



Sirebe Forest Carbon Project

Babatana Region, Choiseul Province, Solomon Islands

Project Design Document

Part B: PES Accounting

Version 1.3
28/04/2026



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

Funded by the Bread for the World and Critical Ecosystem Partnership Fund (CEPF).

Report prepared by Natural Resources Development Foundation with support from The Nakau Programme and Ekos NZ

Cover Photo: Wilko Bosma



Table of Contents

Document History	1
1 Eligibility & Guidance.....	1
1.1 Eligibility	2
1.2 Standards and Guidance	7
2 Identifying GHG Sources, Sinks and Reservoirs	12
3 Determining the Baseline Scenario.....	15
3.1 Baseline Selection, Additionality and Baseline Modelling	15
4 Quantifying Baseline GHG Emissions and Removals	19
4.1 Calculation of Baseline GHG Emissions and Removals	20
5 Quantifying Project Emission Reductions and Removals.....	26
5.1 Project GHG Emissions and Removals	26
5.2 Net Carbon Benefit.....	29
5.3 Plan Vivo Certificates.....	29
5.4 Managing Loss Events	30
6 Monitoring the Sirebe Forest Carbon Project	32
6.1 Carbon Monitoring.....	34
6.2 Community Impact Monitoring.....	40
6.3 Ecosystem Monitoring	44
6.4 Sharing Results of Project Monitoring	48
7 References	49
8 Appendices.....	50
Appendix 1: Definitions	50
Appendix 2a: Protected Areas Act 2010	50
Appendix 2b: Protected Area Regulations 2012	50
Appendix 3: Additionality Assessment.....	50
Appendix 4: Forest Inventory and Carbon Accounting (update)	50
Appendix 5: Harvest Rate Justification Report (Superseded).....	50
Appendix 6: Example Director’s Certificate	50
Appendix 7: Eligible Forest Area Boundary Inspection Template	50
Appendix 8: Project Area Inspection Template	50
Appendix 9: De-Minimis Timber Harvest Template (Superseded)	50
Appendix 10: Activity-Shifting Leakage Template (Superseded)	50

Document History

PDD Version	Version Details/Changes	Date
1.0	First PDD submissions	11/03/2021
1.1	Reviewed PDD Version	18/05/2021
1.2	Validated PDD	17/06/2021
1.3	<ul style="list-style-type: none"> • Removal of references to the Babatana Rainforest Conservation Project (Grouped Project) and Sirebe as the inception project in the whole document • The Carbon accounting methodology and carbon benefit results in section 5 have been updated • The Section on project habitat enhancements (previously section 6) has been removed as this methodology is not used in the Sirebe project • Carbon Monitoring in section 6.1 has been updated • Ecosystem Monitoring in section 6.3 has been updated 	28/04/2026

1 Eligibility and 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.

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.
- Sirebe Methodological Deviation to Technical Specification July 2023

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:

- Eligible forests will be indigenous forests that qualified as 'forest lands' as of 31 December 2009.
- Baseline and project activities in eligible forests comprise management of carbon stocks in forest-remaining-as-forest activities.
- Projects will account for AFOLU GHG emissions and removals in the baseline and project scenarios.
- 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.
- 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 lands¹ managed for wood products such as sawn timber, pulpwood, and fuelwood and are included in the 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 Sirebe Forest Carbon Project takes place on land where there is legal sanction to undertake high intensity selective logging (conventional logging).

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*. The Sirebe tribal group has developed an individual project in the Nakau Programme Solomon Islands, as outlined in section 2.4.1.1 in PDD Part A, and has legally registered a Protected Area that covers the tribal land. Each tribal group in the Babatana region that is currently in the process of declaring their tribal land as protected will sign a project development agreement with NRDF. Tribal groups will join the Nakau Programme as separate participants and their areas will be treated as individual projects and will need to provide a PDD to be approved by 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.

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

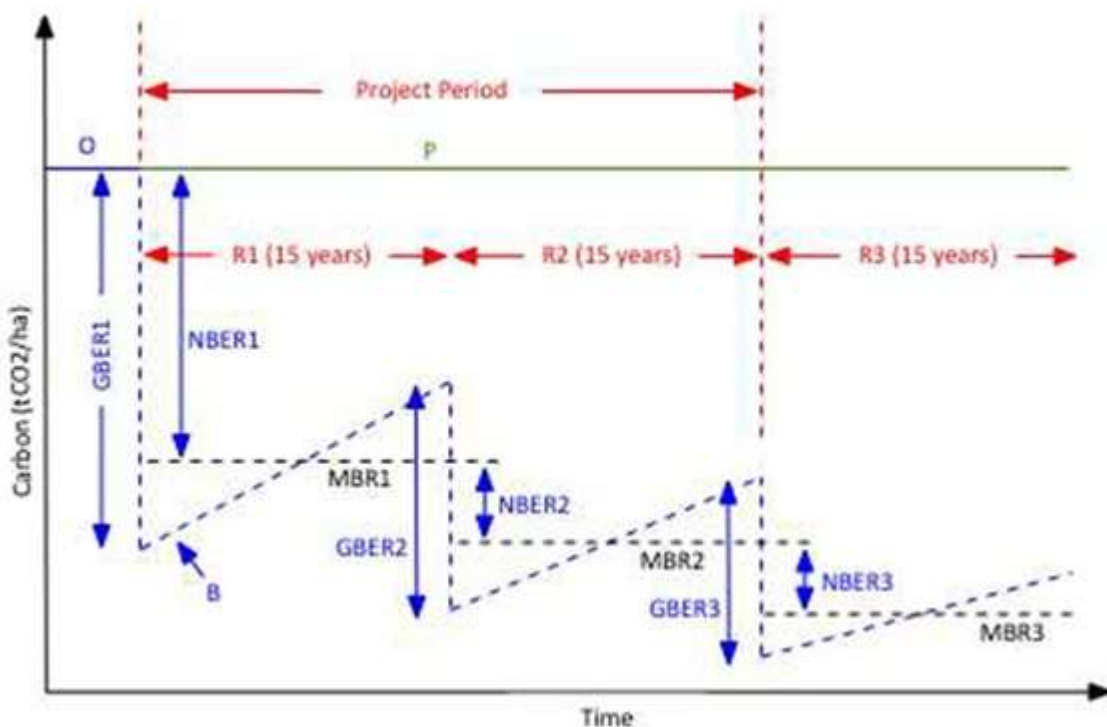
¹ See definitions in Appendix 1

regenerating. Eligible forests will include two forest management strata as follows:

- a) Unlogged Forest: 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 commercial timber harvesting (apart from *de minimis* harvests mentioned in a above).

The Nakau Programme Solomon Islands is intended to include (recruit) a range of tribal areas over time. The Sirebe Tribal Lands are the first to seek validation in the Programme. 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 the concept diagram in Figure 1.1.4a of TS Module (C) 1.1 (IFM-LtPF) D2.1.1 v1.0 20151009.

Figure 1.1.4a. Variant 1 - Concept diagram: IFM-LtPF 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

² i.e lower than 5% of the total allowable annual commercial timber harvest volume for the equivalent rotation.

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 Nakau Programme 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 Project Design Document (PDD).

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. Customary land recording 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 PDD Part A Appendix 1) 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). 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).

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 existing laws.³customary landowners, the individual groups and clans in which that “ownership” vests is not readily deductible from existing laws³.

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 describe 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 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 Sirebe 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.

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>

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 and 12 (PDD 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 PDD.

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.

Projects may have different start and end dates, to be specified in each PES Agreement. All projects will have a project period 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

	<p>This project is validated to the Plan Vivo Standard, and follows the following Plan Vivo guidance documents:</p> <ul style="list-style-type: none"> • 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
	<p>This project is aligned to the IPCC 2006 Guidelines on National GHG Inventories in the following way:</p> <ul style="list-style-type: none"> • 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:
	<ul style="list-style-type: none"> • 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)
	<ul style="list-style-type: none"> • 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 PDD Part A	Location in PDD Part B (this doc.)	Plan Vivo Standard Element	Location in PDD Part A	Location in PDD Part B (this doc.)	Plan Vivo Standard Element	Location in PDD Part A	Location in PDD 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	

Table 1.2.2 Plan Vivo Standard Alignment Table

Plan Vivo Standard Element	Location in PDD Part A	Location in PDD Part B (this doc.)	Plan Vivo Standard Element	Location in PDD Part A	Location in PDD Part B (this doc.)	Plan Vivo Standard Element	Location in PDD Part A	Location in PDD Part B (this doc.)
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	

Table 1.2.2 Plan Vivo Standard Alignment Table

Plan Vivo Standard Element	Location in PDD Part A	Location in PDD Part B (this doc.)	Plan Vivo Standard Element	Location in PDD Part A	Location in PDD Part B (this doc.)	Plan Vivo Standard Element	Location in PDD Part A	Location in PDD Part B (this doc.)
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	CO2e emissions from above ground woody biomass removed from the forest.

Table 3a: GHG Sources, Sinks, and Reservoirs: Pacific REDD+ Program	
	CO ₂ e emissions from above ground woody biomass entering the deadwood pool in the form of discarded crown and branches of harvested (target) trees.
	CO ₂ e emissions from additions to the above ground deadwood carbon pool resulting from collateral damage to non-target trees due to wood harvest activities.
	CO ₂ e emissions from the decomposition of below ground biomass resulting from above ground wood harvesting and collateral damage.
Sinks	CO ₂ e sequestered in the natural background rate of natural forest regeneration.
	CO ₂ e sequestered in harvest patches as a consequence of the opening the forest canopy.
Reservoirs in	The GHG assessment in this project estimates the change in carbon stocks contained 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
Aboveground 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.
Deadwood (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

Table 3b: Carbon Pools Used in this Methodology		
Carbon Pool	Included/ Excluded	Justification
		(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 23 rd 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 ₂ O)	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 lands⁴ and a “forests remaining as forests” 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

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:

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>

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 Sirebe 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 m³ to nearly 3 million m³ 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 Solomons around logging/

Even if landowners morally object to logging on their land, the lack of alternatives for income often persuades them to engage in 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

⁵ Global witness 2018: Paradise Lost- How China can help the Solomon Islands protect its forests.

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 Sirebe Project area, which shows the tribes that logging is commercially successful on these neighboring lands, without taking into account the environmental losses and social disruptions 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 neighboring tribal lands, including on customary registered land adjacent to 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:

- a) Forests Act 1999
- b) Forest Resources and Timber Utilisation Act 2004
- c) Forest Resources and Timber Utilization Regulations 2005
- d) Logging Code of Practice

We acknowledge that within the above-mentioned laws and regulations, conventional logging is not allowed to occur within the designated river buffer zone, of 50 meters from the edge of streams. Logging within this buffer area is illegal, however, it is sanctioned with minimal policing and enforcement from government and considered common practice. In the technical specifications applied, we were supposed to ascertain that the illegal practice 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.

3.1.3 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.

3.1.4 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 Sirebe Community 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 conventional 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 Sirebe and in the Babatana region.

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.

3.1.5 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 (farming area 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.

3.1.6 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.

3.1.7 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

The carbon accounting methodology and results presented in this section was updated in 2023. The details of the methodological deviation and updated carbon accounting calculations are presented in Appendix 4:

- *Sirebe Methodological Deviation to Technical Specification July 2023*
- *Sirebe Carbon Accounting July 2023 update*

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).

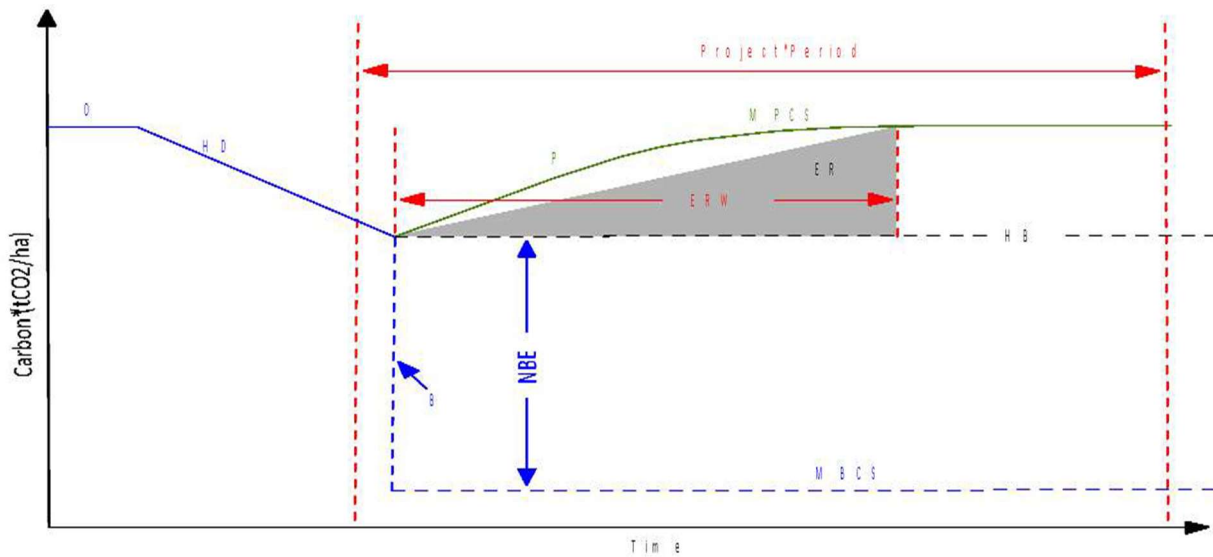
If applicable, the project proponent shall select or develop GHG emissions or removal factors that:

- 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 Baseline 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_{LU_i} = 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 4.1a: Baseline GHG Sources and Sinks	Acronym
Included in Modelling:	
Above Ground Biomass Emitted as a result of baseline logging	AGBE
Below Ground Biomass Emitted as a result of baseline logging	BGBE
Removals sequestered into the long-term wood product pool	ltWP
Removals from post degradation growth of woody vegetation	RLBPD
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 4.1b: Evidence Requirement: Baseline Scenario GHG Emissions/Removals	
#	Name/Description
4.1a	Forest Inventory results and baseline carbon accounting created for the Sirebe Eligible Forest Area is provided in Appendix 4: Sirebe Carbon Accounting July 2023 update

4.1.1 Baseline commercial yield

The commercial yield is the fraction of the commercial stock which is harvested in the baseline in each rotation. The commercial stock is calculated based on measured values from a sample-based forest inventory. Expressed in percent of the commercial stock, the commercial yield is known as the harvest rate. Since all subprojects in the Babatana region are covered by the same type of undisturbed lowland rainforest, forest inventory data from the three sub-projects Siporae, Padezaka and Vuri was merged to form the database for all sub-projects in the Babatana region. The merged data allows for an increased level of data accuracy as compared to using data from individual sites.

In the Solomon Islands, commercial logging in natural forest occurs at highly unsustainable rates and frequencies - re-entry normally occurs prematurely only 10 years after the previous rotation. Timber harvesting during a 30-year project period is conservatively assumed to occur in two rotations of 15 years each. It is assumed that the whole Sirebe EFA would be logged in year 1 and logged again in year 16. In the absence of a legally binding allowable cut in the country, we assume the following, conservative harvest rates:

- Rotation 1: First entry logging at a harvest rate of 50% of the original commercial stock
- Rotation 2: Re-entry logging at a harvest rate of 70% of the future commercial stock

After intense logging in the first rotation, the harvest rate in the re-entry logging will typically increase relative to the remnant commercial stock due to the diminished commercial timber resources. To avoid overestimating the commercial yield, the harvest rate shall not exceed 70% of the commercial stock in each rotation. This threshold aims to factor in harvest inefficiencies caused by lack of planning and damaged future crop trees.

Equation 4.1.1: Calculation of commercial yield per rotation

$$YLD_r = CVOL_r * HR\%_r$$

Where:

YLD_r Mean commercial yield in rotation r (m³ ha⁻¹)

CVOL_r Mean commercial stock in rotation r (m³ ha⁻¹)
 HR%_r Harvest Rate rotation r (%)

Table 4.1.1: Baseline commercial stock, commercial yield and harvest rate in the Sirebe EFA

Rotation	Min. Diameter Limit	Mean Commercial Stock (CVOL)	Mean Commercial Yield (YLD)	Harvest Rate (HR%)
	cm	m ³ ha ⁻¹	m ³ ha ⁻¹	(%)
Rotation 1	50	177.1	88.6	0.50
Rotation 2	50	81.8	57.2	0.70

4.1.2 Baseline Emissions from Harvested Logs

The baseline emissions from the harvested logs BE_{HL} are calculated by converting the commercial yield of all species into CO₂ emissions and multiplying it by the extraction factor as is shown in the equation below. It is assumed that all carbon stored in the logs, except for a fraction stored in long-lived wood products, is oxidized during the project period.

Equation 4.1.2: Calculation of baseline emissions from harvested logs

$$BE_{HL,r} = \left(\sum_{sp}^n CVOL_{sp} * WD_{sp} * CF_{WB} * EF_C \right) * HR\%_r$$

Where:

BE_{HL,r} Baseline emissions from harvested logs in rotation r (t CO₂e)
 CVOL_{sp} Commercial yield of species sp (m³)
 WD_{sp} Wood density of tree species sp (t d.m. per m³)
 CF_{WB} Carbon fraction of woody biomass (%)
 EF_C Emission factor C to CO₂ (t CO₂)
 sp Commercial tree species
 n Number of commercial species identified in forest inventory
 HR%_r Harvest rate in rotation r (%)

Baseline emissions from harvested logs in the Sirebe EFA

Rotation 1: BE_{HL} = 70,352 t CO₂e
 Rotation 2: BE_{HL} = 45,466 t CO₂e
 Project Period: BE_{HL} = 115,818 t CO₂e

4.1.3 Baseline Emissions from Deadwood

The baseline emissions from deadwood pools comprise harvest residue and logging damage (BE_{DW}) and are calculated according to the equations below:

Equation 4.1.3a: Calculation of baseline emissions from deadwood in undisturbed forest

$$BE_{DW,UF,r} = YLD_r * EF_{DW,UF} * EF_C$$

Equation 4.1.3b: Calculation of baseline emissions from deadwood in logged forest

$$BE_{DW,LF,r} = YLD_r * EF_{DW,LF} * EF_C$$

Where:

$BE_{DW,r}$	Baseline emissions in above-and belowground deadwood from collateral damage caused by tree felling and logging infrastructure in rotation r (t CO ₂ e)
YLD_r	Commercial yield in rotation r (m ³)
$EF_{DW,UF}$	Emission factor deadwood from logging damage in undisturbed forest (t C per m ³)
$EF_{DW,LF}$	Emission factor deadwood from logging damage in logged forest (t C per m ³)
EF_C	Emission factor C to CO ₂ (t CO ₂)

Baseline emissions from deadwood pools in the Sirebe EFA

Rotation 1:	$BE_{DW,UF} =$	324,583 t CO ₂ e
Rotation 2:	$BE_{DW,LF} =$	133,683 t CO ₂ e
Project Period:	$BE_{DW} =$	458,266 t CO ₂ e

4.1.4 Baseline Removals from Woody Biomass

Woody biomass increment is assumed to increase in the baseline scenario due to increased light penetration after logging disturbance which causes a higher rate of carbon sequestration compared to undisturbed forest. This method applies a mean annual carbon sequestration rate in logged forest based on the best available literature data. For simplicity, it is assumed that baseline removals start in year 1 and occur at a constant annual rate during the project period. It is further assumed that the rotation period of 15 years is not long enough for the disturbed forest to regenerate to mature forest when the carbon sequestration rate would decline.

Equation 4.1.4: Calculation of baseline removals from woody biomass

$$BR_{WB,LF,r} = \Delta C_{WB,LF} * F_{BG} * EF_C * A_{EFA} * r$$

Where:

$BR_{WB,LF,r}$	Baseline removals from above- and belowground woody biomass increment in logged forest in rotation r (t CO ₂ e)
$\Delta C_{WB,LF}$	Carbon in aboveground woody biomass increment in logged forest (t C ha ⁻¹ yr ⁻¹)
F_{BG}	Factor of tree belowground biomass BG in tropical forests (dimensionless)

EF _C	Emission factor C to CO ₂ (t CO ₂)
A _{EFA}	Extent of EFA (ha)
r	Number of years in rotation

Baseline removals from woody biomass in the Sirebe EFA

Rotation 1:	BR _{WB,LF} = 68,037 t CO ₂ e
Rotation 2:	BR _{WB,LF} = 68,037 t CO ₂ e
Project Period:	BR _{WB,LF} = 136,074 t CO ₂ e

4.1.5 Baseline Removals from Wood Products

Removals from long-lived wood products are calculated using the conceptual framework detailed in Winjum et al 1998⁶.

Equation 4.1.5: Baseline removals from carbon sequestered in long-lived wood products

$$BR_{llWP,r} = \sum_{ty}^n (((C_{HL,ty} - WW_{ty}) - SLF_{ty}) - OF_{ty,r})$$

Where:

BR _{llWP,r}	Baseline removals from carbon in long-lived wood products <i>llWP</i> that remains sequestered after the end of rotation <i>r</i> (t CO ₂ e)
C _{HL,ty,r}	Total carbon in extracted logs <i>HL</i> that is processed into wood product types <i>ty</i> (t CO ₂ e)
WW _{ty,r}	Waste fraction of wood product types <i>ty</i> that is emitted immediately (t CO ₂ e)
SLF _{ty,r}	Short-lived fraction of wood product types <i>ty</i> that is emitted within 3 years of timber processing (t CO ₂ e)
OF _{ty,r}	Oxidized fraction of wood product types <i>ty</i> that is emitted during rotation <i>r</i> (t CO ₂ e)
<i>ty</i>	Types of wood products
n	Number of wood products

Baseline removals from long-lived wood products in the Sirebe EFA

Rotation 1:	BR _{llWP} = 2,982 t CO ₂ e
Rotation 2:	BR _{llWP} = 2,982 t CO ₂ e
Project Period:	BR _{llWP} = 5,964 t CO ₂ e

4.1.6 Net Baseline Emissions

⁶ Winjum, J.K., Brown, S. and Schlamadinger, B., 1998. Forest harvests and wood products: sources and sinks of atmospheric carbon dioxide. *Forest Science*, 44(2), pp.272-284.

Net baseline emissions equal the baseline emissions less the baseline removals as per the equation below:

Equation 4.1.6: Calculation of net baseline emissions

$$NBE_r = BE_{CP,r} - BR_{CP,r}$$

Where:

NBE_r	Net baseline emissions in rotation r (t CO ₂ e)
$BE_{CP,r}$	Baseline emissions from all carbon pools and emission sources in rotation r (t CO ₂ e)
$BR_{CP,r}$	Baseline removals from all carbon pools in rotation r (t CO ₂ e)

Net baseline emissions in the Sirebe sub-project

Rotation 1:	NBE = 323,916 t CO ₂ e
Rotation 2:	NBE = 108,130 t CO ₂ e
Project Period:	NBE = 432,046 t CO ₂ e

5 Quantifying Project Emission Reductions 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.

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 CO₂e using appropriate GWPs.

5.1 Project GHG Emissions and Removals

5.1.1 Project Emissions from Small-Scale Timber Milling

Timber milling in the Sirebe project happens in an area that covers an estimated 50% of the EFA while in the other 50% it is not feasible because of the remoteness and inaccessibility of the terrain.

Project Emissions from small scale timber milling in the Sirebe project

Rotation 1:	$PE_{TM} = 2,332 \text{ t CO}_2\text{e}$
Rotation 2:	$PE_{TM} = 2,332 \text{ t CO}_2\text{e}$
Project Period:	$PE_{TM} = 4,663 \text{ t CO}_2\text{e}$

5.1.2 Project Emissions from Activity Shifting Leakage

Activity shifting leakage refers to the displacement of production activities (commercial logging, timber milling and farming) from the eligible forest area (EFA) boundaries as a result of the project activities. PE_{ASL} is calculated using the equation below.

Equation 5.1.2: Calculation of activity-shifting leakage

$$PE_{ASL} = \sum_p Arp_p * Prp_p * \Delta C_{CP,p}$$

Where:

- PE_{ASL} Project emissions from activity shifting leakage (t CO₂e)
- Arp_p Extent of the EFA that will experience reduced production of activity p as a result of project activities (ha)
- Prp_p Reduction in production activity p in area Arp_p as a result of project activities; expressed as a proportion of production expected under the baseline scenario (dimensionless)
- $\Delta C_{CP,p}$ Reduction in carbon stocks from all carbon pools that occurs as a result of displacement of production activity p (t CO₂e/ha)

Project emissions from activity shifting leakage in the Sirebe EFA

Rotation 1:	$PE_{ASL} = 0 \text{ t CO}_2\text{e}$
Rotation 2:	$PE_{ASL} = 0 \text{ t CO}_2\text{e}$
Project Period:	$PE_{ASL} = 0 \text{ t CO}_2\text{e}$

Activity shifting leakage from the displacement of commercial timber production activities in the Sirebe project is zero because the project owner groups do not own or control additional areas outside of the project area to which such activities could be shifted.

Activity shifting leakage from farming has been prevented in the Sirebe project through participatory land-use planning. The EFA was mapped to exclude areas which would potentially be used for agriculture in the future. This includes a 22-ha garden area was demarcated for farming. Through the availability of sufficient farmland for food production, the incentive for the tribe to shift farming

activities elsewhere due to project activities has been eliminated.

Table 5.1.2: Parameters and references used in calculation of activity-shifting leakage from displacement of farming activities in the Sirebe project

Parameter	Value	Unit
(Arp) Extend of project area that will experience reduced farming activities as a result of project activities	806.2	ha
(Prp) Reduction of farming activities in EFA compared to baseline activity	0	%
(ΔC_{CP}) Reduction in carbon stocks that as a result of displacement of timber production activities to areas outside the project area	0	t CO ₂ e

5.1.3 Project Emissions from Market Leakage

Market leakage is currently assumed to be zero in project areas of the Nakau Programme-SI due to insignificance (see Update to Sirebe Technical Specification 2023 in Appendix 4)

5.1.4 Project Removals from Woody Biomass

Woody biomass is the only carbon pool to experience removals in the project scenario, which occurs as additional carbon becomes sequestered in woody biomass through forest increment. This technical specification applies a mean carbon sequestration rate in undisturbed (mature) forest based on the best available literature data. For simplicity, it is assumed that project removals would occur at a constant annual rate during the project period.

Equation 5.1.4: Calculation of project removals from woody biomass

$$PR_{WB,r} = \Delta C_{WB,UF} * F_{BG} * A_{EFA} * r$$

Where:

$PR_{WB,r}$	Project removals from woody biomass in rotation r (t CO ₂ e)
$\Delta C_{WB,UF}$	Carbon in aboveground woody biomass increment in undisturbed forest (t C ha ⁻¹ yr ⁻¹)
F_{BG}	Factor of tree belowground biomass in tropical forests (dimensionless)
A_{EFA}	Extent of EFA (ha)
r	Number of years in rotation r

Project removals from woody biomass in the Sirebe project

Rotation 1:	$PR_{WB} = 13,972$ t CO ₂ e
Rotation 2:	$PR_{WB} = 13,972$ t CO ₂ e
Project Period:	$PR_{WB} = 27,944$ t CO ₂ e

5.1.5 Net Project Benefit

The net project benefit equals the project removals less the project emissions, as follows:

Equation 5.1.5: Calculation of net project benefits

$$NPB_r = PR_{WB,r} - PE_{L,r} - PE_{TM,r}$$

Where:

NPB_r	Net project benefit in rotation r (t CO ₂ e)
$PR_{WB,r}$	Project removals from woody biomass in rotation r (t CO ₂ e)
$PE_{L,r}$	Project emissions from leakage in rotation r (t CO ₂ e)
$PE_{TM,r}$	Project emissions from small-scale timber milling in rotation r (t CO ₂ e)

Net project benefits in the Sirebe project

Rotation 1: NPB = 11,640 t CO₂e

Rotation 2: NPB = 11,640 t CO₂e

Project Period: NPB = 23,280 t CO₂e

5.2 Net Carbon Benefit

The net carbon benefit in each rotation is calculated as the sum of the net baseline emissions (NBE) and the net project benefit (NPB) as follows:

Equation 5.2: Calculation of net carbon benefit

$$NCB_r = NBE_r + NPB_r$$

Where:

NCB_r	Net carbon benefit in rotation r (t CO ₂ e)
NBE_r	Net baseline emissions in rotation r (t CO ₂ e)
NPB_r	Net project benefit in rotation r (t CO ₂ e)

Net carbon benefit in the Sirebe project

Rotation 1: NCB = 335,556 t CO₂e

Rotation 2: NCB = 119,770 t CO₂e

Project Period: NCB = 455,327 t CO₂e

5.3 Plan Vivo Certificates

The expected Plan Vivo Certificates are calculated in each rotation as the net carbon benefit less the risk buffer of 20% according to the equation below.

Equation 5.3: Calculation of Plan Vivo Certificates

$$vPVC_r = NCB_r * (1 - RBF)$$

Where:

$vPVC_{a,r}$ Plan Vivo Certificates in rotation r (t CO₂e)

$NCB_{a,r}$ Net carbon benefit in rotation r (t CO₂e)

RBF Risk buffer net carbon benefit (20%)

*Expected vPVCs in the Sirebe-project**Total*

Rotation 1: vPVCs = 268,445 t CO₂e

Rotation 2: vPVCs = 95,816 t CO₂e

Project Period: vPVCs = 364,261 t CO₂e

Per year

Rotation 1: vPVCs = 17,896 t CO₂e yr⁻¹

Rotation 2: vPVCs = 6,388 t CO₂e yr⁻¹

Project Period: vPVCs = 12,142 t CO₂e yr⁻¹

Per hectare

Rotation 1: vPVCs = 22.2 t CO₂e ha⁻¹ yr⁻¹

Rotation 2: vPVCs = 7.9 t CO₂e ha⁻¹ yr⁻¹

Project Period: vPVCs = 15.1 t CO₂e ha⁻¹ yr⁻¹

5.4 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.

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.

5.5 Uncertainty in Baseline GHG Emissions and Removals

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.

5.5.1 Uncertainty of Commercial Stock

The commercial stock in the Sirebe EFA is estimated based on sampled values from a forest inventory carried out in the Babatana region (see section 4.1.1). The uncertainty of the commercial stock is estimated as the standard error of the mean at a 90% confidence level as presented in the equations that follow. Based on the confidence interval of the commercial stock and yield, the confidence interval of net carbon credits is estimated.

Equation 5.5.1: Calculation of error of the commercial stock

$$SE_{CVOL} = z * \frac{SD_{CVOL,p}}{\sqrt{n}}$$

Where:

SE_{CVOL}	Standard error of the mean commercial stock at 90% confidence level ($m^3 \text{ ha}^{-1}$)
SD_{CVOL}	Standard deviation of the commercial stock from sample plots p ($m^3 \text{ ha}^{-1}$)
z	Critical value for two-tailed test of significance at alpha level 0.1
n	Number of samples

Equation 5.5.2: Calculation of relative sampling uncertainty of commercial stock

$$SE\%_{CVOL} = \frac{SE_{CVOL}}{CVOL} * 100$$

Where:

SE% _{CVOL}	Relative standard error of the mean commercial stock at 90% confidence level (%)
SE _{CVOL}	Standard error of the mean commercial stock at 90% confidence level (m ³ ha ⁻¹)
CVOL	Mean commercial stock (m ³ ha ⁻¹)

Basic Statistics and Uncertainty of the commercial stock in the Babatana Region

Mean	177.1 m ³ ha ⁻¹
Standard Deviation	107.4 m ³ ha ⁻¹
Standard Error (SE) of the Mean (90% Confidence Interval):	17.8 m ³ ha ⁻¹
SE (%)	10.1 %
90% Confidence Interval:	168.2 – 186.0 m ³ ha ⁻¹

The error of the commercial stock is very low 10.1 % and therefore the estimate of the mean provides a high level of accuracy.

5.5.2 Uncertainty of PVCs

Based on the confidence interval of the commercial yield, the confidence interval and uncertainty of the net carbon credits is estimated as follows:

Basic Statistics of PVCs in the Sirebe EFA

Mean:	12,142 t CO ₂ e yr ⁻¹
Uncertainty 90% Confidence Interval	1,492 t CO ₂ e yr ⁻¹
Uncertainty (%)	12.1 %
Range of 90% Confidence Interval	11,407– 12,877 t CO ₂ e yr ⁻¹
Range of 90% Confidence Interval	14.1-16.0 t CO ₂ e yr ⁻¹ ha ⁻¹

The error of the PVCs is very low 12.1 % and therefore the estimate of the carbon benefits has a high level of accuracy.

5.5.3 Uncertainty of other Sources

The uncertainty of parameters used in estimating carbon emissions and removals that cannot be readily quantified is controlled using best practice approaches (e.g. to reduce measurement error), appropriate and conservative default values and robust assumptions as detailed in the tables on parameters and references in this technical specification.

6 Monitoring the Sirebe Forest Carbon 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; Origin of the data;*
- c) Monitoring methodologies, including estimation, modelling, measurement or calculation approaches;*
- d) Monitoring times and periods, considering the needs of intended users; Monitoring roles and responsibilities;*
- e) GHG information management systems, including the location and retention of stored*
- f) 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 GHG reductions produced by this project are issued as Plan Vivo Certificate (PVC) 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 PDD 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.

6.1 Carbon Monitoring

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

Annual reports will be produced using the latest Plan Vivo Annual Report Template in annual intervals and for each Verification Period. At the end of the verification period, a final annual report is produced. Each Annual Report will be produced until September of the year following the Reporting Period. Each monitored indicator is measured at different intervals and at different times. Generally, indicators are measured either annually, or once during each verification period (3 to 5 years). The results of project monitoring will be shared in the Annual Report.

6.1.1 Carbon Indicators and Targets

Carbon indicator	Target
Forest Loss from commercial logging in the Eligible Forest Area	No changes to forest cover in the Eligible Forest Area
Forest Loss from subsistence use in the eligible area	Disturbance from subsistence use to remain small-scale with emissions not exceeding the amount calculated in the project carbon accounting.
Carbon Baseline	The net baseline emissions are re-assessed every 10 years
Baseline Scenario	The credibility of the Baseline Scenario is re-assessed every 10 years
Activity-Shifting Leakage	Not monitored- Activity-shifting leakage has been prevented through land-use planning and the allocation of farming areas outside of the Eligible Forest Area
Market Leakage	Market leakage assumptions are re-assessed at every verification

6.1.2 Carbon Monitoring Procedures

The monitored carbon indicators are summarized in the tables below that follow.

Carbon indicator	Forest Cover loss
Description	Identify and measure potential areas of forest cover loss caused by encroachment of agriculture or illegal logging in the EFA which would lead to a loss of forest carbon stocks.
Measured value	Area of forest cover loss (hectares) Logged timber volume (m ³)
Monitoring procedures	<p>1. Remote monitoring: Nakau has subscribed to Upstream Tech Lens, a web-based, remote sensing application to monitor forest cover loss in all sub-projects (see https://app.upstream.tech). Through the app, forest cover can be monitored through an analysis of recent, high-resolution satellite images made available from Planet Lab through Norway's International Climate and Forests Initiative (NICFI). The app provides monthly image mosaics that allow for a timely and holistic detection of potential incidents leading to forest cover loss. Any incidents detected inside the EFA or near the EFA boundary will be inspected in the field by the forest rangers.</p> <p>2. Field monitoring: Forest cover loss in the EFA is additionally monitored in the field by means of:</p> <ol style="list-style-type: none"> Regular field patrols: Field patrolling is carried out along pre-planned transects and the EFA boundary with the aid of a field mapping application installed on smartphones. Targeted field inspections: Carried out in areas where human disturbance is happening or is at risk of happening, detected through remote sensing app. NRDF provides the forest rangers with spatial information (GPS coordinates) of actual or potential forest cover loss incidents. <p>Where a human disturbance incident is detected, the forest rangers will enforce the PA rules to immediately stop the activity which is leading to forest cover loss and to prevent further disturbance. Subsequently, the area of forest cover loss is measured in the field using the mapping app or with a GPS device. Where applicable, the logged volume is measured by recording all stump diameters and estimating the log length of all felled trees in the area. After the rangers have returned from the field, they will report and hand over the spatial data to NRDF field officers in Sasamungga. If necessary, NRDF will organize a second field inspection to carry out a more detailed assessment of the environmental damage. Where applicable, this will include an assessment of the logged volume by recording all stump diameters and estimating the log length of all felled trees in the area. NRDF, together with the VCA will report the PA infringement to the authorities.</p>
Calculation method	After field measurement, the actual project emissions per carbon pools are calculated according to section 5. The losses will be deducted according to Plan Vivo procedures at verification.
Frequency of monitoring	Remote sensing analysis: flexible from monthly (in project areas with elevated risks of human disturbance) to annually in areas with low disturbance risks. Field monitoring: Annually and after disturbance incidents
Teams involved and	Sirebe forest rangers are responsible to carry out the field monitoring

Carbon indicator	Forest Cover loss
responsibilities	and data collection/measurement. Nakau and NRDF provide technical support and training to facilitate the monitoring activity. Nakau and NRDF lead in the remote sensing forest monitoring and are responsible for regularly checking the project areas for disturbance threats and communicating any such threats to the project owner.
Monitoring equipment and resources	<ul style="list-style-type: none"> • Web-based, remote sensing monitoring app • Smartphones with mapping app installed • Handheld GPS units • GIS software • Computer • EFA boundary map • Monitoring transects and transect map
Reporting	A forest monitoring activity report will be prepared annually. The report will combine the results of forest and ecosystem monitoring and report on forest monitoring progress indicators. The forest monitoring activity report will be attached as a supporting document to the annual reports submitted to Plan Vivo. Third party verification occurs every 3-5 years

Carbon indicator	Carbon Baseline
Description	The monitoring of the carbon baseline involves the periodic verification of net baseline emissions through the re-assessment of the baseline commercial stock and potential yield in the EFA.
Measured value	m ³ ha ⁻¹
Monitoring procedures	Re-measurement of permanent forest inventory sample plots and reassessment of commercial stock and yield with revised forest inventory data
Calculation method	The net carbon emissions and carbon benefits calculations (Appendix 4) are recalculated with the updated commercial yield from the field assessment.
Frequency of monitoring	The carbon baseline is updated every 5 years throughout the project period. An earlier assessment will be carried out in case of significant disturbance events such as cyclones.
Monitoring equipment	<ul style="list-style-type: none"> • GPS or Mapping app • Diameter tape, • Hypsometer • Compass, • Desktop computer
Teams involved and responsibilities	Field work is carried out by Sirebe forest rangers with technical support and training from Nakau and NRDF. Nakau is the technical lead on the re-assessment of the carbon baseline and reporting of potential changes to Plan Vivo.
Reporting	Updates in the carbon baseline are reported in the annual reports every 10 years, or earlier, in case of significant forest loss events.

Carbon indicator	Baseline Scenario
Description	The monitoring involves the periodic assessment of forest sector policy and regulatory changes that could affect the baseline

Carbon indicator	Baseline Scenario
	assumptions and project additionality. Monitoring has the purpose to identify potential changes in the forest sector policy and regulatory environment and to re-assess the validity of baseline and project additionality assumptions.
Measured value	n/a
Monitoring procedures	Revision of forest sector policy/regulatory changes Updated baseline assessment using the CDM AR tool 02
Calculation method	n/a
Frequency of monitoring	Once per verification period
Monitoring equipment	n/a
Teams involved and responsibilities	Baseline re-assessment Nakau Reporting Nakau
Reporting	Potential changes to the baseline scenario are reported in the Sirebe annual reports once per verification period.

Carbon indicator	Emissions from market leakage
Description	Market leakage occurs when forest conservation projects significantly reduce logging, causing a change in the timber supply and demand equilibrium that results in a shift of production elsewhere to make up for the lost supply.
Measured value	Foregone log volume through Nakau project activities (m ³) Log export volume at the country level (m ³)
Monitoring procedures	Data collection of the foregone log volume (m ³) from the protected forest area under Nakau projects. Data collection on log production at the country level (m ³).
Calculation method	Calculation of the foregone log volume caused by the Nakau project (m ³) a and comparison with the total the log export volume at the country level (m ³) during the verification period. Based on the percentage, the significance of the foregone log volume and potential impacts on the buyer markets are assessed.
Frequency of monitoring	Once per verification
Monitoring equipment	Desktop computer and internet connection
Teams involved and responsibilities	Nakau is the technical lead in the market leakage assessment
Reporting procedures	Market leakage results are reported in the annual monitoring reports once per verification period

6.1.3 Carbon Monitoring Roles and Responsibilities

Specific project monitoring roles for this project are presented in Table 6.1.3 below:

Task	Responsibility
Eligible Forest Area Boundary Inspections	Sirebe rangers with assistance from the Project Coordinator where needed
Eligible Forest Area Inspections	Sirebe rangers with assistance from the Project Coordinator where needed

Table 6.1.3 Project Monitoring Roles/Responsibilities	
Task	Responsibility
Remote forest cover assessment	Nakau or Project Coordinator
Carbon Baseline	Sirebe rangers with assistance from the Project Coordinator and Nakau
Baseline Scenario	Nakau
Market Leakage	Nakau
Carbon Monitoring data management	Nakau and Project Coordinator

6.1.4 Carbon Monitoring Information Management Systems

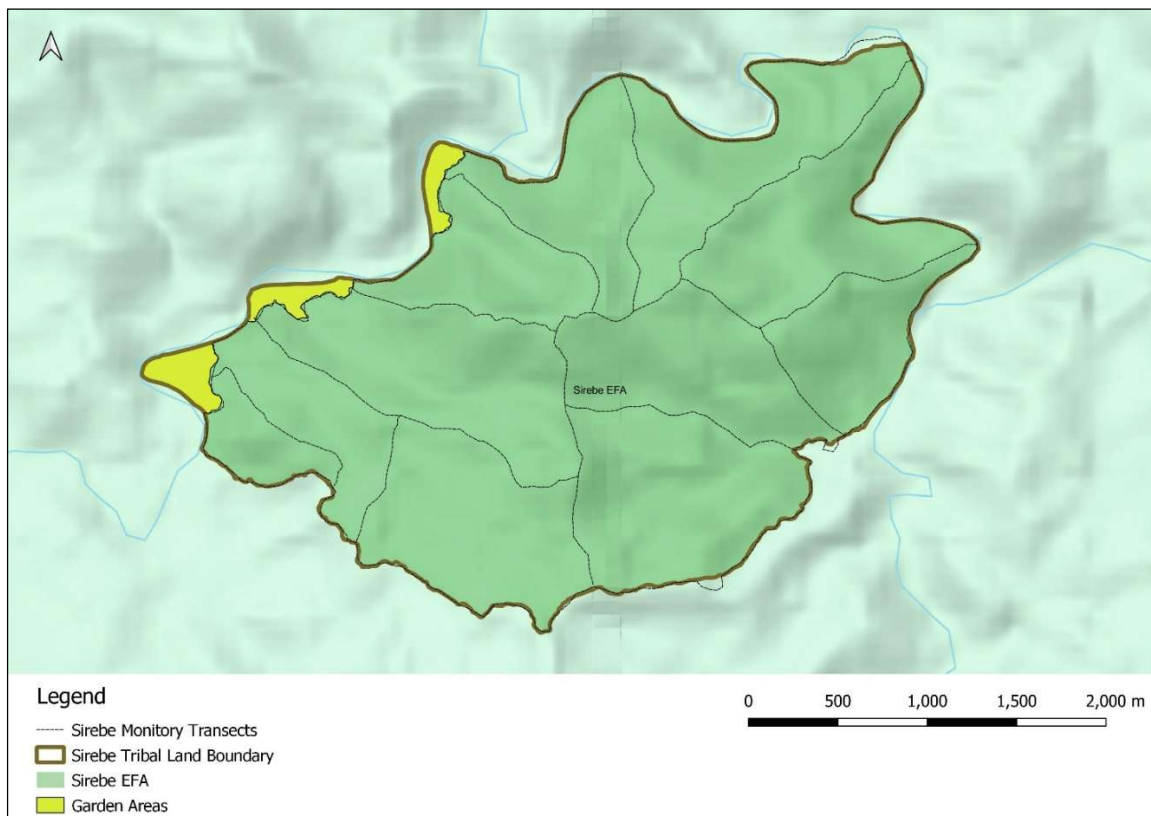
This project uses the information management system described in Section 7.1 of the Nakau Methodology Framework.

6.1.5 Reporting of Carbon Monitoring Results

This project has submitted a simplified Annual Report at its first verification. The Report lists the data and indicators to be monitored but the full monitoring procedures are not be implemented until the second verification. In subsequent verification, the Sirebe project will submit an annual report that reports on the monitoring results of all relevant carbon indicators.

6.1.6 Sirebe Forest Monitoring Map

Figure 6.1.6: Sirebe Forest Monitoring Map



6.1.7 Community Participation in Monitoring

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.*

The Project Owner will recruit community rangers with responsibilities to undertake project monitoring tasks described in section 6.1.2. 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 monitoring 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 validation of this PDD, 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 PDD and how to use the AVENZA application to monitor carbon, or more specifically measure 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 over time. The project coordinator and project operator will supervise and continue to support the project owner, to meet their monitoring requirements.

Nakau, with input of the project coordinator has also created a data collection toolkit manual, which can be used in conjunction with PDD 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 6.1.2 is an ongoing activity in the Sirebe project. In addition to the expertise provided from Nakau, 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 a forest inventory, including the completion of plots since the start of the project. The forest inventory methodologies and inventory techniques used in this project are described in the Nakau Forest Inventory Manual. 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.

6.2 Community Impact Monitoring

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

6.2.1 Community Monitoring Indicators and Targets

Performance indicator	Target
Food security	<ul style="list-style-type: none"> No detrimental changes to food security attributable to the project Project contributes to improvements in food security
Water security	<ul style="list-style-type: none"> No detrimental changes to water security attributable to the project Project contributes to improvements in water security
Financial security and impact of money	<ul style="list-style-type: none"> No detrimental changes community wellbeing caused by carbon income (e.g. increase in drug and alcohol use) Participants perceive carbon income to provide positive economic benefits
Participation	<ul style="list-style-type: none"> Increase in participation and access to information from baseline levels (and between monitoring events) Increased trust in the project and perceived community wellbeing

6.2.2 Monitored Community Indicators

Monitored and community impact data are listed in Table 6.2.2 below.

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 and %	Community Impact Survey	Monitored

6.2.3 Community Monitoring Procedures

Data Unit / Parameter:	Food Security
Data unit:	Various
Description	<p>We want to know:</p> <ul style="list-style-type: none"> • 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:	<p>Structured interviews pursuing the following questions:</p> <ol style="list-style-type: none"> 1. How often do you buy food from the store or market? 2. What goods do you purchase at the store/market? 3. How big is your household garden? 4. What type of crops do you grow at your family garden? 5. How often do you eat good from your garden? 6. Do you ever run out of food? 7. How often do you harvest food from the forest? 8. What goods do you collect from the forest?
Frequency of monitoring/recording:	At every verification
Value monitored:	Various
Monitoring equipment:	Social survey equipment
QA/QC procedures to be applied:	3-5 yearly 3 rd party verification
Calculation method:	Compare responses with previous survey

Data Unit / Parameter:	Water Accessibility
Data unit:	Various
Description:	<p>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.</p>
Source of data:	Community Impact Survey

Data Unit / Parameter:	Water Accessibility
Description of measurement methods and procedures to be applied:	Structured interviews pursuing the following questions: <ol style="list-style-type: none"> 1. Do you ever run out of water? 2. Which water sources does your household use and is it available all year round? 3. Do you feel you can use as much tap water as you like? (i.e through piped system) 4.
Frequency of monitoring/recording:	At each verification
Value monitored:	Various
Monitoring equipment:	Social survey equipment
QA/QC procedures to be applied:	3-5 yearly 3 rd party verification
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: <ol style="list-style-type: none"> 1. How many children/youth (under 20 years) in your household are currently in primary/secondary/tertiary school? 2. How many household members have graduated from secondary/tertiary school? 3. What is your household's average monthly income? 4. What are your main sources of income? 5. What are your household's average monthly expenditures? 6. What are your main expenditures? 7. Are you able to save money from your earnings in a typical month? 8. Which sources of electricity are used in your home? 9. What type of toilet is your household using? 10. Hours spent for daily activities? 11. -Cooking (Female / Male) 12. -Household chores 13. -Gardening/ farming/fishing

Data Unit / Parameter:	Financial security
	14. -Community church activities 15. Are you aware of anyone in the community using marijuana or other drugs (incl. homebrew).
Frequency of monitoring/recording:	Once per verification
Value monitored:	Various
Monitoring equipment:	Social survey equipment
QA/QC procedures to be applied:	3-5 yearly 3 rd party verification
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 tribal associations, project management) is engaging with 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: 1. Can you access information about the REDD+ Enterprise finances and activities? 2. Do you generally trust the REDD+ Enterprise? 3. Is any of your household directly involved in PES activities (Employed, committee member etc) 4. Do you generally feel the PES enterprise contributes to the 5. wellbeing of the tribe/community members?
Frequency of monitoring/recording:	At each verification
Value monitored:	Various
Monitoring equipment:	Social survey equipment
QA/QC procedures to be applied:	3-5 yearly 3 rd party verification
Calculation method:	Compare responses with previous survey

6.2.4 Community Monitoring Roles and Responsibilities

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 before every

verification event. Ideally, the same household 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.

6.2.5 Community Monitoring Information Management Systems

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

6.2.6 Reporting of Community Impacts

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

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			

6.3 Ecosystem Monitoring

Carbon offsets are issued to this project as a result of 3rd party verification of each Annual Report, which contains sufficient data to provide evidence to support an ecosystem 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 PDD Part A Appendix 5), the project will undertake ecosystem monitoring surveys at the project sites. Rangers will make opportunistic observations during transact/boundary walks and when conducting other activities in the Protected Areas and record observations of flora and fauna classified as key (indicator) species as per table 6.3.2 of this PDD.

Key species: A comprehensive baseline biodiversity inventory in the forest habitats of the Mount Maetambe-Kolombangara River Basin was carried out in 2014, which includes the area of the Sirebe project. The results from this work provide a comprehensive list of fauna and flora species that inhabit the region. 13 species were identified as key species of high conservation value and/or concern (see section **Error! Reference source not found.**). The criteria for the selection of key species were:

- Vulnerable or higher status as per the IUCN red list, and/or
- Endemism/limited geographical range, and/or
- Potentially under threat from human activities (hunting, wildlife trade)
- Potentially under threat from exotic invasive or feral animal species (rats, cats, dogs, wild boar)

Observations must be recorded and reported at PA Management Committee Meetings. Survey data collection will use a data collection app with a customized schema for key and other species.

- Key species observed
- Non-key species observed (optional)
- Number of Individuals observed
- Date species observed
- Name and role of observer
- Location of observation

6.3.1 Ecosystem Indicators and Targets

Performance indicator	Target
Presence of key species of plants and animals	Key species of plants and animals persist in the Project Area
Estimated population size of key species	Populations of key species are stable in the Project Area

6.3.2 Ecosystem Indicators

Monitored ecosystem indicators (key species) are listed in Table 6.3.2 below.

Table 6.3.2: Key species for ecosystem monitoring in the Sirebe project

Species Group	Species Name	IUCN Status	Potential threats in the project area	Means of verification
Flora	Rosewood (<i>Pterocarpus indicus</i>)	EN	Rosewood is a valuable timber tree highly sought after on the Chinese market due to cultural value. In the Solomon Islands it has been widely depleted despite its status as a legal protected species and is globally endangered (EN) due to overexploitation.	<ul style="list-style-type: none"> • Ecosystem monitoring spatial data • Forest and ecosystem monitoring activity reports (annual) • Annual reports • Ecosystem monitoring report (at verification)
Fauna: Mammals	Admiralty flying fox (<i>Pteropus admiralitatum</i>)	LC	The Admiralty and Solomon flying fox are threatened by hunting and trade. Both are CITES-listed (Appendix II)	
	Solomon flying fox (<i>Pteropus rayneri</i>)	NT		
	Poncellet's giant rat (<i>Sitomys poncelleti</i>)	CR	Poncellet's giant rats are critically endangered and threatened by hunting.	
	Bougainville giant rat	VU	Bougainville giant rats are vulnerable and threatened by hunting.	

Species Group	Species Name	IUCN Status	Potential threats in the project area	Means of verification
	<i>(Solomys salebrosus)</i>			
Fauna: Birds	Blyth's hornbill <i>(Rhyticeros plicatus)</i>	LC	Blyth's hornbill is threatened by live pet trade and CITES-listed (Appendix II). The species is further frequently hunted for food and threatened by forest loss.	
	Papuan eclectus parrot <i>(Eclectus polychloros)</i>	LC	The eclectus parrot is vulnerable due to live pet trade. The species is further threatened by forest loss.	
	Sanford's sea eagle <i>(Haliaeetus sanfordi)</i>	VU	Sanford's sea eagle is endemic to the Solomon Islands and vulnerable. It is threatened by live pet trade. It is CITES listed (Appendix II).	
	Crested cuckoo dove <i>(Reinwardtoena crassirostris)</i>	LC	The crested cuckoo dove is potentially threatened by hunting and pet trade	
Fauna: Amphibians	Solomon leaf frog <i>(Cornufer guentheri)</i>	LC	The Solomon leaf frog is an endemic, forest frog species that is threatened by live pet trade.	
	Solomon giant tree frog <i>(Cornufer hedigeri)</i>	LC	The Solomon giant tree frog is threatened by live pet trade.	
Fauna: Reptiles	Solomon Islands skink <i>(Corucia zebrata)</i>	NT	The Solomon Islands skink is a large endemic reptile characteristic of closed canopy forest and is threatened by hunting and live pet trade. It is CITES-listed (Appendix II).	
	Western crocodile skink <i>(Tribolonotus pseudoponceleti)</i>	LC	The western crocodile skink is threatened by live pet trade.	

6.3.3 Ecosystem Monitoring Parameters

Data Unit / Parameter:	Key Species
Data unit:	Presence/absence Population size
Source of data:	Biodiversity Survey

Data Unit / Parameter:	Key Species
Description of measurement methods and procedures to be applied	Record key species during PA and EFA Inspections
Frequency of monitoring/recording:	Annual
Value monitored:	Presence/absence Population size
Monitoring equipment:	Animal identification table, binoculars, mobile phone, AVENZA software (or equivalent)
QA/QC procedures to be applied:	3-5 yearly 3 rd party verification
Calculation method:	Compare responses with previous survey

6.3.4 Ecosystem Monitoring Roles and Responsibilities

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

6.3.5 Ecosystem Monitoring Information Management

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

6.3.6 Reporting on Ecosystem Impacts

This project will submit a simplified Annual Report for its first verification. This will involve the reporting of the first project biodiversity survey and initial ecosystem indicator values, but will not include the presentation of the baseline biodiversity survey (to be presented at a subsequent verification event).

6.3.7 Ecosystem Monitoring Standard Operating Procedures

Project biodiversity impacts will be measured by means of a 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 seeks to investigate the presence and absence of key species present in the project area 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 key species. Overtime, the Sirebe rangers will have an increased ecosystem monitoring capacity, and it is expected that the ecosystem monitoring aspects of the project can be enhanced.

If an opportunity arises, additional in-depth biodiversity research, may be conducted to support the knowledge about the biodiversity impacts 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.

All ecosystem monitoring that is conducted during the monitoring period will be presented at the verification events. The first project biodiversity impact survey was undertaken during project development, and results are summarized in Section 5.3 of the Babatana Rainforest Conservation Project PDD Part A.

An example of the tabulation and project biodiversity impacts and trends, could be presented in summary, using the example format below.

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

6.4 Sharing Results of Project Monitoring

The outcomes of the project 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 Annual General Meeting.

Project monitoring outputs are reported in the 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 Annual 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 Annual Report is submitted to Plan Vivo for review.

7 References

CDM Tool for Demonstration and Assessment of Additionality.

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>

Estrada, M. 2011 Standards and methods available for estimating project-level REDD+ carbon benefits: reference guide for project developers. Working Paper 52. CIFOR, Bogor, Indonesia.

Green Collar 2010. VCS Proposed Methodology for Improved Forest Management, Conversion of Logged to Protected Forest V3-0, July 2010.

IPCC 2006. 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Prepared by the National Greenhouse Gas Inventories Program, Eggleston H.S., Buendia L., Miwa K., Ngara T. and Tanabe K. (eds). Published: IGES, Japan.

ISO 14064-2:2006. Greenhouse Gases - Part 2: Specification with guidance at the project level for Paradise Lost, How China can help the Solomon Islands protect its forests. Global witness 2018.

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

quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements.

First Edition 2006-03-01.

VCS 2013. Verified Carbon Standard Agriculture, Forestry and Other Land Use Requirements. v3.4.

VCS 2012. Tool for the demonstration and assessment of additionality in IFM project activities. VT0002, v1.0.

8 Appendices

All Appendixes are supplied separately.

Appendix 1: Definitions

Appendix 2a: Protected Areas Act 2010

Appendix 2b: Protected Area Regulations 2012

Appendix 3: Additionality Assessment

Appendix 4: Forest Inventory and Carbon Accounting (update)

Appendix 5: Harvest Rate Justification Report (Superseded)

Appendix 6: Example Director's Certificate

Appendix 7: Eligible Forest Area Boundary Inspection Template

Appendix 8: Project Area Inspection Template

Appendix 9: De-Minimis Timber Harvest Template (Superseded)

Appendix 10: Activity-Shifting Leakage Template (Superseded)