Babatana Rainforest Conservation Project

Project Description Part B: PES Accounting

An Improved Forest Management Project at Babatana, Choisel, Solomon Islands

D3.2B V1.0 20200901

NRDF

Sirebe Tribal Association

NAKAU

A project of the Natural Resources Development Foundation in collaboration with The Nakau Programme Pty Ltd.

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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 Babatana Rainforest Conservation Project qualified as forest land as of 31 December 2009. This forest is a tropical lowland and hill rainforest and was established prior to the 20th century (natural unlogged primary forest).

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 only 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 Babatana Rainforest Conservation Project takes place on land where there is legal sanction to 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 Protected Area under the *Protected Areas Act 2010* (Appendix 2a and 2b) under the category *Resource Management Area*. Each tribal group joining the project, as outlined in section 2.4.1.1 in PD Part A, will legally register their own Protected Area and be an independent sub-project. Each tribal group is currently in the process of declaring their tribal land as protected and have signed project development agreements with NRDF. Tribal groups will join the grouped project as separate participants and their areas will be treated as individual sub-projects and will need to provide a simplified PD as described in PD A and approved with the Plan Vivo standard. At project commencement, The Sirebe Tribal Group has used the *Protected Areas Act 2010* legislation to legally protect their land as a designated protected area, for the purposes of the Babatana Rainforest Conservation Project.

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:

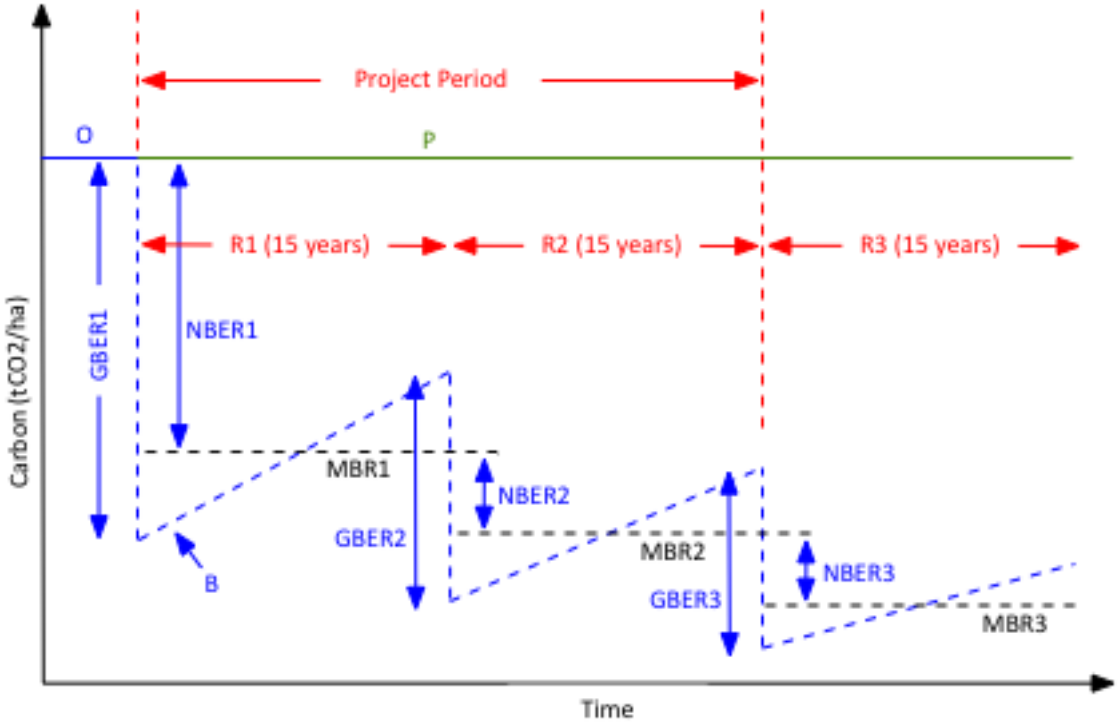
a. Unlogged Forest: Where there is no evidence of prior logging or no record of prior logging. Unlogged Forest is not eligible to claim enhanced removal carbon benefits in this methodology. Project activities will protect this unlogged forest from timber harvesting, apart from *de minimis*[2] non-commercial 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).

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

As a grouped project, the Babatana Rainforest Conservation project is intended to include (recruit) a range of tribal areas over time. The Sirebe Tribal Lands are the first to seek validation under the grouped project. Their land comprises 806.19 hectares of unlogged forest only.

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

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

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.

Each tribal group participating in the Babatana Grouped Project will form a Tribal Association and a Community Company. Each Tribal Association and Community company will need to sign their own PES agreements, which will be submitted with a simplified PD.

The *Solomon Charitable Trust Act (Cap. 115) 1996* governs the formation of associations. The Sirebe Tribe and all its members are legally represented by the Sirebe Tribal Association (STA), a charitable trust established under the *Solomon Islands Charitable Trusts Act 1996 (Cap. 115).*

The STA has registered a local Community Company, the Sirebe Community Company Ltd. (SCCL) to enable participation in commercial activities. The *Companies ACT 2009 and Regulations 2010* governs such company establishment. The STA is the sole shareholder in the SCCL.

The registering of the Sirebe Tribe Association Trust Board (STA) and the Sirebe Community Company Ltd. (SCCL) is evidence of the project being compliant with these Acts (Refer PD Part A Appendices 10 & 12). The STA holds the land management rights associated with the Project Area determined through the declaration of a Protected Area.

The *Constitution of the Solomon Islands 1978* states that 'the natural resources of our country are vested in the people and the government of Solomon Islands'. Custom land registration has not, however, occurred for the entire country.

To determine ownership, the Sirebe tribal land boundaries have been surveyed and confirmed by the Lauru Land Conference of Tribal Communities (LLCTC), a native registered organization

representing all the tribes within the Choiseul Province. As part of the Protected Area process, as determined by the Solomon Islands Government through the Protected Areas Act 2010 and the Protected Areas Regulations 2012, neighbouring tribes of Sirebe have signed a Memorandum Of Understanding (in PD Part A Appendix 1 MOUs Neighbouring tribes Sirebe) in which they verify the land boundaries on the maps presented and agree upon the declaration of the area as a Protected Area under the Protected Areas Act 2010, with the support of Protected Areas Regulations 2012 (See Appendix 2a and Appendix 2b).

Through genealogy research that was done together with the LLCTC in 2015, all individual landowners of the Sirebe Tribe were identified and registered as the true and rightful landowners (in PD Part A, Appendix 2 Sirebe Genealogy). According to Choiseul custom these rightful landowners also own all the rights of the available resources on the land.

In August 2017 the Protected Area was publicly announced by the Ministry of Environment in the national newspapers and through notices displayed in all main settlements and centres in Choiseul Province. The Sirebe tribe was challenged by the Qoqopele tribe who claimed to have ownership of part of the proposed Protected Area. This led to a Customary Hearing (inquiry), facilitated by the Babatana Council of Chiefs in March 2018. The outcome of this hearing was in favour of the Sirebe tribe, recognizing them as the rightful owners of the area (in PD Part A, Appendix 3 Sirebe Tribe Custom Hearing Decision Report).

Carbon rights have not been clarified formally in the Solomon Islands however a Forest Carbon Rights Analysis conducted in 2012 states that:

> While it is clear that forest carbon on customary land is 'owned' by customary land 'owners', the individual, groups and clans in which that 'ownership' vests is not readily deducible from existing laws.[3]

As described above the legal process to clarify ownership of Sirebe Lands was clarified in 2015 through the Protected Areas Act 2010.

Sections 23 - 27 of the Forests Act 1999 describes how a group of customary owners on unregistered customary land can obtain a timber harvesting licence (ordinary or local). There is no impediment for the Sirebe landowners to undertake timber harvesting of their forest.

Leakage through logging shifting to other lands owned or managed by project participants (outside the bounds of the carbon project) will be avoided because all forested and non-forested land owned by project participants will be subject to land use plans. This will occur

[3] Corrin, J. (2012) REDD+ and Forest Carbon rights in SI, Background and legal analysis, (par 3.1.1). SPC/GIZ Regional Project. Accessed online: https://www.pacificclimatechange.net/document/redd-and-forest-carbon-rights-solomon-islands-background-legal-analysis

in the form of a Conservation Management Plan, which specifies zones for land use activities that specify where certain land use activities can occur in the project area. It is anticipated that participating tribes will protect all their forested land (under the Protected Areas Act), leaving non-forest areas for other planned activities. This does not leave any significant forest for activity shifting leakage to be possible.

Each tribal group participant will establish their own independent Conservation Management Plan and Protected Area. However, as circumstances between each participant may differ, activity-shifting leakage will be separately assessed for each project participant at verification.

For the Inception project, the Sirebe Tribal Association has established a Conservation Management Plan for the entirety for their 856 ha protected area, which includes all their tribal land, totaling 806.19 hectares of eligible forested area. As the Sirebe Tribal Association have committed the entirety of their tribal land to protection and they do not own or have access to any other land, activity shift leakage is not possible.

Table 1.1.5: Evidence Requirement: Specific Conditions	
#	Description
1.1.5a	Documentation to prove that Project Owner exists as a legal entity capable of acting as counterparty 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 Appendices 10 & 12 (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.
1.1.5d	Evidence of avoidance of activity shifting leakage to take the form of a leakage assessment using Section 5.2 of the Technical Specifications.
	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.

Sub-projects may have different start and finish dates, to be specified in each PES Agreement. All sub-projects will have a project period duration of 30 years.

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

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 Pre-Harvest 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.

3.1 BASELINE SELECTION, ADDITIONALITY AND BASELINE MODELLING

3.1.1 Selection of Baseline

[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

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 conventional logging with a methodology deviation that allows inclusion of illegal logging that is common practice in river buffer zones (see below).

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 activity is prevalent in the lands surrounding the Project Area. The land is suitable to the baseline activity in terms of aspect, soils, and topography as demonstrated by the land use in communities surrounding the Project Area.

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

There are no economic barriers to conventional logging in the project area. In fact, there are economic incentives for conventional logging, given the need among the landowners and community for economic development and the well-established and existing markets for timber, local and international.

There are no institutional or legal constraints to conventional logging at the project site. Areas around the Project Area have begun logging and committed to logging in the future, demonstrating the threat of logging.

3.1.2 Justification of Selected Baseline

The Project Coordinator asserts that the Baseline Scenario for forest management at the Babatana Rainforest Conservation Project area is conventional logging.

Currently, the Solomon Islands is the largest exporter of round logs to the international market, mainly to China, after Papua New Guinea. The logs are processed in China and

exported as tropical hardwood products across the global market. Over the last two decades the export of round logs have increased from around 850,000 m^3 to nearly 3 million m^3 in 2017/18. This level of harvesting is unsustainable and it is estimated that all natural forests in the Solomon Islands that are accessible to logging companies – i.e. not on a steep mountainside – will soon be commercially exhausted.[5]

The rapid and unsustainable harvesting of forest in the Solomon Islands occurs because it provides landowners' access to fast and easy cash income. Further, the Solomon Islands government is highly dependent on the logging industry because it is a large revenue provider for the country.

In the Solomon Islands, land tenure is defined through customary title to the people who live on it, and there are a number of measures in place to ensure that those people have the rights to decide if conventional logging can occur. However, investigations have demonstrated evidence to suggest that logging companies are not legally seeking local landowner permission. Corruption and land disputes are thriving in the Solomon's around logging.

Even if landowners morally object to logging on their land, the lack of alternatives for income often persuades them to conduct conventional logging. Currently, cash income is the main driver for landowners to opt for large-scale logging. NRDF have experienced this firsthand that tribes concluded their partnership with NRDF because the benefits of alternative land use activities were not perceived or received in a timely manner. This "feeling" has always been leveraged by the pro-loggers in the tribes to convince the community that logging is the right activity for the tribe. Logging companies operate all around the Babatana Rainforest Conservation Project area, which shows the tribes that logging is commercially successful on these neighbouring lands, without taking into account the environmental losses and social unrest that goes with it.

The closest alternative to conventional logging has been commercial sawmilling but this activity has never been developed itself as a competitive alternative for logging (see 3.1.3). Currently conventional logging is occurring on neighbouring tribal lands, including on customary registered land adjacent to Padezaka and Sirebe. The land adjacent is currently being logged by at least one commercial company. Conventional logging in the project area is compliant with the following Solomon Island Government Laws and regulations:

- Forests Act 1999
- Forest Resources and Timber Utilisation Act 2004
- Forest Resources and Timber Utilisation Regulations 2005
- Logging Code of Practice

We acknowledge that within the above-mentioned laws and regulations, conventional logging is not meant to occur within the designated river buffer zone, of 50 metres from the edge of

[5] PARADISE LOST How China can help the Solomon Islands protect its forests. Global witness 2018.

the stream. Logging within this buffer area is illegal, however, it is sanctioned with minimal policing and enforcement of government policy and considered common practise. In the technical specifications applied, we were supposed to ascertain that the illegal practise occurs on at least 30% of the area of the minimum administrative unit. We have applied a slight deviation to the methodology as we are not able to provide data to demonstrate this requirement. Firstly, logging in the project area has not occurred and is not set to occur due to the project intervention. Secondly, the geographic area does not have administrative units below the tribal land level, and we are unable to demonstrate that illegal logging is occurring at the lowest administrative unit at 30%. To supplement the quantitative material required, we provided evidence in Appendix 3 and Appendix 5, to demonstrate that conventional logging is the baseline activity and including logging in the river buffer. With the methodology deviation, we therefore assert that conventional logging (including illegal logging of buffer zones) is the most plausible activity in the absence of the PES project.

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 Conservation Baseline

Without carbon financing, conservation would not likely occur in the Babatana communities, given the need for economic development among the landowners. The economic development needs of the communities in the Babatana Rainforest Conservation Project are unable to be met under existing land use. Establishing forest protection is an expensive and unutilised activity in the Solomon Islands and Choiseul.

Sustainable Forest Management Baseline

Although timber milling with portable sawmills was once a viable industry in some parts of the Solomon Islands and was the possible alternative for logging, this activity never developed itself as a competitive alternative for logging in Choiseul. Currently most of the timber milled and exported comes from conventional logging operation sites where portable sawmills,

owned by the landowners, process a certain percentage of round logs into timber for the local and export markets.

With the assistance from NRDF the Sirebe tribe tried to develop a sustainable milling operation in 2012. They managed to enter FSC certification to enable them to export certified timber to international markets. However, the project was not successful and no timber reached the export market, mainly because it could not compete with coventional logging.

Sirebe is not the only tribe that had difficulties establishing and implementing a successful milling operation. Commercial SFM practitioners throughout the Pacific Islands region have found many barriers to commercial viability for community-based SFM. Many examples can be found in PNG, Vanuatu and Fiji.

Although community based SFM sawmill operations can (in theory) run profitably, a lack of resources, management and capacity commonly prevents commercial success. The main points of failure that NRDF has observed in its SFM sawmill operations are:

- A lack of capital to start operations
- No capital reserved for ongoing operational maintenance
- 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 spent on subsistence living and hence, family needs so no long-term development outcomes result from logging operations
- Logistical difficulties that cause operational costs to be prohibitively high.

This absence of commercial success in SFM in the Solomons and other Pacific Islands reinforces the justification for a conventional logging baseline for a PES project at Babatana.

NRDF has many years of experience with SFM and sawmilling and due to the many downsides and obstacles aforementioned, has decided to step away from sawmilling to promote other economic developments for landowners protecting their forest.

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 two strata:

1. Non-Forest (not contained in the Eligible Forest Area)
2. 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 photosynthesis 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 3.

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 justification for the selected baseline and the technical data used to create the Baseline and Project Scenarios from an ecosystem service accounting perspective.

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).

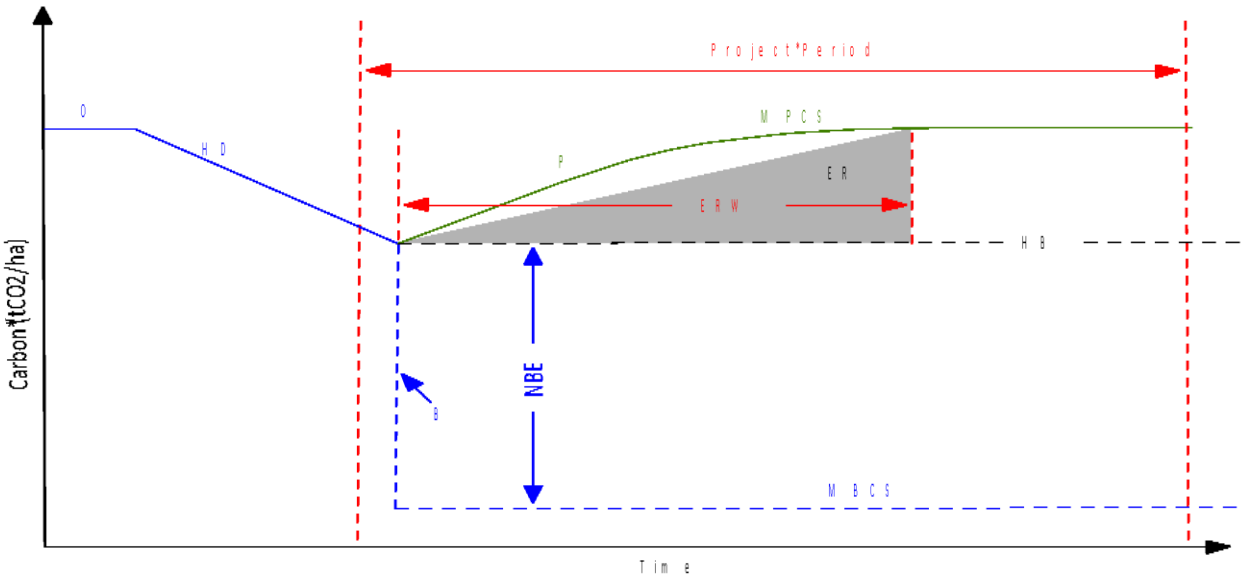
If applicable, the project proponent shall select or develop GHG emissions or removal factors that:

- *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 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:



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 2.3
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_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	Forest Inventory data and carbon accounting of baseline created for Eligible Forest Area (provided in Appendix 4 Babatana Carbon Inventory 2020 Ver 1.0.).

4.1.1 Step 1 – Harvest Rate (HR)

The Harvest Rate (HR) for this project is 80 % of the inventory for Rotation 1 and 25 % of Rotation 1 for Rotation 2 based on an analysis of standard harvesting under conventional logging taking place currently on Choiseul Island. See Harvest Rate Justification Report, Appendix 5.

The Harvest Rate for Eligible Forest Area is: 12,445.16 yr^{-1}

(See Appendix 4 Babatana Carbon Inventory 2020 Ver 1.0, sheet PHI, cell H36)

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 = HR / 0.5

TWH_{R1} = 12,445.16 /0.5 = 24,890 $m^3\,yr^{-1}$

(See Appendix 4 Babatana Carbon Inventory 2020 Ver 1.0, sheet Carbon Credits, cell D4.)

$THW_{R2} = THW_{R1}$x 0.25

THW_{R2} = 24,890 x 0.25 = 6,223 $m^3\,yr^{-1}$

(See Appendix 4 Babatana Carbon Inventory 2020 Ver 1.0, sheet Carbon Credits, cell E4.)

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).

CD = TWH x 0.15

CD_{R1} = 24,890 x 0.15 = 3,734 $m^3\,yr^{-1}$

(See Appendix 4 Babatana Carbon Inventory 2020 Ver 1.0, sheet Carbon Credits, cell D5.)

$CD_{R2} = CD_{r1}$ x 0.25

CD_{R2} = 933 $m^3\,yr^{-1}$

(See Appendix 4 Babatana Carbon Inventory 2020 Ver 1.0, sheet Carbon Credits, cell E5.)

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 = TWH + CD

$AGBE_{R1}$ = 24,890 + 3,3,743 = 28,624 $m^3\,yr^{-1}$ (See Appendix 4 Babatana Carbon Inventory 2020 Ver 1.0, Carbon Credits sheet cell D6)

$AGBE_{R2} = AGBE_{r2}$ x 0.25

$AGBE_{R2}$ = 7,156 $m^3\,yr^{-1}$

(See Appendix 4 Babatana Carbon Inventory 2020 Ver 1.0, Carbon Credits sheet cell E6)

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 = AGBE x 0.37

$BGBE_{R1}$ = 26,624 x 0.37 = 10,591 $m^3\,yr^{-1}$

(See Appendix 4 Babatana Carbon Inventory 2020 Ver 1.0, sheet Carbon Credits, cell D7.)

$BGBE_{R2}$ = 10,591 x 0.25

$BGBE_{R2}$ = 2,648 $m^3\,yr^{-1}$(See Appendix 4 Babatana Carbon Inventory 2020 Ver 1.0, sheet Carbon Credits, cell E7.)

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 ($TM3_{R1}$) 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). Rotation 2 is 25% of Rotation 1, as to align with PHI.

TM3 = AGBE + BGBE

$TM3_{R1}$= 28,264 + 10,591 = 39,215 yr^{-1}

(See Appendix 4 Babatana Carbon Inventory 2020 Ver 1.0, sheet Carbon Credit cell D8)

$TM3_{R2}$= 39,215 x 0.25

$TM3_{R2}$ = 9,804 $m^3\,yr^{-1}$

(See Appendix 4 Babatana Carbon Inventory 2020 Ver 1.0, sheet Carbon Credit cell E8)

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

Gross Total Emissions in tCO_2e for Rotation 1 ($GTCO2_{R1}$) and Rotation 2 (GTC02r2) 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).

GTC02 = ((TM3 x WD) X 0.49) x 3.66

$GTC02_{R1}$ = 35,153 $tCO2e\ yr^{-1}$

(See Appendix 4 Babatana Carbon Inventory 2020 Ver 1.0, sheet Carbon Credit, cell D9)

$GTC02_{R2} = GTC02_{r1}$ x 0.25 tCO_2e

$GTC02_{R2}$ = 8,788 $tCO2e\ yr^{-1}$

(See Appendix 4 Babatana Carbon Inventory 2020 Ver 1.0, sheet Carbon Credit, cell E9)

Mean wood density of 0.50 was applied and is derived from the average wood density from the species recorded in the PHI, and calculated in Appendix 4 Babatana Carbon Inventory 2020 Ver 1.0, sheet PHI, cell C38.

The rainforest is very rich in commercial timber trees, small to medium size trees, shrubs, herbs, creepers and climbers. The tree flora is dominated by *Pometia pinnata, Vitex cofassus, Calluphyllum peekellii, Flueggia flexuosa, Canarium salomonense* and *Syzygium* spp. However, the following timber trees are found to occur: *Alstonia scholaris, Amoora cucullata, Burkella obovata, Calophyllum peekellii, Campnosperma brevipetiolata, Canarium salomonense, Fluegia flexuosa, Elaeocarpus sphaericus, Dysoxyllum excelsum, Pometia pinnata, Vitex cofassus, Syzigium tierneyna, Syzygium spp., Terminalia calamansanai,* and several other minor timber trees. The high timber stock per unit area is typical of forest areas converted by logging companies, which is a great threat to biodiversity conservation endeavours.[1][6]

4.1.8 Step 8 – Gross Baseline Emissions For Rotation 1 (GBE_{R1}) and Rotation 2 (GBE_{R2})

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).

$GBE_{R1} = GTC02 – ItWP_R$

GBE_{R1} = 35,153 – 305.931 = 34,847 $tCO2e\ yr^{-1}$

(See Appendix 4 Babatana Carbon Inventory 2020 Ver 1.0, sheet Carbon Credit, cell D10)

GBE_{R2} = 32,463 * 0.25 = 8,712 $tCO2e\ yr^{-1}$

(See Appendix 4 Babatana Carbon Inventory 2020 Ver 1.0, sheet Carbon Credit, cell E10)

[6] Pikacha P & Sirikolo M. 2009, A report on the Biodiversity of three proposed protected Areas on South West Choiseul Island, Solomon Islands.

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).

$ltWP_{R1}$ = 305.931 tCO_2e

(See Appendix 4 Babatana Carbon Inventory 2020 Ver 1.0, sheet Carbon Credits cell P20)

4.1.10 Step 10 – Net Baseline Emissions Avoided For Rotation X (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).

$NBEA_{R1}$ = GBEA - BR

$NBEA_{R1}$ = 34,847 - 0 yr^{-1}

$NBEA_{R1}$= 34,847 tCO2e yr^{-1} (See Appendix 4 Babatana Carbon Inventory 2020 Ver 1.0, sheet Carbon Credits, cell D13)

$NBEA_{R2}$ = $GBEA_{R2}$ - BR

$NBEA_{R2}$= 8712 - 0

$NBEA_{R2}$= 8712 tCO2e yr^{-1}

(See Appendix 4 Babatana Carbon Inventory 2020 Ver 1.0, sheet Carbon Credits, cell E13)

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).

5.1.1 Step 11 – Enhanced Removals (ER)

There are no Enhanced Removals (ER) in the Sirebe Eligible Forest Area, Babatana Rainforest Conservation Project, because the area is unlogged.

5.1.2 Step 12 – Enhanced Removals Window (ERW)

There is no Enhanced Removals Window (ERW) in the Sirebe Eligible Forest Area, Babatana Rainforest Conservation project, because the area is unlogged.

5.2 PROJECT LEAKAGE

As outlined in PD A 2.4.1.1 there are several tribal lands that are potential participants within the Babatana Rainforest Conservation Project, under the grouped implementation modality. Some of the tribal areas in the process of declaring their tribal land as Protected under the Protect Act 2010 (Appendix 2a and 2b). The tribes that are in the process of registering PAs have signed and entered a Project Development Agreement with NRDF. Tribal groups will join the Babatana Rainforest Conservation Project as separate participants and sub-projects, under the grouped modality. Land owned by the other tribal groups in the project may independently opt in or out of the project. As such, each tribal group and their land are treated as an individual sub-project. Therefore, Total Activity Shifting Leakage (TAL) and Total Leakage, will be calculated and monitored at the sub-project level. For example, if one tribal group opts to undertake logging, it will not be treated as leakage for another landowner group.

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 forested land owned by participating landowners (at sub-project level) 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.

Lands neighbouring the Babatana grouped project are already committed to logging and logging operations are common and currently occurring on Choiseul.

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). Methodology deviation: we have not followed all steps of the GreenCollar IFM LtPF v10 VCS VM0010, because required data is not available in the Solomon Islands. The approach undertaken follows the same principle of as the approved methodology VM0010 and we have ascertained that TML is 0 e yr^{-1}. Our detailed rationale for TML = 0, is provided in Appendix 11 – Rationale for TML.

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

As there has been no previous logging in the Project Area, the contribution of the Project Area to the national commercial timber volume is insignificant.

Market leakage would continue to be insignificant for the entire project once all potential project participants join the Babatana Grouped Project. Timber demand is currently met by other tribal and forested areas across Choiseul and the Solomon Islands. Hence, not being able to log in the Babatana area will not affect or increase the demand of logging elsewhere in Choiseul or across the country. Logging is the largest contributor to the national economy and as such, national demand is met elsewhere in the country. The entire area in the grouped project being dedicated to conservation is insignificant to the amount of land dedicated to logging. Refer to Appendix 5 – Harvest Rate Justification Report v01, for a brief synopsis and references on the logging industry in the Solomon Islands.

Lands neighbouring the Babatana grouped project are already committed to logging and logging operations are common and currently occurring on Choiseul. See further justification in Appendix 11 – Rationale for TML.

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).

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

(See Appendix 4 Babatana Carbon Inventory 2020 Ver 1.0, sheet Carbon Credits, 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 (NPR_{R1}) and Rotation 2 (NPR_{R2}), which in combination comprise the 30-year Project Period.

$NPR_{R1} = 0\ tCO_2e\ yr^{-1}$

(See Appendix 4 Babatana Carbon Inventory 2020 Ver 1.0, sheet carbon credits, cell D17)

NPR_{R2} = 0 $tCO_2e\ yr^{-1}$

(See Appendix 4 Babatana Carbon Inventory 2020 Ver 1.0, sheet carbon credits, cell E17)

5.4 NON-PERMANENCE RISK AND BUFFER DETERMINATION

This project applies a default 20% buffer. An assessment of risk to permeance was included in the project risk assessment available in PD Part A Appendix 8 - Sirebe Risk Management Framework.

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 ($BUFNBEA_{R1}$) and Rotation 2 $BUFNBEA_{R2}$). The Sirebe sub-project has selected to base credit issuance on the average NBEA across the entire project period (i.e. 30 years).

$BUFNBEA_{R1}$ = 34,847 x 0.2 = 6969 $tCO_2e\ yr^{-1}$

(See Appendix 4 Babatana Carbon Inventory 2020 Ver 1.0, sheet Carbon Credits, cell D15)

$BUFNBEA_{R2}$ = 8712 x 0.2 = 1742 $tCO_2e\ yr^{-1}$

(See Appendix 4 Babatana Carbon Inventory 2020 Ver 1.0, sheet Carbon Credits, cell E15)

BUF_{av} = 4356 $tCO_2e\ yr^{-1}$

(See Appendix 4 Babatana Carbon Inventory 2020 Ver 1.0, sheet Carbon Credits, cell F20)

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 ($BUFNPR_{R1}$) and Rotation 2 BUFNPRR2).

$BUFNP_{R1}$ = 0 $tCO_2e\ yr^{-1}$

(See Appendix 4 Babatana Carbon Inventory 2020 Ver 1.0, sheet Carbon Credits, cell D18)

$BUFNP_{R2}$ = 0 $tCO_2e\ yr^{-1}$

(See Appendix 4 Babatana Carbon Inventory 2020 Ver 1.0, sheet Carbon Credits, cell E18)

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 (NCC_{R1}) and Rotation 2 (NCC_{R2}). The Sirebe sub-project has selected to base credit issuance on the average NCC across the entire project period (i.e. 30 years).

NCC_{R1} = (34,847 – 8712) + (0 – 0) = 27,878 $tCO_2e\ yr^{-1}$

(See Appendix 4 Babatana Carbon Inventory 2020 Ver 1.0, sheet Carbon Credits, cell D22)

NCC_{R2} = (8712 – 1742) + (0 – 0) = 6969 $tCO_2e\ yr^{-1}$

(See Appendix 4 Babatana Carbon Inventory 2020 Ver 1.0, sheet Carbon Credits, cell E22)

NCC_{av} = 17,423 $tCO_2e\ yr^{-1}$

(See Appendix 4 Babatana Carbon Inventory 2020 Ver 1.0, sheet Carbon Credits, cell F22)

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. No loss events have occurred between the signing of the project development agreement, to the start date of the project and to the verification event. At the time of verification, the Sirebe Monitoring Report with its Appendix 2 quantifies that there has been no loss events.

6. Quantifying Project Habitat Hectare Enhancements

This project has elected to not 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 is due to the lack of market demand for habitat hectares.

6.1 BASELINE HABITAT HECTARES

Baseline Habitat Hectares will not be eligible in this project.

6.2 PROJECT HABITAT HECTARES

Not applicable

6.3 LEAKAGE

Not applicable

6.4 QUANTIFICATION OF HABITAT HECTARE UNITS

6.4.1 Gross Habitat Hectares

Not applicable for this project.

6.4.2 Habitat Hectare Buffer

Not applicable

6.4.3 Net Habitat Hectares

Not applicable

6.4.4 Net Carbon Credit Equivalent

Not applicable

6.4.5 Net Carbon Credits Per Habitat Hectare

Not applicable

6.5 MANAGING LOSS EVENTS

Not applicable to measure loss events in Habitat Hectares. Managing loss events is addressed in Section 5.6 of this document and focuses on the Carbon Credit losses.

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.

For the Pre-harvesting inventory a line sampling design was used, whereby circular sample plots with a radius of 17.8 meter (0.1 Ha) were established at 100 meter intervals. A total of 23 plots were established (2.3 Ha). Inside each plot the diameters at breast height (DBH) were taken from all trees with a DBH of 30 cm and up. Tree heights (merchantable heights) of all the trees were taken with the use of a suuntoo clinometer, considering slope corrections.

Any trees located on the boundary of the plot (“borderline trees”) were carefully assessed by the inventory teams. If more than half (50 %) of the tree stem was within the plot it was included in the sample; if less than half (50 %), it was excluded.

During each monitoring period, we will investigate the need to implement more pre-inventory harvest plots and increase the number accordingly during each monitoring period to reassess the harvest rate and increase the confidence in the data and create a more accurate baseline

for verification events. Further, if needed the number of pre-harvest inventory plots will increase, as each potential project participant joins the Babatana grouped project. If there is any difference between the carbon values at the baseline revision, we will adjust accordingly. Henceforth, we will investigate the need to implement more plots during each monitoring period for Sirebe and when other project areas join the Babatana Grouped Project. Once a critical number of pre-inventory harvest plots is reached, we will no longer conduct more plots.

Wood density data in this project is derived from wood density data for the species from the Pre-Harvesting Inventory. This produced a more precise wood density calculation than 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.

7.1.1 Harvest Rate (HR)

The core of the avoided emissions component of the baseline calculation is based on conservative estimates of the timber volume to be logged in the baseline activity. This estimate is calculated conservatively on the basis of commercial timber volumes harvested in the baseline at 80% of the harvestable wood volume available for rotation 1 and 25% for rotation 2.

7.1.2 Total Wood Harvested (TWH)

The uncertainty in the calculation of TWH is addressed by applying the conservation default factor of 0.5 for the conversion of above ground biomass to sawlog. This assumes that the mean recovery rate of sawlog per above tree biomass is 50%. In practise, waste wood (baseline emissions) will commonly be higher than this. As such the calculation is conservative.

7.1.3 Collateral Damage (CD)

'Collateral damage' represents the damage to non-target tree species and tree limbs because of timber harvesting operations. Collateral damage is conservatively estimated as the equivalent of 15% of TWH and measured in m^3 per year. The estimation is justified in the technical specifications applied to this project.

7.1.4 Below Ground Biomass Emitted

Uncertainty in the calculation of Below Ground Biomass (BGBE) is addressed in this methodology by applying the default value for below ground biomass used by the IPCC 2006 Inventory Guidelines (Chapter 4, pg. 49) of 0.37. When the target tree species for commercial timber harvesting in the baseline includes species known to regrow from stumps, the Project Coordinator is required to:

i. Calculate the proportion of AGBE attributable to these species
ii. Include the AGBE attribute to these species and remove the corresponding the BGBE attributable to these species in the baseline.

Removing the BGBE component attributable to these species by default is conservative because these species do not always regenerate from stumps but this methodology assumes that they always do.

7.1.5 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

As this project occurs in unlogged forest, no enhanced removals have been included in the calculations.

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.

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. Given limited market interest in Habitat Hectares, they have not been calculated for this project.

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 standard operating procedure for measuring project outcome delivery according to these three project benefit types.

For the first verification event, the report will follow a Simplified Monitoring Report Template. This project has actioned a methodology deviation by not applying a VCS template for the monitoring report. The project will deliver the monitoring report in the most up-to-date template provided by Plan Vivo at project verification events. The methodology deviation has occurred because the Plan Vivo template is more appropriate (the project is to be validated by Plan Vivo). Monitoring Reports in the future and for sub-projects joining the grouped project will use the most up-to-date Plan Vivo template.

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. Each monitored and non-monitored parameter is measured at different intervals and at different times. Generally, most parameters are measured atleast once during

each project monitoring period (3 to 5 years) or annually or bi-annually. The results of monitoring will be shared in the Annual Report and Project Monitoring Report.

8.1.1 Performance indicators & targets - Carbon

Performance indicator	**Target**
Commercially logged forest area	No changes to area that has been commercially logged in the Project Area
Disturbance from subsistence use in the eligible area	Disturbance from subsistence use to remain below di-minimis level (5% per annum) within the eligible area

8.1.2 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 at 3 to 5 year intervals. Section 8.1.6 outlines how each parameter is measured, using a standard operation procedure.

Table 8.1.2 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
MLF	Market Leakage Factor	Dimen-sionless	Box in Section 5.2.2	Derived from Activity Shifting Leakage Analysis	Monitored Updated each Monitoring Period
TML	Total Market Leakage	$tCO_2e\ yr^{-1}$	5.2.2	Derived from Market Leakage Analysis	Not monitored Updated each Baseline Revision
ORR	Overall Risk Rating	Dimen-sionless	5.5.1	Derived from project risk assessment	Monitored Updated each Monitoring Period

8.1.3 Monitored Parameters - Carbon

Monitored data and parameters are summarized in the tables below. Each parameter is monitored in the field by the forest rangers, using the standard operating procedure outlined in section 8.1.6.

Data Unit / Parameter:	**Eligible Forest Area (Eligible Forest Area)**
Scope / scale:	Sub-project
Data unit:	Ha
Description:	Forest area included in baseline and project scenario, and area upon which crediting is based (EFA_{LF} &/or EFA_{ULF}). Monitored with boundary inspections and forest transects.

Source of data:	Aerial imagery and project boundary inspection and transect inspections.
Description of measurement methods and procedures to be applied:	Aerial imagery (sub-meter accuracy, if available, but sub-two metre accuracy will suffice) to define Eligible Forest Area boundary; boundary survey inspections using GPS. Other remote sensing methods to monitor forest change could be developed, which may include spatial imagery at 3-metre resolution. This is unavailable at this time but would be justified in future monitoring reports if applied. Measure any reversals occurring in the Eligible Forest Area by undertaking boundary inspections and forest transects walks. 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 Open source aerial imagery will also be used to inspect if logging has increased in neighbouring tribal areas.
Frequency of monitoring/recording:	Aerial imagery: 5-yearly Eligible Forest Boundary inspections: 3-yearly.
Value monitored:	Area
Monitoring equipment:	Aerial imagery/satellite data to sub-meter accuracy (if available), but sub-two-meter accuracy will suffice to cross validate change. Handheld GPS unit, photography. Open source imagery will with a higher temporal resolution but a lower spatial resolution will suffice to monitor the presence of logging on neighbouring tribal lands.
QA/QC procedures to be applied:	Every monitoring period 3rd party verification of Project Monitoring 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:	**Harvest Rate (HR)**
Scope / scale:	Whole Babatana Rainforest Conservation Project (grouped project)
Data unit:	m^3 ha^{-1} rotation 1^{-1}
Description:	The rate of timber harvesting in the baseline scenario for the project forest
Source of data:	- Literature review - Government policy and legislation - If needed, the number of forest inventory sample plots in Sirebe will be increased to create a more accurate baseline for Sirebe - When other project participants join the Babatana grouped project, the number of forest inventory plots will also increase to create an improved baseline and increase the confidence in the data
Description of measurement methods and procedures to be applied:	80 % of the sawlog volume (excluding branches and crown) for each timber species in the EFA for which there is sufficient standing volume to justify commercial harvesting.
Frequency of monitoring/recording:	Each baseline revision. The harvest rate will be adjusted accordingly if there is a difference.
Value monitored:	m^3
Monitoring equipment:	GPS unit, diameter tape, vertex clinometer, increment borer
QA/QC procedures to be applied:	5-yearly 3rd party verification of Project Management Reports.
Calculation method:	Harvest Rate method in commercial timber harvest plan.

Data Unit / Parameter:	**Total Activity Shifting Leakage**
Scope / scale:	Sub-project
Data unit:	tCO_2e/yr
Description:	Leakage caused by activity shifting
Source of data:	Sub-project area inspection (outside Eligible Forest Area), undertaken concurrently boundary inspection.
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 the 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 Project Monitoring Report. Minimum 5-yearly 3rd party verification of Project Monitoring Reporting.
Value monitored:	$m^3\ yr^{-1}$
Monitoring equipment:	GPS unit, measuring tape, photography
QA/QC procedures to be applied:	Every monitoring period, 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.

Data Unit / Parameter:	Market Leakage Factor (MLF)

Scope / scale:	Whole Babatana Rainforest Conservation Project (grouped project)
Data unit:	Dimensionless
Description:	Leakage caused by market effects. The proportion of domestic indigenous timber supply in comparison with equivalent imported timber volumes.
Source of data:	Local data on timber supply Visual inspections by project coordinator into the amount of logging occurring on neighbouring tribal lands contribute to the market leakage factor assessment.
Description of measurement methods and procedures to be applied:	Determined by considering where in the country logging will be increased as a result of the decreased timber supply caused by the project.
Frequency of monitoring/recording:	3-5 yearly 3rd party verification of Project Monitoring Reports
Value monitored:	Dimensionless
Monitoring equipment:	Desktop
QA/QC procedures to be applied:	3-5 yearly 3rd party verification of Project Monitoring Reports.
Calculation method:	Market Leakage factor component of the GreenCollar IFM LtPF v1.0 VCS approved Methodology VM0010 (2011).

Data Unit / Parameter:	Overall Risk Rating
Scope / Scale:	Whole Babatana Rainforest Conservation Project (grouped project)
Data unit:	Dimensionless
Description:	Risk factor used in buffer determination.
Source of data:	Various sources

Description of measurement methods and procedures to be applied:	Following the most recent version of the Verified Carbon Standard AFOLU Non-Permanence Risk Tool and elaborated in Section 5.5 of the Technical Specifications Module 1.1 (C) (IFM-LtPF). This involves assessing the following risk types: · Internal Risk · External Risk · Natural Risk The Overall Risk Rating is calculated as the aggregate risk rating for the three risk types.
Frequency of monitoring/recording:	3-5 yearly coinciding with each 3rd party verification.
Value monitored:	Risk Rating
Monitoring equipment:	Calculated
QA/QC procedures to be applied:	3-5 yearly 3rd party verification of Project Monitoring Reports by 3rd party verifier.
Calculation method:	Following calculation method specified in Section 5.5 of the Technical Specifications Module 1.1 (C) (IFM-LtPF).
Responsibility:	Project Owner or delegated entity (e.g. Project Coordinator)

8.1.4 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

8.1.5 Information Management Systems - Carbon

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

8.1.6 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 plan 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 (see example in Appendix 6) 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.

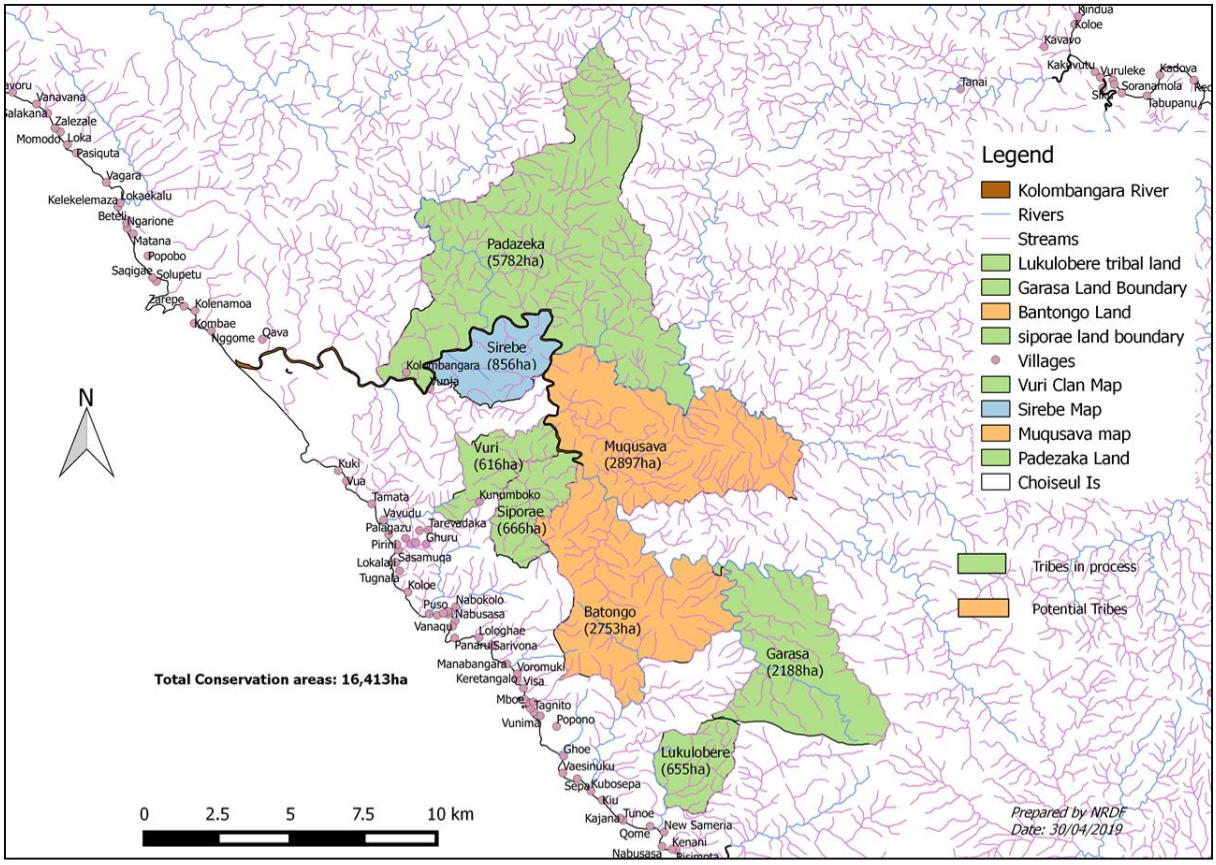
8.1.7 Standard Operating Procedure: Project Monitoring - Carbon

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

Table 8.1.7 Monitoring Schedule – Carbon				
Carbon				
Activity	Frequency	Responsibility	Human Resources	Financial Resources
Eligible Forest Area	Annual inspection via boundary walk and forest transects 5-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	Annual inspection via boundary walk and forest transects 5-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	Annual inspection via boundary walk and transect walks 5-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 3-5 yearly calculation coinciding with verification events	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
Baseline Revisions, including conducting harvest inventory plots.	Desktop assessment 3-5 yearly calculation coinciding with verification events	Project Coordinator and Landowner	Project Coordinators staff.	PES unit price accounts for employment of rangers and Project Coordinator staff

8.1.7.1 Forest Management Areas

The Forest Management Areas for this project are presented in Figure 8.1.7.1. *Figure 8.1.7.1 Location of Tribal Areas that make up the Babatana Rainforest Carbon Project*



The project areas encompassing the eligible forest areas are depicted in Figures 8.1.6.1 and 8.1.6.1a above.

8.1.7.2 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 and forest changes occurring at the boundary.

Secondary to the purpose, any logging that is occurring on adjacent neighbouring tribal lands not owned by the Babatana Grouped project participants, will also be recorded.

Method:

Make observations of the Eligible Forest Area boundary during the course of the annual 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. An example template is provided in Appendix 7 Eligible Forest Boundary Inspection Template.

Logging occurring on adjacent neighbouring tribal lands not owned by the Babatana Grouped project participants, will also be recorded but not considered a reversal event nor will it be considered as a change in leakage, as logging is already occurring. However, it will be recorded for diligence and environmental practice.

Recurrence: Annual 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 least once during each monitoring period.

8.1.7.3 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.

Secondary to the purpose, any logging that is occurring on adjacent neighbouring tribal lands not owned by the Babatana Grouped project participants, will also be recorded.

Method: The transact method below provides guidance on appropriate forest area inspections however another method can be used if justified and supported by the Programme Operator.

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 100 m and 500 m 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.

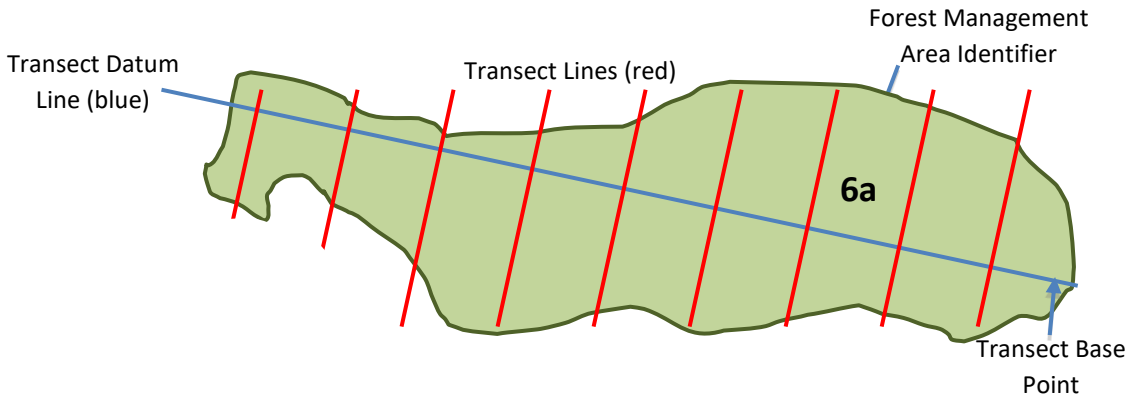
Small Area Transect Method: For forest management areas less than 100m long, start with the Transect Base Point, then locate a single transect running through the longest axis of the forest patch (and curving the transect where necessary in order to keep the transect within the forest boundary).

Transect Survey Procedure: Walk the full length of each transect line and on the Project Area Inspection Template (Appendix 8) 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: annual 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 least 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. Notwithstanding the random generation of transect lines, transects may be modified or new transect lines generated in the case they cross over terrain that is inaccessible or dangerous to survey (e.g. cliffs).

Logging occurring on adjacent neighbouring tribal lands not owned by the Babatana Grouped project participants, will also be recorded but not considered a reversal event nor will it be considered as a change in leakage, as logging is already occurring. However, it will be recorded for diligence and environmental practice.

8.1.7.4 *De Minimis* Timber Harvest Inspection

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

The *de minimis* timber harvesting volume for the Sirebe Protected Area and other Babatana Rainforest Conservation Project is 398.22 m^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 a template. An example template is provided in Appendix 9.

8.1.7.5 Activity Shifting Leakage Inspection

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

The project will record Activity Shifting Leakage events. An example template is provided in Appendix 10.

8.1.8 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.

8.1.9 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.

8.1.9.1 Community Participation In Monitoring

The Project Owner will recruit community 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.

The project owner, namely the forest rangers, receive ongoing support and training from the Project Coordinator and Project Operator, to participate and complete the community aspects of the carbon monitoring. The specific aspects of the training include; How to complete a boundary inspection, how to complete a transect across the protected area. Further the training includes, how to collect data and monitor the forest, including potential changes and disturbance events using data collection applications.

Prior to the verification of this project description, the training has begun with a number of simple data collection workshops, with participation from project coordinator staff and members from the project owner group. The workshops covered the basic principles of the community participation in monitoring in alignment with the PD and how to use the AVENZA application to monitor carbon, or more specifically calculate areas of potential changes in the forest. The training will continue over the monitoring period, where the project coordinator will continue to offer support to increase the capacity of the project owner. The training events will happen based on mutual agreement and at times, opportunistically, when the project coordinator can visit the field. The training is to occur, in a manner, where the project owners capacity increases before the verification event and over time. The project coordinator and project operator will supervise and continue to support the project owner, to meet their monitoring requirements.

The project operator, with input of the project coordinator has also created a data collection toolkit manual, which can be used in conjunction with PD Part B, to support the project owners to collect data and monitor the project activities. In a similar fashion, the project coordinator and project operator, have made commitments to opportunistically seek sources of funding to continue to increase the capacity of the project owners, through training and updated resources.

Specific training to conduct forest inventories and remeasure plots for carbon accounting purposes and completing the monitored parameters outlined in section 8.1.2 is an ongoing activity in the Babatana project. In addition to the expertise provided from the Nakau Programme both the Project Coordinator and the Project owner have and will continue to receive technical support from the Solomon Islands Government, Ministry of Forestry. The Ministry of Forestry has been collaborating with the NRDF (the project coordinator) to conduct the Pre-Harvesting inventory, including the completion of plots since the start of the project. The forest inventory methodologies and inventory techniques used in this project will be reviewed in collaboration with the Ministry of Forestry and up to date training will be provided by the Project Coordinator to the Project owners. The forest rangers employed by the project owners are the key personnel likely to complete forest inventories, and as such training will be frequent and necessary field equipment will be provided by the Project Coordinator.

8.1.9.2 Sharing Results of Community Monitoring

The outcomes of the community monitoring are shared with the project participants and the community in several ways. Firstly, at the project baseline the results of the community livelihood assessment are shared with the community through a consultation held by the Project Coordinator. The findings are then used to develop the Community Development Plan through an FPIC process.

After each community monitoring event, it is the responsibility of the project owner to share the results of the survey and monitoring with the broader community, typically through community meetings and consultation events. Depending on the results of the monitoring,

the employed staff through the Project Owners, will be responsible for sharing the results, which is planned to be done on a quarterly basis and once annually at the Project Management Meeting.

Community monitoring outputs are recorded in annual Project Management Reports prepared and approved by the Project Owner 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 Project Monitoring Reports. Project Owners and the Project Coordinator approve 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. Project monitoring occurs periodically dependent on the variable See (Table. 8.1.6) and is available in the Project Monitoring reports, to be submitted every 3 to 5 years, at a maximum of 5 years, in the Project Monitoring Report.

8.1.9.3 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 Performance Indicators and Targets - Community

Performance indicator	**Target**
Food security	- No detrimental changes to food security attributable to the project - Project contributes to improvements in food security
Water security	- No detrimental changes to water security attributable to the project - Project contributes to improvements in water security
Financial security and impact of money	- No detrimental changes community well being caused by carbon income (e.g. increase in drug and alcohol use) - Participants perceive carbon income to provide positive economic benefits

Participation	- >70% of participants trust the project - Increase in participation of women in decision making and project roles from baseline levels (and between monitoring events)

8.2.2 Monitored And Non-Monitored Parameters – Community

Monitored and unmonitored community impact data are listed in Table 8.2.1 below.

Table 8.2.2 Monitored and Non-Monitored Parameters – Community Impacts				
Notation	Parameter	Unit	Origin	Monitored
FA	Food Security	Various	Community Impact Survey	Monitored
W	Water Security	%	Community Impact Survey	Monitored
H	Financial security and impact of money	Solomon Island Dollar	Community Impact Survey	Monitored
P	Participation	Number & %	Community Impact Survey	Monitored

8.2.3 Monitored Parameters – Community

Monitored data and parameters are summarized in the tables below and are from PD A 5.2.2.1.

Data Unit / Parameter:	**Food Security**
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 from the store or market? 1.2 What goods do you purchase at the store/market? 1.3 How big is your household garden? 1.4 What type of crops do you grow at your family garden? 1.5 How often do you eat good from your garden? 1.6 Do you ever run out of food? 1.7 How often do you harvest food from the forest? 1.8 What goods do you collect from the forest?
Frequency of monitoring/recording:	3-yearly
Value monitored:	Various
Monitoring equipment:	Social survey equipment
QA/QC procedures to be applied:	3-5 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 is not a major problem at this time but could be due to climate change impacts. Given improved access to water is highly desired, any changes may indicate a positive impact resulting from the project. Sanitation was identified as a major concern for the Sirebe people. We want to see if the project helps to improve sanitation for the households and further improvements in clean water sources.
Source of data:	Community Impact Survey
Description of measurement methods and procedures to be applied:	Structured interviews pursuing the following questions: 2.1 Do you ever run out of water? 2.2 Which water sources does your household use and is it available all year round? 2.3 Do you feel you can use as much tap water as you like? (i.e through piped system)
Frequency of monitoring/recording:	3-yearly
Value monitored:	Various
Monitoring equipment:	Social survey equipment
QA/QC procedures to be applied:	3-5 yearly 3rd party verification of Project Monitoring Reports
Calculation method:	Compare responses with previous survey

Data Unit / Parameter:	**Financial security**
Data unit:	Various
Description:	Increased income can demonstrate increased wellbeing, however it can also create negative impacts. Social impact assessment will investigate positive and negative aspects of money. We will measure income over time, and 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 investigate if 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: 3.1 How many children/youth (under 20 years) in your household are currently in primary/secondary/tertiary school? 3.2 How many households' members have graduated secondary/tertiary school?

	3.3 What is your households' average monthly income? 3.4 What are your main sources of income 3.5 What is your households' average monthly expenditures? 3.6 What are your main expenditures? 3.7 Are you able to save money from your earnings in a typical month? 3.8 Which sources of electricity are used in your home? 3.9 What type of toilet is your household using? 3.10 Hours spent for daily activities? -Cooking (Female / Male) -Household chores -Gardening/ farming/fishing -Community church activities 3.11 Are you aware of anyone in the community using marijuana or other drugs (incl. homebrew).
Frequency of monitoring/recording:	3-yearly
Value monitored:	Various
Monitoring equipment:	Social survey equipment
QA/QC procedures to be applied:	3-5 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 'Carbon Project ' (i.e. Associations, management) is engaging the project owners and earning local trust. This indicates overall wellbeing if the faith in this project and entity 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 Can you access information about the REDD+ Enterprise finances and activities? 4.2 Do you generally trust the REDD+ Enterprise? 4.3 Is any of your household directly involved in PES activities (Employed, committee member etc) 4.4 Do you generally feel the PES enterprise contributes to the wellbeing of the tribe/community members?
Frequency of monitoring/recording:	3-yearly
Value monitored:	Various
Monitoring equipment:	Social survey equipment
QA/QC procedures to be applied:	3-5 yearly 3rd party verification of Project Monitoring Reports
Calculation method:	Compare responses with previous survey

8.2.4 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 the Project Owner community. The survey shall be replicated every 3 years. Ideally, the same households' members surveyed during the baseline should be included in subsequent interviews. Furthermore, the number of respondents used for the baseline should be the minimum standard for further surveys, however the Project will aim to increase in the number of respondents.

8.2.5 Information Management Systems - Community

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

8.2.6 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.

8.2.7 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

8.2.7.1 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 Babatana Rainforest Project PD Part A D3.2a v1.0 01092020. 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 Babatana PD Part B (this document).

8.2.7.2 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.

8.2.7.3 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.

As per the Protected Area Management Plan (see Sirebe Protected Area Management Plan in PD Part A Appendix 5), the project will undertake biodiversity monitoring surveys at the project sites. Rangers will make opportunistic observations during transact walks and when conducting other business in the Protected Areas and record observations of flora and fauna classified as significant species as per table 5.3.1 of this PD (above). Observations must be recorded and reported at Project Management Meetings. Survey data collection may use paper forms, or use digital data collection applications. These forms may state:

- Species observed
- Date species observed
- Name and role of observer
- Location of observation (ideally using geo-referenced map coordinates, however description satisfactory)

- Remarks on abundance, distribution or other information (if possible and relevant).

8.3.1 Performance Indicators and Targets - Biodiversity

Performance indicator	**Target**
Presence of significant species of plants and animals	- Significant species of plants and animals persist in the Project Area

8.3.2 Monitored And Non-Monitored Parameters – Biodiversity

Monitored and unmonitored biodiversity impact data are listed in Table 8.3.1 below.

Table 8.3.2 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

8.3.3 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:	Once every monitoring period
Value monitored:	Presence/absence
Monitoring equipment:	Animal identification table, binoculars, mobile phone, AVENZA software (or equivalent)
QA/QC procedures to be applied:	3-5 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:	Once every monitoring period
Value monitored:	Presence/absence
Monitoring equipment:	Plant identification table, binoculars, mobile phone, AVENZA software (or equivalent)
QA/QC procedures to be applied:	3-5 yearly 3rd party verification of Project Monitoring Reports
Calculation method:	Compare responses with previous survey

8.3.4 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 Community.

The carbon finance from the project will support the biodiversity monitoring to be conducted in parallel with the eligible area monitoring. Financial support for in depth and robust biodiversity assessment, monitoring and inventories will be sought after by the project coordinator and project operator.

8.3.5 Information Management Systems - Biodiversity

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

8.3.6 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).

8.3.7 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 - Fauna	Opportunistic / ongoing	Project Owner	Project Rangers	PES unit price accounts for employment of Project Coordinator staff
Biodiversity Survey - Flora	Opportunistic / ongoing	Project Owner	Project Rangers	PES unit price accounts for employment of Project Coordinator staff

8.3.7.1 Baseline Biodiversity Impacts

Baseline biodiversity impacts (i.e. survey of a reference area supporting habitat types in the baseline) were measured in 2009 and 2014. As described in Section 5.3.3.1 Babatana PD Part A, the protected areas in the project will actively manage to maintain and enhance the biodiversity of the areas according to the measures set out in the Sirebe Protected Area Management Plan (in PD Part A Appendix 5). The data from the surveys is available in Babatana PD Part A section 5.3.

8.3.7.2 Project Biodiversity Impacts

Project biodiversity impacts will be measured by means of a 3-5 yearly collation of biodiversity observations, coinciding with verification events. The approach is semi-quantitative, as to determine any potential change and/or trends in site biodiversity. Given the challenging nature and resource intensive action of conducting biodiversity surveys, assessments and inventories, the method is simple and opportunistic. That being, it does not seek to investigate the presence and absence of all species present in the project area, but rather those that are opportunistically sighted, or the community owners can verify that they are present.

When the eligible area inspection is being conduct (e.g. boundary inspections and during the transects), if the opportunity arises the community rangers will seek to confirm the presence of the vulnerable plants, *Pterocarpus indicus, Macaranga choisueliana, Poemtia pinnata* and *Vitex cofassus*. Overtime, the Babatana Community Rangers will have an increased biodiversity monitoring and data collection capacity and it is expected, that the biodiversity monitoring aspects of the project can be enhanced. The other listed species, the presence of the vertebrates will also be recorded but only opportunistically. However, the project coordinator seeks to access funding to conduct biodiversity surveys and inventories for the IUCN listed species with the aim of detecting improvements over time.

If an opportunity presents itself, additional in-depth biodiversity surveys, assessments or inventories and specie specific research may be conducted to support the knowledge about the biodiversity impact and condition of the Project Area. However, such activities will only be conducted when there is opportunity and collaboration with leading expertise with financial resources and specialist capacities. Such inventories will have an emphasis to monitor the presence and potential changes in the abundance and localized status species listed as threatened or endangered under the IUCN listing (See PD Part A Section 5.3.3.1). All

biodiversity monitoring that is conducted during the monitoring period will be presented at the verification event.

The first project biodiversity impact survey was undertaken during project development, and results are summarised in Section 5.3.3.1 of the Babatana Rainforest Conservation Project PD Part A D3.2a v1.0 01092020.

8.3.7.3 Net Biodiversity Impact Enhancements

An example of the tabulation and project biodiversity impacts and trends, could be presented in summary, using the example format below. The impacts presented will be based on the data collected during the monitoring period. If in depth biodiversity monitoring and species assessment reports are produced during the monitoring, it will be presented in the table below and any materials produced, will accompany the monitoring report at each verification event.

	Baseline biodiversity observations	Project biodiversity observations	Net biodiversity impact enhancements
Impact 1			
Impact 2…			

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Appendices

All Appendixes are supplied separately.

APPENDIX 1: DEFINITIONS

APPENDIX 2A: PROTECTED AREAS ACT 2010

APPENDIX 2B: PROTECTED AREAS REGULATIONS 2012

APPENDIX 3: ADDITIONALITY ASSESSMENT - VCS TOOL IFM PROJECTS

APPENDIX 4: BABATANA CARBON INVENTORY V1.0

APPENDIX 5: HARVEST RATE JUSTIFICATION REPORT

APPENDIX 6: EXAMPLE DIRECTORS CERTIFICATE

APPENDIX 7: ELIGIBLE FOREST AREA BOUNDARY INSPECTION TEMPLATE

APPENDIX 8: PROJECT AREA INSPECTION TEMPLATE

APPENDIX 9: DI MINIMIS TIMBER HARVEST TEMPLATE

APPENDIX 10: ACTIVITY SHIFTING LEAKAGE TEMPLATE