by the project proponent and the model validation report review written by the independent modeling experts Dr. Tessa Van Der Voort and Dr. Gerard Ros (Ref. 71) to confirm that the Roth C model met all the required criteria for model calibration and validation. Furthermore, the audit team confirmed that the Roth C model is valid and used appropriately to quantify project SOC stocks in the project as per the requirements specified in the applied methodology and module by running the validated model at randomly sampled farms and assessing outputs in relation to the project's outputs that are used for calculating VCUs (27-30).
- The audit team independently recalculated project SOC stocks for a sample of fields based upon the project's database (Ref. 66) using R, which is an alternative tool to Excel.
- The audit team assessed and independently recalculated project methane, nitrous oxide, and carbon dioxide emissions outputs from various sources using raw project data (Ref. 1-5) and

quantitative 3 equations from the methodology in R and cross-checked them with the project's outputs for a sample of farms. The audit team confirmed that the relevant equations along with the values of the data and parameters used in the calculations are valid and correctly applied. The following graph shows a comparison between Quantitative Approach 3 project emissions calculated by SCS and the project.



- The audit team confirmed the project instance areas (Ref. 18-21) and assessed the chosen projection system with an analysis of the project's geodetic polygons in GIS.

A description of the steps taken to validate the project parameters and data used in the PDMR is listed below. Please note that the project methane, nitrous oxide, and carbon dioxide emissions and baseline SOC stocks were calculated per hectare using the data and parameters outlined in the table below. A description of the steps taken to validate the baseline data and parameters used in the PDMR follows.

Parameter	Description	Value	Step(s) taken to validate the value
$fSOC_{bsl,1,t}$	Modeled project SOC stocks in year t	Various across fields	Reviewed the model validation report review (Ref. 71), project data used for modeling, and model schedule files, and model outputs (Ref. 27-30) for randomly selected fields enrolled during the first monitoring period

$fSOC_{bsl,1,t-1}$	Modeled project SOC stocks in year t-1	Various across fields	Reviewed the model validation report review (Ref. 71), project data used for modeling, and model schedule files, and model outputs (Ref. 27-30) for randomly selected fields enrolled during the first monitoring period
$FFC_{bsl,j,i,t}$	Consumption of fossil fuel type j during the project scenario	Various across fields	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
$EF_{CO2,j}$	Emission factor for fossil fuel j	0.002886	Confirmed from Table 3.3.1 Chapter 3 Volume 2 of the IPCC 2019 report.
$M_{Limestone,bsl,i,t}$ and $M_{Dolomite,bsl,i,t}$	Amount of calcitic limestone ($CaCO_3$) and dolomite ($CaMg(CO_3)_2$) applied during the project scenario	Various across fields	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
$EF_{limestone}$	Emission factor for calcitic limestone	0.12	Confirmed from Section 11.3, Chapter 11, Volume 4 of the IPCC 2019 report.
$EF_{Dolomite}$	Emission factor for dolomite (0.13)	0.13	Confirmed from Section 11.3, Chapter 11, Volume 4 of the IPCC 2019 report.
I	Type of livestock	Cattle - Beef	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
$Pop_{bsl,i,i,t,P}$	Population of grazing livestock during the project scenario	Various across fields	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
GWP_{CH4}	Global warming potential for CH_4	28	Confirmed from the IPCC 2019 report.
$EF_{ent,i,P}$	Enteric fermentation emission factor	52	Confirmed from Table 10.11 Volume 4 Chapter 10 of the IPCC 2019 report.
$W_{bsl,i,i,t,P}$	Average weight of livestock during the project scenario	550 kg for mature animals and 275 kg for young animals	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
Days	No. of days animals were present on the fields	Various across fields	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period

$EF_{CH4,md,I,P,S}$	Emission factor for methane emissions from manure deposition	0.6	Confirmed from Table 10.11 Volume 4 Chapter 10 of the IPCC 2019 report.
$AWMS_{l,i,t,P,S}$	Fraction of total annual volatile solids	1.0	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
$VS_{rate,I,P}$	Default volatile solids excretion rate	12	Confirmed from Table 10.13a Volume 4 Chapter 10 of the IPCC 2019 report.
GWP_{N2O}	Global warming potential for N_2O	265	Confirmed from IPCC 2019 report.
$EF_{Ndirect}$	Emission factor for nitrous oxide emissions from N additions from synthetic fertilizers, organic amendments and crop residues	0.005	Confirmed from Table 11.1 Volume 4 Chapter 11 of the IPCC 2019 report.
$M_{bsl,SF,i,t}$	Mass of N-containing synthetic fertilizer during the project scenario	Various across fields	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
$M_{bsl,OF,i,t}$	Mass of N-containing organic fertilizer during the project scenario	Various across fields	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
NC_{SF}	N content of synthetic fertilizer type SF	Various across fields	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
NC_{OF}	N content of organic fertilizer type OF	Various across fields	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
$MS_{bsl,l,i,t}$	Fraction of nitrogen excretion by livestock during the project scenario	Various across fields	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
$Frac_{GASF,I,S}$	Fraction of all synthetic N added to soils that	0.011	Confirmed from Table 11.3 Volume 4 Chapter 11 of the IPCC 2019 report.

	volatilizes as NH_3 and NO_x		
$\text{Frac}_{\text{GASM},i,S}$	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	0.21	Confirmed from Table 11.3 Volume 4 Chapter 11 of the IPCC 2019 report.
$\text{EF}_{\text{Nvolat}}$	Emission factor for nitrous oxide emissions from atmospheric deposition of N on soils and water surfaces	0.005	Confirmed from Table 11.3 Volume 4 Chapter 11 of the IPCC 2019 report.
$\text{Frac}_{\text{LEACH},i,S}$	Fraction of N (synthetic or organic) added to soils and in manure and urine deposited on soils that is lost through leaching and runoff	0 if the field is not irrigated; 0.24 if the field is irrigated	Confirmed from Table 11.3 Volume 4 Chapter 11 of the IPCC 2019 report.
$\text{EF}_{\text{nleach}}$	Emission factor for nitrous oxide emissions from leaching and runoff	0.11	Confirmed from Table 11.3 Volume 4 Chapter 11 of the IPCC 2019 report.
$\text{MB}_{g,bsl,i,t}$	Annual aboveground and belowground dry matter of N-fixing species during the project scenario	Various across fields	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
Ncontent_g	Fraction of N in dry matter for N-fixing species	Aboveground N: 0.008 Belowground N: 0.008	Confirmed from Table 11.1a Volume 4 Chapter 11 of the IPCC 2019 report.
$\text{Nex}_{l,p}$	Average annual nitrogen excretion per head of livestock type	0.44	Confirmed from Table 10.19 Volume 4 Chapter 10 of the IPCC 2019 report.

EF _{N2O,md,l,S}	Emission factor for nitrous oxide from manure and urine deposited on soils by livestock type	0.002	Confirmed from Table 11.1 Volume 4 Chapter 11 of the IPCC 2019 report.
A	Project area during the project scenario	15,547 ha	Recalculated polygon areas in GIS for all project fields (Ref. 18-21) during the first monitoring period

Quantification of Leakage

The quantification methods that will be used for calculation of leakage emissions during the project crediting period are summarized as follows:

- The methodology considers four types of leakage including (i) leakage from the new application of organic amendments from outside the project area, (ii) leakage from livestock displacement, (iii) leakage from productivity decline and (iv) leakage from diversion of biomass residue used for energy applications in the baseline scenario.
- In this project, leakage from the new application of organic amendments from outside the project area will be quantified using equation 34 of the applied methodology for project instances where new organic amendments are applied in the project that were not applied in the historical look back period. No leakage deductions will be applied if the manure or compost applied in the project is produced on-site by the farmer.
- Leakage from livestock displacement will be quantified using relevant equations as described in section 8.2.7 and 8.2.10 of the applied methodology if the livestock numbers are reduced in the project scenarios compared to the baseline scenarios.
- Leakage from productivity decline will be quantified using equations 35 or 36 of the applied methodology if productivity decline occurs.
- Leakage from diversion of biomass residue used for energy applications in the baseline scenario will be quantified using procedures in CDM tool 16 listed in the applied methodology.

The following steps have been taken to validate the quantification methods described above.

- The audit team interviewed the farmers and reviewed livestock data (Ref. 1-5) for the enrolled fields during the first monitoring period to confirm that average livestock grazing days are slightly higher in the project scenarios compared to the baseline scenarios. Thus, livestock emissions increased and leakage from livestock displacement are not applied for the fields enrolled during the first monitoring period.

- The audit team interviewed the project proponent and farmers to confirm that new application of manure or crop residues are not diverted from energy applications. Thus, leakage from diversion of biomass residue used for energy applications in the baseline scenario is not applied for the fields enrolled during the first monitoring period.
- The audit team reviewed the referenced studies (Ref. 79-80) demonstrating that improved agricultural management practices enhance soil water-holding capacity, reducing the risk of productivity decline. Furthermore, the audit team reviewed the farmer data (Ref. 1) to confirm that project activities did not negatively impact productivity during the first monitoring period.
- The audit team reviewed data in the PDMR to confirm that the data, parameter values, and equations are correctly listed to be applied to future fields to be enrolled in the project.

Summary of Net GHG Emission Reductions or Removals

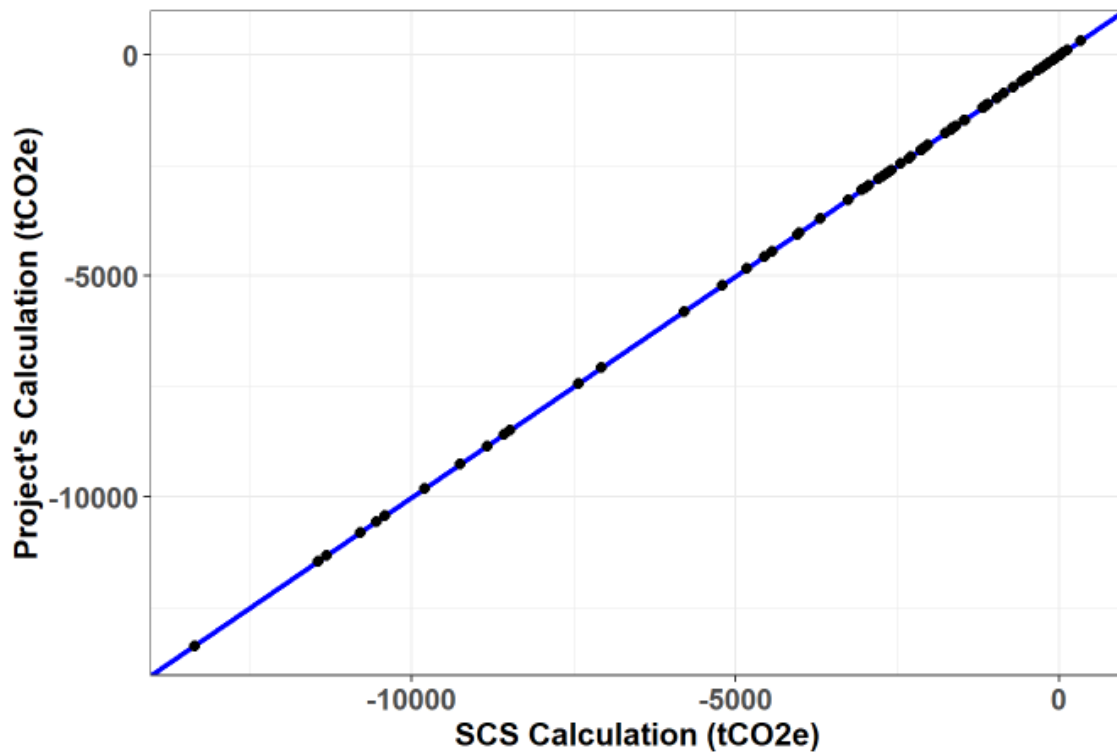
The quantification methods that will be used for calculation of net GHG emission reductions and removals during the project crediting period are summarized as follows:

- Net GHG emission reductions will be quantified using equation 37 of the applied methodology.
- Net GHG emissions removals will be quantified using equation 38 of the applied methodology.
- Net GHG emission reductions and removals will be quantified using equation 39 of the applied methodology.
- Carbon dioxide emission reductions and removals will be quantified using equations 40 to 44 of the applied methodology.
- Methane emission reductions will be quantified using equations 45 to 48 of the applied methodology.
- Nitrous oxide emission reductions will be quantified using equations 49 and 50 of the applied methodology.

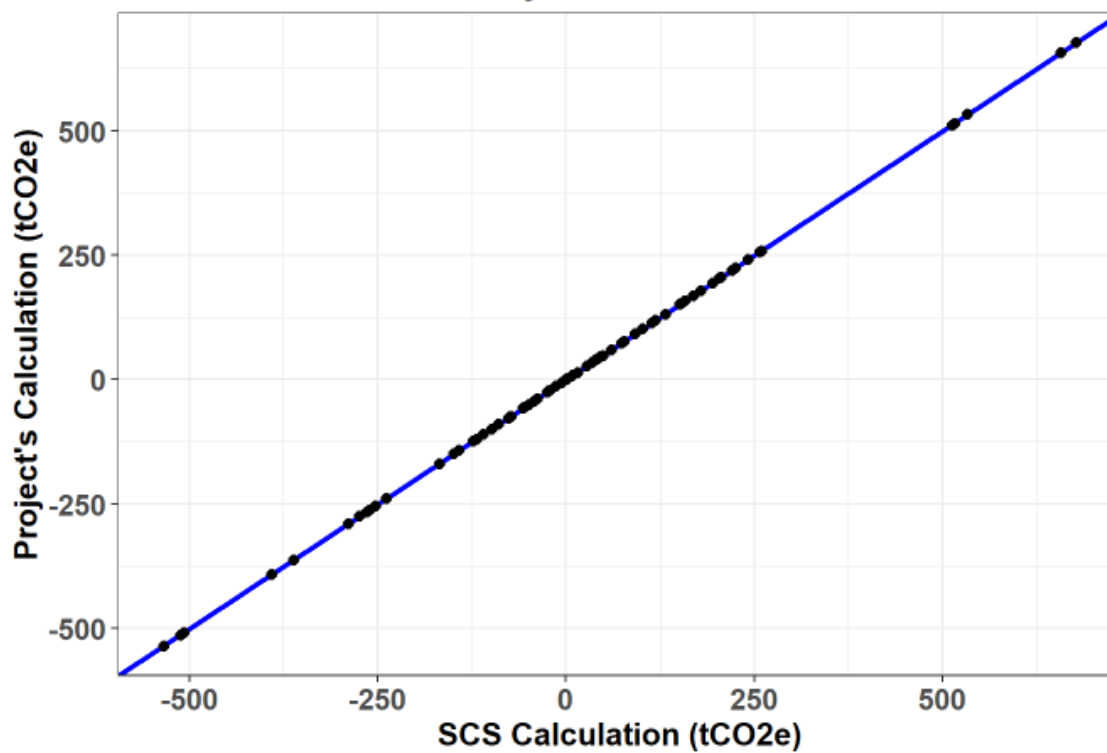
The following steps have been taken to validate the quantification methods described above.

- The audit team reviewed and recalculated the calculations in R for net GHG emission reductions, net GHG emission removals, net GHG emission reductions and removals (Ref. 1-2) along with carbon dioxide emission reductions and removals, methane emission reductions, nitrous oxide emission reductions, and carbon dioxide fuel emissions reductions for the fields enrolled during the first monitoring period and confirmed that all the equations as well as data and parameter values are correctly applied. The following are graphs comparing farm-level net SOC sequestration removals and net non-SOC related emissions reductions separately:

All net SOC ERs by Farm/Year



All net non-SOC ERs by Farm/Year



Uncertainties Associated With the Calculation of Emissions

The quantification methods that will be used for calculation of uncertainty during the project crediting period are summarized as follows:

- Model prediction error resulting from uncertainty in model parameters or model structural errors will be calculated using equation 51 and 52 of the applied methodology.
- Sampling error will be calculated using equation 53 to 55 of the applied methodology.
- Uncertainty deductions will be estimated and applied separately for each ERR source within the project boundary using equation 65 of the applied methodology.

The following steps have been taken to validate the quantification methods described above.

- The audit team issued finding #10 and reviewed the project proponent's response. Furthermore, the audit team recalculated uncertainty for the fields enrolled during the first monitoring period, based upon the applicable methodology equations and the project's RothC validation statistics and compared to the project's uncertainty (Ref. 2) to confirm that all the equations as well as data and parameter values are correctly applied.
- The audit team reviewed the IME report (Ref. 71) and the MVR (Ref. 38) to confirm that the project is calculating model prediction error appropriately. The audit team confirms that the validation dataset contains relatively high SOC stock changes associated with high manure inputs, with one study showing 6.43 tC ha⁻¹ year⁻¹⁵. The project inflated the error variance for multiple practice change and crop functional group (PC/CFG) combinations that were under validation, which in turn increased the model prediction error and total uncertainty deduction. The audit team confirmed that this procedure was approved by the IME and that the project abides by VMD0053 modeling requirements.
- The audit team reviewed an analysis conducted by the project (Ref. 81), which identified SOC stock change outliers and quantified the impact of these outliers on total ERs from SOC removals. The audit team confirms that the analysis is applied on the same SOC stock changes that contribute towards VCU calculations (Ref. 2), and the audit team reproduced the project's SOC stock change outlier identification process. Finally, the audit team reproduced the project's calculated 4.2% impact that outliers have on emissions removals.

The audit team concludes the following with respect to the PDMR:

Assessment of whether...	Audit Team Assessment
All relevant assumptions and data are listed in the PDMR, including their references and sources.	All required assumptions and data including references and sources provided in the PDMR are considered complete as confirmed by document review (Ref. 1-24, 50) and interviews with project personnel and farmers.
All data and parameter values used in the PDMR are	The audit team confirmed that parameters and factors used in the PDMR are reasonable. References are provided and a rationale for the choice of parameter or factor is provided.

⁵ <https://www.mdpi.com/2073-4395/11/3/484>

considered reasonable in the context of the project.	
All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PDMR.	The baseline emissions have been replicated by the audit team. The audit team confirmed that sufficient information and justifications for key assumptions and equations have been provided in section 5.1 of the PDMR to allow for a third-party to reproduce the calculations to estimate baseline emissions.

Overall Conclusion

In conclusion, the methodology and any referenced tools have been applied correctly to calculate baseline emissions, project emissions, leakage and net GHG emission reductions and removals during the project crediting period. The audit team also confirms that the project applied the RothC consistently in the project area, as described and validated in the MVR (Ref. 38), which was approved by the IME (Ref. 71). The audit team confirms that model prediction error and other components of the uncertainty deduction have been calculated correctly for this verification period (Ref. 2).

3.4.7 Methodology Deviations

The table below identifies one methodology deviation applied to the project which has been validated as part of the validation engagement described in this report. The audit team concludes, in summary, that this deviation is valid.

Identification of deviation	Assessment column 1*	Assessment column 2**
Livestock methane emission calculations	The methodology deviation meets with the criteria and specifications for permitted methodology deviations as it relates to data and parameters available at validation and data and parameters monitored.	The audit team reviewed the project proponent's response to finding #32 related to the methodology deviation. The project's argument for reverting back to 'grazing days' for Equations 13-14 is compelling, as it would satisfy the Standard requirement (section 3.20) that the deviation is more accurate in emissions accounting, while at the same time, v2.0 inherently accepts this premise in Equation 29. Furthermore, emissions would not

		decrease in the project scenario from baseline, given requirements in section 8.4.2 of VM0042 v2.0, which does indicate the deviation is not a less conservative approach. After reviewing all documentation mentioned in finding #32, the audit team concludes that the deviation is generally more accurate and does not pose a problem relative to conservatism in emissions accounting. The audit team also implemented the ammended equations in our quantitative approach 3 check and found the results to be consistent with the project's outputs.
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- *Assessment column 1 contains information regarding assessment of whether the deviation meets with the criteria and specifications for permitted methodology deviations.
- **Assessment column 2 contains information regarding assessment of whether the deviation does not negatively impact the conservativeness of the quantification of GHG emission reductions or removals (except where it results in increased accuracy)

3.4.8 Monitoring Plan

The parameters to be monitored are as follows:

Data/Parameters be monitored	Description	Steps taken to validate the suitability and eligibility of the monitoring equipment and procedures
$F(SOC_{bsl,i,t})$	Modeled SOC stocks	Reviewed the model validation report review (Ref. 71), project data used for modeling, model schedule files, and model outputs (Ref. 27-30) for randomly selected fields enrolled during the first monitoring period
i	Sample unit	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period

A_i	Area of sample unit	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
j	Type of fossil fuel combusted	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
$EF_{CO2,j}$	Emission factor for fossil fuel j (gasoline or diesel)	Confirmed from Table 3.3.1 Chapter 3 Volume 2 of the IPCC 2019 report
$FFC_{wp,j,i,t}$	Consumption of fossil fuel type j	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
$EF_{Limestone}$ and $EF_{Dolomite}$	Emission factor for the application of calcitic limestone ($CaCO_3$) and dolomite ($CaMg(CO_3)_2$) (i.e., liming)	Confirmed from Section 11.3, Chapter 11, Volume 4 of the IPCC 2019 report
$f(CH4_{soilbsl,i,t})$	Modeled methane emissions from the soil	Not applicable as soil methanogens source is not included in the project boundary (see section 3.4.3 above)
$EF_{ent,l,p}$	Enteric fermentation emission factor	Confirmed from Table 10.11 Volume 4 Chapter 10 of the IPCC 2019 report
$Pop_{wp,l,i,t,p}$	Population of grazing livestock	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
l	Type of livestock	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
P	Productivity system	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
$AWMS_{l,i,t,p,s}$	Fraction of total annual volatile solids	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
$EF_{CH4,md,l,p,s}$	Emission factor for methane emissions from manure deposition	Confirmed from Table 10.11 Volume 4 Chapter 10 of the IPCC 2019 report

S	Manure management system	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
VS _{rate,l,P}	Default volatile solids excretion rate	Confirmed from Table 10.13a Volume 4 Chapter 10 of the IPCC 2019 report
W _{wp,l,i,t,P}	Average weight of livestock	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
CF _c	Combustion factor for agricultural residue	Values from Table 2.6 Volume 4 Chapter 2 of the IPCC 2019 report will be used. Biomass burning is not a project activity on any of the fields enrolled during the first monitoring period
EF _{c,CH4}	Emission factor agricultural residue burned.	Confirmed from Table 2.5 Volume 4 Chapter 2 of the IPCC 2019 report
c	Type of agricultural residue	Type of agriculture residue will be determined from the project data. Biomass burning is not a project activity on any of the fields enrolled during the first monitoring period
MB _{wp,c,i,t}	Mass of agricultural residues burned	Mass of agriculture residue burned will be determined from the project data. Biomass burning is not a project activity on any of the fields enrolled during the first monitoring period
f(N ₂ O _{soil}) _{bsl,i,t}	Modeled nitrous oxide emissions from soil	Not applicable as nitrous oxide emissions are not modeled but rather quantified using QA3 of the applied methodology
EF _{Ndirect}	Emission factor for direct nitrous oxide emissions from N additions	Confirmed from Table 11.1 Volume 4 Chapter 11 of the IPCC 2019 report
NC _{SF}	N content of synthetic fertilizer type SF	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
SF	Type of synthetic N fertilizer	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
M _{wp,SF,i,t}	Mass of N-containing synthetic fertilizer type SF applied	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period

NC _{OF}	N content of organic fertilizer type OF	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
OF	Type of organic N fertilizer	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
M _{wp,OF,i,t}	Mass of N-containing organic fertilizer applied	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
FraC _{GASF,I,S}	Fraction of all synthetic N added to soils that volatilizes as NH ₃ and NO _x	Confirmed from Table 11.3 Volume 4 Chapter 11 of the IPCC 2019 report.
FraC _{GASM,I,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	Confirmed from Table 11.3 Volume 4 Chapter 11 of the IPCC 2019 report.
FraC _{LEACH,I,S}	Fraction of N (synthetic or organic) added to soils and N in manure and urine deposited on soils that is lost through leaching and runoff	Confirmed from Table 11.3 Volume 4 Chapter 11 of the IPCC 2019 report.
EF _{Nleach}	Emission factor for nitrous oxide emissions from leaching and runoff	Confirmed from Table 11.3 Volume 4 Chapter 11 of the IPCC 2019 report.
MB _{g,wp,i,t}	Annual aboveground and belowground dry matter of N-fixing species g returned to soils	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
N _{content,g}	Fraction of N in dry matter for N-fixing species g	Confirmed from Table 11.1a Volume 4 Chapter 11 of the IPCC 2019 report
g	Type of N-fixing species	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
EF _{N2O,md,I,S}	Emission factor for nitrous oxide from manure and urine deposited on soils by livestock type	Confirmed from Table 11.1 Volume 4 Chapter 11 of the IPCC 2019 report

$N_{ex,i,p}$	Annual average nitrogen excretion per head of livestock	Confirmed from Table 10.19 Volume 4 Chapter 10 of the IPCC 2019 report
$EF_{N_{volat}}$	Emission factor for nitrous oxide emissions from atmospheric deposition of N	Confirmed from Table 11.3 Volume 4 Chapter 11 of the IPCC 2019 report
EF_{c,N_2O}	Nitrous oxide emission factor for the burning of agricultural residue	Values from Table 2.5 Volume 4 Chapter 2 of the IPCC 2019 report will be used. Biomass burning is not a project activity on any of the fields enrolled during the first monitoring period.
$M_{OA_{wp,i,t}}$	Mass of organic amendment applied as fertilizer	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
$CC_{wp,i,t}$	Carbon content of manure applied as fertilizer	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
$P_{wp,p}$	Average productivity for product p during the project period	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
p	Crop/livestock product	Reviewed the project data and QA3 emission quantification spreadsheets (Ref. 1-5) for various fields during the first monitoring period
$RP_{wp,p}$	Average regional productivity for product p during the project period	Not applicable during the first monitoring period, as the monitoring of this parameter is required after 10 years and this monitoring period only covers first 3 years.
$SOC_{bsl,i,t}$	Areal mean SOC stocks in the baseline scenario for sample unit i in year t	Reviewed the model validation report review (Ref. 71), baseline data used for modeling, model schedule files, and model outputs (Ref. 27-30) for randomly selected fields enrolled during the first monitoring period
$SOC_{bsl,i,t-1}$	Areal mean SOC stocks in the baseline scenario for sample unit i in year t – 1	Reviewed the model validation report review (Ref. 71), baseline data used for modeling, model schedule files, and model outputs (Ref. 27-30) for randomly selected fields enrolled during the first monitoring period
$SOC_{wp,i,t}$	Areal mean SOC stocks in the project scenario for sample unit i in year t	Reviewed the model validation report review (Ref. 71), project data used for modeling, model schedule files, and model outputs (Ref. 27-30)

		for randomly selected fields enrolled during the first monitoring period
$SOC_{wp,i,t-1}$	Areal mean SOC stocks in the project scenario for sample unit i in year $t - 1$	Reviewed the model validation report review (Ref. 71), project data used for modeling, model schedule files, and model outputs (Ref. 27-30) for randomly selected fields enrolled during the first monitoring period
$\Delta C_{TREE,bsl,i,t}$	Areal mean change in carbon stocks in trees in the baseline	Not applicable during the first monitoring period. The audit team reviewed the baseline and project data (Ref. 1-5) to confirm that all the fields enrolled during the first monitoring period do not include any agroforestry practices
$\Delta C_{SHRUB,bsl,i,t}$	Areal mean change in carbon stocks in shrubs in the baseline	Not applicable during the first monitoring period. The audit team reviewed the baseline and project data (Ref. 1-5) to confirm that all the fields enrolled during the first monitoring period do not include any agroforestry practices
$\Delta C_{TREE,wp,i,t}$	Areal mean change in carbon stocks in trees in the project	Not applicable during the first monitoring period. The audit team reviewed the baseline and project data (Ref. 1-5) to confirm that all the fields enrolled during the first monitoring period do not include any agroforestry practices
$\Delta C_{SHRUB,wp,i,t}$	Areal mean change in carbon stocks in shrubs in the project	Not applicable during the first monitoring period. The audit team reviewed the baseline and project data (Ref. 1-5) to confirm that all the fields enrolled during the first monitoring period do not include any agroforestry practices
•	Gas or pool	Reviewed the PDMR along with baseline and project data to confirm that appropriate gases or pools are included in the project boundary (see section 3.4.3 above)
$\bar{\Delta} \bullet, t$ and $\bullet \bar{t}$	Mean emission reductions from pool or source $\bullet$, or stock of pool $\bullet$, in year t	Reviewed and replicated the project's uncertainty calculation results (Ref. 2)
Buffer _t	Number of buffer credits to be contributed to the AFOLU pooled buffer account in year t	Reviewed and replicated the project's buffer calculation results (Ref. 2)

A monitoring plan, consistent with the requirements of the methodology, is provided in Section 6.3 of the PDMR. The audit team took the following steps to validate the suitability of the implemented monitoring system. Please note that the project proponent has provided the details for sections 6.3.3 to 6.3.6 of the PDMR in separate reports as part of the submission pack. The audit team issued finding #18 to confirm if these separate reports will be uploaded to the publicly accessible Verra registry page. The project proponent stated that these reports contain commercially sensitive information, but these reports will also be provided to Verra as part of the submission. However, the project proponent will request to redact and remove the commercially sensitive sections from these reports before they are made available publicly on Verra registry.

- Reviewed the PDMR to confirm that the monitoring plan follows the requirements of the methodology.
- Reviewed and confirmed that the stratification and sample size calculations (Ref. 65) are correct as per the methodology. Additionally, the audit team reviewed the project proponent's response to finding # 20.
- Reviewed the data collection and management activities (Ref. 22-24, 65) and discussed aspects of the monitoring plan with the project proponent during the site visit to confirm data collection and management activities.
- Reviewed and confirmed the calculations and modelling processes (Ref. 1-5, 27-30, 38-41) with the project proponent during remote interviews.
- Observed and confirmed the roles and responsibilities by interviewing the project proponent and other stakeholders remotely and during the site visit as well as reviewing the project proponent's response to finding #8.
- Reviewed and confirmed the QA/QC procedures (Ref. 63) with the project proponent during the site visit and remote interviews.

In conclusion, the monitoring plan adheres to the requirements of the applied methodology and any referenced tools.

3.5 Non-Permanence Risk Analysis

The reported value of the overall risk rating, as determined based on the risk analysis documented in the NPRR, was 15%.

The audit team performed a complete review of the risk analysis against the requirements of the AFOLU Non-Permanent Risk Tool. The audit team concludes that the assignment of risk scores is appropriate and in conformance to the AFOLU Non-Permanence Risk Tool.

A detailed review of the audit team's conclusions can be found below.

Internal Risk – Project Management

Risk	Assessment of Rationale, Assumptions, and Justification	Assessment of Quality of Documentation and Data Provided	Conclusion regarding Appropriateness of Risk Rating
Q1	The audit team reviewed the adaptive management plan (Ref. 37) provided by the project proponent and confirmed that it includes monitoring and mitigation plan to address potential risks to the project.	The adaptive management plan assessed by the audit team is of high quality.	Risk rating is appropriate
Q2 (a)	Credits have not been issued for any carbon stocks for this project at this point.	Documentation (PDMR, NPPR) supporting the claim that no carbon credits have been issued for this project is high quality, as this is the initial validation and verification of this project.	Risk rating is appropriate
Q2 (b)	Credits have not been issued for any carbon stocks for this project at this point.	Documentation (PDMR, NPPR) supporting the claim that no carbon credits have been issued for this project is high quality, as this is the initial validation and verification of this project.	Risk rating is appropriate
Q2 (c)	The audit team interviewed the project team and participating farmers on site, as well as assessed the project team's curriculum vitae (CVs)	The CVs (Ref 34) corroborate information received from interviews with the project team and are high quality	Risk rating is appropriate
Q2 (d)	The audit team visited 50% of the participating farms during the site visit across the entire project area region and assessed (Ref. 31).	The travel experience of the audit team on site and Ref 31 are of high quality	Risk rating is appropriate

Q2 (e)	After reviewing the PDMR and other data associated with project monitoring and establishing baselines (Ref. 22-24), the audit team did not detect any previous incidents of a loss event for this project.	The documentation assessed by the audit team (Ref. 22-24) is of high quality.	Risk rating is appropriate
Q2 (f)	From interviewing the project team and farmers on site, the audit team found that farmers participating in the project receive training on improved ALM from the project team.	The interviews of the project team and 50% of participating farmers across the project region are of high quality.	Risk rating is appropriate
Q2 (g)	From interviewing farmers on site, the audit team found that farmers participating in the project are aware of the potential for yields to decrease temporarily during the transition to ALM practices.	The interviews of 50% of participating farmers across the project region are of high quality.	Risk rating is appropriate

Internal Risk – Financial Viability

Risk	Assessment of Rationale, Assumptions, and Justification	Assessment of Quality of Documentation and Data Provided	Conclusion regarding Appropriateness of Risk Rating
Q1 (a-e)	After reviewing financial documentation from the project about revenues and costs (Ref. 33), the audit team agrees that the payback period is 4 years or less from the current risk assessment.	The audit team found the financial documentation to be of high quality.	Risk rating is appropriate

Q2 (f-i)	After reviewing financial documentation from the project about revenues and costs (Ref. 33), the audit team agrees that the project has secured at least 80% investment funding that covers total cash out before the project reaches breakeven.	The audit team found the financial documentation to be of high quality.	Risk rating is appropriate
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Internal Risk – Opportunity Cost

Risk	Assessment of Rationale, Assumptions, and Justification	Assessment of Quality of Documentation and Data Provided	Conclusion regarding Appropriateness of Risk Rating
Q1	The audit team interviewed the farmers, conducted on-site inspections and reviewed the management data (Ref. 1) to confirm that the project fields enrolled in the project are used for commercial agricultural operations to grow commodity crops and thus, not subsistence driven.	The cited documentation as well as the travel experience of the audit team on site and the interviews of participating farmers are of high quality.	Risk rating is appropriate
Q2 (a-f)	The project has identified conventional agriculture as the most profitable alternative to ALM practices implemented by the project, and after on-site interviews with farmers, the audit team accepts this claim as reasonable for the risk assessment. The project identified productivity as a key metric for assessing NPV, as	Interviews with 50% of participating farmers and project documentation (PDMR, Ref. 22-24) are of high quality.	Risk rating is appropriate

	this is the primary variable underlying revenue for farming operations. Based upon the analysis in section 1.19 about productivity for baseline and project years across all participating farms (under 'Productivity declines') and the underlying data sources of this analysis (Ref. 22-24), the audit team accepts the claim that productivity is not significantly different from years with project activities and years with conventional agriculture (i.e., baseline years). Based upon the same data sources, the audit team does accept that fertilizer usage has dropped on average across the project, which would indicate a reduction of costs in project years. Overall, the audit team accepts that NPV is 20% or less between conventional and ALM agriculture.		
Q3 (g-h)	As discussed in section 3.1 for Sustainable Development Goal contributions, the project has demonstrated they are contributing to SDGs 2 and 6, which would qualify as a net positive community impact.	Table 1.18.1 of the PDMR and documentation supporting project contributions to SDGs 2 and 6 are of high quality.	Risk rating is appropriate
Q4 (i)	In response to finding NIR 28, the project provided contracts that each farmer has signed as an agreement to participate in the project (Ref. 23). The audit team accepts that given Clauses 4.1, 8.1.2, 8.1.5, and	The contracts provided are legitimate and of high quality.	Risk rating is appropriate.

	14 of these contracts, they are legally enforceable agreements that can be used to count towards Mitigation (i).		
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Internal Risk – Project Longevity

Risk	Assessment of Rationale, Assumptions, and Justification	Assessment of Quality of Documentation and Data Provided	Conclusion regarding Appropriateness of Risk Rating
Q1	The validation and verification assessment was completed on 25 October 2024, and the project was submitted for registration shortly thereafter. Additionally, Verra approved the exemption request (Ref. 70), allowing the assessment to be completed by 31 December 2024.	The exemption request document listed on Verra registry is of high quality.	Risk rating is appropriate
Q2	In response to finding NIR 28, the project provided contracts that each farmer has signed as an agreement to participate in the project (Ref. 23). The audit team accepts that the contracts are legally binding, but not explicitly for 100 years.	The contracts provided are legitimate and of high quality.	Risk rating is appropriate
Q3-Q4, Q7(a)	In response to finding NIR 28, the project provided contracts that each farmer has signed	The cited documentation (Refs. 23, 33, 37, PDMR) are of high quality.	Risk rating is appropriate

	as an agreement to participate in the project (Ref. 23). The project has also provided financial documentation (Ref. 33), which has been shared with the institution funding the project and has projections 100 years from the project start date. The monitoring plan has been provided in the publicly available PDMR (section 6.3), and the adaptive management plan has been provided as part of the publicly available NPRT package (Ref. 37).		
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External Risk – Land Tenure and Resource Access/Impacts

Risk	Assessment of Rationale, Assumptions, and Justification	Assessment of Quality of Documentation and Data Provided	Conclusion regarding Appropriateness of Risk Rating
Q1	After assessing ownership documentation (Refs 23, 59-61), the audit team agrees that the project has done a proper due diligence check of land ownership in the project area.	Ownership documentation provided by the project is of high quality.	Risk rating is appropriate
Q2	The audit team confirmed that the project does have legally binding contractual agreements with participating farmers (Ref. 23).	The contracts provided are legitimate and of high quality.	Risk rating is appropriate

Q3 (b)	From interviews with the project team and farmers during the site visit, the audit team can confirm that some fields in the project are held under lease, so option 'b' was properly selected by the project.	Interviews with the project team and 50% of participating farmers during the site visit are of high quality.	Risk rating is appropriate
Q4 (d)	After interviewing the project team, the audit team confirms South Africa has changed land rights in the past 20 years, so the project chose the correct risk score.	Interviews with the project team and the in-country expert's opinion are of high quality.	Risk rating is appropriate
Q5 (h)	From interviews with 50% of participating farmers, the audit team confirmed that there are no disputes over land tenure or ownership in the project area.	Interviews with 50% of participating farmers during the site visit are of high quality.	Risk rating is appropriate
Q6 (k)	From interviews with 50% of the participating farmers, the audit team confirmed that there are no disputes over access or use rights.	Interviews with 50% of participating farmers during the site visit are of high quality.	Risk rating is appropriate

External Risk – Community Engagement

Risk	Assessment of Rationale, Assumptions, and Justification	Assessment of Quality of Documentation and Data Provided	Conclusion regarding Appropriateness of Risk Rating
Q1	Based on site visits and interviewing the participating farmers and farm workers, the audit team confirmed that neither the participating farmers nor farm workers are reliant on the enrolled project fields for	Interviews with 50% of participating farmers during the site visit are of high quality.	Risk rating is appropriate

	food, fuel, fodder, building material or medicines. While farmers and workers live in the vicinity of the project fields, the fields are used exclusively for commercial agricultural production (Ref. 1) under contractual agreements (Ref. 23). There is no dependency on the project area for subsistence needs as outlined in the standard. Therefore, the audit team confirmed that the stakeholder engagement risk assessment is not applicable to this project.		
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External Risk – Political Risk

Risk	Assessment of Rationale, Assumptions, and Justification	Assessment of Quality of Documentation and Data Provided	Conclusion regarding Appropriateness of Risk Rating
Q1	The audit team recalculated the governance score and found that the project correctly selected option 'c'.	The World Bank Governance Score website is considered high quality.	Risk rating is appropriate
Q2	The project provided the following as evidence to obtain a mitigation credit for political risk: https://www.un.org/sustainabledevelopment/blog/2016/04/parisagreementsingatures/	The UN website is considered high quality.	Risk rating is appropriate

Natural Risk

Risk	Assessment of Rationale, Assumptions, and Justification	Assessment of Quality of Documentation and Data Provided	Conclusion regarding Appropriateness of Risk Rating
Fire			
L	The South African Council for Scientific and Industrial Research (CSIR) report provided by the project (Ref. 35) provides enough evidence to substantiate an annual frequency of more than once every 10 years.	The CSIR report is considered high quality.	Risk rating is appropriate
S	The audit team agrees with the project’s assumption that an insignificant amount of existing soil carbon stocks from 0-30 cm would be affected by a fire in cropland based on the soil science expertise of the audit team and the in-country expert.	The audit team’s advanced soil science background is considered high quality.	
M	Interviews with the project team and participating farmers have confirmed that fire breaks and fire fighting preparedness have been instituted in enrolled project farms.	The interviews conducted on site with farmers and the project team, and on site observations by the audit team are considered high quality.	
Pest and Disease Outbreaks			

L	The project has provided reports that substantiate the frequency of pest outbreaks of more than once every 10 years (Ref. 35).	The studies provided to substantiate outbreak frequency are considered high quality.	Risk rating is appropriate
S	The project has provided reports that substantiate the claim that 5 to less than 25% of the project area is affected by pest and disease outbreaks, which is a proxy for soil carbon stocks being affected by these outbreaks (Ref. 35).	The studies provided to substantiate outbreak severity are considered high quality.	
M	The project attached a Brown Locust management plan, which can be appropriately used as a mitigation for pest and disease outbreaks that would likely impact the project area (Ref. 35).	The provided pest management plan is considered high quality.	
Extreme Weather			
L	The project provided reports to substantiate that droughts are a frequent occurrence at more than once every 10 years (Ref. 35). Interviews with farmers confirmed that flooding is not a major risk to	The reports provided by the project and farmer interviews during the site visit are considered high quality.	Risk rating is appropriate

	consider in the project area.		
S	The audit team agrees with the project's assumption that an insignificant amount of existing soil carbon stocks from 0-30 cm would be affected by droughts based on the soil science expertise of the audit team and the in-country expert.	The audit team's advanced soil science background is considered high quality.	
M	The project provided a peer-reviewed study that supports the claim that adopting ALM practices featured in this project would mitigate impacts caused by droughts (Ref. 35).	The study provided by the project is of high quality.	
Geological Risk			
L	After interviewing farmers on site, the audit team agrees that there is negligible risk of geologic events in the project area.	The interviews conducted on site with farmers on site are considered high quality.	Risk rating is appropriate
S	After interviewing farmers on site, the audit team agrees that there is negligible risk of geologic events in the project area.	The interviews conducted on site with farmers on site are considered high quality.	
M	After interviewing farmers on site, the	The interviews conducted on site with farmers on	

	audit team agrees that there is negligible risk of geologic events in the project area.	site are considered high quality.	
Other Natural Risk			
L	After interviewing farmers on site, the audit team agrees that there is negligible risk of geologic events in the project area.	The interviews conducted on site with farmers on site are considered high quality.	Risk rating is appropriate
S	After interviewing farmers on site, the audit team agrees that there is negligible risk of geologic events in the project area.	The interviews conducted on site with farmers on site are considered high quality.	
M	After interviewing farmers on site, the audit team agrees that there is negligible risk of geologic events in the project area.	The interviews conducted on site with farmers on site are considered high quality.	

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The evidence gathering activities included reviewing the monitoring plan in the PDMR, supporting documents and data (Ref. 1-5, 22-24), GIS files (Ref. 18-21) as well as interviewing the project proponent and farmers and observations during the site visit. The audit team reviewed the project proponent's response to finding #9 to further confirm the implementation of project activities during the first monitoring period. During the first monitoring period from 1 August 2018 to 31 July 2022, the project activities were implemented on 22 farms including 905 fields and 15,547 hectares. The three predominant project activities implemented during the first monitoring period included reduced tillage, cover cropping and organic inputs as improved

fertilizer usage. The audit team confirmed that except for any methodology deviations described in the above Section 3.4.7, the GHG emission reductions and/or removals for this monitoring period have been quantified correctly in accordance with the monitoring plan and the applied methodology. For all project fields enrolled during the first monitoring period in which values were transcribed between datasets (e.g., transcription from the project description to reporting workbooks, or between reporting workbooks), the audit team carefully traced values to ensure the absence of manual transposition errors.

An identification of the data and parameters used to calculate the GHG emission reductions and/or removals, and a description of the steps taken to assess each of them is located in Section 3.4.6 of this report. The audit team concludes that all parameters have either been recalculated exactly or if different, led to total VCU values that fall within the materiality threshold of this project's audit, which is +/- 5% (see section 1.3). The methods and equations set out in the PDMR are being followed by the project. The chosen default values are appropriate.

As observed during the site visit and through a thorough review of documentation provided by Orizon (see section 2.2), the audit team concludes that the project has been implemented in accordance with the PDMR.

Implementation Status	Assessment steps, evidence checked, & conclusion:
Project implementation	The evidence gathering activities involved reviewing the PDMR and supporting documents (Ref. 1 & 22-24), as well as interviewing the farmers, and observations during the site visit. The audit team confirmed that the project activities were implemented on 22 farms across 905 fields enrolled in the project during the monitoring period as described in the PDMR. The audit team concludes that except for any methodology deviations described in the above Section 3.4.7 of this report, the monitoring plan was correctly applied in accordance with the applied methodology. Thus, there is no material misstatements between the project implementation and the project description.

Monitoring plan	The evidence gathering activities involved reviewing the PDMR and supporting documents (Ref. 1-5, 22-24, 34, 63, 65-66), as well as interviewing the project proponent and farmers, and observations during the site visit. The audit team assessed the implementation of the monitoring plan to ensure it contained enough detail to capture the requirements of the methodology and provided assurance in the project's overall management and QA/QC. The monitoring plan is comprised of the organizational structure, responsibilities and competencies of the personnel, enrollment process, data collection and management (Ref. 1-5, 22-24), stratification and soil sampling (Ref. 65-66), QA/QC processes for data review and integrity processes (Ref. 63), calculations and modeling processes (Ref. 1-5, 26-30, 42-48). As a result, the audit team concludes that monitoring plan was complete and suitable during the first monitoring period of this project. Further, based on document review, interviews and observation made during the site visit, the audit team concludes that the project's monitoring system conformed to the monitoring plan and the applied methodology requirements and there are no material misstatements between the actual monitoring system and the monitoring plan set out in the PD and the methodology.
AFOLU-specific project implementation	The evidence gathering activities involved reviewing the PDMR and supporting documents (Ref. 1 & 22-24), as well as interviewing the project proponent and farmers, and observations during the site visit. The audit team concludes that this is the first verification of initial project activities enrolled during the first monitoring period and thus, project activities listed in section 4.1 of the PDMR (reduced tillage, cover cropping and organic inputs as improved fertilizer usage) were implemented on the initial project instances. Additionally, the audit team confirmed that no loss of carbon stock occurred during the first monitoring period.

4.2 Accuracy of Reduction and Removal Calculations

The audit team concluded that except for any methodology deviations described in the above Section 3.4, the GHG emission reductions and/or removals for the first monitoring period have been quantified correctly in accordance with the PDMR and with the applied methodology.

Category	Audit Team Assessment and Conclusion
Accuracy of reductions and removals, including accuracy of spreadsheet formulae, conversions and aggregations, and consistent use of the data and parameters	The audit team reviewed the project data (Ref. 1-5, 22-24), quantification workbooks (Ref. 1-5), the model validation review report (Ref. 71) and quantification of SOC stocks using the model (Ref. 27-30, 42-48) to confirm the accuracy of reductions and removals, including accuracy of spreadsheet formulae, conversions and aggregations, and consistent use of the data and parameters. The audit team has developed automated scripts (R: https://cran.r-project.org/) that receive inputs (see section 3.4), follow equations found in the applied methodology, and put out carbon estimates at the field, farm, and project-levels. By running inputs and parameters approved by the applied methodology, the audit team could compare back to the project's outputs at different scales and confirm whether there was a material or conformance issue. The audit team did not find formulae, conversion or aggregation errors in the project's workbooks (Refs. 1-5).
Use of methods and formulae set out in the project description for calculating baseline emissions, project emissions and leakage emissions	The audit team reviewed the project data (Ref. 1-5, 22-24), quantification workbooks (Ref. 1-5), the model validation review report (Ref. 71) and quantification of SOC stocks using the model (Ref. 27-30, 42-48) to confirm that all the relevant method and equations as set out in the PDMR were used for calculating baseline emissions, project emissions and leakage emissions. The audit team independently recalculated baseline, project and leakage emissions using the methods and equations set out in the PDMR and project data (Ref. 1-5, 22-24) for a sample of fields in R.

Appropriateness of any default values used in the monitoring report and their conformance with the VCS Program rules	The audit team reviewed the project data (Ref. 1-5, 22-24), quantification workbooks (Ref. 1-5), the model validation review report (Ref. 71) and quantification of SOC stocks using the model (Ref. 27-30, 42-48) to confirm that all default values used in the monitoring report were appropriate as per the default factor values of IPCC report 2019 (listed in the applied methodology) and thus conform to the VCS program rules.
Appropriateness of soil carbon model implementation in the project area to model SOC under project and baseline scenarios.	The project's back-modeling procedure adheres to methodology requirements in section 8.2 and 8.3 with the following remarks: - The project appropriately used the same validated parameters for each practice change/crop functional group (PC/CFG) combination as were validated during the model validation procedure for corresponding PC/CFGs in the project area. - The baseline and project scenarios were initialized at the same SOC value at the project start date for all sampling locations across the project area. In other words, the project and baseline scenarios started at the same SOC value at the project start date. The procedure for initializing RothC to an SOC estimate at project start is appropriate and is supported by the RothC Technical Guide Part 3.1. The model is 'spun-up' to an equilibrium with an assumed 'plant residue carbon input' input at a given sample location, and the 'plant residue carbon input' is not precisely known. Note: the project start date is synonymous with 'equilibrium' conditions. The project scenario is then modelled after the model is 'spun-up' to equilibrium at the project start date, and the fit between the project scenario projection at 2023 and the sampled SOC point at 2023 is evaluated. The 'plant residue carbon input' is iteratively adjusted and the spin-up procedure is repeated until the project scenario closely aligns with the sampled SOC point in year 2023. The audit team ensured that all estimated

'plant residue carbon inputs' used by the project were physically appropriate across all sampling locations (Refs 27-28).

4.2.1 Data and Parameters Available at Validation

Please see baseline emissions in section 3.4.6 of this report for a detailed assessment of the data and parameters available at validation.

4.2.2 Data and Parameters Monitored

Please see section 3.4.8 of this report for a detailed assessment of the data and parameters monitored.

4.3 Quality of Evidence to Determine Reductions and Removals

Nature of Data and Information Supporting GHG Quantification

The methodology utilized for this project uses a number of parameters to calculate the project emissions in conjunction with project-specific data. Based on the audit team's review of data, none of the supporting quantifications of GHG reductions and/or removals were hypothetical or projected in nature.

Quality and Quantity of Evidence Used to Determine GHG Quantification

The evidence used to determine the GHG reductions and removals for the verification period was of sufficient quantity. An identification of a description of the evidence used to determine the GHG emission reductions and removals, and a description of the steps taken to assess the sufficient quantity and appropriateness of quality, of each category of evidence is provided in the table below.

Category	Audit Team Assessment and Conclusion
Reliability, source, and nature of evidence for the determination GHG emission reductions or removals	The audit team reviewed the project data (Ref. 1-5, 22-24) and quantification workbooks (Ref. 1-5), which originated from the project personnel. The audit team issued several findings related to the data, parameters and GHG emission reduction and removal calculations. The audit issued several findings (39, 42, 46, 49 & 54) to the project proponent during the review of the project's quantification spreadsheets for SOC stocks using

	Roth C model and various emissions for quantification approach 1 and 3 of the methodology, respectively. Based on the review of the model validation report (Ref. 38) review by the IMEs (Ref. 71), data (Ref. 22-24) and quantification workbooks (Ref. 1-5) as well as finding responses, the audit team was able to obtain a reasonable assurance that the project proponent's evidence to determine the GHG emission reduction and removals was reliable for the monitoring period. Ultimately, the audit team determined that the final project documents and project data to be reliable.
Information flow from data generation and aggregation, to recording, calculation, and final transposition into the monitoring report	The audit team observed data entry procedures and record keeping practices during the site visit (see section 2.4 of this report). The audit team followed the data flow from the sources (Ref. 22-24) to the quantification workbooks (Ref. 1-5) to compare final values with the PDMR. Specifically, the audit team independently recalculated baseline and SOC stocks as well as emissions from various sources for a sample of fields based upon the project's database using R and cross-checked with outputs of quantification workbooks (Ref. 1-5) provided by the project proponent. No material errors resulted when comparing SCS-calculated VCUs to the project proponents' calculations.
Appropriateness of implemented calibration frequency (where not specified for relevant monitoring equipment in the project description)	Calibration frequency is not applicable to methods and procedures used to monitor data and parameters in the project. All the project data and parameters are obtained directly from the farmers or from IPCC default factors or online govt. sources.

Overall, the evidence used to determine the GHG reductions and removals for the verification period is of sufficient quantity (i.e., all necessary information has been provided to allow the audit team to trace and, as necessary, recalculate the quantification of GHG reductions and removals), and of appropriate quality (i.e., information presented is free of misstatements, whether material or immaterial) to allow the audit team to render a verification opinion.

5 VALIDATION AND VERIFICATION OPINION

5.1 Validation and Verification Summary

The audit team concludes that the GHG statement is the responsibility of the project proponent and asserts with no qualifications or limitations that the project conforms with the validation and verification criteria for projects and their GHG emission reductions and removals set out in VCS Version 4 and the applied methodology VM0042: Methodology for Improved Agricultural Management v2.0. This assessment approach for validation and verification was in accordance with ISO 14064-3:2019.

5.2 Validation Conclusion

The audit team concludes that the certain data and information supporting the GHG statement assertion is projected in nature. The audit team confirms that the Ex-ante calculations provided by the project proponent are based on an expected increase in enrollment of fields over the crediting period. The audit team confirms the reasonableness of assumptions, limitations, and methods that support a claim about the outcome of future activities, noting that actual results may vary since the estimates are based on assumptions that are subject to change. As a result, the nature of the project type does not allow for accurate estimates until the project is fully implemented.

Overall, the audit team concludes that the project is likely to achieve the estimated GHG emission reductions and removals describes below.

Crediting Period: From 01 August 2018 to 31 July 2043

Validated estimated GHG emission reductions and carbon dioxide removals for the project crediting period:

The non-permanence risk rating (%)	20%
If applicable, the Long-term Average (LTA), whether it has been properly updated, and if it has been reached.	<i>Not applicable</i>

Vintage period	Estimated baseline	Estimated project	Estimated leakage	Estimated buffer pool	Estimated reductions	Estimated removals	Estimated total VCU
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	emissions (tCO ₂ e)	emissions (tCO ₂ e)	emissions (tCO ₂ e)	allocation (tCO ₂ e)	VCUs (tCO ₂ e)	VCUs (tCO ₂ e)	issuance (tCO ₂ e)
01-Aug-2018 to 31-Dec- 2018)	5,593	(7,973)	0	2,302	148	(11,510)	9,061
01-Jan-2019 to 31-Dec- 2019	13,134	(29,748)	0	7,203	28	(36,015)	28,784
01-Jan-2020 to 31-Dec- 2020	13,593	(47,537)	0	10,234	(166)	(51,168)	41,100
01-Jan-2021 to 31-Dec- 2021	16,019	(57,130)	0	12,340	363	(61,700)	48,998
01-Jan-2022 to 31-Dec- 2022	21,412	(64,468)	0	13,954	709	(72,676)	58,013
01-Jan-2023 to 31-Dec- 2023	32,118	(62,066)	0	15,175	1,064	(79,944)	63,705
01-Jan-2024 to 31-Dec- 2024	42,008	(67,188)	0	18,295	(209)	(91,475)	73,389
01-Jan-2025 to 31-Dec- 2025	45,000	(78,104)	0	20,270	(2,350)	(101,351)	83,431
01-Jan-2026 to 31-Dec- 2026	45,000	(78,104)	0	20,270	(2,350)	(101,351)	83,431
01-Jan-2027 to 31-Dec- 2027	45,000	(78,104)	0	20,270	(2,350)	(101,351)	83,431
01-Jan-2028 to 31-Dec- 2028	45,000	(78,104)	0	20,270	(2,350)	(101,351)	83,431
01-Jan-2029 to 31-Dec- 2029	45,000	(78,104)	0	20,270	(2,350)	(101,351)	83,431
01-Jan-2030 to 31-Dec- 2030	45,000	(78,104)	0	20,270	(2,350)	(101,351)	83,431
01-Jan-2031 to 31-Dec- 2031	45,000	(78,104)	0	20,270	(2,350)	(101,351)	83,431
01-Jan-2032 to 31-Dec- 2032	45,000	(78,104)	0	20,270	(2,350)	(101,351)	83,431

01-Jan-2033 to 31-Dec-2033	45,000	(78,104)	0	20,270	(2,350)	(101,351)	83,431
01-Jan-2034 to 31-Dec-2034	45,000	(78,104)	0	20,270	(2,350)	(101,351)	83,431
01-Jan-2035 to 31-Dec-2035	45,000	(78,104)	0	20,270	(2,350)	(101,351)	83,431
01-Jan-2036 to 31-Dec-2036	45,000	(78,104)	0	20,270	(2,350)	(101,351)	83,431
01-Jan-2037 to 31-Dec-2037	45,000	(78,104)	0	20,270	(2,350)	(101,351)	83,431
01-Jan-2038 to 31-Dec-2038	45,000	(78,104)	0	20,270	(2,350)	(101,351)	83,431
01-Jan-2039 to 31-Dec-2039	45,000	(78,104)	0	20,270	(2,350)	(101,351)	83,431
01-Jan-2040 to 31-Dec-2040	45,000	(78,104)	0	20,270	(2,350)	(101,351)	83,431
01-Jan-2041 to 31-Dec-2041	45,000	(78,104)	0	20,270	(2,350)	(101,351)	83,431
01-Jan-2042 to 31-Dec-2042	45,000	(78,104)	0	20,270	(2,350)	(101,351)	83,431
01-Jan-2043 to 31-Jul-2043	26,250	(45,561)	0	11,824	(1,371)	(59,121)	48,668
Total	980,126	(1,787,541)	0	456,190	(41,734)	(2,287,929)	1,873,473

5.3 Verification Conclusion

The audit team asserts that the GHG statement is the responsibility of the project proponent and asserts with no qualification or limitation that the project conforms with the verification criteria for projects and their emission reductions and removals set out in VCS Version 4, and the applied methodology VM0042: Methodology for Improved Agricultural Management v2.0. The project has been implemented in accordance with the project description, subsequently validated variations do not exist. Lastly, the audit team concludes with a reasonable level of assurance that the quantity of emission reductions and removals in tCO₂ equivalents achieved by the project during the verification period is conservative, transparent, complete, and consistent throughout all documents provided.

Verification Period: From 01 August 2018 to 31 July 2022

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

The non-permanence risk rating (%)	20%
If applicable, the Long-term Average (LTA), whether it has been properly updated, and if it has been reached.	Not Applicable
Whether a loss has been appropriately accounted for, in accordance with the VCS Program rules, if applicable.	Not Applicable as this is the initial validation and verification

Vintage period	Baseline emissions (tCO ₂ e)	Project emissions (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Buffer pool allocation (tCO ₂ e)	Reductions VCU (tCO ₂ e)	Removals VCU (tCO ₂ e)	Total VCU issuance (tCO ₂ e)
01-Aug 2018 to 31-Dec-2018	5,593	(7,973)	0	2,302	148	(11,510)	9,061
01-Jan-2019 to 31-Dec-2019	13,134	(29,748)	0	7,203	28	(36,015)	28,784
01-Jan-2020 to 31-Dec-2020	13,593	(47,537)	0	10,234	(166)	(51,168)	41,100
01-Jan-2021 to 31-Dec-2021	16,019	(57,130)	0	12,340	363	(61,700)	48,998
01-Jan-2022 to 31-Jul-2022	10,337	(37,811)	0	8,140	342	(40,699)	32,216
Total	58,676	(180,199)	0	40,218	715	(201,092)	160,159

5.4 Ex-ante vs Ex-post ERR Comparison

Vintage period	Ex-ante estimated reductions/removals	Achieved reductions/removals	Percent difference	Explanation for the difference
1 Aug 2018 to 31 Dec 2018	2,083	9,061	335%	Since the project's pipeline submission, Orizon increased the number of hectares within the project and farmers have improved their cover cropping practices, such as planting

				more winter cover crops than initially planned.
1 Jan 2019 – 31 Dec 2019	6,042	28,784	376%	Since the project's pipeline submission, Orizon increased the number of hectares within the project and farmers have improved their cover cropping practices, such as planting more winter cover crops than initially planned.
1 Jan 2020 – 31 Dec 2020	8,542	41,100	381%	Since the project's pipeline submission, Orizon increased the number of hectares within the project and farmers have improved their cover cropping practices, such as planting more winter cover crops than initially planned.
1 Jan 2021 – 31 Dec 2021	12,083	48,998	306%	Since the project's pipeline submission, Orizon increased the number of hectares within the project and farmers have improved their cover cropping practices, such as planting more winter cover crops than initially planned.
1 Jan 2022 – 31 Jul 2022	19,167	32,216	68%	Since the project's pipeline submission, Orizon increased the number of hectares within the project and farmers have improved their cover cropping practices, such as planting more winter cover crops than initially planned.
Total	47,917	160,159	234%	

APPENDIX 1: COMMERCIALLY SENSITIVE INFORMATION

Section	Information	Justification	Assessment method conclusion
5	Soil Sample Locations and Lab Results per Field	Details regarding soil sampling locations and results is propriety. Soil sample locations and laboratory results were shared with SCS, and we assessed these data for conformance to VM0042 requirements.	The soil sampling locations and laboratory analyses followed the stratified random sampling approach and laboratory procedure requirements adequately, as required by VM0042.
5	Practice Changes per Field	Details regarding specific practice changes per field are not shared in the PD, given privacy concerns of the farmers implementing the practice changes. The audit team assessed practice changes at the field-level on site and with documentation submitted to SCS.	Practice changes at the field-level have been consistently recorded across all documentation assessed by SCS. This includes quantitative approach 3 data and project area-related RothC modeling assessments. All practice changes applied in this project are acceptable under VM0042.
2	Specific contract details about individual farmers	Details regarding contractual agreements between Orizon and stakeholders have not been provided, but SCS did receive and review contractual information as part of our data checks and for checking conformance to stakeholder safeguard requirements.	After reviewing contracts and interviewing stakeholders on site, SCS is reasonably assured that Orizon has built in appropriate stakeholder safeguards in their contracts and are in conformance with stakeholder safeguard and engagement requirements.

APPENDIX 2: LIST OF FINDINGS

Note: the VCS Standard v4.6 was active at the beginning of this audit. The audit team ended the audit with VCS Standard v4.7 in effect. Any findings released prior to v4.7 were assessed to the requirements of v4.7.

NIR 1 Dated 9 Apr 2024

Standard Reference: VCS Standard v4.6; VCS Program Definitions v4.4; VCS Joint Project Description and Monitoring Report Template v4.2 (NOTE: out of date)

Document Reference: Orizon CarbonCrop Rewards Programme Joint Project Description and Monitoring Report.pdf

Finding: First, the VCS Definitions document defines Stakeholder as: "Any person or entity who can potentially affect or be affected by the project activities."

The Standard states in section 3.18.1: "The project proponent shall conduct a thorough assessment of the stakeholders that will be impacted by the project activities. In identifying stakeholders, the project proponent must consider the significance of user populations and how deeply affected they may be by the project activities, such that distant or intermittent user groups who will be affected in very limited ways by the project need not be defined as stakeholders. The project description shall include information on stakeholders at the start of the project, including:

1) The process(es) used to identify stakeholders likely impacted by the project and a list of such stakeholders;

2) Identification of any legal or customary tenure/access rights to territories and resources, including collective and/or conflicting rights, held by stakeholders;..."

The joint PD and MR template also states in section 2.5: "For AFOLU projects with no impacts on stakeholders, provide evidence of such."

Section 2.5 of the PD states: "The project instances of this grouped project are on farmer's private lands with the surrounding communities not directly dependant on these lands. Access to the farms

is restricted i.e., mostly workers employed on the farm along with the farmer's family. For these reasons what would be considered local stakeholders, do not face any of the risks associated with the activities of the project as they are not directly impacted by the project activities and therefore no local stakeholder identification process is undertaken."

The audit team has identified workers employed on the farm as a potential stakeholder, as they can potentially affect or be affected by the project activities, since they implement regenerative farming practices that have been identified as project activities. The audit team needs more information about why this group has not been identified by the project as a stakeholder, and/or why no risks have been identified for this stakeholder group.

Project Personnel Response: The PDMR has been amended and updated as per the requirements of the v4.3 template. Section 2 of the template is a complete overhaul from the v4.2 template. In Section 2.1 Stakeholder Engagement and Consultation the following sections are addressed:

2.1.1 Stakeholder Identification - Orizon has outlined in this section which stakeholders were identified and the process of how the different stakeholders were identified. Currently, during the first monitoring period, Orizon has identified three stakeholder groups:

1. Farm owners
2. Farm managers (where different to the owner)
3. Permanently employed farm workers.

Orizon agrees with SCS that the permanently employed workers should be included as stakeholders and have done so as per section 2.1.1 in the PDMR.

2.2 Risk to Stakeholders and the Environment – In this section Orizon has identified the risks for the respective stakeholders within the project. Please refer to the table in Section 2.2 of the PDMR for a detailed description of all the identified risks.

Furthermore, as supporting evidence, the Orizon CarbonCrop Programme – Stakeholder Safeguards document provides further explanation of labor audits, the Unemployment Insurance Fund and other relevant overarching information related to permanent labor in agriculture in South Africa.

Auditor Response: Thank you for the additional information. The audit team reviewed the updated section 2.1.1 and the newly provided document 'Orizon CarbonCrop Programme - Stakeholder Safeguards.pdf'. Given the regulatory and unemployment safeguards, as well as the labor audits conducted on most of the growing operations, the audit team is reasonably assured that permanently employed farm workers have been properly identified and integrated into the project design. The audit team has no additional questions and this finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NCR 2 Dated 9 Apr 2024

Standard Reference: VCS Standard v4.6; VCS Program Definitions v4.4; VCS Joint Project Description and Monitoring Report Template v4.2 (NOTE: out of date)

Document Reference: Orizon CarbonCrop Rewards Programme Joint Project Description and Monitoring Report.pdf

Finding: The Standard states in section 3.18.4: "The project proponent shall develop a grievance redress procedure to address disputes with stakeholders that may arise during project planning and implementation, including with regard to benefit sharing and all other safeguard and stakeholder engagement requirements mentioned in Sections 3.18 and 3.19 respectively. The procedure shall include processes for receiving, hearing, responding and attempting to resolve grievances within a reasonable time period, taking into account culturally appropriate conflict resolution methods. The procedure and documentation of disputes resolved through the procedure shall be made publicly available. The procedure shall have three stages:..."

The audit team was unable to find a description of a publicly available grievance redress procedure in the PDMR document that fulfills the requirements of section 3.18.4 of the standard.

Project Personnel Response: The PDMR has been updated to version 4.3 of the template as required by the VCS. The grievance redress procedure is outlined in Section 2.1.4 of the PDMR. There is a more detailed document also provided as extra evidence for this finding. The Orizon CarbonCrop Programme – Grievance Redress Procedure document is available on the Orizon website (towards the bottom, alongside terms and conditions and the privacy policy) for further details.

Auditor Response: The audit team reviewed the provided document 'Orizon Agriculture Grievance Process.pdf', and also downloaded the publicly available version at <https://orizonagriculture.com/>. Updates to section 2.1.4 of the PDMR were also reviewed. The grievance redress now fulfills all requirements in section 3.18.4 of the standard, and this finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NCR 3 Dated 9 Apr 2024

Standard Reference: VCS Joint Project Description and Monitoring Report Template v4.2 (NOTE: out of date)

Document Reference: Orizon CarbonCrop Rewards Programme Joint Project Description and Monitoring Report.pdf

Finding: According to section 1.1 of the VCS Joint Project Description & Monitoring Plan template

V4.2, “Provide a summary description of the project to enable an understanding of the nature of the project and its implementation, including the following (no more than one page)” and “For projects undergoing crediting period renewal, include the audit history of the project using the table below.”

However, section 1.1 of the PDMR provided by the project proponent contains a summary description of the project that exceeds one page. Further, the project proponent has included an audit history table even though this project is not undergoing crediting period renewal.

Please revise the PDMR to meet the template requirements.

Project Personnel Response: Section 1.1 in the PDMR has been updated and reduced to one page. The audit history table, section 1.2 in the v4.3 of the template, has been removed and stated as not applicable. Please refer to the relevant sections in the updated PDMR document for further details.

Auditor Response: Section 1.1 has been reduced to one page, and the audit history table has been removed in section 1.2, per template requirements. This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NCR 4 Dated 9 Apr 2024

Standard Reference: VCS Joint Project Description and Monitoring Report Template v4.2 (NOTE: out of date)

Document Reference: Orizon CarbonCrop Rewards Programme Joint Project Description and Monitoring Report.pdf

Finding: According to section 1.10 of the VCS Joint Project Description & Monitoring Plan template V4.2, “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. In all other cases, indicate the scale of the project (project or large project) and the estimated annual GHG emission reductions or removals for the project crediting period.”

However, section 1.10 of the PDMR provided by the project proponent does not include/indicate the project scale. This is not in conformance with template requirements.

Project Personnel Response: Please note that Section 1.10 in the template v4.2 is now Section 1.11 in the template v4.3. The project scale has been included in section 1.11 as per the template requirements. This grouped project is classified as a project with <300,000 tCO₂e per year estimated GHG ERRs.

Auditor Response: Section 1.11 now declares the project scale, which is correct (as a 'project'). This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NIR 5 Dated 9 Apr 2024

Standard Reference: VCS Joint Project Description and Monitoring Report Template v4.2 (NOTE: out of date)

Document Reference: Orizon CarbonCrop Rewards Programme Joint Project Description and Monitoring Report.pdf

Finding: According to section 1.10 of the VCS Joint Project Description & Monitoring Plan template V4.2, "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. In all other cases, indicate the scale of the project (project or large project) and the estimated annual GHG emission reductions or removals for the project crediting period."

The estimated GHG emission reductions or removals for the first crediting period have been provided in Table 1.10.1, however, the audit team requests more information on how these projections have been calculated.

Project Personnel Response: The calculations have been provided in the "Estimations & Tables" sheet/tab within the "Net Emission Reductions & Uncertainty Workbook."

The years preceding the submission are based on actuals (as these are known, they can be included as actuals). The years for which estimations are required are based on our best estimate and internal targets growing steadily until our internal target is reached. Our eventual target is 100,000 credits per season for this project.

This target is based on an average of 2 VCU's per hectare (estimate based on our own internal modelling and research) across 50,000 hectares. We believe this is achievable as this represents less than 1% of the cropland in South Africa.

Note: Verra had confirmed that it should be based on calendar years, and therefore we would allocate each season's (1 August until 31 July) VCU's to the appropriate calendar year based on the pro-rata number of months represented by each calendar year within that monitoring period /

season. For example, 10,000 VCU's for the 2020/21 season (i.e. 1 August 2020 until 31 July 2021) would be apportioned as 4,167 VCU's for 2020 (5 of 12 months fall in 2020) and 5,833 VCU's for 2021 (7 of 12 months fall in 2021).

Auditor Response: Thank you for the additional information. The audit team reviewed the updated workbook 'Net Emission Reductions & Uncertainty Workings - July2022.xlsx' and have no further questions. This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NIR 6 Dated 9 Apr 2024

Standard Reference: VCS Standard v4.6; VCS Program Definitions v4.4; VCS Joint Project Description and Monitoring Report Template v4.2 (NOTE: out of date)

Document Reference: Orizon CarbonCrop Rewards Programme Joint Project Description and Monitoring Report.pdf

Finding: The standard states in section 3.17.1: "The project proponent shall demonstrate how the project activities, or additional activities implemented by the project proponent, contribute to sustainable development, as defined by, and tracked against the SDGs. The project proponent shall demonstrate that a project contributes to at least three SDGs by the end of the first monitoring period, and in each subsequent monitoring period. Where possible, project proponents should demonstrate how the project activity(s) is consistent with the SDG objectives of the host country."

Furthermore, the template states in section 1.17.1: "Provide a brief description that includes the following (no more than 500 words):

- A summary description of project activities that result in sustainable development (SD) contributions (i.e., technologies/measures implemented, activity location).
- An explanation of how project activities will result in expected SD contributions.
- Describe how the project contributes to achieving any nationally stated sustainable development priorities, including any provisions for monitoring and reporting same."

The PDMR states in the second-to-last paragraph in section 1.17.1: "The focus of this project is to assist our farmers in the journey towards a more holistic and sustainable farming enterprise. This will be achieved by implementing Regenerative Agriculture practices that will not only improve soil health but also build resilience to climate change as well as reduce GHG emissions. The practices implemented throughout our project tie in well with several of the SDGs and provide Orizon with the opportunity to record this over time and provide insight to stakeholders regarding these goals and

the achievements of this project going forward."

Specific information about relevant project activities and how they will result in expected SD contributions is needed to satisfy the template requirements. As currently written, the exact project activities and the specific SD contributions they are associated with are not described in this section.

Project Personnel Response: Please note that Section 1.17 in v4.2 is now Section 1.18 in the v4.3 template. As requested, section 1.18.1 has been amended to be in conformance with the requirements of the latest VCS standard with specific information provided about relevant project activities and how they have resulted in expected SDG contributions. Please refer to Section 1.18.1 in the PMDR for the amendment.

Auditor Response: Thank you for updating the PMDR. The audit team has reviewed section 1.18 of the PMDR and it now conforms with the requirements in section 3.17.1 of the standard and the v4.3 PMDR template requirements. This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NCR 7 Dated 9 Apr 2024

Standard Reference: VCS Standard v4.6; VCS Program Definitions v4.4; VCS Joint Project Description and Monitoring Report Template v4.2 (NOTE: out of date)

Document Reference: Orizon CarbonCrop Rewards Programme Joint Project Description and Monitoring Report.pdf

Finding: The standard states in section 3.17.1: "The project proponent shall demonstrate how the project activities, or additional activities implemented by the project proponent, contribute to sustainable development, as defined by, and tracked against the SDGs. The project proponent shall demonstrate that a project contributes to at least three SDGs by the end of the first monitoring period, and in each subsequent monitoring period. Where possible, project proponents should demonstrate how the project activity(s) is consistent with the SDG objectives of the host country."

Furthermore, the Table 1 instructions in section 1.17.2 state: "Document total project contributions since the project start date, previous SD contribution monitoring period, or VCS monitoring period in the "Current Project Contributions" column and the cumulative contributions over the project lifetime in the "Contributions Over the Project Lifetime" column in Table 1 below. The cumulative impact

should be calculated by summing the current project contributions with all impacts included in previously approved VCS monitoring reports or Sustainable Development Contribution Reports."

The audit team notes that this is the first verification period, and that information in the "Contributions Over Project Lifetime" do not seem to correspond to that listed under column "Current Project Contributions". Table 1 is not in conformance with the requirements stated above.

Project Personnel Response: Please note that Section 1.17 in v4.2 is now Section 1.18 in the v4.3 template. The Table 1.18.1 in Section 1.18.2 of the PDMR has been adjusted to reflect the correct information for the columns 'Current project contributions' and 'Contributions over project lifetime' to meet the template requirements. This information is available in Section 1.18.2 of the PDMR.

Auditor Response: Thank you for updating the PDMR. The audit team has reviewed section 1.18 of the PDMR and it now conforms with the requirements in section 3.17.1 of the standard and the v4.3 PDMR template requirements.

The audit team does seek more information about the following land use conversions stated in sections 1.4.1 and 1.18 of the PDMR. Specifically, from table 1.4.1: "2. Cropland and Grassland Land-use Conversions (CGLC): Several project instances have made once-off conversions of degraded lands and have started reducing GHG emissions by improving carbon stocks", and from table 1.18.1: "The conversion of degraded land to cropland in 14 project instances contributed positively to the reduction in area of degraded land during the first monitoring period. This area totaled 1,176.3 ha in total of converted land."

Section 4 of VM0042 v2.0 states: "Project activities must be implemented on land that is either cropland or grassland at the project start date. The land must remain cropland or grassland throughout the project crediting period except under the following scenarios:

b) A one time conversion from grassland to cropland or vice versa where it is demonstrated prior to project validation that project lands in the baseline scenario are degraded and the introduction of improved land use change practices would significantly improve soil health. Project proponents must provide documentation demonstrating that lands are degraded at the start of the project and degradation will continue in the baseline scenario due to the presence of degradation drivers or pressures in the baseline scenario. See Appendix 2 for procedures on how to propose this type of land use change." (underline emphasis by SCS)

Please point the audit team to documentation that addresses the underlined portion of the

requirement quoted above.

Project Personnel Response 2: Via email from Orizon to the audit team on 09 May 2024:

We have updated the Land Conversion Assessment document ("Orizon CarbonCrop Programme - Land Conversion Assessment 09.05.2024.pdf") to reflect the correct number of hectares and hope this document addresses the required information for the finding. The change in hectares is due to some of the hectares included in the original calculation being after the end of the first monitoring period and therefore those hectares are not included in the updated documents. These will be included for the next verification period.

We have also updated Table 1.18.1 in the PDMR to reflect the correct number of hectares and instances included in the land conversion statistics. There is an updated PDMR document attached that includes this change.

Auditor Response 2: Thank you for the response. The document provided is informative and addresses indicators from the CDM tool "Tool for the identification of degraded or degrading lands for consideration in implementing CDM A/R project activities", which has been cited as a source of guidance for identifying degradation by Appendix 2, Step 1 of VM0042.

One of the main sources used by the project to identify degradation in fields converted from grasslands to cropland is Lindeque 2015's map of weighted degradation index. The project indicated this index exists at the municipal level in South Africa. This line of evidence seems to correspond to point (a) of section III of the CDM tool: "Provide documented evidence that the area has been classified as "degraded" under verifiable local, regional, national or international land classification system or peer-review study, participatory rural appraisal, satellite imagery and/or photographic evidence in the last 10 years. If the documented evidence of degradation is older than ten years then:"

The audit team could not independently locate and download and information related to the Lindeque 2015 map of weighted degradation index. This data is needed for the audit team to verify assigned weighted degradation index to each field. Please provide the same Lindeque 2015 data reported in the document 'Orizon CarbonCrop Programme - Land Conversion Assessment 09.05.2024.pdf'.

Project Personnel Response 3: The Lindeque 2015 resources has been uploaded to the audit

findings and response documents folder in 'Finding 7 - Monitored Sustainable Development Goals.. The pdf document has been updated showing the locations for the average weighted degradation index ranges.

Auditor Response 3: Thank you for providing this document. The audit team could confirm the Lindeque weighted degradation index as applied to the field-level. This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NIR 8 Dated 9 Apr 2024

Standard Reference: VCS Joint Project Description and Monitoring Report Template v4.2 (NOTE: out of date)

Document Reference: Orizon CarbonCrop Rewards Programme Joint Project Description and Monitoring Report.pdf

Finding: The template states in section 6.3: "Describe the process and schedule for obtaining, recording, compiling and analyzing the monitored data and parameters set out in Section 6.2 (Data and Parameters Monitored) above. Include details on the following:

- The organizational structure, responsibilities and competencies of the personnel that carried out monitoring activities."

Information about Account Managers has been provided, and it appears they handle the bulk (if not all) of the monitoring work. Please confirm whether Account Managers are the only personnel that conduct monitoring activities at Orizon.

Project Personnel Response: We can confirm that the Account Managers were the only individuals collecting and processing data received from farmers.

Soil sampling procedures were performed by temporary workers trained and hired by Orizon, and were managed by the Account Managers.

Auditor Response: This confirmation is also consistent with information the audit team gathered about monitoring activities during the site visit. The audit team sought more alignment in understanding the organization structure relevant to monitoring activities with this finding, and no further questions needed. Finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NIR 9 Dated 9 Apr 2024

Standard Reference: VM0042 v2.0

Document Reference: Orizon CarbonCrop Rewards Programme Joint Project Description and Monitoring Report.pdf

Finding: According to applicability condition 1 under section 4 of the methodology, “Projects must introduce or implement one or more new changes to pre-existing agricultural management practices which:

- a) Improve fertilizer (organic or inorganic) management;
- 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 practices.”

The audit team notes that table 3.5.1 of the PDMR lists four predominant project activities during the first monitoring period including reduced tillage, cover cropping, organic inputs and livestock integration (the livestock category is not included for adoption rate assessment). Further, section 4.1 list three predominant project activities during the first monitoring period including reduced tillage, cover cropping, organic inputs. Moreover, ay parameter table in section 6.1 of the PDMR lists four project activities including no tillage, reduced tillage, cover cropping and organic inputs.

The audit team needs additional information and clarification of the parameter table for 'ay' with respect to table 3.5.1, as these tables are not exactly aligned.

Project Personnel Response: We have removed the mention of livestock in Table 3.5.1, as this practice type is not included as a main category in the common practice assessment. The “Reduced Tillage” category in Table 3.5.1 is further sub-divided into no till and minimum / reduced tillage. These two sub-categories are used in the regional adoption rates for the common practice assessment and as the main categories for the project adoption rates. The categories used for the parameter ay in the additionality assessment and Equation 1 are: No till, reduced / minimum tillage, cover cropping and organic inputs as detailed in the table for the parameter ay in Section 6.1 of the PDMR. The relevant amendments have been made to Table 3.5.1, section 4.1, and the relevant parameter table in section 6.1 of the PDMR to better explain the main categories and ensure consistency throughout the document.

This approach is consistent with the additionality requirements of VM0042 that states that "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 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."

Auditor Response: Thank you for the updates. The audit team reviewed Table 3.5.1, section 4.1, and the 'ay' parameter table in section 6.1 of the updated PDMR. Project activities have been clarified and are consistently reported across the document. This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NCR 10 Dated 9 Apr 2024

Standard Reference: VCS Joint Project Description and Monitoring Report Template v4.2 (NOTE: out of date)

Document Reference: Orizon CarbonCrop Rewards Programme Joint Project Description and Monitoring Report.pdf

Finding: Per section 5.4 of the VCS joint project description and monitoring report template, "Describe the procedure for estimation 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."

Section 5.4 of the PDMR provided by the project proponent states that "Detailed example equations are shown in section 7.5." The project proponent has included equation 65 to estimate uncertainty deductions. However, no relevant equations or information are provided to estimate model prediction error, sampling error and measurement error. Further, equation 66 of the methodology to estimate number of VCUs is not included in the PDMR.

Please update the PDMR with all the relevant equations.

Project Personnel Response: The PDMR has been updated to include and show all relevant equations in the Uncertainty section (Section 7.6 of the PDMR) as well as for the calculations of the VCUs as per V2.0 of VM0042. Orizon followed Quantification Approach 1, Analytical Propagation of Error Approach as per Section 8.6.1.1 to determine the Uncertainty.

Model Prediction Error was determined by following Equation 51 and 52 in V2.0 of VM0042. These two equations have now been included in Section 7.6 of the PDMR.

Equations 53, 54, in Section 8.1.1.3 Sampling Error, were used to determine the sampling error and measurement error. As these equations were not included in the initial PDMR submitted to the VVB,

these have now been included to meet the template requirements.

Equation 66, to estimate the VCUs, is now also included in the PDMR. This is Section 7.7 in the PDMR.

Please refer to Section 7.6 and 7.7 of the PDMR for a more detailed description of the above.

Auditor Response: The project has added previously missing equations to the appropriate section of the PDMR. The audit team was able to replicate the uncertainty and VCU calculations without material error. This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NIR 11 Dated 9 Apr 2024

Standard Reference: VCS Standard v4.6; VM0042 v2.0

Document Reference: Orizon CarbonCrop Rewards Programme Joint Project Description and Monitoring Report.pdf

Finding: Per section 3.16.1 of the VCS standard, “Data and parameters used for the quantification of GHG emission reductions and/or removals shall be provided in accordance with the methodology.”

In section 7.1 of the PDMR provided by the project proponent, for parameters $M_{OAwP,I,t}$ (Mass of organic amendment applied as fertilizer on the project area in year t) and $CC_{wp,I,t}$ (Carbon content of manure from livestock type I applied as fertilizer on the project area in year t) are both assigned a value of 0. The project proponent references section 1.18 (leakage management) for more details. The audit team notes that although the leakage emissions related to the additional application of organic amendment are avoided (as justified in section 1.18 of the PDMR and Leakage Report), the project proponent is still required to monitor the application rate and carbon content of the organic amendment for emissions reductions calculations.

Please provide clarification and justification for the use of a 0 value for these two parameters.

Project Personnel Response: Please note that Section 1.18 Leakage Management is now found in Section 1.19 of the latest template v4.3. Orizon has amended the relevant parameters in Section 7.1 with the required specific values for $CC_{wp,I,t}$ and $M_{OAwP,I,t}$. Section 1.19 Leakage Management explains how leakage emissions related to the additional application of organic amendments are avoided. The values provided in Section 7.1 in the amended PDMR serve to provide evidence for the monitoring of these parameters in the project.

Auditor Response: The project has revised the 'Value applied' entry of parameters $M_{OAwP,I,t}$ (Mass of organic amendment applied as fertilizer on the project area in year t) and $CC_{wp,I,t}$ (Carbon content

of manure from livestock type I applied as fertilizer on the project area in year t), which now show they have been tracked by the project. This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NIR 12 Dated 9 Apr 2024

Standard Reference: VM0042 v2.0

Document Reference: Orizon CarbonCrop Rewards Programme Joint Project Description and Monitoring Report.pdf; Orizon CarbonCrop Programme – Additionality.pdf

Finding: According to section 7 of 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. 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 (see Equation 1).”

In section 5.3 of the PDMR, the project proponent states that “These adoption rates were based on available literature, as well as conservative (i.e., over estimations) adoption rate estimates where literature values were not available on a provincial / regional / national level. Further to his evidence we also received signed attestations from Agronomists confirming that our estimates are conservative.” Further, in section 2.3 of the additionality document, the project proponent has stated that “In our calculation for the adoption of CA (see Table 2 below) we have therefore used a combination of the Findlater study and Smith’s data to determine estimated adoption rates for CA at a provincial level. We used the 2021 data from Smith 2021 for each province and multiplied it by a ratio that was a combination of the Findlater adoption % and the overall % across SA for Smith’s study. For example, the Western Cape = $51\% * 14\%/25\% = 28.6\%$ overall CA adoption. Based on this pro rata calculation, the adoption of CA in only 3 provinces is above the 20% threshold for common practice.”

However, the audit team notes the following and requests more information:

a) It is unclear how the adoption rate for CA was determined using the ratio that combines Findlater adoption % and the overall % across SA for Smith’s study. Please provide all the calculations in the excel workbook, including calculations for individual adoption rates for all practices changes and weighted average adoption rate using equation 1 of the methodology.

b) The adoption rate for CA and some other individual project activities has been estimated using Smith's 2021 report. However, the audit team does not have access to this report. Please provide the report to verify the adoption rate numbers.

Project Personnel Response: The following documents have been provided as references and supporting evidence in the Audit Findings & Responses Document:

- Additionality Calculation Workbook – This workbook outlines how the project level adoption rates were calculated i.e. Equation 1 of Section 5.3.
- Regional Adoption Rates Calculation Workbook – This workbook provides the details as to how the regional adoption rates were calculated.
- An assessment of the adoption of conservation agriculture in annual crop-livestock systems in South Africa Smith 2021 draft report to the FAO
- Derpsch, R., Friedrich, T., Kassam, A., & Li, H. (2010). Current status of adoption of no-till farming in the world and some of its main benefits. International. Journal of Agricultural and Biological Engineering 3, 1–26. (This paper is saved as Derpsch et al 2010).
- Kooper 2020
- Cover Crop Trends, Programs, and Practices in the United States 2021

Please also refer to the "Orizon CarbonCrop Programme - Additionality" report in the "Other Supporting Documents" folder in the Audit folder.

Auditor Response: Thank you very much for the additional information and workbooks. Please note, there is a phrase under 'Assessment Results' in the 'Additionality Calculation Workbook.xlsx' that states: "The results are documented below with all calculation details being found in the linked tab ("Analysis Workings"):".

The audit team could not locate this tab. Please point the audit team or provide the data and calculations in this tab.

Project Personnel Response 2: The tab 'Analysis Workings' has been included in the Updated Additionality Calculation Workbook. This workbook has been sent as an attachment in the email response and uploaded to the Audit Responses & Findings folder in the folder Finding 12 - Common Practice Assessment - NIR.

Auditor Response 2: Thank you for sharing this tab. The audit team reviewed the calculations and found them in conformance with equation 1. This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): M/C

NIR 13 Dated 9 Apr 2024

Standard Reference: VM0042 v2.0

Document Reference: Orizon CarbonCrop Rewards Programme Joint Project Description and Monitoring Report.pdf

Finding: The methodology states for 'Justification of choice' for the parameter 'FFC,j,i,t' (ie, 'Consumption of fossil fuel type j (gasoline or diesel) for sample unit i in year t in the baseline scenario') in section 9.1: "Fossil fuel consumption may be monitored or the amount of fossil fuel combusted may be estimated using fuel efficiency (e.g., l/100 km, l/t-km, l/hour) of the vehicle and the appropriate unit of use for the selected fuel efficiency (e.g., km driven where efficiency is given in l/100 km)."

In Section 6.1, for the 'Justification of choice' for the parameter 'FFC,j,i,t', the PDMR states: "Values have been adapted from the Department of Agriculture , Forestry and Fisheries Guide to machinery costs. For crop duster airplane fuel consumption, the sources include peer reviewed literature and several other sources."

Please provide the references mentioned above to the audit team, so that we may verify the chosen FFC,j,i,t value.

Project Personnel Response: The following documents have been provided as references in the Audit Findings & Responses Documents Folder:

- DAFF Guide to Machinery Costs 2014-2015 pdf
- Cost of aerial and ground sprayings (Moraes et al 2021) pdf
- Sustainable Aviation Metrics pdf
- Ag aircraft Operations pdf

For the aircraft fuel consumption, the following calculation was used. This calculation was done based on using the aircraft Air Tractor 502B, which is the most used agricultural aircraft worldwide. Based on the AAU August 2023 reference this plane can cover 150 to 200 acres per hour. Using the lower end of 150 acres per hour this equates to 60.7028 ha/hr.

Based on Moraes et al. 2021 the fuel consumption was 230 l/hour (highlighted in the paper for easy reference). The following reference (<https://www.verifavia.com/greenhouse-gas-verification/fq-how-are-aircraft-CO2-emissions-calculated-11.php>) states that the emission factor for aircraft fuel is 3.10 tCO₂/t fuel. The conversion for 1 liter of aviation fuel to weight is 1l = 0.80kg (see Sustainable Aviation Metrics document where this is highlighted). Therefore, the emission factor for this fuel is:

Emission Factor of this fuel = $3.10 \text{ tCO}_2\text{e} / 1000 \text{ t of fuel} = 0.0031 \text{ tCO}_2/\text{kg} = 0.00311 / 0.8 = 0.003875 \text{ tCO}_2\text{e} / \text{liter aviation fuel}$

Number of liters per hectare = $230 \text{ l/hour} / 60.7028 \text{ ha/hr} = 3.7889520747 \text{ l of aviation fuel/ha}$

The emission factor for diesel is $0.002886 \text{ tCO}_2\text{e}/\text{l}$. In order to get the aviation fuel to an equivalent liters diesel (equivalent in terms of relative emission factors) we calculate as follows: $3.7889520747 \text{ l} \times (0.003875 / 0.002886) = 5.09 \text{ l/ha}$ as used in Table 8 in the QA3 document.

In the DAFF Guide to Machinery Costs the relevant values are highlighted and comments made where calculations were applied to determine the fuel consumptions used in Table 7 and Table 8 of the QA3 document.

Auditor Response: Thank you for the organized materials and stepping us through the calculation. The audit team verified the numbers used in this conversion with the materials, which are of appropriate quality as data sources. However, please revisit the conversion from $0.0031 \text{ 'tCO}_2 / 1 \text{ kg of aviation fuel'}$ to $\text{'t CO}_2 / \text{liter of aviation fuel'}$. Note, $0.8 \text{ kg of aviation fuel} / 1 \text{ liter of aviation fuel}$ is the accepted conversion factor.

Project Personnel Response 2: The conversion factor from tCO_2 per kg to tCO_2 per liter for aviation fuel has been adjusted correctly in the relevant documents. This adjustment will be applied for all future monitoring periods.

Airplane fuel events are extremely limited in the first monitoring period with only 30 events on a single project instance. The slightly higher fuel consumption applied before the error was found is negligible to the fuel consumption overall for this project instance and the overall project and is therefore not adjusted in the current monitoring period. the emission factor for this fuel is:

Emission Factor of this fuel = $3.10 \text{ tCO}_2\text{e} / 1000 \text{ t of fuel} = 0.0031 \text{ tCO}_2/\text{kg} = 0.00311 * 0.8 = 0.00248 \text{ tCO}_2\text{e} / \text{liter aviation fuel}$

Number of liters per hectare = $230 \text{ l/hour} / 60.7028 \text{ ha/hr} = 3.7889520747 \text{ l of aviation fuel/ha}$

We have calculated the effect of this change on net project emissions with the following results:

Baseline should decrease by $2.503 \text{ tCO}_2\text{e}$

Project should decrease by $2.808 \text{ tCO}_2\text{e}$

Therefore the net effect is an overstatement of $0.304 \text{ tCO}_2\text{e}$ project emissions when compared to baseline emissions. The net effect is conservative as the overstatement of the project emissions is greater than the baseline emissions overstatement.

Auditor Response 2: Thank you for correcting the conversion factor and for the additional context of its use for emissions calculations during this verification period. The audit team agrees that in this case, the error results in conservative emissions reductions estimations. This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NIR 14 Dated 9 Apr 2024

Standard Reference: VM0042 v2.0

Document Reference: Orizon CarbonCrop Rewards Programme Joint Project Description and Monitoring Report.pdf

Finding: In section 9.2, the methodology lists units for the 'Nex,I,P' parameter as 'kg N deposited/(head x year)'.

In section 7.1 of the PDMR acknowledges this with the following comment for 'Nex,I,P': "Table 10.13a Volume 4 Chapter 10 IPCC (2019). Important to note that these values are kg volatile solid/1000 kg animal mass/day and must be converted to kg N deposited/head/year. Important that one knows the livestock population and average weight."

The audit team needs more information to understand how Nex,I,P was converted from kg volatile solid/1000 kg animal mass/day to kg N deposited/head/year for this verification period.

Project Personnel Response: The table reference made for the parameter Nex,L,P is incorrect. This should refer to Table 10.19 in IPCC Volume 4 Chapter 10, which refers to Default Values for Nitrogen Excretion Rate (kg N / 1000 kg animal mass / day). This has been corrected in Section 7.1 of the PDMR.

Example Equation for clarification purposes:

Livestock Type: Beef Cattle in South Africa

Value from Table 10.19 IPCC Volume 4 Chapter 10: Other Cattle – Africa – Mean: 0.44 kg N / 1000 kg animal mass / day

To convert the above value of Nitrogen excretion rate per day to kg N/head/year we needed to determine the equivalent 1000kg animal units in that population for that field event. The farmers provided us with the number of animals and the relative frame size. In this example the frame size is Cattle – Beef – Medium (400 – 699kg), using the average weight of 550kg per animal. The farmer has 100 adult animals in the population.

Number of 1000kg animal units = $100 * 550/1000 = 55$ (1000kg animal units)

Days in the year = 365

To calculate kg N / head / day = $0.44 * 55 = 24.2$ kg N / head / day

To calculate kg N / head / year = $24.2 * 365 = 8,833.0$ kg N / head / year

Auditor Response: Thank you for the additional context. The project's description about the Nex parameter indicates it is being calculated appropriately. The audit team checked the application of the Nex values in the project's calculations and found that they were consistently applied. This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NIR 15 Dated 9 Apr 2024

Standard Reference: VM0042 v2.0

Document Reference: Workbooks in folder 'Emission Summaries (Per Farmer)'

Finding: The methodolog states in section 8.3 under Quantitative Approach 3: "Project emissions are calculated for each sample field using applicable default values and any monitored parameters. The most accurate available emission factor applicable to the project conditions must be used , in the following descending order of preference."

The project uses a 'dry matter fraction of silage production' value of 0.29 (assigned in cell D353 of worksheet 'Emission LookUp Tables') as part of the constants used in Quantitative Approach 3 calculations. Please support the use of this value, as the audit team could not locate a reference.

Project Personnel Response: The value of 29% (or 0.29 as a ratio), is based on an average moisture content value of 71% based on our literature review. We have uploaded a '.zip' folder called "Silage moisture content" containing 6 studies, where the moisture range varies between 65 - 78%, with the simple average between all these results being 70.5%, rounded to 71%.

That results in a 29% dry matter portion ($100\% - 71\% \text{ moisture} = 29\% \text{ dry content}$).

Auditor Response: Thank you for the additional resources and explanation. The audit team has no further questions and this finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NIR 16 Dated 9 Apr 2024

Standard Reference: VM0042 v2.0

Document Reference: Workbooks in folder 'Emission Summaries (Per Farmer)'

Finding: The methodolog states in section 8.3 under Quantitative Approach 3: "Project emissions are

calculated for each sample field using applicable default values and any monitored parameters. The most accurate available emission factor applicable to the project conditions must be used , in the following descending order of preference."

The project uses a m- and c-values (assigned in cells J358:K459 of worksheet 'Emission LookUp Tables') as part of the constants used in Quantitative Approach 3 calculations, specifically for crop biomass calculations. Please support the use of these values, as the audit team could not locate a reference.

Project Personnel Response: The m- and c-values were obtained from a study performed on cover crop biomass (Büchi (2016), Non-invasive method for the estimation of biomass of cover crops - the study has been provided in the "Audit Findings & Response Documents" folder on the audit drive). Values were not available for each specific crop. In such instances, the values of the crop that represents the same crop family or leaf & stem structure were used.

The accuracy of this model was tested through biomass sampling across various areas with various cover crop types at various stages of the cover crop's growth phases.

The accuracy assessment and further information on the approach towards estimating biomass from cover crops is detailed in the workbook "Orizon CarbonCrop Programme - Cover Crop Biomass" within the "Other Supporting Documents" folder on the shared drive. The tab relating to the accuracy assessment is called "Accuracy assessment".

The results showed a strong correlation and a generally conservative estimation of cover crop biomass.

Auditor Response: Thank you for the additional information. This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NIR 17 Dated 9 Apr 2024

Standard Reference: VM0042 v2.0

Document Reference: Orizon CarbonCrop Rewards Programme Joint Project Description and Monitoring Report.pdf

Finding: Table 3 of the methodology lists relevant GHG sources for VM0042, which potentially include biomass burning.

Table 3.4.1 indicates biomass burning has been considered as a potential emissions source as part of the project, but it is not included during this verification period, as no enrolled farmers practice biomass burning in baseline or project activity years. However, for Requirements in Table 3.4.1 for

Biomass Burning, the project states: "Farmer consultations and satellite imagery are used as a source of information."

Please explain how satellite imagery would be used to track or monitor biomass burning.

Project Personnel Response: Tracking of biomass burning was primarily done through farmer consultations.

Satellite imagery was used for any cases where there was a biomass burning event (however, the only significant biomass burning activities were from periods before the baseline historic schedule of activities commenced).

We worked with a lot of satellite imagery / data when assessing for cover crop presence, mapping field boundaries, checking field history, assessing historic land use, etc. During these assessments, we were mindful to assess for biomass burning activities, which are clearly visible on satellite imagery. Therefore, this was not a separate exercise, but an element we kept on assessing incidentally during other assessments. Our primary source of information however was consultations with the farmers.

Auditor Response: Thank you for the additional information. Farmer consultations are an acceptable source of data for tracking biomass burning (ie, Box 1). It is also clearer as to how satellite data was used for monitoring burning events. This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NIR 18 Dated 9 Apr 2024

Standard Reference: VCS Joint Project Description and Monitoring Report Template v4.2 (NOTE: out of date)

Document Reference: Orizon CarbonCrop Rewards Programme Joint Project Description and Monitoring Report.pdf

Finding: The template states for section 6.3: "Describe the process and schedule for obtaining, recording, compiling and analyzing the monitored data and parameters set out in Section 6.2 (Data and Parameters Monitored) above. Include details on the following:

- The procedures used for internal auditing and QA/QC.
- The procedures used for handling any internal auditing performed and any non-conformances identified.
- The implementation of sampling approaches, including target precision levels, sample sizes, sample site locations, stratification, frequency of measurement and QA/QC procedures. Where applicable, demonstrate whether the required confidence level or precision has been met."

The PDMR states for sub-section in section 6.3 relevant to the above points as "Details are provided in a separate report as part of the submission pack."

While this may be fine, assuming the separate report(s) are uploaded to the publicly accessible Verra Registry page, there is no indication of the file names of these reports to guide anyone interested in reading additional details about these points that are required to be included by the template.

Project Personnel Response: The different documents for Section 6.3.3 – 6.3.6 in the PMDR contain commercially sensitive information but have been provided to SCS as part of the audit folder. These are referred to in the PDMR and the most recent update includes the exact document names.

These documents do contain some commercially sensitive information and this is mentioned in Section 6.3.3 - 6.3.6 of the PDMR.

The documents in their entirety will be provided to Verra as part of the submission. However, we ask that we get the opportunity to redact the documents and remove certain sections which are commercially sensitive before these documents are made available publicly on the Verra registry.

Auditor Response: Thank you for the clarification. The audit team will note this in our validation/verification report, and the audit team confirms we reviewed these documents as part of this assessment. This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NIR 19 Dated 9 Apr 2024

Standard Reference: VM0042 v2.0

Document Reference: Orizon CarbonCrop Programme - Soil Sampling and Stratification.pdf

Finding: The methodology states in section 8.2.1: "Measurement procedures for SOC and bulk density must be thoroughly described including all sample handling, analysis preparation and analysis techniques."

Appendix E of the soil sampling document states: "They will be using the LECO instrument for Dry Combustion analysis, sensitive and calibrated scales, 2-mm sieves and drying ovens for bulk density and a combination of acids and the LECO instrument for determining inorganic carbon where

necessary."

There is a drying step for sub-samples prior to bulk density determination, but the audit team needs more information about the temperature and duration of the sample drying procedure. These are important technical details that are missing from the analysis preparation/techniques discussion.

Project Personnel Response: The "Orizon CarbonCrop Programme - Soil Sampling and Stratification" report mentions some of the procedures around sample handling, drying and the dry combustion process and refers to Appendix E for more details. However, Appendix E did not provide sufficient information about the drying procedures. We have uploaded an updated "Orizon CarbonCrop Programme - Soil Sampling and Stratification" report which discusses the drying procedures in more detail in Appendix E.

The drying was done on the small sub-sample at 105 degrees Celsius for 24 hours.

Auditor Response: Thank you for the updates to the Appendix. Some more information is needed before this finding may be closed: 2)

- Correct/update/check the website: <https://www.waterscience.co.za/labs.html> - is "Not Found" when searched for.
- The Eco-Analytica website (<https://natural-sciences.nwu.ac.za/eco-analytical-laboratory/about-us>) does not contain an accreditation certificate. Please obtain and present their Agrilasa membership certificate (or other accreditation certificates).
- The methodology set out in the Orizon document implies that soil carbon is determined on a soil sample that has been oven dried (for at least 24 h at 105 °C). Is this correct? Dry combustion analysis should be performed on an air-dry soil sample – not an oven dry sample. Oven drying a soil sample to 105 °C results in loss of OM from the sample (and thus underestimation of soil carbon content).
- Is result checking the responsibility of Orizon or Eco-Analytica? (e.g. that the variability in soil carbon content results between three sub-samples (per single soil sample) are within acceptable limits?)

Project Personnel Response 2:

Auditor Response 2: The audit team received an update to the Appendix that satisfied last round's information requests and provided further explanation for our questions over email. The answers are summarized as follows:

- The website is not available at this point, but this has no bearing on the closure of this finding, as more information has been provided about the lab's accreditation
- The Eco-Analytica lab is part of a credible University (North West University), and the project presented its 2022 Agrilasa creditation. The official Agrilasa member list (available at

https://agrilasa.co.za/members/admin/member_list.php) lists Eco-Analytica as a current member as of this finding.

- The lab is conducting tests on oven-dried samples for soil carbon. The project provided an extensive literature review to show how there would be a minimal affect, and the audit team's soil scientist expert confirmed they had a good theoretical argument (essentially, there appears to be a minimal difference between oven-drying and air drying for samples with >2% SOC; only 2 farms have an average SOC of >2%). The project is not planning on deviating from this approach, but will also conduct tests on air-dried samples to confirm whether there is any material affect in future sampling events. Since the laboratory approach to sample drying will stay consistent, there is little chance of measurement bias later in the project.
- Both Eco-Analytica and Orizon conduct their own internal quality analysis for sub-sample SOC variability

The audit team has no further questions and this finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NIR 20 Dated 9 Apr 2024

Standard Reference: VM0042 v2.0

Document Reference: Orizon CarbonCrop Programme - Soil Sampling and Stratification.pdf

Finding: Section 8.2.1.2 of the methodology states: "Soil sampling must be conducted following the stratified random sampling strategy. Each sampling unit within the project area should be divided into homogenous strata based on factors influencing SOC stock distribution (see below). Random samples should be taken in each stratum."

Project specific strata, their area and the sampling points within strata must be reported in a spreadsheet and submitted as an annex to project documentation at every verification."

Section 2 of the soil sampling document states about stratification: "Based on the most dominant soil & geographic / hydrological properties, each field will be assigned into a soil property category / stratum within the management cluster."

Section 3 of the soil sampling document states about stratification: "In the project, stratification is

performed on an instance-specific/farm-specific basis. Strata are therefore not comparable between instances/farms. Strata are identified based on management (anthropogenic) and natural (non-transient pedogenic) factors. Of these, the natural characteristics considered for the stratification of an area are mostly static within a human lifespan (when significant alterations are not performed). These characteristics were identified by considering the CROPT (climate, relief, organisms, parent material, and time) soil forming factors as well as clay content up to 0.3m. On a farm scale, however, there is little variation in climate, organisms, and time. These factors can therefore be omitted from stratification. The information regarding variation in parent material is not available on a farm scale and must be omitted. The remaining soil-forming factor is relief/topography, which is a significant driver of soil variation on the farm scale. The clay content of the soils is often also impacted by topography (or correlates to topography) and impacts the capacity of soil to store carbon. Therefore, topography and clay content are the only drivers for the natural stratification procedure."

Overall, the above strategy is sound and appears to follow the methodology. However, there is some ambiguity in the stratification process about the connection between mapped environmental variables (HWSD clay, topography), which are in a 'gridded' format, and the field boundaries, which are polygons. Please provide the audit team with more information on how strata were determined for each field, as there is likely some variation (or multiple 'pixels') of soil and topography data within each field boundary. For instance, were different pixels 'averaged' to represent clay for a field during the clustering and strata assignment?

Project Personnel Response: The below response is relevant to the clustering/grouping of soil and terrain properties of farm instances in our stratification process and ignores the management practice stratification done on a field level.

SoilGrids2.0 was used as a source of spatial soil data and not the HWSDv1.2. SoilGrids2.0 was selected as it provided a higher spatial resolution of soil properties than the HWSDv1.2. Three gridded SG2 rasters were used in the analysis, namely 0-5cm, 5-15cm, and 15-30cm. A single, smoothed slope raster layer was also used for clustering. The rasters were resampled to a 25m resolution and clipped to the field boundaries. Point values were extracted from each raster cell. The point values from the different rasters were then scaled and clustered using a k-means clustering approach. The number of clusters used for the farm instance was informed by the differences in the within-sum-of-squares of the clusters. The point values (of clusters) were used to create a new raster with values that corresponded to the cluster number of that cell/point. The resultant new rasters did in some instances have more than one cluster per field. Each field was binned into the dominant strata for the field. Management practices were then superimposed in the classified fields to obtain the final strata, with each field in a strata containing similar dominant soil and management practice properties.

Auditor Response: Thank you for the additional information. The audit team has no further questions.

This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): M/C

NIR 21 Dated 9 Apr 2024

Standard Reference: VM0042 v2.0

Document Reference: ModelValidationReport2023_Orizon_Project3368.pdf

Finding: Table 6 in the methodology states for Soil properties as a model input: "Directly measured or determined from published soil maps with known uncertainty. Estimates from direct measurements must:

- Be derived from representative (unbiased) sampling; and
- Ensure accuracy of measurements through adherence to best practices."

Section 1.2 of the model validation report states: "Soil clay and texture data were drawn from the Harmonised World Soil Database v1.2. Figure 1 shows the texture classes (USDA) for the farms in the OCRP. The dominant soil textural classes for the fields in the project domain are sandy clay loam, clay loam, clay, and sandy loam."

During the site visit, the audit team found that most farmers had clay content maps provided by third party consultants, which were apparently based upon samples collected on their fields. Given the local information available for most farms, please support the decision to use the harmonized world database to parameterize RothC's clay input for the project area application (the audit team is under the impression HWSD was used for project area modeling as it was for calibration/validation).

Project Personnel Response: We have uploaded 2 additional studies not initially included in the audit submission, named "Bodenstein et al 2022" (Paper 1) and "Sensitivity Analysis of the RothC Soil Carbon Model (Ver. 26.3 Excel)" (Paper 2).

Paper 1 includes an assessment of the uncertainties around the HWSD maps for various properties, including clay. The RMSE for 30cm clay fraction is 13.9%. For soil properties excluding SOC and BD, VM0042 requires us to use values "directly measured or determined from published soil maps with known uncertainty." These maps are understood to be acceptable by these standards.

Furthermore, Paper 2 is a sensitivity analysis of various parameters of the RothC Model. The clay % was found to be a relatively insensitive parameter. Further to this, the baseline and project scenarios

would both have the same clay %, further reducing the impact of small variances in clay as the relative differences are compared.

During our initial assessment & interviews of various farmers and consultants, the use of maps provided by farmers was deemed problematic due to the following reasons:

- The methodology requires us to use measured clay % or maps with a known uncertainty to the sample depth (30cm). Many of the local maps from the farmers were not to a 30cm depth, but to a 15cm depth which is the standard sampling depth for soil analysis. For soil classification exercises, the depths are typically deeper but are not necessarily split into depths that can be aggregated to 30cm.

- We found that many of the maps are available in paper/pdf format, but not in digital format as the companies who performed the classification exercise refrain from sharing original shapefiles, or the farmers have lost access.

- The maps vary in process, depths, spatial resolution, laboratory/assessment methods, sampling methods, etc. These differences make comparisons difficult and result in a process which cannot be replicated and where uncertainties are not known.

We are working on a hybrid approach where we can use maps of the farmers as long as they meet certain conditions, while defaulting to the best available digital soil maps.

Auditor Response: Thank you for the additional information. Based upon review of these papers in-field texture tests the audit team conducted at different points within the same strata, the audit team is reasonably assured that clay is not being over-predicted by the HWSD maps prior to its input into the project-specific RothC modeling. This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NIR 22 Dated 9 Apr 2024

Standard Reference: VCS Standard v4.6

Document Reference: Orizon CarbonCrop Rewards Programme Joint Project Description and Monitoring Report.pdf; Workbooks in folder 'Emission Summaries (Per Farmer)'

Finding: The standard states in section 3.8: "The project start date of an AFOLU project is the date on which activities that lead to the generation of 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)."

The PDMR states in section 1.8: "A field level approach is taken whereby the project start date for

each instance is set in relation to each field and defined as the earliest start date for that field provided the date is not earlier than 1 August 2018. A farmer's instance may therefore include fields with different start dates if not all fields began implementing the improved ALM practices on the same date, or if new fields were leased / purchased over time." The cited workbooks contain detailed field-level data for each field in each enrolled farm.

Please demonstrate that the project is tracking the start date for each project instance by providing a list of initial project activities and any supporting records for each field that was visited by the audit team during the February 2024 site visit.

Project Personnel Response: We have updated the PDMR section 1.9 (previously section 1.8) to provide more detail on this matter.

We are effectively using a grouped-field-level start date assessment whereby we assess the farm-wide start date of all fields under the farmer's management control in those seasons.

We believe there is a risk of carbon leakage when only including individual fields based on the adoption of sustainable practices on those individual fields. For example, a farmer with 100ha could have been planting 50ha cover crops for the past 10 years on the same fields. In order to qualify for a carbon project, he simply stops planting cover crops on the normal 50ha fields and shifts these practices to the other 50ha fields which were previously not planted to cover crops. Using a field-level approach would over-state carbon sequestration.

Therefore, we have a single project start date for a farmer, except in cases where additional fields were purchased / leased at a later stage.

Due to the fact that individual fields could have different project start dates (due to the reasons mentioned above) we had used the term "field-level approach". However, we have realised that this term is not appropriate and have changed our wording in the PDMR accordingly to better reflect the true nature of our approach.

We have provided a pdf document in the "Audit Findings & Response Documents" folder called "Farmer Instance Start Dates - Orizon Agriculture CarbonCrop". This document further explains our approach, summarises the start dates for all farmers as well as the start dates of the sample fields, and provides support to each farmer's project start date.

Should additional supporting documents be required (e.g. underlying NDVI imagery, purchases of equipment, invoices for organic inputs, etc.), we can gladly provide this for any specific activities you

wish to sample.

Auditor Response: Thank you for the additional context. The farm-level approach for tracking start dates is reasonable, and the audit team agrees that it may be conservative in preventing over-crediting in the context of the example provided. Also, it is reasonable that fields that are leased or bought later would have different start dates than the original fields at the time of the farm-level start date.

One further request: although the audit team acknowledges we have the information, we ask the project team provide a summary table of the practices that occurred at 'project start' for each farm.

Project Personnel Response 2: We have amended the Table on section 3 of the previously uploaded document "Farmer Instance Start Dates - Orizon Agriculture CarbonCrop" to also include a column which lists the practices which were implemented at project start. We have done this for the sampled farmers only, as this was previously requested only for the selected farmers. Should that be insufficient, or you require the data in another format, please specify exactly the information you would like to see.

This can be found in the shared "Audit findings & response document"

Auditor Response 2: Thank you for the additional data and narratives. The audit team now has sufficient information to close this finding.

Bearing on Material Misstatement or Conformance (M/C/NA): M/C

NCR 23 Dated 9 Apr 2024

Standard Reference: August 2023 Overview of VCS Program Updates and Effective Dates (updated 25 SEPT 2023)

Document Reference: Orizon CarbonCrop Rewards Programme Joint Project Description and Monitoring Report.pdf

Finding: Item 12 of the Overview of Effective Dates states: "Updates to the VCS Project templates: Effective for all project requests submitted on or after 1 March 2024." This refers to updating relevant documentation from v4.2 to v4.3, such as the joint project description and monitoring report.

The PDMR is currently in v4.2, which is not in conformance with the effective date requirement.

Project Personnel Response: The PDMR has been updated from the template version 4.2 to version 4.3 of the template as requested.

This updated version has been included in the audit file in the folder "Audit Findings & Response

Documents".

Auditor Response: Thank you for providing the updated template. Note: the added sections 7.6 and 7.7 do not appear in the template and appear relevant for section 7.5. Also, there are tables in section 7.5 that have not been included. This finding remains open.

Project Personnel Response 2: The sections have been amended to follow the template as part of Section 7.5.. The relevant tables as per the template v4.3 have been included in section 7.5.

This can be found in the shared "Audit findings & response document"

Auditor Response 2: Thank you for updating the PDMR. One additional editorial note: please ensure the most up-to-date effective versions for all criteria (ie, VCS Standard v4.7) are given in the document. This finding remains open.

Project Personnel Response 3: The PDMR has been updated with the up-to-date effective versions for all criteria. We have submitted the updated PDMR on 11 June 2024.

Auditor Response 3: Thank you for the updates. The audit team reviewed the PDMR and found that the project updated the criteria version references. This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NIR 24 Dated 9 Apr 2024

Standard Reference: VM0042 v2.0

Document Reference: Orizon CarbonCrop Rewards Programme Joint Project Description and Monitoring Report.pdf

Finding: Box 1 in the methodology states: "All qualitative information on ALM practices must be determined via consultation with, and substantiated with a signed attestation from, the farmer or landowner of the sample field during that period. Where the farmer or landowner is not able to provide qualitative information (e.g., a sample field is newly leased), the project proponent must follow the quantitative information hierarchy outlined below."

Section 3.4 of the PDMR under Regional Baseline Development states: "For fields where no historic data for baseline establishment is available (such as where the field is newly leased / purchased and the previous owner is not willing to share information with Orizon), a regional baseline is applied based on the common practices prevalent in the region...."

The large majority of fields had baseline data available, and the above approach was only followed for a minority of fields (ca. 15.4% of total hectares)."

To facilitate a check on the fields that had baseline data represented by the regional baseline, please provide the audit team with a list of fields that used the regional baseline data for the baseline scenario.

Project Personnel Response: Column R ("Historic period availability") within tab "Field Inclusion Reconciliations" in the "Net Emission Reductions & Uncertainty Workings - July 2022" workbook indicates whether the field is based on regional baseline data or its own historic activities, where "Available" indicates that actual on-farm historic data was available and has been used to establish the baseline and "Not available" indicates that there was no historic data available and the regional baseline data was used.

Please note that the 15.4% you are referring to is the weighted average across the 4 seasons and not the simple % as at the close of July 2022. It therefore represents the average % of hectares which required a regional baseline across the entire monitoring period.

Auditor Response: Thank you for the additional information. The project has demonstrated that they are tracking regional baseline application in their calculation workbooks. This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NIR 25 Dated 9 Apr 2024

Standard Reference: AFOLU NPRT v4.2

Document Reference: Orizon CarbonCrop Rewards Programme AFOLU NPRT Report.pdf

Finding: Item 1.1(c) of the NPRT analysis states as a risk factor: "Management team does not include individuals with significant experience in all skills necessary to successfully undertake the project activities (i.e., any area of required experience is not covered by an individual with at least five years experience in that area)."

The project has taken a risk rating of 0 for this category. While on site, it was clear the project personnel understood VM0042 and have the capacity to successfully undertake project activities. However, as further support, please provide the audit team with CVs for each member of the management team.

Project Personnel Response: Orizon has complied further evidence to support this claim by providing CVs of the management team. This includes CVs of the Director, Project Originator (Manager), Soil Modelling manager, Lead Software Developerr and the CarbonCrop consultants (agronomists) permanently employed at Orizon when the risk assessment was completed.

The farmers involved in this project are the managers of the implementation of the project activities. They can therefore be seen as part of the management team. The average years of farming experience is over 21 years amongst the 22 farmers (lowest being 6 years) and the average number of generations of farming across the project so far is more than 3 generations across the project. Out of the 22 initial instances, 18 farmers have a relevant degree/diploma.

These statistics further support the fact that the farmers in the project currently have significant experience in the agricultural sector.

Orizon has also involved Unique Land Use as advisors regarding carbon projects on a consultancy basis. Benjamin Schwarz was the lead consultant, and has more than 7 years' experience in AFOLU carbon project development, carbon modelling and soil carbon accounting.

For any legal aspects related to the project, Orizon is advised by Andrew Gilder and Olivia Rumble of Climate Legal. Andrew Gilder has close to 20 years' experience in sustainability, environmental and climate-related legal matters and is widely considered to be the leading South African private sector climate change and carbon markets lawyer. Olivia Rumble has more than 10 years of experience specializing in climate change law, policy and governance, climate finance and development, and carbon pricing instruments.

Further consultations were performed with a sister company, Catalyst Solutions, and particularly with Christo Engelbrecht. Christo has >12 years experience in local carbon markets, including project development and carbon trading.

Auditor Response: Thank you for providing the CVs as supporting evidence for this finding. The audit team has no further questions and this finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NIR 26 Dated 9 Apr 2024

Standard Reference: AFOLU NPRT v4.2

Document Reference: Orizon CarbonCrop Rewards Programme AFOLU NPRT Report.pdf; Notes Provided as Reasons for Risk Scores.pdf

Finding: Section 2.2.2 of the NPRT states: "Projects may demonstrate that funding has been secured through, for example, financial statements, bank records, executed commodity purchase agreements, executed emission reduction purchase agreements, or other signed contractual agreements. Evidence shall be provided showing agreement counterparties are in good financial

standing and can meet their financial obligations. Given execution uncertainties, options contracts shall not be counted as secured funding. The assumptions made for revenue from both carbon and other commercial sources (e.g., timber, agricultural commodities) must be conservative. The source, pricing assumptions, frequency of verification, and other relevant variables shall be clearly documented."

Section 2.2.3 of the NPRT states: "The NPV analysis shall cover the project crediting period, compare credible alternatives to the project and use a conservative estimate of revenue from GHG credit sales and other project revenue streams. Estimates of GHG credit prices shall be based on market intelligence reports or other published sources."

The project has selected options for sections 1.2 and 1.3 of the NPRT analysis, but the audit team could not locate documentation to substantiate that 80% of funding has been secured, the payback period is four years or less from the current risk analysis, or assumptions underlying the NPV analysis. Please provide the audit team with additional documentation to substantiate scores selected in sections 1.2 and 1.3.

Project Personnel Response: COMMERCIALY SENSITIVE - PLEASE REFRAIN FROM MAKING THESE DOCUMENTS PUBLICALLY AVAILABLE UNTIL PERMISSION IS RECEIVED FROM ORIZON.

We have provided the required information, including the following:

- "Orizon Farmer Production Budget.xlsx" which details costs borne by the growers and the additional revenue streams from such practices, along with conservative project pay-back period estimations.
- "Orizon Cash Flow Budget (Redacted for commercial sensitivity).xlsx" which details Orizon's cost profile (actuals for past years and budgeted for future periods), along with the pay-back period, NPV and other metrics.
- "Loan Agreement Spring Capital Holdings Limited Orizon Agriculture (Pty) Ltd 20240306 FULLY SIGNED.pdf" which details a R30m loan agreement between Spring Capital Holdings and Orizon Agriculture (Pty) Ltd for the purpose of developing this carbon project and expanding on it in future. The funding is sufficient to cover project development costs multiple times over.
- "ORIZON AGRICULTRE (PTY) LTD 07248 GUSTAV VAN DEN BERG .pdf" which authorises the transfer of foreign capital to the value of R30m from Spring Capital Holdings to Orizon Agriculture (Pty) Ltd.

Auditor Response: The audit team accepts the loan agreement and transfer as official documentation. The audit team reviewed the financial analyses for Orizon and the farm-level and found both to be well supported by proper sources. The analyses support the claims made in the NPRT for internal risk: financial viability. This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C**NCR 27 Dated 9 Apr 2024****Standard Reference:** AFOLU NPRT v4.2**Document Reference:** Orizon CarbonCrop Rewards Programme AFOLU NPRT Report.pdf; Notes Provided as Reasons for Risk Scores.pdf

Finding: Section 2.2.4 of the NPRT states: "For all AFOLU project types, the entire project longevity shall be covered by management, financial, and monitoring plans submitted to local government, financial institutions, or made public. The intention to continue management practices shall be stated and planned for in these documents. They may include external evidence such as municipal land-use plans, institutional structures, ecological-economic zoning, etc."

Please provide the required documentation mentioned in the requirement above that corresponds with the project's 100-year longevity.

Project Personnel Response: COMMERCIALY SENSITIVE - PLEASE REFRAIN FROM MAKING EXCEL DOCUMENT PUBLICLY AVAILABLE UNTIL PERMISSION IS RECEIVED FROM ORIZON. The Excel document provides an overview of the 100-year financial plan for Orizon.

We had previously also uploaded the Adaptive Management Plan report which we have now updated to include more details around the intention of sustaining this project over the entire project period (100 years).

We have also now uploaded a cash flow budget which shows the expected project-related revenues and expenses over the next 100 years.

Our participating farmers have shown a clear intention to carry on with these project activities through purchases of expensive implements (e.g. no till planters), participation in regenerative courses, signing our contractual agreement and signing an attestation indicating their intention to carry on such practices.

Evidence for the above has been included in the audit file (e.g. contracts and attestations) while other evidence has been collected during our monitoring activities (e.g. photos of no till planters, discussions on regenerative course participation, etc.). Section 6.3 of the PDMR also provides further details regarding the Monitoring Plan of the project in accordance with this requirement for the NPRT.

Auditor Response: The adaptive management report now does correspond to a 100-year time horizon, so we have no further questions about that. The audit team reviewed the financial analysis for Orizon and found it to be well supported by proper sources.

It is unclear whether the financial plan has been submitted to any of the organization types mentioned in section 2.2.4 of the NPRT guidance (clearly not the public). This finding remains open.

Project Personnel Response 2: The financial data is included in the workbook as explained to the audit team.

Section 2.2.4 of the NPRT guidance lists organisations with whom these financial plans could have been shared. Our interpretation of this is that the purpose behind this requirement is that these are 'official numbers' and can be trusted. Based on our business structure, there is no channel for us to submit it to any of the specifically mentioned institutions. There is no channel to submit this or a similar document to government, we do not require any loans from financial institutions and therefore have never needed to make submissions of future cash flow projections and we are not a publicly-listed or similar company and therefore it is not the norm to share any of this information publicly.

However, as we receive investor-based funding the financial plan has also been shared with the funders of the project. This could be seen as similar to sharing this information with a financial institution as the investors make their investment decisions based on these projections.

Auditor Response 2: The requirement for either publicly disclosing a financial plan or sending to a financial institution works in part as an accountability measure for the project's stated longevity claim. Given that the financial plan has been shared with funders of the project (which will hold the project financial accountable) and that it has influence on their investment decisions, the audit team seems no reason why the project needs to send it to another institution of any kind. This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NIR 28 Dated 9 Apr 2024

Standard Reference: AFOLU NPRT v4.2

Document Reference: Orizon CarbonCrop Rewards Programme AFOLU NPRT Report.pdf; Notes Provided as Reasons for Risk Scores.pdf

Finding: Section 2.2.4(4) of the NPRT states: "Legal agreement or requirement to continue the management practice refers to any legally enforceable agreement or requirement, such as a conservation easement or protected area law requiring the continuation of the management practice that sequesters carbon or avoids emissions for the project's longevity."

The project states for Q2 in section 1.4 of the NPRT: "In the contract signed by our farmers the following is stated: 4. Term and Termination 4.1. This Agreement commences on the Signature Date and terminates on the date that all payments have been made for the final Crediting Period, unless terminated as otherwise provided for herein. In section 1.9 of our Project Description Document: As per section 3.9.3 in the VCS Standard v4.5 requirement for AFOLU projects, the crediting period for this program should be a minimum of 20 years with a maximum of 4 renewals within the maximum 100-year crediting period."

Please provide the audit team with contracts referred to in the above citation (if not already provided), and please discuss how these contracts are legally enforceable agreements or requirements.

Project Personnel Response: We have uploaded all Contracts for the initial project instances. These can be found in '.zip' folders within each individual grower's folder within the "Grower instances" folder on the audit drive.

These contain the signed contract, along with a summary which indicates the individuals and email addresses which e-signed these contracts and other details.

We have now also uploaded an example for one farmer to the "Audit Findings & Response Documents" folder.

These are legally binding contracts set up by Andrew Gilder and Olivia Rumble from Climate Legal. These climate lawyers are the most respected / prominent climate lawyers in the country and have set up many carbon offset agreements in the past.

Within the contracts, the following terms are some of those which hold the farmer accountable to project practices, while still acknowledging that there may be short-term practical constraints to these commitments (such as planting cover crops in a dry season, or nutrient stratification issues requiring a corrective tillage pass):

- Clause 4.1: "This Agreement commences on the Signature Date and terminates on the date that all payments have been made for the final Crediting Period, unless terminated as otherwise provided for herein."

- Clause 8.1.2: "The Property Owner shall endeavor to implement one or more Improved ALM Practices on the Field(s), and take all reasonable steps to continue such practices for the duration of

this Agreement;"

- Clause 8.1.5: "The Property Owner shall take all reasonable measures to minimize the negative impacts of a Natural Disturbance, or Significant Reversal on the Property; and endeavor to not use the Property in a way which would negatively impact on the operation of the Project or the generation of Carbon Credits in the long term."

- Clause 14 which gives Orizon the right to withhold any payments should any reversals, potential reversals, leakage, or any permanence risks be suspected

- Other relevant clauses include 8.4; 10.6 etc.

Auditor Response: Thank you for providing this documentation and pointing the audit team to the contracts. After review, it does appear these contracts are legally enforceable agreements. The audit team has no further questions and this finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NIR 29 Dated 9 Apr 2024

Standard Reference: VM0042 v2.0

Document Reference: Workbooks in folder 'Emission Summaries (Per Farmer)'

Finding: The parameter 'Pop' for equations 12, 13, and 29 is: "Population of grazing livestock of type I in sample unit i for productivity system P in year t in the baseline scenario head numbers."

As part of the Quantitative Approach 3 (QA3) calculation process in the project's workbooks, the population of grazing livestock is calculated as mature animal count + 0.5*(young animal count), which appears in column MN in 'Emissions calculations.'

Please provide an explanation to support this formula for the 'Pop' parameter.

Project Personnel Response: Young cattle numbers have the 0.5 factor assigned as they are approximately half of the weight of a mature cow. Based on literature, such as provided by the department of Agriculture & Rural Development for effective beef production, growers should aim for weaners (young cattle) to be 42% of the weight of a mature cow at weaning (this target weight aligns closely to anecdotal evidence received through interviews with farmers). In our data collection our farmers provided numbers of adult cattle and numbers of young cattle present (those of pre-weaning age). We conservatively used 0.5 for young cattle for these calculations as weaners are expected to be around 42% of the weight of a mature animal. Using 0.5 instead of 0.42 adds conservativeness to the calculation.

As the number of young animals and the number of adult animals is provided to us by the farmers in their field records data, we are able to make this distinction.

Auditor Response: The audit team reviewed the material from Agriculture and Rural Development provided by the project. The team also reviewed statistics of weaner and mature cow weights from the University of Wyoming Extension service, another industry source, and USDA statistics. All sources support the project's cited data that 0.5 is a conservative factor for estimating weaner weight from mature cow weight. This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NIR 30 Dated 9 Apr 2024

Standard Reference: VM0042 v2.0

Document Reference: Workbooks in folder 'Emission Summaries (Per Farmer)'

Finding: The project is currently seeking a deviation from v2.0's enteric fermentation methane emissions (equation 12), methane emissions from manure deposition (equations 13-14), and nitrous oxide emissions from manure deposition (equation 29) in favor of v1.0's approach. This would involve grazing days in the calculation, instead of applying the calculation with annual rates and assumptions.

The grazing days formula in column MO in sheet 'Emissions Calculations' in the cited workbooks generally makes sense, except for the term 'Nights spent onfields'. Please provide a brief explanation of the formula for calculating Grazing Days Fraction of Year to ensure the audit team understands all of the assumptions being made for this formula.

Project Personnel Response: Column 'JE' (an input into column 'MO') in the "Emissions calculations" sheet refers to the % of nights that animals spent on the project fields. The numbers are therefore on a scale from 0 - 100. The calculation in column 'MO' uses this to derive a net % of days in the year spent on project fields. For the period over which the livestock are on the project fields, 50% of time is allocated to the day and 50% is allocated to the night. The entire 50% daytime is always included, but the 50% nighttime (or portion thereof) is only included when animals actually spent this time on the project fields and not elsewhere.

There are some South African farmers who, for security reasons against theft risks, herd their animals into an enclosure every night, or on weekends or full moon nights only in some cases (as weekends or full moons typically have heightened livestock theft risks). This means that there is a % of the manure which does not get deposited onto project fields. It is therefore important to differentiate between livestock that spend all day and night on project fields against those that only

spend days on these fields. This impacts our carbon modelling inputs as there would be reduced consumption of grasses/residues and a reduced input of manure as a carbon source onto project fields. It also impacts manure-related emission calculations as these are not deposited on project fields.

Note: We had very few such scenarios, therefore this factor was almost always set at 100%.

Auditor Response: Thank you for the explanation. The assumptions now make sense, and the audit team has no further questions. This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NIR 31 Dated 9 Apr 2024

Standard Reference: VM0042 v2.0

Document Reference: Orizon CarbonCrop Programme - Methodology Deviation.pdf; Orizon CarbonCrop Rewards Programme Joint Project Description and Monitoring Report.pdf

Finding: The project is currently seeking a deviation from v2.0's enteric fermentation methane emissions (equation 12), methane emissions from manure deposition (equations 13-14), and nitrous oxide emissions from manure deposition (equation 29) in favor of v1.0's approach. This would involve grazing days in the calculation, instead of applying the calculation with annual rates and assumptions.

The explanation for the change in Equation 14 in the 'Methodology Deviation' document and Equation 14 as cited in the PDMR are not exactly the same. Please provide the correct equation for each document, as the audit team assumes the Methodology Deviation document is currently intended for public access.

Project Personnel Response: The Methodology Deviation document and Section 3.6 of the PDMR have been adjusted to have the same wording and explanations for the deviation. Equation 14 in the PDMR has been amended to be the same as the equation in the Methodology Deviation document. This and the other equations can be found in Section 5.1.5 – 5.1.6 in the PDMR. Further wording providing guidance of when these equations are used has been inserted in these sections of the PDMR to clarify that the equations as per V2 of the methodology can be used if the Methodology Deviation exclusion or applicability conditions are not met by the specific project instance.

Auditor Response: Please note that in the calculation workbooks, '365' is still being multiplied in Equation 14, which does not appear in the PDMR's description of Equation 14. Also, all parameters (including Days_bsl,i,t,P in Equation 13) need to be specifically listed and described below the equations with units included in the description. This finding remains open.

Project Personnel Response 2: The excel needed to be designed to cater for the possibility of instances where V2 equations are applied or for the methodology deviation equations to be applied and therefore Equation 14 is multiplied by 365 as per V2. Equation 13 is divided by 365 using the ratio grazing days/365 for instances where the deviation applies.

This requirement for two options meant we therefore calculate the $VSI_{I,t,P}$ value for the entire year and then use the grazing days/365 in Equation 13 for instances where the deviation applies. The 365 factor therefore cancels out and effectively one requires only the number of days in Equation 13 (This is why the parameter ' $Daysbsl_{I,t,P}$ ' appears in the PDMR). The number of grazing days/365 ratio also applies and is used for N2O emissions calculations (see attached image in email) and a Vlookup of this value is used by the Excel calculation so the 365 is effectively cancelled out.

An example equation may better explain this:

$VS_{rate,I,P}$ for Other Cattle in Africa is 12.0 kg VS per 1000kg animal mass per day (IPCC Volume 2 Chapter 10 Table 10.13a). If the average weight of the cattle is 500kg then $VSI_{I,t,P}$ is $12 \times 500/1000 \times 365$ as per Equation 14 of V2 of VM0042. 2,190 kg VS per head per year. This is how the excel calculates it and then in Equation 13 this is multiplied by number of grazing days/ days in the year for example $100/365$ for instances where the methodology deviation is applied. So $2,190 \times 100/365 = 600$ kg VS for the grazing period. Without the 365 factor it is calculated as $12 \times 500/1000 \times 100$ grazing days which also equals 600 kg VS for the grazing period per head of cattle. The difference in how it is calculated in the Excel does differ to the PDMR but it is merely due to the way the Excel is set up.

The PDMR will be amended to include the parameters under the equations as requested. This will be part of the final PDMR submission with the model finding adjusted figures.

Finding 31 – Highlighted is a screenshot example showing the ratio used in the CH4 and N2O emissions, from the tab 'Emissions Calculations' in the Farmer Emissions Summary 31 July 2022 excel of one of the project instances to explain the inclusion of the 365 factor in the Excel and not in the PDMR. This is uploaded in Finding 31 in the Audit Findings & Responses folder.

Auditor Response 2: Thank you for the added explanation. The 365 factor does cancel out. The project provides additional information for this equation structure in section 7.2.5. This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

Standard Reference: VM0042 v2.0

Document Reference: Orizon CarbonCrop Programme - Methodology Deviation.pdf; Orizon CarbonCrop Rewards Programme Joint Project Description and Monitoring Report.pdf

Finding: The project is currently seeking a deviation from v2.0's enteric fermentation methane emissions (equation 12), methane emissions from manure deposition (equations 13-14), and nitrous oxide emissions from manure deposition (equation 29) in favor of v1.0's approach. This would involve grazing days in the calculation, instead of applying the calculation with annual rates and assumptions.

Following Equation 29, the PDMR states: "MSbsl,i,t is determined by the number of grazing days that the livestock spend on the field. AWMS, which has been explained in the methane emissions section, has a value of 1.0 assigned in the project area based on the current instances."

It appears equation 29 is also part of the deviation, however, the specific update to equation 29 is not described explicitly in the deviation document and is vaguely mentioned in the PDMR in the quoted text above. Also, the explanation for 'MSbsl,i,t' under Equation 29 in the PDMR appears to be the same explanation as provided in v2.0 of the methodology. The audit team needs to confirm that any update caused by the project deviation is consistently explained throughout the PDMR, including the nitrous oxide manure deposition equations.

Project Personnel Response: As per Section 3.6 and in Section 1.1 of the Methodology Deviation document:

Nitrous Oxide emissions remain as per the methodology as these equations already consider the number of grazing days with the parameter MSbsl,i,t. This parameter is an annual fraction based on using the number of grazing days and converted to a percentage. Assuming all manure deposited is deposited on the project field for the entire year results in a value of 1 being applied.

Equation 29 therefore does not change in terms of the make-up of the equation and is therefore not explicitly included in the Methodology Deviation document. It would remain as is in V2.0 of VM0042.

In the case of a baseline adjustment however, where it is required, there would be changes made to the parameters MSbsl,i,t and Popbsl,i,t only. Example 6 in the Methodology Deviation document describes an example where a baseline adjustment would potentially be required. As either the baseline population or the baseline grazing days requires adjustment, these parameters need to be adjusted. It is therefore correct that the explanation for the parameters is the same as in V2 of the methodology.

The change is further detailed in the Methodology Deviation document in Appendix C where a

baseline adjustment is required in that example. Please note that we currently do not have any such instances in our project.

Auditor Response: The audit team reviewed the Methodology Deviation document again, and to be fair, the project did include an explanation about how Equation 29 would not change, as it already factors in a percentage of annual emissions through parameter $MS_{bsl,i,t}$. From VM0042 v2.0, section 8.2.10, the description for parameter $MS_{bsl,i,t}$ states: "Baseline fraction of total annual N excretion for each livestock type I for quantification unit i in year t that is deposited on the project area (%)."

The confusion over why this finding was issued is how Equation 29 does inherently take into account the fraction of grazing activity on sample units (ie, enrolled project fields), while the updated Equations 14 in v2.0 automatically assumes grazing occurs on sample units all year by multiplying the expression including $VS_{rate,I,P}$ (from section 8.2.7 of VM0042 v2.0, description is: "Default volatile solids excretion rate for livestock type I for productivity system P kg volatile solids/(1000 kg animal mass $\times$ day"). Given the inconsistency of the approach for methane emissions from livestock (section 8.2.7) and nitrous oxide emissions from livestock (section 8.2.10), the approach for section 8.2.7 would still require one to factor in 'grazing days' (as the project does in their calculation workbooks), even though this is not explicitly expressed in Equation 29. The audit team focused on the implementation of 'grazing days' in the project's calculation of Equation 29 and admittedly glossed over the explanation in the Methodology Deviation document.

The project's argument for reverting back to 'grazing days' for Equations 13-14 is compelling, as it would satisfy the Standard requirement (section 3.20) that the deviation is more accurate in emissions accounting, while at the same time, v2.0 inherently accepts this premise in Equation 29. Furthermore, emissions would not decrease in the project scenario from baseline, given requirements in section 8.4.2 of VM0042 v2.0, which does indicate the deviation is not a less conservative approach.

After reviewing all documentation mentioned in this finding, the audit team concludes that the deviation is generally more accurate and does not pose a problem relative to conservatism in emissions accounting. Therefore, after implementing equations for Quantitative Approach 3 in the audit team's system, which has been amended to include the project's deviation, and finding the results consistent, this finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NIR 33 Dated 9 Apr 2024

Standard Reference: VM0042 v2.0

Document Reference: Workbooks in folder 'Emission Summaries (Per Farmer)'

Finding: In Section 9.1, the Justification for the parameter FFC is taken as: "Fossil fuel consumption may be monitored or the amount of fossil fuel combusted may be estimated using fuel efficiency (e.g., l/100 km, l/t-km, l/hour) of the vehicle and the appropriate unit of use for the selected fuel efficiency (e.g., km driven where efficiency is given in l/100 km)."

For fossil fuel emissions accounting, please confirm if column J and K are used to prevent double-counting of fossil fuel emissions during planting events where fertilizers and/or treatments are also applied at the same time.

Project Personnel Response: We can confirm that column J and column K are in place to ensure that no double counting of fossil fuel takes place. Column J ensures that where combined events take place, such as planting and fertilizer together, that fuel is included only once. Column K ensures that the correct fuel consumption rate is used for the activity type. For example the fuel consumption rate differs for different combination events and therefore it is essential that the correct event is calculated, which is what Column K does.

Auditor Response: Thank you for the information. This helped the audit team replicate fossil fuel emissions calculated by the project to a reasonable level of assurance. This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NIR 34 Dated 9 Apr 2024

Standard Reference: VM0042 v2.0

Document Reference: Workbooks in folder 'Emission Summaries (Per Farmer)'

Finding: For equations 19, 23, and 24, 25, and 28 (and potentially others), emissions factors or other constants may be adjusted for 'wet' and 'dry' fields.

Please briefly explain how the 'trigger' in the project's calculation workbooks (eg, column O in sheet 'Emissions Calculations') works to assign a field as 'wet' or 'dry' for various emissions calculations.

Project Personnel Response: The wet vs dry trigger determines some emission factors within our QA3 calculation workbook, such as N volatilization from manure or leaching factors within fertilizer.

The default value is a 'dry climate'.

In order to be classified as a 'wet climate' a field has to either be listed as an irrigated field (except for drip irrigation), or be manually classified as being in a 'wet climate'. A field will only be classified as being in a 'wet climate' where the ratio of annual precipitation to potential evapotranspiration is greater than 1 (in temperate and boreal zones), or where annual precipitation is greater than 1000 mm (in tropical zones).

Both of these avenues towards defining a field as being in a 'wet climate' take place within Orizon's data collection platform. Fields are classified as dryland or irrigated during the "Map Fields" stage of the onboarding process. This is based on consultations with farmers and our own visual assessments (i.e. centre pivots are clearly visible from satellite imagery used when assessing fields). Allocating farms into a 'wet climate' zone is done manually by admins after an assessment of such zones across the entire project area using ERA5 data.

Note: the initial project instances did not include any fields/farms which were classified as being in a 'wet climate' based on climatic conditions. The only 'wet climate' fields were those that are being irrigated.

Note: We also did not have any cases of drip irrigation, and therefore all irrigated fields were defined as 'wet' fields.

Within the QA3 workbook, the field data & overrides data from Orizon's data collection platform is imported which contains the irrigation status of the fields as well as the 'wet' vs 'dry' trigger based on manual overrides. This is then used in columns M and O within the "Emissions calculations" sheet.

The emission calculations use emissions factors based on whether or not the field on which these activities occurred is classified as 'wet' or 'dry'.

Auditor Response: Thank you for the explanation. The audit team followed the project's stated process and was able to replicate all emissions calculations. This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NCR 35 Dated 9 Apr 2024

Standard Reference: VCS Standard v4.6

Document Reference: Orizon CarbonCrop Rewards Programme AFOLU NPRT Report.pdf; Orizon CarbonCrop Rewards Programme Joint Project Description and Monitoring Report.pdf

Finding: Section 2.2.1 of the standard states for the principle of consistency: "Enable meaningful comparisons in GHG-related information."

The audit team notes that the monitoring period duration shown at the beginning of the NPRT is slightly different than the date range currently shown in Table 1.1.1 of the PDMR. This inconsistency is not in conformance with the standard.

Project Personnel Response: The discrepancy has been amended to reflect the correct monitoring period dates, 1 August 2018 - 31 July 2022 on the Project Hub. The draft report reflecting the correct monitoring period dates has been uploaded to the Non-modelling Findings folder in the "Audit Findings & Response Documents" folder in the drive.

Auditor Response: The audit team reviewed the new NPRT report and compared back to the table on page 1 of the updated PDMR. Both align, so this finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NIR 36 Dated 9 Apr 2024

Standard Reference: VM0042 v2.0

Document Reference: Orizon CarbonCrop Rewards Programme Joint Project Description and Monitoring Report.pdf

Finding: The methodology states in section 8.2.1.2: "Project specific strata, their area and the sampling points within strata must be reported in a spreadsheet and submitted as an annex to project documentation at every verification."

Please point to or provide an annex that lists all the required information in the cited requirement above.

Project Personnel Response: We have uploaded a workbook in response to this, named "Strata and sample lists - Orizon July 2022 Submission".

This is an extract of the strata, field and sample data found in the previously uploaded workbook called "Net Emission Reductions & Uncertainty Workings - July2022" specifically in the sheets called "Workings by Strata" and "Workings by Sample".

Auditor Response: Thank you for the list. The audit team notes that we checked whether sample codes listed in the newly provided sample list ("Strata and sample lists - Orizon July 2022 Submission.xlsx") align with those listed in lab data provided by the project (sheet 'Lab Results' in "Orizon Sample List - 2023 (Final).xlsx"). Both lists align for samples included, so this finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): M/C

NIR 37 Dated 19 Apr 2024**Standard Reference:** VMD0053 v2.0**Document Reference:** ModelValidationReport2023_Orizon_Project3368.pdf

Finding: The module states in section 4 under Applicability Condition 2: "Appropriately reviewed , tested and s hown in peer reviewed scientific studies to successfully simulate change s in SOC and trace gas emissions resulting from changes in ALM introduced by the project activity."

Page 9 of the model validation report (MVR) states: "The RothC26.3 model can be implemented in several ways, e.g., the desktop version owned by Rothamsted Research, in the R language using the SoilR package, in the Excel version developed by the Australian Greenhouse Office, or through the implementation of the calculations in other software. We initially implemented the RothC model through the SoilR package in the R programming language."

The independent modeling experts (IME) have accepted SoilR output as an appropriate benchmark. This is important to note, as Orizon is using a RothC implementation in R based on the Australian Greenhouse Office, but the R implementation itself has not been peer reviewed. During the review process, Orizon demonstrated close results between their R implementation, the Australian Greenhouse Office excel tool, and SoilR. The IMEs request that a discussion of this comparison be included in the MVR.

Project Personnel Response: A discussion and examples of the agreement between the Orizon implementation of RothC and SoilR were included in the updated report. Furthermore, Orizon provided the Excel, SoilR, and Orizon implementation files for the IME to review and test, should it be required.

Auditor Response: The project has benchmarked their implementation with RothC with strictly peer-reviewed versions, and the agreement between these different model outputs is apparent in the latest MVR, which demonstrates this benchmarking analysis. Furthermore, the IMEs have passed the latest MVR. This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): M**NIR 38 Dated 19 Apr 2024****Standard Reference:** VMD0053 v2.0**Document Reference:** ModelValidationReport2023_Orizon_Project3368.pdf

Finding: The module states for point 3 in Appendix 1: "The IME must generate an assessment report based on the MVR assessment that:

a) Confirms that the selected model meets the applicability conditions stated in Section 4 of this module and verifies it is appropriate for the cropping system and biophysical conditions occurring in the project;"

Given the scarcity of data representative of the project area and the data requirements for validation in VMD0053, 3 studies were selected for model calibration. Because of this, the calibrated effect of tillage resulting from the calibration procedure is not based on a wide range of data. The IMEs request that the project includes a reflection on the predicted differences of C stock increases over time between tillage and no-tillage scenarios in the MVR.

Project Personnel Response: An example that shows the effect of the Orizon calibration on a hypothetical field yielding 7t/ha maize monocrop was included in the MVR. The weather file used in this example was from one of the validation trials in South Africa and therefore reflects local climatic conditions.

Auditor Response: The project has updated the MVR, which has been passed by the IMEs. No further comment, and this finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NIR 39 Dated 19 Apr 2024

Standard Reference: VMD0053 v2.0

Document Reference: ModelValidationReport2023_Orizon_Project3368.pdf

Finding: The module states for point 3 in Appendix 1: "The IME must generate an assessment report based on the MVR assessment that:

a) Confirms that the selected model meets the applicability conditions stated in Section 4 of this module and verifies it is appropriate for the cropping system and biophysical conditions occurring in the project;"

On page 10 of the MVR, it states: "Additionally, the calibrated RPM decomposition rate for different agricultural practices can be adjusted on a monthly basis, depending on the prevailing management conditions. The Orizon Agriculture R implementation of RothC26.3 as well as the carbon input processing code can be provided as supplementary information to the IME."

This statement is not clear and insinuates that the calibrated decay parameter varies from month to month. Please clarify whether the calibrated RPM decay rate is varied on a monthly basis in the MVR.

Project Personnel Response: Adjustments to the RPM and R/S parameter values are no longer relevant and was replaced by a single tillage rate modifier (TRM) for reduced and conventional tillage. The implementation approach still allows for a transition of TRM values but this change only takes place once, which is when the field transitions from conventional tillage to reduced tillage.

Auditor Response: The project's response is accurate, and the calibration procedure is clearly explained in the latest MVR, which has been passed by the IMEs. This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): M

NIR 40 Dated 19 Apr 2024

Standard Reference: VMD0053 v2.0

Document Reference: ModelValidationReport2023_Orizon_Project3368.pdf

Finding: The module states for point 3 in Appendix 1: "The IME must generate an assessment report based on the MVR assessment that:

a) Confirms that the selected model meets the applicability conditions stated in Section 4 of this module and verifies it is appropriate for the cropping system and biophysical conditions occurring in the project;"

Section 5.6 of the MVR states: "The MC approach allowed for multiple potential outcomes (C stock values) to be determined, of which the mean was used as the model output. Figure 15 and Figure 16 shows the distribution of the parameter values when sampled with replacement (n = 100)."

Orizon stated the following in response to an IME comment: "The results from calibration (for the RPM and R/S parameters) were pooled into conservation and conventional agriculture categories. These pools were sampled 100 times in a Monte-Carlo approach to yield 100 potential outcomes of C turnover. The results were then averaged to obtain the model which was considered in the validation and the project."

Please clarify whether this response means that 100 samples of each calibrated parameter (R/S and RPM decay rate) are sampled for each full model run or each time-step within a model run. Please also clarify if this sampling is conducted for all model runs (ie, also validation and the project area application). Finally, include any clarifications in the MVR.

Project Personnel Response: Sampling of the RPM and R/S parameter pools are no longer relevant as these parameter calibrations were replaced by a single TRM. The values for R/S are now derived from a lookup table that contains R/S values per crop type. The RPM value used for the resubmission was the default for RothC.

To clarify for this resubmission, TRM values were calibrated for four reduced tillage studies and four conventional tillage studies, each group forming a pool of studies. The average TRM values were calculated for each pool and applied in the model validation and project, based in the tillage status of the field.

Auditor Response: The project's response is accurate, and the calibration procedure is clearly explained in the latest MVR, which has been passed by the IMEs. This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NIR 41 Dated 19 Apr 2024

Standard Reference: VMD0053 v2.0

Document Reference: ModelValidationReport2023_Orizon_Project3368.pdf

Finding: The module states for point 3 in Appendix 1: "The IME must generate an assessment report based on the MVR assessment that:

a) Confirms that the selected model meets the applicability conditions stated in Section 4 of this module and verifies it is appropriate for the cropping system and biophysical conditions occurring in the project;"

Table 9 in the MVR references Jordan and Smith (2022), with the calibration summary being: "Default decomposition rates adjusted by a Tillage Rate Modifier (TRM)." Based on an email exchange between the project and IMEs, this appears to be support for adjusting the RPM decay parameter.

The IMEs note that the MVR is not providing clear support for the decision to calibrate the RPM decay rate or the root to shoot (R/S) ratio. The IMEs request an updated discussion on how realistic the changes in the RPM decay rate and R/S ratio are between the calibrated and 'default' (or 'standard') parameter values. Please clarify why any literature sources are being cited in this discussion.

Project Personnel Response: Orizon considered the RPM and R/S ratios that were calibrated in the initial submission and decided that these parameter values could be effectively replaced by a simpler TRM approach. We therefore use the publication of Jordon and Smith (2022) as basis for the introduction of a TRM in the project calibration.

Auditor Response: The project's response is accurate, and the calibration procedure is clearly explained in the latest MVR, which has been passed by the IMEs. This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): M

NIR 42 Dated 19 Apr 2024

Standard Reference: VMD0053 v2.0

Document Reference: ModelValidationReport2023_Orizon_Project3368.pdf

Finding: The module states for point 3 in Appendix 1: "The IME must generate an assessment report based on the MVR assessment that:

a) Confirms that the selected model meets the applicability conditions stated in Section 4 of this module and verifies it is appropriate for the cropping system and biophysical conditions occurring in the project;"

Please provide the study Mallet et al. (1987) to the audit team and IMEs, as we encountered problems accessing this study.

Project Personnel Response: Orizon reassessed the quality of the calibration studies used and decided to remove the Mallet et al. (1987) study from calibration as the sampling depth in the study was considered to be too shallow. This study was replaced by two more appropriate studies and will be provided to the IME for review.

Auditor Response: More studies have been incorporated into the MVR, and the IMEs have passed the updated MVR. This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NIR 43 Dated 19 Apr 2024

Standard Reference: VMD0053 v2.0

Document Reference: ModelValidationReport2023_Orizon_Project3368.pdf

Finding: The module states for point 3 in Appendix 1: "The IME must generate an assessment report based on the MVR assessment that:

b) Assesses the quality of model-driving input data (experimental data of soil emission reductions) and the pooled measurement uncertainty;"

Equation 3 of the MVR is "Equation 3: Basic form of the net organic carbon input calculation".

The IMEs request the following clarification in the MVR: "Biological additions: can the Project provide the units?"

Optionally: provide examples from literature where these types of changes reached the same results with respect to soil organic C outputs.

Project Personnel Response: All biological additions or removal were accounted for on a t/ha basis. This clarification is provided in the MVR as well.

Auditor Response: The project's response is accurate, and the calibration procedure is clearly explained in the latest MVR, which has been passed by the IMEs. This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): M

NIR 44 Dated 19 Apr 2024

Standard Reference: VMD0053 v2.0

Document Reference: ModelValidationReport2023_Orizon_Project3368.pdf

Finding: The module states for point 3 in Appendix 1: "The IME must generate an assessment report based on the MVR assessment that:

a) Confirms that the selected model meets the applicability conditions stated in Section 4 of this module and verifies it is appropriate for the cropping system and biophysical conditions occurring in the project;"

During an email exchange between the IMEs and Orizon, Orizon provided a reflection on the relative magnitude of parameter changes (R/S ratio, RPM decay rate). Please include this reflection in the MVR.

Project Personnel Response: This reflection is no longer required as the calibration of the RPM and R/S paramter were removed for the resubmission.

Auditor Response: The project's response is accurate, and the calibration procedure is clearly explained in the latest MVR, which has been passed by the IMEs. This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NIR 45 Dated 19 Apr 2024**Standard Reference:** VMD0053 v2.0**Document Reference:** ModelValidationReport2023_Orizon_Project3368.pdf

Finding: The module states for point 3 in Appendix 1: "The IME must generate an assessment report based on the MVR assessment that:

a) Confirms that the selected model meets the applicability conditions stated in Section 4 of this module and verifies it is appropriate for the cropping system and biophysical conditions occurring in the project;"

The MVR states on page 54: "The histograms show that while the same ranges of values exist for both CT and CA parameters, the CA parameters are more conservative in terms of RPM decomposition rates and more aggressive for belowground biomass. These parameter characteristic differences were deemed reasonable for the practices in questions and were implemented as such in the validation and project instances." Table 10 also lists calibrated model parameters.

The IMEs request the following addition to the MVR: please provide an explanation of the range each calibrated parameter (R/S ratio, RPM decay rate) was allowed to vary during the NSGA-II procedure and comment on how close the optimal parameter estimates are to the edge of the allowable range that has been assigned for the NSGA-II algorithm.

Project Personnel Response: Since calibration of RPM and R/S was replaced by calibration of a single TRM value, a multi-objective function approach for the calibration of multiple parameters was no longer required. The current approach calibrates the TRM value for a possible range of [0.1:2.0] using the "optimise" function in R. The objective function used was RMSE. The implementation of the calibration will also be provided to the IME for review.

Auditor Response: The project has updated their calibration approach, which has been accepted by the independent modeling experts. The updated approach uses robust estimates of tillage rate modifiers (TRMs) from Hyun and Yoo (2024). The IMEs have confirmed the project has applied these TRMs appropriately for the calibrating and validating RothC. The audit team confirmed the project is applying TRMs in the same manner for the project area as they did for the model validation. More details may be found in the project's latest MVR. This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): M**NIR 46 Dated 19 Apr 2024****Standard Reference:** VMD0053 v2.0

Document Reference: ModelValidationReport2023_Orizon_Project3368.pdf

Finding: The module states for point 3 in Appendix 1: "The IME must generate an assessment report based on the MVR assessment that:

c) Confirms that the calibration procedure and generation of model parameters and parameter sets meet the requirements stated in Section 5 of this module (see Box 1 for details), including the definition of the project domain (see Box 2 for details);"

The MVR states in section 5.4: "The aim of model calibration for the OCRP was to identify the parameter values (or range of values) for a parameter set that resulted in a generalised carbon turnover model. A generalised model is required by VMD0053 v2 and is further necessitated by the wide range of possible PC/CFG combinations that are present in the OCRP."

The IMEs request further clarification in the MVR about whether the calibrated parameters represent both maize and wheat as one crop functional group (CFG).

Project Personnel Response: The calibration of the TRM was focussed only on tillage but would invariably account for biogenic and climatic inputs that were present in the trials used for calibration. We therefore selected the trials to include C3, C4, legume and non-legume plants. However, the calibration was not aimed at calibrating the model for these crops but rather for tillage.

Auditor Response: The project's response is accurate, and the calibration procedure is clearly explained in the latest MVR, which has been passed by the IMEs. This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NIR 47 Dated 19 Apr 2024

Standard Reference: VMD0053 v2.0

Document Reference: ModelValidationReport2023_Orizon_Project3368.pdf

Finding: The module states for point 3 in Appendix 1: "The IME must generate an assessment report based on the MVR assessment that:

a) Confirms that the selected model meets the applicability conditions stated in Section 4 of this module and verifies it is appropriate for the cropping system and biophysical conditions occurring in the project;"

The MVR states in section 5.2: "Table 9 shows that researchers have followed two different

approaches for model calibration, 1) equal adjustment of all decomposition parameter values (Jordon & Smith, 2022), or 2) adjustment of the RPM decomposition parameter (Skjemstad et al., 2004)."

In a response to questions posed by the IMEs, Orizon stated: "We do not cite the Skjemstad paper for any reason other than showing that there is a scientific precedent to making adjustments to the RPM decay rate and that this can result in a calibrated RothC model."

The IMEs request that this reasoning for including Skjemstad et al., 2004 be explicitly clear in the MVR.

Project Personnel Response: Orizon no longer cite Skjemstad et al. (2004) for calibration but only refers to the paper and the methodology followed. The approach by Skjemstad et al. (2004) was replaced with an approach similar to that followed by Jordon and Smith (2022).

Auditor Response: The project has updated the MVR, which has been passed by the IMEs. No further comment, and this finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NIR 48 Dated 19 Apr 2024

Standard Reference: VMD0053 v2.0

Document Reference: ModelValidationReport2023_Orizon_Project3368.pdf

Finding: The module states for point 3 in Appendix 1: "The IME must generate an assessment report based on the MVR assessment that:

a) Confirms that the selected model meets the applicability conditions stated in Section 4 of this module and verifies it is appropriate for the cropping system and biophysical conditions occurring in the project;"

In part of a response to a question about the calibration procedure from the IMEs, Orizon stated: "The NSGA-II optimisation algorithm was then used to determine the optimal parameter value combinations for the specific scenario based on bias and RMSE objective functions."

The IMEs request that a 2D graph of RMSE be provided across the possible range of each parameter, which should be an output of the NSGA-II algorithm.

Project Personnel Response: The NSGA-II algorithm is no longer used.

Auditor Response: The project has updated the MVR, which has been passed by the IMEs. No further comment, and this finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NIR 49 Dated 19 Apr 2024

Standard Reference: VMD0053 v2.0

Document Reference: ModelValidationReport2023_Orizon_Project3368.pdf

Finding: The module states for point 3 in Appendix 1: "The IME must generate an assessment report based on the MVR assessment that:

a) Confirms that the selected model meets the applicability conditions stated in Section 4 of this module and verifies it is appropriate for the cropping system and biophysical conditions occurring in the project;"

Following the initial review of the MVR, the IMEs have clarifying questions regarding the calibration and validation procedures. In general, these procedures should be clarified in the MVR. The following is a summary of the calibration procedure, as understood by the IMEs:

- Parameters R/S and RPM decay rate were selected for adjustment in calibration for RT based on expert judgement
- The range for these parameters was set between 0.15:0.45 based on expert judgement
- NSGA-II algorithm was used to find the best parameter values based on lowest RMSE and bias for both parameters for CT and CA
- The SOC values for CT and CA were derived from the three calibration papers cited in Table 10 (NOTE: it is not clear how many actual SOC measurements or time-series were available among these 3 papers)
- One parameter set was found for CT and another for CA. These are respectively for the RPM decay rate from 0.32 to 0.25 and r/s from 0.25 to 0.35
- These values were implemented in model validation by sampling R/S ratio and RPM decay rate parameter values from a data distribution that was 'established' during the calibration exercise
- No distinction for CFG was made

- No evaluation of model performance with the standard RothC settings was done
- The RT model fits adequately according to VMD0053 validation criteria

Please confirm if the above process accurately reflects the calibration and validation procedure. If so, please ammend parts of the MVR to clarify or add information related to the above steps.

Project Personnel Response: A summary of the new calibration approach is provided in the resubmission MVR.

Auditor Response: The project has updated their calibration approach, which has been accepted by the independent modeling experts. The updated approach uses robust estimates of tillage rate modifiers (TRMs) from Hyun and Yoo (2024). The IMEs have confirmed the project has applied these TRMs appropriately for the calibrating and validating RothC. The audit team confirmed the project is applying TRMs in the same manner for the project area as they did for the model validaiton. More details may be found in the project's latest MVR. This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): C

OBS 50 Dated 10 May 2024

Standard Reference: AFOLU NPRT v4.2

Document Reference: Question to project personnel on site

Finding: The NPRT states for category Project Management (d): "Management team does not maintain a presence in the country or is located more than one day of travel from the project site, considering all parcels or polygons in the project area."

Note, the following is a response to a question about the travel time from various project personnel and the project's headquarters location(s) to all fields.

Project Personnel Response: Although not part of the issued findings, we were asked to evidence that all project instances are within a day's travel distance from our Orizon representatives.

We have uploaded a .zip folder with a screenshot of the project locations (in green) and the locations of our Orizon representatives and offices (in yellow). Included are also 2 screenshots of the 2 furthest farm locations of the initial instances, with the travel time & route details to get there from our Orizon offices.

Auditor Response: The audit team reviewed the material provided in the zipped folder 'Travel times to project instances' related to the project's response and confirm that management maintains a presence in the project area that is <1 day travel to all project instances enrolled for the current verification period. The audit team's in-country travel also confirms that this information is accurate.

Bearing on Material Misstatement or Conformance (M/C/NA): C

NIR 51 Dated 10 May 2024

Standard Reference: VCS Standard v4.7

Document Reference: Net Emission Reductions _ Uncertainty Workings - July2022.xlsx;
All_Fields_by_Strata.shp

Finding: Section 3.11.2 of the standard states: "The spatial extent of the project shall be clearly specified to facilitate accurate monitoring, reporting and verification of GHG emission reductions and carbon dioxide removals and to demonstrate that the project meets the eligibility criteria of the relevant project category. The description of the project location shall include the following information:

3) KML file with geodetic polygons that precisely delineates the project zone of the AFOLU project where reductions and removals occur, in accordance with the following:..."

Please provide the audit team with a kml and a shapefile that can be directly linked to area information listed in sheet 'Non-SOC Net Emissions Import' of workbook 'Net Emission Reductions _ Uncertainty Workings - July2022.xlsx'.

Project Personnel Response: We have uploaded the "All_Fields_by_Strata" files in both KML and SHP format to the "Audit Findings & Response Documents" folder (Finding 51) on the drive. These were also available in the "Farmer Locations" folder on the drive previously.

Please confirm whether this is in the correct format and contains the correct info as requested. It contains the strata names, field names, farmer names and the geometric coordinates of each field individually (total of 905 fields).

Auditor Response: Thank you for the response. Unfortunately, the provided shapefile does not have the same Field Names or Field IDs as the list in 'Non-SOC Net Emissions Import' of workbook 'Net Emission Reductions _ Uncertainty Workings - July2022.xlsx', and since there are multiple fields for some strata (ie 'ZA239013CP (A-1)'), it was not easily possible to match these two datasets directly. Providing the Field ID in the shapefile would help facilitate this check much more quickly, without the

audit team expending an increased amount of time on the review.

Project Personnel Response 2: We have uploaded the following files into the Audit Findings & Responses folder - Non-modelling - Finding 51: Spatial dataset of Fields - NIR. There is a Field shapefiles (905 fields including FieldID) kml and a zip folder containing the .shp of the same name. The FieldID has been included for easier cross-referencing for the necessary checks to be done by the audit team.

Auditor Response 2: Thank you for this new dataset. The auditors could connect the spatial dataset to areas used in emissions reductions and removals calculations. The audit team detected a -2.8% difference in total area (less than the project's calculation) when recalculating areas based on UTM zone 35 S and 36 S projection systems and a -2.7% difference in total area when recalculating areas based on the Cape projection system (epsg 22293). Please indicate what projection system was used to calculate areas for the fields.

Project Personnel Response 3: There has been email correspondence with the auditors providing updates regarding the projection system and area calculation. This has resulted in the overall project area being adjusted from 16,108 hectares to 15,547 hectares.

Auditor Response 3: The project has reprojected the project instance polygons in a local projection system. The audit team checked new area calculations with a UTM projection relevant to each project instance, and there was no material difference (<0.2% difference in total area). The audit team encourages the project to upload a kmz of project instances that directly corresponds to their area calculations to the Verra project hub. This finding is closed.

Bearing on Material Misstatement or Conformance (M/C/NA): M/C