Drawa Forest Project – Project Description (PD)
Part B: PES Accounting

An Improved Forest Management Project at Drawa, Vanua Levu, Fiji.
D3.2b v1.0 20151009

The Nakau Programme:
An indigenous Forest Conservation Programme
through Payments for Ecosystem Services

EUROPEAN UNION

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Cover Photo: Weaver - view towards Drawa from the south coast of Vanua Levu, Fiji.

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1. Eligibility & Guidance

According to Section 5 of the Plan Vivo Standard (2013, p16):

5.1. The project must develop technical specifications for each of the project interventions, describing:

5.1.1. The applicability conditions, i.e. under what baseline conditions the technical specification may be used

5.1.2. The activities and required inputs

5.1.3. What ecosystem service benefits will be generated and how they will be quantified. (NB Technical specification templates can be provided by the Plan Vivo Foundation)

According to Section 5.1 of the ISO 14064-2 standard (2006):

The project proponent shall ensure the GHG project conforms to relevant requirements of the GHG programme to which it subscribes (if any), including eligibility or approval criteria, relevant legislation or other requirements.

In fulfilling the detailed requirements of this clause, the project proponent shall identify, consider and use relevant current good practice guidance. The project proponent shall select and apply established criteria and procedures from a recognized origin, if available, as relevant current good practice guidance.

In cases where the project proponent uses criteria and procedures from relevant current good practice guidance that derive from a recognized origin, the project proponent shall justify any departure from those criteria and procedures.

In cases where good practice guidance from more than one recognized origin exists, the project proponent shall justify the reason for using the selected recognized origin.

Where there is no relevant current good practice guidance from a recognized origin, the project proponent shall establish, justify and apply criteria and procedures to fulfill the requirements in this part of ISO 14064.

Technical Specifications Module/s applied:

Technical Specifications Module (C) 1.1 (IFM-LtPF) Improved Forest Management – Logged to Protected Forest v1.0. D2.2.1 v2.0, 20150815.

1.1 ELIGIBILITY

According to section 5.2 (j) of the ISO 14064-2 standard (2006):

This includes any information relevant for the eligibility of a GHG project under a GHG programme and quantification of emission reductions or removal enhancements, including legislative, technical, economic, sectoral, social, environmental, geographic, site-specific and temporal information.

1.1.1 General Eligibility

According to Section 5 of the Plan Vivo Standard (2013, p17):

5.14. To avoid 'double counting' of ecosystem services, project intervention areas must not be in use for any other projects or initiatives, including a national or regional level mandatory GHG emissions accounting programme, that will claim credits or funding in respect of the same ecosystem services, unless a formal agreement is in place with the other project or initiative that avoids double-counting or other conflicting claims, e.g. a formal nesting agreement with a national PES scheme.

According to Section 1.1.1 of TS Module IFM-LtPF:

All projects applying this Technical Specifications Module must meet the following eligibility criteria:

a. Eligible forests will be indigenous forests that qualified as 'forest lands' as of 31 December 2009.
b. Baseline and project activities in eligible forests comprise management of carbon stocks in forest-remaining-as-forest activities.
c. Projects will account for AFOLU GHG emissions and removals in the baseline and project scenarios.
d. Eligible forests are not subject to carbon credit or other carbon or PES unit claims by any other entity (including governments) as part of any other programme at the national, jurisdictional or project level at any time during the Project Period.
e. Eligible forests must meet the additionality conditions of this methodology and in so doing demonstrate the high probability that the forests of the project area would have been logged within the project period in the absence of project activities.

1.1.1a Forest Land

The eligible forest area for the Drawa Forest Project qualified as forest land as of 31 December 2009. This forest is a tall coastal rainforest and was established prior to the 20th century.

1.1.1b Deforestation Baseline

The baseline activity for this project is conventional logging.

1.1.1c Forest Protection

The project activity in this project is forest protection using a legal instrument of protection.

1.1.1d AFOLU Emissions & Removals

This project accounts for AFOLU emissions and removals in the baseline and project scenarios. See Sections 4 and 5 of this document.

1.1.1e No Double Counting

This project is not subject to any other carbon credit or other PES unit claims by any other entity (including government) at any scale.

1.1.2 Eligible Baseline Activities

According to Section 1.1.2 of TS Module IFM-LtPF:

Baseline activities for projects applying this Technical Specifications Module are those implemented on forest lands[1] managed for wood products such as sawn timber, pulpwood, and fuelwood and are included in the IPCC category "forests remaining as forests", whereby the logging activities to produce such wood products would have occurred during the project period in the absence of project activities.

Only areas that have been designated, sanctioned or approved for such activities (e.g. where there is legal sanction to harvest timber or fuelwood) by the national and/or local regulatory bodies are eligible for crediting under this activity type.

The Drawa Forest Project takes place on land where there is legal sanction undertake high intensity selective logging (conventional logging).

[1] See definitions in Appendix 1.

1.1.3 Eligible Project Activities

According to Section 1.1.3 of TS Module IFM-LtPF:

The project activity for each project applying this Technical Specifications Module will involve the legal protection of the eligible forests within the Project Area. This legal protection is required to legally prevent baseline activities and require the on-going implementation of project activities for the duration of the Project Period.

The eligible forest area for this project will be protected by means of a Conservation Lease under the iTaukei Lands Trust Board (TLTB). The Conservation Lease for this project is between lessors TLTB (on behalf of the nine mataqali landowners) and the DBFCC (established by the same nine mataqali landowners).

1.1.4 Eligible Forest Strata

According to Section 1.1.4 of TS Module (C) 1.1 (IFM-LtPF) D2.1.1 v1.0 20151009:

Eligible forests will include unlogged forest or forest that has previously been logged and is currently regenerating. Eligible forests will include two forest management strata as follows:

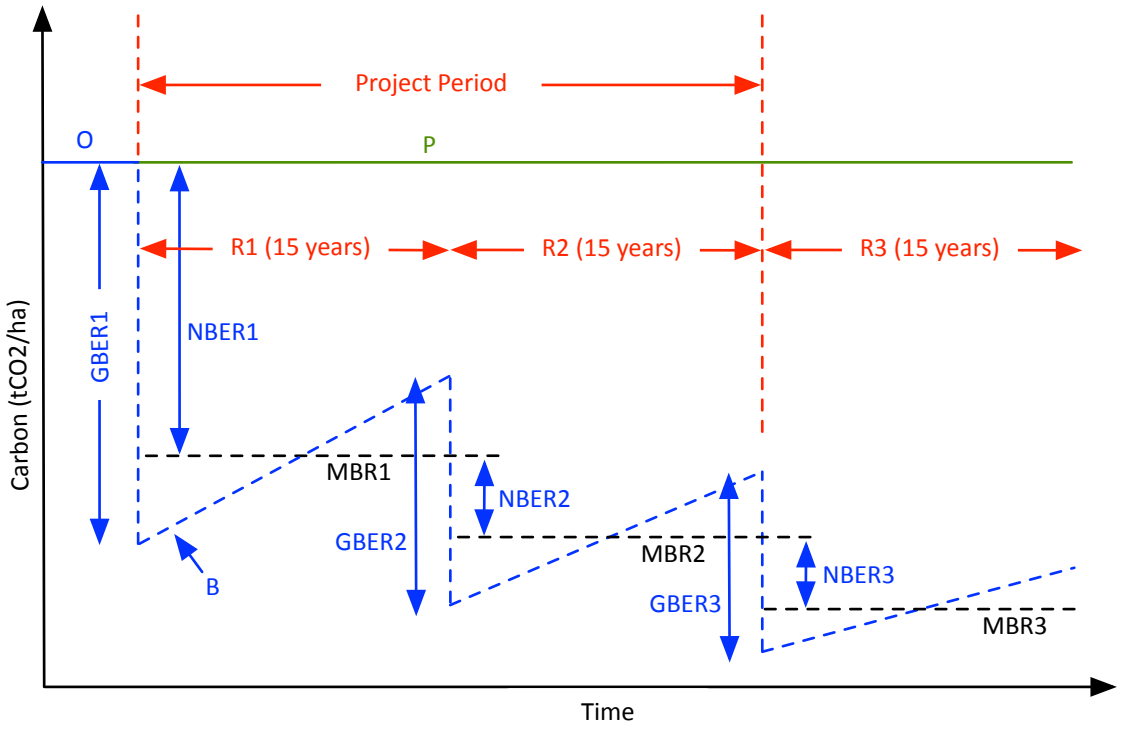
a. Unlogged Forest: Where there is no evidence of prior logging or no record of prior logging. Unlogged Forest is not eligible to claim enhanced removal carbon benefits in this methodology. Project activities will protect this unlogged forest from timber harvesting, apart from *de minimis*[2] non-commercial wood harvesting for local house-building or other cultural purposes.
b. Logged Forest: With supporting evidence showing that the area has been previously logged between 1 January 1930 and 31 December 2009, or where the commercial wood harvesting operation currently occurring in these forests began prior to 31 December 2009, or where there is evidence that the forest is regenerating and not in an 'old growth' condition. Logged Forest is eligible to claim enhanced removal carbon benefits in this methodology. Project activities will prevent this previously logged forest from timber harvesting (apart from *de minimis* harvests mentioned in a. above).

The eligible forest area is comprised of 1,396 ha of Logged Forest and 327 ha of Unlogged Forest areas.

This project therefore applies variants 1 and 2 of the two variants for this IFM-LtPF activity type as depicted in Figure 1.1.4b of TS Module (C) 1.1 (IFM-LtPF) D2.1.1 v1.0 20151009: (reproduced in Figure 1.1.4a and b below).

[2] I.e. Lower than 5% of the total allowable annual commercial timber harvest volume for the equivalent rotation.

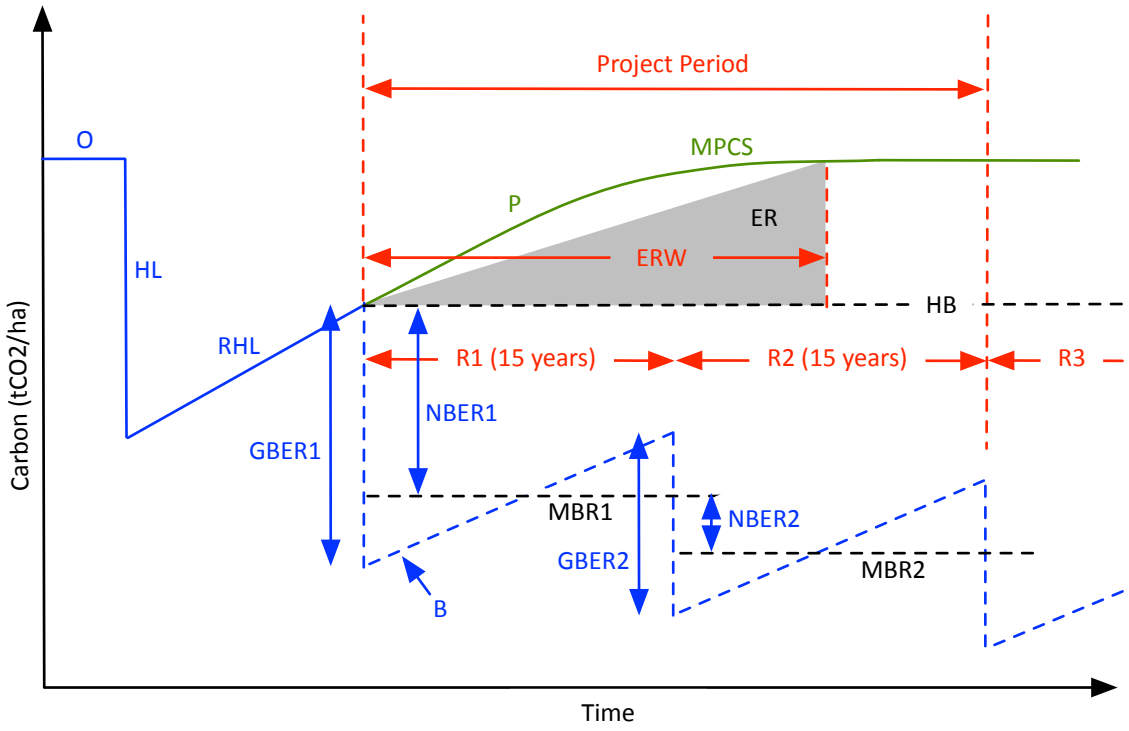
Figure 1.1.4a. Variant 1 - Concept diagram: IFM-LtPF$_{ULF}$ in Unlogged (old growth) Forest.



Key:

	O =	Original mean carbon stocks in old growth undisturbed forest
	B =	Baseline Scenario carbon stocks under timber harvesting regime (harvest/regrowth)
	P =	Project Scenario carbon stocks under forest protection regime
	MB_{R1} =	Mean Baseline carbon stocks during Rotation 1
	MB_{R2} =	Mean Baseline carbon stocks during Rotation 2
	MB_{R3} =	Mean Baseline carbon stocks during Rotation 3
	GBE_{R1} =	Gross Baseline Emissions during Rotation 1
	GBE_{R2} =	Gross Baseline Emissions during Rotation 2
	GBE_{R3} =	Gross Baseline Emissions during Rotation 3
	NBE_{R1} =	Net Baseline Emissions during Rotation 1
	NBE_{R2} =	Net Baseline Emissions during Rotation 2
	NBE_{R3} =	Net Baseline Emissions during Rotation 3

Figure 1.1.4b. Variant 2a - Concept diagram: IFM-LtPF$_{LF}$ in Logged (regenerating) Forest.



Key:

	O =	Original mean carbon stocks in old growth undisturbed forest
	HL =	Historical logging
	RHL =	Regeneration following historical logging
	B =	Baseline Scenario carbon stocks under timber harvesting regime (harvest/regrowth)
	P =	Project Scenario carbon stocks under forest protection regime
	HB =	Harvest baseline (mean carbon stocks at start of baseline timber harvesting)
	MB_{R1} =	Mean Baseline carbon stocks during Rotation 1
	MB_{R2} =	Mean Baseline carbon stocks during Rotation 2
	MB_{R3} =	Mean Baseline carbon stocks during Rotation 3
	GBE_{R1} =	Gross Baseline Emissions during Rotation 1
	GBE_{R2} =	Gross Baseline Emissions during Rotation 2
	GBE_{R3} =	Gross Baseline Emissions during Rotation 3
	NBE_{R1} =	Net Baseline Emissions during Rotation 1
	NBE_{R2} =	Net Baseline Emissions during Rotation 2
	NBE_{R3} =	Net Baseline Emissions during Rotation 3
	ER =	Enhanced Removals (Project Scenario)
	ERW =	Enhanced Removals Window (Project Scenario)

1.1.5 Specific Conditions

According to Section 1.1.5 of TS Module IFM-LtPF:

Specific conditions for projects applying this Technical Specifications Module:

a. The Project Period for all projects using this Technical Specifications Module shall be no less than 30 years, with perpetual right of renewal.
b. Project Owner exists as an entity capable of entering into binding project commitments with the Programme Operator and capable of owning carbon credit assets.
c. Project Owner owns the carbon rights and management rights over the forest lands in the project area.
d. Current and planned land use: land must be legally eligible for deforestation.
e. There may be no leakage through activity shifting to other lands owned or managed by project participants outside the bounds of the carbon project.

The Project Period is 30 years and perpetually renewable.

The Project Owner is the Drawa Block Forest Community Cooperative (DBFCC) – a cooperative established under the Fiji Cooperatives Act 1996.

The DBFCC owns the carbon and land management rights associated with the Project Area pursuant to the following laws and regulations:

- iTaukei Land Trust (Leases and Licenses) Regulations 1984 governs the leasing of iTaukei Lands (lands owned by registered indigenous peoples). The signing of Conservation Lease (Appendix 4) is evidence that the project is compliant with this Regulation.
- Fiji Cooperatives Act 1996 governs the formation cooperatives. The registering of the Drawa Block Forest Community Cooperative is evidence of project being compliance with this Act. See ER 2.13.10a (PD Part A).
- The Forest Decree 1992 is the main law regulating forest use in Fiji. There is no provision specifically referring to sustainable forest management or the participation of landowners in the management of forest resources. The Decree does recognise the rights of customary landowners and provides that subsistence forest use that is recognised by customary law is permitted and should not be restricted by the Decree. A legal review of the PES Agreement was undertaken by private lawyers (Siwatibau and Sloan) to assess compliance with the Forest Decree. The assessment found that the Forest Decree does not mention carbon projects and noted that regulation for carbon projects is still being developed in Fiji. However the review also found that the PES Agreement does not contradict anything in the Forest Decree, and is therefore allowable. See ER 2.13.10b (PD Part A).

The land is legally eligible for conventional logging under the Forest Decree 1992 - the main law regulating forest use in Fiji.

The Project Area is subject to a land use plan (The Nakau Management Plan) that specifies the planned land use for the area. The Management Plan protects the eligible forest area in the form of a conservation lease. This does not leave any significant forest for activity shifting leakage to be possible.

Table 1.1.5: Evidence Requirement: Specific Conditions[3]	
#	Description
1.1.5a	Documentation to prove that Project Owner exists as a legal entity capable of acting as a counter party to a sale and purchase agreement and capable of owning carbon credit assets. This could be a certificate of incorporation, or similar legal document associated with the establishment of the legal entity sufficient to meet this eligibility criterion.
	See ER 2.13.10a (PD Part A).
1.1.5b	Documentation to demonstrate that Project Owner owns the carbon rights and management rights over the forest lands in the project area. This would need to include documentation from the government that clarifies options for carbon rights ownership and the particular option selected in this case. It would also need to include evidence of said rights ownership by the Project Owner legal entity.
	See ER 1.1.5b.
1.1.5c	Documentation to demonstrate that Project Owner is legally eligible to undertake conventional logging in the project area.
	See ER 1.1.5c (pg 1).
1.1.5d	Evidence of avoidance of activity shifting leakage to take the form of a leakage assessment using Section 5.2 of this Technical Specifications Module.
	To be provided in the leakage assessment undertaken in Part B, Section 5.2 of the PD.

1.1.6 Rationale For 30-Year Project Period

According to Section 5 of the Plan Vivo Standard (2013, p16):

5.5. Ecosystem services must be accounted for over a specified quantification period that is of sufficient length to provide a clear picture of the long-term impact of the activity.

5.6. The quantification period must not exceed the period over which participants can make a meaningful commitment to the project intervention, and must be justified in relation to the duration of payment and monitoring obligations.

The Project Period is 30 years and is perpetually renewable as per Section 1.1.6 of the Technical Specifications Module (C) 1.1 (IFM-LtPF): D2.1.1 v1.0, 20151009.

[3] An 'Evidence Requirement' is a class of Nakau Programme documentation typically referring to a specific piece of evidence to demonstrate compliance with a specific requirement of the Nakau methodology or the standard applied.

1.2 STANDARDS AND GUIDANCE

This Project is validated to the Plan Vivo Standard (2013). The following standards and guidance were used:

Table 1.2.1: Good Practice Guidance	
#	Good Practice Guidance Element
1.2.1a	Plan Vivo Standard
	This project is validated to the Plan Vivo Standard, and follows the following Plan Vivo guidance documents: • Plan Vivo Standard (2013) • Plan Vivo PDD Template • Plan Vivo PIN Template • Plan Vivo Guidance Manual
1.2.1b	IPCC 2006 Guidelines on National GHG Inventories
	This project is aligned to the IPCC 2006 Guidelines on National GHG Inventories in the following way: • The carbon stock change calculations framework used in this methodology follows Section 2.2.1 of Volume 4 of the IPCC 2006 Guidelines. Specifically, this methodology elaborates on Equation 2.3 of Volume 4 of the IPCC 2006 Guidelines but varies by conservatively neglecting litter and soil carbon. • Wood density and dry wood to carbon default values used in this methodology used the default values from the IPCC 2006 Guidelines on National GHG Inventories.
1.2.1c	ISO 14064-2 Standard
	This project follows the ISO 14064-2 standard in every respect.
1.2.1d	This project uses elements of the Verified Carbon Standard (VCS) with reference to the following VCS documents:
	• VCS AFOLU Requirements V3.4 • VCS Guidance for Loss Events (8 March 2011) • VCS Tool the demonstration and assessment of additionality in VCS agriculture, forestry and other land use (AFOLU) project activities (VT0001, V3.0). • There was a close alignment of this project with the Green Collar IFM methodology Version 1.0 (18 March 2011) approved by the VCS in 2011.
1.2.1e	The Clean Development Mechanism (CDM)
	• The CDM was used as the broad framework for the Programme of Activities/Grouped Project scope of this methodology. • Exclusion of emissions derived from the removal of herbaceous vegetation was based on CDM EB decision reflected in paragraph 11 of the report of the 23rd session of the board: cdm.unfccc.int/Panels/ar/023/ar_023 _rep.pdf • The Additionality test in this project is from the VCS, which in turn is derived from the CDM Tool for Demonstration of Additionality.

1.2.1 Alignment To Plan Vivo Standard (2013)

This Project Description Part B (when used in combination with the Project Description Part A) aligns to every element of the Plan Vivo Standard (2013) as depicted in the following table. Note that this alignment includes elements that are located in the Nakau Methodology Framework.

Table 1.2.2 Plan Vivo Standard Alignment Table

Plan Vivo Standard Element	Location in Project Description Part A	Location in Project Description Part B (this document)
1		
1.1	1.3.2	
1.2	1.3.2	
1.2.1	1.3.2	
1.2.2	1.3.2	
1.2.3	1.3.2	
1.2.4	1.3.2	
2		
2.1	1.3.3	
2.1.1	1.3.3	
2.1.2	1.3.3	
2.1.3	1.3.3	
2.1.4	1.3.3	
2.2	2.8	
2.3	2.10	
2.4	2.5	
2.4.1	2.5	
2.4.2	2.5	
3		
3.1	2.13.1	
3.2	2.13.3	
3.3	2.13.5	
3.4	2.13.4	
3.5	2.13.4	
3.6	2.13.9	
3.7	2.13.10	
3.8	2.13.11	
3.9	2.13.12, 4.2	
3.10	2.13.13, 4.2.2	
3.11	2.13.14	
3.12	2.13.15	
3.13	2.13.16	
3.14	2.13.17	
3.15	2.13.18	
3.16	2.13.19	
4		
4.1	3.1.2	
4.1.1	3.1.2	
4.1.2	3.1.2	
4.1.3	3.1.2	
4.1.4	3.1.2	
4.1.5	3.1.2	
4.1.6	3.1.2	
4.1.7	3.1.2	
4.2	3.1.2.2	
4.3	3.1.2.2	
4.4	3.1.3	
4.5	3.1.4	
4.6	3.1.5.1	
4.7	3.1.5.1	
4.8	3.1.5.1	
4.9	3.1.5.1	
4.10	3.1.5.1	
4.11	2.4	
4.12	3.1.6	
4.13	3.1.6	
4.14	3.2	
5		
5.1	5.1	
5.1.1	5.1	
5.1.2	5.1	
5.1.3	5.1	
5.2		4, 5
5.3		3.1.6
5.4		3.1.5
5.4.1		3.1.5
5.4.2		3.1.5
5.5		1.1.6
5.6		1.1.6
5.7	5.1	
5.8	1.3.3	
5.9		8
5.9.1		8
5.9.2		8
5.9.3		8
5.9.4		8
5.9.5	6.2.2	
5.9.6		8.1.8
5.9.7		8.1.8
5.9.8		8.1.8
5.10		8.1.8
5.11		7
5.12		3.1.1
5.13	5.3	
5.14		1.1.1
5.15		2
5.16		5.6
5.17		4.1
5.18		4.1
5.19		5.2
5.20		5.2
6		
6.1		5.4
6.2		5.4
6.3		5.4.1
6.4		5.4.1
7		
7.1	5.2.2	
7.2	5.2.1, 5.2.2	
7.2.1	5.2.1	
7.2.2	5.2.1	
7.2.3	5.2.1	
7.2.4	5.2.1	
7.2.5	5.2.1	
7.2.6	5.2.1	
7.2.7	5.2.1	
7.2.8	5.2.1	
7.3	5.2.2	
7.4	5.2.3	
7.4.1	5.2.3.2	
7.4.2	5.2.3.5	
7.5	5.2.3.6	
8		
8.1	4	
8.2	4.1.1	
8.2.1	4.1.1	
8.2.2	4.1.1	
8.2.3	4.1.1	
8.2.4	4.1.1	
8.2.5	4.1.1	
8.2.6	4.1.1	
8.2.7	4.1.1	
8.2.8	4.1.1	
8.2.9	4.1.1	
8.2.10	4.1.1	
8.3	4.1.2	
8.4	4.1.1	
8.5	4.1.3	
8.5.1	4.1.3	
8.5.2	4.1.3	
8.5.3	4.1.3	
8.6	4.1.3	
8.7	4.1.3	
8.8	4.3	
8.9	4.3	
8.10	4.3	
8.11	4.3	
8.12	4.3	
8.13	4.3	

2. Identifying GHG Sources, Sinks and Reservoirs

According to Section 5 of the Plan Vivo Standard (2013, p18):

5.15. All carbon pools and emissions sources used to quantify climate services must be specified with justification for their inclusion. Carbon pools expected to decrease, and emissions sources expected to increase as a result of the project intervention must be included, unless decreases or emissions are likely to be insignificant, i.e. less than 5% of total climate benefits.

Section 5.3 of the ISO 14064-2 Standard requires project proponents to:

Select or establish criteria and procedures for identifying and assessing GHG sources, sinks and reservoirs controlled, related to, or affected by the project.

Based on selected or established criteria and procedures, the project proponent shall identify GHG sources, sinks and reservoirs as being:

a) Controlled by the project proponent,
b) Related to the GHG project, or
c) *Affected by the GHG project.*

Section 5.5 of the ISO 14064-2 Standard requires project proponents to:

[Identify] *GHG sources, sinks and reservoirs relevant to the baseline scenario, and for each*

a) Consider criteria and procedures used for identifying the GHG sources, sinks and reservoirs relevant for the project,
b) *If necessary, explain and apply additional criteria for identifying relevant baseline GHG sources, sinks and reservoirs, and*
c) *Compare the project's identified GHG sources, sinks and reservoirs with those identified in the baseline.*

Section 5.6 of the ISO 14064-2 Standard requires project proponents to:

Select or establish criteria and procedures for selecting relevant GHG sources, sinks and reservoirs for either regular monitoring or estimation.

Justify not selecting any relevant GHG source, sink and reservoir for regular monitoring.

Criteria For Selecting Relevant GHG Sources, Sinks and Reservoirs

The GHG sources, sinks and reservoirs estimated in this project are restricted to LULUCF sector carbon emissions and removals as follows:

Table 3a: GHG Sources, Sinks, and Reservoirs: Pacific REDD+ Program	
Sources	CO_2e emissions from above ground woody biomass removed from the forest.
	CO_2e emissions from above ground woody biomass entering the deadwood pool in the form of discarded crown and branches of harvested (target) trees.
	CO_2e emissions from additions to the above ground deadwood carbon pool resulting from collateral damage to non-target trees due to wood harvest activities.
	CO_2e emissions from the decomposition of below ground biomass resulting from above ground wood harvesting and collateral damage.
Sinks	CO_2e sequestered in the natural background rate of natural forest regeneration.
	CO_2e sequestered in harvest patches as a consequence of the opening the forest canopy.
Reservoirs	The GHG assessment in this project estimates the change in carbon stocks contained in carbon reservoirs (and associated emissions and/or removals), rather than the total content of carbon stored in the forest carbon reservoirs/pools.

The total volume of carbon stored in the above ground carbon pools is measured in this project by means of a carbon stock inventory. Carbon stored below ground is derived from the application of a root-shoot ratio. Furthermore, the GHG sources and sinks estimated in this project are restricted to LULUCF carbon pools that are controlled by the Project Owners and lie within the Eligible Forest Area of the project.

The carbon pools used in this project are:

Table 3b: Carbon Pools Used in this Methodology		
Carbon Pool	Included/ Excluded	Justification
Above ground biomass (AGB)	Included	At a minimum, the stock change in the above-ground tree biomass shall be estimated.
Below ground biomass (BGB)	Included	When you kill a tree you also kill its roots (unless the tree is of a species that coppices). The 2006 IPCC Guidelines on GHG Inventories uses a BGB default value of 0.37 of AGB for tropical rainforest. The only exception to this default rule for this methodology applies to species that are known to be capable of regenerating from cut stumps. Project Coordinators shall identify the proportion of the above ground biomass emitted (AGBE) attributable to these species in the Baseline, and remove the below ground biomass emitted (BGBE) portion for these species in the baseline calculation.

Dead-wood (DW)	Included	Required under VCS Tool for AFOLU Methodological Issues.
Harvested Wood Products	Included	Required under VCS Tool for AFOLU Methodological Issues, even though harvested wood products are usually not considered when estimating the baseline or project scenarios under the Plan Vivo Standards for RED projects (Estrada (CIFOR) 2011, p49). Included in this methodology to maintain consistency with the VCS on this point.
Litter	Excluded	Insignificant and exclusion is conservative.
Soil organic carbon	Excluded	Exclusion is conservative.

The inclusion/exclusion of greenhouse gases in this project are shown in Table 3c.

Table 3c: Emission sources other than resulting from changes in stocks in carbon pools

Gas	Sources	Included / Excluded	Justification
Carbon dioxide (CO_2)	Removal of woody vegetation through commercial logging activity	Included	Such removal of vegetation causes CO_2 emissions to the atmosphere.
	Combustion of fossil fuels (in vehicles, machinery and equipment)	Excluded	Not required by Plan Vivo Standards.
	Removal of herbaceous vegetation	Excluded	Based on CDM EB decision reflected in paragraph 11 of the report of the 23rd session of the board: cdm.unfccc.int/Panels/ar/023/ar_023_rep.pdf
Methane (CH_4)	Combustion of fossil fuels (in vehicles, machinery and equipment)	Excluded	Not required by Plan Vivo Standards.
	Burning of biomass	Excluded	Exclusion is conservative.
Nitrous oxide (N_2O)	Combustion of fossil fuels (in vehicles, machinery and equipment)	Excluded	Not required by Plan Vivo Standards.
	Nitrogen based fertilizer	Excluded	Potential emissions are conservatively neglected.
	Burning of biomass	Excluded	Potential emissions are conservatively neglected.

Comparison Between Baseline & Project

The sources, sinks and reservoirs defined in the baseline scenario are the same for the project scenario.

3. Determining The Baseline Scenario

Section 5.4 of the ISO 14064-2 Standard requires project proponents to:

1. Select or establish criteria and procedures for identifying and assessing potential baseline scenarios considering the following:

a) *The project description, including identified GHG sources, sinks and reservoirs ([see Section 3 above]);*
b) *Existing and alternative project types, activities and technologies providing equivalent type and level of activity of products or services to the project;*
c) *Data availability, reliability and limitations;*
d) *Other relevant information concerning present or future conditions, such as legislative, technical, economic, socio-cultural, environmental, geographic, site-specific and temporal assumptions or projections.*

2. Demonstrate equivalence in type and level of activity of products or services provided between the project and the baseline scenario and shall explain, as appropriate, any significant differences between the project and the baseline scenario.

3. Select or establish, explain and apply criteria and procedures for identifying and justifying the baseline scenario.

4. [Develop] the baseline scenario, the project proponent shall select the assumptions, values and procedures that help ensure that GHG emissions reductions or removal enhancements are not over-estimated.

Baseline activities for this project are restricted to conventional logging implemented on forest lands[4] and is a "forest-remaining-as-forest" activity.

Only areas that have been designated, sanctioned or approved for such activities (e.g. where there is legal sanction to undertake conventional logging) by the national and/or local regulatory bodies are eligible for crediting under this project.

[4] Using the FAO FRA 2010 definition: Land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds in situ. It does not include land that is predominantly under agricultural or urban land use. Source: http://www.fao.org/docrep/014/am665e/am665e00.pdf

3.1 BASELINE SELECTION, ADDITIONALITY AND BASELINE MODELLING

3.1.1 Selection of Baseline

According to the Plan Vivo Standard (2013, p17):

5.12. *A baseline scenario must be provided for each project intervention, describing current land uses and habitat types and existing major ecosystem services provided in the area, and how these are most likely to change over the quantification period in the absence of project interventions.*

The baseline scenario for each land parcel in this project is deforestation.

According to the TS Module (C) 1.1 (IFM-LtPF) D2.1.1 v1.0 20151009:

In justifying the Baseline Activity, Project Coordinators must determine the most likely land use in the absence of the project, through the identification of possible land uses using the following criteria, and an assessment of land use options according to the following criteria:

a. *Land suitability*
b. *Technical barriers*
c. *Economic barriers*
d. *Institutional constraints*

The most likely land use in the absence of the project is conventional logging. This land use is the prevalent land use in the lands surrounding the Project Area. The land is suitable to the baseline activity in terms of aspect, soils, and topography as evidenced by the land use in lands surrounding the Project Area.

There are no technical barriers to conventional logging at the project site because of past logging activity and logging planning and infrastructure development (e.g. logging roads).

There are no economic barriers to conventional logging at the project site. In fact the opposite is true. There are economic incentives for conventional logging given the need among the land owning community for economic development and the existing markets for timber.

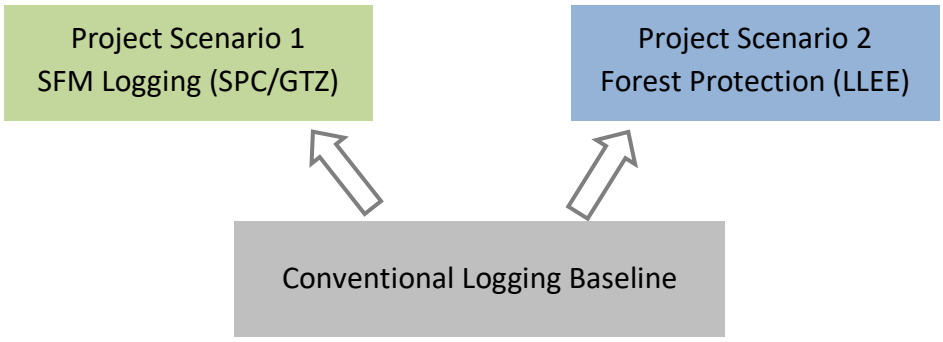
There are no institutional constraints to conventional logging at the project site.

3.1.2 Justification of Selected Baseline

The Project Coordinator asserts that the Baseline Scenario for forest management at the Drawa Block is conventional logging.

Between 200) and 2009 the Secretariat of the Pacific Community (SPC) in partnership with German Technical Cooperation (GTZ - now GIZ) developed a sustainable forest management (SFM) project at Drawa as a Project Scenario in contrast to a conventional logging Baseline Scenario at this location. This project did not succeed commercially even though it was technically robust and well supported financially during project development.

The Fiji Department of Forestry then proposed the Drawa Block as an official pilot project site for the Fiji REDD+ Programme. It appointed Live & Learn as the implementing agency to develop the *Drawa Forest Carbon Project*. This project applies the same conventional logging Baseline Scenario as the SFM project that preceded it, but applies a different Project Scenario involving forest protection through payments for ecosystem services.



If sustainable forest management proved to be commercially viable at Drawa prior to the inception of the Drawa Forest PES Project, then a SFM baseline would have been applied in the Drawa Forest Carbon Project, because SFM would have been the forest management activity displaced by the carbon project. But this was not the case, and as such, conventional logging remains the most plausible Baseline Scenario for the Drawa Block.

The SFM project undertaken by SPC/GTZ at Drawa provided inventory data and timber harvest plans that became central to the carbon accounting data sets at the heart of the Drawa Forest Carbon Project. The current Drawa PES Project therefore, emerges as a technical collaboration between SPC/GTZ (forest inventory/ baseline timber harvest plans) and Live & Learn (carbon accounting and MRV, carbon project development, community based project governance, sales and marketing). The Drawa SFM project developed by SPC/GTZ was clearly technically feasible, but did not succeed commercially.

For SFM to be applied successfully as the baseline for a forest carbon project at Drawa at least one of the following conditions would need to be met:

- Commercially viable SFM logging operations are common practice elsewhere in Fiji.
- SFM logging was/is commercially successful at Drawa or on neighboring lands.

Neither of these conditions has been met, and as such, this project asserts that conventional logging is the most plausible activity in the absence of the PES project.

In contrast there is evidence to support a conventional logging baseline because both of the following conditions have been met:

- Commercially viable conventional logging operations are common practice elsewhere in Fiji.
- Conventional logging was/is commercially successful on neighboring lands.

3.1.2.1 Commercially Viable Baseline

According to the TS Module (C) 1.1 (IFM-LtPF) D2.1.1 v1.0 20151009:

Projects are also required to undertake an economic analysis for establishing the scale of baseline activity and demonstrating that the baseline activity is commercially viable.

This Technical Specifications Module establishes the baseline on historical activities in the project and/or reference area, so is similar to making the assumption that the baseline scenario will continue for the Project Period. Project Coordinators are required to update the baseline every ten years from the Project Start Date.

3.1.3 Justification for Excluding Alternative Baselines

Possible alternative baselines:

Forest Protection

This is not likely given the need for economic development among the landowners in the landowning mataqali of the Drawa Block whose economic development needs are unable to be met under existing land use arrangements.

Sustainable Forest Management logging

The sustainable forest management (SFM) project established by SPC/GTZ (now GIZ) in the early 2000s was unsuccessful commercially. Landowners at Drawa grew frustrated at the lack of progress for economic development in their locale, and were in the process of considering conventional logging when the Project Coordinator proposed a PES project. So strong was the incentive to return to conventional logging that two landowning clans of the original set of project landowners opted out of the PES project electing conventional logging instead (mataqali Navoatu and mataqali Vulavuladamu). This took place in early 2015 where 24% of the original project was lost to conventional logging (see Appendix 5, sheet Drawa PHI, cells I32, and I40-I46 to see the adjusted PHI calculations following the exit of these two landowner groups from the PES Project in favour of conventional logging).

Commercial SFM practitioners throughout the Pacific Islands region have found many barriers to commercial viability for community-based SFM. In practice this has meant that although technically viable, SFM operations rarely succeed commercially in the region. For example, the Natural Resources Development Foundation (NRDF) in the Solomon Islands (http://nrdfsolomons.org/about-us/) provided technical support for SFM projects in Western

Province between 2003 and the present, and reported to us the following in relation to SFM logging ventures:

> *Although community based SFM sawmill operations can (in theory) run profitably, a lack of management capacity commonly prevents commercial success. The main problem NRDF see in SFM sawmill operations are:*
>
> - *A lack of capital to start operations*
> - *No capital kept for spare parts part way through*
> - *No replacement for sawmill so after 5-6 years it all stops*
> - *Higher production costs when trees have low recovery rates (rotten trees, rejection high after grading)*
> - *Lots of timber waste which is not utilized for income generation.*
> - *Income normally required for sustaining the forestry operation get used for day-to-day family needs so no long term development outcomes result from logging operations*
> - *Logistic problems (e.g. timber transport from site to beach and to market) make running costs prohibitively high.*

The Drawa SFM project in Fiji and the Butmas SFM project in Vanuatu were both unable to succeed commercially in spite of strong technical support from GTZ during project design and development. These examples underscore the challenges faced by Pacific Island SFM logging operations in a commercial context, and help to explain why commercial SFM has not become a norm in the region. This absence of commercial success in SFM logging in the Pacific Islands (and Fiji in particular) reinforces the justification for a conventional logging baseline for a PES project at Drawa.

3.1.4 Stratification

According to the TS Module (C) 1.1 (IFM-LtPF) D2.1.1 v1.0 20151009:

All projects applying this Technical Specifications Module shall stratify the baseline scenario into the following strata:

a. *Forest composition stratification.*
b. *Forest management stratification.*

This project has three strata:

1. Non-Forest (not contained in the Eligible Forest Area)
2. Logged Forest – forest that has been influenced by logging in the past and thereby currently exists as a regenerating forest that is sequestering carbon dioxide annually
3. Unlogged Forest – forest that has not been influenced by logging in the past and thereby currently exists as an old-growth forest that is not sequestering carbon

dioxide annually, but where respiration and photosysnthesis rates cancel each other out.

3.1.5 Additionality

According to Section 5 of the Plan Vivo Standard (2013, p16):

5.4. Ecosystem services forming the basis of Plan Vivo projects must be additional i.e. would not have been generated in the absence of the project, which involves as a minimum demonstrating that:

5.4.1. Project interventions are not required by existing laws or regulations, unless it can be shown that those laws are not enforced or commonly met in practice and the support of the project is therefore justified;

5.4.2. There are financial, social, cultural, technical, scientific or institutional barriers preventing project interventions from taking place.

According to section 5.4 of the ISO 14064-2 standard (2006):

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

This project tests the additionality of the project using the most recent version of the VCS Additionality Tool for IFM Projects. The Additionality Assessment is presented in Appendix 10.

3.1.6 Baseline Revision

According to Section 5.3 of the Plan Vivo Standard (2013):

Technical specifications must be updated at least every 5 years where they are still being used to sign new PES Agreements, by reviewing both available data from project monitoring results, e.g. species growth data, and new available data from outside the project.

All projects are required to undertake a baseline revision every 5 years. This baseline revision will include revision of the technical data used to create the Baseline and Project Scenarios from an ecosystem service accounting perspective. It will also be based on documentation of any changes in project circumstances or any changing conditions in the Fiji national REDD+ programme that materially affect this project.

Documents consulted to assess potential impacts of the national REDD+ programme to the baseline will include:

- Fiji Forest Policy of 2007 (and any subsequent policy amendments under the Forest Act 2016, Cap 32.). Future changes to policy could impact the baseline timber-harvesting scenario, for example due to changes to buffer zones, protected species, or allowable logging intensity.
- Fiji Forest Act 2016 (and any subsequent amendment).
- Fiji policy in relation to Forest Carbon Partnership Facility (in development).

Specific parameters to be reviewed for potential updating shall include:

- Eligible forest area (data source: monitored).
- Carbon sequestration rate should local data become available sufficient to warrant an update (data source: review of recent literature and/or permanent sample plots in situ).
- Harvested wood products data from international sources (data source: review of recent literature).
- Baseline timber harvesting rate (data source: review of impact of any laws or regulations change that impact on the selected baseline rate of timber harvesting).

4. Quantifying Baseline GHG Emissions and Removals

According to Section 5 of the Plan Vivo Standard (2013):

5.2. Sources of data used to quantify ecosystem services, including all assumptions and default factors, must be specified and as up-to-date as possible, with a justification for why they are appropriate.

5.18. An approved approach must be used to quantify initial carbon stocks and emissions sources, and estimate how they are most likely to change over the project period, as part of the baseline scenario.

According to Section 5.7 of the ISO 14064-2 Standard:

The project proponent shall select or establish criteria, procedures and/or methodologies for quantifying GHG emissions and/or removals for selected GHG sources, sinks and/or reservoirs (see Section 6 above).

Based on selected or established criteria and procedures, the project proponent shall quantify GHG emissions and/or removals separately for

a) Each relevant GHG for each GHG source, sink and/or reservoir relevant for the project, and
b) Each GHG source, sink and/or reservoir relevant for the baseline scenario.

When highly uncertain data and information are relied upon, the project proponent shall select assumptions and values that ensure that the quantification does not lead to over-estimation of GHG emissions reductions or removal enhancements.

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

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

If applicable, the project proponent shall select or develop GHG emissions or removal factors that:

- *are derived from a recognized origin,*
- *are appropriate for the GHG source or sink concerned,*

- *are current at the time of quantification,*
- *take account of the quantification uncertainty and are calculated in a manner intended to yield accurate and reproducible results, and*
- *are consistent with the intended use of the GHG report.*

This Technical Specifications Module calculates the net anthropogenic GHG emissions and removals in the Baseline Scenario, and then calculates the net anthropogenic GHG emissions and removals in the Project Scenario.

4.1 CALCULATION OF GHG EMISSIONS AND REMOVALS

The highest-level equation for carbon stock change measurement in this Technical Specifications Module for baseline and project scenarios is equivalent to Equation 2.3 of Volume 4, Chapter 2 of the 2006 IPCC Guidelines for National GHG Inventories:

EQUATION 2.3
ANNUAL CARBON STOCK CHANGES FOR A STRATUM OF A LAND-USE CATEGORY AS A SUM OF CHANGES IN ALL POOLS

$$\Delta C_{LU_i} = \Delta C_{AB} + \Delta C_{BB} + \Delta C_{DW} + \Delta C_{LI} + \Delta C_{SO} + \Delta C_{HWP}$$

Where: ΔC_{LUi} = Carbon stock changes for a stratum of land-use category; and subscripts denote the following carbon pools: AB = Above Ground Live Biomass; BB = Below Ground Live Biomass; DW = Deadwood; LI = Litter; SO = Soils; HWP = Harvested Wood Products.

Annual carbon stock change calculations for baseline and project scenarios are based on Equation 2.7 (Chapter 2, Volume 4) of the IPCC 2006 Guidelines on National GHG Inventories.

EQUATION 2.7
ANNUAL CHANGE IN CARBON STOCKS IN BIOMASS IN LAND REMAINING IN A PARTICULAR LAND-USE CATEGORY (GAIN-LOSS METHOD)

$$\Delta C_B = \Delta C_G - \Delta C_L$$

Where: ΔC_B = Annual change in carbon stocks in biomass, (tonnes C yr^{-1}); ΔC_G = Annual gain (removals) of carbon in biomass due to biomass growth considering the total area (tonnes C yr^{-1}); ΔC_L = Annual loss (emissions) of carbon in biomass due to biomass loss considering the total area (tonnes C yr^{-1}).

The following table lists the baseline GHG sources and sinks modelled by this methodology:

Table 4.1: Baseline GHG Sources and Sinks	Acronym
Included in Modelling:	
Above Ground Biomass Emitted as a result of baseline deforestation	AGBE
Below Ground Biomass Emitted as a result of baseline activity	BGBE
Removals sequestered into the long-term wood product pool	ltWP
Residual Live Biomass in post deforestation woody vegetation	RLB_{PD}
Excluded from Modelling:	
Emissions from fossil fuel components of baseline activity	

Calculation of Baseline Scenario carbon dioxide emissions and removals involves the application of the equations presented in this section of this methodology to complete the carbon accounting for all land parcels in the Baseline Scenario. The baseline and project emissions and removal calculations are based on conservative default values applied to empirical measurement of baseline timber harvesting rates.

According to Section 5 of the Plan Vivo Standard (2013, p18):

5.17. Where climate services are affected by cyclical management activity, e.g. harvesting or naturally occurring cycles, the quantification period must be representative of the services provided throughout the full cycle of events.

The equations calculate the total emissions across the crediting period for each emissions source.

Table 4.1a: Evidence Requirement: Baseline Scenario GHG Emissions/Removals	
#	Name/Description
4.1a	Commercial timber harvest plan for the Eligible Forest Area. Supplied in Table 10 of the Drawa Model Area Forest Management Plan (p21) Appendix 12 in combination with an 80% harvest rate under a conventional logging baseline (i.e. removal of 80% of commercial timber identified in the pre-harvest inventory). The latter is provided in Appendix 5 (Drawa Carbon Budget & Pricing Spread sheet Drawa PHI, column I).

4.1.1 Step 1 – Harvest Rate (HR)

The Harvest Rate (HR) for this project was calculated using a harvest plan (Appendix 5) developed for the area and applies a conventional logging baseline of an 80% harvest rate for commercial species. The harvest rate for the Eligible Forest Area is calculated as the sum of harvest rates for each logging coup using an 80% logging rate scenario.

The Harvest Rate for the Eligible Forest Area is: 8,147 m^3 yr^{-1}

(See Appendix 5 Drawa Carbon Budget & Pricing, sheet Drawa PHI, cell I51.)

4.1.2 Step 2 – Total Wood Harvested (TWH)

Total Wood Harvested (TWH) is calculated using the methodology presented in Section 4.1.2 of the Technical Specifications Module (C) 1.1 (IFM-LtPF): D2.1.1 v2.0, 20151009).

TWH = 8,147 / 0.50 = 16,295 $m^3 yr^{-1}$

(See Appendix 5 Drawa Carbon Budget & Pricing, sheet Drawa Carbon, cell D4.)

4.1.3 Step 3 – Collateral Damage (CD)

Collateral Damage (CD) is calculated using the methodology presented in Section 4.1.3 of the Technical Specifications Module (C) 1.1 (IFM-LtPF): D2.1.1 v2.0, 20151009).

CW = 16,295 x 0.15 = 2,444 $m^3 yr^{-1}$

(See Appendix 5 Drawa Carbon Budget & Pricing, sheet Drawa Carbon, cell D5.)

4.1.4 Step 4 – Above Ground Biomass Emitted (AGBE)

Above Ground Biomass Emitted (AGBE) is calculated using the methodology presented in Section 4.1.4 of the Technical Specifications Module (C) 1.1 (IFM-LtPF): D2.1.1 v2.0, 20151009).

AGBE = 16,295 + 2,444 = 18,159 $m^3 yr^{-1}$

(See Appendix 5 Drawa Carbon Budget & Pricing, sheet Drawa Carbon, cell D6.)

4.1.5 Step 5 – Below Ground Biomass Emitted (BGBE)

Below Ground Biomass Emitted (BGBE) is calculated using the methodology presented in Section 4.1.5 of the Technical Specifications Module (C) 1.1 (IFM-LtPF): D2.1.1 v2.0, 20151009).

BGBE = 18,159 x 0.37 = 6,933 $m^3 yr^{-1}$

(See Appendix 5 Drawa Carbon Budget & Pricing, sheet Drawa Carbon, cell D7.)

There are no species known to regenerate from stumps located in the eligible forest area and as such no subtractions have been made to BGBE.

4.1.6 Step 6 – Total Emitted Wood Volume in Cubic Metres (TM3)

Total Emitted Wood Volume for Rotation 1 in cubic meters (TM3) is calculated using the methodology presented in Section 4.1.6 of the Technical Specifications Module (C) 1.1 (IFM-LtPF): D2.1.1 v2.0, 20151009).

TM3 = 18,159 + 6,933 = 25,672 m^3 yr^{-1}

(See Appendix 5 Drawa Carbon Budget & Pricing, sheet Drawa Carbon, cell D8.)

4.1.7 Step 7 – Gross Total Emissions in tCO_2e (GTCO2)

Gross Total Emissions in tCO_2e for Rotation 1 (GTCO2) is calculated using the methodology presented in Section 4.1.7 of the Technical Specifications Module (C) 1.1 (IFM-LtPF): D2.1.1 v2.0, 20151009).

GTCO2 = ((25,672 x 0.45) x 0.51)) x 3.66 = 21,689 tCO_2e yr^{-1}

(See Appendix 5 Drawa Carbon Budget & Pricing, sheet Drawa Carbon, cell D9.)

Mean wood density of 0.51 was applied and is derived from Payton and Weaver (2011), and SPC/GTZ (2003), and calculated in Appendix 5 Drawa Carbon Budget & Pricing, sheet Drawa Wood Density, cell D38.

According to the Drawa Forest Management Plan the current top 10 marketable species of Fiji comprise of almost 50 % of the total number of trees ≥ 35 cm dbh. The most frequent species are Damanu, Kaudamu male, Yasiyasi, Sa, Sasawira and Waciwaci.

4.1.8 Step 8 – Gross Baseline Emissions For Rotation 1 (GBE_{R1})

Gross Baseline Emissions for Rotation 1 (GBE_{R1}) is calculated using the methodology presented in Section 4.1.8 of the Technical Specifications Module (C) 1.1 (IFM-LtPF): D2.1.1 v2.0, 20151009).

GBE_{R1} = 21,689 – 501 = 21,187 tCO_2e yr^{-1}

(See Appendix 5 Drawa Carbon Budget & Pricing, sheet Drawa Carbon, cell D10.)

4.1.9 Step 9 – Sequestration into Long Term Wood Products for Rotation 1 ($ltWP_{R1}$)

Removals sequestered into the long-term Wood Products pool for Rotation 1 ($ltWP_{R1}$) is calculated using the methodology presented in Section 4.1.9 of the Technical Specifications Module (C) 1.1 (IFM-LtPF): D2.1.1 v2.0, 20151009).

$ltWP_{R1}$ = 501 tCO_2e yr^{-1}

(See Appendix 5 Drawa Carbon Budget & Pricing, sheet Drawa Carbon, cell R26.)

4.1.10 Step 10 – Net Baseline Emissions Avoided For Rotation 1 (NBE_{Rx})

Net Baseline Emissions for Rotation 1 ($NBEA_{Rx}$) is calculated using the methodology presented in Section 4.1.10 of the Technical Specifications Module (C) 1.1 (IFM-LtPF): D2.1.1 v2.0, 20151009). NBEA for Rotation 1 (NBEAR1) and Rotation 2 (NBEAR2) are calculated below.

NBEAR1 = 21,187 * 0.75 = 15,891 $tCO_2e\ yr^{-1}$

(See Appendix 5 Drawa Carbon Budget & Pricing, sheet Drawa Carbon, cell D11.)

NBEAR2 = 15,891 * 0.25 = 3,973 $tCO_2e\ yr^{-1}$

(See Appendix 5 Drawa Carbon Budget & Pricing, sheet Drawa Carbon, cell D12.)

This project applies a combination of baseline scenario variants 1 and 2 as defined in 4.1.10 of the Technical Specifications Module (C) 1.1 (IFM-LtPF): D2.1.1 v2.0, 20151009). Variant 1 is applied to unlogged forest land parcels within the Eligible Forest Area, and variant 2 is applied to logged forest land parcels within the Eligible Forest Area.

Land parcels applying baseline scenario variant 2 (logged forest) are:

Table 4.1.10 Logged Forest Land Parcels

Land Parcel	ha
Nadugumoimoi	137
Nakalounivuaka	637
Koroni	360
Nakase	161
Tonikula	101
Total logged area	**1,396**

(See Appendix 5 Drawa Carbon Budget & Pricing, sheet Drawa PHI, cells O5-12.)

The balance of 327ha is unlogged forest.

5. Quantifying Project Emission Reductions & Removal Enhancements

According to Section 5 of the Plan Vivo Standard (2013):

5.2. Sources of data used to quantify ecosystem services, including all assumptions and default factors, must be specified and as up-to-date as possible, with a justification for why they are appropriate.

According to Section 5.8 of the ISO 14064-2 Standard:

The project proponent shall select or establish criteria, procedures and/or methodologies for quantifying GHG emission reductions and removal enhancements during project implementation.

The project proponent shall apply the criteria and methodologies selected or established to quantify GHG emission reductions and removal enhancements for the GHG project. GHG emission reductions or removal enhancements shall be quantified as the difference between the GHG emissions and/or removals from GHG sources, sinks and reservoirs relevant for the project and those relevant for the baseline scenario.

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

The project proponent shall use tonnes as the unit of measure and shall convert the quantity of each type of GHG to tonnes of CO_2e using appropriate GWPs.

5.1 PROJECT GHG EMISSIONS AND REMOVALS

Project activity emissions are excluded from this project as provided for in Section 5.1 of the Technical Specifications Module (C) 1.1 (IFM-LtPF): D2.1.1 v2.0, 20151009).

The period for which projects can claim Enhanced Removals (ER) for Logged Forest land parcels follows Section 5.1 of the Technical Specifications Module (C) 1.1 (IFM-LtPF): D2.1.1 v2.0, 20151009).

5.1.1 Step 11 – Enhanced Removals (ER)

Enhanced Removals (ER) is calculated using the methodology presented in Section 5.1.1 of the Technical Specifications Module (C) 1.1 (IFM-LtPF): D2.1.1 v2.0, 20151009).

ER = 12,564 $tCO_2e\ yr^{-1}$

(See Appendix 5 Drawa Carbon Budget & Pricing, sheet Drawa Carbon, cell D21.)

The Mean Sequestration Rate applied in this project is 9 $tCO_2e\ ha^{-1}\ yr^{-1}$. This is derived from (and applies a conservativeness factor to) the IPCC default value for carbon sequestration in tropical rainforest for the region Asia (other) set at 11.78$tCO_{2e}ha^{-1}yr^{-1}$ - assuming a 0.47 carbon fraction (wood and foliage) (IPCC 2006, Ch 4, p 4.59 – Table 4.10).

5.1.2 Step 12 – Enhanced Removals Window (ERW)

The Enhanced Removals Window (ERW) for Logged Forest land parcels is calculated using the methodology presented in Section 5.1.2 of the Technical Specifications Module (C) 1.1 (IFM-LtPF): D2.1.1 v2.0, 20151009).

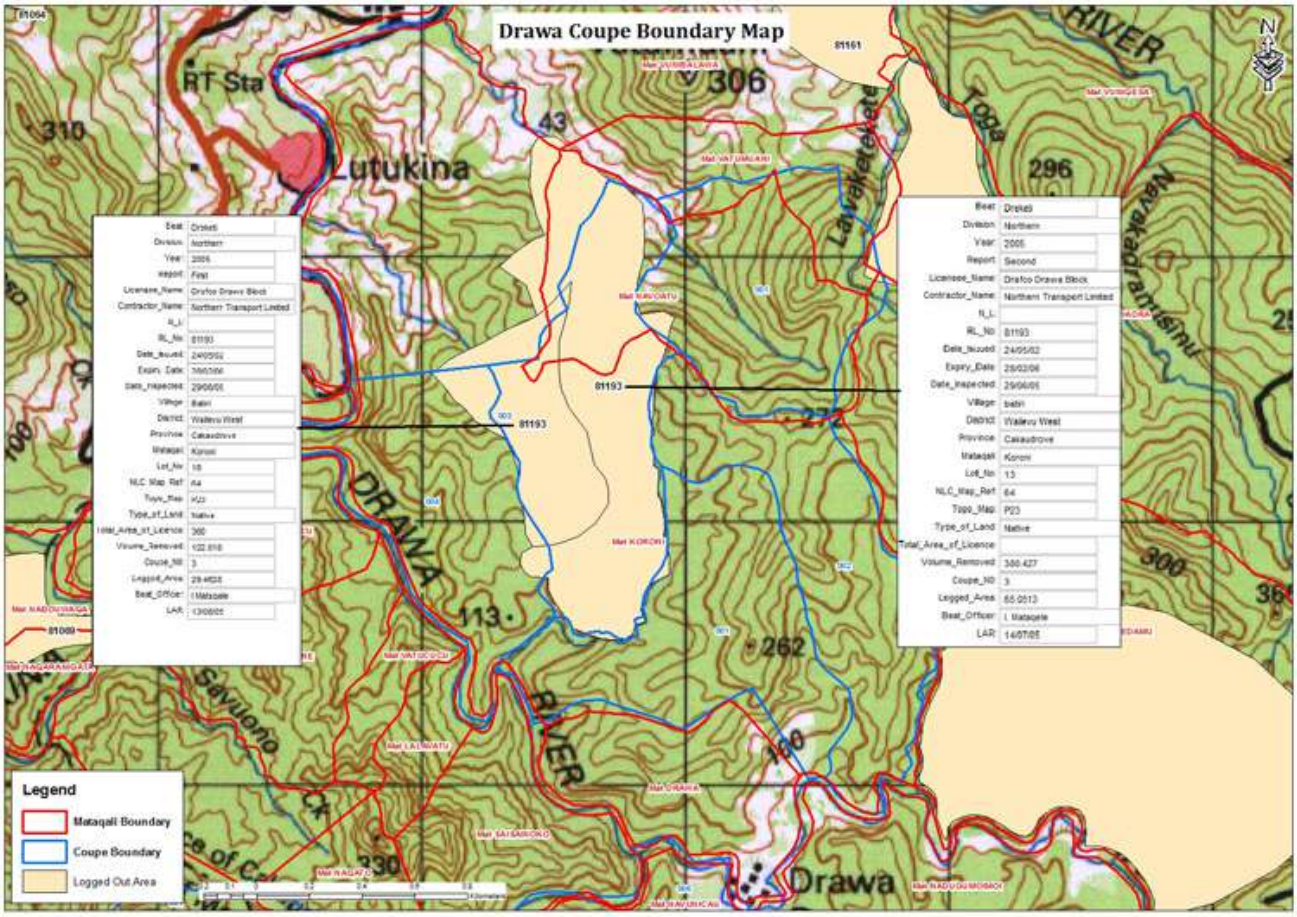
ERW = 45 years starting in 2005

Landowner consultations revealed past logging to have taken place in the land parcels depicted in Table 4.1.10. The most recent logging in the Logged Forest Areas was as follows:

- Illegal logging in 2002 with the removal of 144 m^3
- Logging as part of the Sustainable Forest Management programme in 2005 with the removal of 503 m^3

See Appendix 11, Section 5.1.1, p37, and Figure 5.1.2 for information on past logging.

Figure 5.1.1 Logging under the Drawa Sustainable Forest Management project



The stratification of the Project Area into Logged and Unlogged forest (i.e. regenerating and old-growth forest) is supported by data from the National Forest Inventory of 1995, which classified this area as being comprised of:

Table 5.1.2 National Forest Inventory Classification of the Drawa Forest		
Forest Cover	Crown Cover %	% Total Area
Dense Forest	75-100	44
Medium Dense Forest	45-80	
Scattered Forest	15-50	46
Non-Forest	<15	10
Total (6,345.5 ha)		100

Source: SPC/GTZ 2003. The Drawa Model Area Forest Management Plan 2003-2012, p 16.

Forty five years from 2005 was set as the Enhanced Removals Window (applicable only to Logged/regenerating Forest) assuming that by 2050 the carbon stocks affected by past logging would have recovered to a level where the mean sequestration rate becomes zero.

5.2 PROJECT LEAKAGE

5.2.1 Step 13 – Total Activity Shifting Leakage (TAL)

Total Activity Shifting Leakage (TAL) is calculated using the methodology presented in Section 5.2.1 of the Technical Specifications Module (C) 1.1 (IFM-LtPF): D2.1.1 v2.0, 20151009).

TAL = 0 $tCO_2e\ yr^{-1}$

This is justified on the basis that all forest land owned by participating land owners has been included in the protected forest. The only areas of natural forest that are not included in the project comprise of lands near to existing human settlements allocated to subsistence and cash crop gardens under both the baseline and project scenarios.

5.2.2 Step 14 – Total Market Leakage (TML)

Total Market Leakage (TML) is calculated using the methodology presented in Section 5.2.2 of the Technical Specifications Module (C) 1.1 (IFM-LtPF): D2.1.1 v2.0, 20151009).

TAL = 0 $tCO_2e\ yr^{-1}$

It is estimated that past logging in the project area has thus far extracted 647m3 of timber between 2003 and the present (see Appendix 5 Drawa Carbon Budget & Pricing spreadsheet, sheet Drawa PHI cells I47-49). The contribution of the Project Area to the national commercial timber volume is insignificant.

5.2.3 Step 15 - Total Leakage (TLK)

Total Leakage (TLK) is calculated using the methodology presented in Section 5.2.3 of the Technical Specifications Module (C) 1.1 (IFM-LtPF): D2.1.1 v2.0, 20151009).

TLK = 0 $tCO_2e\ yr^{-1}$

(See Appendix 5 Drawa Carbon Budget & Pricing, sheet Drawa Carbon, cell D14.)

5.3 NET GREENHOUSE GAS EMISSION REDUCTIONS

Greenhouse gas emission calculations undertaken through Steps 1 to 15 above allows an *ex-ante* estimation of the net GHG Emission Reductions brought about by replacing the Baseline Scenario with the Project Scenario. This involves the calculation of Net Baseline Emissions Avoided (NBEA), Net Project Emissions (i.e. Enhanced Removals) and accounting for leakage.

This provides a basis to calculate Net Project Benefits (NPB) for each rotation in the baseline timeline.

5.3.1 Step 16 – Net Project Removals (NPR)

Net Project Removals (NPR) is calculated using the methodology presented in Section 5.3.1 of the Technical Specifications Module (C) 1.1 (IFM-LtPF): D2.1.1 v2.0, 20151009). This is calculated for Rotation 1 (NPRR1) and Rotation 2 (NPRR2), which in combination comprise the 30-year Project Period.

NPRR1 = 12,564 $tCO_2e\ yr^{-1}$

(See Appendix 5 Drawa Carbon Budget & Pricing, sheet Drawa Carbon, cell D21.)

NPRR2 = 12,564 $tCO_2e\ yr^{-1}$

(See Appendix 5 Drawa Carbon Budget & Pricing, sheet Drawa Carbon, cell D22.)

5.4 NON-PERMANENCE RISK AND BUFFER DETERMINATION

This project applies a default 20% buffer.

5.4.1 Step 17 – Buffer Credits

5.4.1.1 Project Buffer Rating

The Project Buffer Rating (PBR) is used to calculate the Buffer for the baseline timeline. The Project Buffer Rating (PBR) is equal to 0.2 in this Technical Specifications Module.

5.4.1.2 Buffer Credits For Net Baseline Emissions Avoided

Buffer Credits associated with Net Baseline Emissions Avoided (NBEA) are calculated using the methodology presented in Section 5.4.1.2 of the Technical Specifications Module (C) 1.1 (IFM-LtPF): D2.1.1 v2.0, 20151009). This is calculated for Rotation 1 (BUFNBEAR1) and Rotation 2 BUFNBEAR2).

BUFNBEAR1 = 15,891 x 0.2 = 3,178 $tCO_2e\ yr^{-1}$

(See Appendix 5 Drawa Carbon Budget & Pricing, sheet Drawa Carbon, cell D15.)

BUFNBEAR2 = 3,973 x 0.2 = 795 $tCO_2e\ yr^{-1}$

(See Appendix 5 Drawa Carbon Budget & Pricing, sheet Drawa Carbon, cell D16.)

5.4.1.3 Buffer Credits For Net Project Removals

Buffer Credits associated with Net Project Removals (NPR) for each rotation in the baseline timeline for the Project Scenario are calculated using the methodology presented in Section 5.4.1.3 of the Technical Specifications Module (C) 1.1 (IFM-LtPF): D2.1.1 v2.0, 20151009). This is calculated for Rotation 1 (BUFNPRR1) and Rotation 2 BUFNPRR2).

BUFNPRR1 = 12,564 x 0.2 = 2,513 $tCO_2e\ yr^{-1}$

(See Appendix 5 Drawa Carbon Budget & Pricing, sheet Drawa Carbon, cell D24.)

BUFNPRR2 = 12,564 x 0.2 = 2,513 $tCO_2e\ yr^{-1}$

(See Appendix 5 Drawa Carbon Budget & Pricing, sheet Drawa Carbon, cell D25.)

5.4.1.4 Buffer Account Attributes

The Buffer Account Attributes for this project apply the methodology presented in Section 5.4.1.4 of the Technical Specifications Module (C) 1.1 (IFM-LtPF): D2.1.1 v2.0, 20151009).

5.5 NET CARBON CREDITS

5.5.1 Step 18 – Net Carbon Credits (NCC_{Rx})

Net carbon credits for this project are calculated using the methodology presented in Section 5.5.1 of the Technical Specifications Module (C) 1.1 (IFM-LtPF): D2.1.1 v2.0, 20151009). This is calculated for Rotation 1 (NCCR1) and Rotation 2 (NCCR2).

NCCR1 = (15,891 – 12,712) + (11,168 – 2,234) = 22,764 $tCO_2e\ yr^{-1}$

(See Appendix 5 Drawa Carbon Budget & Pricing, sheet Drawa Carbon, cell D33.)

NCCR2 = (3,973 – 795) + (12,564 – 2,513) = 13,229 $tCO_2e\ yr^{-1}$

(See Appendix 5 Drawa Carbon Budget & Pricing, sheet Drawa Carbon, cell D34.)

5.6 MANAGING LOSS EVENTS

This project applies Section 5.6 of the Technical Specifications Module (C) 1.1 (IFM-LtPF): D2.1.1 v2.0, 20151009) for managing loss events.

6. Quantifying Project Habitat Hectare Enhancements

This project has elected to produce Habitat Hectare units as mutually exclusive units to Carbon Credits as specified in Section 6 of the Technical Specifications Module (C) 1.1 (IFM-LtPF): D2.1.1 v2.0, 20151009).

This project elects to issue Habitat Hectare units through the issuance/retirement of the equivalent volume of Carbon Credits per Habitat Hectare sold (i.e. a registry proxy). In this way, Habitat Hectare units are mutually exclusive to Carbon Credits from an ecosystem accounting perspective for this project. For example, when this project sells one habitat hectare unit, the equivalent volume of Carbon Credits issued to this project will be retired at the point of sale (i.e. there will be no secondary market for Habitat Hectare units for this project as required in Section 6 of the Technical Specifications Module (C) 1.1 (IFM-LtPF): D2.1.1 v2.0, 20151009).

6.1 BASELINE HABITAT HECTARES

The baseline for Habitat Hectare units is conventional logging over 100% of the eligible forest area (BHH). Baseline Habitat Hectare units (BHH) is equal to the number of Habitat Hectare units to be produced in the baseline.

BHH = 0 ha yr^{-1}

6.2 PROJECT HABITAT HECTARES

Project Habitat Hectare Enhancements are calculated using the methodology presented in Section 6.2 of the Technical Specifications Module (C) 1.1 (IFM-LtPF): D2.1.1 v2.0, 20151009.

The eligible forest area (EFA) is 1,723 ha in size. Project Habitat Hectares of rainforest protected inside the eligible forest area: 1,378 ha yr^{-1} for both Rotation 1 and Rotation 2. This amounts to the EFA – 20%.

6.3 LEAKAGE

The leakage assessment for Habitat Hectares in this project equals the leakage assessment for Carbon Credits as specified in Section 5.2 of this document. Accordingly, there has been no activity shifting leakage. There has been no market leakage in this monitoring period (due to the insignificant volume of baseline timber harvesting in relation to the national domestic timber market).

Annual leakage (*ceteris paribus*) for this project = 0ha.

6.4 QUANTIFICATION OF HABITAT HECTARE UNITS

6.4.1 Gross Habitat Hectares

Gross Habitat Hectares (GHH) is calculated by applying the methodology specified in Section 6.4.4 of the Technical Specifications Module (C) 1.1 (IFM-LtPF): D2.1.1 v2.0, 20151009.

EFA = GHH = 1,723 ha.

(See Appendix 5 Drawa Carbon Budget & Pricing, sheet Drawa HH, cell E5.)

6.4.2 Habitat Hectare Buffer

The Habitat Hectare Buffer (BUFHH) is calculated by applying the methodology specified in Section 6.4.2 of the Technical Specifications Module (C) 1.1 (IFM-LtPF): D2.1.1 v2.0, 20151009.

BUFHH = 345 ha.

(See Appendix 5 Drawa Carbon Budget & Pricing, sheet Drawa HH, cell E6.)

6.4.3 Net Habitat Hectares

Net Habitat Hectares (NHH) is calculated by applying the methodology specified in Section 6.4.3 of the Technical Specifications Module (C) 1.1 (IFM-LtPF): D2.1.1 v2.0, 20151009.

NHH = 1,723 – 345 = 1,378 ha

(See Appendix 5 Drawa Carbon Budget & Pricing, sheet Drawa HH, cell E8.)

6.4.4 Net Carbon Credit Equivalent

Net Carbon Credit Equivalent (NCCE) is calculated by applying the methodology specified in Section 6.4.4 of Technical Specifications Module (C) 1.1 (IFM-LtPF): D2.1.1 v2.0, 20151009. This is calculated for Rotation 1 (NCCER1) and Rotation 2 (NCCER2).

NCCER1 = 1,378 x 16.51 = 22,764 $tCO_2e\ yr^{-1}$

(See Appendix 5 Drawa Carbon Budget & Pricing, sheet Drawa HH, cell E9. This calculation can be cross-checked by ensuring that this number is the same as NCCR1 in sheet Drawa Carbon, cell D33).

NCCER2 = 1,378 x 9.60 = 13,229 $tCO_2e\ yr^{-1}$

(See Appendix 5 Drawa Carbon Budget & Pricing, sheet Drawa HH, cell E11. This calculation can be cross checked by ensuring that this number is the same as NCCR1 in sheet Drawa Carbon, cell D34).

6.4.5 Net Carbon Credits Per Habitat Hectare

Net Carbon Credits Per Habitat Hectare (NCC/HH) is calculated by applying the methodology specified in Section 6.4.5 of the Technical Specifications Module (C) 1.1 (IFM-LtPF): D2.1.1 v2.0, 20151009.

NCC/HH R1 = (12,712 + 10,051) / 1,378 = 16.51 $tCO_2e\ ha^{-1}\ yr^{-1}$

NCC/HH R2 = (3,178 + 10,051) / 1,378 = 9.60 $tCO_2e\ ha^{-1}\ yr^{-1}$

Net Habitat Hectares (NHH) is calculated as follows:

Table 6.4 Quantification of Habitat Hectare units

Year	Gross Habitat Hectares (GHH) (ha)	Buffer (GHH) (ha)	Leakage (ha)	Net Habitat Hectares (NHH) (ha)	Net Carbon Credits equivalent (mutually exclusive to HHs) (tCO_2e)	Net Carbon Credits / Habitat Hectare (tCO_2e)
R1	1,723	345	0	1,378	22,764	16.51
R2	1,723	345	0	1,378	13,229	9.60

(See Appendix 5 Drawa Carbon Budget & Pricing, sheet Drawa HH, cells E4-E12.)

6.5 MANAGING LOSS EVENTS

Managing loss events is addressed in Section 5.6 of this document and focuses on the Carbon Credit losses and converts them back to HH losses using the equations above.

7. Assessment of Uncertainty

This project is guided by the uncertainty assessment developed by the VCS.

According to the Plan Vivo Standard (2013, p17):

5.11. Projects must identify and describe where uncertainty exists in quantifications of ecosystem services and estimate the approximate level or range of uncertainty. The level of uncertainty must be factored into the level of conservativeness applied in the accounting method for quantifying ecosystem services.

According to the Approved VCS Tool for the Estimation of Uncertainty for IFM Project Activities VT0003 V1.0 (2010):

Conservative estimates can be used instead of uncertainties, provided that they are based on verifiable literature sources or expert judgment. In this case the uncertainty is assumed to be zero. However, this tool provides a procedure to combine uncertainty information and conservative estimates resulting in an overall ex-post project uncertainty.

It is important that the process of project planning consider uncertainty. Procedures including stratification and the allocation of sufficient measurement plots can help ensure that low uncertainty in carbon stocks results and ultimately full crediting can result.

7.1 UNCERTAINTY IN BASELINE GHG EMISSIONS AND REMOVALS

7.1.1 Above Ground Biomass Emitted

The core of the avoided emissions component of the baseline calculation is based on a conservative estimate of the woody biomass volume to be removed in the baseline activity. Uncertainty is addressed by means of applying pre-harvest inventory data as stated in the Drawa Model Are Forest Management Plan (SPC/GTZ 2003, p73):

> *The pre-harvest inventory was done through a systematic line sampling design, whereby parallel strips were established with continuous plots of 20 x 10 m (0.02 ha). To achieve the statistical target of Standard Errors around <10 the distance between sampling strips varies according to the coupe size. The chosen sampling intensities allow for a sufficiently reliable interpretation of coupe level.*
>
> *In the main plots all trees >35cm dbh have been assessed for species, diameter at breast height measured with diameter tape, height measured with clinometer and quality to estimate total standing stock. In addition in 3145 sub-plots (in ever fifth*

main plot) trees between 10 and 35 cm dbh have been recorded accordingly with out taking heights to obtain an impression of the understory condition.

A sampling intensity of 11% and 1.9% had been achieved for the main and sub plots respectively taking gross areas as reference.

Wood density data in this project is derived from wood density data for the species from the Fiji Forestry Department (see Payton and Weaver 2011). This produced a higher resolution wood density calculation that required by the Technical Specifications Module (C) 1.1 (IFM-LtPF): D2.1.1 v2.0, 20151009.

Uncertainty in above ground dead biomass leaf litter, as well as soil carbon is addressed by exclusion where exclusion is conservative.

7.1.2 Below Ground Biomass Emitted

Uncertainty in the calculation of Below Ground Biomass Emitted (BGBE) is addressed in this project by applying the default value for below ground biomass used by the IPCC 2006 Inventory Guidelines (Chapter 4, pg. 49) of 0.37.

7.1.3 Gross Total Emissions in tCO_2

Uncertainty in the calculation of Gross Total Emissions in tCO_2e (GTCO2) is addressed in this project by:

a. Following the IPCC procedure for converting moist wood volume to carbon dioxide, and
b. Using species-by-species wood density for the species mix contained in the forest inventory data (and reverting to genus or family when species data was unavailable).

7.2 PROJECT GHG EMISSIONS AND REMOVALS

7.2.1 Enhanced Removals

Uncertainty associated with the calculation of the mean sequestration is addressed by application of a conservativeness factor built into the calculation of Enhanced Removals.

The Mean Sequestration Rate applied in this project is 9 $tCO_2e\ ha^{-1}\ yr^{-1}$. This is derived from (and applies a conservativeness factor to) the IPCC default value for carbon sequestration in tropical rainforest for the region Asia (other) set at 11.78$tCO_{2e}ha^{-1}yr^{-1}$ - assuming a 0.47 carbon fraction (wood and foliage) (IPCC 2006, Ch 4, p 4.59 – Table 4.10).

8. Monitoring The GHG Project

According to Section 5 of the Plan Vivo Standard (2013, p17):

5.9. A monitoring plan must be developed for each project intervention which specifies:

- *5.9.1. Performance indicators and targets to be used and how they demonstrate if ecosystem services are being delivered. Performance targets may be directly or indirectly linked to the delivery of ecosystem services, e.g. based on successful implementation of management activities or other improvements but must serve to motivate participants to sustain the project intervention*
- *5.9.2. Monitoring approaches (methods)*
- *5.9.3. Frequency of monitoring*
- *5.9.4. Duration of monitoring*

According to section 5.10 of the ISO 14064-2 Standard:

The project proponent shall establish and maintain criteria and procedures for obtaining, recording, compiling and analysing data and information important for quantifying and reporting GHG emissions and/or removals relevant for the project and baseline scenario (i.e. GHG information system). Monitoring procedures should include the following:

- *a) Purpose of monitoring;*
- *b) Types of data and information to be reported, including units of measurement;*
- *c) Origin of the data;*
- *d) Monitoring methodologies, including estimation, modelling, measurement or calculation approaches;*
- *e) Monitoring times and periods, considering the needs of intended users;*
- *f) Monitoring roles and responsibilities;*
- *g) GHG information management systems, including the location and retention of stored data.*

Where measurement and monitoring equipment is used, the project proponent shall ensure the equipment is calibrated according to current good practice.

The project proponent shall apply GHG monitoring criteria and procedures on a regular basis during project implementation.

The purpose of project monitoring is to measure, report, and verify ecosystem service outcomes delivered by the project. While a project may generate multiple ecosystem service and social outcomes, the scope of project monitoring is restricted to the specific outcomes represented by PES units.

Two PES unit types are produced by this project: Carbon Offsets and Habitat Hectare units. Both of these unit types are mutually exclusive to each other and cannot be double counted. The core PES unit for purposes of project monitoring is carbon offsets. Habitat Hectares are a proxy for general rainforest protection whereby the assertion of value delivered in project implementation is dominated by project implementation activities associated with the creation of carbon offsets.

The particular type of carbon offset produced by this project is a Plan Vivo Certificate issued as a Verified Emission Reduction unit (VER) but imbued with biodiversity and community co-benefits as required by the Plan Vivo Standard. These co-benefits are integral attributes of the carbon offsets produced under this standard and for this reason, project monitoring requires measurement, reporting and verification of the following project outcome attributes:

- Carbon benefits
- Community benefits
- Biodiversity benefits

Project measurement requirements set out in the PD are broken down into these three categories. Similarly, project monitoring is also broken down into the same three categories. The Project Monitoring Plan is the annual standard operating procedure for measuring project outcome delivery according to these three project benefit types.

8.1 CARBON MONITORING

Carbon offsets are issued to this project as a result of 3rd party verification of each Project Monitoring Report, which contains data sufficient to provide evidence to support a GHG assertion for the Project Monitoring Period in question.

Project Monitoring reports will be produced using the latest VCS Monitoring Report Template at a maximum of 5-yearly intervals covering each Project Monitoring Period. The Project Monitoring Report will be produced in the year following the final year of the Project Monitoring Period.

8.1.1 Monitored And Non-Monitored Parameters - Carbon

Some data parameters are derived from default values or are measured at one time only. These are non-monitored parameters. Other data parameters are monitored during each Monitoring Period.

Table 8.1.1 Monitored and Non-Monitored Parameters (monitored parameters in green)					
Notation	Parameter	Unit	Equa-tion	Origin	Monitored
EFA	Eligible Forest Area	ha	-	PD	Monitored
LF/ULF	Forest stratification (logged/unlogged forest)	ha	-	PD	Area calculated in PD
HR	Harvest Rate	$m^3\ yr^{-1}$	4.1.1	Calculated from inventory	Not monitored Updated each Baseline Revision
TWH	Total Wood Harvested	$m^3\ yr^{-1}$	4.1.2	Default factor applied	Not monitored Updated each Baseline Revision
CD	Collateral Damage	$m^3\ yr^{-1}$	4.1.3	Root-shoot ratio (proportion of AGBE)	Not monitored Updated each Baseline Revision
AGBE	Above Ground Biomass Emitted	$m^3\ yr^{-1}$	4.1.4	Sum of TWH and CD	Not monitored Updated each Baseline Revision
BGBE	Below Ground Biomass Emitted	$m^3\ yr^{-1}$	4.1.5	Root-shoot ratio (proportion of AGBE)	Not monitored Updated each Baseline Revision
TM3	Total Emissions in m^3	$m^3\ yr^{-1}$	4.1.6	Sum of AGBE and BGBE	Not monitored Updated each Baseline Revision
GTCO2	Gross Total Emissions in tCO^2e	$tCO_2e\ yr^{-1}$	4.1.7	Conversion factors from wood volume to emissions	Not monitored Updated each Baseline Revision
GBER1	Gross Baseline Emissions Rotation 1	$tCO_2e\ yr^{-1}$	4.1.8	Conversion factors from wood products calculation	Not monitored Updated each Baseline Revision
ltWP	Long Term Wood Products	$tCO_2e\ yr^{-1}$	4.1.9	Calculated through conversion factors based on volume of wood harvested.	Not monitored
NBEARx	Net Baseline Emissions Avoided	$tCO_2e\ yr^{-1}$	4.1.10	Default factors based on GBE	Not monitored Updated each Baseline Revision
ER	Enhanced Removals	$tCO_2e\ yr^{-1}$	5.1.1	Default values derived from mean sequestration rates for relevant forest types and subsequently derived from project-specific data	Not Monitored Updated each Monitoring Period
TAL	Total Activity Shifting Leakage	$tCO_2e\ yr^{-1}$	5.2.1	Derived from Activity Shifting Leakage Analysis	Monitored Updated each Monitoring Period

8.1.2 Monitored Parameters - Carbon

Monitored data and parameters are summarized in the tables below.

Data Unit / Parameter:	**Eligible Forest Area (Eligible Forest Area)**
Data unit:	Ha
Description:	Forest area included in baseline and project scenario, and area upon which crediting is based (EFA_{LF} &/or EFA_{ULF})
Source of data:	Aerial imagery and Project Boundary Inspection
Description of measurement methods and procedures to be applied:	Aerial imagery (sub-meter accuracy) to define Eligible Forest Area boundary; boundary survey inspections (sub-meter accuracy) using GPS. Measure any reversals occurring in the Eligible Forest Area. Monitored by means of Eligible Forest Boundary Inspections that record any reversal incident occurring within the Eligible Forest Area. The area of any reversal above and beyond the *de minimis* threshold is measured using GPS units set up for sub-meter accuracy and measuring tapes. Area subject to reversal is removed from the Eligible Forest Area until the reversal has recovered the carbon volume lost in the reversal. This is calculated by means of sequestration rates and the estimate of the forest age for the area subject to the reversal. Forest age of the area subject to the reversal is calculated by: • Dendrochronology on stumps in the case of a timber harvest reversal • Dendrochronology on adjacent living trees of equivalent size of burnt stumps
Frequency of monitoring/recording:	Aerial imagery: 5-yearly Eligible Forest Boundary inspections: annually
Value monitored:	Area
Monitoring equipment:	Aerial imagery/satellite data to sub-meter accuracy Hand held GPS unit, photography
QA/QC procedures to be applied:	3-yearly 3rd party verification of Project Management Reports.
Calculation method:	Subtract reversal area from the Eligible Forest Area and recalculate the Net Carbon Credits by means of the Buffer Account Rules (Section 5.5.2 this document).

Data Unit / Parameter:	**Total Activity Shifting Leakage**
Data unit:	tCO_2e/yr
Description:	Leakage caused by activity shifting
Source of data:	Project Area Inspection (outside Eligible Forest Area)
Description of measurement methods and procedures to be applied:	Site visit of indigenous forest lands owned and controlled by the Project Owner to assess commercial timber harvesting activity in comparison with the Baseline Activity and Project Activity as stated in the PD. Where commercial indigenous timber harvesting is occurring on lands

	owned and controlled by the Project Owner but lying outside the Eligible Forest Area, and where such harvesting has been declared in the PD, the following assessment will be undertaken: • Records of timber harvesting activity are inspected and verified against the timber harvesting plan stated in the PD. • Timber harvesting sites are inspected to verify that they are occurring in the areas specified in the PD. Where commercial indigenous timber harvesting is occurring on lands owned and controlled by the Project Owner but lying outside the Eligible Forest Area, and where such harvesting has not been declared in the PD (i.e. and thereby constitutes Activity Shifting Leakage), the following assessment will be undertaken: • Records of timber harvesting activity are inspected and annual timber harvesting volumes and species are recorded. • Timber harvesting sites are inspected to determine area of harvesting activity. • Calculations are made using the baseline GHG emissions measurement methodology in the Technical Specifications Module 2.1 (C) (IFM-LtPF), to determine the volume of Activity Shifting Leakage. • Net Carbon Credits are recalculated to account for Total Activity Shifting Leakage (TAL) • The Project Owner is notified of the consequence of any continuation of Activity Shifting Leakage in terms of the reduction in Net Carbon Credits for the Project. The Project Owner is instructed to terminate Activity Shifting timber harvesting or risk suspension or termination from the Nakau Programme.
Frequency of monitoring/recording:	Annual Leakage Inspection and results incorporated into the annual Project Management Report. 5-yearly 2nd party verification of Project Management Reporting by the Programme Operator.
Value monitored:	$m^3\ yr^{-1}$
Monitoring equipment:	GPS unit, measuring tape, photography
QA/QC procedures to be applied:	5-yearly 3rd party verification of Project Management Reports.
Calculation method:	Activity Shifting Leakage method specified in Section 5.2.1 of the Technical Specifications Module (C) 1.1 (IFM-LtPF): D2.1.1 v2.0, 20151009.

8.1.3 Monitoring Roles And Responsibilities - Carbon

Specific project monitoring roles for this project is presented in Table 8.1.3 below:

Table 8.1.3 Project Monitoring Roles/Responsibilities	
Task	Responsibility
Eligible Forest Area Boundary Inspections	Project Owner with assistance from the Project Coordinator where needed
Eligible Forest Area Inspections	Project Owner with assistance from the Project Coordinator where needed
Project Management Reporting	Project Owner with assistance from the Project Coordinator
Aerial imagery/mapping	Project Coordinator
Project Monitoring data management	Project Coordinator

8.1.4 Information Management Systems - Carbon

This project uses the information management system described in Section 7.1 of the Nakau Methodology Framework.

8.1.5 Simplified Project Monitoring Report Methodology - Carbon

This project will submit a simplified Project Monitoring Report for its first verification. The Simplified Project Monitoring Report will fulfil all components of the latest VCS Monitoring Report Template with the exception that Section 3.2 will list the data and parameters monitored but the full monitoring procedures will not be implemented until the second verification. Monitoring activities equivalent to those required in the monitoring were undertaken during project development provided and fulfilled the material requirements of the Monitoring Plan contained in this PD but did not fulfil the procedural requirements. This is because the monitoring plan was being developed towards the end of project development, which coincided with the end of the first monitoring period. At first verification this project will submit the equivalent of a Director's Certificate to assert that the Project Activity has taken place according to the requirements of the Nakau Methodology Framework and the Technical Specification Module applied between the Project Start Date and the end of the first Monitoring Period.

8.1.6 Standard Operating Procedure: Project Monitoring - Carbon

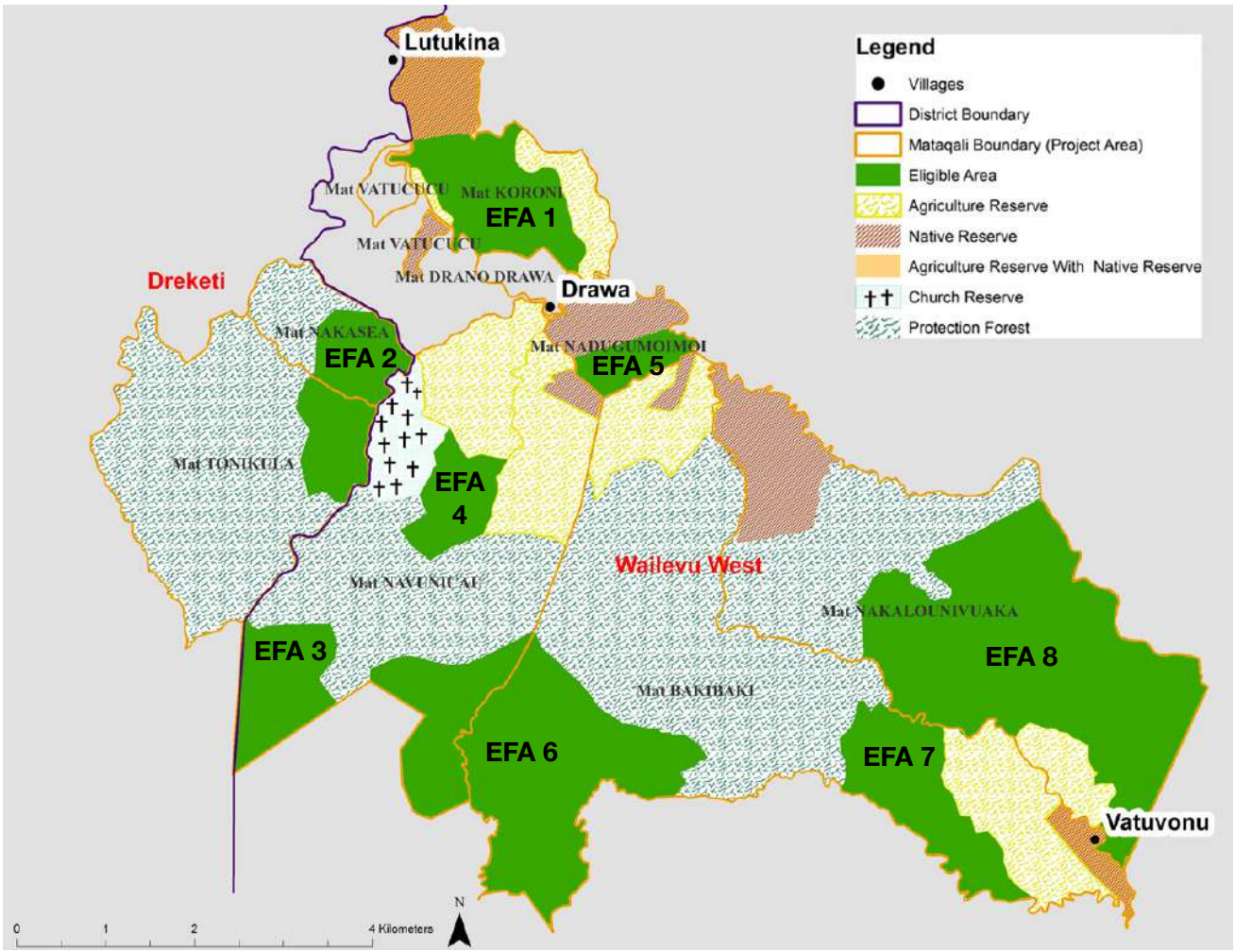
The Standard Operating Procedure (SOP) for Monitoring Carbon benefits is presented below.

Table 8.1.6 Monitoring Schedule - Carbon				
Carbon				
Activity	Frequency	Responsibility	Human Resources	Financial Resources
Eligible Forest Area	6-monthly inspection 3-yearly aerial imagery	Landowner (rangers); Project Coordinator	Rangers employed by the project from the landowner community; Project Coordinator staff	PES unit price accounts for employment of rangers and Project Coordinator staff
Eligible Forest Boundary	6-monthly inspection 3-yearly aerial imagery	Landowner (rangers); Project Coordinator	Rangers employed by the project from the landowner community; Project Coordinator staff	PES unit price accounts for employment of rangers and Project Coordinator staff
De minimis timber harvesting inspections	6-monthly inspection 3-yearly aerial imagery	Landowner (rangers); Project Coordinator	Rangers employed by the project from the landowner community; Project Coordinator staff	PES unit price accounts for employment of rangers and Project Coordinator staff
Activity Shifting Leakage	Annual inspection 3-yearly calculation	Project Coordinator and Landowner	Rangers employed by the project from the landowner community; Project Coordinator staff	PES unit price accounts for employment of rangers and Project Coordinator staff

8.1.6.1 Forest Management Areas

The Forest Management Areas for this project are presented in Figure 8.1.6.1.

Figure 8.1.6.1 Drawa Rainforest Conservation Project management zones



The Eligible Forest Area management zones are depicted in Figure 3.1.6.1 above.

8.1.6.2 Eligible Forest Boundary Inspections

Description: The Eligible Forest Area boundary is inspected annually to record the status of this boundary.

Purpose: Monitor and manage any reversals occurring at the boundary.

Method:

Make observations of the Eligible Forest Area boundary during the course of the 6-monthly Eligible Forest Area Inspections. This is conducted during the walking of line transects from one side of an Eligible Forest Area boundary to another, and by viewing the Eligible Forest Area boundary in both directions along the boundary from the point on each transect line as it meets the Eligible Forest Area boundary. If reversals at the Eligible Forest Area boundary are observed at points along the boundary that do not coincide with the line transect then the reversal is recorded using the Eligible Forest Boundary Inspection Template (Appendix 6).

Recurrence: 6-monthly inspections.

Responsibility: Project Owner with supervision support from the Project Coordinator until such time as Project Coordinator supervision support not required (as determined by Project Owner and Project Coordinator by mutual agreement). Project Coordinator to supervise Eligible Forest Boundary Inspection at leas once during each 3-yearly monitoring period.

8.1.6.3 Eligible Forest Area Inspections

Description: Descriptive survey of forest condition within Eligible Forest Area boundary.

Purpose: Monitor any reversals occurring within Eligible Forest Area, and ensure that any timber harvesting lies within the *de minimis* limit imposed by the Technical Specifications Module applied.

Method:

Large Area Transect Method: For each Forest Management Area, permanently mark a Transect Base Point with a boundary peg (this can be a boundary peg used for forest inventory and/or permanent sample plots). Define a Transect Datum Line using a compass bearing and orient the transect datum line along the long axis of the Forest Management Area (see Figure 8.1.6.3). Use the last two digits from random numbers and convert to meters, to select a transect starting point along the Transect Datum Line. Use a compass bearing to mark out parallel transect lines through the Forest Management Area, with transects located between 100m and 500m intervals and orientated perpendicular to the Transect Datum Line.

Medium Area Transect Method: For forest management areas that are too small to undertake two or more transects using the Large Area Transect Method, use the same method as the Large Area Transect Method but select the last single digit from the random numbers to locate the first transect line, and locate the transects between 20m and 100m intervals along the transect datum line.

Small Area Transect Method: For forest management areas less than 100m long, start with the Transect Base Point, then locate a single transect running through the longest axis of the forest patch (and curving the transect where necessary in order to keep the transect within the forest boundary).

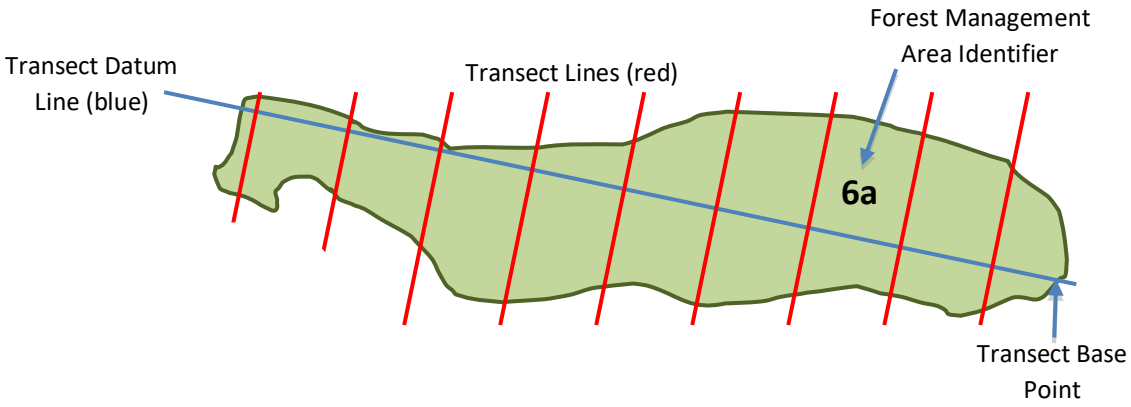
Transect Survey Procedure: Walk the full length of each transect line and on the Project Area Inspection Template (Appendix 7) record the following Reversal Events:

a. Evidence of timber harvesting
b. Evidence of fire
c. Evidence of detrimental changes in forest health (e.g. browsing, pest infestation, disease, snow-break, dieback)

For each Reversal Event record the location with a GPS unit and describe the event using the Eligible Forest Area Inspection Checklist. For each timber harvesting Reversal Event record

the stump diameter, the species of harvested tree where possible, any evidence of on-site timber processing, log hauling, and collateral damage.

Figure 8.1.6.3 Eligible Forest Area Inspection Transect Location



Recurrence: 6-monthly inspections.

Responsibility: Project Owner with supervision support from the Project Coordinator until such time as Project Coordinator supervision support not required (as determined by Project Owner and Project Coordinator by mutual agreement). Project Coordinator to supervise Eligible Forest Boundary Inspection at leas once during each 3-yearly monitoring period.

Note: Use a different random number to generate the transect starting point along the transect datum line for each subsequent annual monitoring cycle.

8.1.6.4 *De Minimis* Timber Harvest Inspection

De minimis timber harvesting inspections will be undertaken 6-monthly in conjunction with the 6-monthly Eligible Forest Area Inspections described in Section 8.1.6.3.

The *de minimis* timber harvesting volume for the Drawa Rainforest Conservation Project is 407m^3 per year. This amounts to <5% of the total allowable annual commercial timber harvest in the Baseline Scenario in the Eligible Forest Area as provided for in the Technical Specifications Module applied.

The project will record *de minimis* timber harvesting events using the template supplied in Appendix 8.

8.1.6.5 Activity Shifting Leakage Inspection

Activity Shifting Leakage Inspections will be undertaken annually following first verification. These inspections will be undertaken in conjunction with the 6-monthly Eligible Forest Area Inspections described in Section 8.1.6.3.

The project will record Activity Shifting Leakage events using the template supplied in Appendix 9.

8.1.7 Monitoring Resources and Capacity - Carbon

According to Section 5 of the Plan Vivo Standard (2013, p17):

5.9. A monitoring plan must be developed for each project intervention which specifies:
5.9.6. Resources and capacity required

According to the Technical Specifications Module (C) 1.1 (IFM-LtPF) D2.1.1 v1.0 20151009:

The Project Monitoring Plan must identify (and provide evidence for) the resources available to undertake monitoring, including:

- *Financial resources and the source of such finance (e.g. unit pricing, grants, fees)*
- *Human resources and capability required.*

The financial and human resources allocated to project monitoring are presented in Table 8.1.6 above.

8.1.8 Community Monitoring - Carbon

According to Section 5 of the Plan Vivo Standard (2013, p17):

5.9. A monitoring plan must be developed for each project intervention which specifies:
5.9.7. How communities will participate in monitoring, e.g. by training community members and gradually delegating monitoring activities over the duration of the project
5.9.8. How results of monitoring will be shared and discussed with participants

5.10. Where participants are involved in monitoring, a system for checking the robustness of monitoring results must be in place, e.g. checking a random sample of monitoring results by the project coordinator.

According to the TS Module (C) 1.1 (IFM-LtPF) D2.1.1 v1.0 20151009:

The Project Monitoring Plan must include:

- *A description of how the Project Owner and/or other local people will participate in monitoring in compliance with the Project Participation Protocol specified in Section 3.1 of the PD (applying Section 3.1 of the Nakau Methodology Framework).*
- *A description of how the results of monitoring will be shared and discussed with participants with reference to the Project Monitoring Workshops specified in Section 3.1.7 of the PD (applying Section 3.1.7 of the Nakau Methodology Framework).*

- *A description of the quality controls used to safeguard the integrity and accuracy of data gathered from monitoring activities involving Project Owners and/or other local people.*

Community involvement in monitoring is set out in Table 8.1.6 above.

8.1.8.1 Community Participation In Monitoring

The Project Owner will recruit rangers with responsibilities to undertake project monitoring tasks described in Table 8.1.6. The Project Owner will be responsible for recruitment and management of rangers for this project. The Project Coordinator will provide supervision and support for ranger activities with this role scaling downwards through time at a rate determined by mutual agreement between the Project Coordinator and the Project Owner.

8.1.8.2 Sharing Results of Community Monitoring

Community monitoring outputs are recorded in annual Project Management Reports prepared and approved by Serthiac with the assistance of the Project Coordinator. Project Management Reports are submitted for approval to the Project Coordinator and the Programme Operator on an annual basis. The Project Coordinator collates the content of annual Project Management Reports into three-yearly Project Monitoring Reports. Serthiac and the Project Coordinator approves each Project Monitoring Report before being submitted to the Programme Operator for approval. Once approved by the Programme Operator the Project Monitoring Report is submitted for a verification audit.

8.1.8.3 Quality Controls for Community Monitoring

Quality controls for community monitoring are described in Section 8.1.8.2.

8.2 COMMUNITY IMPACT MONITORING

Carbon offsets are issued to this project as a result of 3rd party verification of each Project Monitoring Report, which contains data sufficient to provide evidence to support a community impact assertion for the Project Monitoring Period in question. This is a requirement for the carbon offsets to be issued as Plan Vivo Certificates under the Plan Vivo Standard.

8.2.1 Monitored And Non-Monitored Parameters – Community

Monitored and non-monitored community impact data are listed in Table 8.2.1 below.

Table 8.2.1 Monitored and Non-Monitored Parameters – Community Impacts

Notation	Parameter	Unit	Origin	Monitored
FA	Food & Agriculture	Various	Community Impact Survey	Monitored

W	Water accessibility	%	Community Impact Survey	Monitored
H	Household Income	Vatu	Community Impact Survey	Monitored
P	Participation	Number & %	Community Impact Survey	Monitored

8.2.2 Monitored Parameters – Community

Monitored data and parameters are summarized in the tables below.

Data Unit / Parameter:	**Food & Agriculture**
Data unit:	Various
Description:	We want to know: • If the forest products continue to be used indicating the continuation of traditional practices • If access to land for gardens diminishes to a point that it affects access to food • If project owners begin to purchase food more often indicating increased income but also creating possible negative unintended impacts (i.e. health) • If income is still sought through the sale of food and how this income changes over time.
Source of data:	Community Impact Survey
Description of measurement methods and procedures to be applied:	Structured interviews pursuing the following questions: 1.1 How often do you buy food? 1.2 How big is your family garden? 1.3 How often do you eat free food from your garden? 1.4 How often do you run out of food? 1.5 How often do you eat food from the forest? 1.6 How much do you make selling food?
Frequency of monitoring/recording:	3-yearly
Value monitored:	Various
Monitoring equipment:	Social survey equipment
QA/QC procedures to be applied:	3-yearly 3rd party verification of Project Monitoring Reports.
Calculation method:	Compare responses with previous survey

Data Unit / Parameter:	**Water Accessibility**
Data unit:	Various
Description:	Access to water has been a key issue for project owners. We want to know if improved access to water results from the project. Further, access to water being such a basic need, is another indicator of overall wellbeing. The impact of this on women deserves special attention by interviewers.
Source of data:	Community Impact Survey
Description of measurement methods and procedures to be applied:	Structured interviews pursuing the following questions: 1.1 Do you run out of water? 1.2 Are there days when you can use as much as you like?

Frequency of monitoring/recording:	3-yearly
Value monitored:	Various
Monitoring equipment:	Social survey equipment
QA/QC procedures to be applied:	3-yearly 3rd party verification of Project Monitoring Reports.
Calculation method:	Compare responses with previous survey

Data Unit / Parameter:	**Household Income**
Data unit:	Various
Description:	Increased income can demonstrate increased wellbeing although it can also be damaging. While we measure income over time, we also measure changes in livelihoods or time spent on activities every day such as housework, gardening etc. This will help us to see if project owners have more time to give to non-core activities and therefore, perhaps their lives are made easier by the project. We will also monitor if the money is causing social decay via its use for negative pursuits (i.e. alcohol). Education is also used to determine whether increased income is creating greater wellbeing.
Source of data:	Community Impact Survey
Description of measurement methods and procedures to be applied:	Structured interviews pursuing the following questions: 1.1 Access to Education 1.2 Personal Monthly Income (VUV) 1.3 Travel to town (times per week) 1.4 Hours spent cooking (per day) 1.5 Hours spent Gardening (Per day) 1.6 Hours spent resting
Frequency of monitoring/recording:	3-yearly
Value monitored:	Various
Monitoring equipment:	Social survey equipment
QA/QC procedures to be applied:	3-yearly 3rd party verification of Project Monitoring Reports.
Calculation method:	Compare responses with previous survey

Data Unit / Parameter:	**Project Participation**
Data unit:	Various
Description:	We want to use this monitoring as a chance to assess how well the 'REDD+ Enterprise' (i.e. the cooperative or family business) is doing at engaging the project owners and earning local trust. This indicates resilience and overall wellbeing if the faith in this institution is high.
Source of data:	Community Impact Survey
Description of measurement methods and procedures to be applied:	Structured interviews pursuing the following questions: 4.1 How many youth do you know that are engaged with the REDD+ Enterprise? 4.2 Are you given the opportunity to access information about the REDD+ Enterprise's finances and activities? 4.3 Do you trust the REDD+ Enterprise?
Frequency of	3-yearly

monitoring/recording:	
Value monitored:	Various
Monitoring equipment:	Social survey equipment
QA/QC procedures to be applied:	3-yearly 3rd party verification of Project Monitoring Reports.
Calculation method:	Compare responses with previous survey

8.2.3 Monitoring Roles And Responsibilities - Community

Community Impact Monitoring surveys are the responsibility of the Project Coordinator. Surveys are to be conducted with the consent of Serthiac.

8.2.4 Information Management Systems - Community

This project uses the information management system described in Section 7.1 of the Nakau Methodology Framework.

8.2.5 Simplified Project Monitoring Report Methodology - Community

This project will submit a simplified Project Monitoring Report for its first verification. This will involve the presentation of baseline community impact data gathered during project development concurrently with the first monitoring period. Project community impact data and results will be presented for the first time at second verification.

8.2.6 Standard Operating Procedure: Project Monitoring – Community

The Standard Operating Procedure (SOP) for Monitoring Community Impacts is presented below.

Table 8.2.6 Monitoring Schedule – Community Impacts				
Community				
Activity	Frequency	Responsibility	Human Resources	Financial Resources
Food, consumption, agriculture	3-yearly	Project Coordinator	Project Coordinator staff	PES unit price accounts for employment of Project Coordinator staff
Water accessibility	3-yearly	Project Coordinator	Project Coordinator staff	PES unit price accounts for employment of Project Coordinator staff
Household income	3-yearly	Project Coordinator	Project Coordinator staff	PES unit price accounts for employment of Project Coordinator staff
Participation	3-yearly	Project Coordinator	Project Coordinator staff	PES unit price accounts for employment of Project Coordinator staff

8.2.6.1 Baseline Community Impacts

Baseline community impacts were measured during project development and have been measured and presented in Section 5.2.2.2 of the Drawa Forest Project PD Part A D3.2a v1.0 20151009. Project Community impacts will be presented at second verification due to this first Project Monitoring Report applying a simplified Project Monitoring Report as provided for in Section 8.2.5 of the Drawa PD Part B (this document).

8.2.6.2 Project Community Impacts

Project community impacts will be measured by means of a 3-yearly community impact survey to quantify change in the community impact indicators described in Section 8.2.2 above.

8.2.6.3 Net Community Impact Enhancements

Tabulation of baseline and project community impacts, and net community impact enhancements will be presented in summary using the following format.

	Baseline community impacts	Project community impacts	Net community impact enhancements
Impact 1			
Impact 2…			

8.3 BIODIVERSITY MONITORING

Carbon offsets are issued to this project as a result of 3rd party verification of each Project Monitoring Report, which contains data sufficient to provide evidence to support a biodiversity impact assertion for the Project Monitoring Period in question. This is a requirement for the carbon offsets to be issued as Plan Vivo Certificates under the Plan Vivo Standard.

8.3.1 Monitored And Non-Monitored Parameters – Biodiversity

Monitored and non-monitored community impact data are listed in Table 8.2.1 below.

Table 8.3.1 Monitored and Non-Monitored Parameters – Biodiversity Impacts				
Notation	Parameter	Unit	Origin	Monitored
SSA	Significant species - Animals	Presence/absence	Biodiversity Survey	Monitored
SSP	Significant species - Plants	Presence/absence	Biodiversity Survey	Monitored

8.3.2 Monitored Parameters – Biodiversity

Monitored data and parameters are summarized in the tables below.

Data Unit / Parameter:	**Significant Species - Animals**
Data unit:	Presence/absence
Description:	
Source of data:	Biodiversity Survey
Description of measurement methods and procedures to be applied:	Record significant species during Eligible Forest Area Inspections.
Frequency of monitoring/recording:	3-yearly
Value monitored:	Presence/absence
Monitoring equipment:	Animal identification table, binoculars, mobile phone, itracker software (or equivalent)
QA/QC procedures to be applied:	3-yearly 3rd party verification of Project Monitoring Reports.
Calculation method:	Compare responses with previous survey

Monitored data and parameters are summarized in the tables below.

Data Unit / Parameter:	**Significant Species - Plants**
Data unit:	Presence/absence
Description:	
Source of data:	Biodiversity Survey
Description of measurement methods and procedures to be applied:	Record significant species during Eligible Forest Area Inspections.
Frequency of monitoring/recording:	3-yearly
Value monitored:	Presence/absence
Monitoring equipment:	Plant identification table, binoculars, mobile phone, itracker software (or equivalent)
QA/QC procedures to be applied:	3-yearly 3rd party verification of Project Monitoring Reports.
Calculation method:	Compare responses with previous survey

8.3.3 Monitoring Roles And Responsibilities - Biodiversity

Biodiversity Monitoring surveys are the responsibility of the Project Owner with support and supervision of the Project Coordinator. Surveys are to be conducted with the consent of the Project Owner.

8.3.4 Information Management Systems - Biodiversity

This project uses the information management system described in Section 7.1 of the Nakau Methodology Framework.

8.3.5 Simplified Project Monitoring Report Methodology - Biodiversity

This project will submit a simplified Project Monitoring Report for its first verification. This will involve the presentation of the first project biodiversity survey but will not include the presentation of the baseline biodiversity survey (to be presented at a subsequent verification event).

8.3.6 Standard Operating Procedure: Project Monitoring – Biodiversity

The Standard Operating Procedure (SOP) for Monitoring Biodiversity is presented below.

Table 8.3.6 Monitoring Schedule – Biodiversity Impacts				
Community				
Activity	Frequency	Responsibility	Human Resources	Financial Resources
Biodiversity Survey - Animals	3-yearly	Project Owner	Project Rangers	PES unit price accounts for employment of Project Coordinator staff
Biodiversity Survey - Plants	3-yearly	Project Owner	Project Rangers	PES unit price accounts for employment of Project Coordinator staff

8.3.6.1 Baseline Biodiversity Impacts

Baseline biodiversity impacts (i.e. survey of a reference area supporting habitat types in the baseline) have not been measured. A baseline biodiversity survey is optional under the Plan Vivo standard minimum requirements for biodiversity, but it is the aspiration of the Drawa Forest Project to undertake a baseline biodiversity survey to enable comparison between baseline and project biodiversity indicators and generate a net biodiversity impact assertion.

8.3.6.2 Project Biodiversity Impacts

Project biodiversity impacts will be measured by means of a 3-yearly biodiversity impact survey to quantify change and/or trends in site biodiversity. The first project biodiversity impact survey was undertaken during project development and have been measured and presented in Section 5.3.1 of the Drawa Forest Project PD Part A D3.2a v1.0 20151009.

8.3.6.3 Net Biodiversity Impact Enhancements

Tabulation of baseline and project biodiversity impacts, and net biodiversity impact enhancements will be presented in summary using the following format.

	Baseline community impacts	Project community impacts	Net community impact enhancements
Impact 1			
Impact 2…			

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Evidence Requirements for this PD are available on this link:

https://www.dropbox.com/sh/znercnznnww28xi/AADbwC54Yf7c8mTDpa9lqfDTa?dl=0

Appendices

APPENDIX 1: DEFINITIONS

A/R	Afforestation/Reforestation
Activity Type	Specifically defined carbon project activity combining a reference activity and a project activity to generate carbon benefits
Afforestation	Establishment of forest through planting and/or deliberate seeding on land that, until then, was not classified as forest (FAO 2010). See Explanatory Note below.
AFOLU	Agriculture, Forestry and Other Land Uses
Baseline Scenario	Carbon balance arising from baseline (BAU) activities
BAU	Business-as-Usual
Carbon balance	Sum of carbon in a system into account carbon stored in reservoirs, emissions of carbon from sources, and sequestration of carbon into sinks
Carbon benefits	Net CO_2e benefits arising from total net avoided emissions and net enhanced removals
Carbon flux	Movement of carbon through different carbon pools
Carbon pool	Component of the earth system that stores carbon
Carbon reservoir	Carbon pool that stores carbon for long time scales
Carbon sink	Carbon pool that absorbs/sequesters carbon dioxide by transforming gaseous CO_2e into a carbon-based liquid or solid
Carbon source	Carbon pool that emits carbon from a liquid or solid form into a gas
CCB	Climate Community and Biodiversity Standard
CDM	Clean Development Mechanism
CO_2e	Carbon dioxide equivalent: translation of non-CO_2 GHG tonnes into equivalent CO_2tonnes through conversion using global warming potential of non-CO_2 GHG
Compliance Space	What is contained within the GHG accounting boundary of a compliance GHG accounting regime (e.g. Kyoto Protocol, NZ ETS)
COP	Conference of Parties (to the UNFCCC)
CSR	Corporate Social Responsibility
Deforestation	The conversion of forest to other land use or the long-term reduction of the tree canopy cover below the minimum 10 percent threshold (FAO 2010). See Explanatory Note below.
DOE	Designated Operational Entity
Eligible Area	Subset of Forest Area comprising area of forest eligible for crediting

Enhanced removals	Carbon sequestration assisted by management intervention to a level above what would occur naturally
Ex ante	Before the event (referring to future activities)
Ex post	After the fact (referring to past activities)
Forest Area	Subset of Project Area comprising forest land within Project Area
Forest Degradation	The reduction of the capacity of a forest to provide goods and services.
Forest Land	Land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds in situ. It does not include land that is predominantly under agricultural or urban land use (FAO 2010). See Explanatory Note below.
GHG	Greenhouse Gas
GIS	Geographical Information System
GPG	Good Practice Guidance
HWP	Harvested Wood Products
IFM	Improved Forest Management
IFM-LtPF	Improved forest management – logged to protected forest activity type
IPCC	Intergovernmental Panel on Climate Change
ISO	International Standards Organisation
LULUCF	Land Use, Land Use Change and Forestry
MRV	Measurement/Monitoring Reporting and Verification
Non-Forest Land	All land that is not classified as Forest or Other wooded land (FAO 2010). See Explanatory Notes for 'Other Land' below). Same definition as 'Other Land'.
Operational Forest Area	Term used in sustainable forest management plans delimiting area eligible for timber harvesting
Other Land	All land that is not classified as Forest or Other wooded land (FAO 2010). See Explanatory Notes below). Same definition as 'Non-Forest Land'.
Other Wooded Land	Land not classified as Forest, spanning more than 0.5 hectares; with trees higher than 5 meters and a canopy cover of 5-10 percent, or trees able to reach these thresholds in situ; or with a combined cover of shrubs, bushes and trees above 10 percent. It does not include land that is predominantly under agricultural or urban land use (FAO 2010). See Explanatory Note below.
Participants	The adult land/resource rights holders involved in the project – including, but not limited to the project owner group board/committee members.
PD	Project Description
PDD	Project Design Document (synonymous with PD in this document)
PES	Payment for Ecosystem Services

Project Area	Land ownership boundary within which carbon project will take place
Project Coordinator	The entity assisting the Project Owner to develop and implement the forest carbon project.
Project Governing Board	Subset of the Project Owner community appointed by the Project Owner community to govern the project in the interests of the Project Owner community.
Project Scenario	Carbon balance arising from project activities
Programme Operator	The entity that owns and administers the Nakau Programme. This entity is responsible for safeguarding the integrity of the Nakau Programme and its role is to a) govern the Nakau Programme; b) own the IP associated with Nakau Programme methodologies and protocols; c) be the beneficiary of any covenant on the land title of the Project Owner that protects the forest; d) own the buffer credits of the Nakau Programme; e) administer the buffer account with the registry; and f) act as the guardian of the Nakau Programme.
Project Owner	The owner of the forest and forest carbon rights subject to the project
Project Proponent	The Project Owner and Project Coordinator combined.
Project Scenario	Carbon balance arising from Project activities (carbon project change from BAU)
Protected Forest	Halting or avoiding activities that would reduce carbon stocks and managing a forest to maintain high and/or increasing carbon stocks
RED	Reducing Emissions from Deforestation
REDD	Reducing Emissions from Deforestation and Degradation
Reforestation	Re-establishment of forest through planting and/or deliberate seeding on land classified as forest (FAO 2010). See Explanatory Note below.
REL	Reference Emission Level: rate of GHG emissions under BAU
Removals	Carbon sequestered from the atmosphere into a carbon sink
SFM	Sustainable Forest Management
UNFCCC	United Nations Framework Convention on Climate Change
Validation	Independent audit of Project Description (PD) and/or Methodology
VCS	Verified Carbon Standard
Verification	Independent audit of Project Monitoring Reports

Explanatory Notes

All definitions and explanatory notes relating to forest and non-forest land, afforestation, reforestation, deforestation, forest degradation is taken from the FAO Global Forest Resources Assessment 2010.

Forest Land:

1. Forest is determined both by the presence of trees and the absence of other predominant land uses. The trees should be able to reach a minimum height of 5 meters in situ.

2. Includes areas with young trees that have not yet reached but which are expected to reach a canopy cover of 10 percent and tree height of 5 meters. It also includes areas that are temporarily unstocked due to clear-cutting as part of a forest management practice or natural disasters, and which are expected to be regenerated within 5 years. Local conditions may, in exceptional cases, justify that a longer time frame is used.

3. Includes forest roads, firebreaks and other small open areas; forest in national parks, nature reserves and other protected areas such as those of specific environmental, scientific, historical, cultural or spiritual interest.

4. Includes windbreaks, shelterbelts and corridors of trees with an area of more than 0.5 hectares and width of more than 20 meters.

5. Includes abandoned shifting cultivation land with a regeneration of trees that have, or is expected to reach, a canopy cover of 10 percent and tree height of 5 meters.

6. Includes areas with mangroves in tidal zones, regardless whether this area is classified as land area or not.

7. Includes rubber-wood, cork oak and Christmas tree plantations.

8. Includes areas with bamboo and palms provided that land use, height and canopy cover criteria are met.

9. Excludes tree stands in agricultural production systems, such as fruit tree plantations, oil palm plantations and agroforestry systems when crops are grown under tree cover. Note: Some agroforestry systems such as the "Taungya" system where crops are grown only during the first years of the forest rotation should be classified as forest.

Other Wooded Land

1. The definition above has two options:

- The canopy cover of trees is between 5 and 10 percent; trees should be higher than 5 meters or able to reach 5 meters in situ.
- The canopy cover of trees is less than 5 percent but the combined cover of shrubs, bushes and trees is more than 10 percent. Includes areas of shrubs and bushes where no trees are present.

2. Includes areas with trees that will not reach a height of 5 meters in situ and with a canopy cover of 10 percent or more, e.g. some alpine tree vegetation types, arid zone mangroves, etc.

3. Includes areas with bamboo and palms provided that land use, height and canopy cover criteria are met.

Other Land

1. Includes agricultural land, meadows and pastures, built-up areas, barren land, land under permanent ice, etc.

2. Includes all areas classified under the sub-category “Other land with tree cover”.

Afforestation

1. Implies a transformation of land use from non-forest to forest.

Reforestation

1. Implies no change of land use.

2. Includes planting/seeding of temporarily unstocked forest areas as well as planting/seeding of areas with forest cover.

3. Includes coppice from trees that were originally planted or seeded.

4. Excludes natural regeneration of forest.

Deforestation

1. Deforestation implies the long-term or permanent loss of forest cover and implies transformation into another land use. Such a loss can only be caused and maintained by a continued human-induced or natural perturbation.

2. Deforestation includes areas of forest converted to agriculture, pasture, water reservoirs and urban areas.

3. The term specifically excludes areas where the trees have been removed as a result of harvesting or logging, and where the forest is expected to regenerate naturally or with the aid of silvicultural measures. Unless logging is followed by the clearing of the remaining logged-over forest for the introduction of alternative land uses, or the maintenance of the clearings through continued disturbance, forests commonly regenerate, although often to a different, secondary condition.

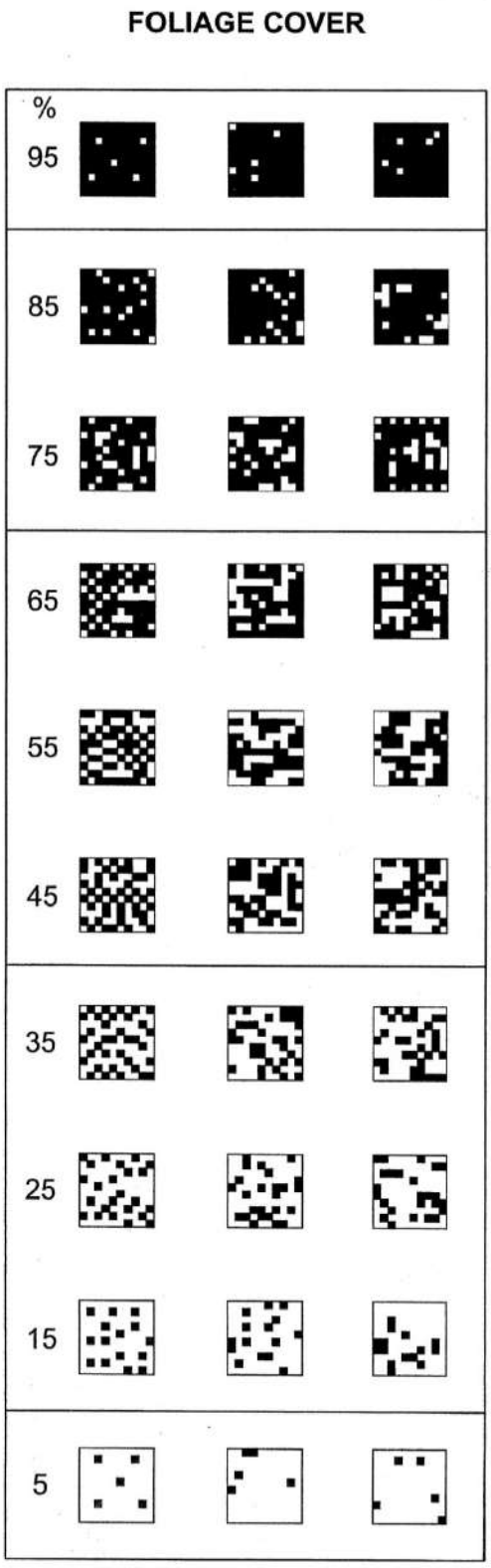
4. In areas of shifting agriculture, forest, forest fallow and agricultural lands appear in a dynamic pattern where deforestation and the return of forest occur frequently in small patches. To simplify reporting of such areas, the net change over a larger area is typically used.

5. Deforestation also includes areas where, for example, the impact of disturbance, over utilization or changing environmental conditions affects the forest to an extent that it cannot sustain a tree cover above the 10 percent threshold.

APPENDIX 2. SITE DESCRIPTION PLOT SHEET

<table>
<tr><th colspan="5">SITE DESCRIPTION PLOT SHEET</th></tr>
<tr><td colspan="4">Survey name:</td><td>Date measured:</td></tr>
<tr><td colspan="4">Plot identifier:</td><td>Measured by:</td></tr>
<tr><td colspan="4">Location:</td><td></td></tr>
<tr><td colspan="4"></td><td></td></tr>
<tr><td colspan="4">Plot layout:</td><td>GPS make & model</td></tr>
<tr><td></td><td>Bearing</td><td>Slope distance</td><td>Slope angle</td><td>Easting:</td></tr>
<tr><td>A–B</td><td></td><td></td><td></td><td>Southing:</td></tr>
<tr><td>B–C</td><td></td><td></td><td></td><td>Single/averaged 2D/3D ± m</td></tr>
<tr><td>C–D</td><td></td><td></td><td></td><td>Datum:</td></tr>
<tr><td>D–A</td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="4"></td><td rowspan="11">Location diagram:</td></tr>
<tr><td colspan="4">Altitude (m)</td></tr>
<tr><td colspan="4">Physiography: ridge gully face terrace</td></tr>
<tr><td colspan="4">Aspect (0 - 359°)</td></tr>
<tr><td colspan="4">Slope (°) concave convex linear</td></tr>
<tr><td colspan="4">Average top height (m)</td></tr>
<tr><td colspan="4">Canopy Cover (%)</td></tr>
<tr><td colspan="4">Cultural: none burnt logged cleared
mined grazed tracked</td></tr>
<tr><td colspan="4">Subplots outside survey area:</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td colspan="4">Dominant tree species:</td><td>Approach notes:</td></tr>
<tr><td colspan="4"></td><td></td></tr>
<tr><td colspan="4"></td><td></td></tr>
<tr><td colspan="4">Other plant species:</td><td></td></tr>
<tr><td colspan="4"></td><td></td></tr>
<tr><td colspan="4">Fauna:</td><td>Notes:</td></tr>
<tr><td colspan="4"></td><td></td></tr>
<tr><td colspan="4"></td><td></td></tr>
<tr><td colspan="4"></td><td></td></tr>
</table>

APPENDIX 3. FOLIAR COVER SCALE



APPENDIX 4. STEM DIAMETER RECORD SHEET

Plot Identifier:	Measured by:
Date:	Recorded by:

Subplot	Tag No.	Local name	Botanical name	Diameter	Notes

APPENDIX 5. DRAWA CARBON BUDGET & PRICING SPREADSHEET

Supplied separately

APPENDIX 6. ELIGIBLE FOREST BOUNDARY INSPECTION TEMPLATE

Project Boundary Inspection Data Entry Template		
Project Boundary Inspection Key Data		
A	Project Name	
B	Inspection Date	
C	Project Management Report Number	
D	GPS Settings	

Forest Management Area (FMA) Data (repeat for each FMA)					
1	Forest Management Area (FMA)				
2	Transect Base Point (TBP)				
3	Key Identifiers	Select up to 4 landmarks identifiable by aerial imagery as anchor points linking ground based data with aerial imagery data			
		Name/Description		GPS Location	
	Key Identifier 1	E.g. Road Intersection with fence line 20m SW of TBP			
	Key Identifier 2				
	Key Identifier 3				
	Key Identifier 4				
4	Eligible Forest Area Boundary (GPS Readings @ 50m intervals)				
	GPS File number				
	Boundary Survey (record all events and enter additional lines as necessary)				
5	Evidence of Reversal		Description	GPS Location	Photo
	Timber Harvesting	1	Description: Cause: Avoidable/unavoidable: Remedy:		Y/N
		2			Y/N
	Fire	1			Y/N
		2			Y/N
	Forest Health	1			Y/N
		2			Y/N
6	Evidence of Addition		Description	GPS Location	Photo
		1			Y/N
		2			Y/N
7	Notes				

APPENDIX 7. ELIGIBLE FOREST AREA INSPECTION TEMPLATE

Project Area Inspection Data Entry Template		
Project Area Inspection Key Data		
A	Project Name	
B	Inspection Date	
C	Project Management Report Number	
D	GPS Settings	

Forest Management Area (FMA) Data (repeat for each FMA)						
1	Forest Management Area (FMA)					
2	Transect Base Point (TBP)					
3	Transect Method	Large Area		Medium Area		Small Area
4	Transect Datum Line Compass Bearing					
5	Transect Starting Point	Enter last two or last random number digit		Description of how Transect Starting Point was positioned		
6	Sketch of transect location in FMA					
7	Transect Survey (record all events and enter additional lines as necessary)					
	Evidence of Reversal		Description		GPS Location	Photo
	Timber Harvesting	1	Description: Cause: Avoidable/unavoidable: Remedy:			Y/N
		2				Y/N
	Fire	1				Y/N
		2				Y/N
	Cyclone	1				Y/N
		2				Y/N
	Forest Health	1				Y/N
		2				Y/N
	Other	1				Y/N
		2				Y/N
8	Notes					

APPENDIX 8. DE MINIMIS HARVESTING INSPECTION TEMPLATE

Project Area Inspection Data Entry Template		
Project Area Inspection Key Data		
A	Project Name	
B	Inspection Date	
C	Project Management Report Number	
D	GPS Settings	

Forest Management Area (FMA) Data (repeat for each FMA)					
1	Forest Management Area (FMA)				
2	Transect Base Point (TBP)				
3	Transect Method	Large Area	Medium Area	Small Area	
4	Transect Datum Line Compass Bearing				
5	Transect Starting Point	Enter last two or last random number digit	Description of how Transect Starting Point was positioned		
6	Sketch of transect location in FMA				
7	Transect Survey (record all events and enter additional lines as necessary)				
	Evidence of *de minimis* timber harvesting		Description	GPS Location	Photo
	Harvest event	1	Stem Diameter: Species:		Y/N
		2	Stem Diameter: Species:		Y/N
8	Notes				

APPENDIX 9. ACTIVITY SHIFTING INSPECTION TEMPLATE

Project Area Inspection Data Entry Template		
Project Area Inspection Key Data		
A	Project Name	
B	Inspection Date	
C	Project Management Report Number	
D	GPS Settings	

Forest Management Area (FMA) Data (repeat for each FMA)					
1	Forest Management Area (FMA)				
2	Transect Base Point (TBP)				
3	Transect Method	Large Area	Medium Area	Small Area	
4	Transect Datum Line Compass Bearing				
5	Transect Starting Point	Enter last two or last random number digit	Description of how Transect Starting Point was positioned		
6	Sketch of transect location in FMA				
7	Transect Survey (record all events and enter additional lines as necessary)				
	Evidence of Activity Shifting	Description		GPS Location	Photo
	Harvest event	1	Area affected (ha):		Y/N
		2	Area affected (ha):		Y/N
8	Notes				

APPENDIX 10. ADDITIONALITY ASSESSMENT

This project applies the most recent VCS tool for the demonstration of additionality for IFM Projects:

> *Tool for the Demonstration and Assessment of Additionality in IFM Project Activities, VT0002 v1.0.*

APPLICABILITY CONDITIONS

The tool is applicable under the following conditions:

- *The IFM project activity is eligible under the current VCS IFM types (see VCS Tool for AFOLU Methodological Issues);*
- *Activities within the proposed project boundary performed with or without being registered as IFM project activity shall not lead to violation of any applicable law even if the law is not enforced;*
- *The use of this tool to determine additionality requires the baseline methodology to provide for an approach justifying the determination of the most plausible baseline scenario. Project proponents proposing new baseline methodologies shall ensure consistency between the determination of a baseline scenario and the determination of additionality of a project activity.*

This project meets each of the applicability conditions listed above. This project applies an Improved Forest Management – Logged to Protected Forest activity type. This project as designed does not and will not violate any applicable laws. The baseline methodology provides for an approach that justifies the determination of the most plausible baseline scenario. The new methodology developed for this project has ensured consistency between the determination of a baseline scenario and the determination of additionality of the project activity.

PROCEDURE

Project proponent(s) shall apply the following four steps:

(a) STEP 0. Preliminary screening based on the starting date of the IFM project activity

(b) STEP 1. Identification of alternative land use scenarios to the IFM project activity;

(c) STEP 2. Investment analysis to determine that the proposed project activity is not the most economically or financially attractive of the identified land use scenarios; or

(d) STEP 3. Barriers analysis; and

(e) STEP 4. Common practice analysis.

STEP 0: PRELIMINARY SCREENING BASED ON THE STARTING DATE OF THE IFM PROJECT ACTIVITY

The VCS IFM Additionality Tool requires the following:

The project crediting start date and project start date shall be in accordance with the most recent version of the applicable VCS requirements.

This project does not formally apply a VCS methodological requirement, but applies the Nakau Programme *Technical Specifications Module (C) 1.1 (IFM-LtPF): Improved Forest Management – Logged to Protected Forest v1.0* validated to the Plan Vivo standard. This Technical Specifications Module has been developed in accordance with the VCS AFLOU Requirements v3.4. The activity type is equivalent to the VCS activity type Improved Forest Management – Logged to Protected Forest (LtPF) (see VCS AFOLU Requirements v3.4 p 18, 34, 36, 46, 53.

STEP 1: IDENTIFICATION OF ALTERNATIVE LAND USE SCENARIOS

Sub-step 1a. Identify credible alternative land use scenarios

The VCS IFM Additionality Tool requires projects to undertake the following:

Identify realistic and credible land-use scenarios that would have occurred on the land within the proposed project boundary in the absence of IFM project activity under the VCS. The scenarios should be feasible for the project proponents or similar project developers taking into account relevant national and/or sectoral policies and circumstances, such as historical land uses, practices and economic trends. The identified land use scenarios shall at least include:

- *Projected forest degradation as estimated using the applicable baseline methodology;*
- *Avoiding forest degradation of the land within the project boundary performed without being registered as the IFM project activity;*
- *If applicable, IFM activities of at least a part of the land within the project boundary of the proposed IFM project at a rate resulting from:*
    - *Legal requirements; or*
    - *Extrapolation of observed activities improving forest management in the geographical area with similar socio-economic and ecological conditions to the proposed IFM project activity occurring in the 10-year period before the Project Start Date, as selected by the project proponent.*

For identifying the realistic and credible land-use scenarios, land use records, field surveys, data and feedback from stakeholders, and information from other appropriate sources, including Participatory rural appraisal (PRA) may be used as appropriate.

Realistic and credible land use scenarios that would have occurred on the land within the Eligible Forest Area in the absence of this project include:

- Conventional logging

- Piece-meal forest degradation following conventional logging through local harvests of timber for domestic uses
- Clearance of degraded forest for cash cropping such as cocoa, coffee, yaqona.

This land use is consistent with local development and land use trends, evidenced by land use activities on neighbouring lands and throughout Fiji.

The projected forest degradation as estimated using the applicable baseline methodology is provided in Appendix 5.

No avoided degradation is projected to take place within the eligible forest area in the baseline. Note that the baseline is conventional logging and does not include:

- Piece-meal forest degradation following conventional logging through local harvests of timber for domestic uses
- Clearance of degraded forest for cash cropping such as cocoa, coffee, yaqona.

This project asserts that the baseline is therefore conservative.

The VCS IFM Additionality Tool requires projects to undertake the following:

All identified land use scenarios must be credible. All land-uses within the boundary of the proposed IFM project activity or the geographical area with similar socio-economic and ecological conditions to the proposed IFM project activity, that are currently existing or that existed at some time in the 10-year period before the Project Start Date but no longer exist, may be deemed realistic and credible. For all other land use scenarios, credibility shall be justified. The justification shall include elements of spatial planning information (if applicable) or legal requirements and may include assessment of economical feasibility of the proposed land use scenario.

Justification for the assertion that the land use scenarios described above are credible stems from the fact that these are the predominant land use types for this part of Fiji, and such land use exists on neighbouring lands.

The VCS IFM Additionality Tool requires projects to undertake the following:

(b) Outcome of Sub-step 1a: List of credible alternative land use scenarios that could have occurred on the land within the project boundary of the VCS IFM project.

- Conventional logging
- Piece-meal forest degradation following conventional logging through local harvests of timber for domestic uses
- Clearance of degraded forest for cash cropping such as cocoa, coffee, yaqona.

Sub-step 1b. Consistency of credible land use scenarios with laws and regulations

The VCS IFM Additionality Tool requires projects to apply the following procedure:

Demonstrate that all land use scenarios identified in the sub-step 1a: are in compliance with all mandatory applicable legal and regulatory requirements;

This project asserts that the baseline activity is that the Drawa landowners undertake conventional logging lands within the Eligible Forest Area. This involves harvesting timber at an 80% harvest rate through a 15-year rotation until forest degradation renders the area uneconomic for commercial timber harvesting (i.e. after 45 years).

This kind of land management activity is compliant with the following:

- Forest Decree 1992 - the main law regulating forest use in Fiji.
- iTaukei Land Trust (Leases and Licenses) Regulations 1984 governs the leasing of iTaukei Lands for commercial timber extraction.

List of plausible alternative land use scenarios that are in compliance with mandatory legislation and regulations taking into account their enforcement in Fiji:

- Conventional logging
- Piece-meal forest degradation following conventional logging through local harvests of timber for domestic uses
- Clearance of degraded forest for cash cropping such as cocoa, coffee, yaqona.

The VCS IFM Additionality Tool requires projects to apply the following procedure:

If an alternative does not comply with all mandatory applicable legislation and regulations, then show that, based on an examination of current practice in the region in which the mandatory law or regulation applies, those applicable mandatory legal or regulatory requirements are systematically not enforced and that non-compliance with those requirements is widespread, i.e. prevalent on at least 30% of the area of the smallest administrative unit that encompasses the project area;

Alternative land uses listed above all comply with forestry, land use and agriculture legislation and regulations in Fiji, are common practice, and are practiced on neighbouring lands.

The VCS IFM Additionality Tool requires projects to apply the following procedure:

Remove from the land use scenarios identified in the sub-step 1a, any land use scenarios which are not in compliance with applicable mandatory laws and regulations unless it can be shown these land use scenarios result from systematic lack of enforcement of applicable laws

and regulations.

Not applicable.

The VCS IFM Additionality Tool requires projects to apply the following procedure:

Outcome of Sub-step 1b: *List of plausible alternative land use scenarios to the IFM project activity that are in compliance with mandatory legislation and regulations taking into account their enforcement in the region or country and any VCS decisions on national and/or sectoral policies and regulations.*

If the list resulting from the Sub-step 1b is empty or contains only one land use scenario, then the proposed IFM project activity is not additional.

List of plausible alternative land use scenarios that are in compliance with mandatory legislation and regulations taking into account their enforcement in Fiji:

- Conventional logging
- Piece-meal forest degradation following conventional logging through local harvests of timber for domestic uses
- Clearance of degraded forest for cash cropping such as cocoa, coffee, yaqona.

Sub-step 1c. Selection of the baseline scenario:

According to the VCS IFM Additionality Tool:

The baseline methodology that would use this tool shall provide for a stepwise approach justifying baseline forest degradation and the post-degradation land use and carbon stocks.

→ Proceed to Step 2 (Investment analysis) or Step 3 (Barrier analysis), as it is necessary to undertake at least one of them.

This project elects to undertake a Barrier Analysis and thereby moves directly to Step 3 below.

STEP 2. INVESTMENT ANALYSIS

The VCS IFM Additionality Tool requires projects to:

Determine whether the proposed project activity, without carbon market-related revenues, is economically or financially less attractive than at least one of the other land use scenarios. Investment analysis may be performed as a stand-alone additionality analysis or in connection to the Barrier analysis (Step 3). To conduct the investment analysis, use the following sub-steps:

Sub-step 2a. Determine appropriate analysis method

The VCS IFM Additionality Tool requires projects to:

Determine whether to apply simple cost analysis, investment comparison analysis or benchmark analysis (sub-step 2b). If the IFM project activity generates no financial or economic benefits other than carbon market-related income, then apply the simple cost analysis (Option I). Otherwise, use the investment comparison analysis (Option II) or the benchmark analysis (Option III). Note, that Options I, II and III are mutually exclusive, hence, only one of them can be applied.

Not applicable.

Sub-step 2b. – Option I. Apply simple cost analysis

The VCS IFM Additionality Tool requires projects to:

Document the costs associated with the IFM project activity and demonstrate that the activity produces no financial benefits other than carbon market-related income.

If activities improving forest management in the project area or in the geographical area with similar socio-economic and ecological conditions to the proposed IFM project activity occurring in the 10-year period before the Project Start Date have disappeared, the project proponents shall identify incentives/reasons/actions that allowed for the past activities improving forest management and demonstrate that the current legal/financial or other applicable regulations or socio-economical or ecological or other local conditions have changed to an extent that justifies the conclusion that the activity produces no financial benefits other than carbon market-related income.

→ If it is concluded that the proposed VCS AFOLU project produces no financial benefits other than VCS related income then proceed to Step 4 (Common practice analysis).

Not applicable.

Sub-step 2b. – Option II. Apply investment comparison analysis

The VCS AFOLU Additionality Tool requires projects to:

Identify the financial indicator, such as IRR (investment rate of return), NPV (net present value), payback period, cost benefit ratio most suitable for the project type and decision-making context.

Not applicable.

Sub-step 2b – Option III. Apply benchmark analysis

The VCS IFM Additionality Tool requires projects to:

Identify the financial indicator, such as IRR, NPV, payback period, cost benefit ratio, or other (e.g. required rate of return (RRR) related to investments in agriculture or forestry, bank deposit interest rate corrected for risk inherent to the project or the opportunity costs of land, such as any expected income from land speculation) most suitable for the project type and decision context. Identify the relevant benchmark value, such as the required rate of return (RRR) on equity. The benchmark is to represent standard returns in the market, considering the specific risk of the project type, but not linked to the subjective profitability expectation or risk profile of a particular project developer. Benchmarks can be derived from:

- *Government bond rates, increased by a suitable risk premium to reflect private investment and/or the project type, as substantiated by an independent (financial) expert;*

- *Estimates of the cost of financing and required return on capital (e.g., commercial lending rates and guarantees required for the country and the type of project activity concerned), based on bankers views and private equity investors/funds¨ required return on comparable projects;*

- *A company internal benchmark (weighted average capital cost of the company) if there is only one potential project developer (e.g., when the proposed project land is owned or otherwise controlled by a single entity, physical person or a company, who is also the project developer). The project developers shall demonstrate that this benchmark has been consistently used in the past, i.e., that project activities under similar conditions developed by the same company used the same benchmark.*

Not applicable.

Sub-step 2c. Calculation and comparison of financial indicators

According to the VCS IFM Additionality Tool those projects electing Options II and III are required to calculate and compare financial indicators as follows:

Calculate the suitable financial indicator for the proposed IFM project activity without the financial benefits from carbon finance and, in the case of Option II above, for the other land use scenarios. Include all relevant costs (including, for example, the investment cost, the operations and maintenance costs), and revenues (excluding carbon market revenues, but including subsidies/fiscal incentives where applicable), and, as appropriate, non-market cost and benefits in the case of public investors.

Present the investment analysis in a transparent manner and provide all the relevant assumptions in the VCS PD, so that a reader can reproduce the analysis and obtain the same results. Clearly present critical economic parameters and assumptions (such as capital costs,

lifetimes, and discount rate or cost of capital). Justify and/or cite assumptions in a manner that can be validated by the validator. In calculating the financial indicator, the project's risks can be included through the cash flow pattern, subject to project-specific expectations and assumptions (e.g. insurance premiums can be used in the calculation to reflect specific risk equivalents).

Assumptions and input data for the investment analysis shall not differ across the project activity and its alternatives, unless differences can be well substantiated.

Present in the VCS PD submitted for validation a clear comparison of the financial indicator for the proposed IFM project activity without the financial benefits from carbon finance and:

Option II (investment comparison analysis): If one of the other land use scenarios has the better indicator (e.g. higher IRR), then the IFM project activity cannot be considered as financially attractive; or

Option III (benchmark analysis): If the IFM project activity has a less favourable indicator (e.g. lower IRR) than the benchmark, then the IFM project activity cannot be considered as financially attractive.

→ If it is concluded that the proposed IFM project activity without the financial benefits from carbon finance is not financially most attractive then proceed to Step 2d (Sensitivity Analysis).

Not applicable.

Sub-step 2d. Sensitivity analysis

According to the VCS IFM Additionality Tool those projects electing Options II and III are required to undertake a sensitivity analysis as follows:

Include a sensitivity analysis that shows whether the conclusion regarding the financial attractiveness is robust to reasonable variations in the critical assumptions. The investment analysis provides a valid argument in favour of additionality only if it consistently supports (for a realistic range of assumptions) the conclusion that the proposed IFM project activity without the financial benefits from carbon finance is unlikely to be financially attractive.

If activities improving forest management in the project area or in the geographical area with similar socio-economic and ecological conditions to the proposed IFM project activity occurring in the 10-year period before the Project Start Date have disappeared, the project proponents shall demonstrate that incentives/reasons/actions that allowed for the past activities have changed to an extent that affects the financial attractiveness of such activities in the project area without being registered as the IFM project.

- *If after the sensitivity analysis it is concluded that the proposed IFM project activity without the financial benefits from carbon finance is unlikely to be financially most*

attractive (Option II and Option III), then proceed directly to Step 4 (Common practice analysis).

- *If after the sensitivity analysis it is concluded that the proposed IFM project activity is likely to be financially most attractive (Option II and Option III), then the project activity cannot be considered additional by means of financial analysis. Optionally proceed to Step 3 (Barrier analysis) to prove that the proposed project activity faces barriers that do not prevent the baseline land use scenario(s) from occurring. If the Step 3 (Barrier analysis) is not employed then the project activity cannot be considered additional.*

Not applicable.

STEP 3. BARRIER ANALYSIS

According to the VCS IFM Additionality Tool projects can elect to undertake a barrier analysis instead of or as an extension of investment analysis:

Barrier analysis may be performed as a stand-alone additionality analysis or as an extension of investment analysis.

If this step is used, determine whether the proposed project activity faces barriers that:

- *Prevent the implementation of this type of proposed project activity; and*
- *Do not prevent the implementation of at least one of the alternative land use scenarios.*

Use the following sub-steps:

The proposed project activity of forest protection faces barriers that prevent the implementation of this type of proposed project activity. These barriers do not prevent the implementation of at least one of the alternative land use scenarios.

Sub-step 3a. Barriers that would prevent the proposed project activity

When undertaking a Barrier Analysis the VCS IFM Additionality Tool requires projects to:

Establish that there are barriers that would prevent the implementation of the type of proposed project activity from being carried out if the project activity was not registered as an IFM activity. The barriers should not be specific to the project or the project proponent(s). Such barriers may include, among others:

- *Investment barriers, other than the economic/financial barriers in Step 2 above, inter alia:*
    - *For IFM project activities undertaken and operated by private entities: Similar activities have only been implemented with grants or other non-commercial finance terms. In this context similar activities are defined as activities of a similar scale that take place in a comparable environment with respect to regulatory framework and are undertaken in the relevant geographical area;*

- *Debt funding is not available for this type of project activity;*
- *No access to international capital markets due to real or perceived risks associated with domestic or foreign direct investment in the country where the project activity is to be implemented, as demonstrated by the credit rating of the country or other country investment reports of reputed origin;*
- *Lack of access to credit.*

- *Institutional barriers, inter alia:*
  - *Risk related to changes in government policies or laws;*
  - *Lack of enforcement of forest or land-use-related legislation.*
- *Technological barriers, inter alia:*
  - *Lack of access to planting materials (e.g. if plantations are a leakage avoidance*
  - *strategy);*
  - *Lack of technological know-how of implementing improved forest management;*
  - *Lack of infrastructure for implementation of the technology.*
- *Barriers related to local tradition, inter alia:*
  - *Traditional knowledge or lack thereof, laws and customs, market conditions,*
  - *practices;*
  - *Traditional equipment and technology.*
- *Barriers due to prevailing practice, inter alia:*
  - *The project activity is the "first of its kind": No project activity of this type is currently operational in the host country or region;*
- *Barriers due to social conditions, inter alia:*
  - *Demographic pressure on the land (e.g. increased demand on land due to population growth);*
  - *Social conflict among interest groups in the region where the project takes place;*
  - *Widespread illegal practices (e.g. illegal grazing, non-timber product extraction and tree felling);*
  - *Lack of skilled and/or properly trained labour force;*
  - *Lack of organisation of local communities.*
- *Barriers relating to land tenure, ownership, inheritance, and property rights, inter alia:*
  - *Communal land ownership with a hierarchy of rights for different stakeholders limits the incentives to undertake IFM activity;*
  - *Lack of suitable land tenure legislation and regulation to support the security of tenure;*
  - *Absence of clearly defined and regulated property rights in relation to natural resource products and services;*
  - *Formal and informal tenure systems that increase the risks of fragmentation of land holdings.*

The communities of the Drawa Block of rainforest in western Vanua Levu have basic socio-economic needs and aspirations relating to local community infrastructure establishment and/or enhancement. Infrastructure in need of establishment and/or enhancement in the villages at the Project Site include access to sanitation, piped water, electricity, housing, transportation, and health care for current and future generations of landowners. The Drawa landowners also aspire to gaining access to employment for household cashflows to raise the standard of living for individual families in this community. There is also a desire to generate localised employment to stem the tide of outmigration from villages to urban centres, and preserve the local village labour force as best as possible.

In remote forested areas in Fiji, the normal means of generating both capital for community infrastructure development and cash flows for families is through either removal of indigenous forest followed by agricultural production or plantation forestry, or conventional logging of indigenous timber species without changing from a forest to non-forest land use, or changing to non-forest land uses only gradually and in patchy distribution at decadal timescales.

In the absence of counter-measures capable of delivering economic development capable of supporting local economic development needs and aspirations, landowners have few options but to pursue conventional logging for economic development.

In contrast, neighbouring communities that have pursued conventional logging have increased their access to such economic development in the form of community infrastructure, employment and income. The on-going economic development opportunities associated with conventional logging and activities made available on degraded forest lands has benefited communities that have elected to undertake conventional logging.

Notable in this regard is the decision of the Vulavuladamu and Navoatu clans to exit this rainforest protection project in early 2015 after three years of project development. These clans exited the project in order to pursue conventional logging activities, which resulted in the project decreasing in size by 24%. The reason for this exit was due to the compelling need for community economic development that these clans felt could only be delivered (at sufficiently low financial risk) through conventional logging.

Prior to these two clans exiting the project, other neighbouring clans were continuing with conventional logging up to the project boundary.

It is clear that local poverty combined with demand for basic economic development combined with the availability of low financial risk development solutions through conventional logging means that in the absence of this project the baseline of conventional logging would occur in the Eligible Forest Area.

When undertaking a Barrier Analysis the VCS IFM Additionality Tool requires projects to address the following:

The identified barriers are only sufficient grounds for demonstration of additionality if they

would prevent potential project proponents from carrying out the proposed project activity if it was not expected to be registered as a IFM project activity.

If the project was not registered as an IFM project activity, the consequent absence of carbon revenues would mean that the conservation opportunity costs would not be addressed. Accordingly, without an IFM project the reasonable demand among landowners for modest community economic development in proportion with their means (i.e. in proportion with their own resources capable of driving economic development) would remain undelivered. This reasonable demand (without the IFM project activity) would compel the landowners to turn to the baseline activity as the most plausible land use scenario in the absence of this project.

When undertaking a Barrier Analysis the VCS IFM Additionality Tool requires projects to:

Provide transparent and documented evidence, and offer conservative interpretations of this documented evidence, as to how it demonstrates the existence and significance of the identified barriers. Anecdotal evidence can be included, but alone is not sufficient proof of barriers. The type of evidence to be provided may include:

- *Relevant legislation, regulatory information or environmental/natural resource management norms, acts or rules;*
- *Relevant (sectoral) studies or surveys (e.g. market surveys, technology studies, etc) undertaken by universities, research institutions, associations, companies, bilateral/multilateral institutions, etc;*
- *Relevant statistical data from national or international statistics;*
- *Documentation of relevant market data (e.g. market prices, tariffs, rules);*
- *Written documentation from the company or institution developing or implementing the IFM project activity or the IFM project developer, such as minutes from Board meetings, correspondence, feasibility studies, financial or budgetary information, etc.;*
- *Documents prepared by the project developer, contractors or project partners in the context of the proposed project activity or similar previous project implementations;*
- *Written documentation of independent expert judgments from agriculture, forestry and other land-use related Government / Non-Government bodies or individual experts, educational institutions (e.g. universities, technical schools, training centres), professional associations and others.*

The landowners of the Drawa block have been pursuing an as yet unfulfilled pursuit to gain access to modest forms of economic development through utilizing their forests since the late 1990s (Fung 2005). This involved the establishment of a project to undertake commercially viable sustainable forest management timber harvesting with the technical support of the Secretariat of the Pacific Community and the GTZ Pacific German Regional Forestry Project (PGRFP) (Fung 2005; Drawa Forest Management Plan n.d.). This project was developed and piloted between 1999 and 2009, and while technically feasible it did not succeed commercially. The local demand for economic development did not abate, and so in 2011 the Fiji Department of Forests invited the Project Coordinator (Live & Learn Fiji) to

develop a forest carbon project as a pilot project within the framework of the Naitonal REDD+ programme.

To reiterate the tangible threat to the carbon stored in these forests: Two landowning groups exited the project in early 2015 to pursue conventional logging as a means to access economic development using their own resources. These two landowning clans (mataqali Vulavuladamu and mataqali Navoatu) were part of the SPC/GTZ Drawa sustainable forest management project, and participants of this rainforest carbon project during the first three years of project development. They came to the decision that their well-being and access to economic development was best served by means of conventional logging – an activity well proven beyond (but adjacent to the original project boundary and throughout Fiji).

When undertaking a Barrier Analysis the VCS IFM Additionality Tool requires projects to address the following:

If activities improving forest management in the project area or in the geographical area with similar socio-economic and ecological conditions to the proposed IFM project activity occurring in the 10-year period before the Project Start Date have disappeared, the project proponent shall identify incentives/reasons/actions/that allowed for the past activity and shall demonstrate that the current legal/financial or other applicable regulations or ecological or other local conditions have changed to the extent that they pose a barrier which allows for conclusion that repetition of the activity performed without being registered as the IFM project activity is not possible.

The Drawa sustainable forest management project operated by SPC/GTZ and the Drawa landowners did not succeed commercially. For this reason it could be considered to have completed the project development phase of the project cycle, but did not successfully transition to project implementation. As such, there have been no IFM project activities implemented on the project site in the 10-year period before the project start date, apart from pilot sustainable forest management logging in a small part of the Eligible Forest Area (this has been accounted for in the carbon accounting in this project).

Sub-step 3b. Barriers not preventing alternative land use scenarios

When undertaking a Barrier Analysis the VCS IFM Additionality Tool requires projects to:

If the identified barriers also affect other land use scenarios, explain how they are affected less strongly than they affect the proposed IFM project activity. In other words, explain how the identified barriers are not preventing the implementation of at least one of the alternative land use scenarios. Any land use scenario that would be prevented by the barriers identified in Sub-step 3a is not a viable alternative, and shall be eliminated from consideration. At least one viable land use scenario shall be identified.

- *If both Sub-steps 3a – 3b are satisfied, then proceed directly to Step 4 (Common practice analysis).*

- *If one of the Sub-steps 3a – 3b is not satisfied then the project activity cannot be considered additional by means of barrier analysis. Optionally proceed to Step 2 (Investment analysis) to prove that the proposed IFM project activity without the financial benefits from carbon markets is unlikely to produce economic benefit (Option I) or to be financially attractive (Option II and Option III). If the Step 2 (Investment analysis) is not employed then the project activity cannot be considered additional.*

The barrier to a project to permanently protect the indigenous forest at Drawa is the inability of a protected forest to cater to the reasonable (and very basic) socio-economic development needs and aspirations of the local community, now and into the future. This barrier to rainforest protection is not a barrier to the implementation of any of the alternative land use scenarios identified. The conventional logging baseline scenario directly overcomes the barrier to economic development posed by the long-term protection of the indigenous forest.

STEP 4. COMMON PRACTICE ANALYSIS

According to the VCS IFM Additionality Tool:

The previous steps shall be complemented with an analysis of the extent to which similar activities improving forest management have already diffused in the geographical area of the proposed IFM project activity. This test is a credibility check to demonstrate additionality that complements the barrier analysis (Step 2) and the investment analysis (Step 3).

Provide an analysis to which extent similar activities improving forest management to the one proposed as the IFM project activity have been implemented previously or are currently (i.e. at the time the project participants involved considered the incentives from carbon finance) underway. Similar activities are defined as those which are of similar scale, take place in a comparable environment, inter alia, with respect to the regulatory framework and are undertaken in the relevant geographical area, subject to further guidance by the underlying methodology. Other registered IFM project activities shall not be included in this analysis. Provide documented evidence and, where relevant, quantitative information. Limit your considerations to the 10-year period prior to the Project Start Date.

If activities improving forest management similar to the proposed IFM project activity are identified, then compare the proposed project activity to the other similar activities and assess whether there are essential distinctions between them. Essential distinctions may include a fundamental and verifiable change in circumstances under which the proposed IFM project activity will be implemented when compared to circumstances under which similar activities were carried out. For example, barriers may exist, or promotional policies may have ended. If certain benefits rendered the similar forestation activities financially attractive (e.g., subsidies or other financial flows), explain why the proposed IFM project activity cannot use the benefits. If applicable, explain why the similar activities did not face barriers to which the proposed IFM project activity is subject.

→ If Step 4 is satisfied, i.e. similar activities can be observed and essential distinctions between the proposed IFM project activity and similar activities cannot be made, then the proposed IFM project activity cannot be considered additional. Otherwise, the proposed IFM project activity is not the baseline scenario and, hence, it is additional.

The baseline activity of conventional logging is the predominant land use activity in all neighbouring lands, in the region of western Vanua Levu and also the predominant land use for village based economic development throughout rural Fiji where indigenous forest is available for timber production.

The project activity is the first of its kind in Fiji (i.e. payment for ecosystem services) and so there is no opportunity to compare it with similar activities that have already diffused in the geographical area of the proposed project.

APPENDIX 11: DRAWA PROFILE REPORT

Supplied separately

APPENDIX 12: PRE-HARVEST INVENTORY

Supplied separately