Verification Company:

Rainforest Alliance

SmartWood Program Headquarters
65 Millet St. Suite 201
Richmond, VT 05477 USA
Tel: 802-434-5491
Fax: 802-434-3116
www.smartwood.org

Methodology Assessment
Managed by:

Adam Gibbon, Technical Specialist
Rainforest Alliance
Tel: 1-212-677-1900
Fax: (212) 677-2187
Contact person: Adam Gibbon
Email: agibbon@ra.org

Voluntary Carbon Standard Methodology Assessment Report for:

Shell Canada Energy in Calgary, Alberta, Canada

Date Reconciled with v6.3:	13 August 2010
Date Report Issued:	07 January 2010
Audit dates:	05 November – 05 December 2009 15 - 30 April 2009 17 – 25 August 2009
Assessment team:	Adam Gibbon, Jeffrey Hayward, Sue Page, Igino Emmer
Approved by:	Mateo Cariño Fraisse
Assessment standard:	*Voluntary Carbon Standard, 2007.1 (November 18, 2008)* *Voluntary Carbon Standard, Guidance for Agriculture, Forestry, and Other Land Use, 2007.1 (November 18, 2008)* *Voluntary Carbon Standard, Tool for AFOLU Methodological Issues, (November 18, 2008)*
Methodology	Baseline and monitoring methodology for conservation projects that avoid planned land use conversion in peat swamp forests, Version 5.1 December, 2009 (reconciled with V6.3, see Appendix C)
Proponent contact:	Mr Jim Brewington
Proponent address:	Shell Canada Energy 355 – 4th Avenue S.W. Calgary, Alberta Canada T2P 2H9

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1 INTRODUCTION

1.1 Objective

The purpose of this report is to document conformance of a methodology presented by Shell Canada Energy, hereafter referred to as "Proponent", with the requirements of the Voluntary Carbon Standard (VCS). The Proponent is the owner of the methodology under assessment for estimating carbon fluxes for fire control in peat swamp forests. The methodology was prepared by Winrock International under contract to Shell Canada Energy. Originally, the methodology was designed to enable project development in the area referred to as the *Mawas Peatlands Conservation Project* located in Central Kalimantan, Borneo, Indonesia. Rainforest Alliance was engaged by the proponent in March 2009 to perform an assessment of the methodology consistent with Voluntary Carbon Standards (VCS) requirements in effect at the time.

The assessment was based upon the following VCS documents:

- Voluntary Carbon Standard, 2007.1 (November 18, 2008)
- Voluntary Carbon Standard, Guidance for Agriculture, Forestry, and Other Land Use,
- 2007.1 (November 18, 2008)
- Voluntary Carbon Standard, Tool for AFOLU Methodological Issues, (November 18,
- 2008)

The proponent's intention was for this Rainforest Alliance assessment to satisfy the first validator's assessment in lines of a VCS double approval process for Component A, 'Baseline and monitoring methodology for conservation projects that avoid planned land use conversion in peat swamp forests'. Avoiding planned deforestation does fall under the VCS RED project type (reducing emissions from deforestation), although at the time of the assessment, the VCS AFOLU guidance suggested that new guidance and methodologies are needed for such projects on peatlands. We note that the VCS Association (VCSA) has been developing guidance for Peat Rewetting and Conservation (PRC) projects and for other AFOLU projects located on peat lands. Activities that verifiably and permanently reduce net GHG emissions from peatland or increase peat carbon stocks would be eligible under the VCS as PRC projects, or as AFOLU projects on peatland.

The process to begin this validation assessment started in March 2009, well before the VCS normative standard on the Double Approval Process came into effect. As such Rainforest Alliance intended to complete the first validator's assessment, according to existing guidance of VCS 2007.1. The assessment will be provided to the VCS where the output of the assessment report may enhance the PRC guidance under development. If any other party should wish to see the methodology brought through the double approval process, they would bear responsibility to continue the process with the VCS, including requesting that the VCSA post the methodology for public comment, as well as to contract another validator and completing the conduct of the 2nd assessment. In 2010 the methodology went through the second validator assessment by Bureau Veritas Certification for the project proponent Infinite Earth.

The report presents the findings of qualified Rainforest Alliance program auditors and technical experts in methodologies for greenhouse gas emissions and removals or peat forests and soils who have assessed the methodology under review according to the applicable standard(s) and protocols of the Voluntary Carbon Standard. Section 2 below provides the methodology assessment conclusions. Appendix C reports upon the process by which both validators approved changes to the methodology, including changes made during the second assessment,

and in particular those respective of the public consultation and comments, such that both validators agreed upon the final methodology version 6.3.

The Rainforest Alliance did not conduct this assessment on behalf of the VCS (VCS Association, VCS Secretariat, or VCS Board) or within a process of a specific VCS project validation or verification. The intention is to provide Shell Canada Energy with an objective assurance of the quality of the methodology as per the standards and requirements of the VCS.

This Rainforest Alliance methodology assessment report can be made available to the public and stakeholders. Particular material in the report identified as confidential by the proponent was excluded from this report prior to finalization.

The Rainforest Alliance's SmartWood program was founded in 1989 to certify forestry practices conforming to Forest Stewardship Council (FSC) standards and now focuses on providing a variety of forest auditing services. Rainforest Alliance is a member of the Climate, Community, and Biodiversity Alliance (CCBA) and approved verifier to CCB standards, an accredited verifier with the Chicago Climate Change (CCX), a verifier with the Plan Vivo (PV) and CarbonFix standards, and an accredited validator/verifier with the Voluntary Carbon Standard (VCS).

Dispute resolution: If Rainforest Alliance clients encounter organizations or individuals having concerns or comments about Rainforest Alliance / SmartWood and our services, these parties are strongly encouraged to contact the SmartWood program headquarters directly. Formal complaints or concerns should be sent in writing and may simultaneously be sent to the Voluntary Carbon Standard Association.

1.2 Scope and Criteria

Scope:

This assessment of a new methodology will evaluate whether or not the methodology has been prepared in line with guidance given under the VCS Program, including Section 6 of the VCS 2007.1 document.

The scope of this assessment includes:

i. Eligibility criteria. Assessment of whether the methodology's eligibility criteria are appropriate and adequate.

ii. Baseline approach: Assessment of whether the approach for determining the project baseline is appropriate and adequate.

iii. Additionality: Assessment of whether the approach/tools for determining whether the project is additional are appropriate and adequate.

iv. Project boundary: Assessment of whether an appropriate and adequate approach is provided for the definition of the project's physical boundary and sources and types of gases included.

v. Emissions: Assessment of whether an appropriate and adequate approach is provided for calculating baseline emissions, project emissions and emission reductions.

vi. Leakage: Assessment of whether the approach for calculating leakage is appropriate and adequate.

vii. Monitoring: Assessment of whether the monitoring approach is appropriate and adequate.

viii. Data and parameters: Assessment of whether monitored and not monitored data and parameters used in emissions calculations are appropriate and adequate.

ix. Adherence to the project-level principles of the VCS Program: Assessment of whether the methodology adheres to the project-level principles of the VCS Program.

Standard criteria:

This assessment follows in line with the guidance provided within the following standards:

Voluntary Carbon Standard, 2007.1 (November 18, 2008)

Voluntary Carbon Standard, Guidance for Agriculture, Forestry, and Other Land Use, 2007.1 (November 18, 2008)

Voluntary Carbon Standard, Tool for AFOLU Methodological Issues, (November 18, 2008)

1.3 Methodology Description

The following description is text from the Methodology:

"Baseline and monitoring methodology for conservation projects that avoid planned land use conversion in peat swamp forests, Version 5.1.0, December 2009" This description remained consistent in Version 6.3, 3 August 2010.

"The baseline methodology outlines transparent and conservative methods to estimate the avoided net greenhouse gas emissions resulting from project activities implemented to stop planned land use conversion on tropical peat forest.

This methodology allows for the estimation of changes in carbon stocks in selected aboveground carbon pools and also accounts for peat emissions. It conservatively draws the baseline scenario from amongst the plausible scenarios, and presents methods to transparently estimate the GHG emissions expected from the most likely land use(s) prior to the start of the project activity." (p.5)

"The monitoring methodology outlines methods to monitor both carbon stock changes in the living biomass and peat emissions of project activities and increases in the GHG emissions that result from the implementation of the project activity. It outlines methods and procedures that complement the provisions of the baseline methodology. As per this methodology, the baseline scenario is identified and quantified ex ante at the beginning of the project activity and shall be re-assessed/revised every 10 years in accordance with VCS guidelines to take into account the latest scientific and technical understanding. The methodology outlines methods for assessing and accounting for displacement of economic activities attributable to the project activity.

The methodology recommends the use of remotely sensed data to monitor the project carbon stocks as well as disturbances within the project boundary. The methodology specifies annual monitoring and supports the recording of disturbances, if any. It recommends the adoption of standard operating procedures for monitoring, data collection and archival in order to maintain the integrity of the data collected in the monitoring process. " (p.7)

2 ASSESSMENT CONCLUSIONS

Conclusions of the 09 August 2010 assessment report

Rainforest Alliance completed the first assessment of the methodology element 'COMPONENT A: Baseline and monitoring methodology for conservation projects that avoid planned land use conversion in peat swamp forests' and approved version 5.1 in the assessment report dated 10 January 2010. Bureau Veritas (BV) undertook the second assessment of the methodology. In response this second assessment and public comments, the methodology was updated to version 6.3, which Bureau Veritas Certification also approved.

According to step 4.5.4 of the VCS Program Normative Document: Double Approval Process v1.1 both the first and second validators must issue an assessment statement based on the same version of the methodology element. It was therefore necessary for Rainforest Alliance to undertake a process to update their initial assessment in response to the revisions to the methodology. The process of reconciling the two validators findings is recorded in appendix C of this document.

The final assessment conclusion is in Appendix C and relates to version 6.3 of the methodology.

Conclusions of the December 4, 2009 assessment report

The assessment team found that Version 5.1 of the methodology had addressed the remaining Corrective Action Requests and had closed out all remaining CARs issued in prior assessment reports.

Rainforest Alliance assessed the methodology entitled 'Baseline and monitoring methodology for conservation projects that avoid planned land use conversion in peat swamp forests, Version 5.1 December, 2009' by the proponent Shell Canada Energy. The validator has reached a positive, but qualified assessment opinion. The qualification is due to the fact that at the time of the assessment there was limited VCS guidance for projects on peatlands and the VCS was drafting new guidelines for such purpose, and which may affect the requirements for peat projects. These guidelines were in draft form and not available for the Rainforest Alliance at the time of the assessment. The scope of the assessment was to provide an evaluation according to the guidelines provided by the VCS 2007.1 standard. The work began prior to the release of the release of the, 'VCS Program Normative Document - Double Approval Process'. As such, the methodology was not subject to a public comment period prior to the first validator assessment. This assessment opinion is addressed to the VCSA Board.

Conclusions of the August 25, 2009 assessment report

The assessment team found that Version 3 of the methodology had made a number of improvements to address the Corrective Action Requests (CARs) issued in the auditors first assessment report dated April 30, 2009. In particular, significantly more guidance was given on the derivation of peat related data and parameters. The methodology included guidance on how to measure all peat related data in the field it provides default values, and made clearer the explanation of when and how expert opinion should be used. In addition, the leakage section had been completely re-written. The geographical scope of the methodology was limited to Southeast Asia. However, there were a number of CARs that still remain open. The most

significant related to the applicability conditions ability to ensure that drainage outside the project area is adequately accounted for and the ability of the methodology to adequately constrain burn depths.

Conclusions from April 30, 2009 assessment report

The assessment team found that for the new methodology the developers had done a solid job in organizing the issues related to emissions from the emissions releasing activities in tropical peat forests. However, the two leading peat specialists that reviewed the new methodology found there to be a lack of grounding in the science related specifically to peat emissions, which meant that the methods would not be suitable currently for their purpose.

In particular, it was concluded that, considering the potential emissions from each of the pools, the detail that had gone into the above-ground calculations was dis-proportionate to the peat. The lack of technical guidance on field measurement methods for peat was also a concern. The methodology was considered to be too reliant on expert opinion and literature values to derive crucial data and parameters that would have a large impact on emissions calculations and were not straight forward.

The most significant concerns of the review team relating to Component A were surrounding leakage and the potential impact of activities outside the project may have on the peat. Whilst it is understood that the leakage component was designed based on new modules under development for the VCS, the reviewers did not find sufficient rationale that linked to these (as yet unapproved and not within the scope of this assessment) guidelines. More generally, the impact of peat drainage can extend over great distances. Also, the methodology was not founded on the measurement and monitoring of either water tables or peat subsidence. There exists the risk of sizeable variations in peat emissions if not measured more rigorously. The result of this is that there was an unconsidered potential for drainage activities outside the project area to impact within and cause emissions. This risk was not considered as a source of emissions within the project and mitigation activities for such an occurrence were not built into the methods and monitoring for its occurrence was not included.

However, it was thought by both peat experts that through more consultation with leading peat scientists these issues could be overcome.

2.1 Audit Team Recommendation

Based on an evaluation of the proponent's new methodology as related to the defined assessment scope and criteria, which assessed the credibility of all data, rationale, assumptions, justifications and documentation provided by the methodology proponent; the Rainforest Alliance new methodology assessment team finds that the proponent has:

☒ Demonstrated compliance/conformance with the standard, with the qualification and caveat that the VCS was in the process of developing new guidance on peatlands that may lead to changes with the standard.

☐ Not demonstrated unqualified compliance/conformance with the standard.

2.2 Corrective Action Requests

Note: A non-conformance is defined in this report as a deficiency, discrepancy or misrepresentation that in all probability materially affects the methodology. CAR language uses "shall" to suggest its necessity and tries not to be prescriptive in terms of mechanisms to mitigate the CAR. Each CAR is brief and refers to a more detailed finding in the appendices.

Corrective action requests (CARs) identified during draft assessment reports must be successfully closed by the proponents before Rainforest Alliance issues a positive assessment decision. Any open CARs upon finalization of the assessment report will result in a qualified assessment statement which lists: (a) all qualifications, (b) rationale for each qualification, and (c) impact of each qualification on the methodology.

CAR#:	**CAR 01/09**
Checklist reference:	i. Applicability criteria
CAR description:	Shell Canada shall clarify the definition of the eligibility of land areas, with respect to the allowed pre-project uses and forest definitions.
Timeline for conformance:	N/A
Evidence to close CAR:	Version 5.1 of the methodology contains a UNFCCC definition of forested areas and scientifically valid definition of peat.
CAR status:	**CLOSED**

CAR#:	**CAR 02/09**
Checklist reference:	ii. Baseline approach
CAR description:	Shell Canada shall justify the geographic scope or restrict the applicability of the methodology to areas in which the scientific understanding of tropical peat systems is sufficient to defend the assumptions made when calculating emissions.
Timeline for conformance:	N/A
Evidence to close CAR:	Version 3 of the methodology limits the geographic scope of the methodology to southeast Asia.
CAR status:	**CLOSED**

CAR#:	**CAR 03/09**
Checklist reference:	ii. Baseline approach
CAR description:	Shell Canada shall include all emissions sources applicable in the methodology in Tables B and C.
Timeline for conformance:	N/A

Evidence to close CAR:	In Version 3 of the methodology Table B's heading has been changed to be consistent with AR-AM0004. Table C was also updated to be consistent with the heading and the rest of the methodology.
CAR status:	**CLOSED**

CAR#:	**CAR 04/09**
Checklist reference:	iii. Additionality:
CAR description:	Shell Canada shall be consistent in documenting the additionality tool that should be used in conjunction with the methodology.
Timeline for conformance:	N/A
Evidence to close CAR:	Version 3 of the methodology now only refers to "Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM Project Activities" for additionality determination
CAR status:	**CLOSED**

CAR#:	**CAR 05/09**
Checklist reference:	iv. Project boundary
CAR description:	Shell Canada shall ensure the methodology addresses drainage activities outside of the project boundary impacting peat emissions inside the project boundary.
Timeline for conformance:	N/A
Evidence to close CAR:	Version 5.1 of the methodology contains an updated section on defining the project boundary in such a way that it constitutes a functionally discrete hydrological unit. If this cannot be demonstrated a buffer zone that extends to the edge of the peat dome or 3 km, whichever is smaller, must be monitored. If drainage is detected in the buffer zone, then due to applicability condition K, the methodology "is no longer applicable in its current form and it shall be revised to take into consideration the extent of the outside drainage activity's impact on GHG emissions occurring within the project boundary" (p.5) It goes on to state that, "This drainage impact shall be determined using a combination of hydrological modeling and field measurements and shall be done in collaboration with at least two peat experts." This approach is conservative in that any external drainage that could reduce the peat carbon stock within the project area will be detected. The lack of a specific methodology to quantify this, and reliance on project specific peat expert modeling and sampling, was found to be acceptable due to the nascent nature of peat modeling and emissions science.
CAR status:	**CLOSED**

CAR#:	**CAR 06/09**
Checklist reference:	iv. Project boundary
CAR description:	Shell Canada shall align the carbon pools referenced in the methodology with those used by the VCS.
Timeline for conformance:	N/A
Evidence to close CAR:	In Version 3 of the methodology Table A has been updated such that it corresponds with the VCS pools, except that peat has been separated out from soil carbon. The peat pool has been clearly defined and includes the organic soil component. It was found that calling it the pool peat, rather than the soil pool, increased clarity and posed no risks of double counting or confusion.
CAR status:	**CLOSED**

CAR#:	**CAR 07/09**
Checklist reference:	v. Emissions
CAR description:	Shell Canada shall provide references for techniques used throughout the methodology.
Timeline for conformance:	N/A
Evidence to close CAR:	In the revised version of the methodology (Version 3) referencing is more thorough and was thought to be acceptable.
CAR status:	**CLOSED**

CAR#:	**CAR 08/09**
Checklist reference:	v. Emissions
CAR description:	Shell Canada shall provide more methodological guidance on the derivation of parameters used in peat emissions calculations, giving more consideration to the variation that may be encountered by those attempting to gather data to execute the methodology. This includes providing techniques for gathering field data on peat where necessary, and accurate, conservative sourcing of data for input into peat equations.
Timeline for conformance:	N/A
Evidence to close CAR:	Version 5.1 has detailed guidance on the derivation of all parameters including bulk density.
CAR status:	**CLOSED**

CAR#:	**CAR 09/09**
Checklist reference:	v. Emissions

CAR description:	Shell Canada shall include water table depth when calculations regarding burn depth are used.
Timeline for conformance:	N/A
Evidence to close CAR:	In version 5.1 of the methodology, section 5.3.2.1 (baseline calculations) the depth of peat burned is assumed to be equal to the drainage depth (in cm) minus a critical threshold value of 40 cm above the drainage depth. The rationale for this assumption is that the layer of peat 40 cm directly above the lowered water table is too wet to burn due to capillary rise of water in the pore spaces of the peat. The maximum depth of peat burnt will not exceed 34 cm. If the difference between drainage depth and the critical threshold exceeds 34 cm, then the maximum burn depth of 34 cm shall be applied. This approach was found to be consistent with the latest knowledge on peat burn depths. In responding to this CAR the Methodology Developers included a method that lead to the double counting of emissions from burning and drainage realted oxidation of peat. The issue of carbon stock loss being double counted has been resolved now in section 5.3.1.1 of the methodology. The depth of peat burnt is now subtracted from the peat that is available to lose carbon through drainage related oxidation/subsidence.
CAR status:	**CLOSED**

CAR#:	**CAR 10/09**
Checklist reference:	v. Emissions
CAR description:	Shell Canada shall include CH_4 emissions from blocked drains as a potential source of GHG emissions in the project scenario or demonstrate their lack of materiality.
Timeline for conformance:	N/A
Evidence to close CAR:	Version 3 of the methodology, in the footnotes to Table B, justifies the exclusion of CH_4 emissions from drainage due to their insignificance.
CAR status:	**CLOSED**

CAR#:	**CAR 11/09**
Checklist reference:	v. Emissions
CAR description:	Shell Canada shall provide calculations that account for the emissions of GHGs over time based on emissions factors calculated. This includes accounting for known trends in emissions from peat drainage over time.
Timeline for conformance:	N/A
Evidence to close CAR:	Version 3 of the methodology Section III.5.2.1.1 no longer accounts

	for the rate of decay of wood products and damaged biomass (as in III.5.3.1 of Version 2). The emissions from decay are assumed to be immediate and the harvested wood product pool is ignored. This change has resolved the issue surrounding inconsistent units of time in the emissions factor for selective logging that was present in Version 2.
CAR status:	**CLOSED**

CAR#:	**CAR 12/09**
Checklist reference:	v. Emissions
CAR description:	Shell Canada shall provide methodological guidance on how field measurements of peat burn depth, bulk density, canal length, area of drainage impact and drainage depth (accounting for seasonal variations) should be conducted in order to assess the applicability of estimates derived from literature values / expert estimates.
Timeline for conformance:	N/A
Evidence to close CAR:	Version 3 of the methodology now includes guidance on how to measure all peat related data in the field it also provides default values and makes clearer explanation of when and how expert opinion should be used. It also explains how errors should be attributed to expert opinions.
CAR status:	**CLOSED**

CAR#:	**CAR 13/09**
Checklist reference:	v. Emissions
CAR description:	*Shell Canada shall use a higher resolution method for primary fire detection.* After discussion with Shell and Winrock this CAR was changed by Rainforest Alliance. (Indicated in "Rainforest Alliance Memo to Shell_Component_A_15 June 09.pdf"). Using MODIS hotspots as an initial detection method (but not area quantification was deemed acceptable). The new wording of the CAR was as follows: Shell Canada shall include ground verification of burn areas and burn depths in the monitoring strategy and use the results in emissions calculations.
Timeline for conformance:	N/A
Evidence to close CAR:	Version 3 of the methodology no longer uses the MODIS hotspot approach to do the initial determinacy of fire presence or absence in the project area/buffer. Instead, medium to high resolution data is used as the first method of detecting fire occurrence (5.2.2 Step 1). The new method presented in Version 3 is considered acceptable.
CAR status:	**CLOSED**

CAR#:	**CAR 14/09**
Checklist reference:	v. Emissions
CAR description:	Shell Canada shall derive an equation more appropriate than Equation 130 to estimate the area impacted by drainage when land is deforested.
Timeline for conformance:	N/A
Evidence to close CAR:	Version 3 of the methodology uses mapping, expert opinion and GIS software to determine the drainage area in an acceptable manner.
CAR status:	**CLOSED**

CAR#:	**CAR 15/09**
Checklist reference:	vi. Leakage
CAR description:	Shell Canada shall provide an approach for calculating leakage that is appropriate and adequate.
Timeline for conformance:	N/A
Evidence to close CAR:	Version 5.1 of the methodology has a leakage methodology based on the Leakage Module prepared by Climate Focus and other consulting firms convened by Avoided Deforestation Partners. This is to be updated when this becomes a final version. The leakage methodology accounts for the difference between displacement to peat lands and non peat lands through the use of baseline strata and the average loss from carbon pools defined in equation 3.
CAR status:	**CLOSED**

CAR#:	**CAR 16/09**
Checklist reference:	vii. Monitoring
CAR description:	Shell Canada shall include peat in the monitoring plan, such that emissions can be accurately estimated.
Timeline for conformance:	N/A
Evidence to close CAR:	Version 3 of the methodology provides more detail in Section III regarding how gather measurements relating to peat emissions.
CAR status:	**CLOSED**

CAR#:	**CAR 17/09**
Checklist reference:	vii. Monitoring
CAR description:	Shell Canada shall clarify against what criteria a low risk of emissions from the project area would be judged, such that it would trigger less the need for less intensive monitoring.

Timeline for conformance:	N/A
Evidence to close CAR:	Version 3 sets a threshold of 0.1% of project area disturbance to trigger less intensive monitoring.
CAR status:	**CLOSED**

CAR#:	**CAR 18/09**
Checklist reference:	vii. Monitoring
CAR description:	Shell Canada shall document steps to assess and minimize the uncertainty in peat emission estimation that are proportional to the significant uncertainty that are associated with their calculation.
Timeline for conformance:	N/A
Evidence to close CAR:	In Version 3 of the methodology, Section II.9 contains additional guidance on how to identify the potential sources of uncertainty, quantify and combined them.
CAR status:	**CLOSED**

CAR#:	**CAR 19/09**
Checklist reference:	viii. Data and parameters
CAR description:	Shell Canada shall address internal inconsistencies and typos.
Timeline for conformance:	N/A
Evidence to close CAR:	The typos and inconsistency identified in Version 3 have been successfully addressed.
CAR status:	**CLOSED**

CAR#:	**CAR 20/09**
Checklist reference:	vii. Monitoring
CAR description:	Shall Canada shall ensure the monitoring frequency is sufficient to allow accurate estimation of carbon stock losses.
Timeline for conformance:	N/A
Evidence to close CAR:	Version 5 of the methodology, Section 3, part 2.3 now mandates annual monitoring.
CAR status:	**CLOSED**

2.2.1 Observations

Note: Observations are issued for areas that the auditor sees the potential for improvement in implementing standard requirements or in the quality system; observations may lead to direct non-conformances if not addressed.

OBS 01/09	Checklist reference: v. Emissions
Observation: Shell Canada should consider the frequency of burning used for management of different land covers in order to more accurate emissions from the baseline scenario.	
In Version 3 of the methodology this observation was not addressed, but this is conservative.	

OBS 02/09	Checklist reference: v. Emissions
Observation: Shell Canada should strengthen the procedures for assessing the risk of reversal of greenhouse gas benefits from a project.	
Section I.5.b of the updated Version 3 methodology now references the VCS Tool for AFOLU Non-Permanence Risk Analysis and Buffer Determination as the mechanism for determining risk of reversal. This observation has been adequately addressed.	

OBS 03/09	Checklist reference: vii. Monitoring
Observation: Shell Canada should not constrain the project to any one method of *ex-post* fire depth mensuration, but leave the options open to the project developer.	
Version 5.1 of the methodology has the option for project designed burn depth determination methods to be used. This observation has been adequately addressed.	

2.3 Actions Taken by Company Prior to Report Finalization

The first draft of the assessment report was completed and submitted to the proponents on April 30, 2009.

The report was reviewed by the proponent and then comments concerning the CARs were sent to Rainforest Alliance by Winrock International on June 5, 2009. These comments requested that Rainforest Alliance re-consider some the CARs and report findings, and for clarification/justification of the findings and CARs.

In reaction to this request for clarification, a memo explaining the Rainforest Alliance position on each of the CARs was submitted to Shell on June 15, 2009. After this date, Winrock International proceeded to redact the methodology to prepare a subsequent version for review.

On August 10, 2009, a revised 3rd version was sent to Rainforest Alliance to enable the second review of the latest version of the methodology. (This version had minor updates made and resent to Rainforest Alliance on August 21, 2009.)

Rainforest Alliance issued a second review on August 25, 2009 which still had open corrective action requests.

On November 5, 2009 Rainforest Alliance received the fourth version of the methodology. Rainforest Alliance provided a memo underlining the remaining non-conformities which were

then acted upon by the developers. Version 5 of the methodology was delivered to Rainforest Alliance on November 30, 2009. Version 5.1, which contained minor updates to V5 was submitted to Rainforest Alliance on December 04, 2009. This report is written considering the latest version, V5.1, of the methodology. Where the latest findings in the report relate to an earlier version, then the updates made did not affect the findings and they are valid for V5.1 as well.

No further actions were taken by Shell Canada, however those taken by Winrock International and Infinite Earth are described in Appendix C.

3 AUDIT METHODOLOGY

3.1 Assessment Team

Assessor(s)	Qualifications
Adam Gibbon, MSci. Rainforest Alliance Technical Specialist, Climate Initiative	Adam has led the technical climate change side of nine CCBA validations that are either completed or currently underway. He has also led three methodology reviews, one VCS validation and been involved in 1 CCX verification. Adam has trained over 60 people in Spain, Bali and Vietnam in AFOLU project auditing and project development. Recipients of the training included Rainforest Alliance auditors, government officials, private consultants and NGO representatives. Adam was lead author of recent Rainforest Alliance publication entitled, "Guidance on coffee carbon project development using the (CDM) simplified agroforestry methodology" as well as two scientific articles currently in press. Before joining Rainforest Alliance Adam worked at Oxford University as a researcher. His research emphasized the potential of carbon markets to finance sustainable management of forest resources. He led a team conducting a landscape scale assessment of carbon stocks in the Peruvian Andes' cloud forests and montane grasslands. Adam earned a distinction on the Environmental Change and Management MSc. Program at Oxford University, winning prizes for his dissertation and overall performance. He was awarded the Sir Walter Raleigh Scholarship at Oriel College, Oxford. He graduated with a first class degree from Durham University, with a BSc in Natural Sciences, specializing in Geology, Chemistry & Geography.
Jeff Hayward, MSci. Rainforest Alliance Manager, Climate Initiative **VCS AFOLU Expert**[1]	Jeff is based in Washington, DC, though his work has a worldwide focus, especially in Asia, Africa, Latin America, leading development of a cross-program initiative including carbon verification, best practices and standards for climate mitigation and adaptation, climate-oriented capacity building, and facilitation of carbon forestry and agroforestry projects. For nearly six years he managed the Rainforest Alliance forest certification programs in the Asia-Pacific region from Jakarta, Indonesia. In forest certification and carbon verification, he has conducted over 25 forest management assessments and/or audits and over 60 chain-of-custody assessments and/or audits. He has led forest certification awareness training courses in Malaysia, Indonesia, Japan, Fiji, and China. Prior to working for the Rainforest Alliance, he conducted silviculture and ecology research for the University

[1] http://www.v-c-s.org/docs/VCS_Approved_AFOLU_experts.pdf

	of British Columbia's Alex Fraser Research Forest in Canada. In Oregon, he worked for the U.S. Bureau of Land Management in forest inventory and timber sale administration. For three years he was with the U.S. Peace Corps serving as a community forester in Guatemala in an agroforestry and conservation of natural resources program. Jeff earned an MSci in forestry, (Univ. of British Columbia, Canada); and a B.A. in Latin American development with a specialization on forestry (Univ. of Washington, USA).
Dr. Sue Page Senior Lecturer in Physical Geography University of Leicester, U.K.	Dr Page is an ecologist by training, with more than 15 years experience of research in tropical forest ecosystems with a particular focus on tropical peat swamp forests. Her research activities encompass: (i) ecology and functioning of tropical forests; role of deforestation, fire and land use change on the tropical carbon cycle; (ii) sustainable management of natural resources, including human-nature interactions, strategies for wildlife conservation, wise use, and ecological restoration, with a focus on the humid tropics. Dr Page's research findings have been presented at more than 30 international conferences and in high quality scientific publications. Her research has received both national and international recognition, including: • Appointment to the National University of Singapore as a Visiting Research Professor (advisor on a Peatland, Water and Carbon Management research programme). • Advisor to (a) a masterplan project funded by the Dutch government for 1.5 million hectares of degraded land in Indonesia; (b) to Delft Hydraulics consultancy on a science support project on improved land management for a large plantation company, Indonesia; • Contributions to benchmark publications, including those of the Intergovernmental Panel on Climate Change (IPCC), the World Conservation Union (IUCN) and the UN Environment Programme (UNEP).
Dr. Igino Emmer* **VCS AFOLU Expert**[2] Independent Consultant, Emmer International	Dr. Igino Emmer has a PhD in Physical Geography. He is a self-employed consultant and has over 10 years experience in the development, management and certification of forestry-based carbon sequestration projects and in the certification of sustainable forest management in Eastern Europe, Southeast Asia, Africa, South America, and The Netherlands. Dr. Emmer is currently a member of the UNFCCC A/R Working Group and the VCS Afforestation, Reforestation and Revegetation (ARR) Expert Group. He coordinated and led the reviews of two experts who have requested to remain anonymous as condition of participation in the methodology review.

[2] http://www.v-c-s.org/docs/VCS_Approved_AFOLU_experts.pdf

Note: * only engaged for the first review and draft version of the assessment report.

3.2 Methodology Assessment Process

The following project level principles, based upon ISO 14064-2:2006, were the principles that were considered in evaluating the methodology against the checklist criteria:

i. General: The application of principles is fundamental to ensure that GHG-related information is a true and fair account. The principles are the basis for, and will guide the application of, requirements in this part of ISO 14064:2006 and the VCS 2007.1.

ii. Relevance: Select the GHG sources, GHG sinks, GHG reservoirs, data and methodologies appropriate to the needs of the intended user.

iii. Completeness: Include all relevant GHG emissions and removals. Include all relevant information to support criteria and procedures.

iv. Consistency: Enable meaningful comparisons in GHG-related information.

v. Accuracy: Reduce bias and uncertainties as far as is practical.

vi. Transparency: Disclose sufficient and appropriate GHG-related information to allow intended users to make decisions with reasonable confidence; and

vii. Conservativeness: Use conservative assumptions, values and procedures to ensure that GHG emission reductions or removal enhancements are not overestimated.

The methodology was assessed against eleven criteria of the VCS. The first nine were specified specifically by the VCS as the minimum to review. The next two were added as additional criteria after a review of the VCS standards. Each of the criteria in the checklist are followed by bullet points that pertain to Section 6 of the VCS 2007.1 standards, which relates to the requirements for approved VCS methodologies.

The methodology assessment was conducted from Rainforest Alliance offices and those of the contracted consultants. There was desk evaluation, along with phone calls and correspondence with the proponents and methodology developers. The contract to conduct this methodological assessment was signed and work commenced prior to the release of the VCS Double Approval Process Normative Standards, June 19 2009.

3.3 Document Review for the first approval

Document Date	Title, Author(s), Version

August 4, 2008	Baseline and monitoring methodology for conservation projects that avoid planned land use conversion in peat swamp forests, Version 2.0, July 2008* (Referred to as Version 2)
July 3, 2009	Baseline and monitoring methodology for conservation projects that avoid planned land use conversion in peat swamp forests, Version 3.0, July 2009[+] (Referred to as Version 3)
October 2009	Baseline and monitoring methodology for conservation projects that avoid planned land use conversion in peat swamp forests, Version 4.0, October 2009
November 2009	Baseline and monitoring methodology for conservation projects that avoid planned land use conversion in peat swamp forests, Version 5.0 November, 2009[++] (Referred to as Version 5)
December 2009	Baseline and monitoring methodology for conservation projects that avoid planned land use conversion in peat swamp forests, Version 5.1 December, 2009

*File date and title date were different.
[+] File name was NM Baseline Component A Land Use Change (plantations) v3 21aug09 CLEAN
[++] File name was NM Baseline Component A Land Use Change (plantations) v5 30nov09 but the document says v4 October 2009 on page 3.

Appendix A: PROPONENT CONTACT AND DETAILS

1 Contacts

Methodology name:	Baseline and monitoring methodology for conservation projects that avoid planned land use conversion in peat swamp forests, Version 5.1 December 2009 Reconciled to V6.3 in Appendix C
Proponent:	Shell Canada Energy
Type of organization:	Private company
Contact person, Title:	Jim Brewington
Address:	355 – 4th Avenue S.W. Calgary, Alberta Canada T2P 2H9
Tel/Fax/Email:	Phone: 1(403) 384-6411 Fax: 1 Jim.Brewington@shell.cat
Billing contact:	Jim Brewington
Methodology developer:	Winrock International
Type of organization:	Non-profit organization
Contact person, Title:	Nancy Harris
Address:	1621 North Kent Street, Suite 1200 Arlington, Virginia 22209
Tel/Fax/Email:	Phone: 1.703.525.9430 Fax: 1.703.525.1744 nharris@winrock.org

Appendix B: DETAILED ASSESSMENT FINDINGS TO THE STANDARDS

i. Applicability criteria

Assessment of whether the methodology's applicability criteria are appropriate and adequate.

- The methodology should ensure compatibility with VCS Tool for AFOLU methodological issues (II. Step 1)

April 09 Review Findings	The method's applicability conditions are mostly consistent with the VCS Tool for AFOLU methodological Issues. (I.3) However, criterion 'H' of the applicability criteria, which states the project area must not contain any human activities, is inconsistent with findings in discussions with the methodology developers that selective logging was being deliberately conservatively ignored from the baseline. This criterion could prevent otherwise acceptable areas that have some selective logging implementing this methodology. (I.3 H) In addition, local people's expectations in many areas is that a right exists to supplement their livelihoods by collecting and/or utilising natural resources (e.g. timber harvest for domestic use, collection of non-timber products) and may be common practice. As such, this criterion could be very restrictive for project eligibility. "Tropical peat swamp forest" was not clearly defined with respect to internationally accepted definitions of forests. (I.3 A) Whilst the eligibility criteria state that within the parcel to be converted to plantation human activities or settlements must not be present, there is not criteria to prevent parcels that have already been affected by drainage. If a parcel had been affected, then emissions from drainage may have already occurred and are at risk of being counted again in the avoided emissions case. In addition, if re-wetting was a project activity in this case, there is no methodology to calculate the avoided emissions.
August 09 Review Findings	The method's applicability conditions are consistent with the VCS Tool for AFOLU methodological Issues. (I.3) In the revised version of the methodology (Version 3) a number of changes have been made to address the issues raised in the draft review. Applicability condition H has been revised such that some use of the project area is allowed, so long as it does not lead to deforestation. Applicability condition A has been strengthened; it now uses the UNFCCC host country forest definition which was acceptable. An FAO peat soil definition is used, the definition provided is for histosol soils, of which true peat is only one category. Thus the definition is too broad, and could lead to inaccurate counting of emissions if applied to soils that are not truly peat. Peat soils are usually considered as organic soils with at least 65% organic matter and a minimum

	thickness of 50 cm (cf. Rieley & Page 2005[3]). Condition A also now excludes previously drained peat areas.		
December 09 Review Findings	Version 5.1 of the methodology contains a UNFCCC definition of forested areas and scientifically valid definition of peat.		
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	**CAR 01/09** Shell Canada shall clarify the definition of the eligibility of land areas, with respect to the allowed pre-project uses and forest definitions. This CAR was closed by updates made to Version 5.1 of the methodology as described in the findings above.		

ii. Baseline approach:

Assessment of whether the approach for determining the project baseline is appropriate and adequate.

- The project proponent shall select the most conservative baseline scenario for the methodology. This shall reflect what most likely would have occurred in the absence of the project. (6.3)

April 09 Review Findings	The methodology refers to the CDM's most current version of the "Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM Project Activities" for baseline selection. Although the tool relates to A/R activities the principals and stepwise approach are applicable. (II.3, I.5.a)		
August 09 Review Findings	In the revised version of the methodology (Version 3) no changes were made that impacted this element of the methodology. Therefore, the draft findings above are still applicable.		
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS			

- The project proponent shall select or establish criteria and procedures for identifying and assessing potential baseline scenarios considering the following:
    - the project description, including identified GHG sources, sinks and reservoirs;
    - existing and alternative project types, activities and technologies providing equivalent type and level of activity of products or services to the project;
    - data availability, reliability and limitations;
    - other relevant information concerning present or future conditions, such as
    - legislative, technical, economic, socio-cultural, environmental, geographic, site specific and temporal assumptions or projections.

April 09 Review Findings	The methodology adopts and refers to the CDM's most current version of the "Combined tool to identify the baseline scenario and demonstrate additionality

[3] Rieley, J.O. & Page, S.E. (2005) Wise Use of Tropical Peatland: Focus on Southeast Asia. Alterra, Wageningen, The Netherlands. 237 p. ISBN 90327-0347-1.

	in A/R CDM Project Activities" for baseline selection. This is a comprehensive, CDM approved baseline selection tool, relevant and appropriate to the methodology. (II.3, I.5.a)		
August 09 Review Findings	In the revised version of the methodology (Version 3) no changes were made that impacted this element of the methodology. Therefore, the draft findings above are still applicable.		
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS			

- In developing the baseline scenario, the project proponent shall select the assumptions, values and procedures that help ensure that GHG emission reductions or removal enhancements are not overestimated.

April 09 Review Findings	The methodology has a conservative and justified approach to the selection of the carbon pools to be included in the baseline. (I.4, II.1.b). The methodology is conservative in its calculations of emissions from above-ground biomass. For example, harvested wood products are included as a reservoir for a portion of the carbon from the above-ground tree pool and it is assumed all species above a threshold diameter would be harvested for timber (despite the likelihood that only certain commercial species would be used for as harvested wood products). The baseline scenario also considers the establishment and growth of plantation trees under short rotation harvesting on the cleared land, which would be considered conservative practice. (II.5)		
August 09 Review Findings	In the revised version of the methodology (Version 3) no changes were made that impacted this element of the methodology. Therefore, the draft findings above are still applicable.		
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS			

- The project proponent shall select or establish, justify and apply criteria and procedures for demonstrating that the project results in GHG emission reductions or removal enhancements that are additional to what would occur in the baseline scenario.

April 09 Review Findings	The methodology adopts and refers to the CDM's most current version of the "Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM Project Activities" for baseline selection. This is a comprehensive additionality assessment tool, relevant and appropriate to the methodology. Although the tool relates to A/R activities the principals and stepwise approach are applicable. (II.3, I.5.a)		
August 09 Review Findings	In the revised version of the methodology (Version 3) no changes were made that impacted this element of the methodology. Therefore, the draft findings above are still applicable.		
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS			

- The baseline scenario shall set out the geographic scope as applicable to the methodology.

April 09 Review Findings	The methodology applicability condition limits the geographic scope for the use of the methodology to "tropical" areas. (I.3.A) The applicability of this methodology beyond Southeast Asia (for example, into Africa or South America), where the scientific study of peat swamp forests may be a limiting factor, should be justified within the methodology.		
August 09 Review Findings	In the revised version of the methodology (Version 3) applicability condition A now limits the use of the methodology geographically to southeast Asia. This is considered more appropriate based on the applicability of the science used.		
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	**CAR 02/09** Shell Canada shall justify the geographic scope or restrict the applicability of the methodology to areas in which the scientific understanding of tropical peat systems is sufficient to defend the assumptions made when calculating emissions. This CAR was closed by updates made to Version 3 of the methodology as described in the findings above.		

- Identifying GHG sources, sinks and reservoirs for the baseline scenario

  Text taken from ISO 14064-2:2006, clause 5.5.

  In identifying GHG sources, sinks and reservoirs relevant to the baseline scenario, the project proponent shall:

  - consider criteria and procedures used for identifying the GHG sources, sinks and reservoirs relevant for the project;
  - if necessary, explain and apply additional criteria for identifying relevant baseline GHG sources, sinks and reservoirs; and compare the project's identified GHG sources, sinks and reservoirs with those identified in the baseline scenario.

April 09 Review Findings	The methodology's identification and selection of sources and sinks are mostly consistent with calculations later in the methodology and are defended with references to scientific literature. The headings in the Tables 'B' and 'C' do not indicate that the methodology is addressing 'emissions by sources *other than those resulting from changes in carbon pools*'. This is inconsistent with AR-AM0004/5 from which the tables are derived. There are at least two missing entries from Table 'B', as, for example, emissions from above-ground biomass decay and retirement of wood products related to selective logging (see Equation 96) are not in the table, but are included in the calculations.
August 09 Review Findings	In the revised version of the methodology (Version 3) Table B's heading has been changed to be consistent with AR-AM0004. It was explained by Winrock that "emissions from aboveground biomass decomposition and wood products are accounted for as changes in the aboveground biomass and wood product carbon pools; thus they are not included as emissions in the table." Above-ground biomass decay is no longer calculated, rather all biomass damaged by logging is assumed to be released immediately. Carbon stored in the harvested wood product pool is now considered permanent. These simplifications are

	conservative and thus acceptable.		
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	**CAR 03/09** Shell Canada shall include all emissions sources applicable in the methodology in Tables B and C. This CAR was closed by updates made to Version 3 of the methodology as described in the findings above.		

- The methodology should be compatible with the VCS Tool for AFOLU methodological issues (II. Step 4, Establish a Project Baseline)

April 09 Review Findings	The methodology is compatible with the VCS Tool for AFOLU methodological issues (II. Step 4, Establish a Project Baseline). The applicability criteria demand only areas 'officially designated' for land use conversion are eligible and this constitutes clearly that the land would have converted in the absence of the project. (I.3.D) The methodology calculates avoided emissions from planned deforestation and the associated peat drainage and burning. (II.5) However, at the time of the methodology assessment and preparation of the first draft report, the VCS did not have standards or requirements defined for the avoided emissions from peat drainage and/or burning of peat. These elements would not currently be compatible with the VCS Tool for AFOLU methodological issues.		
August 09 Review Findings	At the date of the final report the VCS Tool for AFOLU methodological issues does not provide guidance for the inclusion of the peat pool in VCS projects. As such it is still not possible to provide assurance that future guidelines would be met by this methodology. The VCS does state that "wetland forests (e.g., peat swamp forests or mangrove forests) are also eligible for crediting under VCS REDD, as long as they meet the forest definition requirements." However, the VCS goes on to say that "whilst robust methods for estimating changes in mineral soil carbon stocks are provided in the IPCC 2006 GL, the method for peat soils is not well developed yet and a new methodology would need to be developed for including emissions from this pool.		
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	*Note: Until the VCSA provides its guidance and requirements on avoided emissions from peat draining and burning this methodology could not be accepted by the VCSA. Upon reaching a positive assessment opinion for all other elements under review, however, the Rainforest Alliance would present to the VCS this assessment report, with our recommendations and conclusions for consideration.*		

iii. <u>Additionality:</u>

Assessment of whether the approach/tools for determining whether the project is additional are appropriate and adequate.

April 09 Review Findings	The methodology, in section II.4 refers to the CDM's most current version of the "Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM Project Activities" for additionality determination. (II.4) However, in Section I.5.a.5 (Page 6) it is stated that the "tool for demonstration and assessment of additionality for afforestation and reforestation CDM project activities" approved by the CDM Executive Board will be used. There is internal inconsistency within the methodology on which additionality approach is preferred.		
August 09 Review Findings	In the revised version of the methodology (Version 3) the internal inconsistency has been resolved. The methodology now only refers to "Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM Project Activities" for additionality determination.		
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	**CAR 04/09** Shell Canada shall be consistent in documenting the additionality tool that should be used in conjunction with the methodology. This CAR was closed by updates made to Version 3 of the methodology as described in the findings above.		

iv. Project boundary:

Assessment of whether an appropriate and adequate approach is provided for the definition of the project's physical boundary and sources and types of gases included.

- The project proponent shall select or establish criteria and procedures for identifying and assessing GHG sources, sinks and reservoirs controlled, related to, or affected by the project. The VCS PD shall include identification and assessment of GHG sources, sinks and reservoirs as being:
    - controlled by the project proponent:
    - related to the GHG project; or
    - affected by the GHG project. (VCS 2007.1, S6.2).

April 09 Review Findings	The methodology has clear guidance on defining the physical project boundary which is taken directly from AR-AM0005, a CDM approved methodology. (I.5.a.I, II.1) However, there is concern about the impact of drainage for plantations that occurs outside the project boundary which would still have an effect on the peat within the boundary. Drainage impacts may extend many kilometers across a peat dome. The methodology does not address this factor. The boundary design is not based on hydrological boundaries, nor considers buffer zones of drainage exclusion, for example, to mitigate this risk. In addition, monitoring of drainage in proximity to the project is not considered in the monitoring section despite its potential to result in emissions from within the project area (see below).

	The methodology has well documented justifications for the selection of above-ground carbon and peat carbon pools to be considered. The root carbon pool is assumed to be contained within the peat and the conservative exclusion of the other pools is defended. (I.4) However, there is no reference to support the assertion that <0.02% of the total carbon stock in tropical peat forests is stored in the litter. The carbon pools selected do not currently align with those pools identified in VSC guidance for REDD AFOLU project activities. For example, above-ground biomass has not been separated into tree and non-tree components. In addition the harvested wood products pool is not mentioned, yet it is a component of later calculations. (I.4) Finally, it must be noted that peat is not currently a pool considered by the VCS methodology. (VCS Tool for methodological issues, 18 Nov 2008).
August 09 Review Findings	In the revised version of the methodology (Version 3) applicability condition K has been added to ensure that the project area is 'hydrologically unique' from areas that are likely to be 'significantly affected by drainage occurring outside the project area. If this cannot be proven then a 2 km buffer must be monitored for drainage. If drainage is detected in the buffer a methodology must be developed for calculating the resulting losses of carbon stocks in the project area. It is our opinion that the wording 'hydrologically unique' was not very precise and that 'hydrologically intact' would be a more accurate description of what is desired. In addition, the wording 'significantly affected' left room for ambiguity. The exclusion of monitoring for outside drainage could only be allowed if the project area was *not affected* by outside drainage. It is also our opinion that 2 km was not sufficient distance to guarantee that drainage with the potential to impact the project is detected. Based on experience from peatland research and monitoring elsewhere in Indonesia, between 3 and 5 km was considered a better buffer zone size to achieve hydrological separation. However, if through expert opinion it could be justifiably defended then a more narrow buffer width could be acceptable. Currently the wording of the applicability condition does not allow for such discretion. References have been added that support the insignificance of the litter pool. Table A has been updated such that it corresponds with the VCS pools, except that peat has been separated out from soil carbon. It should be noted that according to the current VCS tool for AFOLU methodological issues, the soil component is not allowed to be counted in two of the three sub-types. It is expected that the upcoming VCS guidance on peat inclusion in AFOLU projects will clarify exactly how and when peat can be included.
December 09 Review Findings	Version 5.1 of the methodology contains an updated section on defining the project boundary in such a way that it constitutes a functionally discrete hydrological unit. If this cannot be demonstrated a buffer zone that extends to the edge of

	the peat dome or 3km, whichever is smaller, must be monitored. If drainage is detected in the buffer zone, then due to applicability condition K, the methodology "is no longer applicable in its current form and it shall be revised to take into consideration the extent of the outside drainage activity's impact on GHG emissions occurring within the project boundary" (p.5) It goes on to state that, "This drainage impact shall be determined using a combination of hydrological modeling and field measurements and shall be done in collaboration with at least two peat experts." This approach, is conservative in that any external drainage that could reduce the peat carbon stock within the project area will be detected. The lack of a specific methodology to quantify this, and reliance on project specific peat expert modeling and sampling, was found to be acceptable due to the nascent nature of peat modeling and emissions science.		
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	**CAR 05/09** Shell Canada shall ensure the methodology addresses drainage activities outside of the project boundary impacting peat emissions inside the project boundary. This CAR was closed by updates made to Version 5.1 of the methodology as described in the findings above. **CAR 6/09** Shell Canada shall align the carbon pools referenced in the methodology with those used by the VCS. This CAR was closed by updates made to Version 3 of the methodology as described in the findings above. *Until the VCSA provides its guidance and requirements on avoided emissions from peat draining and burning this methodology could not be accepted by the VCSA. Upon reaching a positive assessment opinion for all other elements under review, however, the Rainforest Alliance would present to the VCS this assessment report, with our recommendations and conclusions for consideration.*		

- The methodology should be compatible with the VCS Tool for AFOLU methodological issues (II. Step 2 Determine the Project Boundary and 3 Determine the Carbon Pools)

April 09 Review Findings	As noted above, the methodologies approach to defining carbon pools is not consistent with that of the VCS. (VCS Tool for methodological issues, 18 Nov 2008) It must be noted that peat is not currently a pool considered by the VCS. (VCS Tool for methodological issues, 18 Nov 2008)		
August 09 Review Findings	Table A has been updated such that it corresponds with the VCS pools, except that peat has been separated out from soil carbon.		
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	See **CAR 06/09** relating to carbon pools. This CAR was closed by updates made to Version 3 of the methodology as		

	described in the findings above. *Note: Until the VCSA provides its guidance and requirements on avoided emissions from peat draining and burning this methodology could not be accepted by the VCSA. Upon reaching a positive assessment opinion for all other elements under review, however, the Rainforest Alliance would present to the VCS this assessment report, with our recommendations and conclusions for consideration.*

v. Emissions:

Assessment of whether an appropriate and adequate approach is provided for calculating baseline emissions, project emissions and emission reductions.

- The project proponent shall select or establish criteria, procedures and/or methodologies for quantifying GHG emissions and/or removals for selected GHG sources, sinks and/or reservoirs.

April 09 Review Findings	The methodology follows the approved CDM template approach whereby the procedure for estimating *ex-ante* avoided emissions is presented in section II and the procedure for calculating actual *ex-post* avoided emissions is presented in section III. This section assesses only the *ex-ante* estimates, whilst the *ex-post* procedures/methods are assessed below. **Baseline Emissions (*ex ante* calculations)** The baseline emissions are those that would have come from above-ground and peat carbon pools during the planned land conversion within the project area. (II.5.1) Standard stratification techniques and plot design are taken from AR-AM0004 and are applicable for all carbon pools except peat (II.2). The methodology states that peat should be stratified by depth, but provides no method for how to do this. Given the importance of peat depth on emissions from burning, this is seen as a potential weakness that could lead to inaccurate estimates if poor depth stratification was conducted. For example, the sampling framework for above-ground carbon estimation within a stratum has a very detailed protocol outlined in section II 5.1.2, whilst no equivalent procedure is outlined for peat depth. The emissions from above-ground biomass from timber extraction and biomass burning are calculated using a combination of techniques from CDM methodologies and some techniques of Winrock International. The method for calculating emissions from timber extraction is conservative, because it considers a portion of biomass would go into wood products. Volume and

	biomass methods for carbon emissions calculations are given. (II.5.2) The emissions from biomass burning of all non harvested biomass are calculated according to a method taken from AR-AM0004, which is relevant and appropriate, and considers CO_2, N_2O and CH_4 emissions. (II.5.2.2) In order to calculate the mean carbon stocks in above-ground tree biomass an aerial imagery technique developed by Winrock International, standard BEF and allometric methods (directly from AR-AM0004) are presented. (II.5.2.2.1) In addition, to be conservative the sequestration of carbon through the establishment and growth of trees planted in plantations after land clearing is calculated using the Winrock techniques. The sequestration of carbon through the establishment of short rotation crops is to be calculated if that is in the baseline scenario. To be conservative some harvested wood is considered to enter the harvested wood product pool. The harvesting process considers that the biomass not extracted or stored in wood products is burnt and that N_2O and CH_4 emissions are released. These other GHGs are correctly converted into CO_{2e} using standard IPCC techniques. (II.5.2.3-4) Many of the techniques for calculating emissions from non-peat sources are acceptable and come from tested Winrock sources. However, often these sources are not referenced. The emissions from peat are considered to come from peat burning and drainage. (II.5.3.1 and II.5.3.2) The methodology for estimating CO_2 and CH_4 emissions from peat burning involves calculating the respective emissions factor from burning peat *ex-ante* at a local to regional scale. These values are multiplied by the mass of peat estimated to be burnt, which in turn is based on estimates (local to regional scale) of burn depth, burn area and estimates or measurements of bulk density (local to regional scale). The peat scientists evaluating the methodology raised a number of concerns about this method. No guidance is given as to the acceptable techniques for estimating CO_2 and CH_4 emissions from peat burning (i.e., the emissions factors). The methodology does not account for differences in emissions factors that arise from different types of peat fires. For example, surface fires where only the aerated peat burns has different emission factors than smouldering fires that affect deeper, (partly) anoxic peat layers. No guidance is given on how to estimate burn depth or area burnt under the baseline scenario within a stratum. The depth to which peat burns in a given fire event is a function of amongst other things, total peat depth, water table depth, above-ground fuel load, and fire severity. It was not felt that the methodology adequately addressed these drivers of variable emission factors and relied mostly on total peat depth without sufficient justification. (II.5.3)

	The bulk density of peat is known to be heterogeneous over many scales and to increase with depth, yet no guidance is given on how to constrain this to one value of bulk density. This is particularly important as the literature on bulk density of drained peat layers is sparse and bulk density will vary with peat type, drainage and fire history, etc. There is no consideration of the water table and its affect on the maximum depth of peat that can be burnt. This could potentially lead to an overestimation of avoided emissions. The emissions from drainage are based on anticipated area of drained peat and using an estimate of average depth of drainage and a linear emissions function to calculate CO_2 emissions. There is no consideration of the fire frequency anticipated in land management post-clearing. In oil palm plantations fire occurs less frequently than in pulpwood timber plantations, while on agricultural lands it may be much more frequent. In the baseline case, not considering fires used in post-conversion land management would be a conservative omission. **Project Emissions (*ex ante* calculations)** The only project emissions considered are from fuel consumption for transport related to project activities. They are calculated using standard equations from AR-AM0004. (II.6.1) **Emissions Reductions (*ex ante* calculations)** These are calculated from the baseline and project emissions explained above and assume, in the *ex-ante* calculation that the project is 100% effective. These calculations are complete and mathematically correct. An estimate of leakage is also required to calculate the estimated emissions reductions, but this is discussed in the leakage section below. (II.8)
August 09 Review Findings	Section II 5.3, GHG emissions from peat (in the baseline), has been significantly changed in response to the draft findings and CARs. These changes represent an improvement. Guidance is provided on estimating the depth of drainage, and conservative default values are provided (5.3.1.1). The fact that emissions from peat drainage are not immediate and will be limited by the peat depth are built into the modeling of emissions (5.3.1.2). A clearer explanation of how peat drainage area is calculated is provided (5.3.1.3). The drainage depth to emissions function (Hooijer *et al.*, 2006) has not changed from Version 2 but is better explained and more clearly defended. Section 5.3.1.1 defines 34 cm as the default burn depth for the entire area cleared in the absence of local data (5.3.1.2). This figure is based on the mean burn depth reported by Couwenberg *et al.,* (2009). This burn depth was

	considered acceptable when drainage exceeded 80 cm. If the drainage planned is less than 34 cm then the methodology considers the burn depth to be equal to the drainage depth. This was not thought to be acceptable. At lower water tables, the risk of fire establishing in the upper peat layer probably increases progressively but, in practice, peat fires usually do not start until the water table has dropped to 80 cm below the surface, rendering a maximum of 40 cm of dry peat above the capillary zone susceptible to combustion. Most fires are associated with periods when water table depths approach or are lower than 100 cm, in which case greater loss of peat may occur. The burn depth of 34 cm may be appropriate, but should only be applied in situations where the peat drainage depth is known to be greater than 80 cm. Any unit of peat can only lose its carbon stock once from either oxidation in the atmosphere due to drainage or due to combustion (also oxidation) in a fire event. There is a lack of clarity in the methodology as to whether there is potential double counting of emissions from drainage and burning. More guidance is provided on estimating the peat bulk density (5.3.1.3) as well as CO_2 and CH_4 emission factors (5.3.1.4). In both cases default values are also provided. Section 5.2.2 provides more details on how burn depths should be calculated. These additions were thought to be acceptable. However, the suggested default value for bulk density of 0.144 g cm^{-3} was thought to be high for the top 34 cm of the peat. This is because the references used obtained data from lower horizons of peat. The lack of reference to stratification by peat depth has now been addressed. In Section II.2.step1.d more guidance is given on how to stratify by peat depth if the loss of peat is likely to exceed the peat available. Whilst this was thought to be acceptable it would be scientifically accurate to quote the drainage depth from which the average subsidence rate of 4.5 cm y^{-1} is derived. The CDM Executive Board decisions 44 and 46 deem fossil fuel burning and transport related emissions insignificant for A/R projects. Using this precedent as justification, they have been removed from the GHG accounting of project emissions. This was thought to be acceptable. In the revised version of the methodology (Version 3) referencing is more thorough and was thought to be acceptable. Section II.5.2.3 provides the calculations for estimating biomass gains due to growth of planted crops/trees after deforestation. There appears to be an inconsistency in the way the units of the $R_{ARB,it}$ parameter is presented. In equation 42 it has the units t C ha^{-1} y^{-1} whilst in equation 40 it has units of t C ha^{-1}. It is therefore unclear how the annual increase in biomass is applied when the monitoring frequency is not annual.
December 09 Review findings	Version 5.1 has detailed guidance on the derivation of all parameters including bulk density. Section 5.3.2.1 (baseline calculations) the depth of peat burned is assumed to

	be equal to the drainage depth (in cm) minus a critical threshold value of 40 cm above the drainage depth. The rationale for this assumption is that the layer of peat 40 cm directly above the lowered water table is too wet to burn due to capillary rise of water in the pore spaces of the peat. The maximum depth of peat burnt will not exceed 34 cm. If the difference between drainage depth and the critical threshold exceeds 34 cm, then the maximum burn depth of 34 cm shall be applied. This approach was found to be consistent with the latest knowledge on peat burn depths. The issue of carbon stock loss being double counted has been resolved now in section 5.3.1.1 of the methodology. The depth of peat burnt is not subtracted from the peat that is available to lose carbon through drainage related oxidation/subsidence. $R_{ARB,it}$ parameter is now presented with the units t C ha^{-1} y^{-1} in equations 41 and 43.		
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	**CAR 7/09** Shell Canada shall provide references for techniques used throughout the methodology. This CAR was closed by updates made to Version 3 of the methodology as described in the findings above. **CAR 8/09** Shell Canada shall provide more methodological guidance on the derivation of parameters used in peat emissions calculations, giving more consideration to the variation that may be encountered by those attempting to gather data to execute the methodology. This includes providing techniques for gathering field data on peat where necessary, and accurate, conservative sourcing of data for input into peat equations. This CAR was closed by updates made to Version 5.1 of the methodology as described in the findings above. **CAR 09/09** Shell Canada shall include water table depth when calculations regarding burn depth are used. This CAR was closed by updates made to Version 5.1 of the methodology as described in the findings above. **OBS 01/09** Shell Canada should consider the frequency of burning used for management of different land covers in order to more accurate emissions from the baseline scenario. This observation was not addressed, but this is conservative.		

- Based on selected or established criteria and procedures, the project proponent shall enable the quantification of GHG emissions and/or removals separately for:
    - each relevant GHG for each GHG source, sink and/or reservoir relevant for the project; and
    - each GHG source, sink and/or reservoir relevant for the baseline scenario.

April 09 Review Findings	The methodology correctly and separately calculates relevant GHG from the different reservoirs. The separate components are correctly combined in consistent units to generate both the *ex-ante* and *ex-post* estimates of avoided emissions. (II, III)		
August 09 Review Findings	The calculations presented In the revised version of the methodology (Version 3) are still presented correctly.		
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS			

- When highly uncertain data and information are relied upon, the project proponent shall select assumptions and values that ensure that the quantification do not lead to an overestimation of GHG emission reductions or removal enhancements. (VCS 2007.1, S6.2.5)

April 09 Review Findings	The calculations involving changes in the above-ground biomass are based on standard techniques and would not be classed as 'highly uncertain'. In estimating emissions from the burning and draining of peat there are several factors that are estimated or calculated within the methodology. However, many of these techniques are lacking pre-proven (e.g. IPCC) approaches for determination and would be considered of high uncertainty. More guidance is necessary in the methodology to ensure conservative values are selected.		
August 09 Review Findings	The updated version 3 of the Methodology has taken steps to improve the treatment of the uncertainty of peat calculations. This involves providing more guidance on how parameters and data should be gathered. In the case of the actual emission from peat burning, there is also a requirement to verify literature values used by field sampling (for which guidance is given). See for example the treatment of burn depth on page 71. See findings above relating to **CAR 08/09** for more details.		
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS			

- The project proponent shall estimate GHG emissions and/or removals by GHG sources, sinks and reservoirs relevant for the project and relevant for the baseline scenario, but not selected for regular monitoring.

April 09 Review Findings	All sinks and sources are subject to monitoring.
August 09 Review Findings	In the revised version of the methodology (Version 3) no changes were made that impacted this element of the methodology. Therefore, the draft findings above are still applicable.

Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS			

- The project proponent shall establish and apply criteria, procedures and/or methodologies to assess the risk of a reversal of a GHG emission reduction or removal enhancement (i.e. permanence of GHG emission reduction or removal enhancement) (VCS 2007.1, S6.2.5).

April 09 Review Findings	The monitoring methodology provides the steps to calculate unanticipated emissions during the project activity that could lead to reversal of avoided emissions. These unanticipated emissions sources are selective logging, fire and land use change. (III.5.3) However, the methodology does not specifically establish and apply criteria, procedures and/or methodologies to assess the risk of a reversal of a GHG emission reduction or removal enhancement. It is understood that such procedures would be most comprehensively dealt with in a PD.		
August 09 Review Findings	Section I.5.b of the updated Version 3 methodology now references the VCS Tool for AFOLU Non-Permanence Risk Analysis and Buffer Determination as the mechanism for determining risk of reversal. In section III.5.2 it is stated that, *"In theory, project activities that prevent land use change within the project boundary should be 100% successful and C_{PRJ} in Eq. 70 above should be zero."* The 'unanticipated' emissions that occur and are quantified as C_{PRJ}, include fire, selective logging and land use conversion. It was noted that selective logging is permitted by the methodology within the project boundary (applicability condition H) and as such this is not necessarily unexpected. Therefore even with 100% success of the project, selective logging emissions may still occur. There is no problem with the way the calculations are executed, but this text could add slight confusion. This issue should be addressed to improve consistency and clarity.		
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	**OBS 02/09** Shell Canada should strengthen the procedures for assessing the risk of reversal of greenhouse gas benefits from a project. This observation was addressed in Version 3 of the methodology as described in the final findings above.		

- If applicable, the project proponent shall select or develop GHG emissions or removal factors that:
    - are derived from a recognized origin;
    - are appropriate for the GHG source or sink concerned;
    - are current at the time of quantification;
    - take account of the quantification uncertainty and are calculated in a manner intended to yield accurate and reproducible results; and

- are consistent with the intended use of the VCS PD or monitoring report as applicable (VCS 2007.1, S6.2.5).

April 09 Review Findings	The methodology uses emissions factors as a data input into the equations that link the mass of peat burnt to CO_2 and CH_4 emissions (EF_{CO2} and EF_{CH4}) as well as for CO_2 emissions from peat drainage ($EF_{peat,drainage,i}$). No references are provided as guidance for recognized origins of the burning emissions factors. (e.g. Equation 126 and 127) A reference to Hooijer *et al.,* (2006) is given to support the linear relationship given as a default emissions factor for drainage (e.g. Equation 116,146) and is thought to be acceptable.		
August 09 Review Findings	The same approach to emissions factors is taken In the revised version of the methodology (Version 3). The changes made to the methodology are described above in relation to CAR08/09		
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS			

- The project proponent shall select or establish criteria, procedures and/or methodologies for quantifying GHG emission reductions and removal enhancements during project implementation. GHG emission reductions or removal enhancements shall be quantified as the difference between the GHG emissions and/or removals from GHG sources, sinks and reservoirs relevant for the project and those relevant for the baseline scenario.

April 09 Review Findings	***Ex-post* net GHG avoided emissions** **Baseline emissions** The methodology uses the baseline emissions calculated *ex-ante* in the *ex-post* calculations. Whilst the baseline is not monitored, the methodology allows for changes if new data or technical progress allow for more accurate emissions. **Unexpected emissions within the project boundary** The *ex-ante* emissions estimates assumed 100% efficiency of the project. The monitoring methodology provides the steps to calculate unanticipated emissions during the project activity, i.e. to address the circumstances whereby the project is not entirely successful. These unanticipated emissions sources are selective logging, fire and land use change. This is a conservative approach, as selective logging was not considered in the baseline. (III.5.3) Accounting for unanticipated emissions from selective logging involves calculating emissions from the trees removed (with some harvested wood products being created), trees damaged (and decaying) and peat drained. The method is based on calculating the estimated emissions from a 'gap' caused by logging and then multiplying by the number of gaps found. (III.5.3.1) The calculations are thorough and correct, however the methodologies derived

	by Winrock are not referenced. It was also noted that there was an inconsistency in the use of units regarding the emissions factors and that they did not reflect the annual emissions derived from annual monitoring. (III.5.3.1) In order to calculate emissions from selective logging, annually collected remote sensing imagery should be collected and tree gaps counted. It is conservatively assumed that any gaps found are new. There is an option for less frequent monitoring at the discretion of the verifier. (III.5.3.1) Accounting for unanticipated emissions from canal construction from within the project boundary is based on estimating the canal lengths and the distance of impact to derive an area of drained peat and then using an estimate of average depth of drainage and a linear emissions function to calculate CO_2 emissions. Whilst technically acceptable, there is a concern that two key aspects are left to expert opinion (canal length, distance of drainage impact) without guidance on what approaches would be taken or suggestions of best practice. (III.5.3.1.3) It was also noted that there are difficulties in estimating the drainage impact associated with the small side canals of varying depth that are typical of illegal selective logging activities. The methodology does not give guidance on what size drainage canals contribute significant emissions and which can be conservatively excluded. More generally, with regard to all drainage calculations it was thought that methods for assessing drainage impact need to be explained more comprehensively in the methodology, rather than being left to the individual projects and/or project descriptions. There is also a need to also take account of seasonal variation in the water table. There is not consideration of how emissions from drainage may change over time, whilst the scientific literature suggests reduced subsidence (oxidative peat losses) with time. The methodology for calculating emissions from drainage is based on the length of new canals discovered at the time of monitoring (III.5.3.1.2, Step 1, Equation 114). However, the emissions from selective logging ($E^{selective\_logging}$), into which the emission from drainage feeds, are given in units that do not include a time component. It is therefore not clear how the methodology accounts for cumulative increases in drainage area and the fact that emissions continue for many years after the drainage is initiated. The methodology for estimating CO_2 and CH_4 emissions from peat burning involves calculating the respective emissions factors from burning peat *ex-ante* at a local to regional scale (III.5.3.2, step 2b). These values are multiplied by the mass of peat estimated to be burnt, which in turn is based on estimates (local to regional scale) or measurements of burn depth, measured burn area and estimates or measurements of bulk density (locally derived, ex ante). There were a number of concerns raised about this method.

	No guidance is given as to the methodologies that are acceptable for estimating CO_2 and CH_4 emissions from peat burning emissions factors. As stated above, the methodology does not account for differences in emissions factors that arise from different types of peat fires. The bulk density of peat is known to be heterogeneous over many scales and to increase with depth, yet no guidance is given on how to constrain this to one value of bulk density. This guidance is particularly important as the literature on bulk density of drained peat layers is sparse and bulk density will vary with peat type, drainage and fire history, etc. With regard to the depth burnt – it is stated that this can be 'measured in the field' or 'average values can be measured and applied'. This is a large source of uncertainty and as such requires guidance. There needs to be a detailed explanation of how the depth of peat burned can be assessed in the field. What will be the point of reference? How many measures need to be obtained at each burnt area? What is the likely variability in burn depth(s) even within one fire scar? How will single versus multiple fire sites differ in terms of amount of peat consumed (e.g. because of different above-ground fuel loads)? Accounting for unanticipated emissions from fire involves determining the presence/absence of fire in the project boundary and multiplying this by an emission factor per unit area burnt. The emissions factor considers both above-ground burning and peat burning. (III.5.3.2) Burn areas are detected using MODIS hotpot, or other remote sensing fire detection techniques and affected areas further investigated for land cover change with remote sensing imagery. In tropical regions there is chance that cloud could impede the gathering of annual imagery for a specific area from satellites. The phrasing "aerial imagery" however, implies that aircraft could be used, thus overcoming this challenge. (III.5.3.2). A recent study[4] has found high omission errors in detection of fires in peat swamp forests. This study indicates, therefore, that accurate identification of fire occurrence must be carried out using optical (or potentially radar) data; reliance on MODIS hotspot data alone could result in poor fire detection and high omission errors. The above-ground biomass burn emissions are calculated using standard IPCC techniques or a mass balance between burnt and unburnt portions of the affected strata. (III.5.3.2, step 2a) Accounting for unanticipated emissions from land clearing (deforestation) involves calculating the area of above-ground and peat affected. Emissions factors for the loss of all above-ground biomass, peat drainage and burning are calculated. Harvested wood products area conservatively excluded. (III.5.3.3)

[4] Tansey et al. (2008) [Tansey, Beston, Hoscilo, Page and Paredes Hernandez - Relationship between MODIS fire hot spot count and burned area in a degraded tropical peat swamp forest in Central Kalimantan,Indonesia. JOURNAL OF GEOPHYSICAL RESEARCH, VOL. 113, D23112, doi:10.1029/2008JD010717, 2008]

	III.5.3.3, Step 1 states that it is conservative to assume that the area of peat affected by land cover change is equal to 100% of the converted area – but canal drainage impacts will extend beyond the drainage feature. This is indeed the case – drainage effects can extend over several km, depending on peat hydraulic conductivity amongst other factors. It is not clear how the second part of Equation 130 would accurately estimate the area affected by draining beyond the boundary of the project area. From the text above it appears this only applies if canals are seen outside the deforested area, but this is not specified in the equation. If drainage channels area of impact overlap then there could be significant double counting of area, resulting in an overestimation of emissions (although this error would be conservative). The monitoring methodology does not account for drainage initiated outside the project boundary, but whose impact extends within the boundary. With the impacts of drainage potentially extending many kilometers (dependant on peat hydrology), significant emissions could be experienced within a project boundary due to external drainage. The methodology does not include any consideration of potential emissions (CH_4) from the blocking of canals for peat rewetting. For example, blocking drainage canals could be a fire prevention method. The potential scale of these emissions has not been considered and no guidance is given as to whether they should be included in calculations. **Project Emissions (*ex-post* calculations)** The only project emissions considered are from fuel consumption related to project activities within the project boundary. They are calculated using standard equations. (III.5.2) **Emissions Reductions** These are calculated from the baseline, project, and unexpected emissions explained above. An estimate of leakage is also required to calculate the estimated emissions reductions, but this is discussed in the leakage section below. (II.8) These calculations are complete and mathematically correct. Guidance is also given on the optional calculation of biomass increases in trees that would have been cut down under the baseline scenario. The approach is conservative and refers to earlier sections on sampling and biomass quantification. (III.5.4)
August 09 Review Findings	In the revised version of the methodology (Version 3) several changes have been made to the way *ex-post* actual emissions reductions are calculated and additional guidance has been given in many cases. The methodology in Section III.5.2.1.1 no longer accounts for the rate of decay of wood products and damaged biomass (as in III.5.3.1 of Version 2). The

	emissions from decay are assumed to be immediate and the harvested wood product pool is ignored. Both these changes simplify the calculations and are conservative. This change has also resolved the issue surrounding inconsistent units of time in the emissions factor for selective logging that was present in Version 2. A new eight step process has been defined to estimate the emissions from drainage canals associated with logging. It involves mapping canals during the wet season and consultation with at least 2 independent peat experts to estimate the distance of impact that the canals would have. The use of hydrological models is not mandated, but is an option the peat expert may decide to use. GIS software is used to map a drainage area based on the expert opinion of drainage distance impact. This step replaces the erroneous Equation 130 that was used to calculate the drainage area impact in Version 2. Drainage depth along transects perpendicular to canals must be measured in the field to provide drainage depths. The same function (Hooijer) that relates drainage depth to emissions that was used in the baseline scenario is used again. The methodology no longer uses the MODIS hotspot approach to do the initial determinacy of fire presence or absence in the project area/buffer. Instead, medium to high resolution data is used as the first method of detecting fire occurrence (5.2.2 Step 1). High resolution remote sensing data or ground measurements are then used to estimate the burn area. There is no mandatory ground checking of the data gathered from high resolution imagery. The third paragraph in Section III.5.2.2.step 1 that begins “If fires are detected” appears to be missing the word “no” before the word “fires”. In order to estimate burn depth the use of field measurements or literature values is permitted by the methodology. Literature values must be verified using limited ground sampling (see beneath Equation 91). Version 3 of the methodology has a new method for calculation of the emissions from drainage associated with land-use conversion (III5.2.3). The methodology still relies on expert opinion to determine the impact of drainage canals but includes the option of using a hydrological model. It is not explicitly stated that two experts need to be consulted with (like in 5.2.1.3), the plural “experts” implies this. A conservative assumption that the drainage depth immediately next to the canal is the depth over the whole drained area is applied. The methodology allows for improved data to be used when better techniques become available. Once created, the drainage emissions from a drain must be included in every year of monitoring, even if the drain is not longer active. This represents conservative accounting. Regrowth on deforested areas can be measured by using permanent plots or conservatively ignored. This method was thought to be acceptable. The revised applicability condition (k) states that a buffer zone may require monitoring for drainage, but this is not mentioned in the monitoring section.

	The CDM Executive Board decisions 44 and 46 deem fossil fuel burning and transport related emissions insignificant for A/R projects. As such the methodology now does not include them either. This was thought to be acceptable. The referencing is now more comprehensive and considered acceptable. The methodology, in the footnotes to Table B justifies the exclusion of CH_4 emissions from drainage due to their insignificance.		
December 09 Review Findings	The typo identified in the August 09 review has been corrected. Section 3 of the methodology now addresses the need to monitor a buffer zone during project implementation.		
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	**CAR 10/09** Shell Canada shall include CH_4 emissions from blocked drains as a potential source of GHG emissions in the project scenario or demonstrate their lack of materiality. This CAR was closed by updates made to Version 3 of the methodology as described in the findings above. **CAR 11/09** Shell Canada shall provide calculations that account for the emissions of GHGs over time based on emissions factors calculated. This includes accounting for known trends in emissions from peat drainage over time. This CAR was closed by updates made to Version 3 of the methodology as described in the findings above. **CAR 12/09** Shell Canada shall provide methodological guidance on how field measurements of peat burn depth, bulk density, canal length, area of drainage impact and drainage depth (accounting for seasonal variations) should be conducted in order to assess the applicability of estimates derived from literature values / expert estimates. This CAR was closed by updates made to Version 3 of the methodology as described in the findings above. ***CAR 13/09 (OLD)*** *Shell Canada shall use a higher resolution method for primary fire detection.* After discussion with Shell and Winrock this CAR was changed by Rainforest Alliance. (Indicated in "Rainforest Alliance Memo to Shell_Component_A_15 June 09.pdf"). Using MODIS hotspots as an initial detection method (but not area quantification was deemed acceptable). The new wording of the CAR was as follows: **CAR 13/09 (NEW)** Shell Canada shall include ground verification of burn areas		

	and burn depths in the monitoring strategy and use the results in emissions calculations. This CAR was closed by updates made to Version 3 of the methodology as described in the findings above. **CAR 14/09** Shell Canada shall derive an equation more appropriate than Equation 130 to estimate the area impacted by drainage when land is deforested. This CAR was closed by updates made to Version 3 of the methodology as described in the findings above.

- The project proponent shall quantify, as appropriate, GHG emission reductions and removal enhancements separately for each relevant GHG and its corresponding GHG sources, sinks and/or reservoirs for the project and the baseline scenario.

April 09 Review Findings	The methodology correctly and separately calculates fluxes from the different reservoirs. The separate components are correctly combined in consistent units to generate both the *ex-ante* and *ex-post* estimates of avoided emissions. (II, III)		
August 09 Review Findings	In the revised version of the methodology (Version 3) no changes were made that impacted this element of the methodology. Therefore, the draft findings above are still applicable.		
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS			

- The project proponent shall use tonnes as the unit of measure and shall convert the quantity of each type of GHG to tonnes of CO2e using appropriate global warming potentials.

April 09 Review Findings	The methodology presents units of avoided emissions consistently as t CO_{2e}. Standard IPCC conversions from other GHGs are used correctly.		
August 09 Review Findings	In the revised version of the methodology (Version 3) no changes were made that impacted this element of the methodology. Therefore, the draft findings above are still applicable.		
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS			

- The methodology should be compatible with the VCS Tool for AFOLU methodological issues (II. Step 6, Estimate and Monitor net GHG Benefits)

April 09 Review Findings	The methodology does not conflict with the VCS Tool for AFOLU methodological issues as standard IPCC approaches are used for above-ground biomass emissions estimation.
August 09	In the revised version of the methodology (Version 3) no changes were made

Review Findings	that impacted this element of the methodology. Therefore, the draft findings above are still applicable.		
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS			

vi. Leakage:

Assessment of whether the approach for calculating leakage is appropriate and adequate.

- The methodology should be compatible with the VCS Tool for AFOLU methodological issues (II. Step 5, Assess and Manage Leakage)

April 09 Review Findings	Leakage is estimated to have two components, fuel consumption outside the project boundary and activity displacement. Fuel consumption is calculated as project related emissions (transport to work) outside the project boundary using standard equations from AR-AM0004 which were thought to be adequate. Four scenarios are presented under which the leakage from activity from activity displacement would be considered zero. ▪ Pre-project activities (i.e. plantation establishment) are halted altogether and activities are not displaced elsewhere due to the leakage prevention activities of the project. 1. It was not understood what leakage mitigation activities are envisioned that could lead to halting of plantation development completely by a commercial or Government entity. ▪ Pre-project activities (i.e. plantation establishment) were planned by centralized government entities on government-owned and operated land; leakage that occurs in this scenario is outside the direct control of project participants. 2. The methodology allows pre-project activities planned by centralized government owned and operated land to incur no leakage emissions because the scenario is outside the control of project participants. However, the REDD market has created a perverse incentive for governments to greatly increase their plans for allowed deforestation, to generate profit from avoiding deforestation. The methodology contains no requirements for project developers to demonstrate that areas allotted for land conversion through deforestation by Government agencies will not increase due to the potential for REDD projects (this demonstration is one of the requirements of the new "Estimation of emissions from activity shifting for avoided planned deforestation" module currently under review by the VCS, but not reviewed by the Rainforest Alliance).

	▪ Pre-project activities (i.e. plantation establishment) are displaced to non-peatland areas outside the project boundary that have aboveground carbon stocks of less than 20 t C ha-1 3. There is no justification given for the cut-off for 20 t C ha^{-1} as the above-ground carbon density of non-peatlands that would be allowed to receive displaced plantations without leakage penalty. It was considered inappropriate to discourage activity shifting into non-peat areas with above-ground C densities of just over 20 t C ha^{-1} (by demanding leakage calculations), whilst encouraging displacement into areas of previously (>5 years) peat with < 20 t C ha^{-1} (by allowing leakage emissions to be assumed to be zero), when actual emissions caused by the leakage onto peatlands could be significantly higher. This point is expanded below. ▪ Pre-project activities (i.e. plantation establishment) are displaced to peatland areas outside the project boundary, but these areas have an aboveground carbon stock of less than 20 t C ha-1 and the peat was drained at least five years prior to the start of project activities 4. There is a serious concern that allowing no leakage emissions from plantations shifted to peat drained over five years ago could lead to significant emissions and an incentive for the reversal of peat restoration projects. Large areas of peatland have been deforested in Indonesia, especially in Kalimantan and Sumatra, much of it more than 5 years ago. In Central Kalimantan, for example, a Master Plan has been prepared for restoration and rehabilitation of the Ex-Mega Rice Project area that involves protecting peat and its carbon more than 3 meters thick by rewetting and re-greening. If there is an option in carbon payment schemes to divert land use change projects to peatland areas outside the boundary that were deforested more than 5 years ago it could lead to activities that continue to increase CO_2 emissions significantly. There is no guidance on how to calculate leakage where the deforestation agents are yet to be determined but will have government sanction. When the activities of the displaced entity are considered, it is not clear what geographical limits are imposed on the counting of plantations. If it is found that leakage will occur onto areas with an above-ground carbon stock of >20 t C ha^{-1}, or onto peatlands drained less than fives years prior to the project start date, then steps are provided to calculate the emissions from the displaced entity. This involves gathering data on peat land and non peat land areas planned to be deforested. The related emissions are calculated as those from draining and burning peat as well as above-ground biomass clearing. The emissions from those areas of peat drained and burnt are calculated the same way as those from the monitoring of emissions within the project boundary from these activities. The same concerns highlighted for such calculations previously also apply here. There is no consideration of fire frequency used in land management. In oil palm plantations fire is used only once every 25 years, on agricultural lands it may be much more frequent. In the case of shifted agricultural activity, not considering fires used in post-

	conversion land management would not be a conservative omission. It is conservatively assumed that emissions equivalent to the total carbon stock of the converted land are released due to land clearing. Selective logging is not considered in leakage calculations because it was not considered in the baseline; this is an acceptable, conservative approach.		
August 09 Review Findings	In the revised version of the methodology (Version 3) the approach to leakage has been completely revised. The methodology allows for zero leakage if the pre-project activities are displaced to degraded non-forest land on mineral soils. This was thought to be acceptable. If this is not the scenario that occurs the methodology refers to the latest draft version of the Leakage Module prepared by Climate Focus and other consulting firms convened by Avoided Deforestation Partners, advising that this should be replaced with the latest version once it is completed and approved. This new approach, in combination with Equation 107, is not considered sufficient to differentiate between that displacement which may occur to non-peat forest and the displacement to peat forest. This is of concern because there is no mechanism to incentivize the displacement of activities to non-peatland forests, but would only result in conservative accounting.		
December 09 Review Findings	Version 5.1 of the methodology has a leakage methodology based on the Leakage Module prepared by Climate Focus and other consulting firms convened by Avoided Deforestation Partners. This is to be updated when this becomes a final version. The leakage methodology accounts for the difference between displacement to peat lands and non peat lands through the use of baseline strata and the average loss from carbon pools defined in equation 3.		
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	**CAR 15/09** Shell Canada shall provide an approach for calculating leakage that is appropriate and adequate. This CAR was closed by updates made to Version 5.1 of the methodology as described in the findings above.		

vii. Monitoring:

Assessment of whether the monitoring approach is appropriate and adequate.

- The methodology should select or establish criteria and procedures for selecting relevant GHG sources, sinks and reservoirs for either regular monitoring or estimation (VCS 2007.1, S6.5.1).

April 09 Review Findings	The methodology lists what aspects of the forest monitoring activities are to be recorded in a project database (III.1.b), but does not list peat depth in relation to burning which is a key parameter in emissions estimation. The methodology's monitoring approach is closely derived from AR-AM004. The main exception is that sampling plots are temporary and not permanent, and due to the nature of monitoring avoided emissions from deforestation, it is only necessary to have plots at the beginning of the project for biomass

	determination and then monitor land cover change over the crediting period. (III.2.2.1.1) The methodology refers to "standard operating procedures" (I.5.b) for data collection. However, standard operating procedures are not thought to exist for peat data collection; however they could be developed if expert opinion were sought. The methodology gives no guidance on how and when to monitor water table and peat subsidence levels which would be important in detecting drainage and peat emissions from drainage originating outside the project area. The methodology allows for optional monitoring of increases in biomass of standing forest through the establishment of permanent plots but make mandatory monitoring emissions from unexpected stock decreases. This is a conservative approach. (II.5) Annual monitoring is required, with lengthening upon verifier's conclusion that risks of emissions within the boundary are low. However, it is not clear exactly what statement of risk would trigger this, or if "low" refers to the VCS's AFOLU Non-Permanence Risk Analysis and Buffer Determination. (III.2.2.4) Emissions from vehicles within the project area are required to be monitored, consistent with their inclusion as a project emission. (III.5.2)
August 09 Review Findings	The updated methodology Version 3 contained a number of changes to the monitoring methodology. In Section III.1.b the depth of burning is still not mentioned, but the list presented was thought to be an adequate summary of what data is required, acknowledging that Section III goes into much more detail about the measurements that are needed. More detail has been provided in Section III regarding how gather measurements relating to peat emissions. Demanding two independent assessments by peat experts when estimates are made adds rigor to the method. The proposed methodology for assessing peat burn depths (p. 74) (i.e. the use of sampling posts located close to the fire front) will be difficult to apply in areas of dense forest that have no or limited human access; there are also health and safety considerations. Alternative methodologies that could be considered, including interferometric analysis of land subsidence using radar data, use of air-borne lidar etc. However, it should be noted that these technologies are still in a developmental stage. Drainage from outside the project boundary is only measured if the project area cannot be proven to be 'hydrologically unique'. However, this is not mentioned in the monitoring section.

	The trigger for switching to lower frequency monitoring has been quantified and is thought to be acceptable. However, there is a concern that a five year monitoring frequency may make degradation hard to interpret if it occurred a number of years ago. In addition, if there was no monitoring on a year that was particularly vulnerable to fire (i.e. an el Niño year) then again, results may be harder to interpret in the future. Vehicular emissions are no longer monitored consistent with their justified exclusion from emissions calculations.		
December 09 Review Findings	Version 5 of the methodology, Section 3, part 2.3 now mandates annual monitoring.		
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	**CAR 16/09** Shell Canada shall include peat in the monitoring plan, such that emissions can be accurately estimated. This CAR was closed by updates made to Version 3 of the methodology as described in the findings above. **CAR 17/09** Shall Canada shall clarify against what criteria a low risk of emissions from the project area would be judged, such that it would trigger less the need for less intensive monitoring. This CAR was closed by updates made to Version 3 of the methodology as described in the findings above. **OBS 03/09** Shell Canada should not constrain the project to any one method of *ex-post* fire depth mensuration, but leave the options open to the project developer. **CAR 20/09** Shall Canada shall ensure the monitoring frequency is sufficient to allow accurate estimation of carbon stock losses. This CAR was closed by updates made to Version 5.1 of the methodology as described in the findings above.		

- The project proponent shall establish and apply quality management procedures to manage data and information, including the assessment of uncertainty, relevant to the project and baseline scenario. (S6.5.4).

April 09 Review Findings	The methodology includes a comprehensive 'Uncertainties and conservative approach' section for baseline and leakage estimation. Here instructions on how to handle uncertainty in expert judgment, allometric equations and combining uncertainties are given. (II.9, III.10) In addition comprehensive quality control and quality assurance procedures to be applied to the monitoring process are given. Much of this information comes

	directly from AR-AM0004, with additional information about aerial imagery being provided, to compliment the new techniques included in this methodology. (II.9, III.10) However, the section lacks any reference to the peat component. Peat will be a significant contributor to the overall emissions reductions, and is calculated using less refined and more estimative techniques than the above-ground component. Some aspects of emissions from peat can be measured in the field (such as depth of peat burning) and others simply estimated, or derived from literature. The failing to document steps to reduce/manage uncertainty and ensure conservativeness in any way in the 'Uncertainties and conservative approach sections' (II.9, III.10), is seen as a serious weakness. For example, there is a requirement to verify allometric equation accuracy using site specific values, yet there is no requirement to ground truth peat depth maps and thus no guidance on how one could do this (II.9.2).		
August 09 Review Findings	In the updated Version 3 of the PDD, Section II.9 contains additional guidance on how to identify the potential sources of uncertainty, quantify and combined them. This was thought to be an improvement on the previous version and to be acceptable. In addition, throughout section III the instructions for data collection are more explicit and will help to reduce uncertainty.		
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	**CAR 18/09** Shell Canada shall document steps to assess and minimize the uncertainty in peat emission estimation that are proportional to the significant uncertainty that are associated with their calculation. This CAR was closed by updates made to Version 3 of the methodology as described in the findings above.		

viii. Data and parameters:

Assessment of whether monitored and not monitored data and parameters used in emissions calculations are appropriate and adequate.

April 09 Review Findings	Overall, the data and parameters are clearly presented and consistent, However; For the Data/Parameter values that start MC throughout the document, sometimes, in the description column it is explicit they deal with only above-ground biomass. However, sometimes, for example, $MC_{nonpeat}$ it is not clear. Section 5.3.1.1, Equation 107, $D_{pce\text{-}b.tr.ik}$ appears twice in the list. (see also page 94, 2.1.1.43, there is potentially a corresponding missing entry here). Section II.6, Equation 61 describes C_{BSL} as "baseline GHG emissions avoided", but this is not consistent with Equation 80 where they are correctly labeled "baseline greenhouse gas emissions".

August 09 Review Findings	In the revised version of the methodology (Version 3) the data and parameters are presented clearly. However, in Equations 92 and 93 the notation used for the deforestation emission factor does not appear to match the text underneath (page 73 and 74). In section III the equations start from number 60, which does not align with the end of section II. The third paragraph in section III.5.2.2.step 1 that begins "If fires are detected" appears to be missing the word "no". On pages 37 and 38, the section headings (starting with 5.3.1.1) are mis-numbered. Section II.5.2.3 provides the calculations for estimating biomass gains due to growth of planted crops/trees after deforestation. There appears to be an inconsistency in the way the units of the $R_{ARB,it}$ parameter is presented. In equation 42 it has the units t C ha^{-1} y^{-1} whilst in equation 40 it has units of t C ha^{-1}. It is therefore unclear how the annual increase in biomass is applied when the monitoring frequency is not annual.		
December 2009 review Findings	The typos and internal inconsistencies in Version 3 have been corrected in version 5.1.		
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	**CAR 19/09** Shell Canada shall address internal inconsistencies and typos. This CAR was closed by updates made to Version 5.1 of the methodology as described in the findings above.		

ix. Adherence to the project-level principles of the VCS Program:

Assessment of whether the methodology adheres to the project-level principles of the VCS Program (see VCS 2007.1, Section 3.1.1), summarised below and the full principals at the top of this checklist).

- The scope of the VCS Program includes:
    - all six Kyoto Protocol greenhouse gases;
    - all technologies supported by an approved VCS Program methodology, including
    - AFOLU project types as set out on www.v-c-s.org; (See also list in AFOLU Methodological Issues) (VCS 2007.1, S3.1.1).

- The scope of the VCS Program excludes:
    - project(s) that can reasonably be assumed to have generated GHG emissions primarily for the purpose of their subsequent reduction, removal or destruction.
    - project(s) that have created another form of environmental credit unless they provide a letter from the program operator that the credit has not been used and has been cancelled from the relevant program(VCS 2007.1, S3.1.1).

- The methodology should be compatible with the VCS Tool for AFOLU methodological issues (II. Step 1, Determine Land Eligibility)

April 09 Review Findings	The methodology was found to be in line with the project-level principals of the VCS program. However, at present, the VCS does not recognize projects/methodologies that account for avoided emissions from avoided peat burning and drainage.		
August 09 Review Findings	At the date of the final report the VCS had not provided the guidelines for the inclusion of peat in VCS projects. As such it is still not possible to provide assurance that future guidelines would be met by this methodology.		
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	*Until the VCSA provides its guidance and requirements on avoided emissions from peat draining and burning this methodology could not be accepted by the VCSA. Upon reaching a positive assessment opinion for all other elements under review, however, the Rainforest Alliance would present to the VCS this assessment report, with our recommendations and conclusions for consideration.*		

x. Special case of previous rejection from other GHG program

- Methodologies rejected by other GHG Programs, due to procedural or eligibility requirements where the GHG Program applied has been approved by the VCS Board; can be considered for VCUs but project proponents in this case shall:
    - document the methodology; and
    - clearly state in its VCS PD all GHG Programs for which the methodology has applied for approval and why the methodology was rejected, such information shall not be deemed commercially sensitive information; and
    - provide the VCS Program verifier with the actual rejection document(s) including explanation(VCS 2007.1, S6.1).

April 09 Review Findings	This methodology has not, to the knowledge of the auditors, been rejected by any other GHG programs.		
August 09 Review Findings	This methodology has not, to the knowledge of the auditors, been rejected by any other GHG programs.		
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS			

Appendix C: RECONCILIATION OF RAINFOREST ALLIANCE'S APPROVAL WITH THE SECOND VALIDATOR'S

Introduction

Rainforest Alliance conducted a first assessment of the methodology element 'COMPONENT A: Baseline and monitoring methodology for conservation projects that avoid planned land use conversion in peat swamp forests' and approved version 5.1 in the assessment report dated 10 January 2010. Bureau Veritas (BV) undertook the second assessment of the methodology. In response this second assessment and public comments, the methodology was updated. Bureau Veritas approved version 6.1 of the methodology in their report dated 25 June 2010.

According to step 4.5.4 of the VCS Program Normative Document: Double Approval Process v1.1 both the first and second validators must issue an assessment statement based on the same version of the methodology element. It was therefore necessary for Rainforest Alliance to undertake a process to update their initial assessment in response to the revisions to the methodology. The process of reconciling the two validators findings is recorded in this document.

This process involved Rainforest Alliance:

a. Reviewing each of the CARs and/or Clarifications of BV, to accept these and agree to them, in principle;
b. Determining if the responses of the methodology developer were logical, complete, and well-defended within the methodology;
c. Assessing that the most recent revision of the methodology meets the criteria and requirements of the VCS, as did that version assessed by Rainforest Alliance previously;
d. Discussion with methodology developer for clarifications and explanations of changes;
e. Discussion with second validator, Bureau Veritas, to coordinate finalization of the Double Approval Process; and,
f. As necessary recommend further clarifications or impose new Corrective Action Requests.

Documents Checked

As part of this process Rainforest Alliance viewed the following documents:

1. The final methodology approved by Bureau Veritas, version 6.1, dated June 25, 2010, sent from Nancy Harris to Jeff Hayward on 6/29/2010.
2. Several tracked changes version of the methodology, to check the progression of revisions, such as:
    a. Version 5.1 03dec09 – The version that Rainforest Alliance initially validated for Shell Energy and wrote the assessment report which was finalized in January 2010.
    b. Version 5.2 30mar10 corrected on 13apr10 – The version that Bureau Veritas validated the first time, but without incorporation of public comments.
    c. Version 6.0 – The version that incorporates the public comments that were required by Bureau Veritas to address after their first validation report was issued.
    d. Version 6.1 – The final methodology validated a second time by Bureau Veritas, after consideration of the revisions made in response to public comments.

3. The 2nd validator report, “BUREAU VERITAS CERTIFICATION - PRELIMINARY REPORT-REPORT BRASIL/00361/2009 V1” dated 25 June 2010. In addition, Rainforest Alliance reviewed the final version of the BVC assessment report, dated 6 August 2010 to check for consistency with issues discussed.
4. Following the initial assessment and the issuance of the Draft Report, Rainforest alliance subsequently reviewed Versions 6.2 and 6.3 that were produced to address the CARs and Observations raised in this report.

The conclusions reached in this report are based on V6.3 of the methodology.

Review of 2nd Validator Report

The BUREAU VERITAS CERTIFICATION - PRELIMINARY REPORT - REPORT BRASIL/00361/2009 V1, 25 June 2010 stated that the methodology developer had responded to all CARs and Clarification Requests. The BV assessment report found that no major changes needed to be made to the methodology. All of the changes requested for correction were deemed to be minor in nature. A summary of the report is presented below:

a. The conclusion of the report is that the methodology should be approved. As stated: “In this second assessment, it is Bureau Veritas Certification’s opinion that the new methodology is technically solid and was correctly and well designed, the clarifications as well as some corrective actions and public comments (see Annex A and Annex B) were solved by the methodology proponent, thus the methodology can be recommended to validation under the VCS 2007.1”.

b. There were a total of 11 CARs. These predominantly related to missing elements of equations, missing elements in parameter tables, missing labels within the methodology.

c. Several comments were made by Carbon Planet and some resulted in changes or adjustments to the methodology and were approved by Bureau Veritas, which were: CAR01-iii, CAR01-ix, CAR01-x, CAR01-xii, CAR02-iv, CAR05-ii, CAR07-v and CAR07-vii. These public comments were sufficiently addressed by the methodology developer and second validator and were reviewed in our reading of the BV report and methodology.

d. Several comments were made by Terra Global Capital and some resulted in changes or adjustments to the methodology and were approved by Bureau Veritas, which were: CAR09 and CAR10. These public comments were sufficiently addressed by the methodology developer and second validator and were reviewed in our reading of the BV report and methodology.

e. The final BVC assessment report was amended after the version 6.3 was submitted to both validators, and concludes approval with the methodology. 1 new CAR had been raised and was subsequently closed by version 6.3.

Evaluation of Changes to Methodology in Response to Second Validator Assessment:

A number of changes were made to the methodology in direct response to the second validator's report. The table below presents Rainforest Alliance's assessment of the changes made to the methodology to address the Corrective Action Requests (CAR) raised:

CAR	BV Description	Winrock Response	RA Check	RA Comments
CAR01	Was not possible to retrieve the footnotes 10, 11, 12 and 13, mentioned in Table B of the methodology.	Have Furukawa and Hadi and Takakai, need to get Christian ref	OK	Citations added, improvement
CAR02	No description found for PVB,it presented in Eq. 8 and 9	Will add this into definitions -- PVB,it = Plot-level volume to be extracted under the baseline scenario in stratum I at time t; m3 ha-1	OK	Description provided in equations. Equation numbers changed.
CAR03	In Eq. 20 MCAG_nontree_sample,it cannot be given in t C ha-1 while MCAG,nontree_sample,sf,it is given in kg d.m. and the ASFP,I is given in m2	Will fix equation to express in units of t C ha-1 rather than kg d.m. m-2	OK.	Units error.
CAR04	In Eq. 69 the LK parameter makes reference to Eq. 63, however Eq. 63 refers to actual net GHG emissions avoided and not leakage	Will change Eq. 63 to Eq. 64 (LK equation)	OK.	Equation number changed.
CAR05	Section II, 5.2: ELUC is parameter of Eq. 73, but this parameter is not present in this equation, but in Eq. 74. Also in 5.2.1.1 of Section III, the meth refers to Cextracted and Cdamaged as being parameters of Eq. 75 while these parameters are presented in Eq. 76.	Will change ref in text from Eq. 73 to Eq. 74. Will change ref in text from Eq. 75 to Eq. 76.	OK.	Equation number changed.
CAR06	In Eq. 81, no description for parameter Hs,tr,ik was given, especially regarding its unit (cm or m) that must be applied in the equation. The absence of reference for this parameter can lead to misunderstanding between this and Htr,ik that is in meters.	Will add this parameter into text - height of stump should be in cm.	OK.	Parameter added.
CAR07	In 5.2.1.3 D drainage for selective logging is wrongly referred to the Eq. 91, and also in 5.2.3 Ddrain is wrongly referred to Eq. 95.	Will change equation reference in text from Eq. 91 to Eq. 92. Will change equation reference in text from Eq. 95 to Eq. 108.	OK.	Reference error.
CAR08	In Section III 5.3, the last paragraph refers to Section II 5.2.1 for "sampling framework", however Section ii 5.2.1 is about "GHG emissions from biomass burning for land clearing" and not about sampling framework. In this same paragraph (Section III 5.3) the methodology refers the "estimation of mean carbon stocks in AG tree biomass" to Section II 5.2.1.1, notwithstanding this item could not be found in the methodology.	Will change Section II 5.2.1 to Section II. The heading "estimation of mean carbon stocks in aboveground tree biomass" is found in Section II 5.1.2.1 and not Section II 5.2.1.1. This will be changed in the text.	OK.	Reference error.
CAR09	In Section II 5.2.1.2 (p 18) is followed by item 5.2.3 (p 28) with no reference to items 5.2, 5.2.1 or 5.2.2.	Section II will be renumbered for consistency.	OK	Very minor typo; sub-section heading number changed further through report in sequence
CAR10	Section III 5.2.2 the "estimation of CO2 and CH4 emission factors" is referred to item 5.3.1.4 of Section II, however the Efs are actually presented in item 5.3.2.4 of section II.	Section will be renumbered for consistency.	OK	Very minor typo.
CAR11	In Section III item 8, the parameter AdefLK and HistHa are wrongly referred to Eq. 110 and 108, respectively, notwithstanding these parameters are presented in equation 113 and 110, respectively.	Will change ref. in text to reflect correct equation numbers.	OK.	Equation number changed.

Rainforest Alliance Findings on Methodology Revisions of Importance Found in V6.1:

In addition to those changes made in direct response to the second validators CARs and public comments, other changes have been made to the methodology. The intention of these appears to be to bring the methodology in line with methodological steps being developed in other methodology elements under development. The sections on leakage and uncertainty were those that had undergone significant change from version 5.1. As the methodology changed, Rainforest Alliance had to assess the quality and consistency against VCS criteria of all the changes that were made. Many of these were improvements, which would in our opinion, benefit the methodology. However, some changes introduced issues that needed to be addressed and therefore new Corrective Action Requests were raised. These are presented in the findings below.

See the report section "Conclusions" below, which describes how the methodology developer responded to new CARs in the draft report and how these CARs were effectively closed.

Leakage

The most significant changes to the methodology were in the treatment of leakage. This is because the methodology now accounts for market effects leakage, in addition to activity shifting leakage, which was covered in earlier versions. Due to these changes, which derive from the ADP REDD methodology modules, which are not yet approved, there were new concerns raised by the methodology, which needed to be addressed before the Rainforest Alliance could recommend approval of the methodology to the VCSA.

Each issue related to leakage is presented in the order that it appears.

1. Class of Agent Clause

Section 7.2 of the methodology states,

> "*Where only a class of agent can be identified, the rate of land conversion from forest to non-forest by this class shall be shown to be the same (plus or minus 10%) or on the same trajectory (plus or minus 10%) as before project implementation.*"

It was understood, after discussion with the Methodology Developer, that this statement is meant to act as a tolerance limit, within which no leakage would be assigned to the project. The intention is for projects only to have responsibility for the leakage that goes beyond the tolerance limits. These explanations were found to be acceptable, however the text requires re-organizing and clarifying to reflect the authors intentions.

CAR 01/10 The Methodology Developer shall revise section 7.2 to explain how the levels of tolerance for changes to past averages/trends in deforestation rates by deforestation agent classes are accounted for.

2. Agents with no deforestation history

The methodology includes the following clause below equation 72,

"Where a specific agent has been identified and there is no history of deforestation within a given stratum and no verifiable plans for controlled lands and future-controlled lands, then WoPR should be set to the planned baseline rate for the project."

It was understood, after a discussion with the Methodology Developer, that this statement is just to provide clarity to projects with no history and no deforestation plans other than the project then the without project rate is simply the project rate. This was found to be a sensible clarification and that the methodology was in fact clear.

3. Using historical averages and extrapolations

In the version of the methodology that Rainforest Alliance initially approved, the approach to determine historical trends of deforestation required a minimum of 5 years and allowed up to a maximum of 10 years. This element has changed and now based only on a 5 year period, removing some of the flexibility of the methodology. The auditors note that extrapolating linearly, or taking an average based on 5 years of data, may not be statistically robust. In the case of linear extrapolations, there is an assumption that past trends indicate future trends. The basis for this assumption should be provided. The choice not to use any data that may exist about future rates and base it entirely on historical amounts should be justified.

OBS 01/10 The Methodology Developer should explain the rationale for using past deforestation rates (averages or trends) for a five-year period as indicators of future rates. This explanation can be presented outside the methodology text and provided in an appendix.

4. Potential risk to projects

In cases where a deforestation agent class is being monitored instead of a sole agent, the methodology does not present clearly how deviations from historical averages or trends are to be attributable to the Project Proponent and also meet the VCS definition of leakage. If the deforestation avoided by a project is small in area relative to the area that the agent or the deforestation agent class deforests annually there appears to be risk that fluctuations in deforestation rates for reasons unrelated and unattributable to the project may lead to large leakage values that are not warranted.

"*Leakage is defined as any increase in greenhouse gas emissions that occurs outside a project's boundary (but within the same country), but is measurable and attributable to the project activities*." (VCS Guidance for AFOLU, p21)

"*Leakage shall be assessed and managed for the three eligible REDD activity types as follows:*
a. In the case of avoiding planned deforestation (APD) leakage shall be controlled and measured directly by monitoring the activities of the project landowner who was originally planning on deforesting the project area (i.e., the baseline deforestation agents). Any leakage identified must be quantified and subtracted from the net carbon benefits claimed by the project." (VCS Guidance for AFOLU, p22)

If there is a lack of clarity provided by the VCS around what to do when the deforestation agent cannot be identified and instead a deforestation class is used, the methodology should explain how this is to be accounted, primarily to present an approach that will bound the extent of

'ownership' for leakage to that which a project can reasonably be considered responsible, or else this will require input from the VCS to resolve.

CAR 02/10 The Methodology Developer shall only deduct activity shifting leakage for emissions that occurs outside a project's boundary (but within the same country), which is attributable to the project.

5. Double Counting Leakage

Market leakage accounts for emissions related to harvesting timber when the project has significantly reduced timber production that would typically occur when clearance involves commercial logging as per the applicability conditions. As market leakage effects are now considered within this methodology it is possible that a project will account for both types of leakage. When activity shifting leakage is detected, then a deduction for the timber harvesting and overall clearance (including drainage) would be made. The potential for double counting of leakage would arise when market leakage and activity shifting leakage are judged to have occurred, as each would make a deduction for timber harvesting.

CAR 03/10 The Methodology Developer shall remove the possibility for double counting of market leakage and activity shifting leakage.

6. 5 year limit to leakage

The methodology only tracks leakage for 5 years;

> *"the difference between the expected area of deforestation under the no leakage scenario and the observed area of deforestation over each of the first five years after project implementation results in the area of leaked deforestation." (p56, 7.2.1)*

The auditors accept that 5 years is a reasonable time period in which to track concessions moving elsewhere through planned deforestation and as a period of time for the land clearance to take place, such that after 5 years the emissions from the removal of the forest cover would not be accounted for. However, the emissions from peat following drainage will persist beyond five years as subsidence and oxidation occur, and must be accounted for.

CAR 04/10 The Methodology Developer shall account for all emissions that occur if a concession is displaced outside of the project zone as leakage.

7. Consistency of units

Within this phase of the assessment, we identified that the use of units in the leakage section could be improved. For example, in equation 75 the right hand side of the equation has (ha y^{-1}) - (ha y^{-1}), whilst on the left hand side, the units are (ha). This appears to be an issue of how true rates, and units of area in a given year, t, are distinguished. The approach used must be logical, mathematically correct and consistent throughout the methodology.

CAR 05/10 The Methodology Developer shall revise units related to time and rates such that they are logical, easily understood and mathematically correct.

Section II Part 9: Uncertainties and Conservative Approach

8. Ex-ante vs. Ex-post

The methodology states,

"*The purpose of the methodology is for calculating ex-ante and ex-post a precision level and any deduction in credits for lack of precision following project implementation and monitoring.*" (p58)

This placement of this language in this particular section of the methodology, which is for calculating uncertainty ex-ante, may be potentially confusing. We note that Section III, part 10 is about ex-post determination.

OBS 02/10 The Methodology Developer should refer accurately to the scope of the different uncertainty sections of the methodology.

9. Leakage Uncertainty

In section II, part 9 the methodology states,

"The methodology assesses uncertainty in baseline estimates and in estimations of with-project sequestration, emissions and leakage." (p58)

This is factually correct, as an overview statement, although the leakage uncertainty is not calculated until section III part 10, which could be somewhat confusing.

OBS 03/10 The Methodology Developer should be clear about when, ex-ante or ex-post, uncertainty calculations for leakage are made.

10. Uncertainty from Default Values

The methodology states,

"It is assumed that the uncertainties associated with the estimates of the various input data are available, either as default values given in IPCC Guidelines (2006), IPCC GPG-LULUCF (2003), expert judgement, or estimates based on sound statistical sampling." (p58)

In our experience the IPCC tends to provide ranges, minimums and maximums rather than uncertainty values directly. Ranges would need interpretation to get data that meets the methodologies definition of uncertainty (equation 77), unless conservative values are taken in which case uncertainty can then assumed to be zero. Section 9.1.3 does discuss how to derive uncertainty data but does not mention how to handle ranges. Examples of how uncertainty is derived from IPCC defaults should be provided. We note that the CDM already has guidance on this matter: http://cdm.unfccc.int/Reference/Guidclarif/ar/methAR_guid26.pdf

OBS 04/10 The Methodology Developer should provide full guidance on how uncertainty data is to be gathered from literature sources.

11. Uncertainty in Deforestation Rate

With respect to determining the area deforested every year, the methodology states,

"*The annual area of forest conversion to the proposed land use type* $A_{B,it}^{cleared}$ *(and* $A_{B,it}^{logged}$ *if applicable) must be estimated. Where a valid verifiable plan exists for rate at which deforestation and/or logging is projected to occur, then this rate shall be used. If no verifiable plan exists, the rate shall be established by examining proxy areas." (p21)*

In section 9.2.1 (Uncertainty in baseline estimates) the methodology states,

"Where rates are based on actual deforestation plans, as for instances of planned deforestation, assume

$Uncertainty_{BSL\_RATE} = 0$*" (p59)*

However, the methodology provides no instructions on how the uncertainty in the deforestation rate is to be calculated in cases where the second option from p21 (when no verifiable plan exists) is chosen.

CAR 06/10 The Methodology Developer shall provide the methodological steps for calculating the uncertainty associated with the deforestation rate where actual plans were not used.

12. Total uncertainty in baseline scenario and parameters to assess

The outcome of section 9, in equation 80 is a parameter called, "*Total uncertainty in baseline scenario*". This parameter could we worded more specifically, since this percentage value is of a specific parameter. The same point applies to, "$Uncertainty_{P,i}$" in equation 119 (p101). Likewise there are a finite number of parameters that need to have their uncertainty assessed. It would be beneficial to have these listed for project proponents. This will aid implementation and auditing of projects using the methodology.

OBS 05/10 The Methodology Developer should make clear exactly which parameters the uncertainty is being calculated for and which parameters must have their uncertainty assessed.

13. Equation 80 and 120

Equation 80 and 120 could not be understood by the auditors. It is not understood how squaring and then summing strata specific uncertainties would lead to the uncertainty for the project area. In addition, the parameters beneath equation 120 do not match those found in the equation

CAR 07/10 The Methodology Developer shall present a mathematically correct equation for summing the uncertainties with strata with the appropriate parameters listed beneath.

14. Monitoring Deforestation and Degradation

In this methodology the tracking of deforestation AND degradation is mandatory, yet in section III part 10, the language is not as prescriptive (see quote below). In addition, it is not clear what "an accuracy assessment criterion of 80% or more" is in relation to the monitoring activities that are described in the methodology. How is this calculated? Why is a limit of 80% set?

"The area of deforestation or degradation in the with-project scenario should be tracked directly using an accuracy assessment criterion of 80% or more" (p101)

CAR 08/10 The Methodology Developer shall be consistent and clear with requirements around the accuracy required in monitoring.

15. Implications for Project Accounting

In section 10.3, 'Implications for Project Accounting' uncertainty is allowed if within the bounds of 10%. This does not link to any VCS guidance. The cut off appears arbitrary, since projects with 9.9% uncertainty received no uncertainty deduction, whilst those with 10.1%, have a 10.1% deduction. The VCS has materiality thresholds of 1% for mega projects and 5% for all others.

CAR 09/10 The Methodology Developer shall justify any tolerance limits allowed for uncertainty.

16. Lack of Parameter for 'modified' $C_{REDD,t}$

In section 10.3, 'Implications for project accounting', equation 122 is to "modify" the parameter $C_{REDD,t}$. It is not clear to the auditors, why a new parameter that represents the emissions reductions corrected for uncertainty is not provided. Equation 122 is the only equation we found that does not have any value on the left hand side. This is potentially confusing and mathematically incorrect.

CAR 10/10 The Methodology Developer shall use equations to deduct the uncertainty from $C_{REDD,t}$ in a way that is consistent with the rest of the methodology and is mathematically correct.

17. Peat Uncertainty

In this methodology the biggest uncertainty originates from the peat pool, and assessing uncertainty in this pool will differ from the other above-ground pools and sources that have been more widely studied. As such, specific guidance on how uncertainty is to be assessed for peat parameters should be provided.

CAR 11/10 The Methodology Developer shall provide specific guidance on how uncertainties relating to emissions from the peat pool must be quantified.

Minor Methodology Revisions Noted and Commented Upon*

Outside of the sections that dealt with leakage and uncertainty, there were other minor revisions that are assessed below:

1. Improvements:

In the current version explanation of the monitoring methodology, it is made clearer that the baseline is re-assessed/revised every 10 years (page 7).

Revisions of table B was made to state whether sources of GHG emissions were included or excluded (page 8).

Section 2.3, 'Procedure for selection of most plausible baseline scenario', provided an 'explanation/justification' to help where the methodology was deemed not 'self-explanatory'. There were seven pages of new text, from p. 12 to 19, describing the steps to select the most plausible baseline scenario and also demonstrate the additionality of the project. This was additional explanatory guidance to the methodology user, as the earlier version did not have this guidance and was only referring to an A/R tool alone, without consideration for REDD.

Equation 12, page 24, has been improved as it includes the parameter Carbon Fraction for the BEF equation.

The term "plantation" was removed in several places throughout the methodology, which makes it more flexible for a broader range of post-deforestation land uses.

The methodology introduced clarification to be more transparent about the biomass removed from harvest (page 40).

2. Areas for Improvement:

In several sections (i.e., page 12), the methodology explains that the text incorporates draft versions of REDD modules, referring in brackets that these are not yet approved and therefore the drafts are changing. This methodology should be clear that while the source may be the REDD modules, the current methodology is evaluated and published on its own contents. We question why this explanatory language regarding the modules is in the main passages of the methodology, instead of in footnotes?

OBS 06/10 The Methodology Developer should remove ambiguous references to ADP REDD modules from the main body of the text, relegating them to footnotes, or the introductory section on the sources of the methodology.

The methodology states that "the data shall be geo-referenced, and preferably provided in digital format. We note that the VCS asks for this data to be provided in KML format (page 8).

OBS 07/10 The Methodology Developer should replace the optional language around digital spatial data provision with language that reflects the VCS requirements for project registration, namely KML shape file data.

We make note that VCS has an approved baseline selection and additionality test tool VT0001 and it is possible that the ADP module may adopt its use, thus any text that references the ADP modules should envision such changes.

OBS 08/10 The Methodology Developer should reference the use of approved tools.

The methodology makes reference to VCS guidance that is out of date. In step 0, page 13, the first bullet point is out of date since this was updated by the VCS program update 21 Jan 2010.

OBS 09/10 The Methodology Developer should update the date before which projects must be validated in line with VCS program update 21 Jan 2010.

*Additional notes and observations may be added prior to finalization of the report.

3. Additional Changes Made in V6.3

In addition to the changes explained below to address the CARs and OBS made, the Methodology Developers made the following improvements which were found to be acceptable:

1. CF has been removed from Equation 8 on page 23 (and the associated parameter list on page 24)
2. Units for biomass have been changed from t ha^{-1} to t d.m. ha^{-1} on pages 22, 24, 28 and 58
3. $C_{B,it}$ has been added to the parameter list for Equation 87 on page 66
4. "class of agent" text has been removed from parameter tables for $HistHa_i$ on page 75 and $A_{defLK,it}$ on page 76
5. In the HistHai parameter table on page 75, the time period has been changed from 5 years to 5-10 years

Conclusions on Conformance of the Final Methodology:

The assessment team found that Version 6.1 of the methodology had introduced changes of significance that present some new issues related to VCS criteria, particularly due to the inclusion of market leakage and elements treating uncertainty. This assessment raised new Corrective Action Requests. Version 6.3 contains changes that address the corrective action requests and observations raised.

Based on an evaluation of the new methodology, v6.3, as related to the defined assessment scope and criteria, which assessed the credibility of all data, rationale, assumptions, justifications and documentation provided by the methodology proponent; the Rainforest Alliance assessment team finds that the methodology developer has:

☒ Demonstrated unqualified compliance/conformance with the standard.

☐ Not demonstrated unqualified compliance/conformance with the standard.

Corrective Action Requests

Note: A non-conformance is defined in this report as a deficiency, discrepancy or misrepresentation that in all probability materially affects the methodology. CAR language uses "shall" to suggest its necessity and tries not to be prescriptive in terms of mechanisms to mitigate the CAR. Corrective action requests (CARs) identified during draft assessment reports must be successfully closed by the proponents before Rainforest Alliance issues a positive assessment decision.

CAR#:	**CAR 01/10**
Checklist reference:	Uncertainty
CAR description:	The Methodology Developer shall revise section 7.2 to explain how the levels of tolerance for changes to past averages/trends in deforestation rates by deforestation agent classes are accounted for.
Timeline for conformance:	Prior to Approval
Evidence to close CAR:	The methodology now requires the project to have a "A valid verifiable plan by the agent of deforestation must exists for estimating the rate at which deforestation and/or logging is projected to occur" (p27) This removes the option to estimate rates based on proxy area data.
CAR Status:	**CLOSED**

CAR#:	**CAR 02/10**
Checklist reference:	Leakage
CAR description:	The Methodology Developer shall only deduct activity shifting leakage for emissions that occurs outside a project's boundary (but within the same country), which is attributable to the project.

Timeline for conformance:	Prior to Approval
Evidence to close CAR:	The methodology no longer allows for fluctuations within a class of deforestation agents to be attributed as leakage to the project, thus the issue has been removed.
CAR Status:	**CLOSED**

CAR#:	**CAR 03/10**
Checklist reference:	Leakage
CAR description:	The Methodology Developer shall remove the possibility for double counting of market leakage and activity shifting leakage.
Timeline for conformance:	Prior to Approval
Evidence to close CAR:	The methodology now contains a new approach to activity shifting leakage in section 7.2 The principals of the new approach are as follows: Leakage must account for the initial emissions related to forest clearance and peat burning, and then ongoing emissions from peat subsidence or mineral soil changes. Activity shifting leakage can be detected by looking for deviations from historical trends/averages of the project proponent's clearance. The VCS approach to leakage assumes that if timber supply is significantly reduced by the project then there is 40% market leakage of the emissions associated with timber harvesting, and thus if activity shifting leakage is less than 40% of the normal area cleared then timber related emissions do not need to be counted as leakage, but other emissions sources (related to complete clearance and soil/peat changes) must be. These principals were found to be acceptable. The equations related to these principals are complex, but were found to be correct.
CAR Status:	**CLOSED**

CAR#:	**CAR 04/10**
Checklist reference:	Leakage
CAR description:	The Methodology Developer shall account for all emissions that occur if a concession is displaced outside of the project zone as leakage.
Timeline for conformance:	Prior to Approval
Evidence to close CAR:	See CAR 03/10, ongoing peat and mineral soil emissions are accounted for (see equation 70).
CAR Status:	**CLOSED**

CAR#:	**CAR 05/10**
Checklist reference:	Leakage
CAR description:	The Methodology Developer shall revise units related to time and rates such that they are logical, easily understood and mathematically correct.
Timeline for conformance:	Prior to Approval
Evidence to close CAR:	The revised PDD has changed the units of the parameters in equations 73 and 74 on pages 55 and 56 respectively to better reflect that the deforestation is an amount and not a rate. The uncertainty calculations were also changed to be annual.
CAR Status:	**CLOSED**

CAR#:	**CAR 06/10**
Checklist reference:	Uncertainty
CAR description:	The Methodology Developer shall provide the methodological steps for calculating the uncertainty associated with the deforestation rate where actual plans were not used.
Timeline for conformance:	Prior to Approval
Evidence to close CAR:	See response to CAR 01/10. This CAR is no longer relevant.
CAR Status:	**CLOSED**

CAR#:	**CAR 07/10**
Checklist reference:	Uncertainty
CAR description:	The Methodology Developer shall present a mathematically correct equation for summing the uncertainties with strata with the appropriate parameters listed beneath.
Timeline for conformance:	Prior to Approval
Evidence to close CAR:	The equations that were previously erroneous have now become equations 87 and 128. The equations are now mathematically correct.
CAR Status:	**CLOSED**

CAR#:	**CAR 08/10**
Checklist reference:	Uncertainty
CAR description:	The Methodology Developer shall be consistent and clear with requirements around the accuracy required in monitoring.
Timeline for	Prior to Approval

conformance:	
Evidence to close CAR:	The requirements around tha accuracy of land cover monitoring has been removed from the uncertainty section and added to the monitoring section. The developer demonstrated to the auditors how the uncertainty related to land cover assessment would feed into the methodologies uncertainty calculations.
CAR Status:	**CLOSED**

CAR#:	**CAR 09/10**
Checklist reference:	Uncertainty
CAR description:	The Methodology Developer shall justify any tolerance limits allowed for uncertainty.
Timeline for conformance:	Prior to Approval
Evidence to close CAR:	The methodology revised the approach to allow no deductions with uncertainty up to 10%, but for uncertainty greater than 10% a deduction equal to the number of percentage points above the 10% threshold must be deducted. See equation 131. The VCS provides no guidance on how uncertainties, once calculated must be treated. On page 28 of the VCS Guidance for AFOLU Projects it is stated, "The IPCC 2006 Guidelines shall be used for estimating: CO_2 and non-CO_2 emissions…. These Guidelines shall also be followed in terms of quality assurance/control and uncertainty analysis." Volume 1 (General Guidance and Reporting), Chapter 3 of the 2006 IPCC guidelines is specifically on uncertainties[5] and the chapters in the various chapters in Volume 4 (AFOLU) contain specific information about how uncertainty can be managed for each carbon pool. However the purpose of uncertainty analysis for national GHG accounting (the purpose of the IPCC guide) is to, "Identifying significant sources of uncertainty in the inventory to help prioritise data collection and efforts to improve the inventory." (IPCC 2006, V1, C3, p6). Hence there is no guidance about making deductions to estimates based on uncertainty. The auditors agreed with the developers, that if it was considered acceptable to discount 10% uncertainty, then it was acceptable to keep the discount for projects with over 10% uncertainty.
CAR Status:	**CLOSED**

CAR#:	**CAR 10/10**
Checklist reference:	Parameters

[5] http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/1_Volume1/V1_3_Ch3_Uncertainties.pdf

CAR description:	The Methodology Developer shall use equations to deduct the uncertainty from $C_{REDD,t}$ in a way that is consistent with the rest of the methodology and is mathematically correct.
Timeline for conformance:	Prior to Approval
Evidence to close CAR:	The methodology has been corrected in equation 131 and 126, and via the introduction of a new parameter for the adjusted value.
CAR Status:	**CLOSED**

CAR#:	**CAR 11/10**
Checklist reference:	Uncertainty
CAR description:	The Methodology Developer shall provide specific guidance on how uncertainties relating to emissions from the peat pool must be quantified.
Timeline for conformance:	Prior to Approval
Evidence to close CAR:	The methodology now provides figures that show which parameters need to have their uncertainty assessed. These include the peat related parameters.
CAR Status:	**CLOSED**

Observations

Note: Observations are issued for areas that the auditor sees the potential for improvement in implementing standard requirements or in the quality system; observations may lead to direct non-conformances if not addressed.

OBS 01/10 The Methodology Developer should explain the rationale for using past deforestation rates (averages or trends) for a five-year period as indicators of future rates. This explanation can be presented outside the methodology text and provided in an appendix.

OBS 02/10 The Methodology Developer should refer accurately to the scope of the different uncertainty sections of the methodology.

OBS 03/10 The Methodology Developer should be clear about when, ex-ante or ex-post, uncertainty calculations for leakage are made.

OBS 04/10 The Methodology Developer should provide full guidance on how uncertainty data is to be gathered from literature sources.

OBS 05/10 The Methodology Developer should make clear exactly which parameters the uncertainty is being calculated for and which parameters must have their uncertainty assessed.

OBS 06/10 The Methodology Developer should remove ambiguous references to ADP REDD modules from the main body of the text, relegating them to footnotes, or the introductory section on the sources of the methodology.

OBS 07/10 The Methodology Developer should replace the optional language around digital spatial data provision with language that reflects the VCS requirements for project registration, namely KML shape file data.

OBS 08/10 The Methodology Developer should reference the use of approved tools.

OBS 09/10 The Methodology Developer should update the date before which projects must be validated in line with VCS program update 21 Jan 2010.

In version 6.3 of the methodology, all observations had been addressed.

- END OF REPORT -