

VCS PROJECT VALIDATION - KARIBA REDD+ PROJECT VALIDATION REPORT



Project/Report Number (ID): VO11070.01val

Project Title	Kariba REDD+ Project
Version	Report Version 01
Report ID	VO11070.01val

Report Title	VCS Project Validation - Kariba REDD+ Project Validation Report
Client	Carbon Green Investments (Guernsey) 18-20 Le Pollet Street, St. Peter Port, Guernsey, UK, GY1 1WH
Pages	144
Date of Issue	29 September 2012
Prepared By	Environmental Services, Inc. – Forestry, Carbon, and GHG Services Division
Contact	Corporate Office :7220 Financial Way, Suite 100, Jacksonville, Florida 32256 – USA Phone: 904-470-2200 Fax: 904-470-2112 www.esicarbon.com
Approved By	Shawn McMahon – Lead Validator, and Janice McMahon – Regional Technical Manager
Work Carried Out By	Shawn McMahon – Lead Validator; Validation Team - Caitlin Sellers, Richard Scharf, Steve Ruddell (VCS AFOLU REDD Expert), and Janice McMahon (QA/QC)

Summary:

Environmental Services, Inc., (ESI) was contracted by Carbon Green Investments (CGI) on 12 January 2012 to conduct the project validation of the *Kariba REDD+ Project*.

According to the Project Document (PD), the *Kariba REDD+ Project* will generate approximately **51,925,950** carbon credits from reduced emissions associated with deforestation. The reduction in deforestation “will be achieved through a series of activities that are designed to significantly improve the livelihoods of locals, such as improved agriculture, beekeeping, fuelwood plantations and fire management. In addition, a significant share (20% of net profit) of the project’s carbon income will be invested in general activities that promote and guarantee project sustainability. The project’s Community and Project Sustainability Fund is structured to benefit whole communities, specifically the poorest members of society. The fund will be used to improve health and education in the project area with its long-term activities.”¹

The project start date is 01 July 2011, and the project crediting period is 30 years (through 30 June 2040). The *Kariba REDD+ Project* “will lead to the protection of both unlogged forest and previously logged forest that has the regenerative capacity to reach a mature, ‘old growth’ state.”² The project activities designed to provide financial benefits to the community are expected to be sustained far beyond the 30-year crediting period.

The validation objective included an assessment of compliance with the Verified Carbon Standard (VCS) Version 3 (an all associated updates), and the likelihood that implementation of the planned greenhouse gas (GHG) project will result in the GHG emission removal enhancements as stated by the project developer (ISO 14064-3:2006). This validation assessed the GHG emission removals through an Agriculture, Forestry and Other Land Use (AFOLU) project, specifically: a Reduced Emissions from Deforestation and Degradation (REDD+), Avoided Unplanned Deforestation and/or Degradation (AUDD) project.

The scope of the validation included: the GHG project and baseline scenarios; physical infrastructure, activities, technologies and processes of the GHG project; GHG sources, sinks, and/or reservoirs; types of GHG’s ; and implementation periods covered. The geographic validation scope was defined by the project boundary, which includes the carbon reservoir types, management activities, growth and yield models, inventory program, and contract periods. The project is located in Northwestern Zimbabwe, in the jurisdiction of four Rural District Councils (RDCs) located in the provinces of Matabeleland North, Midlands, Mashonaland West and Mashonaland Central and totals 784,987 hectares

The validation criteria followed the guidance documents provided by VCS and included the following: VCS Program Guide (01 Feb 2012, v3.3), VCS Standard (01 Feb 2012, v3.2), Program Definitions (01 Feb 2012, v3.3), AFOLU Requirements (01 Feb 2012, v3.2), AFOLU Non-Permanence Risk Tool (01 Feb 2012, v3.1), and the VCS Methodology VM0009 v1.1.

A summary of all findings is included in Appendix A. There are no restrictions of uncertainty.

ESI confirms all validation activities, including: objectives, scope and criteria, level of assurance and the PD’s adherence to the selected methodology and the VCS Version 3 as documented in this report are complete. ESI concludes without any qualifications or limiting conditions that *the Kariba REDD+ Project* dated 29 September 2012 meets the requirements of VCS Version 3.

¹ South Pole Carbon Asset Management Ltd., *Kariba REDD+ Project*, Version 5.0, 19 September 2012, Page 4.

² *ibid*

Table of Contents

1	Introduction	4
1.1	Objective	4
1.2	Scope and Criteria	4
1.3	Level of assurance	4
1.4	Summary Description of the Project	5
2	Validation Process	5
2.1	Method and Criteria.....	5
2.2	Document Review	6
2.3	Interviews	6
2.4	Site Inspections	7
2.5	Resolution of Any Material Discrepancy	7
3	Validation Findings.....	7
3.1	Project Design	7
3.1.1	Project Proponent and Other Entities	8
3.1.2	Project Start Date	9
3.1.3	Project Crediting Period	10
3.1.4	Project scale and estimated GHG emission reductions or removals	10
3.1.5	Project Activities	11
3.1.6	Project Location.....	15
3.1.7	Project compliance with applicable laws, statutes and other regulatory frameworks	16
3.1.8	Ownership and other programs.....	16
3.1.9	Additional information relevant to the project.....	17
3.2	Application of Methodology	18
3.2.1	Title and Reference	18
3.2.2	Applicability	18
3.2.3	Project Boundary	21
3.2.4	Baseline Scenario	23
3.2.5	Additionality	25
3.2.6	Quantification of GHG Emission Reductions and Removals	25
3.2.7	Methodology Deviations	28
3.2.8	Monitoring Plan	28
3.3	Environmental Impact	29
3.4	Comments by stakeholders.....	30
4	Validation conclusion	30
5	Appendix A.....	32
6	Appendix B.....	142

1 INTRODUCTION

1.1 Objective

The validation objective for this project included an assessment of compliance with VCS Version 3, the selected methodology, and the likelihood that implementation of the planned GHG project would result in the GHG emission removal enhancements as stated by the project developer (ISO 14064-3:2006). This validation assessed the GHG emission removals through an AFOLU project – specifically, a REDD+ project.

1.2 Scope and Criteria

The scope of the validation included: the GHG project and baseline scenarios; physical infrastructure, activities, technologies and processes of the GHG project; GHG sources, sinks, and/or reservoirs; types of GHG's; time periods covered. The geographic validation scope was defined by the project boundary, which includes the carbon reservoir types, management activities, growth and yield models, inventory program, and contract periods. The scope of the *Kariba REDD+ Project* was outlined by the project developer prior to the validation initiation and is re-defined as follows:

Baseline Scenario	Conversion of forestland to cropland/grazing for small-scale subsistence farming, logging of timber for domestic use, fuelwood collection, poaching, forest fires, and traditional beekeeping.
Activities/Technologies/Processes	REDD + (REDD/AUDD, improved socioeconomics and improved agriculture)
Sources/Sinks/Reservoirs	Above and below-ground biomass, soil carbon, long-lived wood products, and standing deadwood
GHG Type	CO ₂
Time Period	Crediting Period: 30 years, beginning on 01 July 2011 and ending on 30 June 2040
Project Boundary	Northwestern Zimbabwe, in the jurisdiction of four Rural District Councils (RDCs) located in the provinces of Matabeleland North, Midlands, Mashonaland West and Mashonaland Central. The RDC project areas are: Binga = 157,652.50 ha Nyaminyami = 226,341.46 ha Hurungwe = 131,480.28 ha Mbire = 269,513.10 ha Total Project area = approximately 784,987 ha.

1.3 Level of assurance

The level of assurance was used to determine the depth of detail that the validator placed in the Validation Sampling Plan to determine if there are any errors, omissions, or misrepresentations (ISO 14064-3:2006). ESI assessed the project (general principles, data, sampling descriptions, documentation, calculations, etc.) to provide *reasonable assurance* to meet the Project Level requirements of the VCS Program. The evidence used to achieve a *reasonable* level of assurance is specified in the following sections.

1.4 Summary Description of the Project

“The *Kariba REDD+ Project* is located in northwestern Zimbabwe, partly along the southern shore of Lake Kariba, the largest artificial lake in the world by volume. The project area of 784,987 hectares of forest (consisting of woodland and open woodland) spans four provinces: Matabeleland North, Midlands, Mashonaland West and Mashonaland Central. The project is administered by four Rural District Councils (RDCs): Binga, Nyaminyami, Hurungwe and Mbire.

“The project is community-based and consists of implementation of activities in conjunction with the local population.”³ The project is utilizing VCS Methodology VM0009: Methodology for Avoided Mosaic Deforestation of Tropical Forests (v1.1) and is expected to generate more than 50 million GHG emission reductions [in above- and below-ground living tree and non-tree biomass, standing deadwood, and Soil Organic Carbon (SOC)] during its lifetime.

The reduction in deforestation “will be achieved through a series of activities that are designed to significantly improve the livelihoods of locals, such as improved agriculture, beekeeping, fuelwood plantations and fire management. In addition, a significant share (20% of net profit) of the project’s carbon income will be invested in general activities that promote and guarantee project sustainability. The project’s Community and Project Sustainability Fund is structured to benefit whole communities, specifically the poorest members of society. The fund will be used to improve health and education in the project area with its long-term activities.

“The project area lies within the Zambezian biome of the Zambezi basin. The major ecosystem includes Mopane and Miombo woodland. The project area is an important wildlife area, showing significant populations of African elephants, lions, impalas, hippos, buffalo, leopard and crocodiles, along with a wide variety of birds, including the IUCN red list vulnerable species Southern Ground Hornbill, Lappet-faced Vulture, and White-headed Vulture.”⁴

“In the past, the natural resources of the project areas supported significant populations of wildlife, including elephants, which, in turn, supported a variety of tourism and safari activities. However, the economic and political crises over the past decade led to a decrease in tourism. Poaching also escalated in the project area. As a result, wildlife populations have been severely reduced.

There is no significant income to offset the cost of the activities to mitigate deforestation without carbon revenues. In the absence of active protection that creates sustainable economic alternatives for communities, the land in the project area will be cleared for non-sustainable alternative land-use scenarios.”⁵

The validator confirmed that the project start date is 01 July 2011, and the project crediting period is 30 years (through 30 June 2040). Although, the project activities designed to provide financial benefits to the community are expected to be sustained far beyond the 30-year crediting period.

2 VALIDATION PROCESS

2.1 Method and Criteria

Our Validation process closely follows the *VCS Standard*; *VCS Program Guide*; *Agriculture, Forestry and Other Land Use (AFOLU) Requirements*; ISO14064-3 and ISO 14065, and ESI’s Management System and Management System Manual (v12), Section V.2. For this validation,

³ South Pole Carbon Asset Management Ltd., op.cit., p. 4

⁴ *ibid*

⁵ *ibid*

the sample size for the desktop portion of the validation included a complete review of the PD and supporting documents.

The field validation included both an onsite and aerial review of the project and reference region (please refer to Section 2.4 of this report below for additional information). These areas were visited and observed to allow a review of a sufficient sample to meet a reasonable level of assurance, as directed by the professional judgment of the Lead Validator. Additionally, the validator randomly observed forested and non-forested areas for consistency with the results of the cumulative deforestation model.

The validation criteria followed ISO 14064-3 and the guidance documents provided by VCS and included the following: VCS Program Guide (01 Feb 2012, v3.3), VCS Standard (01 Feb 2012, v3.2), Program Definitions (01 Feb 2012, v3.3), AFOLU Requirements (01 Feb 2012, v3.2), AFOLU Non-Permanence Risk Tool (01 Feb 2012, v3.1), and the VCS Methodology VM0009 v1.1.

2.2 Document Review

A detailed review of all project documentation was conducted to ensure consistency with, and identify any deviation from VCS program requirements (VCS, Version 3 and associated updates), and the VCS methodology VM0009 v1.1. Initial review focused on the PD and included an examination of the project details, data and parameters, quantification of GHG emission reductions and removals, and supporting documents.

Please see Appendix B for a complete list of documents and files provided by the client and reviewed by ESI during validation, including any items associated with the risk analysis.

2.3 Interviews

The onsite validation site visit occurred between 27 April and 02 May 2012. Onsite interviews and informal discussions were conducted with project staff and members and leaders of the community. During most interviews, the underlying negative comment received was that the community members wanted the project activities to begin sooner, demonstrating their eagerness and willingness to participate in the project and share in the economic benefits. No other negative comments were received, and information provided in the PD was supported. Meetings included discussions with:

- Members of Carbon Green Investments (27 April – 02 May 2012)
- Member of South Pole Carbon Asset Management Ltd. (27 April – 02 May 2012)
- Member of Black Crystal Consulting (27 April – 02 May 2012)
- Gokwe Council and Community Members at Community Center (27 April 2012)
- Mbire District Council Chairman of Ward 4 (28 April 2012)
- Mbire Council Game Scout (28 April 2012)
- Hurungwe Liaison Officer (30 April 2012)
- Hurungwe Council and Community Representative (30 April 2012)
- Hurungwe Natural Resources Officer (30 April 2012)
- Nyaminyami Council Game Scout (01 May 2012)
- Binga Community and Council Members (01 May 2012)

The interviews confirmed with reasonable assurance that no community members will negatively affected by the project and that the community members were eagerly anticipating participation in project activities.

2.4 Site Inspections

The validation site inspection conducted during 27 April to 02 May 2012 included onsite visits to the Gokwe Reference Area and each RDC jurisdiction (Binga, Nyaminyami, Hurungwe, and Mbire). In addition, over the span of 5 days a series of aerial flyovers in a fixed-wing aircraft were undertaken bisecting the major project areas with the goal of viewing the majority of project and reference lands from the plane. Because the project had not yet undertaken monitoring activities, the validators did not resample field inventory plots. However, the validators requested that the project team demonstrate the inventory methodology on one sample plot. The demonstration indicated that the inventory was sound and able to be replicated by the field teams.

The validators completed ground-truthing of the project strata to compare to PD descriptions, in addition to aerial correlation while in the air. The points taken were selected to allow a review of a sufficient sample to provide the necessary sample size to meet a reasonable level of assurance, as directed by the professional judgment of the Lead Validator.

During the field review of the project, the following aspects of the project were assessed:

- pre-project/baseline conditions, as evidenced by current condition of the project/reference areas (as the effects/benefits of the project have not been fully implemented in the project areas), and evidence of the on-going activities that lead to deforestation
- current project conditions, including reported tree species and forest cover types, reported growth characteristics (diameter, or similar), and implementation of inventory plan/monitoring prior to monitoring being fully completed
- forested and non-forested areas for consistency with the results of the cumulative deforestation model.

2.5 Resolution of Any Material Discrepancy

During the validation process, there was a risk that potential errors, omissions, and misrepresentations would be found. The actions taken when errors, omissions, and misrepresentations were found included: notifying the client of the issue(s) identified, and expanding our review to the extent that satisfied the Lead Validator's professional judgment.

During the course of the validation, two-hundred and nine (209) Non-Conformity Reports (NCRs) and/clarifications (CLs) were identified. All NCRs/CLs were satisfactorily addressed. The NCRs/CLs provided necessary clarity to ensure the project was in compliance with the requirements of the VCS Standard (v3.2) for GHG projects. For a complete list of all NCRs/CLs and their resolutions, please refer to Appendix A.

3 VALIDATION FINDINGS

3.1 Project Design

The scope of the *Kariba REDD+ Project* was outlined in Section 1.2 of this report. This project is seeking registration under VCS Version 3 as a REDD+ project and has been developed in compliance with the AFOLU Requirements (01 Feb 2012, v3.2). Additionally, the project is in compliance with the VCS Methodology VM0009 v1.1.

3.1.1 *Project Proponent and Other Entities*

Project Proponent	Point of contact	Roles/ Responsibility	Contact Details
CGI (Guernsey)	Robert Hume	Financing and implementation	18-20 Le Pollet Street St. Peter Port Guernsey UK, GY1 1WH

In addition to the project proponents, there are other individuals and organizations that will play an operative role in the project. These parties are presented below:

Other Entities	Point of contact	Roles/ Responsibility	Contact Details
South Pole Carbon Asset Management (South Pole)	Yougha von Laer	South Pole elaborates and oversees the development of appropriate project design and monitoring techniques in line with the guidelines of the VCS and CCBS. South Pole is a globally active carbon project developer and consultant with a long and successful track record working on forestry-based carbon projects.	Technoparkstrasse 1 8005 Zurich Switzerland Phone: +41 43 501 35 50 Fax: +41 43 501 35 99 www.southpolecarbon.com
Environment Africa (EA)	N/A	EA implements activities that protect forested wilderness areas. EA is an NGO working in Southern Africa, which contributes its expertise and experience to the community engagement side of the project	www.environmentafrica.org
Black Crystal Consulting (Black Crystal)	Susan Childes	Black Crystal supports the biodiversity component of the project and is involved in the on-the-ground assessment of carbon stocks. It is a Zimbabwean environmental consultancy agency with a long track	http://blackcrystal.co.zw/
Environmental Services, Inc. (ESI)	Shawn McMahon	Lead Validator	Environmental Services, Inc. 3800 Clermont St., NW North Lawrence, OH 44666 United States of America Phone: +1-330-833-9941

3.1.2 Project Start Date

The project start date is 01 July 2011 – the approximate date on which the implementation of the management structure and activities addressing the deforestation drivers (protection plans) and the associated investments were initiated.

As stated in the PD⁶, “these investments refer to research, fieldwork and capacities provided by Black Crystal and EA, as well as further management and protection work such as reporting, communication, capacity building and control activities. In addition, all bilateral agreements for the verified emission reductions between CGI and the RDCs were signed, before the project start date, in March 2011 (for Binga, Hurungwe, Mbire and Nyaminyami).”

The validator confirmed the signing of the bilateral agreements occurred in March of 2011, but the project start date more closely correlated with when the financial investments were undertaken, as well as when available (cloud-free) aerial imagery was available to support the modeling. The validator believed the later start date was a conservative assertion, in accordance with the principles of VCS.

3.1.3 Project Crediting Period

The project crediting period for this project is 30 years, beginning on 01 July 2011 and ending on 30 June 2040.

3.1.4 Project scale and estimated GHG emission reductions or removals

Project	No
Mega-project	Yes

Estimated GHG emission reductions for the *Kariba REDD+ Project* are listed below:

Years	Estimated GHG emission reductions or removals (tCO₂e)
Year 2011	139,077
Year 2012	630,746
Year 2013	1,096,006
Year 2014	1,618,495
Year 2015	2,168,306
Year 2016	2,717,741
Year 2017	3,242,148
Year 2018	3,255,707
Year 2019	3,218,160
Year 2020	3,137,072
Year 2021	3,020,413

⁶ South Pole Carbon Asset Management Ltd., op.cit., p. 6

Year 2022	2,876,144
Year 2023	2,711,850
Year 2024	2,534,448
Year 2025	2,349,998
Year 2026	2,163,607
Year 2027	1,979,416
Year 2028	1,800,649
Year 2029	1,629,697
Year 2030	1,468,231
Year 2031	1,317,313
Year 2032	1,177,511
Year 2033	1,049,004
Year 2034	931,667
Year 2035	825,159
Year 2036	728,978
Year 2037	642,520
Year 2038	565,118
Year 2039	496,076
Year 2040	434,692
Total Estimated ERs	51,925,950
Total Number of Crediting Years	30
Average Annual Emissions Reductions	1,730,865

3.1.5 Project Activities

The validation affirmed the following project activity assertions of the PD. “This project will lead to the protection of both unlogged forest and previously logged forest that has the regenerative capacity to reach a mature, ‘old growth’ state.”⁷

The project provided supporting documentation that the economic benefits of the *Kariba REDD+ Project* will be perpetuated, and current costs are budgeted and covered by the project.⁸ The following project activities are included in the plan and will be implemented to meet the deforestation drivers, and to ultimately achieve GHG emission reductions, throughout the life of the project⁹:

⁷ South Pole Carbon Asset Management Ltd., op.cit., p. 8

⁸ “Kariba_Redd_final_Budget_from_-_DGomo_30.12.2011(2)-3.xls”; “120524_timeline project activities.xls”; “29th_financials.xlsx”; “111114_finance facility.pdf”; “120430_finance facility.pdf”; “Transactions 2012.pdf”

⁹ South Pole Carbon Asset Management Ltd., op.cit., pp. 8-13

“Improved Agriculture

Access to technology and investment in rural subsistence farming is largely absent in the project area. The *Kariba REDD+ Project* includes a program aimed at improving rural agricultural productivity through provision of inputs and equipment, maintenance, and establishment of infrastructure, as well as training of local farmers.

The *Kariba REDD+ Project* will promote conservation agriculture techniques that have the potential to increase the agricultural output of given plots and, thus, reduce the need for rotational agriculture. Techniques applied in conservation agriculture include planting basins, use of organic manure, precision planting, moisture conservation through mulching and making the most of the first rains, as well as minimal use of inorganic fertilizers. To promote conservational agriculture, training sessions will be held following the FAO's Farmer Field School approach. Inputs such as tools and seeds will be provided.

Where tobacco cultivation is a major driver of deforestation, mainly in the Hurungwe RDC, the project will promote the use of alternative high-value crops such as garlic and chili. This will reduce the demand for wood used in the tobacco curing process. Chili and garlic will be promoted by the provision of seeds and tools as well as training on cultivation, marketing, and how to minimize post-harvest losses.

To further increase agricultural production, community gardens will be established. This will be completed where water is available from boreholes. For protection against wildlife, community gardens will be fenced. As the community gardens are cultivated quite intensively, they are expected to contribute significantly to food production, thus reducing pressure on the forest from the expansion of subsistence farming. Where necessary, boreholes will be newly established or maintained. The management of boreholes is seen as an opportunity to make agriculture on existing plots more attractive than on newly deforested plots where no boreholes are available.

Beekeeping

Beekeeping adds value to standing forests and enables locals to generate income streams that do not cause deforestation. Selected wards in the *Kariba REDD+ Project* RDCs will pioneer the beekeeping project activity and will act as reference wards during a scaling-up phase that will involve all of the wards. On the ground, beekeeping activities include workshops on the construction of beehives and assistance in processing and marketing the produced honey within regional markets. A processing center will be set up in the medium term of 3-5 years. The project partner, EA, is experienced in promoting sustainable honey production, constructing processing centers for honey, and marketing honey.

From the perspective of locals, beekeeping will increase the value of the standing forest. The nectar of a tree that is located within a radius of two km from a hive increases the value of a tree. Trees with nectar that are located within an area of 1,200 ha per location of hives tend to be protected. Beehives can be constructed using waste wood from sawmills in the region. “Cultivated” beehives can produce 15 - 30 kg per harvest and up to three harvests per year, which can generate incomes of \$500 to \$1,000 USD/year. The honey-processing centres can add further value to beekeeping through the production of wax and candles, and more efficient honey extraction can be achieved with a honey extractor.

Fuelwood plantations

The establishment of sustainably-managed fuelwood plantations has the potential to reduce the pressure on natural forests and improve the livelihoods of locals because labor force becomes available that would otherwise be needed to collect fuelwood.

The tree planting project activity will aim to create an alternative source of fuelwood for tobacco curing and household use. In the Hurungwe district, the project will work with the tobacco companies. These companies will provide seeds of the fast-growing eucalyptus tree (*Eucalyptus robusta*, *E. tereticornis*), but will not provide other necessary hardware (e.g. planting pockets) and training on how to do the nurseries, planting and management of the trees.

The project will also promote the multipurpose tree Moringa (*Moringa oleifera*) for nutritional purposes. Some of the multipurpose trees will be planted in irrigation schemes and community gardening projects. Communities will be trained in tree planting and seedling production as precursors for the actual tree planting. The trees to be planted are fast growing in nature and can give good firewood in five years; they are also beneficial in that they have a very high coppicing capacity. Planting trees will have additional mitigation benefits for the climate, but this is not planned to be accounted for in this project.

Social Forestry – Indigenous Knowledge Systems

The indigenous knowledge in forest conservation and management will be documented and shared across the project areas. The areas and trees that are of value to indigenous peoples will be recognized and mapped. This will enhance the conservation efforts of the forest resources. The mapping exercise will also highlight areas with abundant non-timber forest product resources that the communities consider for income generation. These include fruits, murara and thatch grass. The communities will be trained in sustainable harvesting, processing and marketing. This will enhance conservation because the communities will get more tangible benefits from their resources.

Fire management

Fires are native to dry Miombo woodlands during the dry season, but have increased due to anthropogenic fires associated with poaching and opening new fields for subsistence agriculture. Tourists may also be responsible for some fires. Fire breaks next to roads and along the RDC's Safari concession boundary in the south towards settled areas (e.g., Binga and Hurungwe) will be established and maintained by setting controlled fires (i.e. low intensity) at the start of the dry season to avoid the spread of high intensity dry season fires. Firebreaks will be intermittently established at the eastern/southern side of roads and, in the following year, on the western/northern side of roads. The controlled fires burn the vegetation covering the soil, but not the trees.

Fire management will reduce the degradation of the forest, allow the forest to recuperate and stop and reverse (slowly) soil carbon loss. To maximize carbon benefits of fire management, fire management should begin in areas with carbon-rich soils and in areas with fairly non-impacted forestlands. Controlled burning is therefore an important activity in keeping bush fire damage to a minimum. The best way to conduct a controlled burn or cold fire is to burn the wet grass in the early months (March to May) as soon as the grass can burn. This creates a "cold" burn, which burns very little vegetation except grass. Grass, if burned at the right time, is not completely burnt. This allows a fresh flush of green grass to rejuvenate, giving more grazing grass for the fauna and creating an inherent firebreak that is supposed to stop "hot fires" later in the season. Controlled burning will be carried out by the project's on-the-ground-management teams (see below). Additionally, awareness campaigns will be implemented, and other training on fire-making, firefighting and management will be conducted.

Alternative and sustainable building materials (brickmaking)

The local communities typically use wood to build their huts or burn bricks from clay soil, which also requires substantial amounts of wood. This results in more deforestation and degradation of forest resources. The project will promote the Hydraform technology as an alternative, which requires less wood resources. To get this project activity started, a Hydraform molding machine

is purchased and will be used for the project. This will be operated by local youths, thereby creating new income generation opportunities.

On the Ground Management teams

The *Kariba REDD+ Project* will be present within the local communities via its On-the-Ground-Management (OGM) teams. OGM teams will include one team leader, two trackers, one community game scout, one National Parks scout (when necessary for anti-poaching follow ups), and one camp attendant. All team members will be recruited locally. The Project Proponent will have a strong influence on the selection of team leaders to ensure their reliability. There will be one OGM team per RDC, where they have a steady office/camp that will also serve as a contact point for the local population. The OGM teams will be in charge of:

- Maintaining technical equipment (e.g. water pumps) if provided by the project
- Fire prevention via “cold fires” and firefighting where possible (see above)
- Patrolling the area to prevent illegal deforestation
- Carrying out the project monitor requirements according to the applied standards
- Maintaining roads to ensure accessibility of the project area
- Facilitating the relations to the local authorities
- Receiving feedback and grievances from the local communities

Community and Project Sustainability Fund

A significant (20% of net profit) share of the project's carbon income will be invested in general activities that promote and guarantee project sustainability. The project's Community and Project Sustainability Fund is structured to benefit whole communities, specifically including the poorest members of society. The fund will be used to improve health and education in the project area due to long term activities. The project is being undertaken on communal lands and as such it is imperative that the people within these communities can improve their livelihood security via the project. The project proponents feel that this aspect of the revenue distribution is of utmost importance.

A Board will decide upon the use of the Community and Project Sustainability Fund's resources. The Board will be comprised of Carbon Green Africa (CGA) Trust members in conjunction with selected members of the Community and Council from each RDC. Oversight will be given by the Project Proponent to ensure all VCS criteria are met and funds are reaching their required targets. The fund will be used to improve health and education in the project area (see below).

Health

Health improvements will include the following:

- Targeted clinics will have all required improvements made and basic amenities will be brought up to an acceptable standard. New buildings will be constructed where applicable.
- Availability, quality and number of healthcare practitioners per clinic will be assessed and salaries of the practitioners will be reviewed and subsidized where required.
- Targeted clinics will be stocked with required basic drugs and dressings etc. so that the majority of common illnesses/injuries can be treated immediately.
- A “Healthcare Officer” will be appointed to assess, monitor and manage this initiative. The Healthcare Officer will report to Board of Community Fund who will direct funds accordingly.

Education

Education improvements will include the following:

- Targeted schools will have all required improvements made, and basic amenities (e.g., roofing, desks, windows, stationary, books, food) will be brought up to an acceptable standard. New buildings will be constructed where applicable.
- Numbers, distribution and salaries of teachers will be assessed and subsidized when necessary, ensuring an acceptable pupil/teacher ratio.
- Targeted schools will have a bursary initiative to subsidize all pupils' fees. For example, the Community Fund will pay some pupils' fees, enabling many children to come to school that might not be able to come otherwise due to financial constraints. In turn this will relieve families of financial pressure associated with sending their children to school and will maximize attendance.
- Climate change and environmental conservation topics will be added to the curriculum and careers within the sector/project will be encouraged after leaving school.
- In order to assess and monitor, an "Education Officer" will be appointed to manage this initiative. The Education Officer will report to the Board of the Community Fund who will direct funds accordingly.

Newsletter

During the project lifetime, the Project Proponent will publish a newsletter, which is foreseen to be issued on a quarterly basis. The newsletter will be in English as well as the local languages (Shona and Tonga). Topics covered by the newsletter will include the following:

- General information and progress of the project
- Topics of environmental awareness and education
- Grievances regarding the project and responses by the Project Proponent
- Job advertisements as part of the project's local recruitment procedure
- Other topics to be agreed upon in cooperation with the local RDC administration

The newsletter will be printed in Harare (the capital city of Zimbabwe) and delivered via the OGM teams. It will be made available in the RDC offices, and in central points in each ward, such as schools and clinics.

Further Considerations

The project activities to stop deforestation and degradation are designed to be financially self-sufficient in the long run. By opening new sources of income, and after initial investments have been made and capacity reaches a certain level, the local population will perpetuate the project activities because it will be in their self-interest to do so.¹⁰ Thus, it is expected that project activities will continue far beyond the lifetime of the project (30 years beginning 01 January 2012 and ending 31 December 2040).

3.1.6 Project Location

"The *Kariba REDD+ Project* is located in northwestern Zimbabwe, partly along the southern shore of Lake Kariba, the largest artificial lake in the world by volume. The project area consists of 784,987 hectares of forest (consisting of woodland and open woodland) and spans four

¹⁰ South Pole Carbon Asset Management Ltd., op.cit., p. 8

provinces: Matabeleland North, Midlands, Mashonaland West and Mashonaland Central. The project is administered by four RDCs: Binga, Nyaminyami, Hurungwe and Mbire.”¹¹

Each RDC is described below¹²:

Binga

The Binga RDC area is located in the Matabeleland North province. It has a forest cover of 157,652.50 hectares and encompasses a prime wildlife area that includes 22 kilometers of Lake Kariba's shoreline. It serves as a corridor, connecting the Chizarira National Park, the Omay South Wildlife Area and the Matusadona National Park. The resulting area makes for a vast and contiguous wildlife area that is roughly 900,000 ha in size.

Nyaminyami

The Nyaminyami RDC area lies in the district of Kariba in the province of Mashonaland West. The Nyaminyami forest covers 226,341.46 ha and connects the Matusadona National Park with the Charara Safari Area. It shares borders with the Binga RDC area. Ecotourism is popular in Nyaminyami, and the most popular ecotourism destination is the shore of Lake Kariba, with its several fishing and safari camps.

Hurungwe

The Hurungwe RDC lies in a remote, rural part of the province of Mashonaland West. It is adjacent to Mana Pools National Park and has a forest cover of 131,480.28 ha.

Mbire

The Mbire forest area covers 269,513.1 ha within the province of Mashonaland Central. It serves as a stepping-stone between Mana Pools National Park in the northwest and the Umfurudzi Safari Area in the southeast.”

As required by VCS, a kml file has been provided that defines the extent of the geographic area of the project (both woodland and open woodland), and this is shown in the project description.

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

All relevant information on the Project's compliance with laws, statutes, and other regulatory frameworks can be found in Section 1.11 of the PD. The Project Proponent declares that all of the laws, rules and decrees stated there, apply to the whole geographic region considered for the project activity. Compliance with these laws was confirmed to a reasonable level of assurance during validation. The RDCs administering the project are government entities instituted and given their authority by the highest level of Zimbabwean government. The agreements that have been signed as part of the project are legally binding. No violation of laws as a result of the project activities was observed during the site visit.

3.1.8 Ownership and other programs

3.1.8.1 Right of use

¹¹ South Pole Carbon Asset Management Ltd., op.cit., p. 13

¹² South Pole Carbon Asset Management Ltd., op.cit., p. 16

The validation activities confirmed that all of the areas which are to be protected as part of the project activity are segments of a larger property (RDCs) for which the Project Proponent has been legally granted the carbon rights.

Contracts exist establishing the *Kariba REDD+ Project* as the common project of the project proponent and the local RDCs. These contracts give CGI the rights to develop, establish, and market the project with support of the RDCs and establish benefit-sharing of the carbon revenues.

The benefit sharing agreement specifies that 30 per cent of the gross revenue go to CGI. Once deducted, 30 per cent of the net revenues go to the land owner (RDCs) and 20 per cent of the net revenues go to the leaseholders if any exists and they are engaging in the project activities. In case there are no leaseholders, 20 per cent of the net revenue is used to create the Community and Project Sustainability Fund, otherwise 10 per cent is used. The fund is established to create extra benefits to the local communities (see section 1.8 of the present document). The remaining carbon revenues are used for community projects (EA) and environmental protection (CGA). Copies of the contracts are separately provided to the auditor.¹³ Documentation of these items has been reviewed and validated.

3.1.8.2 Emissions trading programs and other binding limits

No emission reductions generated by the project are part of an emissions trading program.

3.1.8.3 Participation under other GHG programs

The project has not been registered and is not seeking registration under any other GHG programs.

3.1.8.4 Other forms of environmental credit sought or received

The project has not created wetland mitigation, water quality, air pollution, other non-VCS GHG emission reduction, or any another form of environmental credit.

3.1.8.5 Rejection by other GHG programs

The project has neither applied to receive credits from, nor has it been rejected by any other GHG program.

3.1.9 Additional information relevant to the project

3.1.9.1 Eligibility criteria for grouped projects

The project is not a grouped project.

3.1.9.2 Leakage management for AFOLU projects

No leakage of emissions is expected from the *Kariba REDD+ Project*. Both activity shifting and market leakage were assessed as part of the project. Activity shifting is managed by applying and monitoring a leakage belt around the project area. Additionally, the project actively assists the local population in increasing the efficiency of their agricultural activities on already existing agricultural fields. Increased agricultural output will make shifting of plots to outside the project

¹³ South Pole Carbon Asset Management Ltd., op.cit., p. 22

area highly unlikely. The low mobility of the local populations, the vast extent of the project area, and their centralized location within the project area also contribute to the unlikelihood of activity shifting leakage.

The fuelwood plantation component of the project activity is designed to mitigate the market leakage risk. By establishing sustainably managed woodlots within the project area, the wood resource needs of the local communities will be provided without causing forest deforestation/degradation. The long-term presence of the *Kariba REDD+ Project* team in the area ensures appropriate support in developing this long-term solution for the provision of sustainable wood products.

Despite this low probability of leakage to occur, the leakage belt area will be sampled prior to the end of each monitoring period. To reduce uncertainty in leakage measurement, the field protocol for sampling forest degradation and trainings will be implemented.¹⁴

Additionally, the VCS AFOLU Non-Permanence Risk Analysis yielded a risk rating of 14.5% for the *Kariba REDD+ Project*. This rating of 14.5% signifies that the Project Proponent must hold a minimum of 14.5% of annually awarded credits in a pooled AFOLU buffer account. Annex 1 of the PD demonstrates the use of this tool. It is estimated that a minimum of 7,529,263 credits will be held in the pooled AFOLU buffer account over the life of the project. This risk score will be re-evaluated at each future verification event, as required by VCS.

3.1.9.3 Commercially Sensitive Information

As confirmed by the project proponent, there is no commercially sensitive information within the PD that will be excluded from the publicly issued PD.

3.1.9.4 Further Information

There is no further additional information, which would have a bearing on the eligibility of the project relating to net GHG emissions reductions or removals, or quantification of net GHG emissions reductions or removals, that has not been included in the PD and its supporting documentation.

3.2 Application of Methodology

3.2.1 Title and Reference

The project is applying the VCS Methodology VM0009: Methodology for Avoided Mosaic Deforestation of Tropical Forests (v1.1).

3.2.2 Applicability

The validation confirmed the project met the following applicability conditions of VM0009:

“1. This methodology was developed for avoiding deforestation and assumes that degradation and deforestation occur as a result of land use conversion to agriculture for the cultivation of non-perennial (annual) crops rather than for commercial timber harvest. This methodology may be used if all the drivers and agents of deforestation are consistent with those described in section 6 of this methodology.”

¹⁴ 120904_PROCEDURE MANUAL FOR TREE DATA COLLECTION FINAL.pdf

The drivers and agents of deforestation are consistent with those described in section 6 of VM0009. As stated by the PD¹⁵, “Deforestation agents are members of the communities and local poachers who are causing fires. Deforestation is mainly driven by socio-economic interests and because of the need for woody construction material for settlements.” Were it not for the project and carbon financing, the lands are expected to continue to undergo conversion of forestland to cropland/grazing for small-scale subsistence farming, logging of timber for domestic use, fuelwood collection, poaching, forest fires, and traditional beekeeping.

The primary subsistence activities (expected to continually degrade the forests without the project) for each of the four areas included in the project are as follows¹⁶:

Binga

The main crops are maize and millet, while some areas also produce cotton, cassava and groundnuts. Irrigation schemes are few. Cattle and goats are reared. Traditional fishing helps in providing additional food.

Hurungwe

The main crops grown in the area are maize, tobacco, cotton, groundnuts, sunflower and soybeans. The district has established and functional irrigation schemes. Livestock reared by the communities include cattle, goats, donkeys, sheep, pigs and horses.

Mbire

The main crops are maize, sorghum, millet, cowpeas, pumpkins, bananas, cotton and vegetables. Cattle, goats, sheep, pigs, poultry and donkeys are reared. Farmers also do a lot of fishing in the Zambezi, Manyame, Msengezi and Angwa rivers.

Nyaminyami

The main crops grown are sorghum, millet, maize cotton and vegetables. Cattle, donkeys, goats, sheep and chicken are also reared. In addition, farmers are also fishing.

“2. Once forest is converted to agriculture in the reference and leakage areas that conversion is permanent and the land is not allowed to return to forest. This excludes use of this methodology for Swidden or other traditional forest cultivation activities that clear one area to farm for a year or two, and then move on and leave that area to return to forest over decades. It does not exclude converted areas where selective fields within a farm or agricultural area are abandoned due to soil depletion or are left fallow to recover but are continuously under agricultural or other anthropogenic use, and will not return to forest.”

“There is no shifting cultivation in the area. Lands in the project, reference, and leakage areas will not return to forest land after being left fallow. This is primarily due to crop rotation. Any coppicing is constantly cut out until all below ground biomass dies out, the stumps are burnt to below ground level.”¹⁷

¹⁵ South Pole Carbon Asset Management Ltd., op.cit., p. 24

¹⁶ ibid

¹⁷ South Pole Carbon Asset Management Ltd., op.cit., p. 24

The fact that the land will not return to forest is further supported by the Communal Lands Act. In PART III, Section 8, subsection 2b it is stated that the RDC shall grant consent to persons who according to the customary law of the community have traditionally and continuously occupied and used land in the concerned area. Therefore, once land has been allocated to a family it remains so in perpetuity and is therefore continuously under agricultural or other anthropogenic use, and will not convert to forest.¹⁸

“3. Forest land in the project area has qualified as forest as defined by FAO 2010 or that of the definition of forest set by the residing Designated National Authority (DNA) for the project country for a minimum of 10 years prior to the project start date (VCS, 2008).”

A definition of forest has not been set by the DNA for Zimbabwe. However, both “open woodlands” and “woodlands” in the project area qualifies as forest as defined by FAO 2010. That is, the areas have the potential to grow to more than 5 meters of height and to attain a canopy cover greater than ten percent at maturity. “Woodland” and “open woodland” are forest classifications commonly used in the project area.

“4. No biomass is harvested for use in long-lived wood products in the project area under the with-project scenario. Therefore, carbon sequestered in long-lived wood products under the project during any monitoring period may be accounted for as zero.”

The only harvesting that will occur as part of the project is associated with the fuelwood plantations. The carbon sequestered on long-lived wood products will counted as zero throughout the life of the project.

“5. If the soil carbon pool is selected and the default mean rate of soil carbon loss is selected, then the project must be located in a tropical or semi-arid tropical region.”

The project is located in a tropical or semi-arid tropical region. The default mean rate of soil carbon loss will be utilized for *ex ante* estimates. Scientific studies will be employed during monitoring in order to obtain project-specific *ex post* soil carbon loss estimates.

“6. Foreign agents of deforestation, if any, are unlikely to shift their activities outside the leakage area.”

There are no foreign agents of deforestation associated with this project.

“7. The project area shall not contain organic or peat soils.”

The project will not take place on organic or peat soils.

“8. A reference area can be delineated meeting the requirements described in section 6.3.1 of this methodology including the minimum size requirement.”

The reference area has a size of 206 percent of the project area, has 100.67 percent of the size of the forest in the project area, and meets the similarity conditions.

¹⁸ “Copy of Communal lands act 2.pdf”

“9. As of the project start date, historic imagery of the reference region exists with sufficient coverage to meet the requirements of section 6.4.2 of this methodology.”

Historic imagery with minimum cloud cover from four time steps was provided. Every point has double coverage (being at least cloud free in two of the four images). Most points are covered by all four images.

“10. Project activities are planned or implemented to mitigate deforestation by addressing the agents and drivers of deforestation as described in section 10.1 of this methodology.”

Based on the results of the Participatory Rural Appraisal (PRA), the project activities detailed in Section 3.1.5 above will be implemented to mitigate deforestation by addressing the agents and drivers of deforestation. Supporting documents provided a detailed work plan and budget allocation for project activities.

“11. The project proponents have access to the leakage area to sample forest degradation (see section 10.3.2).”

When considering satellite imagery, access to the leakage area to sample forest degradation is a non-issue. Prior to implementing any “on-the-ground” monitoring, OGM teams will inform the RDCs, and any other lease owners, that field measurements will be taking place. The validator did not observe any obstacles to accessing the leakage areas during the site visit.

“12. If the lag period for the cumulative leakage model is estimated after the project start date but before the end of the first monitoring period (see section 10.3.3), then activity-shifting leakage has not occurred prior to the estimation of the lag period.”

The lag period for the cumulative leakage model will be estimated after the project start date and before the end of the first monitoring period. As justified in Section 3.9.1.2 above, it is assumed that no activity-shifting leakage will have occurred prior to the estimation of the lag period.

“13. Project areas shall not include land designated for legally sanctioned logging activities.”

No land within the project area is designated for legally sanctioned logging activities. Confirmation of this can be found in the supporting documents.¹⁹

3.2.3 *Project Boundary*

Spatial Boundary

The spatial boundary of the project is “the forest cover of the most recent remote sensing imagery at project start date.”²⁰ That is, within the RDCs of Binga, Nyaminyami, Hurungwe, and Mbire,

¹⁹ “Binga Logging letter.pdf,” “Mbire RDC-2 logging letter.pdf,” “Nyaminyami logging letter.pdf,” and “Hurungwe logging letter.pdf”

²⁰ South Pole Carbon Asset Management Ltd., op.cit., p. 17

project proponents used remote sensing techniques to stratify into “Woodland” and “Open Woodland” cover types. Because both cover types meet the FAO’s definition of a forest, they will be used as the project boundary. The areas within the project boundary, stratified by cover type are shown below:

RDC	Woodland Area (ha)	Open Woodland Area (ha)	Total
Binga	55,749	101,903	157,652
Hurungwe	64,087	67,393	131,480
Mbire	46,287	223,226	269,513
NyamiNyami	109,936	116,405	226,341
Total	276,059	508,928	784,987

The cover type areas and RDC jurisdiction boundaries are shown on the maps included in the PD. Additionally, the supporting kml file and ArcView shapefiles were provided to the validator. All spatial boundaries were correlated during the site visit and confirmed through in-office geospatial analysis.

Temporal Boundary

The temporal boundary of the project is defined by the project crediting period, which is 30 years (beginning on 01 July 2011 and ending on 30 June 2040).

Greenhouse Gases

As per VM0009, Carbon Dioxide (CO₂) was selected as a source for greenhouse gas emissions in the project.

Carbon Pools

The carbon pools selected for inclusion in the *Kariba REDD+ Project* are listed below:

Pool	Required?	Included in Project?	Justification
Above-ground large tree biomass	Yes	Yes	Major pool considered
Above-ground small tree biomass	Yes	Yes	Major pool considered
Above-ground non-tree biomass	Optional	Yes	Major pool considered
Below-ground large tree biomass	Optional	Yes	Major pool considered

Below-ground small tree biomass	Optional	Yes	Major pool considered
Below-ground non-tree biomass	Optional	Yes	Major pool considered
Litter	No	No	Conservatively excluded
Standing dead wood	Optional	Yes	Major pool considered
Lying dead wood	Optional	No	Conservatively excluded
Soil	Optional	Yes	Major pool considered
Long-lived wood products	Yes	Yes	N/A

Justification for all pools selected (or not selected) for inclusion in project accounting and monitoring have been validated.

3.2.4 Baseline Scenario

Based on validator research, review of project documents, and site visits conducted, the findings support the justification that the baseline land use scenario without the project will be continuation of pre-project land-use, including: conversion of forestland to cropland/grazing for small-scale subsistence farming, logging of timber for domestic use, fuelwood collection, poaching, forest fires, and traditional beekeeping.

“Forests in this region are transformed for agricultural purposes (subsistence agriculture). Further deforestation and degradation occur because of the use of fuelwood for households and tobacco curing, timber for poles used in the construction of homes, garden fencing, traditional beekeeping, and fires. Fires are frequent and often occur between June and October. Fires result in the loss of the forest in those non-agricultural areas that are still accessible to hunter-poachers.

Within the project area, the population densities are relatively sparse. Greater than 95 percent of the inhabitants are rural dwellers, living on their farms, which are widely distributed over the area. Poaching, especially of black rhinos and elephants, is a continuing problem and has resulted in severe losses of animals despite protection efforts.”²¹

The specific baseline scenarios for each of the individual carbon pools, as validated and required by VM0009 are²²:

Above and Below-ground Small/large Trees and Non-trees

The dry forest land of the project area, as well as the surrounding reference/leakage area, is characterized by small-to-large sized trees. The above and below-ground portion of small/large trees and non-trees is assumed to be removed, burned or converted to fuelwood. When forest

²¹ ibid

²² South Pole Carbon Asset Management Ltd., op.cit., pp. 59-60.

land is converted to agriculture, all the larger trees, with the exception of Baobabs (which have cultural values), are chopped by an axe and burned at the base until the tree eventually falls.

The fire smolders in the stump below the ground surface destroying the main root system. Any coppicing is repeatedly chopped or burned so that remaining biomass dies out. Also, any seedlings from seeds blown in are weeded out. The OGM team leaders have a combined experience of 30 years in the project areas and have not seen any stumps in a field. Therefore, large trees will not be differentiated from small trees for this project. As a result, the project proponent contends that it is common practice in this region to burn the stumps out, and therefore selects the proportion of below-ground biomass removed from all trees in the baseline as 100 percent. The validator also did not observe any stumps during the site visit.

Standing Deadwood

Standing deadwood is assumed to be completely removed, burned or converted to fuelwood as a result of land conversion to agriculture. Standing dead trees are categorized into two decomposition classes: trees with branches and twigs that resemble live trees (class I), and trees that show loss of twigs, branches or bole mass (class II). The carbon stock of trees in decay class I is estimated using the equation developed for live trees. The carbon stock of decay class II is estimated as the biomass in the remaining bole only.

Long-Lived Wood Products

There is no harvest of commercial timber from the project area in the baseline, nor for wood carving, furniture, etc. The only potential harvest of wood products under the baseline would be for building materials for local village huts. For example, in Binga the community members indicated that they used an average of 80 poles to build one hut, and a household had an average of four such houses. Structural material of the houses has to be replaced frequently (on average every 3 years) due to the environmental influences such as termites. No carbon proportion remains therefore in long-life wood products.

General

Identifying and quantifying the baseline scenario for a REDD+ project under the VCS-approved methodology VM0009 requires several steps. They are as follows:

1. Conducting a PRA
2. Analyzing the agents of deforestation
3. Delineating the reference area
4. Defining the reference period
5. Using the “cumulative deforestation model” to predict percent deforestation in the future, using past observations
6. Using the “soil carbon loss model” to predict the decay of carbon in soil under the baseline scenario
7. Application of both baseline models based on each individual carbon pool scenario in the baseline²³

All of the required documentation was provided to the validator regarding these steps in the PD and supporting documents. Processes and application methods were validated to be in conformance with the VCS Methodology VM0009.

As required by VCS and VM0009, the baseline will be re-evaluated every ten years.

²³ VCS Methodology VM0009

3.2.5 Additionality

The methodology requires the use of the latest version of the “Tool for the Demonstration and Assessment of Additionality in VCS AFOLU Project Activities;” details of its use for the *Kariba REDD+ project* can be found in the Section 2.5 of the PD.

The validator confirmed that the identified alternative land use scenarios (subsistence farming, logging of timber for domestic use, fuelwood collection, poaching, traditional beekeeping, and forest fires) are credible and/or legal land uses and represent what would be most likely to occur without the project.

Ultimately, natural, healthy, and productive forest growth in the project area without the implementation of a VCS REDD+ project is prevented due primarily to large financial barriers to independently protect the forests from deforestation and degradation. The project activities required to mitigate deforestation in the area cost the project proponent a significant amount of money annually and undoubtedly represent a financial barrier.

Currently, there are no other registered VCS REDD+ projects in the RDCs of Binga, Nyaminyami, Hurungwe, and Mbire. Similar projects designed to protect wilderness areas in Africa and to provide sustainable development support for rural African communities have occurred principally through funding by Governments and/or donor agencies. However, is not common practice for private companies that are not donor funded to protect forested wilderness in Africa without carbon finance. Moreover, the project activities to stop deforestation and degradation are designed to be financially self-sufficient in the long run and will continue far beyond the lifetime of the project (e.g., 100 years or more).²⁴ Thus, the proposed REDD+ project activity is not the baseline scenario, and it is additional.

3.2.6 Quantification of GHG Emission Reductions and Removals

3.2.6.1 Quantification of baseline emissions

The validator has confirmed that baseline net GHG removals by sinks have been estimated in accordance with the VM0009 Baseline Emissions Section (Section 8). The procedure for quantifying baseline emissions or removals entails the use of “cumulative deforestation to predict deforestation based on the selected carbon pools measured in the project area. The “soil carbon loss model” is used in conjunction with the “cumulative deforestation model” to quantify SOC baseline emissions. Evidence of the use of these models is available in the supporting documents.

For the *Kariba REDD+ Project*, the avoided baseline emissions for each included pool are presented below. These avoided emissions will be achieved through a combination of growth of living tree and non-tree biomass, as well as changes in the SOC pool.

Above ground Biomass	Below ground Biomass	Soil Organic Carbon
14,151,036 tCO ₂	6,980,332 tCO ₂	30,794,582 tCO ₂

²⁴ South Pole Carbon Asset Management Ltd., op.cit., pp. 60-62.

3.2.6.2 Quantification of project emissions

The validator has confirmed that project emissions have been estimated in accordance with the VM0009 Section 9. For the *Kariba REDD+ Project*, there are no emissions expected from the burning of woody biomass as a result of project activities in the project area. Thus, the project emissions are estimated to be zero throughout the life of the project. This will be continually monitored and confirmed during future verification events.

The project proponent is aware that revisions to project emissions values will be required should significant forest fires occur during the project crediting period. Any fire boundaries will be monitored by the project proponent, and the project area will be re-stratified as applicable.

3.2.6.3 Quantification of leakage

As previously mentioned, no activity shifting or market leakage of emissions is expected from the *Kariba REDD+ Project*. Nonetheless, the project proponents followed the steps outlined in Section 10 of VCS Methodology VM0009. These include:

1. Delineating the leakage area
2. Applying the “cumulative leakage model” to estimate future leakage

All of the required documentation was provided to the validator regarding these steps in the PD (see section 3.3) and supporting documents. Processes and application methods were validated to be in conformance with the VCS Methodology VM0009.

The results of these processes provided an annual leakage estimate of zero (0) for the project throughout its lifetime.

“Should deforestation and degradation (forest carbon stock loss) monitored in the leakage area exceed forest carbon stock loss predicted by the leakage model, the amount of excess forest carbon stock loss will be deduced from net emission reductions claimed at the end of the first monitoring period.”²⁵

Leakage management strategies to be employed in the *Kariba REDD+ Project* are described in Section 3.1.9.2 above.

3.2.6.4 Summary of GHG emission reductions or removals

The validator confirmed “Net GHG Emission Reductions and Removals have been estimated in accordance with VM0009 Section 11. The results of this determine that net GHG Emission Reductions or Removals for the 30-year project crediting period are estimated to total **51,925,950** t CO₂-e. Annual net GHG emission reductions are presented below (PD, Section 3.4):

²⁵ South Pole Carbon Asset Management Ltd., op.cit., p. 71.

Year	Estimated baseline emissions or removals (tCO ₂ e)	Estimated project emissions or removals (tCO ₂ e)	Estimated leakage emissions (tCO ₂ e)	Estimated net GHG emission reductions or removals (tCO ₂ e)
2011	139,077	0	0	139,077
2012	630,746	0	0	630,746
2013	1,096,006	0	0	1,096,006
2014	1,618,495	0	0	1,618,495
2015	2,168,306	0	0	2,168,306
2016	2,717,741	0	0	2,717,741
2017	3,242,148	0	0	3,242,148
2018	3,255,707	0	0	3,255,707
2019	3,218,160	0	0	3,218,160
2020	3,137,072	0	0	3,137,072
2021	3,020,413	0	0	3,020,413
2022	2,876,144	0	0	2,876,144
2023	2,711,850	0	0	2,711,850
2024	2,534,448	0	0	2,534,448
2025	2,349,998	0	0	2,349,998
2026	2,163,607	0	0	2,163,607
2027	1,979,416	0	0	1,979,416
2028	1,800,649	0	0	1,800,649
2029	1,629,697	0	0	1,629,697
2030	1,468,231	0	0	1,468,231
2031	1,317,313	0	0	1,317,313
2032	1,177,511	0	0	1,177,511
2033	1,049,004	0	0	1,049,004
2034	931,667	0	0	931,667
2035	825,159	0	0	825,159
2036	728,978	0	0	728,978
2037	642,520	0	0	642,520
2038	565,118	0	0	565,118
2039	496,076	0	0	496,076
2040	434,692	0	0	434,692
Total	51,925,950	0	0	51,925,950

3.2.6.5 Uncertainties associated with the calculation of emissions

The validator confirmed that all uncertainties associated with the calculations of *ex ante* emissions were accounted for accordingly in the use of the “cumulative deforestation” and “soil carbon loss” models described in VCS Methodology VM0009. No additional deductions for uncertainties are required. The validator confirmed that the Project Proponent followed the principles in the “Guidelines on conservative choice and application of default data in estimation of the net anthropogenic GHG removals by sink” to ensure results were conservative. To ensure that carbon stocks are estimated in a way that is accurate, verifiable, transparent, and consistent across measurement periods, the project proponent has established and documented clear Standard Operating Procedures (SOPs) and procedures for ensuring data quality (as per VM0009, Section 13.11). These were validated to meet the requirements of VM0009. The SOPs are outlined in Section 4.3.8 of the PD and the supporting documents.²⁶

Additionally, to ensure the net anthropogenic GHG removals by sinks will be measured and monitored precisely, credibly, verifiably, and transparently, “per IPCC 2006GL guidance, the monitoring plan includes a Quality Assurance/Quality Control (QA/QC) plan to control for errors in measurement and data analysis. The QA/QC plan is described in Section 4.3.6 of the PD and is designed to contribute “significantly to increasing efficiency and decreasing the amount of errors” in measurements and monitoring processes over the life of the project.”²⁷

3.2.7 Methodology Deviations

The *Kariba REDD+ Project* did not employ the point-sampling grid classification method as described in Section 6.4.3 of the VCS Methodology VM0009. Instead, the project “used a complete image classification technique of training a Maximum Likelihood algorithm via training areas taken *in situ* via GPS points. This method is in line with land cover classification requirements of other VCS REDD Methodologies (i.e., VM00015: Methodology for Avoided Unplanned Deforestation).”²⁸

The validator confirmed that the Project Proponent obtained written permission from VCS to follow this classification technique. The technical detail of the classification technique, which is well known in the science of remote sensing (and is considered to be at least as accurate as a point-sampling grid classification), is described in Section 2.6 of the PD. Additional information on this technique is available in the supporting documents.²⁹

The project proponent used the remote sensing Map Accuracy Requirements of VCS Methodology VM00015 to stay in compliance with VCS requirements. Based on accuracy assessments provided by the project developer and detailed during various conference calls, the validator confirmed that classification using this method, and for this project, is considered as accurate as a classification produced using point-sampling methods, and its implementation does not decrease the project's adherence to conservative principles.

3.2.8 Monitoring Plan

The following are the primary data and parameters that were monitored prior to, and made available and assessed during validation:

²⁶ “120904_PROCEDURE MANUAL FOR TREE DATA COLLECTION FINAL.pdf” and “120118_Soil carbon Guidance_small sample.pdf”

²⁷ South Pole Carbon Asset Management Ltd., op.cit., pp. 86 & 86.

²⁸ South Pole Carbon Asset Management Ltd., op.cit., p. 62..

²⁹ “120328_Kariba_Remote_Sensing_PD_Annex.doc”

- Location of project area
- Boundary of project area
- Area of project area/plots
- Ownership of the project area
- Baseline trees/shrubs
- Baseline/project strata
- Number of trees
- Biomass allometric equations, coefficients, ratios and parameters
- Leakage calculations
- Risk calculations
- Total CO₂

The monitoring plan procedures and equipment were comprehensive and were found to be applicable to the parameters monitored. They were appropriately designed and provided reasonable assurance that the avoided emissions from GHG sources, sinks, and reservoirs was (baseline) and will be (project scenario) accurately assessed. In accordance with the conditions of the approved baseline and monitoring methodology VM0009, project emissions were considered insignificant and therefore not included. The Project Proponent is responsible for the registration, monitoring, measurement, and reporting of avoided emissions, within the timeframe required by VCS-REDD+-AFOLU requirements.

3.3 Environmental Impact

In addition to the avoidance of millions of tons of carbon emissions and the positive socioeconomic impact, the *Kariba REDD+ Project* also creates several other environmental co-benefits – the most significant being increased and enhanced wildlife habitat.

The validation confirmed the likelihood that the project will generate increased and enhanced wildlife habitat for many important wildlife species.

As previously mentioned, the project area is imperative for wildlife, having significant populations of many important species. In addition to a reduction in poaching that the project is expected to generate, the forests that will be protected by the project will “serve as a corridor between existing national parks, namely Mana Pools, Matusadona and Chizarira national parks, to assure connectivity. By providing a corridor for wildlife, the project will have a positive impact on biodiversity not only within the project area but also outside the project area.”³⁰ This positive impact could include improvement of the habitat conditions for ICUN Critically Endangered (CR), Endangered (EN), and Vulnerable (VU) species, including:

- Black rhino (CR)
- African wild dog (EN)
- Lion (VU)
- Southern ground hornbill (VU)
- Common hippo (VU)
- African elephant (VU)
- Cheetah (VU)
- Lappet-faced vulture (VU)
- White-headed vulture (VU)”

³⁰ South Pole Carbon Asset Management Ltd., op.cit., p. 91.

The continuation of forests that would otherwise be cleared should also contribute to enhanced water quality and aquatic fauna, as well as improved forest structure, health, and productivity in the project area.

Finally, the validator validated that the *Kariba REDD+ Project* is acceptable under the Climate Community and Biodiversity (CCB) Standard on 08 February 2012.

3.4 Comments by stakeholders

The validation confirmed that comments from stakeholders were appropriately documented and were found to be overwhelmingly positive. “At the end of each stakeholder consultation, the community leaders asked the floor if people wanted the project to go ahead of which there were chorus to the affirmative. The communities however wanted some of the projects to start being implemented as soon as possible even before the final validation of the project. All the chiefs pledged to give support for the success of the project.

To guarantee an ongoing communication a grievance procedure was implemented as part of the project. The procedure includes four different options to the communities, by which they provide potential grievances regarding the project in written or verbal form: directly to the Project Proponent, via the OGM teams, via the Liaison Officer or via the RDC. By providing four different options, they attempted to “widen the net” to include the views of all stakeholders. The Project Proponent is committed to provide a written response to any grievance with 30 days. Furthermore, all grievances and feedback will be published in our quarterly newsletter that will be distributed to the stakeholders in the project area.”³¹

The results of the stakeholder consultation meetings very closely correlated to the consensus in the interviews conducted during the validation site visit.

4 VALIDATION CONCLUSION

ESI confirms all validation activities, including objectives, scope and criteria, level of assurance and the PD's adherence to the selected methodology, and VCS Version 3 (and updates) as documented in this report are complete. ESI concludes without any qualifications or limiting conditions that the *Kariba REDD+ Project* dated 29 September 2012 meets the requirements of the VCS.

Report Submitted to:	Voluntary Carbon Standard Association 1730 Rhode Island Ave. NW Suite 803 Washington, D.C. 20036 Carbon Green Investments (Guernsey) 18-20 Le Pollet Street St. Peter Port Guernsey UK, GY1 1WH
Report Submitted by:	Environmental Services, Inc. Corporate Office 7220 Financial Way, Suite 100 Jacksonville, Florida 32256

³¹ South Pole Carbon Asset Management Ltd., op.cit., pp. 93-94.

ESI Lead Validator Name and Signature:	 Shawn McMahon Lead Validator
ESI Division Regional Technical Manager Name and Signature:	 Janice McMahon Vice President and Forestry, Carbon and GHG Division Regional Technical Manager
Date:	29 September 2012

CS/SMM/JPM/RB VO120-70.01 VCS Kariba REDD+ Project Validation Report (v01) FINAL_29 Sept2012.doc
K: pf:09/29/12d

APPENDIX A – NCR SUMMARY

Item #	VCS Standard 3.2 Requirements (01 February 2012)	Location in PD or Supporting Documents	NCR/CL/OFI	Response from Client	NCR/CL/OFI	Response from Client	NCR/CL/OFI	Response from Client	NCR/CL/OFI	Response from Client	NCR/CL/OFI
	3.1 GENERAL REQUIREMENTS										
1	Projects shall meet all applicable rules and requirements set out under the VCS Program, including this document. Projects shall be guided by the principles set out in Section 2.4.	All	See all other NCRs as related to the VCS program.	Ok	See all other NCRs as related to the VCS program.	Ok	See all other NCRs as related to the VCS program.		See all other NCRs as related to the VCS program.		Addressed .
2	Agriculture, forestry and other land use projects shall meet the rules and requirements set out in VCS document AFOLU Requirements. Ozone-depleting substances projects shall meet the rules and requirements set out in VCS document ODS Requirements.	All	See "AFOLU" 3.2 tab	Ok	See "AFOLU" 3.2 tab	Ok	See "AFOLU" 3.2 tab		See "AFOLU" 3.2 tab		Addressed .
3	Projects shall apply methodologies eligible under the VCS Program. Methodologies shall be applied in full, including the full application of any tools or modules referred to by a methodology, noting the exception set out in Section 3.15.1. The list of methodologies and their validity periods is available on the VCS website.	"120328_Kariba_Remote_Sensing_PD_Annex.doc"	Pending responses to additional NCRs on methodology.	OK	Pending responses to additional NCRs on methodology.	Ok	Pending responses to additional NCRs on methodology.		Pending responses to additional NCRs on methodology.		Addressed .

4	3.5.1 METHODOLOGY DEVIATIONS Deviations from the methodology applied to the project are permitted where they represent a deviation from the criteria and procedures relating to monitoring or measurement (but not quantification) of GHG emission reductions or removals set out in the methodology. Deviations relating to any other part of the methodology shall not be permitted. Methodology deviations shall not negatively impact the conservativeness of the quantification of GHG emissions reductions or removals.	PD Section 2.6; "120328_Kariba_Remote_Sensing_PD_Annex.doc"	Pending responses to additional NCRs on methodology.	OK	Pending any NCRs relating to the Leakage area in the VM0009 tab.	Ok	Pending any NCRs relating to the Leakage area in the VM0009 tab.		Pending responses to additional NCRs on methodology.	Addressed
---	---	--	--	----	--	----	--	--	--	-----------

5	3.8.1 PROJECT START DATE The project start date is the date on which the project began generating GHG emission reductions or removals (see VCS document AFOLU Requirements for further specification for AFOLU projects). The rules and requirements on project start date, as well as validation and verification dates, are set out in the sections below. For projects registered under both the VCS Program and an approved GHG program, further specification with respect to the validation deadline is set out in Section 3.12.	PD Sections 1.1, 1.5, 1.6, & 1.8	Please describe why the project start date is 01 January 2012 in the relevant sections of the PD. Please provide documentation supporting the assertions of the project start date.	YvL: Project documents have been revised and therefore the project start dates changed to July 1st 2011 as the implementation of the management and activities addressing the deforestation drivers (protection plans) have been started around this date (and considerably before) together with the associated investments (for an overview of the expenses please refer to: 1.Expenses April 2011 - December 2011). These investments refer to research, fieldwork and capacities conducted by Black Crystal and Environment Africa (refer to invoices provided in folders: 2.Black Crystal Invoices & 3.EA invoices) and further to management and protection work such as reporting, communication, capacity and control activities (refer to folder 4.Invoices project areas). Therefore means of transportation such as trucks and (motor)-bikes for the OGM teams and locals as part of the needed infrastructure to start with the capacity buildings and controlling have been distributed. In addition office equipment (e.g. laptops, paper) needed to properly do the management of the project was provided, and salaries for scouts have been paid. To satisfy some of the very needed and basic needs, medicine for the hospitals and pencils and paper for the students of the schools as well as	PD Section 1.6 states that the end date is June 30th 2040. The end date should be June 30th 2041 for a 30-year crediting period. Please revise. The verifier agrees with the general assertions from your response confirming when the project activities began. However, there is no discreet item verifying the 01 July 2011 start date. The earliest date from a provided invoice was 30 May 2011, and none of the other documentation provided showed any direct correlation to the 01 July 2011 start date. The verifier believes the signing of the bilateral agreements more directly coincides with the project start date, in accordance with AFOLU 3.2.1 "implementing management or protection plans." Please address. Also,	YvL: Section 1.6 has been changed, end date is June 30th 2041. We decided to postpone the start date about one month taking into consideration the availability of useful images for interpretation. There are still leaves on the trees between February to June and the chance to get cloud-free images is higher. Anyway, postponing the start date is always a more conservative approach.	PD has been revised with the correct project timeline. The project start date is approximately one month after the first invoice was signed, which is based on the availability and consistency of aerial imagery. The verifier agrees that this is still a conservative approach. Issue addressed.	
---	---	----------------------------------	---	--	--	--	--	--

				bikes to facilitate transportation have been distributed. Before even obtaining revenues from carbon credits, CGI have to motivate and convince the community members of the project and encourage them to protect their forest. Please refer to the supporting documentation provided in folder 5,28. In addition, all bilateral agreement for the verified emission reductions between CGI and RDC have been signed before the project start date, in March 2011 (for Binga, Hurungwe, Mbire and Nyaminyami). Please refer to folder 1.12.1 Ownership (provided within the first round of documents sent on March 28, 2012). The date has been updated in all sections of the PD and further description why the project start date is July 1st 2011 has been added.	please ensure any arguments supporting the project start date are included in the revised PD.							
	3.11.1 PROJECT LOCATION shall be specified in the project description as follows.											
6	3) Project location for AFOLU projects shall be specified using geodetic polygons to delineate the geographic area of each AFOLU project activity and provided in a KML file.	n/a	Please provide the updated KML/KMZ files of the project boundaries.	FR - Provided in folder "KML & Shapefiles - KML Project Area & KML Reference Region"	Issue addressed.							
	3.12 OWNERSHIP AND OTHER PROGRAMS											
	3.12.1 Right of Use											

7	The project description shall be accompanied by documentary evidence establishing conclusively one or more of the following rights of use (SEE vcs DOCUMENT Program Definitions for definition of right of use) accorded to the project proponents.	PD Section 1.12.1; Supporting documents in "1.12.1 Ownership" folder.	Please refer to Footnote 25. It appears to reference the CCB PD but is out of context. Please reference the CCB PD directly. The link in Footnote 17 (Section G1.6) of the validated CCB PD is broken. Please provide an updated link in the VCS PD.	YvL: The CCBS PDD has been referenced directly and the updated link has been provided in the footnote. The "Rural District Councils Act Vol.29 No.13" has been provided in addition in folder 7.	Issue addressed.						
	3.13 PROJECT BOUNDARY										
8	The project boundary shall be described (using diagrams, as required) and GHG sources, sinks and reservoirs shall be identified and assessed in accordance with the methodology applied to the project. The project shall justify not selecting any relevant GHG source, sink and reservoirs.	PD Section 2.3	tbd based on VM0009 NCR	Ok	Pending responses to additional NCRs on methodology.	Ok	Pending responses to additional NCRs on methodology.		Pending responses to additional NCRs on methodology.		Addressed .
9	3.14.1 BASELINE SCENARIO The baseline scenario for the project shall be determined in accordance with the requirements set out in the methodology applied to the project, and the choice of baseline scenario shall be justified.	PD Section 2.4	tbd based on VM0009 NCR	Ok	Pending responses to additional NCRs on methodology.	Ok	Pending responses to additional NCRs on methodology.		Pending NCR #145	YvL: NCR #145 had been closed last round.	Addressed .
10	3.14.3 In developing the baseline scenario, assumptions, values and procedures shall be selected that help ensure that net GHG emission reductions and removals are not overestimated.	PD Section 2.4	Pending responses to additional NCRs on methodology.	Ok	Pending responses to additional NCRs on methodology.	Ok	Addressed.				

11	3.15 ADDITIONALITY Additionality shall be demonstrated and assessed in accordance with the requirements set out in the methodology applied to the project.	PD Section 2.5	tbd based on VM0009 NCR	Ok	Pending responses to additional NCRs on methodology.	Ok	Addressed.				
	3.17 MONITORING										
12	3.17.1 Data and Parameters Data and parameters used for the quantification of GHG emission reductions and/or removals shall be provided in accordance with the methodology.	PD Section 4.1	tbd based on VM0009 NCR	Ok	Pending responses to additional NCRs on methodology.	Ok	Pending responses to additional NCRs on methodology.		Pending NCR 67.	Please see answer to NCR 67.	Addressed .
13	3.17.2 Quality management procedures to manage data and information shall be applied and established. Where applicable, procedures to account for uncertainty in data and parameters shall be applied in accordance with the requirements set out in the methodology.	PD Section 4.3.8; SOPs	tbd based on VM0009 NCR	Ok	Pending responses to additional NCRs on methodology.	Ok	Pending responses to additional NCRs on methodology.		Pending NCR 67.	Please see answer to NCR 67.	Addressed .
	Monitoring Plan										
14	3.17.3 The project proponent shall establish a GHG information system for obtaining, recording, compiling and analyzing data and information important for quantifying and reporting GHG emissions and/or removals relevant for the project (including leakage) and baseline scenario.	PD Section 4 and 4.3.5	Although the PD briefly mentions that data will be stored in a secure location, please provide additional details on the GHG information system in accordance with 3.17.3.	YvL: The centralized online data system MOVERS serve as the project's GHG information system. Please refer to section 4.3.5 of the PD for further detail.	Issue addressed.						
15	3.17.5 Where measurement and monitoring equipment is used, the project proponent shall ensure the equipment is calibrated according to the equipment's specifications and/or relevant national or international standards.	PD Section 4	Please clarify if any equipment will require calibration, and if so, please detail the calibration efforts in the relevant section of the PD.	YvL: None of the equipment used and described in the SOP for data collection "120320_PROCEDURE MANUAL FOR TREE DATA COLLECTION FINAL" provided to the auditors on April 23rd 2012 requires calibration.	Issue addressed.						
	RECORDS AND INFORMATION										

16	3.18.1 Records Relating to the Project The project proponent shall ensure that all documents and records are kept in a secure and retrievable manner for at least two years after the end of the project crediting period.	n/a	Please ensure in the PD that "all documents and records are kept in a secure and retrievable manner for at least two years after the end of the project crediting period."	YvL: Please refer to the details provided on data storage in section 4.3.5.: MOVERS is an online data system which is backed-up the data are kept secure and for more than two years after the end of the crediting period. In addition all documents and in addition the copies of the original data sheets are stored in CGI's office.	Issue addressed.							
	Information for the Validation/Verification Body											
17	3.19.1 PROJECT DESCRIPTION The project and its context shall be described in the project description using the VCS Project Description Template (or approved GHG program project description template where the project is requesting registration under an approved GHG program).	All	Please note there are two Section 2.1's (Pages 27 & 30).	YvL: Section numbers have been corrected in the PD.	Please note there are still inconsistent sections, specifically in Section 2.4 starting on page 29. There are a "2.1" & "2.2", but then the next section is "2.4.3". Further, NCR #44 mentions a map added to 2.3.3, but that section was not located. Please correct.	YvL: Inconsistencies have been corrected in the PD; KML file is provided in folder GIS files.	Is there anyway to add a "2.4" in front of all the sections under "2.4 Baseline Scenario," so they won't be confused with the previous sections under Section 2 "Application of a Methodology"? For instance, Section 2.1 on Page 29 should say Section 2.4.2.1. Section 2.2 on Page 32 should say 2.4.2.2. Section 2.3 on Page 33 should say "2.4.3", etc.	YvL:The section numbers have been corrected, please refer tot he PD.	Addressed.			

18	4) A calculation of baseline emissions, project emissions, leakage emissions (if applicable) and net GHG emission reductions and removals.	PD Section 3; Table 14	It appears this requirement has been met through Table 14. However, please note "weather" is misspelled in the first paragraph of Section 3.1. It should read "whether." Also, please re-check the headers in Table 14, as the validator was somewhat unclear of what they were indicating.	YvL: The word "whether" has been corrected in section 3.1 of the PD. The table in section 3.4 has been renamed to: "Ex-ante calculation of baseline emissions/removals, project emissions/removals, leakage emissions and net emission reductions and removals", as requested in the VCS Project Description Template, v3.0_0.	Issue addressed.							
19	5) A summary of any environmental impact assessments conducted.	PD Section 5	Although the validator received the necessary information during the CCB validation process to show a positive environmental impact, please provide a summary in this section of the VCS PD so that it may be a stand-alone document, verifiable by future v/v bodies.	YvL: A summary of the environmental impact has been added to section 5 of the PD.	Issue addressed.							

20	6) A summary of relevant outcomes from any stakeholder consultations conducted.	PD Section 6	Section 6 of PD describes a summary of the Stakeholder Comments. Please discuss the outcomes of those discussions. For example, the stakeholder questions were answered, but was there buy-in from the stakeholders after the answers were provided? Did the project proponent decide to take a different course of action after receiving any relevant stakeholder comments?	YvL: Based on the continuously positive feedback from stakeholders, the project proponent did not decide to take a different course of action. As described in section 6 of the PD, part of the project is an ongoing communication and grievance procedure. So far stakeholders are happy and serious about the project hence they want the project to go ahead. Further information has been added to the PD.	Issue addressed.						
21	8) For AFOLU projects, where required, the project description shall be accompanied by a non-permanence risk analysis prepared in accordance with VCS document AFOLU Non-Permanence Risk Tool.	PD Annex 1: Project VCS non permanence risk assessment	See "VCS_Risk" tab	OK	Pending responses to additional NCRs on VCS_Risk tab.	Ok	Pending responses to additional NCRs on VCS_Risk tab.		Pending responses to additional NCRs on VCS_Risk tab.		Addressed
	General Requirements										
	5.3.1 In addition to the requirements set out in ISO 14064-3:2006, the following shall apply:										

209	5.3.2 Where the project does not fully comply with the methodology, the validation/verification body shall determine whether this represents a methodology deviation or a methodology revision (in accordance with the specifications for each), and the case shall be handled accordingly.	PD Section 2.6; "120328_Kariba_Remote_Sensing_PD_Annex.doc"; Info in Folder "2.6 Arc Gis_GOFC-GOLD justification VCS"			For all areas in the PD where a change has been made to the specific requirements in the methodology, please include within the PD: 1. A full explanation of the change from the methodology, including what the methodology requires, what the project proponent is proposing to implement in its place, and why the change is needed. 2. Why the change from the requirements of the methodology is a deviation and not a revision (ie. how the change relates to measurement and monitoring [a deviation] and not quantification [a revision]). This detail is needed for many areas of section 2.4.4 so please review and revise the PD to include these details. In many areas this can be partly addressed by not referring to	Section 2.3.3. Deviation on measurement of historic deforestation explained in detail and compared to the methodology. Section 2.3.3.3. Minimizing Uncertainty updated and explained that data format (see 2.3.3) is different, thus demanding adaption to minimizing uncertainty but steps 3 & 4 are parallel to the methodology, while 18&2 are additional steps to minimize uncertainty. Too implement two addition steps to minimize uncertainty is not a deviation in our view. No section "2.4.4.6. Uncertainty of wall-to-wall classification" in the PD. Uncertainty of the cumulative deforestation model was quantified in section 2.3.3.6. We assessed uncertainty of the logistical model using appropriate statistics. As no point sample of deforestation observations was used, but wall-to-wall classification we have to deviate	Please re-write the newly added statement to Section 2.3.3 (Page 45) "and clicking several ten thousand time "No Image" over the rest of the grid." This is somewhat unclear. Please remove "unpractical" from the next paragraph. It may be a true statement, but it is not acceptable to deviate because something is unpractical in and of itself. There must be other reasons, which have been stated, so the verifier believes this should be removed.	FR - Wording changed.	Addressed.		
-----	---	---	--	--	---	---	--	-----------------------	------------	--	--

					the separate annex, instead including the details from the annex in the appropriate sections in the PD. <u>Some</u> of the additional areas noted which include changes from the meth and need this detail include: 2.4.4.4 - Deforestation rates - Model fitting - Covariate selection 2.4.4.6 - Uncertainty of the wall to wall classification 4.3.3 - Leakage	here from VM0009. NCR was not very clear and we are unsure what exactly was expected. We can re-introduce an older approach of quantifying uncertainty via the overall accuracy of the classifications from the confusion matrix if this is expected and acceptable. 4.3.3 The leakage area follows the requirements of the methodology, there will be no deviation. AS A SUMMARY: We see necessary deviations in how historic deforestation is measured and how the model uncertainty is quantified. This relates to measurement, while in the construction of the cumulative deforestation model (baseline emissions) and leakage emissions we staying in the framework of VM0009.			
--	--	--	--	--	---	---	--	--	--

22	5.3.3 Where the project applies a revision to an approved GHG program methodology and the version of the (underlying) methodology referenced by the methodology revision is no longer current, the validation/ verification body shall determine whether material changes have occurred to the underlying methodology that affect the integrity of the methodology revision. Where such material changes have occurred, the project shall not be approved.	PD Section 2.6; "120328_Kariba_Remote_Sensing_PD_Annex.doc"	Please note that VM0009 is currently being revised and re-assessed, so this requirement may affect the project, depending on timing.	OK	Issue addressed.						
Item Number	VCS AFOLU Requirements Version 3.2 (01 Feb 2012)	Location in PD or Supporting Documents	NCR/CL/OFI	Response from Client	NCR/CL/OFI	Response from Client	NCR/CL/OFI	Response from Client	NCR/CL/OFI		
	3 Project Requirements										
	3.1 GENERAL REQUIREMENTS										
23	3.1.2 Implementation of the project activities shall not lead to the violation of any applicable law, regardless of whether or not the law is enforced.	n/a	Please add a statement in the PD that "Implementation of the project activities shall not lead to the violation of any applicable law, regardless of whether or not the law is enforced."	YvL: A statement has been added to section 1.11 of the PD.	Issue addressed.						

24	3.1.9 For all IFM, REDD and PRC project types, the project proponent shall, for the duration of the project, reassess the baseline every 10 years and have this validated at the same time as the subsequent verification. Baseline projections for deforestation and/or degradation, forest management plans, and peatland drainage beyond a 10 year period are not likely to be realistic because rates of change in land-use and/or land management practices are subject to many factors that are difficult to predict over the long term, hence the need for periodic reassessment of the baseline. The following shall apply with respect to the baseline reassessment:	n/a	Please include a requirement that the project will reassess the baseline every 10 years.	YvL: A statement has been added to section 2.4, 2 of the PD.	Issue addressed.						
25	1) The reassessment will capture changes in the drivers and/or behavior of agents that cause the change in land use and/or land management practices and changes in carbon stocks, all of which shall then be incorporated into revised estimates of the rates and patterns of land use change and estimates of baseline emissions.	n/a	See above	OK	Issue addressed.						
26	2) The latest approved version of the methodology or its replacement shall be applied at the time of baseline reassessment.	n/a	See above	OK	Issue addressed.						
27	3) The project description shall be updated at the time of baseline reassessment following the requirements set out in the VCS Standard Section 3.9.5(2)(d).	n/a	See above	OK	Issue addressed.						
	3.2 PROJECT START DATE										

28	3.2.1 As set out in the VCS Standard, the project start date of an AFOLU project shall be the date on which activities that lead to the generation of GHG emission reductions or removals are implemented. Such activities may include preparing land for seeding, planting, changing agricultural or forestry practices, or implementing management or protection plans.	PD Sections 1.1, 1.5, 1.6, & 1.8	Please describe why the project start date is 01 January 2012 in the relevant sections of the PD. Please provide documentation supporting the assertions of the project start date.	Please refer to the answer provided under NCR 5.	Pending response to NCR #5.	Please refer to answer provided for NCR #5.	Issue addressed.				
	3.4 PROJECT LOCATION										
29	3.4.1 The project location shall be specified in the project description in terms of its project area. The spatial extent of the project shall be clearly specified to facilitate accurate monitoring, reporting and verification of GHG emission reductions and removals and to demonstrate that the project meets the eligibility criteria of the relevant project category. The project location description shall include the following information:	PD Section 1.9	Please provide the KMZ files (previously requested in "Standard 3.2" tab.	FR - Provided in folder "KML & Shapefiles - KML Project Area & KML Reference Region"	Based on review of the KML files, total project area is calculated to be 859,327 hectares. Please correct the discrepancy.	KML files have been updated and provided in folder GIS files.	Based on our review, please note the following and correct: § Hectares of open woodland in project area = 509,320 § Hectares of woodland in project area = 276,132 § Total hectares of forest in project area = 785,452 • PD (p.4) says 784,987 § Hectares of forest in reference area = 790,783 • PD (p.33) says 802,192 • PD (p. 26) also says reference area has 125% of the forest in the project area, but it only has (790,783/785,452*100)=100.67%	FR - Reference region size updated page 26 and 33. Project areas were found correct calculated individually from forest cover shapefiles in natural map projection per sub area. Difference in calculation of auditors came from calculation of a merged product for which one part (Mbire) was not the right map projection. As evidence we provide: Every sub-project area as individual shapefile with forest area calculated in natural map projection and a comparison in area calculation offset when	See NCR 67.	Please see Answer NCR 67.	Addressed .

								calculating Mbire in its not natural map projection. No update to areas has therefore been done in PD.			
30	3) Geographic coordinates of the project area boundary, provided in the format specified in the VCS Standard.	PD Section 1.9	Please provide the KMZ files (previously requested in "Standard 3.2" tab.	FR - Provided in folder "KML & Shapefiles - KML Project Area & KML Reference Region"	Please refer to NCR #29 above.	Please refer to the answer provided for NCR #29.	Please see NCR 29 above.	Please refer to answer to NCR #29		Please see Answer NCR 67.	Addressed .
31	4) Total size of the project area.	PD Section 1.9	Please confirm the total project area is 858,864 hectares in Section 1.9 of PD. Please note that when the areas of each RDC are totaled, the total is a difference of 1 hectare from what's depicted in Section 1.1.	FR - Mbire area in PD updated. Inconsistency was due to rounding of decimal numbers. We additionally provide the table "20120601_Kariba_Forest_Area.xlsx" in folder "KML & Shapefiles - Project Area Forest Stocks" for detailed overview	Please note that the Mbire area is still somewhat inconsistent, as the table on Page 65 (Section 3.3.3) shows it would be 267,656 when rounded. However, because the difference is very minor and due to rounding, Issue pending response to NCR #29.	Please refer to the answer provided for NCR #29.	Please see NCR 29 above.	Please refer to answer to NCR #29		Please see Answer NCR 67.	Addressed .
	3.6 LEAKAGE MANAGEMENT, MITIGATION AND ACCOUNTING										

32	3.5.1 The potential for leakage shall be identified, and projects are encouraged to include leakage management zones as part of the overall project design. Leakage management zones can minimize the displacement of land use activities to areas outside the project area by maintaining the production of goods and services, such as agricultural products, within areas under the control of the project proponent or by addressing the socio-economic factors that drive land use change.	PD Sections 1.13, 2.4.3, 3 & 4.1 (Page 52)	Please clarify if the reference region and leakage area are the same.	YvL: The reference and leakage area overlap. But instead of the original approach (reference = leakage) we changed for a leakage belt around the project area. As we discussed already on site, in case any leakage occurs it would affect the nearest neighboring areas only due to the low mobility of the local population and the main driver of deforestation: subsistence agriculture (highly unlikely that people are willing to walk further than 2-3 km to maintain their crops). The leakage section has been fully developed under section 3.3 of the PD.	Please note the misprint in Section 3.3.3 (2) "Leakage area (entirely forested at project start date) has an area of 585'863 ha" and revise. Based on your response including an assertion of low mobility, it is unclear if the 5km leakage belt proposed during the site visit is still proposed. Per Ms. Carolyn Ching's email of (30 May 2012, this would be a revision). Please clarify if you are no longer attempting the 5km leakage belt. Please provide KML files of the Leakage Area so that the validator can confirm the total area and forested area.	Section 3.3.3 (2) has been updated. We follow the requirements of the methodology → the leakage area has as much forest as the project area, we are therefore not longer attempting the 5km leakage belt. Updated KLM files are provided in folder KML files.	Please refer to NCR 148.	FR - File updated. Please refer to answer NCR 148.		Please refer to answer of NCR 148.	Addressed
Item Number	Approved VCS Methodology VM0009 Version 1.1 10 November 2011 Sectoral Scope 14	Location in PD or Supporting Documents	NCR/CL/OFI	Response from Client	NCR/CL/OFI	Response from Client	NCR/CL/OFI	Response from Client	NCR/CL/OFI	Response from Client	NCR/CL/OFI
	4 Applicability Conditions										
	For this methodology to be applied, project activities must satisfy the following conditions:										

33	1. This methodology was developed for avoiding deforestation and assumes that degradation and deforestation occur as a result of land use conversion to agriculture for the cultivation of non-perennial (annual) crops rather than for commercial timber harvest. This methodology may be used if all the drivers and agents of deforestation are consistent with those described in section 6 of this methodology.	Section 2.2	Please provide details/types of the annual crops being planted.	YvL: Details of the annual crops planted in each project area have been added to section 2.2, Applicability condition 1 of the PD.	Issue addressed.							
34	2. Once forest is converted to agriculture in the reference and leakage areas, that conversion is permanent and the land is not allowed to return to forest. This excludes use of this methodology for Swidden or other traditional forest cultivation activities that clear one area to farm for a year or two, and then move on and leave that area to return to forest over decades. It does not exclude converted areas where selective fields within a farm or agricultural area are abandoned due to soil depletion or are left fallow to recover but are continuously under agricultural or other anthropogenic use, and will not return to forest.	Section 2.2	In Section 2.2 of methodology, for each of the four districts, please provide justification and evidence for why the project, reference, and leakage areas will not return to forest land after being left fallow.	YvL: Additional information has been added to section 2.2, Applicability condition 2 of the PD, please refer to folder 34 for the communal lands act, part III, Section 8, subsection 2b).	Issue addressed.							

35	3. Forest land in the project area has qualified as forest as defined by FAO 2010 or that of the definition of forest set by the residing designated national authority (DNA) for the project country for a minimum of 10 years prior to the project start date (VCS, 2008).	Section 2.2	Please provide a project strata map in the PD. Please clarify why the forests are stratified as open woodland and woodland and not forests and open forests (See row 23). Please correct label for Map 3, which states "Table 3." It is difficult to tie the FAO map into the specific project areas to determine forestation 10 years prior to project start date. Please provide further evidence that "forest land in the project area has qualified as forest as defined by FAO 2010 or that of the definition of forest set by the residing designated national authority (DNA) for the project country for a minimum of 10 years prior to the project start date (VCS, 2008)."	FR - Forest Cover Map 2000 from project satellite classification provided. Maps into PD and folder "120423_Maps - Project Area". For clarification on the stratification of woodland and open woodland please refer to the answer provided for NCR 43. Label has been corrected in the PD.	There are several areas within the RDCs, especially Nyaminyami and Mbire, that are currently depicted as "Forest," while current satellite imagery shows these areas as non-forested. The validator is concerned that these are large areas and that this could greatly affect the planned deforestation rate, etc. This was an issue of earlier concern, so the project provided its own imagery to ensure consistency; however, after review the of the project's imagery, it is clear that there are still large areas that appear to be misclassified. Please address.	Please refer to NCR #97 for response and data. Forest Cover of NyamiNyami and Binga updated, new KML files provided, reasons for misclassification s explained. Binga had issues because to low ground point density. Additional ground points were taken and Binga completely re-classified for all steps of monitoring period. Project carbon stocks and baseline updated. An independent test of 151 visual points realized by auditor found "no red flags with classification" (see mail Shawn 16th of August) and data in folder "GIS files - NCR97" For NyamiNyami see document "120726_SP_Ex planation_Nyami Nyami" in same folder.	Issue addressed as it relates to this NCR only.
----	---	-------------	--	---	---	---	---

36	7. The project area shall not contain organic or peat soils.	Section 2.2	Under the "PD Requirements: Applicability Conditions" of this section of VM0009, it requires "Credible evidence that all applicability conditions have been met." As discussed during the field visit with Black Crystal, please provide proof of no peat or organic soils, and reference in PD.	YvL: Please refer to the photos of the "Soil Map of Southern Rhodesia" provided in folder 36. The soil types you can find within the project area are: 2; 14 and 16, which do not include peat or organics soils. Please note that there is no digital version of the map. However, there is no forested peatland or wetland in Zimbabwe. This assumption can be justified by the document provided within the same folder ("MRV & Drivers Submission on behalf of Wetlands International_28Feb2012-1," Table 2).	Issue addressed.						
37	10. Project activities are planned or implemented to mitigate deforestation by addressing the agents and drivers of deforestation as described in section 10.1 of this methodology.	Sections 1.8 & 2.2	It is apparent that the project targets the agents and drivers of deforestation directly by providing financial aid and educational resources to the communities, which incentivize them the reduce deforestation. However, please provide a more robust/rigorous and detailed work plan and budget allocation that more specifically defines who, what, where, when, how, and how much is allocated to each item in the list of drivers and agents. This will give the validator and other entities reassurance that	YvL: For a detailed work plan and budget allocation, please refer to the yearly budget planner of Environment Africa provided in folder 37. A comment has been added to section 2.2, Applicability condition 10 and section 1.8 of the PD.	Issue addressed.						

			the plan in place is implementable and can be carried out by any future employees on the project team.								
38	11. The project proponents have access to the leakage area to sample forest degradation (see section 10.3.2).	Section 2.2	Please note the PD references "section 10.3.2 of the present document," which appears to be a misprint, as there is no Section 10.3.2 in the PD (although this is the corresponding section of the methodology). Please provide further evidence of access to the leakage area, and include this evidence in the PD.	YvL: Additional information has been added to section 2.2, Applicability condition 11.	During the site visit, the validators had access to the land and observed how access to lands is communicated and allowed. Though the validator believes that adequate access is allowed, the newly added statement to the PD is confusing (By following common procedures such as writing an informational letter what the measurements are for to the entity that owns the land, no problem anticipated for accessing the leakage area). Please restate so that it is clear that access is granted to the project by the RDCs for the purposes of sampling.	YvL: Please refer to the PD, the wording has been changed.	The newly added statement clarifies the original statement that has been removed. However, the newly added statement is out of sequence, and needs to come after the statement "The access to the leakage area is always given due to the satellite imagery" to avoid confusion. Please revise.	YvL: The statement has been revised, please refer to the PD.	Addressed.		

39	12. If the lag period for the cumulative leakage model is estimated after the project start date but before the end of the first monitoring period (see section 10.3.3), then activity-shifting leakage has not occurred prior to the estimation of the lag period.	Section 2.2; Applicability Condition 12	The PD only references legally sanctioned logging in regards to activity shifting leakage and lag time; however, why are the other active agents/drivers of deforestation not addressed here also? Please provide justification and point to evidence of when the lag period is estimated in the PD.	YvL: For further information of leakage please refer to section 1.13 and the leakage section that has been fully developed under section 3.3 of the PD. The lag period is estimated once monitoring of the leakage area is conducted as to the methodology, section 10.3.2. Please refer to section 4.2 of the PD. The lag period is estimated to be 1-2 years. Once a land has been cleared of trees it is usually planted within the same year. This information is based on local knowledge.	Issue addressed.						
40	13. Project areas shall not include land designated for legally sanctioned logging activities.	Section 2.2; Applicability Condition 13; Binga Logging letter.pdf; Hurungwe logging letter.pdf; Mbire RDC-2 logging letter.pdf; Nyaminyami logging letter.pdf	Please include this applicability item in the PD and provide evidence that the project area does not include land designated for legal logging.	YvL: Applicability condition 13 has been added to the PD. Signed letters from each project area to confirm that not commercial logging is taking place are provided in folder 40.	Issue addressed.						
	PD Requirements: Applicability Conditions										
	The project description must include the following:										
41	1. Credible evidence that all applicability conditions have been met.	Section 2.2	See above NCRs.	OK	Please refer to NCRs 35 & 38 above.	Ok	This is generally addressed after the revision requested in NCR 38 has been completed.				
	5 Project Boundaries										
42	The physical and temporal constraints of the project as well as the greenhouse gases and carbon pools must be clearly delineated and defined by the project proponent. Bounds must conform to the latest guidance from the VCS and this methodology, and must be clearly and objectively	Section 2.3 & 2.4; KML files, strata shape files	Although it appears there is a strata map in the PD, it is based on FAO findings (Section 2.3, Page 23). Please provide a strata map based on project conditions	FR - KML files provided in folder "KML & Shapefiles - KML Project Area & KML Reference Region". Map "Kariba_Project_Area_Forest_2000" from satellite classification entered into PD and in	The validator noted the newly added table in Section 2.3. The remainder of this requirement is pending NCR	Please refer to the answer provided for NCR #35 & #97	Table 16 should include ex ante estimates for each carbon pool depicted in the table in Section 2.3. Please include. (See NCR 122).	YvL: We use default values, therefore it is not possible to make any distinction between large, small trees, non-tree	Addressed.		

	defined to facilitate monitoring and evaluation.		and the cumulative model in the PD. Although the pools are briefly mentioned/ summarized in subsection 6.1 of Section 2.4, please provide a table with the selected carbon pools for clarification in Section 2.3.	folder "120423_Maps - Project Area".	#35.			biomass, and dead wood. Please refer to the validated Kasigau PD (provided in folder 55): page 52, table 5. They assume carbon pools to be 0, although they are included as to page 12 table 2 (e.g. small trees, standing dead wood). The following statement has been added to section 3.1: The amount of emissions assigned for each selected carbon pool depicted in the table in Section 2.3 is determined at verification stage.			
	5.1 Delineating the Spatial Boundaries										

43	At a minimum, project lands must meet the definition of forest given in the definitions in section 3. The project area may consist of multiple contiguous or discontinuous forested parcels.	Section 2.2; Applicability Condition 3	Although discussed during site visit and touched on in Applicability Section 3 of the PD, please explain why the stratification used a woodland classification instead of a forest classification.	YvL: Woodland is a term for a forest classification commonly used for the forest formation found in the project area. Supporting documentation has been provided in folder 43, 46. Please refer in addition to the "Soil Map of Southern Rhodesia" provided in folder 36: e.g.: "2: On permian, Triassic grits, sandstone, and related colluvium in the Zambezi valley: under high deciduous woodland....". Additional information has been added to the Applicability condition 3 of section 2.2 of the PD.	It appears that the areas in the PD referencing "woodland" have been replaced with "forest," although not mentioned in the NCR response. Please clarify if the term "forest" will be broadly used throughout the project (model, plots, etc.) instead of "woodland."	YvL: The forest consists of Woodland and Open Woodland. Forest is the term used in applicability condition 3 of the methodology, this is why we used this term.	The explanation is sufficient; however, please provide a statement in the introductory sections of the PD that clarifies this for readability.	YvL: A statement has been added in section 1.1 of the PD.	Addressed.		
	The geographic or physical bounds of the project must be clearly delineated using, at minimum, the following:										

44	- Name of the project area (compartment or allotment number, local name) - Digital maps of the area, including geographic coordinates of vertices - Total land area - Details of ownership, including user rights and/or land tenure information - Topography - Roads - Major rivers and perennial streams - Land use/vegetation type classification	Section 2.3 & 2.4; KML files, strata shape files	Please provide a map in the PD depicting major rivers and perennial streams. Note the misprint in the description of Map 6. As mentioned in another NCR, please rename the map on Page 24, which is currently labeled as "Table 3." It does not appear a land-use/vegetation type classification map was provided. Please provide.	FR -Map of rivers and settlements provided in section 2.3.3, added as "Rivers and Waterbodies.jpg" in folder "120423_Maps - Reference region". Labeling of maps sorted. Land-use/vegetation type classification maps provided in section 2.3.3. Provided in folder "120423_Maps - Land use 2011 project area and reference region"	Maps 5 & 11 (depicting rivers and waterbodies) were located in Section "2.4.3.1". No Section 2.3.3 was identified in the PD. Please refer to refer to NCR #17. Land use was depicted on Maps 13 & 14, which are based on project stratification. The validator believes that land use maps should be more specific to the actual present land use of the area (roads, farms, national park, etc.). However, we understand the constraints this may place on a project size this large and at the detail needed. This is pending further discussion with Lead Validator, REDD+ Expert and possibly VCS.	Land-use maps show only project area and reference region. For Roads, Rivers and Protected Areas please see separate maps in the section. As project and reference areas are only used in subsistence agriculture of smallholders on communal land, no big farms exist in both areas. Land use classification was only realized for project and reference region following VM0009 requirements. Too much information in one map (landcover, rivers, roads, protected areas etc) would over-burden cartographic readability.	Please refer to NCR 17 for requested section number revisions. Land use, as depicted on several project maps, has been sufficiently depicted. However, please note the misspelling of the project name (Karia) on newly added maps (Maps 12 & 13). Please revise.	FR - Section numbers corrected. Misspelling in Maps corrected.	Addressed.		
	PD Requirements: Spatial Project Boundaries										
	The project description must include the following:										

45	1. A digital (GIS) map of the project area with at least the above minimum requirements for delineation of the geographic boundaries.	KML file	Please refer to NCR #44 above (Row 25) and ensure all these components are provided in GIS (KML) format.	FR - Provided in folder "KML & Shapefiles - KML Project Area & KML Reference Region"	Please refer to NCR #44 above.	Please refer to the answer provided for NCR #44.	This is generally addressed after the revision requested in NCR 44 has been completed.				
	5.2 Defining the Temporal Boundaries										
46	Temporal boundaries define the period of time when deforestation in the project area is mitigated by project activities. Lands must have qualified as "forest" for a minimum period of time prior to the project start date, as specified by the VCS standard. The temporal boundaries include the project crediting period which is fixed by the project proponent.	Section 2.2; Applicability Condition 3	Please clarify why the project was stratified as woodland and open woodland, instead of forest and open forest. Please clarify if woodlands classify as forests for the eligibility requirements of the methodology.	YvL: Please refer to the answer provided for NCR 43. The project area meets the forest definition of the FAO, given the forest is, or has the potential to grow in-situ, to more than 5 meters of height and has a canopy cover of above 10 per cent. Woodland is a term that falls under a dry forest classification (see: https://mail-attachment.googleusercontent.com/attachment/?ui=2&ik=80565a526b&view=att&th=137a719352432561&attid=0.1&disp=inline&safe=1&zw&saduie=AG9B_P-w-eak1MZBBm7DZMf2ffYz&sadet=1339108596054&sads=WkZmRfPWYcysnk9vS49iqRtflmo and the articles provided in folder 43, 46). The validated and verified Kasigau Corridor REDD Project also consists of a dryland forest and meets the forest definition.	Pending NCR #35.	Please refer to the answer provided for NCR #35 & #97	Issue addressed.				
	The following temporal boundaries shall be defined:										

47	· The start date of the project. · The start date of the project crediting period. · The length if the project crediting period. · The dates and periodicity of baseline revision and monitoring periods. Baseline reevaluation after the project start date and monitoring must conform to the current VCS standard.	Sections 1.5, 1.6	Please refer to Section 3.1.9 of the VCS AFOLU Requirements v3.2. Please include the dates and periodicity of baseline revision and monitoring periods in this section of the PD.	YvL: The baseline is reassessed every 10 years from the project start date and crediting period on and is validated at the same time as the subsequent verification. This statement has been added to section 1.6 of the PD. At this stage it is not possible to determine the dates for the monitoring periods.	Issue addressed.							
	PD Requirements: Temporal Project Boundaries											
	The project description must include the following:											
48	3. The dates for mandatory baseline reevaluation after the project start date.		See NCR 47 above.	YvL: Please refer to the answer provided for NCR 47.	Issue addressed.							
49	4. Credible documentation that lands claimed as forest qualified were such for a minimum time period prior to the project start date, as specified by the current VCS standard.	Section 2.2; Applicability Condition 3	See NCR 46 above.	YvL: Please refer to the forest classification map of 2000 provided in section 2.2, Applicability condition 3.	Pending NCR #35.	Please refer to the answer provided for NCR #35 & #97	Issue addressed					
	The project description may also include:											
50	5. A timeline including the first anticipated monitoring period showing when project activities will be implemented.	Section 4	Although not required, a timeline including the first anticipated monitoring period and showing when project activities will be implemented, would be helpful. Please consider including in the PD.	YvL (CGI): Please refer to the table provided in folder 50, 51. The monitoring started already and it is anticipated to finish the first monitoring period in Q4 of 2012.	Please note that the timeline provided was not very helpful, as no explanation for the color schemes was provided. However, as this was not included, Issue addressed.							

51	6. A timeline for anticipated subsequent monitoring periods.	Section 4	Although not required, a timeline for anticipated subsequent monitoring periods would be helpful. Please consider including in the PD.	YvL: Please refer to the answer provided for NCR 50.	Issue addressed.						
	5.3 Gases										
	Project proponents must account for significant sources of the following included greenhouse gases:										
	Gas	Justification									
52	CH ₄ (Methane)	Conservatively excluded	Please provide justification in Section 2.3 of the PD why CH ₄ was excluded from project accounting.	YvL: Additional information has been added in section 2.3 of the PD.	Issue addressed.						
53	N ₂ O (Nitrous Oxide)	Conservatively excluded	Please provide justification in Section 2.3 of the PD why N ₂ O was excluded from project accounting.	YvL: Additional information has been added in section 2.3 of the PD.	Issue addressed.						
	5.4 Selecting Carbon Pools										
54	Project proponents must account for the required pools (below) and may additionally select from the listed optional pools:	Section 2.4.6 (Page 41)	It is unclear what pools are required, especially for the project scenario. Can you provide a table in the PD to clarify?	YvL: Please refer to the information provided in section 2.3 and 2.4.6 of the PD.	Issue addressed.						
	Pool										

55	Above-ground large tree biomass	Section 2.4.6 (Page 41)	Please clarify if the project's use of medium sized trees would fall into the large or small tree carbon pool category. Please define all selected carbon pools in Section 2.3 of the PD.	YvL: Please refer to the information provided in section 2.3 and 2.4.6 of the PD.	The validator does not believe that it is conservative to assume 100% of the below-ground biomass is consumed in agricultural preparation. It is true that visible stumps may be burned, but there may still be a smaller portion of root system that does not burn up. Please address.	YvL: The stumps are totally burned during agricultural conversion, therefore we think that 100% of the below-ground biomass is consumed in agricultural preparation. This seems to be common practice in some countries of Africa, also the Kasigau Corridor REDD Project located in Kenya selected 100% as the proportion of below ground biomass removed from large trees (please refer to Section 6.6. of the PD). The Kasigau Corridor REDD Project got already registered and verified.	Please provide the validated Kasigau PD as supporting documentation (with specific page and section).	YvL: Please refer to the validated Kasigau PD provided in folder 55, section 6.6, page 48. The document can also be downloaded on the following VCS web-page: https://vcsprojectdatabase2.apx.com/myModule/Interactive.asp?Tab=Projects&a=2&i=562&lat=-3.5915&lon=38.79761&bp=1	Addressed.		
56	Standing dead wood	Section 2.4.6 (Page 41)	Please note the misspelling of "braches" and "equitation" in paragraph 6.2.	YvL: Misspellings have been corrected.	Issue addressed.						
57	Soil	Section 2.4.6 (Page 41)	Although it is apparent from the site visit, please clarify in Sections 2.3 and 2.4.6 if soil is a carbon pool accounted for in the project (this may be resolved when NCR #54 is addressed).	YvL: Please refer to NCR 54. Soil carbon is counted. Please refer to the information provided in section 2.3, 2.4.5 and 2.4.6 of the PD.	Issue addressed.						

58	Long-lived wood products	Section 2.4.6 (Page 41); 120328_Kariba REDD Baseline report_FINAL.doc	Please clarify in the PD how building materials for local huts are not considered long-lived wood products.	YvL: Additional information has been added to section 2.4.6: of the PD. Building material of the houses has to be replaced frequently (in average every 3 years) due to the environmental influences such as termites. Please refer to the PRA provided in folder "1&2_PRA" within the annex sent on March 28th, 2012.	Section 3.5.3 of the PRA mentions the 3-year timing for replacement of housing poles. However, it only mentions this for Binga and only for termite areas. Please provide sufficient evidence to back up the assertions that building materials are replaced every 3 years in all areas. Revising the PRA will not be sufficient at this point.	YvL: Generally it is necessary in the entire project area – not only in Binga – to replace housing poles every 1-3 years, although Environment Africa did not specifically mention this in their report. Please refer to folder 58 where letters of the RDCs are provided to confirm timing for replacement.	Issue addressed.				
59	Optional pools may be conservatively excluded if the sum of all emission from optional pools not selected is less than 5% of the total project benefit for the project lifetime (VCS, 2010a). The conservative exclusion of de minimis pools can be demonstrated using ex-ante estimates (see section 11.3). Conservative exclusions must always meet current VCS requirements.	Section 2.4.6 (Page 41)	Pending clarification on included pools above.	YvL: Please refer to NCR 54.	Please explain how/where the sum of emission from the optional pools (litter and lying dead wood) was calculated and determined to be less than 5% of the total project benefit. Please explain the rationale for these assertions.	YvL: The exclusion of lying dead wood and litter is a conservative approach; we therefore underestimate the carbon, which should be an acceptable approach. Further, it is optional to include lying dead wood under VM0009. Additionally the validated and verified Kasigau Corridor REDD Project did choose the same approach (please refer to section 5.4 of the VCS PD). Although the exclusion of these poles results in less carbon that can be claimed, we	Although omission of these pools is considered conservative, the requirement states they may only be excluded "if the sum of all emission from optional pools not selected is less than 5% of the total project benefit for the project lifetime." Even if the other project excluded them, the assumption is that they provided this separate analysis to the validation/verification body at the time of validation. Please address.	YvL: De minimis calculation has been added to the Ex-ante calculation "120903_KA RIBA ER Calc_auditors". Both, the calculation as well as the literature used is provided in folder 59. Please note: Litter has been added although it is explicitly not required by the methodology. The emissions of lying deadwood does only count for 1.5% in Woodland and 1.1% in	Addressed.		

						think it will facilitate the monitoring process.		Open Woodland and can therefore be ignored. The following statement has been added to section 2.3 of the PD: "Lying dead wood counts for considerable less than 5% of the total project benefit for the project lifetime and has therefore been conservatively excluded. The de minimis calculation has been provided separately to the auditors."			
60	Large trees are differentiated from small trees by a specific DBH. The important distinction between these classes of trees is that, under the baseline scenario, below-ground biomass of small trees is assumed to be completely removed, while below-ground biomass of large trees may remain in part on site. This diameter is called the size class diameter and must be selected by the project proponent based on the following criteria:	Section 2.4.6 (Page 41)	Please refer to NCR #55 above (Row 58).	YvL: Please refer to NCR 55.	Please refer to NCR #55 above.	Please refer to the answer provided for NCR #55.	Please see 55 above.	YvL: Please refer to the answer provided for NCR #55.	Addressed.		
61	· Empirical evidence based on past land use conversion events to agriculture, considering the mechanisms used for land clearing and observed residual biomass remaining in the soil after the conversion.	Section 2.4.6 (Page 41)	Please provide "Empirical evidence based on past land use conversion events to agriculture, considering the mechanisms used	YvL: When forest land is converted to agriculture all the larger trees - with the exception of Baobabs, which have cultural values - are chopped by axe and burned at the	Please refer to NCR #55 above.	Please refer to the answer provided for NCR #55.	Please see 55 above.	YvL: Please refer to the answer provided for NCR #55.	Addressed.		

	· The tree diameter below which the belowground tree biomass is completely removed as a result of land use conversion to agriculture. · The tree diameter above which the belowground tree biomass is partially removed as a result of land use conversion to agriculture.		for land clearing and observed residual biomass remaining in the soil after the conversion; The tree diameter below which the belowground tree biomass is completely removed as a result of land use conversion to agriculture; The tree diameter above which the belowground tree biomass is partially removed as a result of land use conversion to agriculture."	base until the tree eventually falls over. The fire smolders into the stump down below the ground surface destroying the main root system. Any coppicing is repeatedly chopped or burned so that remaining biomass dies out. Also any seedlings from seeds blown in are weeded out. The OGM team leaders have a combined experience of 30 years in the project areas and have not seen any stumps in a field. We therefore do not differentiate large trees from small trees for this project (and therefore your question of the tree-diameter has not been addressed in the PD). As a result we contend that it is common practice in this region to burn the stumps out, and therefore we select 100% as the Proportion of below ground biomass removed from large trees. Please refer to the additional information provided in sections 2.3 and s.4.6 of the PD.								
62	If there is no clear distinction between small trees and large trees with respect to these criteria, then any size class diameter can be used. In this case, a project proponent may select a size class diameter that minimizes sampling costs, as small trees can be measured using different sized plots than large trees (see section 13.5). The selection of a relatively small diameter is considered conservative.	Section 2.4.6 (Page 41)	Please refer to NCR#55 (Row 58) above.	YvL: Please refer to answers provided for NCRs 55 and 61.	Please refer to NCR #55 above.	Please refer to the answer provided for NCR #55.	Please see 55 above.	YvL: Please refer to the answer provided for NCR #55.	Addressed.			
	PD Requirements: Carbon Pools											

	The project description must include the following:										
63	2. A list of the carbon pools selected.	Section 2.4.6 (Page 41)	Please refer to NCR#54 (Row 56) above.	YvL: Please refer to answer provided for NCRs 54.	Please refer to NCRs 55 & 58 above.	Please refer to the answer provided for NCR #55 & 58.	Please see 55 above.	YvL: Please refer to the answer provided for NCR #55.	Addressed.		
64	3. The selected size class diameter.	n/a	Please provide diameter size classes for the large tree and small tree biomass pools in accordance with the methodology and NCRs 60 & 61 (Row 70 & 71) above.	YvL: Please refer to answer provided for NCRs 61.	Please refer to NCR #55 above.	Please refer to the answer provided for NCR #55 & 58.	Please see 55 above.	YvL: Please refer to the answer provided for NCR #55.	Addressed.		
65	4. Rationale and evidence to support the selected size class diameter, if applicable.	n/a	Please refer to NCRs 55, 60, 61, and 62 (Rows 58, 70, 71, & 72) above.	YvL: N/A, please refer to answer provided for NCRs 61.	Please refer to NCR #55 above.	Please refer to the answer provided for NCR #55 & 58.	Please see 55 above.	YvL: Please refer to the answer provided for NCR #55.	Addressed.		
	5.5 Grouped Projects										
	6 Baseline Scenario										
	6.1 Overview										
66	The cumulative deforestation model is a function of time and some external, quantifiable drivers of deforestation such as population density, length of road in the region or median household income. These external, quantifiable drivers of deforestation are called covariates due to their correlation with deforestation in the region. The model is primarily constructed using observations made from a reference region which either surrounds or is near to the project area. The boundaries and size of the reference region are subjective and are optionally defined by the results from a participatory rural appraisal.	Section 2.4	The cumulative deforestation model (CDM) predicts percent deforestation in the future, using past observations that are parameterized using EQ 7 of VM0009. Please demonstrate how the CDM is constructed as required by the VM0009.	FR- explanation given in PD section 2.4.4.	Please refer to the NCRs relating to Section 6.4 of the methodology below.		This NCR can be closed as it is a general statement in the methodology. However, refer to any NCRs relating the Section 6.4 of the VM0009 below.				

67	The participatory rural appraisal is an optional tool that suffices to identify the agents and drivers of deforestation in the event that the agents and drivers are not obvious. If, during validation, the agents and drivers of deforestation are found not to be evident, a participatory rural appraisal must be conducted. If a participatory rural appraisal is not used, then statistics about the agents and drivers obtained from published or unpublished sources should be used to demonstrate their prevalence.	PD Section 2.4	During aerial surveys, it was noted that deforestation areas in Gokwe were significantly greater than the project areas. Please provide stronger justification that the agents and drivers are similar in order to avoid having to conduct a PRA in this area.	Tsi: Further justification added to section 2.4 of the PD to show similarity of deforestation agents, drivers and socio-economic conditions in project and reference area - including Gokwe. Included justification: Reference to land classification map showing the communal management of project and reference area, reference to peer-reviewed publication of PRA-based deforestation analysis in Gokwe South, 2011 province-level socio-economic data for all relevant provinces. Please refer to the documents provided in folder 67.	During the site visit, it was observed that Gokwe appeared to have less forested areas proportionally than the project area. The validator felt that this would mean a greater pressure would be placed on Gokwe's existing forest resources than in the project area, which could skew the similarities in the region. Although this was briefly mentioned in the PD, more information is needed to fully vet this issue. Please address.	VM0009 generally assumes deforestation to behave "logistic" over time (page 36), which speaks against an increasing pressure to fewer forests. Gokwe had its cotton rush in the 90s and 80s before the monitoring period. Still, to address auditor's concern large historically deforested tracks of Gokwe South have been removed from reference region. Proponent is convinced the remaining part is similar in agents and drivers of deforestation to the project area.	Please note that the area in the reference region, as calculated in the KML files, appears to be inconsistent with the hectares stated in the PD (See AFOLU tab). Please address.	FR - Figure updated to be equal with number in Cumulative Deforestation Model Landcover change table.	PD says there are 790,715 ha in reference in region, but the number we all agreed on was 790, 711 ha. Given the scale of the difference this is just a clarification question.	Updated to 790,711 ha.	Addressed
	6.2 The Participatory Rural Appraisal										

[illegible]

				All areas historically deforested in the Hurungwe forest area of communal land (same legal status) are included in the reference region. See explanation at the end of section 2.4.3.1. A larger reference region around Hurungwe project area was not searched but not possible to include due to: a) different legal status (National Park or non-communal land) b) different drivers and agents of deforestation as commercial farming for tobacco production dominates, not subsistence agriculture like at the project area or in the reference region.							
	PD Requirements: Participatory Rural Appraisal										
	If a participatory rural appraisal is used then the project description must include the following:										
69	1. A copy of the questionnaire and an archive of all responses that can be easily produced for validation/verification purposes.	Section 2.4, "120328_Kariba REDD Baseline report_FINAL.doc"; PRA Questionnaires	Please provide 2 questionnaire response sheets from each RDC area for the validator to confirm the responses are archived and easily accessible.	YvL: Please refer to the questionnaires provided in folder 69.	Issue addressed.						
70	3. The locations where the survey was administered.	Section 2.3 of PRA and 2.4 of PD.	Please provide a map of the wards within each RDC area.	FR - Map added to PD section 2.3.3. "WardMap.png" in folder "120423_Maps - Reference region".							

71	4. The date(s) when the survey was administered.	Section 2.4, "120328_Kariba REDD Baseline report_FINAL.doc"; PRA Questionnaires	The validator did not see the dates when the surveys were administered. Please provide or detail where located, if provided already.	YvL: The participatory rural appraisal has been conducted from May 14th-23rd in 2011. The information has been added to section 2.4 of the PD.	Issue addressed.							
	PD Requirements: Analysis of Agents of Deforestation											
	If a participatory rural appraisal is used then the project description must include the following:											
72	2. Descriptions of agents including any useful statistics and their sources.	PD Section 2.4.2.1 (1), Page 26	Note the double section numbers. Please correct. Please provide the statistics for the Descriptions of Agents.	YvL: Additional information that refers to the methodology and sampling intensity/size and statistics has been added to the updated baseline report, provided in folder 68,72&74: Please refer to 2.3 Sampling strategies (page 12), 2.4 Participatory rural appraisal, 2.4.3 Household interviews; 2.4.4 Focus group discussions, and 2.4.5 Schools interviews.	Issue addressed.							
73	5. A list of possible external numeric drivers (covariates) of deforestation, if any.	PD Section 2.4.2.1 (1), Page 26	Note the double section numbers. Please correct. Please clarify any possible external numeric agents of deforestation.	FR: Please see PD section 2.4.2.1. No external agents of deforestation have been observed or are expected in the reference region or close to the project areas.	Issue addressed.							
	PD Requirements: Analysis of Drivers of Deforestation											
	If a participatory rural appraisal is used then the project description must include the following:											

	1. A list of drivers of deforestation by rank and number of responses.	PD Section 2.4.2.1 (2); Page 30									
74	2. Useful statistics about the drivers and their sources.	PD Section 2.4.2.1 (2); Page 30	Note the double section numbers. Please correct. Please provide the statistics for the Descriptions of Drivers.	YvL: Additional information that refers to the methodology and sampling intensity/size and statistics has been added to the updated baseline report, provided in folder 68,72&74: Please refer to 2.3 Sampling strategies (page 12), 2.4 Participatory rural appraisal, 2.4.3 Household interviews; 2.4.4 Focus group discussions, and 2.4.5 Schools interviews.	Please clarify where in the stated section can be found the statistics about the drivers of deforestation and their sources.	The statistics can be found in the results section of the Baseline report. Please refer to pages 26-36 where it start off with and explanation of the methodology and pay attention to table 14. There is a column for additional "supporting data from SPSS".	The verifier believes the requirement for statistics refers to numerical statistics, not qualitative information. Please provide numerical statistics or a justification as to why they were not provided.	YvL: Please refer to the "Final revised Baseline report with statistics", previously provided in folder "68, 72 & 74" (120821_Kari ba answers 2nd round). The following sampling intensity applies, which is directly linked to the drivers of deforestation: Section 2.3, page 12: "....The sampling intensity for the wards in the project area is 56.3%....". Section 2.4.3, page 15: ".....A sampling intensity of 5.8% was achieved for the household interview (372 households in the whole project area each with an average of 5 people)..." Section 2.4.4, page 15/16: ".....sampling intensity of 29.6%...." " for focus group	Addressed.		

								discussions. Section 2.24.5, page 17: „.....All schools falling in the sampled project wards were sampled thus making a 100%“.			
75	4. A list of possible external numeric drivers (covariates) of deforestation, if any.	PD Section 2.4.2.1 (2); Page 30	Note the double section numbers. Please correct. Please clarify any possible external numeric drivers of deforestation.	YvL: Please refer to section 2.4, it has been added that the project does not count with any external agents of deforestation. Double section numbers have been corrected.	Issue addressed.						
	6.3 The Reference Region										
	6.3.1 Delineating the Reference Area										

76	The reference area is delineated using the relevant drivers and agents of deforestation as identified by expert knowledge or the participatory rural appraisal. The reference area must be in the same general region as the project area, but not necessarily adjacent to the project area. The size of the reference area must be at least the size of the project area but does not need to be contiguous with the project area. The reference area may not include the project area and may not be altered during the historic reference period. The boundaries of the reference area may include one or more of the following:	PD Section 2.4.3.1; "Black Crystal Capability March 2012.pdf"	Please provide the total area of the reference area in Section 2.4.3 of the PD. Please provide additional information on the empirical process utilized by Black Crystal to select the reference area.	FR: Forest cover is provided in section 2.4.3. The staff of Black Crystal has more than one decade of experience in Zimbabwe / project and reference region. The delineation of the reference area is based on their local knowledge and the extensive knowledge of CGI's project team. In addition, please refer to the additional information on similarity that has been provided in section 2.4 of the PD.	As the forest cover for the reference area was determined by the project model, this issue is pending review of the discrepancies noted in NCR #35.	Please refer to the answer provided for NCR #35 & #97	Please refer to NCR 67 above.	FR - Please refer to answer of NCR 67.	Please refer to NCR 67 above.	Please see Answer to NCR 67.	Addressed
77	· Environmental, natural or political boundaries. · Major transportation infrastructure such as highways or railroads. · Land ownership/tenure boundaries. · Latitudinal or Longitudinal degree boundaries.	PD Section 2.4.3.1; "Black Crystal Capability March 2012.pdf"	Please clarify what determines the boundaries of the reference areas. During the field visit, a discussion of modifying the boundaries of the Gokwe reference area occurred, as the Gokwe reference area appeared to be more heavily deforested than the project area, which would strain its existing forests even more, causing an uneven comparison of the deforestation rate. Please address and confirm if this has occurred.	FR - Even aerial inspection only reveals parts of this large area and observations do not need to be representative . The larger percentage of long historically deforested area does not mean necessarily that Gokwe South has higher deforestation rates than Gokwe North, other parts of the reference region, or close to the project area. Explanation on similarity of the reference region was expanded, especially in respect to other cities close to the project area matching the one Gokwe South Urban inhibits on its surrounding. Please refer to section 2.4 of the PD.	This issue was discussed and acknowledged during the field visit. The response and revisions to the PD do not fully explain or are unclear as to the issue of the possibility of a heavier strained forest resource in Gokwe. The statement "The larger percentage of long historically deforested area does not mean necessarily that Gokwe South has higher deforestation rates than Gokwe North" needs to be fully vetted if it	Please refer to the answer of NCR #67	Please refer to NCR 67 above.	FR - Please refer to answer of NCR 67.	Please refer to NCR 67 above.	Please see Answer to NCR 67.	Addressed

					is to be an assertion of the project. Just because the areas have similar agents and drivers of deforestation does not mean that the deforestation rates will be the same. Please address.						
78	The boundaries and size of the reference area must address the following criteria in order to ensure that the agents and drivers of deforestation in the reference area are similar to those of the project area:	PD Section 2.4.3.1; "Black Crystal Capability March 2012.pdf"	Please see items 1-4 in this section of the methodology and provide greater detail in the PD as to how each one is addressed.	FR -please see description in section 2.4.3.1 - the reference region is the ONLY land in the same region with the project area with communal owned subsistence agriculture farming not under conservation area status. Map of project area, reference region and protected area provided in section 2.4.3. Provided in folder: "120423_Maps - Reference region". : A land classification map supporting this is provided separately to the Auditors, source is http://eusoils.jrc.ec.europa.eu/esdb_archive/EuDASM/Africa/maps/afr_zw2002_2lu.htm .	Please clarify how, based on the Land Classification Map provided, one can determine the conservation area status. It appears there are other Communal lands within the vicinity (Dande?).	Please refer to Map 20 of PD. The place Dande refers to a safari area in the Mbire RDC which was excluded from project and reference area. VM0009 only demands land use and landcover classification for project and reference region and protected areas are excluded from both. Please see also NCR #148.	Please note the Map 15 (which the verifier believes you are referring to when you state Map 20) does not have an identifier in the legend for the brown areas. Please revise. Also, please show the entire boundary of the reference area on this map, as it appears to be hidden under other lines/layers.	FR - Please refer to answer of NCR 67.	Maps 2, 3, 5, 9, 14, and 15 still do not clearly depict the reference area boundary. Please correct.	Maps 2,3,5,14, & 15 updated as discussed. Map 9 left as is as discussed.	Addressed
79	1. The locations of the agents of deforestation relevant to the project area.	PD Section 2.4.3.1; "Black Crystal Capability March 2012.pdf"	Please refer to NCR #78 (Row 145) above.	FR - Please refer to the maps of section 2.4.3 with land use, rivers, soils, elevation, roads, settlements and legal status (protected area status).	Issue addressed.						

80	2. The nobilities of the agents of deforestation relevant to the project area.	PD Section 2.4.3.1; "Black Crystal Capability March 2012.pdf"	Please refer to NCR #78 (Row 145) above.	FR - description and graphic added to PD section 2.4.3.1. Please also see the Adaptive Management Plan provided separately in folder 199 for more details.	Issue addressed.						
81	3. The drivers of deforestation including the following relevant to the project area:	PD Section 2.4.3.1; "Black Crystal Capability March 2012.pdf"	Please refer to NCR #78 (Row 145) above.	FR -please see description in section 2.4.3.1 - the reference region is the ONLY land in the same region with the project area with communal owned subsistence agriculture farming not under conservation area status. Map of project area, reference region and protected area provided in section 2.4.3. Provided in folder: "120423_Maps - Reference region". : A land classification map supporting this is provided separately to the Auditors, source is http://eusoils.jrc.ec.europa.eu/esdb_archive/EuDASM/Africa/maps/afr_zw2002_2lu.htm .	Please refer to NCR #78.	Please refer to answer provided for NCR #78.	Issue addressed.				
82	a. Socio-economic conditions; and b. Cultural conditions.	PD Section 2.4.3.1; "Black Crystal Capability March 2012.pdf"	Please refer to NCR #78 (Row 145) above.	FR -please see description in section 2.4.3.1 - the reference region is the ONLY land in the same region with the project area with communal owned subsistence agriculture farming not under conservation area status. Map of project area, reference region and protected area provided in section 2.4.3. Provided in folder: "120423_Maps - Reference region". : A land classification map supporting this is provided separately to the Auditors, source is http://eusoils.jrc.ec.europa.eu/esdb_archive/EuDASM/Africa/maps/afr_zw2002_2lu.htm .	Please refer to NCR #78.	Please refer to answer provided for NCR #78.	Issue addressed.				

				w2002_2lu.htm.							
83	4. Landscape configuration including the following relevant to the project area:	PD Section 2.4.3.1; "Black Crystal Capability March 2012.pdf"	Please refer to NCR #78 (Row 145) above.	FR - Please refer to the maps of section 2.4.3 with land use, rivers, soils, elevation, roads, settlements and legal status (protected area status).	Issue addressed.						
84	a. Topographic constraints to deforestation (slope, aspect, elevation); b. Land use and/or land cover constraints to deforestation; c. Access points that may constrain deforestation; d. Areas of limited soil productivity; e. Proximity to important markets; f. Proximity to important resources (water, electricity, transportation); and g. Ownership/tenure boundaries that constrain deforestation (government holdings, private holdings and reserves).	PD Section 2.4.3.1; "Black Crystal Capability March 2012.pdf"	Please refer to NCR #78 (Row 145) above.	FR - Please refer to the maps of section 2.4.3 with land use, rivers, soils, elevation, roads, settlements and legal status (protected area status).	Please clarify if there are any topographic constraints to deforestation within the reference area.	Explanation added to end of section 2.4.3.1 below geostatistical analysis.	Please restate the following "and villages as starting points for land use in the reference region equally lie on higher elevation on altitude, thus levelling any topographic constraints to deforestation." This statement is unclear.	FR - Wording changed.	Changes were identified, however the language added is also confusing. Please clarify the statement "While the reference region forests lie on average on higher elevation, reference region villages equally do, levelling accessibility equal. " It is beleived you are trying to state here that even though the reference regions are at higher elevations, all reference regions and project areas have similar accessibility as all are equivalently level.	Language has been revised.	Addressed .

85	4. The reference area and project area must have similar landscape configuration (for instance, the same topography and land cover).	PD Section 2.4.3.1; "Black Crystal Capability March 2012.pdf"	More information is needed to justify the broad statement that the geographic qualities are similar. Please provide a percentage comparison of the various geographic qualities (i.e., percent of each forest type within the project area versus the reference area; percent of mountainous relief in the project area versus the reference area, etc.).	FR - Geostatistical data on elevation and forest strata distribution included in section 2.4 of the PD. Our project area and reference region as matched landscapes by socio-economics, legal status and geography have a high degree of similarity but naturally can not be 100% the same. We kept our reference region of the Kariba REDD+ project close to similarity requirements validated for Kasigau REDD project to comply with the same level of similarity.	The PD references that the project and reference area have different topography. Please explain how this will affect or not affect the deforestation rates determined.	Please refer to answer to NCR #84	Pending NCR #84.	FR - Please refer to answer of NCR 84.	Pending NCR #84.	Please refer to NCR 84.	Addressed
86	5. The reference area must have at least the same area of forest cover as the project area at any point in the reference period. This can be demonstrated by a thematic classification of land cover in the reference area at some point in the reference period and the project area, or by some other credible method.	PD Section 2.4.3.1; "Black Crystal Capability March 2012.pdf"	Although it may be provided in the spreadsheets, in the PD, please describe the total forested area in the project area versus the reference area in accordance with the meth.	FR - reference region forest cover area provided in PD section 2.4.3	This is pending NCR #35.	Numbers added at end of section 2.3.1. Please refer to answer to NCR #35 & #97.	Please ensure the stated area in 2.4.2.3.1 is correct after any adjustments have been made pending other NCRs.	FR - Please refer to answer of NCR 67.	Addressed.		
	PD Requirements: Delineation of the Reference Area										
	The project description must include the following information with respect to the reference area:										
	2. Maps of the landscape configuration, including:										

87	a. Topography (elevation, slope, aspect); b. Recent land use and land cover (either a thematic map created by the project proponent or publically available map); c. Access points; d. Soil class maps (if available); e. Locations of important markets; f. Locations of important resources like waterways or roads; and g. Land ownership/tenure boundaries.	Maps 4-6 no b Maps 8-9 Map 7 e n/a map 8 (no waterways) g n/a	Please provide a map of the recent land use and land cover and a map depicting the important resources (waterways, etc.).	FR - Please refer to the maps of section 2.4.3 with land use, rivers, soils, elevation, roads, settlements and legal status (protected area status).	Please refer to NCR 44.	Please refer to the answer provided for NCR #44.	Issue addressed.				
88	4. Demonstration that the reference area has at least the same area of forest cover as the project area.	PD Section 2.4.3.1; "Black Crystal Capability March 2012.pdf"	Please refer to NCR #86 (Row 159) above.	FR -Reference region forest cover added to PD section 2.4.3 - exceeds project area.	This is pending NCR #35.	Please refer to the answer provided for NCR #35.	This should be addressed, pending final area reviews in KML files and clarifications on inconsistent areas.				
	6.3.2 Defining the Reference Period										
89	The reference period must be established by important historic events as identified by the information obtained from expert knowledge or the participatory rural appraisal and corresponding analysis of agents and drivers of deforestation. These events include the following:	PD Sections 1.10 & 2.4.3.2	Please refer to NCR #90 (Row 169) below.	Please refer to answer provided on NCR 90.	Issue addressed.						
90	· The arrival time of specific foreign agents of deforestation, if any; · The times when the drivers of deforestation became apparent, if any; and · The times of significant economic growth or decline.	PD Sections 1.10 & 2.4.3.2	Please provide additional documentation for how the reference period was established (i.e., important historic events).	FR - Narrative on important historic events (mainly from 1.10 put into context) added to section 2.4 of the PD	Issue addressed.						

91	Historic imagery of the reference area should be acquired for times before and after these events and this imagery should be used to construct the cumulative deforestation model per section 6.4. If no important events are identified, then the reference period should be established by the times of available historic images of the reference area.	PD Sections 1.10 & 2.4.3.2	If there were no historic events identified, please describe the process by which the historic images of the reference area were used to derive the reference period. Please address the use of historic imagery of the reference area before and after any identified historic events, and how it relates to the construction of the CDM.	FR - All images from wide-field, low cost satellite sensors Landsat 5 TM & Landsat 7 EMT+ with less than 50% cloud cover over the reference region within the last 15 years prior to project start were utilized. Therefore the established reference period covers the important historic events in the reference region and is also the only technical viable option. (Explanation added to PD)	Issue addressed.							
	PD Requirements: Defining the Reference Period											
92	The project description must include the following with respect to the reference period: 1. Established reference period boundaries. 2. A list of available historic imagery for the reference area. 3. A timeline of important events as they relate to the agents and drivers of deforestation. 4. Narrative rationale for the selection of the reference period.	PD Sections 1.10 & 2.4.3.2	Please refer to NCRs# (Rows 168-170)	Please refer to answers provided on NCRs 89-91.	Issue addressed.							
	6.4 The Cumulative Deforestation Model											
	6.4.2 Building the Cumulative Deforestation Model											

93	The minimum spatial resolution of the imagery must be 30m. Where possible, multi-spectral imagery should be enhanced using a Tasseled-Cap transformation, Principal Components Analysis (PCA) or other similar transformation to facilitate the differentiation of forest vegetation from other land covers.	PD Section 2.4.4	It appears the imagery is multi-spectral. If so, please clarify if a Tasseled-Cap or PCA transformation was completed.	FR- explanation given in PD section 2.4.4.	Issue addressed.						
94	All imagery must be spatially registered to the same coordinate system with accuracy less than 10% Root Mean-Squared Error (RMSE), on average across all images (Congalton, 1991). The accuracy of spatial registration is assessed empirically, each image relative to other collocated images or a ground control point. Oblique imagery should be avoided to maintain accurate spatial registration.	PD Section 2.4.4	Please state in the PD what the coordinate system is. Please provide the empirical evidence of accuracy required by the methodology or describe where the validator can locate this.	FR- explanation given in PD section 2.4.4.	Pending Skype calls and final review of Lead Validator and AFOLU REDD+ Expert.	To provide empirical evidence that spatial registration follows VM0009 requirements, a RMSE control point selection was performed and results are given below. For details on method please see additionally provided document "120816_RMSE_Analysis_Kariba" as well as location and RMSE tables for each image in folder "GIS files and maps - NCR 94"	Issue addressed.				
	PD Requirements: Historic Imagery to Build the Cumulative Deforestation Model										

95	The project description must include the following: 1. A map of the reference region showing the area of "double-coverage". 2. Quantification of "double coverage"(greater than 90%). 3. A line plot of the historic image dates to confirm stationarity. 4. Empirical evidence that imagery is registered to within 10% RMSE, on average.	PD Section 2.4.4	Please refer to NCR#93 & 94 (184-186).	FR- explanation given in PD section 2.4.4.	Pending Skype calls and final review of Lead Validator and AFOLU REDD+ Expert.	Method to show double coverage in a wall-to-wall classification agreed with auditor in mail from Shawn from 13th of August. Explanation added to end of section 2.3.3. Please review analysis table in folder "GIS files & maps - NCR 95".	ESI is trying to determine if we have the information (shape files) needed to run the double coverage assessment. This issue is to be discussed further in the 04 September 2012 conference call.		Addressed.		
	6.4.5 Discarded Sample Points										
210	When sampling deforestation in the reference area, some sample points are discarded because their initial observations were non-forest; deforestation cannot be observed without initially observing forest. These points should be discarded indefinitely and should not be used in the leakage assessment or in any baseline reevaluations. Likewise, these points should not be considered when estimating the minimum sample size.						Please note this requirement was originally excluded from the checklist, as the verifier thought it related to the point-grid sampling. Upon further review, it does have relevance to the Kariba project's model design. Although we are not requesting any changes to the PD, we suggest you include a statement that addresses that future modeling exercises will not include points that have been previously discarded.	FR - Added reference to section 2.4.2.3.3.3 below, as "Discarded Sampling Points" in our approach are equal to areas excluded because of improbable landcover transitions.	Addressed.		
	6.4.6 Minimizing Uncertainty										

96	Observation data should be checked for inconsistencies. For example, observations of forest state over time at any one point in space probably do not transition from forest to non-forest, and then back to forest during the reference period (for an example, see Figure 6). A list of "impossible" or "unlikely" forest state transitions should be developed, and each point that matches the criteria should be reexamined.	PD Section 2.4.4.4; "120328_Kariba_Remote_Sensing_PD_Annex.doc"	Please clarify if "impossible" or "unlikely" forest state transitions were developed and how their analysis was carried out.	FR- explanation given in PD section 2.4.4.	Issue addressed.						
97	A random subset of sampled points should be interpreted independently, and these observations should be checked against the observations made by the interpreter or interpretive team members to identify any systematic misinterpretation. All systematic errors should be corrected.	PD Section 2.4.4.4 & 2.6; "120328_Kariba_Remote_Sensing_PD_Annex.doc"	Please clarify if a subset of sampled points was interpreted independently.	FR- explanation given in PD section 2.4.4.	Please explain if the issue related to NCR # 35 affects this item. It appears there were areas that were misclassified; thus, additional independent testing may be needed. Pending NCR # 35.	FR: Forest Cover of NyamiNyami and Binga updated, new KML files provided, reasons for misclassification explained. Binga had issues because to low ground point density. Additional ground points were taken and Binga completely re-classified for all steps of monitoring period. Project carbon stocks and baseline updated. An independent test of 151 visual points realized by auditor found "no red flags with classification" (see mail Shawn 16th of August) and data in folder "GIS files and maps - NCR97" For NyamiNyami see document "120726_SP_Explanation_Nyami	Please note that there is a defined, unnatural break line in the forest classification results in the western part of NyamiNyami. Please address and correct.	FR - Comment added in section 2.4.2.3.1 below map 13.	Addressed.		

						Nyami" in same folder.					
	PD Requirements: Minimizing Uncertainty in the Cumulative Deforestation Model										
98	The project description must include the following: 1. A protocol for interpreting forest state from imagery. 2. The results of an independent check of the interpretation.	PD Section 2.4.4.4 & 2.6; "120328_Kariba_Remote_Sensing_PD_Annex.doc"	Please demonstrate the accuracy assessment (likely will require a Skype call).	FR- explanation given in PD section 2.4.4.	Issue addressed.						
	6.4.7 Model Fitting and Selection										
99	The model defined by equation [16] is fit using the sample deforestation data from the reference area as well as covariate data for the reference period. The sample deforestation data include the state observation vector and the time vector . A plot of these vectors shows that states are zeros and ones (for an example, see Figure 7).	PD Section 2.4.4.4 & 2.6; "120328_Kariba_Remote_Sensing_PD_Annex.doc"	Please show the use of EQ 16.	FR- explanation given in PD section 2.4.4.	See NCR # 209 under the "VCS Standard" tab. Also, it appears that covariate data were determined for the project areas and not the reference areas, as is the methodology requirement. Please discuss.		No response was provided for this NCR. It appears that covariate data were determined for the project areas and not the reference areas, as is the methodology requirement. Please discuss.	FR - Explanation on covariate selection expanded. Wrong mentioning of project area changed, data refers to reference area. Sources for data given. "120903_Kariba_Pop_1992_2011_final" provided. The first model fitting attempt did not include interpolated FAO data or other sources. We only interpolated data from the two official census data points 1992 and 2002.	Addressed.		

100	Covariate data are collected for each state at each time period for which there exists imagery. As such, covariate data may need to be interpolated from their sources (e.g. census data that may only be collected once every ten years). These data are used to estimate the linear predictor [7] where is the parameter vector.	PD Section 2.4.4.4 & 2.6; "120328_Kariba_Remote_Sensing_PD_Annex.doc"	Please see NCR# (Row 128) above. Please depict the use of Equation 7.	FR- explanation given in PD section 2.4.4.	See NCR # 209.		Section 2.3.3.4 uses a population census covariate data set and applies a significance test to this data set. Please provide the validator with the data set for each state at each time period for which there exists imagery. Please justify why this data set can not be used as a covariate in the CDM. This justification will need to explain why the source data set is not adequate.	FR - Please see answer to NCR #99. Justification why the data is not statistical significant relates to analysis of P-value significance test at 95% confidence level and AIC data specified in the section.	Addressed.		
101	Covariate data must originate from the following sources to avoid the possibility of perverse incentive in model fitting: · Government publications. · Publications by an independent third party. · Peer reviewed literature.	PD Section 2.4.4.4 & 2.6; "120328_Kariba_Remote_Sensing_PD_Annex.doc"	Please see NCR# (Row 128) above. Please demonstrate evidence that covariates originated from these sources.	FR- explanation given in PD section 2.4.4.	See NCR # 209.		Section 2.3.3.4 of the PD refers to population census data that must originate from one of these sources. No reference to the source is made, and no document has been provided to the validator. Please provide a link to the source document from one of these three sources.	FR - Please see answer to NCR #99. Sources and references were given.	Addressed.		
102	The model is fit using IRLS with an initial weight vector w that corrects for spatial and temporal artifacts from sampling historic imagery (see Venables & Ripley, 2002 for information on model fitting with IRLS).	PD Section 2.4.4.4 & 2.6; "120328_Kariba_Remote_Sensing_PD_Annex.doc"	Please see NCR# (Row 128) above. Fitting the CDM is not a deviation to VM0009. Please depict the use of Equation 16. Please show the use of IRLS and the initial weight vector w .	FR- explanation given in PD section 2.4.4.	See NCR # 209.		Please see NCR's 99 - 100.	FR - Please see answers to NCR #99 & 100	Addressed.		

103	Given all possible covariates, select the best subset of covariates using AIC as a measure of fit. For information on model selection see Davidson (2003) and Freedman (2009). The fit model should be plotted with forest state over time and the project start date (for an example see Figure 8).	PD Section 2.4.4.4 & 2.6; "120328_Kariba_Remote_Sensing_PD_Annex.doc"	Please see NCR# (Row 128) above. Please demonstrate evidence on the use of AIC and provide a plot as required.	FR- explanation given in PD section 2.4.4.	See NCR # 209.		Please see NCR's 99 - 100.	FR - Please see answers to NCR #99 & 100	Addressed.		
104	Once selected and fit, the cumulative deforestation model* is defined by equation [16].	PD Section 2.4.4.4 & 2.6; "120328_Kariba_Remote_Sensing_PD_Annex.doc"	Please show the use of EQ 16.	FR- explanation given in PD section 2.4.4.	See NCR # 209.		Please see NCR's 99 - 100.	FR - Please see answers to NCR #99 & 100	Addressed.		
	PD Requirements: Fitting the Cumulative Deforestation Model										
105	The project description must include the following: 1. The covariates that were considered and their data sources. 2. The linear predictors that were evaluated during model selection. 3. The linear predictor of the selected model. 4. The rationale used for selecting this predictor including comparisons of AIC.	PD Section 2.4.4.4 & 2.6; "120328_Kariba_Remote_Sensing_PD_Annex.doc"	Please refer to NCRs above; Please provide an analysis or roadmap in the PD describing how the project specifically follows any requirements from VM00015. Please demonstrate evidence on the use of AIC and provide a plot as required.	FR- explanation given in PD section 2.4.4.	See NCR # 209. Additionally, where all steps in items 2 - 4 of this requirement of the methodology were met. Please discuss and provide further detail in the PD.		Please see NCR's 99 - 100.	FR - Please see answers to NCR #99 & 100	Addressed.		
	6.4.8 Predicting Cumulative Deforestation										

106	A project proponent may be interested in spreading carbon credits over time (e.g. for accounting / cash flow purposes) using a conservative linear model. Therefore, the project proponent may predict proportion deforestation at any point in time using either the parameterized version of [16], which is denoted $\hat{\cdot}$, or alternatively may choose any linear rate of deforestation, as long as the linear predictions are conservatively less than $\hat{\cdot}$ at any point in time. In the event that a linear rate is selected, $\hat{\cdot}$ becomes an upper bound on the maximum deforestation allowable at any point in time. If a linear rate is selected, then the linear prediction of cumulative deforestation should be used in place of $\hat{\cdot}$ for accounting purposes.	PD Section 2.4.4.5	Please clarify what the parameterized version of the deforestation rate (from Equation 16) would be so the validator can confirm the upper bound requirement.	FR- explanation given in PD section 2.4.4.	Issue addressed.						
	PD Requirements: Linear Prediction of Deforestation										
107	1. The selected rate, according to the notation depicted in [7]. 2. The prediction of $\hat{\cdot}$ for the end date of the current monitoring period. 3. A table of cumulative deforestation used for previous monitoring periods either from equation [16], or the selected linear rate. The cumulative deforestation model should only be refit during a baseline reevaluation (see section 6.7). 4. A graph of $\hat{\cdot}$ from the project start date to the end date of the current monitoring period, including points representing cumulative deforestation for previous monitoring periods used to determine baseline emissions either from equation [16] or the selected linear rate.	PD Section 2.4.4.5	Please refer to NCR #106 (Row 207) above. Please provide the required graph from #4.	Please see section 2.4.4.5 - no linear rate is chosen but a logistical model following equation [16]	Pending NCR #99.	Please refer to the answer provided for NCR #99.	Pending NCR #99.	FR - Please see answers to NCR #99 & 100	Addressed.		

	6.4.9 Estimating Uncertainty in the Cumulative Deforestation Model										
108	Uncertainty in the cumulative deforestation model is estimated from the sample of observed forest states and is used to determine the confidence deduction (see section 11.1). A Horvitz-Thompson estimator of the standard deviation of observed state ⁶ in the reference region is given in equation [17] where corresponds to the observed forest state, to the normalized weight for the observation, the total number of state observations and the set of all observations made. An approximate estimate of uncertainty at the 95% confidence level is given by [15].	PD Section 2.4.4.4 & 2.6; "120328_Kariba_Remote_Sensing_PD_Annex.doc"	Please refer to NCR#98 (Row 196). Additionally, the maps showing the "forest" coverage determined from the approach utilized only showed unlabeled polygons. Please contact the validator to help correct the format issues and to obtain labeled polygons for comparison.	The auditor has been successfully be able to access the files.	See NCR # 209.		Section 2.3.3.6 of the PD applies the Marquardt method for determining uncertainty in the CDM as a substitute for the required use of EQ 15 and EQ 17 in VM0009, because samples were not used. Please provide the validator with a reference to the Marquardt method and the formula used, and justify its use as an appropriate and valid method for determining uncertainty in the CDM when using the wall-to-wall method of data collection applied in the PD.	FR - Marquardt estimator was used in section "2.4.2.3.3.4 Model fitting and selection" and explanation and publication reference was added there. Unnecessary data on the logistical model was deleted. Paragraph explaining approach of VM0009 and our deviation put to beginning. List of parameters put below where we explain our approach.	Addressed.		
	PD Requirements: Estimating Uncertainty in the Cumulative Deforestation Model										
109	The project description must include the following:1. List of values used for variables in determining the uncertainty in the cumulative deforestation model as they relate to equations [15] and [17].2. The quantified uncertainty in the cumulative deforestation model.	PD Section 2.4.4.4 & 2.6; "120328_Kariba_Remote_Sensing_PD_Annex.doc"	Please refer to NCR#98 (Row 196).	FR- Uncertainty quantified in PD section 2.4.4.5 and method of calculation described following VM0009 and estimation of standard error of CDM at 95% confidence level.The uncertainty of the CPM is 0.047, less than the allowable error of 15%, therefore no deduction has to be done in the ex-ante calculation (refer to equation 35 of the methodology). Please note: the uncertainty of	See NCR # 209.		Please clearly define the data and parameters that will need to be monitored in Section 4 of the PD.	FR - Parameters part of the cumulative deforestation model (baseline) and verification defined and statistical accuracy assessment of landcover classification added to section 4.2	Addressed.		

				the total carbon stocks and soil carbon model is determined at monitoring and verification stage (refer to equation 36 of the methodology).							
	6.5 Soil Carbon Loss Model										
110	In addition to cumulative deforestation, the baseline scenario ("without-project" scenario) includes the estimated loss of organic carbon from soil over time in the project area as a result of land conversion to agriculture. The soil carbon loss model is either parameterized from observations of soil carbon in the reference area or taken from literature. If neither method is available, the proponent may use a conservative default model presented below. The parameterized model predicts the proportion of carbon loss over a period of time given field observations, and is the preferred method, as it is the most accurate and realistic option.	Page 39, Section 5	On Page 40: "Two sub-samples are collected on is sampling plot and consolidated after lab analysis in order to reduce uncertainty from heterogeneous soils." Please clarify why they are consolidated after analysis? This should be done before analysis, should it not? Also, please change 'on is' to 'per.' What method will the Ministry of Agriculture be using to measure soil C content? Pending review of the Walker paper to validate the soil C loss rate.	TSi - revised section 5.3. We use the Walkley-Black method in the laboratory. Carbon values are consolidated after lab analysis to allow for check or quality and consistency. The methodology allows to combine results after-the-fact (section 6.5.3).	Issue addressed.						
	6.6 Baseline Scenarios for Selected Carbon Pools										

	6.6.4 Scenario for Below-ground Large Trees										
111	The below-ground portions of large trees are assumed to be partially removed, burned or converted to fuel wood as a result of land conversion to agriculture. The proportion of below-ground large trees that is removed as a result of land conversion to agriculture must be selected by the project proponent where the balance of below-ground biomass not removed is assumed to remain over the life of the project or longer. This proportion will probably be selected based on empirical evidence observed in the region and will likely vary from project to project depending on the mechanism used to clear the land. For instance, if a mechanical device is used to clear the forest, such as a bulldozer, then this proportion might be higher than if the forest is cleared with a handsaw.	PD Section 2.4.6 (Page 41)	The statement that no large trees exist in the project area is very broad. During the site visit, the validator noted trees that could be considered large, depending on how that will be determined (per other pending NCRs). Please provide additional evidence of no large trees occurring in the project area and that 100% of the below-ground biomass is removed. As the VCS requirement is to ensure conservative principles are being followed, greater justification is needed for this assertion, as it is not conservative.	YvL: Please refer to the information provided in section 2.3 and 2.4 6 of the PD.	Please refer to NCR #55.	Please refer to the answer provided for NCR #55.	Please refer to NCR #55.	YvL: Please refer to the answer provided for NCR #55.	Addressed.		

112	The baseline scenario for below-ground large trees is directly related to the cumulative deforestation model which predicts the proportion deforestation over time. This proportion may be one if all below-ground large tree biomass is removed as a result of land conversion to agriculture	Section 3 & "120328_KARIBA ER Calc_auditors_yvl.xls"	Based on the spreadsheets provided, it is unclear where the relevant proportion (3.18%) was applied for each pool in the baseline. Please clarify (a phone call may be helpful for these items).	YvL: Please refer to the adapted calculation provided in folder Ex-ante-calculation; now the deforestation rates of the cumulative deforestation model have been included in the data sheet "Input data", cell 29. Since we assume that the vegetation from a hectare subject to deforestation is removed, the deforestation rate has been applied to the baseline forest cover (see data sheet "Baseline emissions-Biomass", cells 37-43). Afterwards the lost forest cover in hectare has been multiplied by the carbon content of the respective strata (WL, OWL). As it is common practice in the project region to burn the stumps out, 100% is selected as the proportion of below ground biomass removed from large trees. For further information please refer to sections 2.3 and 2.4 of the PD. The below-ground carbon sequestered within large, small and non-tree biomass is released immediately and is therefore treated the same way in the ex-ante-calculation. Please note: this is an ex-ante estimation where default values for the strata apply instead of using inventory data disaggregated by tree species and classes.	Please refer to NCR #55.	Please refer to the answer provided for NCR #55.	Please refer to NCR #55.	YvL: Please refer to the answer provided for NCR #55.	Addressed.		
-----	---	---	---	---	---------------------------------	---	---------------------------------	--	-------------------	--	--

	PD Requirements: Selecting the Proportion of Below-ground Biomass Removed from Large Trees										
113	The project document must include the following: 1. The selected proportion of below-ground large tree biomass that is removed as a result of land conversion to agriculture, . 2. Rationale for selecting this proportion.	Section 3 & "120328_KARIBA ER Calc_auditors_yvl.xls"	Based on the spreadsheets provided, it is unclear where the relevant proportion (3.18%) was applied for each pool in the baseline. Please clarify (a phone call may be helpful for these items).	YvL: Please refer to answer provided for NCR 112.	Please refer to NCR #55.	Please refer to the answer provided for NCR #55.	Please refer to NCR #55.	YvL: Please refer to the answer provided for NCR #55.	Addressed.		
	6.6.5 Scenario for Below-ground Small Trees										
114	The below-ground portions of small trees are assumed to be completely removed, burned or converted to fuel wood as a result of land conversion to agriculture. The baseline scenario for below-ground small trees is directly related to the cumulative deforestation model which predicts the proportion deforestation over time.	Section 3 & "120328_KARIBA ER Calc_auditors_yvl.xls"	Based on the spreadsheets provided, it is unclear where the relevant proportion (3.18%) was applied for each pool in the baseline. Please clarify (a phone call may be helpful for these items).	YvL: Please refer to answer provided for NCR 112.	Issue addressed.						
	6.6.6 Scenario for Below-ground Non-trees										
115	The below-ground portions of non-trees are assumed to be completely removed, burned or converted to fuel wood as a result of land conversion to agriculture. The baseline scenario for below-ground non-trees is directly related to the cumulative deforestation model which predicts the proportion deforestation over time.	Section 3 & "120328_KARIBA ER Calc_auditors_yvl.xls"	Based on the spreadsheets provided, it is unclear where the relevant proportion (3.18%) was applied for each pool in the baseline. Please clarify (a phone call may be helpful for these items).	YvL: Please refer to answer provided for NCR 112.	Issue addressed.						

	6.6.7 Scenario for Standing Deadwood										
116	Standing deadwood is assumed to be completely removed, burned or converted to fuel wood as a result of land conversion to agriculture. The baseline scenario for standing deadwood is directly related to the cumulative deforestation model which predicts the proportion deforestation over time.	Section 3 & "120328_KARIBA ER Calc_auditors_yvl.xls"	Based on the spreadsheets provided, it is unclear where the relevant proportion (3.18%) was applied for each pool in the baseline. Please clarify (a phone call may be helpful for these items).	YvL: The equations used for calculating the carbon stock of dead wood has been provided in section 4.3.7 of the PD. Deadwood is assumed to be completely removed. As to the answer provided for NCR 112, this is an ex-ante estimation where default values for the strata apply instead of using inventory data (such as data from dead trees).	Please clarify the allometric equations in a phone conference. The validator is unclear on the spreadsheet.	YvL: Please let me know when you are available for a phone conference.	Pending phone conference on 04 September 2012.	Yougha v.Laer did explain the allometric eqns. to Caitlin and Shawn during a phone conference on 4 September 2012. Pending feedback from ESI.	Addressed.		
	6.6.9 Scenario for Soil										
117	Soil is assumed to lose its organic carbon over time as a result of agriculture (E. Davidson & Ackerman, 1993). The baseline scenario for soil carbon is directly related to the cumulative deforestation model which predicts the proportion deforestation over time and the soil carbon loss model which predicts the loss of organic soil carbon over time.	Section 3 & "120328_KARIBA ER Calc_auditors_yvl.xls"	Based on the spreadsheets provided, it is unclear where the relevant proportion (3.18%) was applied for each pool in the baseline. Please clarify (a phone call may be helpful for these items).	YvL: Please refer to the adapted calculation provided in folder Ex-ante-calculation; now the deforestation rates of the cumulative deforestation model have been included in the data sheet "Input data", cell 29. Since we assume that the vegetation from a hectare subject to deforestation is removed, the deforestation rate has been applied to the baseline forest cover (see data sheet "Baseline emissions-Biomass", cells 37-43) and was applied respectively to the soil carbon stock loss (see data sheet "Baseline emissions-Soil", cell 23). However, since a decay function is applied, using a soil carbon decay parameter of 0.2 (see data sheet "Input data", cell 30) the emission rates have been modified accordingly (see data sheet "Baseline emissions-Soil", cell 25-59).	Please clarify if baseline calculations (as stated on the tabs in the spreadsheet) are the same as ex ante calculations.	YvL: Yes, this is correct, baseline calculations are the same as ex ante calculations.	Addressed.				

				Please note: this is an ex-ante estimation where default values for the strata apply instead of using inventory data.							
	PD Requirements: Selecting the Proportion of Wood Products										
118	The project description must include the following: 1. The proportion of baseline emissions that are stored in long-lived wood products, . 2. Rationale for selecting this proportion.	Section 2.6.4 (Page 42)	Please refer to NCR#58 (Row 68) above.	YvL: Please refer to the answer provided for NCR 58.	Please refer to NCR #58.	Please refer to the answer provided for NCR #58.	Addressed.				
	7 Additionality										
119	Project proponents shall demonstrate additionality using the latest version of the VCS "Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities" (VCS, 2010b). Relevant applicability conditions (see section 4) for this methodology are as follows:	PD Section 2.5	Per the VCS Tool VT0001, please list "Project activity on the land within the project boundary performed without being registered as the VCS AFOLU project" as one of the alternative land-use scenarios. Please clarify if illegal deforestation that is occurring is contained within one of the listed alternative land-uses; if so, please demonstrate it meets 2.1.2, a) ii. Although discussed during the field visit, please provide the actual "financial plan" referenced in #3 of the Additionality assessment.	YvL: Additional information on other project activities have been added to section 2.5 of the PD. Deforestation is driven by subsistence farming or for the use of timber for domestic use (although this does normally result in degradation). As explained in section 2.5, 2., do the councils have the power to prepare a land-use plan indicating lands proposed for livestock farming, agricultural activities, land protection and conservation measures etc., therefore it is assumed that these activities represent legal land uses. Otherwise it is supposed that the communities do not allow people to deforest. Financials are provided in folder: 119,200,201,202.	Issue addressed.						

120	- Within the project area, project activities shall not lead to the violation of any law, even those laws which are not enforced. - The most conservative baseline scenario is defined by deforestation / conversion to agriculture.	n/a	Please refer to Row 5 AFOLU	YvL: Please refer to sections 2.5 and 1.11 of the PD where it is stated that none of the project activities will violate any law. Subsistence and small-scale farming is by far the most likely baseline land use, as stated in section 2.5 of the PD.	Issue addressed.							
	PD Requirements: Demonstration of Project Additionality											
	The project description must include the following:											
121	1. A list of alternative land use scenarios to the project. 2. Justification for the selected baseline scenario of deforestation/ conversion to agriculture. This justification can include expert knowledge, results from the participatory rural appraisal and the cumulative deforestation model (see sections 6.2 and 6.4). 3. An investment or barriers analysis (VCS, 2010b) proving that the project is not the most economical option. 4. A common practice analysis (VCS, 2010b) including a list of project activities and the drivers of deforestation that they address. 5. Evident compliance with the minimum requirements of the aforementioned VCS tool. This evidence may be the same as the evidence provided to meet reporting requirements listed in section 4.	PD Section 2.5	Please refer to NCRs 253 and 254 above	YvL: Please refer to section 2.5 of the PD and the answers provided for NCRs 119 & 120.	Issue addressed.							
	8 Baseline Emissions											
	PD Requirements: Baseline Emissions											
122	The project description must include the following: 1. Estimates of baseline emissions for each selected	PD section 3.1, Spreadsheet "120328_KARIBA ER Calc_auditors_yvl.xls"	It is noted that only the PD states "A spreadsheet with	YvL: The name of the spreadsheet has been provided in a footnote of section 3.1 of the PD.	Please clarify what the 1.1 tC/ha was that was added to	YvL: Please let me know when you will be available for a	Section 3.4 of the PD states that the CDM will be used to estimate	YvL: Please refer also to answer provided for	There is still a reference to "rates" in the PD (eg.	The naming has been changed on page 53 & 54.	Addressed	.

	carbon pool.		the complete GHG emission analysis for the entire project crediting period is provided separately to the auditor." Please reference the actual name of the spreadsheet in the PD once it is finally approved. Though they are provided in the spreadsheet, please state the results of each equation (based on the estimates) in the PD. The spreadsheet provided states that the values from Ryan are used for the aboveground biomass values, however it is unclear how they were derived from the Ryan study. Please clarify.	A table summarizing avoided baseline emissions for each selected carbon pool (AGB, BGB and SOC) has been added to section 3.1 of the PD. Please refer the yellow highlighted numbers in the article Ryan et.al. provided in folder 122.	the tree stem biomass. The validator would like to walk through the ex-ante calcs in the phone call.	call to walk you through the Ex-ante calculation.	baseline and project emissions. No spreadsheets were found that estimate for each carbon pool as found in Section 2.3 Project Boundary of the PD. Please provide a spreadsheet that demonstrates how all carbon pools sum to the above ground and below ground values that are reported in the PD. 120820 KARIBA ER Calc_auditors and 120820 CDM_Kariba use deforestation rates to calculate baseline emissions, but deforestation rates are not used in VM0009. Update the PD footnote to the most recent version of this ER spreadsheet. Also, please provide the validator with the Landcover Change spreadsheet: 120815_Kariba_Def_rate_sendOut_UPDATED.xlsx	NCR 42: We use default values, therefore it is not possible to make any distinction between large, small trees, non-tree biomass, and dead wood. Please refer to the validated Kasigau PD: page 52, table 5. They assume carbon pools to be 0, although they are included as to page 12 table 2 (e.g. small trees, standing dead wood). The following statement has been added to section 3.4: "Please note that the amount of emissions assigned for each selected carbon pool depicted in the table in Section 2.3 is determined at verification stage." We did use the proportion of area deforested for the ex-ante calculation and not the deforestation rate. Please refer to Cell 29 of the "Input data"	Section 2.4.2 page 56) . Please address. Additionally, page 53 has a reference to "section 2.3.3.6" which should be changed to state "section 2.4.2.3.3.6". Please address.	Reference has been changed accordingly.	
--	--------------	--	---	---	--	--	---	---	---	--	--

								sheet (120905_KA RIBA ER Calc_auditors) and compare to column E of the Cummulative Deforestation Model (120905_CD M_Kariba). The wrong naming has been corrected. The information on land cover change has been provided on August 30 within the document: 120830_CDM _Kariba.			
	8.1 Estimating Emissions from Above-ground Large Tree Biomass										
123	For any given monitoring period, emissions from above- ground large tree biomass are estimated as a proportion of measured carbon in above- ground large tree biomass at the end point in time of the monitoring period. Measured carbon at period in above- ground large tree biomass is (see section 13.5.1). This proportion is estimated by the cumulative deforestation model at the end time of the monitoring period (see section 6.4.8). Emissions from above- ground large tree biomass are estimated as [21].	PD Sections 3.1 and 4.3.7; Spreadsheet "120328_KARIBA ER Calc_auditors_yvl.xls"	Please ensure Section 13 of VM0009 is used and referenced for calculating carbon stocks.	YvL: The equations used at monitoring and verification stage have been referenced in section 3.1 of the PD.	Issue addressed.						
	8.2 Estimating Emissions from Above-ground Small Tree Biomass										

124	For any monitoring period, emissions from above-ground small tree biomass are estimated as a proportion of measured carbon in above-ground small tree biomass at the end point in time of the monitoring period. Measured carbon at period in above-ground small tree biomass is (see section 13.5.2). This proportion is estimated by the cumulative deforestation model at the end time of the monitoring period (see section 6.4.8). Emissions from above-ground small tree biomass are estimated as [22].	Spreadsheet "120328_KARIBA ER Calc_auditors_yvl.xls"	Please ensure Section 13 of VM0009 is used and referenced for calculating carbon stocks.	YvL: The equations used at monitoring and verification stage have been referenced in section 3.1 of the PD.	Issue addressed.						
	8.3 Estimating Emissions from Above-ground Non-tree Biomass										
125	For any monitoring period, emissions from above-ground non-tree biomass are estimated as a proportion of measured carbon in above-ground non-tree biomass at the end point in time of the monitoring period. Measured carbon at period in above-ground non-tree biomass is (see section 13.5.3). This proportion is estimated by the cumulative deforestation model at the end time of the monitoring period (see section 6.4.8). Emissions from above-ground non-tree biomass are estimated as [23].	Spreadsheet "120328_KARIBA ER Calc_auditors_yvl.xls"	As per NCR#122 (Row 261) above, an estimate for non-tree biomass could not be located in the spreadsheet. Please provide. Please ensure Section 13 of VM0009 is used and referenced for calculating carbon stocks.	YvL: This is an ex-ante estimation where default values for the strata apply instead of using inventory data disaggregated by tree species and classes. The equations used at monitoring and verification stage have been referenced in section 3.1 of the PD.	Issue addressed.						
	8.4 Estimating Emissions from Below-ground Large Tree Biomass										

126	For any monitoring period, emissions from below-ground large tree biomass are estimated as a proportion of measured carbon in below-ground large tree biomass at the end point in time of the monitoring period. Measured carbon at period in below-ground large tree biomass is (see section 13.6.1). This proportion is estimated by the cumulative deforestation model at the end time of the monitoring period (see section 6.4.8). Emissions from below-ground large tree biomass are estimated as [24] where is the proportion of below-ground large tree biomass removed as a result of land conversion to agriculture. The project proponent must select this proportion as described in 6.6.4.	Spreadsheet "120328_KARIBA ER Calc_auditors_yvl.xls"	Please ensure Section 13 of VM0009 is used and referenced for calculating carbon stocks.	YvL: The equations used at monitoring and verification stage have been referenced in section 3.1 of the PD.	Issue addressed.						
	8.5 Estimating Emissions from Below-ground Small Tree Biomass										
127	For any monitoring period, emissions from below-ground small tree biomass are estimated as a proportion of measured carbon in below-ground small tree biomass at the end point in time of the monitoring period. Measured carbon at period in below-ground small tree biomass is (see section 13.6.2). This proportion is estimated by the cumulative deforestation model at the end time of the monitoring period (see section 6.4.8). Emissions from below-ground small tree biomass are estimated as [25]. It is assumed that all below-ground small tree biomass is immediately lost as a result of land conversion to agriculture.	Spreadsheet "120328_KARIBA ER Calc_auditors_yvl.xls"	Please ensure Section 13 of VM0009 is used and referenced for calculating carbon stocks.	YvL: The equations used at monitoring and verification stage have been referenced in section 3.1 of the PD.	Issue addressed.						
	8.6 Estimating Emissions from Below-ground Non-tree Biomass										

128	For any monitoring period, emissions from below-ground non-tree biomass are estimated as a proportion of measured carbon in below-ground non-tree biomass at the end point in time of the monitoring period. Measured carbon at period in below-ground non-tree biomass is (see section 13.6.3). This proportion is estimated by the cumulative deforestation model at the end time of the monitoring period (see section 6.4.8). Emissions from below-ground non-tree biomass are estimated as [26]. It is assumed that all below-ground non-tree biomass is immediately lost as a result of land conversion to agriculture.	Spreadsheet "120328_KARIBA ER Calc_auditors_yvl.xls"	An estimate for non-tree biomass could not be located in the spreadsheet. Please provide. Please ensure Section 13 of VM0009 is used and referenced for calculating carbon stocks.	YvL: This is an ex-ante estimation where default values for the strata apply instead of using inventory data disaggregated by tree species and classes. The equations used at monitoring and verification stage have been referenced in section 3.1 of the PD.	Issue addressed.							
	8.7 Estimating Emissions from Standing Dead Wood											
129	For any monitoring period, emissions from standing dead wood are estimated as a proportion of measured carbon in standing dead wood at the end point in time of the monitoring period. Measured carbon at period in standing dead wood is (see section 13.7). This proportion is estimated by the cumulative deforestation model at the end time of the monitoring period (see section 6.4.8). Emissions from standing dead wood are estimated as [27].	Spreadsheet "120328_KARIBA ER Calc_auditors_yvl.xls"	An estimate for standing deadwood biomass could not be located in the spreadsheet. Please provide. Please ensure Section 13 of VM0009 is used and referenced for calculating carbon stocks.	YvL: This is an ex-ante estimation where default values for the strata apply instead of using inventory data. The equations used at monitoring and verification stage have been referenced in section 3.1 of the PD.	Please clarify where standing dead wood would have been aggregated in the ex-ante estimation.	YvL: N/A, this is an ex-ante estimation where default values for the strata apply instead of using inventory data. It is assumed that the default value used for biomass calculation also includes dead wood.	Addressed.					
	8.8 Estimating Emissions from Lying Dead Wood											

130	For any monitoring period, emissions from lying dead wood are estimated as a proportion of measured carbon in lying dead wood at the end point in time of the monitoring period. Measured carbon at period in lying dead wood is (see section 13.8). This proportion is estimated by the cumulative deforestation model at the end time of the monitoring period (see section 6.4.8). Emissions from lying dead wood are estimated as [28].	Spreadsheet "120328_KARIBA ER Calc_auditors_yvl.xls"	An estimate for lying deadwood biomass could not be located in the spreadsheet. Please provide. Please ensure Section 13 of VM0009 is used and referenced for calculating carbon stocks.	YvL: Lying dead wood is conservatively excluded, please refer to the table with the selected carbon pools provided in section 2.3 of the PD. The equations used at monitoring and verification stage have been referenced in section 3.1 of the PD.	Issue addressed.							
	8.9 Estimating Emissions from Soil											
131	For any monitoring period, emissions from soil are estimated as a proportion of measured carbon in soil at the end point in time of the monitoring period. Measured carbon at period in soil is (see section 13.9). This proportion is a product of which is the estimated cumulative deforestation model and () which is the estimated soil carbon loss model during the monitoring period (see sections 6.4.8see section 6.5.6). Emissions from soil are estimated as [29] where is the set of all previous monitoring periods including the current monitoring period.	PD	The paper "Walker, S.M. & P.V. Desanker (2004) The impact of land use on soil carbon in Miombo Woodlands of Malawi" was not found in the Annex. Please provide or provide guidance to where it was provided in the files. Please clarify why both the volume of rocks and the volume of gravel are being measured. Except in soils with no fine particles (<2mm), generally gravel is measured together with rocks. Please ensure Section 13 of VM0009 is used and referenced for calculating carbon stocks.	Tsi Walker paper is provided in file "Walker & Desanker 2004.pdf" Gravel is not measured separated, this was formulated unclear, is now revised in PD (Section 4.3.3) and SOP. Section 13 of VM0009 was referenced in section 5.1 of the methodology.	Issue addressed.							

	8.10 Estimating Emissions from Wood Products										
132	The project developer must provide an estimate of carbon sequestered in long-lived wood products under the baseline. This estimate is a based on the proportion of above-ground large tree biomass that goes into long-lived wood products as a result of deforestation. Sequestered emissions are estimated as [30] where is the fraction of above-ground tree biomass that goes to wood products. The project proponent must select this proportion as described in section 6.6.10 and is assumed to have remained constant though the project crediting period. The proportion of above-ground large tree biomass that goes into long-lived wood products as a result of deforestation can be zero.	Section 2.2	Provide an estimate of baseline emissions associated with long-lived wood products.	YvL: N/A, there are no emissions from long-lived wood products in the project area. Please refer to section 2.4 of the PD.	Pending additional NCRs.	YvL: Please refer to the related NCRs.	Please see NCR 55 and 122. Please provide this requirement or justify why not provided.	YvL: Please refer to the answers provided for NCRs 55 & 122.	Addressed.		
	9 Project Emissions										
133	Project emissions for any monitoring period are estimated by the events of woody biomass consumption.	n/a	Please state in the PD that the methodology will be adhered to for this requirement.	YvL: Additional information has been added to section 3.2 of the PD.	Issue addressed.						
134	Emissions from forest fires within the project area are inherently captured by the monitoring of forest carbon stocks. Nevertheless, maps of significant fire events are necessary to aid verification of carbon stock estimates but no additional accounting is required. However, the project area may need to be re-stratified per section 13.2.	PD Section 3.2	Please state in the PD that the project area may need to be re-stratified based on the significance of fire events.	YvL: Additional information has been added to section 3.2 of the PD.	Issue addressed.						
	PD Requirements: Forest Fires										

135	The project description must include the following: 1. A map of the boundaries of any significant forest fires in the project area during the monitoring period.	PD Section 3.2	This comment is here to mark for discussion with the client and potentially VCS to point out inconsistencies in the meth that cannot be met when a stand alone validation is taking place. The methodology states that the PD needs to include a map of the boundaries of any significant forest fires in the project area during the monitoring period, however in this instance the monitoring has not yet taken place.	Answer VCS (email: May 30th, 2012): In Section 9 of the methodology (v1.1), the instructions indicate that the project proponent shall include in the project description information that is collected or observed during the monitoring period. This is an error. Because this information is collected and observed during the monitoring period, this information should be included in the monitoring report and not the project description. This will be fixed in the next version of the methodology.	Issue addressed.						
	9.1 Emissions from Burning										
136	Emissions from the burning of woody biomass as a result of project activities in the project area should be recorded as the weight (in tonnes) of woody biomass consumed during each burning event. If the production of sustainable charcoal occurs within the project area, then it must be accounted for under emissions from burning. Emissions from the controlled burning of woody biomass is the sum of all burning events during the monitoring period as defined by [31] where is the carbon fraction of wood for a species.	PD Section 3.2	Please provide an estimate of emissions from burning for the baseline scenario. This does not appear to be provided in the PD.	YvL: No project emissions from burning of woody biomass occurs. Otherwise project emissions from burning of woody biomass are calculated as per equation 31 of the methodology at verification stage.	Issue addressed.						
	PD Requirements: Emissions from Burning										

137	The project description must include the following: 1. A table of events when woody biomass was burned during the monitoring period, showing the weight of woody biomass in tonnes and the date consumed.	n/a	Please state in the PD how this requirement will be met. Possibly we need to request a joint meeting with VCS to derive a solution regarding places where the method requires the PD to list inputs from monitoring (such as this example). We can discuss.	Answer VCS (email: May 30th, 2012): In Section 9 of the methodology (v1.1), the instructions indicate that the project proponent shall include in the project description information that is collected or observed during the monitoring period. This is an error. Because this information is collected and observed during the monitoring period, this information should be included in the monitoring report and not the project description. This will be fixed in the next version of the methodology.	Issue addressed.							
10 Leakage												
138	This methodology quantifies NERs from avoided deforestation and conservatively excludes avoided degradation from project accounting. However, it is not considered conservative to exclude degradation from leakage assessment. Consequently, leakage is quantified as emissions from both forest degradation and deforestation caused by activities displaced from the project area due to the presence of the project. Degradation activities include the removal of biomass for fuel wood, charcoal production and harvesting of large trees for wood products.	Section 3.3	Please state in the PD how this requirement will be met.	YvL: Additional information has been added to section 3.3 of the PD.	Please clarify how degradation will be quantified and distinguished from deforestation.	YvL: Additional information has been added to section 3.3.4 of the PD.	Addressed.					

[illegible]

140	Project activities must be monitored in some way to demonstrate their effect on leakage mitigation. Possible monitoring approaches vary by project and may include:	Section 1.13	Please clarify if leakage monitoring will occur every monitoring period, or just the first, as indicated on Page 22 (Section 1.13).	YvL: The statement in section 1.13 and 3.3 of the PD has been corrected. Leakage will be sampled prior to the end of each monitoring period.	Issue addressed.						
141	· The number of people that directly benefit from the activity. · The number of units distributed as a result of an activity (such as number of trees, foodstuffs, vaccines or dollars). · The time devoted to implementing an activity. · Community surveys about the effectiveness of an activity.	Section 1.13, Section 4.3.3	Please add language to section 4.3.3 confirming that leakage sampling plots will reflect all other aspects of the biomass and soil plots, with the exception of the metal stake. It is not currently clear.	YvL: leakage sampling differs from biomass sampling within the project area. Additional information about leakage sampling has been added to section 4.3.3 of the PD.	The information provided in Section 4.3.3 did not sufficiently address <i>how</i> leakage will be sampled. Please include more details that can be a roadmap for future verification events.	YvL: Additional information has been added to section 3.3.4 of the PD and has been referenced in section 4.3.3.	Addressed.				
	PD Requirements: Leakage Mitigation Strategies										
142	The project description must include the following: 1. A list of project activities designed to mitigate leakage. 2. A description of project activities that have been implemented since the project start date and the estimated effects of these activities on leakage mitigation.	Section 1.13; Section 8; Section 3.3.1	Please provide more specific information detailing the scope and scale of the fuelwood plantations (proposed locations, number of plantations), so that this can be confirmed at future verification events. The validator is aware that many of these activities are currently being implemented. However, the VM0009 requirement is that the PD must provide a description of project activities	YvL: The firewood plantations will be implemented adaptively. At the point of validation it is not possible to provide more information about scope and scale of the plantations, as the detailed planning did not start at this point. So far no activities have been implemented within the leakage, as leakage is not expected. Once further data and experience has been gained, activities to mitigate leakage (in the case there is some leakage) will be implemented.	Issue addressed.						

			that have been implemented since the project start date and the estimated effects of these activities on leakage mitigation.								
	10.2 Delineating the Leakage Area										
143	The leakage area: 1. must be in the same general region as the project area, but not necessarily adjacent to the project area, 2. must be at least the size of the forested portions of the project area but does not need to be contiguous with the project area, 3. may not include any part of the project area but may either entirely or partially overlap the reference area, 4. must be entirely forested as of the project start date.	Section 2.4.3.1; Section 3.3.3	In discussions/emails with the project proponent it was made clear that they wish to revise the leakage area to a leakage belt. In the PD please describe how the belt satisfies the requirements of the meth.	YvL: Please refer to section 3.3 of the PD. The leakage maps are provided in folder 120620_Leakage.	Please correct the misprint in Section 3.3.3 #2 of "585'863." This item is pending review of the leakage KML files and NCR #35.	Misspelling corrected and area updated. Please refer for further explanation on new leakage area to NCR #148.	Please see NCR 148	FR - Please refer to answer to NCR 148.	Please see NCR 148	Please see Answer to NCR 148.	Addressed
144	The boundaries and size of the leakage area should address the following criteria:	Section 2.4.3.1; Section 3.3.3	See NCR #145-146 regarding leakage.	YvL: Please refer to answer provided for NCR 145-146.	Please see below.	Ok	See below.	FR - Please refer to answer to NCR 148.	Please see NCR 148	Please see Answer to NCR 148.	Addressed

145	1. Proximity to the project area: The leakage area should be near the project area. This distance varies project-to-project depending on the location of the agents of deforestation acting on the project area. 2. The location of the agents of deforestation acting directly on the project area. The leakage area should be as close to the location of the agents of deforestation as it is to the project area. 3. The mobility of the agents of deforestation acting directly on the project area. The entire leakage area should be accessible to the agents of deforestation. 4. The direction that activities are likely to shift. For example, the pattern may be from east to west and therefore the leakage area might be located on the western side of the project area.	Section 2.4.3.1; Section 3.3.3	See NCR #143 regarding leakage.	YvL: Please refer to the answer provided for NCR 143. Please refer to section 3.3 of the PD. 4. N/A, no leakage is expected.	Please clarify where in the leakage section the location/proximity of the drivers and agents of deforestation are discussed.	FR: Discussion on mobility of deforestation agents expanded and reference made to section 2.4 baseline discussion.	Item 3 of this requirement states that "The entire leakage area should be accessible to the agents of deforestation." However, section 1.13 of the PD specifically states "• The Kariba REDD+ Project covers a large area totaling 784'987 ha. Therefore, most of the local population is unlikely to establish agricultural fields outside the project area because their low mobility puts those areas out of their reach." If this is the case, how are the leakage areas accessible to the agents of deforestation?	YvL: We follow the requirement of the methodology by applying a leakage area that is of the same size as the project area, although we think that the agents of deforestation are very limited in their mobility, and that therefore not all the leakage area will be accessible to them. However, the only forest area ever possible to be accessible has been included to the leakage area, by applying a leakage belt. The last statement has been added to section 1.13 of the PD.	Addressed.		
-----	---	--------------------------------	---------------------------------	--	--	--	--	---	------------	--	--

146	5. Landscape configuration including the following: a. Topographic constraints to deforestation (slope, aspect, elevation); b. Land use and/or land cover constraints to deforestation; c. Access points that may constrain deforestation; d. Areas of limited soil productivity; and e. Ownership/tenure boundaries that constrain deforestation (government holdings, private holdings and reserves). 6. The leakage area must be as constrained by landscape configuration as the project area.	Section 2.4.3.1; Section 3.3.3	See NCR #143 regarding leakage.	YvL: Please refer to section 3.3 of the PD. The leakage maps are provided in folder 120620_Leakage.	Please further clarify how "It is still different from the reference region, because not in the entire leakage area the same agents and drivers of deforestation are (yet) present." Final review pending response to NCR #35.	Please refer to NCR #148	Please see NCR 148	FR - Please refer to answer to NCR 148.	Please see NCR 148	Please see Answer to NCR 148.	Addressed
147	The interpretation of these criteria is subjective and the project proponent should always choose boundaries that result in the most conservative estimates of leakage. That is, given a choice of reasonable leakage areas, chose the area that will likely yield the highest estimate of leakage whether or not the estimated leakage is entirely attributable to activity-shifts from the project area. The following analyses may be helpful to identify the boundaries and size of the leakage area:	Section 2.4.3.1; Section 3.3.3	See NCR #148 regarding leakage.	YvL: Please refer to the answer provided for NCR 148.	see below	Ok	Please see NCR 148	FR - Please refer to answer to NCR 148.	Please see NCR 148	Please see Answer to NCR 148.	Addressed

148	· Buffering the boundaries of the project area. · Mapping the locations of agents of deforestation. · Buffering the locations of agents based on the distance of their mobility. · Mapping the locations of important cultural places. · Digital elevation models. · Maps of topographic surveys. · Maps of land use and land cover. · Mapping the locations of access points that may constrain deforestation. · Maps of soil productivity. · Maps of ownership boundaries (government holdings, private holdings and reserves).	Section 2.4.3.1; Section 3.3.3	See NCR #143 regarding leakage.	YvL: Please refer to section 3.3 of the PD. The location of the leakage area has been selected based on the most probable area where leakage may occur. Therefore a leakage belt is selected.	Can you please provide a map that shows the leakage project areas in relation to reserves/national parks or other areas currently adjacent to the project areas that are not included in the leakage area? It appears there are several areas adjacent to the project area that are not included in the leakage area, but could potentially still be affected by the project activities.	FR: Leakage Area has been changed and now includes all forests surrounding potentially affected by project activities. KML files of new leakage area provided in folder "GIS maps & files". Please see also Map 20 for protected areas. Explanation in area selection adapted in section 3.3.3, including reference to evidence that officially protected areas are not safe from deforestation already before project activities had effect and therefore must be included in new leakage area for monitoring and leakage management.	A visual spot-check of the forest classification for the leakage area was performed similar to the spot-check conducted on the project area. Three areas-of-interest were identified (see attached shape file). Two of the areas appear to have significant forest cover that was not identified as forest by the classification. In other area, the classification results did not agree with the Landsat imagery provided to ESI. This is in an area of overlap between Landsat images and extends into an area that ESI doesn't have Landsat imagery for, so the perceived problem may be the result of ESI comparing the classification results to a Landsat image that was not used for the classification in this area. Regardless, please address.	FR - As discussed areas have been corrected and original Landsat images provided. New Leakage Area KML & Shapefile has been provided. Extent of Leakage Area has been updated in PD Section 3.3.3	Our concerns with the forest cover classification have been addressed, just a projection issue remains. Leakage area spans two different UTM zones (like the project and reference areas do). The leakage area forest cover calculations were run using same projection (UTM Zone 35S) for entire leakage area, while the forest cover calculations for the reference and project areas were run using UTM Zone 36S for the areas that lie in that zone. For consistency, leakage area calculations should be redone after splitting area into two zones.	Areas belonging to image of 36S map projection have been separated and calculated in this one, others have been calculated in 35S. Leakage Area number has been updated and separate Shapefiles for validation of area calculation provided.	Addressed
-----	--	--------------------------------	---------------------------------	---	--	--	---	---	---	--	-----------

149	The project description must include the following information with respect to the leakage area: 1. A map of the delineated boundaries. 2. A thematic map or image of the leakage area showing that it was entirely forested as of the project start date. 3. The size of the forested portion of the project area and the size of the leakage area. 4. A narrative describing the rationale for selection of leakage area boundaries.	Section 2.4.3.1; Section 3.3.3	See NCRs above regarding leakage.	YvL: Please refer to section 3.3 of the PD.	Please see above.	Ok	Please see NCR 148	FR - Please refer to answer to NCR 148.	Please see NCR 148	Please see Answer to NCR 148.	Addressed
10.3 The Leakage Model											
150	To estimate leakage, a model of the cumulative biomass loss that would occur as a result of deforestation and degradation in the absence of the project is required. Because both degradation and deforestation are included in this scenario, the biomass loss predicted by this model will always be greater than or equal to the biomass loss predicted by the cumulative deforestation model. Assuming that degradation precedes deforestation, this model can be parameterized identically to the cumulative deforestation model but with a time shift element called a lag period. The parameterized model predicts functions as a baseline for the leakage area to predict the future degree of biomass loss due to deforestation and degradation at any point in time after the project start date, expressed as a proportion, had the project not been implemented.	Section 2.4.3.1; Section 3.3.2	Please include a leakage model, as required.	YvL: N/A, as no leakage is expected. However, additional information how the leakage factor is calculated has been added to section 3.3 of the PD.	Issue addressed.						
151	Upon baseline reevaluation, the leakage model is updated to reflect the new cumulative deforestation model (see section 6.7). The lag period in the leakage model remains unchanged after baseline reevaluation.	Section 2.4.3.1; Section 3.3.2	Please include this requirement in the PD.	YvL: The requirement has been added to section 3.3 of the PD.	Issue addressed.						

	10.3.2 Sampling Degradation and Deforestation in the Leakage Area										
152	The leakage area must be sampled prior to the end of the first monitoring period in order to estimate the lag period for the leakage model and at every subsequent monitoring period in order to estimate actual emissions due to leakage. Within the leakage area, randomly select a sample of point locations with uniform probability with a sample size determined by equation [10]. These point locations become the northeast corners of the fixed-area plots used to estimate degradation and deforestation in the leakage area permanently throughout the project lifetime. Select plot dimensions so that each plot area is at least two hectares. The dimensions of all plots should be the same. Visit these plots to observe the proportion degradation using the following ordinal scale. Record a factor (i.e. 0.2, 0.4, etc) corresponding to the observed above-ground biomass that is absent as evidenced by presence of stumps for each plot area:	Section 2.4.3.1; Section 3.3.2	Please include this requirement in the PD.	YvL: Please refer to the following PD sections: Section 4.2 (lag period); section 4.3.3 (random selection of plots); 4.2 & 4.3.3 (plot dimension); 4.3.3 (same plot dimension); section 4.3.3 (proportional degradation).	Issue addressed.						
153	Neither the plot boundaries nor locations should be visibly marked on the ground, as they most likely exist in areas outside the project's control and visible marking may lead to preferential treatment of these plots. Rather, they should be monumented using a GPS.	Section 2.4.3.1; Section 3.3	Please include this requirement in the PD.	YvL: Please refer to section 4.3.3 of the PD.	Please include requirement that the leakage points will be monumented with a GPS.	YvL: Has been included to section 4.2 (leakage).	Addressed.				
154	These sample plots are observed each monitoring period to estimate leakage.	Section 2.4.3.1; Section 3.3	Please include this requirement in the PD.	YvL: Please refer to section 1.13 and 4.3.3 of the PD.	Please include a requirement that the leakage plots will be monitored each monitoring period.	YvL: This has been already stated in section 4.2 (leakage)	Addressed.				

155	Uncertainty in measurement should be reduced as much as possible by developing a field protocol for sampling forest degradation. Training should be provided to collection teams.	Section 2.4.3.1; Section 3.3	Please include this requirement in the PD.	YvL: Please refer to the additional information provided in section 1.13 and 4.3.6.	Although Section 3.3.1 states "Degradation will be reported during the on-the-ground measurements of the leakage area," please discuss <i>how</i> degradation will be sampled.	YvL: Please refer to the answer provided for NCR 141.	Addressed.					
	PD Requirements: Sampling Deforestation and Degradation to Build the Leakage Model											
156	The project description must include the following: 1. The sample size. 2. The dimensions of the sample plots. 3. A map of the leakage area showing the sample plot locations. 4. A table of plot data showing the observed factors. 5. A protocol for field sampling of degradation and deforestation. 6. Procedure for training of field collection teams. 7. Documentation of training for field collection teams.	Section 2.4.3.2; Section 3.3	Please include this requirement in the PD.	"Answer VCS (email: May 30th, 2012): Methodology (v1.1), the instructions indicate that the project proponent shall sample deforestation and degradation to build the leakage model at the end of the first monitoring period and include this information in the project description. This too is an error. Because the sampling is collected at the end of the first monitoring period, this information should be include in the monitoring report and not the project description. This will be fixed in the next version of the methodology	Issue addressed.							
	10.3.3 Model Fitting											

157	The leakage model is defined by [8] where is the lag period. The lag period is estimated as using the proportion of cumulative degradation and deforestation in the leakage area at the beginning of the project and the linear predictor (see section 6.4.7) from the cumulative deforestation model using equation [9]. Once the lag period is estimated, then it can be applied to [8] to fit the leakage model. All other parameters of the leakage model are identical to those in the cumulative deforestation model. The leakage model is re-fit per the baseline at the end of each monitoring period.	Section 2.4.3.2; Section 3.3	Please include this requirement in the PD.	YvL: N/A, as no leakage is expected. However, additional information how the leakage factor is calculated has been added to section 3.3 of the PD.	Issue addressed.						
158	If the lag period for the cumulative leakage model is estimated after the project start date but before the end of the first monitoring period, then each datum used to estimate the lag period must be a factor less than or equal to 0.8 to confirm that leakage has not occurred in the leakage area after the project start date. As defined, the leakage area is entirely forested at the project start date and therefore a factor greater than 0.8 indicates that leakage has probably occurred.	Section 2.4.3.2; Section 3.3	Please include this requirement in the PD.	YvL: N/A, as no leakage is expected. However, additional information how the leakage factor is calculated has been added to section 3.3 of the PD.	Issue addressed.						
	PD Requirements: Fitting the Leakage Model										
	10.4 Estimating the Leakage Factor and Emissions from Leakage										

159	At each monitoring period, sample the leakage area as detailed in section 10.3.2. The leakage factor is estimated as [33] where is the observed state of the plot (a fraction from 0 to 1), is the set of all observations made in the leakage area at monitoring period , and (") is the leakage model at time (the end time of the monitoring period) as defined by equation [8] at the end of the monitoring period.	Section 2.4.3.1; Section 3.3	Please include this requirement in the PD.	YvL: N/A, as no leakage is expected. However, additional information how the leakage factor is calculated has been added to section 3.3 of the PD.	Section 4.3.3 of the PD details how leakage/reference sample points will not be fixed throughout the life of the project. Please explain how this is not a deviation to Section 10.3.2 of the methodology (see also NCRs 175-178, & 209).	YvL: This is in line with the methodology. Please refer to the methodology, section 10.3.2 where the following is stated: "Neither the plot boundaries nor locations should be visibly marked on the ground, as they most likely exist in areas outside the project's control and visible marking may lead to preferential treatment of these plots. Rather, they should be monumented using a GPS."	Addressed.					
160	The quantity of degradation and deforestation that may shift outside the project area cannot exceed what would have occurred in the project area, which is a reasonable assumption for the accounting of emissions from leakage. However, the size of the leakage area may exceed the size of the project area as defined in section 10.2. Therefore, equation [33] normalizes the estimated proportion of degradation and deforestation observed in the leakage area such that this proportion is comparable to that that would have occurred in the project area.	Section 2.4.3.1; Section 3.3	Please include this requirement in the PD.	YvL: N/A, as no leakage is expected. However, additional information how the leakage factor is calculated has been added to section 3.3 of the PD.	Issue addressed.							

161	Depending on the relative value of the leakage predicted by the model and the results of the field-observed samples at the end of the current monitoring period, the leakage factor should be calculated in one of three ways. In the first monitoring period, the leakage factor is calculated as the difference between the mean of the field-observed leakage sample and the prediction of the leakage model as illustrated in example (b) below and in Figure 12. In subsequent monitoring periods, the leakage factor is calculated as the difference between the mean of the leakage sample and whichever is greater: the prediction of the leakage model or the results of the leakage sample at the previous monitoring period. This is necessary to avoid double counting when predicting deforestation and degradation based on a cumulative model, and is illustrated by example (c) below and in Figure 12. Any time the results of the field-observed leakage sample lies below the prediction of the leakage model, the leakage factor is zero (example (d) below and in Figure 12). From the leakage factor, quantify leakage emissions as equation [32].	Section 2.4.3.1; Section 3.3	Please include this requirement in the PD.	YvL: N/A, as no leakage is expected. However, additional information how the leakage factor is calculated has been added to section 3.3 of the PD.	Issue addressed.						
	PD Requirements: Estimating the Leakage Factor and Emissions From Leakage										
162	The project description must include the following:1. The estimated cumulative degradation and deforestation predicted by the leakage model, (~).2. The estimated cumulative deforestation and a degradation in the leakage area, ^ .3. The leakage factor, ^ .4. The estimated emissions from leakage, .	Section 2.4.3.1; Section 3.3	Please include this requirement in the PD.	YvL: N/A, no leakage is expected. However, the methodology is followed in case leakage occurs. The methodology steps have been included to section 3.3 of the PD.	Issue addressed.						

	11 Quantification of Net GHG Emission Reductions and/or Removals										
	PD Requirements: Quantification of NERs										
163	The project description must include the following: 1. Estimates for each component of the quantified NERs; 2. The total quantified NERs; and 3. The number of quantified NERs to be allocated to the buffer pool.	Section 3.4	Please provide an estimate for each component of the quantified NER's as required in the methodology.	YvL: N/A as no monitoring did occur so far. The quantification of Net GHG Emissions will be provided within the Monitoring Report at verification stage. At this stage the ex-ante estimation has been developed and the results have been provided in a table in section 3.4.	Issue addressed.						
	11.1 Determining Deductions for Uncertainty										
164	The confidence deduction is determined as [35] where is the weighted quadratic average of the quantified uncertainty in the cumulative deforestation model, the soil carbon loss model and the carbon stock estimates [36].	n/a	Please state in the PD how consistency with this requirement will be met once monitoring is conducted.	YvL: The uncertainty of the total carbon stocks and soil carbon model is determined at monitoring and verification stage using equation 36 of the methodology. The confidence deduction is determined as equation 35. the equations are provided in section 4.3.8 of the methodology. Details of statistical uncertainty analysis is provided in folder 164,165.	Issue addressed.						
	PD Requirements: Confidence Deduction										
165	The project description must include the following: 1. The weighted quadratic average of the quantified uncertainty in the cumulative deforestation model, soil carbon loss model and the carbon stock estimates as defined by [35].	n/a	Please state in the PD how consistency with this requirement will be met once monitoring is conducted.	YvL: The uncertainty of the total carbon stocks and soil carbon model is determined at monitoring and verification stage using equation 36 of the methodology. The confidence deduction is determined as equation 35. the equations are provided in section 4.3.8 of the methodology. Details of statistical uncertainty analysis is	Issue addressed.						

				provided in folder 164,165.							
	11.2 Reversals from the Quantification of Negative NERs										
166	In the event that the quantified NERs for any monitoring period are negative as a result of carbon stock losses, the project proponent must follow the VCS procedures for reversals as set out in the latest version of the VCS. If subsequent to baseline reevaluation per section 6.7, a new cumulative deforestation model falls below the old model (see Figure 11) this does not constitute a reversal. Rather if credits were generated from avoided deforestation prior to baseline reevaluation at a level greater than predicted by the new baseline model after baseline reevaluation, then the project proponent may not generate any new credits from avoided deforestation until the new cumulative deforestation model reaches the previous level of predicted deforestation that generated these credits.	n/a	Please state in the PD how consistency with this requirement will be met once monitoring is conducted.	YvL: Additional information has been added to section 3.4 of the PD.	Issue addressed.						
167	At the end of the project crediting period, the project proponent must estimate the final level of cumulative deforestation using the most current baseline model and use this estimate to quantify the total number of cumulative credits per equation [34]. If this estimate is greater than the number of credits issued during the project crediting period, then this difference must be subtracted from the buffer pool.	n/a	Please state in the PD how consistency with this requirement will be met once monitoring is conducted.	YvL: Additional information has been added to section 3.4 of the PD.	Issue addressed.						
	11.3 Ex-Ante Estimation of NERs										

168	Under the VCS, ex-ante estimates of the net carbon benefits of the project are only required to determine whether decreases in carbon pools or increases in GHG emissions are insignificant and need not be measured and monitored (VCS, 2010a). Additionally, ex-ante estimates of project benefits may be useful to project proponents for planning purposes. Use the project crediting period to estimate ex-ante project benefits.	PD Section 3.1; "120614_KARIBA ER Calc_auditors.xls"	Please see NCR #122 (ROW 265).	YvL: Please refer to NCR 122.	Issue addressed.						
169	The most significant factor in estimating project carbon benefits is likely to be an estimate of avoided baseline emissions which is derived from an estimate of carbon stocks and the baseline models. Estimates of ex-ante avoided baseline emissions can be made by assuming that the total carbon stock in the project area is equal to the initial carbon stock for each future monitoring period. This conservatively ignores growth of the existing forest, assuming that each carbon pool is at a steady state prior to project initiation. The projected avoided baseline emissions are estimated by applying the cumulative deforestation model and soil carbon loss model as described in sections 6.4.8 and 6.5.6 where monitoring period always indicates the initial carbon stock.	Section 2.4.4	See other NCR's which reference the cumulative deforestation model.	YvL: Please refer to the ex-ante calculation provided in folder Ex-ante calculation.	Please clarify if each carbon pool was calculated at a steady state in the baseline.	YvL: The carbon pool has been calculated at a steady state in the baseline.	Addressed.				
170	Using the assumptions outlined above, estimate the ex-ante NERs for each monitoring period as [34] where is avoided baseline emissions, is the confidence deduction, is the project emissions and is emissions from leakage. (refer to Page 70)	Section 3.4	Please state in the PD how consistency with this requirement will be met once monitoring is conducted.	YvL: Please refer to section 3.4 of the PD, where the equation 34 as well as the results of the ex-ante calculation is provided. Please refer to the ex-ante-calculation provided in folder "Ex-ante calculation".	Please note the misspelling of "tones" in section 3.4.	YvL: The misspelling has been corrected.	120820 KARIBA ER Calc spreadsheet does not provide ex-ante estimates that include a confidence deduction and leakage estimate for each monitoring period. Use of EQ 34, 35, and	YvL: Confidence deduction and leakage can be found in the ex-ante calculation, but are assumed to be 0. Confidence deduction can only be	Addressed.		

							36 were not found in the PD. Using the assumptions outlined above, please estimate the ex-ante NERs for each monitoring period that clearly demonstrates the use of EQ 34, 35, and 36 in the ex-ante estimates.	calculated, once the uncertainty of the real data has been calculated (refer to Kasigau, page 63: Table 8: "at monitoring period (1)"). Further refer to the wording at equations 35, 36: "at monitoring period". The following statement has been added to section 3.4 of the PD: <i>"Further, leakage and confidence deduction are reliant upon monitored data and will be therefore determined at verification stage."</i>			
171	Reporting of ex-ante estimates is only required if the project proponent demonstrates that a carbon pool expected to increase in the baseline or a project emissions source is excluded from accounting under the de minimus rule.	Section 2.4	Please demonstrate if any carbon pool is expected to increase in the baseline or if a project emissions source is excluded from accounting under the de minimis rule.	YvL: As no carbon pool is expected to increase in the baseline and no project emission source is excluded from accounting, the reporting of the ex-ante estimates is not required. However, additional information has been added to section 2.3 of the PD.	Issue addressed.						
	PD Requirements: Ex-Ante Estimation of NERs										

172	In the case when ex-ante estimates are used to prove the significance of emissions sources or estimate the quantity of NERs over the project crediting period, the project description must include the following:	Section 3	Pending NCR #173 (ROW 364)	YvL: As no carbon pool is expected to increase in the baseline and no project emission source is excluded from accounting, the reporting of the ex-ante estimates is not required. Please refer to the ex-ante calculation.	Issue addressed.						
173	1. The projected avoided baseline emissions, project emissions, and leakage for each monitoring period over the lifetime of the project. 2. A narrative description of sources used to estimate the leakage rate and demonstration that the estimated rate is conservative. 3. If included in project activities, a description of procedures used to estimate the rate of biomass burning and charcoal production and demonstration that these estimates are conservative.	Section 3	Pending NCR #___ (ROW 364)	YvL: N/A	Issue addressed.						
	13 Monitoring										

174	The procedures described here provide a means of estimating the total carbon stock in selected pools within the project area and the uncertainty of that estimate at a given point in time. These procedures are used both for establishing the initial carbon stock within the project area and the carbon stock at each monitoring event. This methodology employs fixed area plots coupled with allometric equations for estimating carbon stocks in large and small trees. Carbon stocks in dead wood are estimated using fixed area plots for the standing dead pool and line intersect sampling for the lying dead pool. Allometric equations or destructive sampling may be used for estimating non-tree carbon stocks. Soil carbon is estimated using soil samples collected from soil cores or pits. These sampling procedures are designed to detect both increases in carbon stocks, such as those that occur as a result of forest growth, and decreases in carbon stocks, such as changes that may take place as a result of degradation or natural disturbance events.	4.3	Though the specific soil sampling procedures are outlined in the PD, the biomass sampling does not include similar detail in the PD. For consistency, please provide some additional detail on biomass sampling in the PD and reference to the SOP already provided to the validator.	YvL: More details for biomass sampling have been provided and the SOP has been referenced in section 4.3 of the PD.	Issue addressed.						
	13.3 Sampling Guidelines										
	Proportional Allocation										

175	If the only information available is the area of each stratum as delineated on a GIS, proportional allocation can be used. Determine the total estimated sample size [^] using equation [37], then determine the number of plots [^] in each stratum using equation [38].	Section 4.3.3	Please state how the plot locations and distribution are selected.	FR, description of Random Point distribution added to PD	The PD now mentions how "opportunistic" points were taken whenever feasible. However, for statistical accuracy, this cannot be assumed as "random." However, since this NCR appears to be related to inventory sampling, this issue is pending further discussion and the results of NCR #35.	Explanation was added 4.3.3 that "opportunistic" points were purely additional to broaden the sample base in a resource efficient way (like on return way to base).	Addressed.				
	Neyman Allocation										
176	If the area of each stratum as well as an estimate of the population variance of each stratum is available, Neyman allocation can be used. First determine the proportion of plots, that will fall in each stratum using equation [39]. Estimate the total sample size [^] using equation [41], then estimate the number of plots [^] in each stratum using equation [42] where [^] can be estimated from a pilot sample using equation [46].	Section 4.3.3	Please state how the plot locations and distribution are selected.	FR, description of Random Point distribution added to PD	The PD now mentions how "opportunistic" points were taken whenever feasible. However, for statistical accuracy, this cannot be assumed as "random." However, since this NCR appears to be related to inventory sampling, this issue is pending further discussion and the results of NCR #35.	Explanation was added 4.3.3 that "opportunistic" points were purely additional to broaden the sample base in a resource efficient way (like on return way to base).	Addressed.				
	Optimal Allocation										

177	If the area, an estimate of variance, and an estimate of the relative cost of sampling is available for each stratum, optimal allocation can be used. First determine the proportion of plots, that will fall in each stratum using equation [40]. Estimate the total sample size $\hat{n}$ using equation [41], then estimate the number of plots $\hat{n}_h$ in each stratum using equation [42] where $\hat{n}$ can be estimated from a pilot sample using equation [46].	Section 4.3.3	Please state how the plot locations and distribution are selected.	YvL: Please refer to additional information provided in section 4.3.3. The sample size calculation is based on the Sourcebook for LULUCF projects. Please refer to the footnote of section 4.3.3.	The PD now mentions how "opportunistic" points were taken whenever feasible. However, for statistical accuracy, this cannot be assumed as "random." However, since this NCR appears to be related to inventory sampling, this issue is pending further discussion and the results of NCR #35.	Explanation was added 4.3.3 that "opportunistic" points were purely additional to broaden the sample base in a resource efficient way (like on return way to base).	Addressed.				
	13.3.3 Systematic vs. Random Sampling										
178	Project proponents may choose to carry out their inventory using either a random or a systematic (grid-based) sample within each stratum. Systematic sampling helps ensure uniform coverage of the area sampled and can be cost efficient, but risks bias if the sampling units coincide with periodicity in the population. Further, estimating the sampling error based on a systematic sample is difficult. This methodology allows for the use of systematic sampling with the following guidelines:	Section 4.3.3, Kariba REDD+ Project: Inventory Manual	As ground truth plots viewed in the field were sometimes along accessible roadways, please clarify how the systematic random plot sampling technique is implemented.	FR, description of Random Point distribution added to PD	The PD now mentions how "opportunistic" points were taken whenever feasible. However, for statistical accuracy, this cannot be assumed as "random." However, since this NCR appears to be related to inventory sampling, this issue is pending further discussion and the results of NCR #35.	Explanation was added 4.3.3 that "opportunistic" points were purely additional to broaden the sample base in a resource efficient way (like on return way to base).	Addressed.				

179	- Project proponents must identify any periodic variation potentially present in the project area due to topography, management history, or other factors and document how the sampling design avoids bias that may result from these periodicities. - If line-plot cruises or other linearly based methods are used, effort should be made to make cruise lines run perpendicular to slopes, rather than along contours, whenever possible. - Systematic samples should employ a randomized start point.	Section 4.3.3, Kariba REDD+ Project: Inventory Manual	As required by the methodology, please identify any periodic variation potentially present in the project area due to topography, management history, or other factors and document how the sampling design avoids bias that may result from these periodicities. Please include a requirement that for transect plots, effort should be made to make cruise lines run perpendicular to slopes, rather than along contours, whenever possible.	YvL: Additional information has been added to section 4.3.3 of the PD (please also refer to footnotes).	Issue addressed.							
180	The same procedures are applied to estimate the sampling error for both methods	Section 4.3.3, Kariba REDD+ Project: Inventory Manual	Please include this requirement of the methodology.	YvL: Additional information has been added to section 4.3.3 of the PD: The sampling error is calculated by using equation 47 of the methodology.	Issue addressed.							
	13.4 Estimating Total Carbon Stocks											
181	Estimate carbon stocks for selected carbon pools using the strata, plots within each stratum and measurements within each plot where each measurement is. For example, a measurement might apply to a soil sample or a prediction of biomass from an allometric equation. (Refer to Page 75)	Section 4.3.7	Please show how this requirement will be addressed.	YvL: Additional information has been provided in section 4.3.7 of the PD.								
	13.5 Estimating Carbon in Above-ground Biomass											

	13.5.1 Estimating Carbon in Above-ground Large Trees										
182	1. Estimate the carbon stock per unit area in each plot, as equation [45] where is the predicted carbon stock for the large tree in plot, stratum as given by equation [50]. 2. Use to calculate the total carbon stock in above-ground large trees as equation [44] and standard error [^] of the carbon stock in above-ground large trees as equation [47] where [^] is equation [46]. (Refer to Page 75)	n/a	Reference could not be found to some of these equations in the PD. Please state in the PD how these equations will be used once monitoring is complete.	YvL: Equations have been referenced in section 4.3.7 of the PD.	Issue addressed.						
	13.5.2 Estimating Carbon in Above-ground Small Trees										
183	1. Estimate the carbon stock per unit area in each plot, as equation [45] where is the predicted carbon stock for the small tree in plot, stratum as given by equation [50]. 2. Use to calculate the total carbon stock in above-ground small trees as equation [44] and standard error [^] of the carbon stock in above-ground large trees as equation [47] where [^] is equation [46]. (Refer to Page 76)	n/a	Reference could not be found to some of these equations in the PD. Please state in the PD how these equations will be used once monitoring is complete.	YvL: Equations have been referenced in section 4.3.7 of the PD.	Issue addressed.						
	13.5.3 Estimating Carbon in Above-ground Non-trees										
	Allometric Equation Method										
184	1. Estimate the carbon stock per unit area in each plot, as equation [45] where is equation [54] for the shrub in plot, stratum. 2. Use to estimate the total carbon stock in above-ground non-tree biomass as equation [44] and standard error [^] of the carbon stock in above-ground non-trees as equation [47] where [^] is equation [46].	Section 4.3.7	Reference could not be found to some of these equations in the PD. Please state in the PD how these equations will be used once monitoring is complete.	YvL: Equations have been referenced in section 4.3.7 of the PD.	Issue addressed.						

	13.6.1 Estimating Carbon in Below-ground Large Trees										
185	1. Estimate the carbon stock per unit area in each plot, as equation [45] where is the product of , the root to shoot ratio for species and equation [50] for the large tree in plot , stratum . 2. Use to calculate the total carbon stock in below-ground large trees as equation [44] and standard error [^] of the carbon stock in below-ground large trees as equation [47] where [^] is equation [46].	Section 4.3	Reference could not be found to some of these equations in the PD. Please state in the PD how these equations will be used once monitoring is complete.	YvL: Equations have been referenced in section 4.3.7 of the PD.	Issue addressed.						
	13.6.2 Estimating Carbon in Below-ground Small Trees										
186	1. Estimate the carbon stock per unit area in each plot, as equation [45] where is the product of , the root to shoot ratio for species and equation [50] for the small tree in plot , stratum . 2. Use to calculate the total carbon stock in below-ground small trees as equation [44] and standard error [^] of the carbon stock in below-ground small trees as equation [47] where [^] is equation [46].	Section 4.3	Reference could not be found to some of these equations in the PD. Please state in the PD how these equations will be used once monitoring is complete.	YvL: Equations have been referenced in section 4.3.7 of the PD.	Issue addressed.						
	13.6.3 Estimating Carbon in Below-ground Non-trees										
187	1. Estimate the total carbon stock in below-ground non-tree biomass as [64]. 2. Estimate the standard error of total carbon stock [^] as equation [65].	Section 4.3	Reference could not be found to some of these equations in the PD. Please state in the PD how these equations will be used once monitoring is complete.	YvL: Equations have been referenced in section 4.3.7 of the PD.	Issue addressed.						
	To estimate the total carbon stock in the standing dead pool:										

188	1. Estimate the carbon stock per unit area in each plot, as equation[66] where and are computed as described below. 2. Use to calculate the total carbon stock in standing dead wood as equation [44]. 3. Calculate the standard error [^] of the carbon stock in standing dead wood as equation [47] where [^] is equation [46].	Section 4.3	Reference could not be found to some of these equations in the PD. Please state in the PD how these equations will be used once monitoring is complete.	YvL: Equations have been referenced in section 4.3.7 of the PD.	Issue addressed.						
	Decay Class I										
189	The carbon stock of standing dead trees in decay class I is estimated using the same equations developed for live trees. Estimate the carbon stock for each plot as equation [45] where is equation [50] for the tree in plot , stratum .	Section 4.3	Reference could not be found to some of these equations in the PD. Please state in the PD how these equations will be used once monitoring is complete.	YvL: Equations have been referenced in section 4.3.7 of the PD.	Issue addressed.						
	Decay Class II										
190	The carbon stock of standing trees in decay class II is conservatively estimated as the biomass in only the remaining bole. DBH and height should be measured on each tree in decomposition class 2. The diameter at the top of the stem can be measured using a relascope or similar instrument, or it can be conservatively assumed to be zero. The volume of each dead tree is then estimated as the frustum of a cone. Estimate the carbon stock for each plot as equation [45] where is equation [51] for the tree in plot , stratum and is equation [52].	Section 4.3	Reference could not be found to some of these equations in the PD. Please state in the PD how these equations will be used once monitoring is complete.	YvL: Equations have been referenced in section 4.3.7 of the PD.	Issue addressed.						
	13.9 Estimating Carbon in Soil										

191	The soil carbon pool is estimated from soil samples taken in sample plots. Samples may be taken using a soil core or by digging a soil pit. Because of the high degree of variability in soil carbon stocks, it is recommended that several samples be taken from different randomly selected locations within each plot (IPCC, 2003). At each sample location, multiple horizons or depth increments should be extracted (at least 3 are recommended) to ensure that the soil is being measured to a sufficient spatial resolution along its depth. Depth increment of each sample taken must be recorded . Bulk density and carbon concentration should be measured separately by soil horizon or depth increment, as it is important to apply these individual measurements to achieve mass-equivalent measurement. Bulk density and carbon concentration should be evaluated by a laboratory that follows internationally recognized standards (e.g. FAO standards) to minimize errors and bias. If multiple samples within a plot are bulked (i.e. combined) in the field they must be bulked by horizon or depth increment and mixed thoroughly before extracting subsamples for the lab analyses.	120118_Soil carbon Guidance_small sample.pdf		In Working steps in the field, does “plane” mean level (flat, no slope)? Please clarify why this distinction is relevant. Please clarify why only 2 samples are taken per plot, and what was the justification for this number. In step 3, a metal cylinder is used, but it is not listed under "material needed." Also, the guidance just says "take two bulk density samples" without explaining how this is done. Please reference a method for taking BD samples. The two methods, for clay soils and for rocky soils, are grouped together. Please separate for clarity. The methods for determining bulk density are not consistent with general procedures. Please ensure consistency for determining bulk density. Please clarify why the lab is used for BD if it can be determined in the field.	Tsi "plane" has been replaced by "level". This is necessary for the applied approach using water to determine the volume of soil. The methodology recommends but does not require multiple samples (section 6.5.3). We choose 2 to address heterogeneity while allow for an efficient work progress. IPCC (2003) suggests 2-4 subsamples. The metal cylinder is referenced under "material needed". More detailed guidance is included about how to take undisturbed bulk density samples, in step 2. The steps for clay soil and rocky soil have been separated in the guidance. The methods for determining bulk density are consistent with FAO procedures. In the case of undisturbed samples, these are done in the field, except for the drying which needs to be carried out in the laboratory. For disturbed samples, we follow a FAO approved method for disturbed samples. This includes steps that can only be done in the lab (drying and re-compacting the soil).	Issue addressed.																			
-----	---	---	--	---	---	-------------------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

211	This mixing can be done prior to laboratory measurement, or samples from different depths can be analyzed separately and a weighted average with weights proportional to sample increment depth can be used to compute the mean soil carbon stock for the entire depth profile sampled. In soils with coarse fragments (> 2mm), both density and carbon concentration should be based on the fine fraction of the soil (< 2 mm), corrected for coarse fragments. A minimum depth for soil sampling should be established and this minimum depth should be no less than the depth to which soil is disturbed during farming, typically a minimum 30cm. Care should be taken to synthesize the soil measurements made within the project area with those made in the reference area (see section 6.5.3 'Sampling Soil Carbon Loss'). To ensure comparisons made between project area samples and reference area samples are consistent, collection must be done to allow calculation of soil carbon stocks on a mass-equivalent basis, per (Ellert, Janzen & Entz, 2002; Ellert & Bettany, 1995).	120118_Soil carbon Guidance_small sample.pdf	Please clarify the method used to determine soil C content. Please clarify why the two soil samples are not mixed prior to sending to lab.	Tsi included information. We use the Walkley-Black method in the laboratory. Carbon values are consolidated after lab analysis to allow for check or quality and consistency. The methodology allows to combine results after-the-fact (section 6.5.3).	Issue addressed.							
192	The guidance provided in section 4.3.3.5.4 of the GPG-LULUCF (IPCC, 2003) must be adhered to when choosing laboratory methods for analyzing soil carbon content.	Section 2.4.5.1 of PD; 120118_Soil carbon Guidance_small sample.pdf	tbd	Tsi Our Standard Operation Procedure for soil is fully compatible with section 4.3.3.5.4 of IPCC (2003). Calculations of soil carbon stock will be presented upon first verification and be inline with IPCC (2003). A clarification has been including in section 5.1 of the PD	Issue addressed.							

193	1. Calculate the corrected bulk density for each plot using equation [60]. 2. Estimate the soil carbon stock per unit area, ρ , for plot, stratum using equation [61]. 3. Estimate the total stock as [44]. 4. Estimate the variance within each stratum as equation [46]. 5. Estimate the standard error of the total carbon stock in soil carbon, $\hat{\rho}$, as equation [49].	120118_Soil carbon Guidance_small sample.pdf	Please refer to NCR 191 above.	Tsi Calculations of soil carbon stock will be presented upon first verification and be inline with the requirements of the methodology. A clarification has been including in section 5.1 of the PD. Refer also to the responses to NCR 191.	Please reference each equation separately in the PD.	Tsi: For clarification, reference to each of the equations has been included into the PD in section 2.4.5.3.	Addressed.				
	13.11 Uncertainty										
194	To ensure that carbon stocks are estimated in a way that is accurate, verifiable, transparent, and consistent across measurement periods, the project proponent must establish and document clear standard operating procedures and procedures for ensuring data quality. At a minimum, these procedures must include:	Section 4.3.5, Section 4.3.8	Please refer to NCR 195 below.	YvL: Please refer to the answer provided for NCR 195.	Please see below.	Ok	This will be considered addressed when NCR 197 is addressed.	YvL: Please refer to NCR 197.	Addressed.		
195	· Comprehensive documentation of all field measurements carried out in the project area. This document must be detailed enough to allow replication of sampling in the event of staff turnover between monitoring periods. · Training procedures for all persons involved in field measurement or data analysis. The scope and date of all training must be documented. · A protocol for assessing the accuracy of plot measurements using a check cruise and a plan for correcting the inventory if errors are discovered. · Protocols for assessing data for outliers, transcription errors, and consistency across measurement periods. · Data sheets must be safely archived for the life of the project. Data stored in electronic formats must be backed up.	Section 4.3.4, Section 4.3.5, Section 4.3.8	Please provide greater detail on training procedures. Please state that data sheets will be stored for project life. In section 4.3.8 the PD references that check cruise criteria and protocols for addressing outliers and consistency across measuring periods are outlined in the SOP, though this could not be located. Please include this information.	YvL: For further detail on the training procedure please refer to section 4.3.4. For the controlling system please refer to section 4.3.6 of the PD. Please refer to the section 4.3.5 of the VCS PD. Please refer to the additional information provided in section 4.3.8 of the PD: the protocols are implemented and constantly extended once monitored data have been taken and analyzed at monitoring and verification stage of the project. Threshold values are introduced to the MOVERS.	Per the original NCR, the validator requested "greater" detail for the training than what was already depicted. The PD currently indicates that training will occur, but does not elaborate on how it will occur. Please address. Although the PD was updated to further elaborate on the protocols, the original NCR asked where this information was located in the SOPs. Please clarify.	YvL: Please refer to 4.3.4.: <i>"Training of the crews on the survey methodology are undertaken at the beginning of the fieldwork in theoretical and practical sessions during which techniques of different forest and tree measurements, tally of data and techniques."</i> The training is based on the content of the manual (provided in folder 197). The content described in the manual is put into practice in the field. Not experienced members of the	Addressed.				

						field-team are directly trained by the team leader.					
						First, thresholds for values have to be implemented to address outliers and consistency. This is an ongoing process that is implemented in parallel to the monitoring process. Once measured data have been uploaded (at verification stage) to the Internet based MOVERS they will be reviewed critically. There is no implemented protocol at this stage.					
	13.12 Estimating Uncertainty in Total Carbon Stocks										
196	Estimate the standard error of the total carbon stock for the project area, "by combining the standard errors of the required and selected optional pools using equation [63]. Calculate the percent uncertainty in the total carbon stock as equation [67].	Section 4.3.8	A reference to equation 63 could not be found in the PD. Please provide a discussion of how this equation will be used.	YvL: Additional information has been provided in section 4.3.8 of the PD.	Issue addressed.						
	13.14 Reporting Requirements										
	PD Requirements: Monitoring of Carbon Stocks in the Project Area										
	The project description must include the following for each monitoring period:										

197	1. Summary of sampling procedures, with a copy of detailed sampling methods included as an appendix. 2. Documentation of training provided to field crews. 3. Documentation of data quality assessment such as the results from a check cruise. 4. Map showing strata boundaries and plot locations. 5. List of plot coordinates. 6. Description of the plot size and plot layout used for each carbon pool. 7. Documentation of the source of all parameters and allometric equations. 8. If allometric equations are developed, a detailed description of the development process including model fitting and selection. 9. The estimated total carbon stock, standard error of the total, and sample size for each stratum and selected carbon pool in the project area. 10. The estimated total carbon stock and standard error of the total for the entire project area.	"120429_PROCEDURE MANUAL FOR TREE DATA COLLECTION FINAL.pdf"	During the site visit there were several items identified that differed from the SOP. Specifically: - The SOP indicates that "the circumference is measured in cm and rounded down, i.e. 10.9cm will be recorded as 10.5 cm, and not 11 cm, 10.4 cm is rounded down to 10.0cm", however in the field measurements were rounded down to the nearest whole centimeter. Please revise the SOP to reflect on the ground activities. -For height, the SOP also states "To avoid measurement errors the tree distance (at 15, 20, 30 or 40 meters) when taking the measurement must be equivalent to the tree height." However in practice you cannot know the tree height (to measure at that distance) until it is measured, creating a circular conflict. Please revise the SOP to reflect on the ground activities.	YvL: The manual has been updated accordingly. Please refer to folder 197.	Per the third point in the NCR, it does not appear the SOP was updated to discuss how trees were selected for height measurement. Please include.	YvL: Minimum height is 1.3 m (as this is the height where the DBH is measured). Please see the introduction and also look under section 4.4.4 page 18.	Please clarify in the SOP - are all trees on each plot measured for height? If not, what is the criteria for selecting trees to be measured for height?	YvL: Please refer to the bottom of page 24: "Woody species that are smaller than 2.5cm DBH and <1.3m are not measured. The minimum height of 1.3 m is therefore the criteria for selecting trees to be measured." The updated manual is provided in folder 197.	It is taken from the comments provided that all trees above 1.3 m in height will be measured for height. Addressed.		
-----	---	--	--	---	---	--	---	---	---	--	--

			- Please state in the SOP what the protocol is for selecting trees for measurement.								
Item Number	VCS AFOLU Non-Permanence Risk Tool, Version 3.1, 01 February 2012	Location in PD or Supporting Documents	NCR/CL/OFI	Response from Client	NCR/CL/OFI	Response from Client	NCR/CL/OFI	Response from Client	NCR/CL/OFI	Response from Client	NCR/CL/OFI
	Internal Risks										
	Table 1 Project Management										
198	Ongoing enforcement to prevent encroachment by outside actors is required to protect more than 50% of stocks on which GHG credits have previously been issued.	PD Annex 1: Project VCS non permanence risk assessment	Although no definition is provided and the usage is somewhat vague, the validator believes the terms "outside actors" could also mean physically internal components of the project area acting outside the goals of the project or outside of the temporal project boundaries. Please address.	YvL: The following information has been added to the PD Annex 1: In case the definition refers to physically internal components of the project area acting outside the goals of the project or outside of the temporal project boundaries, the OGM teams are in place for an ongoing enforcement to prevent encroachment to protect more than 50% of stocks of which GHG credits have been previously been issued: The progressive conversation with community members via the newsletter or consultations, the implementation of the project activities to address the deforestation drivers and agents, the support due to the fund to improve health and education in the project area will strengthen the presence of the project proponent to mitigate potential risk of encroachment by outside actors.	Issue addressed.						

199	Mitigation: Adaptive management plan in place.	"Adaptive management Plan_final.pdf"	Although the PD outlines mitigation strategies and the benefits of the project, an adaptive management plan is a more robust plan that includes "a process for monitoring progress and documenting lessons learned or corrections that may be needed, and incorporating them into project decision-making in future monitoring periods." It does not appear that the PD has provided this. Please clarify.	YvL (CGI): An adaptive management plan is provided separately in folder 199.	Please provide additional detail in the adaptive management plan on the "process for documenting lessons learned or corrections that may be needed, and incorporating them." Much of this is implied in other parts of the PD, but the adaptive management plan should also address these factors.	YvL: The Adaptive Management Plan has been updated, please refer to folder 199. We can probably provide a more detailed and adjusted process for documenting of lessons learned, once we are fully into MRV.	Addressed.					
	Table 2 Financial Viability											

200	Project cash flow breakeven point is less than 4 years from the current risk assessment	PD Annex 1: Project VCS non permanence risk assessment; "Transactions 2012.pdf"; "29th financials.xls"	Documents provided during CCB validation detailed first-year expenses to be budgeted for \$492,723 for Environment Africa and \$348,760 for CGA environmental protection. Funding of \$500,000 was secured through EBC Guernsey Limited from 03 January 2011 to 03 January 2012. Please provide updated budgets and expenses to-date. In addition, please provide evidence of an extension of the funding past 03 January 2012. Finally, please provide a simple cash-flow analysis so the validator can confirm the assertions of this section of the risk analysis.	YvL: As evidence that the breakeven point is less than 4 years from the current risk assessment, please refer to the excel sheet "29th financials" provided in folder 200,201,202. For evidence of an extension of the funding past 03 January 2012 please refer to the balance statement "Transactions 2012".	Issue addressed.						
201	Project has secured 80% or more of funding needed to cover the total cash out before the project reaches breakeven	PD Annex 1: Project VCS non permanence risk assessment; "120430_finance facility.pdf"	see above	YvL: Please refer to the excel sheet "29th financials" and the finance facility letters "111114_finance facility" & "120430_finance facility" provided in folder 200,201,202.	It appears permanent break-even will occur in December 2013. Since the finance facility appears to be secure through April 2013, is there any way it can be extended until December 2013?	YvL: The finance facility has been extended. Please refer to the letter provided in folder 201,202.	Addressed.				

202	Mitigation: Project has available as callable financial resources at least 50% of total cash out before project reaches breakeven	PD Annex 1: Project VCS non permanence risk assessment	see above	YvL: Please refer to the excel sheet "29th financials" and the finance facility letters "111114_finance facility" & "120430_finance facility" provided in folder 200,201,202.	It appears 50% of the total cash-out is approximately \$56,098 (from the deficit in November 2013). Please see above.	YvL: The finance facility has been extended. Please refer to the letter provided in folder 201,202.	Addressed.				
	Table 4 Project Longevity										

203	With legal agreement or requirement to continue the management practice	legal agreements	Please clarify if the legal agreements in place with the RDCs require CGI to continue the project for 30 years. If the agreements give CGI "the rights to develop, establish and market the project with support of the RDCs and establish a benefit sharing of the carbon revenues" without mandating the project to occur for the 30-year duration, this risk category may not be accurate.	YvL: Please refer to the contracts provided in the annex on March 28th ("1.12.1 Ownership") where it is stated that the agreement covers 30 years.	Please clarify where this is located in the agreement. The validator had a difficult time locating the specific time period.	Please refer to the contracts provided in the annex on March 28th ("1.12.1 Ownership") where it is stated that the agreement covers 30 years: Mbire („Mbire Revenue Distribution Addendum“): 1.9 Project Lifetime. Binga (Mandate Agree CGI & Songo), Hurungwe (Mandate Agree CGI & Hurungwe safari), : 1.5 Project Lifetime. Nyaminyami („Bilateral Agree between CGI&Nyami.pdf“): 1.14: Project Lifetime.	The VCS tool states "Legal agreement or requirement to continue the management practice refers to any legally enforceable agreement or requirement, such as a conservation easement or protected area law that would require the continuation of the management practice that sequesters carbon or avoids emissions for the entire project longevity." For all project areas, the contracts state that "The initial term of this Agreement and as determined by the Project Lifetime is a minimum of ten (10) years from the date of execution with a maximum of thirty (30) years, or the term of the Lease, subject to the termination provisions set forth herein." This appears to not require it be continued, but provides the option to continue. Please address.	YvL: Please see the related clause of all agreements below. Explanation: Please clause e.g. 1.5 of the Binga and Hurungwe bilateral agreement: "Project Lifetime" shall mean as stipulated in the Project Documents and 1.6 of the Nyaminyami agreement. It stipulates that the project lifetime is determined by the PDD. Therefore if the PDD says 30 years then that is what it is. In the document: "Mbire Revenue Distribution Addendum" the project lifetime of 30 years is clearly stated. As agreed, annexes will be signed to clearly confirm the 30 year project lifetime for Binga, Hurungwe and Nyaminyami (not for Mbire as the requirement is already	Addressed.		
-----	---	------------------	---	--	--	---	--	---	------------	--	--

[illegible]

[illegible]

								Addendum): 1.9: secondly, the remaining funds will ensure that the basic project activities continue after the 30 Year Project lifetime has elapsed. It is required that such activities continue up to 100 years from the start of the Project activities; even though the Project itself ends after 30 years. The funds accrued in the Project Longevity Fund' will allow basic activities to continue up to at least year 100 after the start of the Project thereby creating a sustainable Project and environment many years after the Project itself has expired'				
	External Risks											
	Table 6: Land Tenure											

204	Mitigation: Project area is protected by legally binding commitment (eg, a conservation easement or protected area) to continue management practices that protect carbon stocks over the length of the project crediting period	legal agreements	TBD based on response to clarification above.	YvL: Please refer to NCR 203	Please see NCR 203 above.	Please refer to answer provided for NCR #203.	Please see NCR 203 above.	YvL: Please refer to the answer provided for NCR 203.	Addressed.		
	Table 7: Community Engagement										
205	Less than 50 percent of households living within the project area who are reliant on the project area, have been consulted	PD Annex 1: Project VCS non permanence risk assessment	The validator generally agrees with the project's assertion, but this will be further reviewed during field visit.	YvL: After further discussions on May 30th 2012 with the auditor nothing is needed from the project proponent.	Issue addressed.						
206	Less than 20 percent of households living within 20 km of the project boundary outside the project area, and who are reliant on the project area, have been consulted	PD Annex 1: Project VCS non permanence risk assessment	This metric will be further reviewed during field visit.	YvL: The following statement has been added to the risk assessment of the PD: Stakeholder consultations have been elaborated for the entire boundaries of the RDCs of 1'077'930 ha. The VCS project area (forested area) is about 858'863. Stakeholder consultations have therefore been conducted on 20% of land in addition to the project area. It can therefore be assumed that less than 20% of households living within 20 km of the project boundary outside the project area, and who are reliant to the project area, have been consulted.	The last sentence in the newly added statement indicates that "less than 20% of households living within 20 km of the project boundary outside the project area, and who are reliant to the project area, have been consulted." This needs to be revised, as the project is asserting that 20.4% has been consulted, and thus no risk needs to be accrued for this category. Please restate in the PD.	YvL: The sentence has been revised.	The argument stating that the risk factor is not applicable is not clear, however the NCR appears to be satisfied on the basis of 27% of land in addition to the project area being consulted. Please clarify the statement or remove as it is already satisfied. Additionally, though the result is correct, the form of the equation in the risk factor is incorrect (784'987 /1'077'930 = 27%). It should be (1-784'987 /1'077'930 = 27%). Please correct.	YvL: "Not applicable" has been removed and the equation has been corrected in the PD.	This does not appear to have been addressed as the changes could not be found.	Revisions have been made.	Addressed
	Table 8: Political Risk										

207	Governance score of less than -0.79	PD Annex 1: Project VCS non permanence risk assessment; "120127_WGIs_yvl.xlsx"	Although you took the most conservative score, please clarify if 2008 data is the most recent, as higher [or lower] scoring may be available.	YvL: The date 1.54 used is the average over the most recent five years of available data (2006-2010). Please refer to the excel sheet "120127_WGIs_yvl" provided in folder: "120328_Annex - Annex_Risk Assessment - WGI", provided to the auditors on March 28, 2012.	Issue addressed.							
	Natural Risks											

v3.1

					below ground level to aid rapid regeneration after a fire. Please refer to page 2 of the article: "Managing Savanna Ecosystems" (http://www.geocases2.co.uk/printable/savanna.htm) Drought: N/A, as they affect the agriculture activities but normally not the carbon pool (trees). The forests are adapted to droughts. Please refer to page 2 of the article: "Managing Savanna Ecosystems". However, the project has several prevention measures in place (approved agricultural activities associated with irrigation schemes and reestablishment of boreholes) in order to lower the risk of yield loss in agricultural production due to extreme weather events such as drought.					
--	--	--	--	--	--	--	--	--	--	--

APPENDIX B – DOCUMENTS RECEIVED FROM CLIENT

Documents received 03/29/2012

- 120328_Kariba_Remote_Sensing_PD_Annex.doc
- 120328_Kariba VCS PD.docx
- 120328 Annex

Documents received 04/16/2012

- WorkPapEnvSci_2011_05.pdf
- 120321_email VCS on AFOLU 3.2.png
- 120328_Kariba VCS PD.docx
- 120328_Kariba_Remote_Sensing_PD_Annex.doc

Documents received 04/17/12

- 20120417_Kariba_Remote_Sensing_GLOSSARY.pdf

Documents received 04/20/2012

- BINGA edited kml.kml
- HURUNGWE 1.kml
- MBIRE EDITED kml.kml
- Nyaminyami edited kml.kml

Documents received 04/23/2012

- Kariba_Map_Plots_West.PNG
- Kariba_Map_Plots_East.PNG

Documents received 04/24/2012

- Project-Area_Forests.rar
- 120328_Annex
- Kariba_ground truth points
- Kariba-Project-Area_Forests
- Maps
- Kariba_ground truth points.rar
- Kariba_List_Ground truth points.xlsx
- 120320_PROCEDURE MANUAL FOR TREE DATA COLLECTION FINAL.pdf

Documents received 05/02/2012

- NyamiNyami_Gokwe_Confusion_Matrix.rar
- Binga_Confusion_Matrix
- Hurungwe_Confusion_Matrix
- Mbire_Confusion_Matrix
- NyamiNyami_Gokwe_Confusion_Matrix
- Binga_Confusion_Matrix.rar
- Hurungwe_Confusion_Matrix.rar

- Mbire_Confusion_Matrix.rar

Documents received 05/24/12

- Hurunge2011_Forest_NEW.kml
- Hrungrwe2011_Forest_KML_SHP.rar
- Hrungrwe2011_Forest_NEW.dbf
- Hrungrwe2011_Forest_NEW.prj
- Hrungrwe2011_Forest_NEW.qpj
- Hrungrwe2011_Forest_NEW.shp
- Hrungrwe2011_Forest_NEW.shx

Documents received 06/20/2012

- KML & Shapefiles.zip
- 119,200,201,202
- 199
- 120423_Maps
- 120502_Accuracy
- KML & Shapefiles
- 5,28.zip
- 7.zip
- 34.zip
- 36.zip
- 37.zip
- 40.zip
- 43,46.zip
- 50,51.zip
- 67.zip
- 68, 72 & 74.zip
- 69.zip
- 110,131,191.zip
- 119,200,201,202.zip
- 122.zip
- 164,165.zip
- 197.zip
- 199.zip
- 120423_Maps.zip
- 120502_Accuracy.zip
- 120510_Cumulative Deforestation Model.zip
- 120620_Kariba VCS PD.docx
- 120620_Kariba VCS PD_track&change.docx
- 120620_Kariba_REDD+_FINAL_NCRs CLs_16_May_2012.xlsx
- 120620_Leakage.zip

- Ex-ante calculation.zip

Documents received 06/26/2012

- Addition to PD methodology annex for remote sensing.pdf

Documents received 07/22/12

- NyamiNyami_Forest_v2.0.rar
- Repair class

Documents received 07/23/12

- Point 6 - Landsat.jpgw
- Point 6 - Google Earth.JPG
- Point 6 - Landsat.jpg

Documents received 07/26/2012

- 120726_SP_Explanation_NyamiNyami.pdf

Documents received 07/27/2012

- visual validation.rar
- 200_points_regular_random_grid KML.kml
- 250ha_buffers_KML.kml
- Project+Reference PolygonsKML.kml
- visual validation KML files.zip

Document received 07/31/12

- Shawn 05th of June_Landsat2011.png
- concern_shawn_bingas.KML
- Kariba_Leakage_Area_KML.kml
- Kariba_Leakage_Area_KML.rar
- Shawn 05th of June_Example.png
- Shawn 05th of June_Example_Classification.png
- Shawn 05th of June_Example_GE2007.png
- Shawn 05th of June_Landsat2003.png
- Shawn 05th of June_Landsat2009.png

Documents received 08/07/2012

- Shrubland_Biomass Plot.rar
- SAM_0247.AVI

Documents received 08/15/2012

- Gokwe_North_SE_KML.kml
- 120815_Binga_Reclassification_Accuracy
- 120815_Binga_Reclassification_Accuracy.zip
- Gokwe_North_SE.jpg

Documents received 08/21/2012

- Model.zip
- 208
- GIS files

- 58.zip
- 68, 72 & 74.zip
- 197.zip
- 199.zip
- 201,202.zip
- 208.zip
- 120821_Kariba VCS PD_track&change.docx
- 120821_KaribaREDD_NCRs.xlsx
- Ex-ante calculation.zip
- GIS files.zip
- Leakage,article.zip

Documents received 08/23/2012

- 120821_Kariba VCS PD_track&change.docx
- 120821_Kariba VCS PD.docx

Documents received 08/30/2012

- KARIBA FOREST COVERS.zip
- 120820_KARIBA ER Calc_auditors.xls
- 120830_CDM_Kariba.xlsx

Documents received 09/04/2012

- PROJ_DESC_562_31JAN2011.pdf

Documents received 09/07/2012

- NCR 148.zip
- MACOSX
- 55
- 59
- 197
- CDM
- Ex-ante calculation
- NCR 29
- NCR 99
- NCR 148
- 59.zip
- 197.zip
- 2012_08_31_KaribaREDD+_Round3_NCRsCLs_Final_SP 120907.xlsx
- 120907_Kariba VCS PD.docx
- 120907_Kariba VCS PD_track&change.docx
- CDM.zip
- Ex-ante calculation.zip
- NCR 29.zip
- NCR 99.zip

Documents received 09/18/2012

- Kariba Map draft.PNG

- Kariba Map draft 2 - lines same color.PNG

Documents received 09/19/2012

- NCR 148.zip
- 2012_17_09_KaribaREDD+_Round4_N CRsCLs_Final_SP.xlsx
- 120919_Kariba VCS PD_FINAL.docx
- NCR 67.zip

Documents received 09/24/2012

- NCR 148.zip
- Appendix contracts 30 years
- NCR 67
- NCR 148
- 2012_17_09_KaribaREDD+_Round4_N CRsCLs_Final_SP.xlsx
- 120923_Kariba VCS PD_FINAL.docx

Documents received 09/28/2012

- 120929_Kariba VCS PD_FINAL_v1.docx
- 120929_KARIBA ER Calc_auditors.xls
- 120929_Kariba VCS PD_FINAL.docx

Documents received 09/29/2012

120929_Kariba VCS PD_FINAL_v2.docx
120929_KARIBA ER Calc_auditors.xls