



Loru Forest Project - Annual Report 2016

An avoided deforestation project at Loru, Santo, Vanuatu

The Nakau Programme:
An indigenous forest conservation programme
through Payment for Environmental Services (PES)



European Union



A project of Live & Learn Environmental Education and the Nakau Programme Pty Ltd in collaboration with Carbon Partnership Ltd. Funded by the European Union and the Asian Development Bank.

Report prepared by: Sean Weaver

Cover Photo: Weaver - view towards the coastal fringe of the Loru Project site from the sea, east Espiritu Santo, Vanuatu.

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Loru Forest Project: Annual Report 2016

Submitted by: The Nakau Programme Pty Ltd (Programme Operator)

Date of submission: 18 March 2016

SUMMARY

Project overview	
Reporting period	16 January 2013 – 15 January 2015 (2 years)
Geographical areas	Loru, Santo, Vanuatu
Technical specifications in use	TS Module (C) AD-DtPF D2.2.1 v1.0 20150815

Project indicators to date (reporting period end)			
Project Indicators	Historical	Added/issued this period 2013-2015	Total
No. smallholder households with PES agreements	n/a	n/a	n/a
No. community groups with PES agreements (where applicable) by December 2014	n/a	1	1
Approximate number of households (or individuals) in these community groups	n/a	50	50
Area under management (ha) where PES agreements are in place	n/a	165.6 ha	165.6 ha
Total PES payments made to participants (USD)	n/a	No payments made yet	No payments made yet
Total sum held in trust for future PES payments (USD)	n/a	n/a	n/a
Plan Vivo Certificates (PVCs) issued to date	n/a	4,884	4,884
Allocation to Plan Vivo buffer to date	n/a	1,220	1,220
Unsold Stock at time of submission (If comprising various vintages, detail all vintages on additional lines as required)	n/a	n/a	n/a
Total tCO ₂ available for issuance for this reporting period	n/a	4,884	4,884
Plan Vivo Certificates (PVCs) requested for issuance at this time	n/a	4,884	4,884
Remaining tCO ₂ available for issuance for this reporting period	n/a	0	0

PART A: PROJECT UPDATES**A1 Key events**

- This is the first Annual Report
- PES Agreement signed
- PD & TS Module validated
- First issuance sought

A2 Successes and challenges

- Nothing to report at this stage apart from events listed in A1 above.

A3 Project developments

- Nothing to report at this stage apart from events listed in A1 above.

Table 1: Document updates

PDD (including technical specifications) document version:		
PDD section	Date change	Short description of update
<i>Not applicable</i>		

Table 2: Progress against corrective actions

Document	Corrective action	Activity against this
<i>Not applicable</i>		

A4 Future Developments

- No additional plans at this point.

PART B: PROJECT ACTIVITIES**B1 Project activities generating Plan Vivo Certificates****Table 3: Project activity summary**

Name of technical specification	Area (Ha)	No smallholder households	No Community Groups
TS Module (C) AD-DtPF D2.2.1 v1.0 20150815	165.6	0	1 (Serkar Clan represented by Serthiac Ltd)

- B2 Project activities in addition to those generating Plan Vivo Certificates**
- Agroforestry establishment inside project but outside crediting area.

PART C: PLAN VIVO CERTIFICATE ISSUANCE SUBMISSION

C1 Contractual statement

- This issuance is based on signed PES agreement between the Project Owner (represented by the project owner community business – Serthiac Ltd) and the Project Coordinator (Live and Learn Environmental Education Society Committee (Vanuatu) with participants complying with all the minimum requirements stated in this agreement.

C2(b) Issuance request for projects where issuance is made on the basis of ongoing activities on land already managed by the project (e.g. avoided deforestation, calculated *ex-post*)

Table 5: Statement of tCO₂ reductions available for issuance as Plan Vivo Certificates based on activity for reporting period 16 January 2013 – 15 January 2015

Area ID	Total area (ha)	Tech. Spec	Saleable ER's (tCO ₂) available from previous periods*	Total ER's (tCO ₂) achieved this period**	% Buffer	No. of PVCs allocated to buffer from ER's achieved this period	Saleable ER's (tCO ₂) from this period	Issuance request (PVCs)	ER's (tCO ₂) available for future issuances
Zone A 2013	165.6	TS Module (C) AD-DtPF	0	3,052	20	610	2,442	2,442	0
Zone A 2014	165.6	TS Module (C) AD-DtPF	0	3,052	20	610	2,442	2,442	0
TOTAL				6,104		1,220	4,884	4,884	0

*Number of tCO₂ sequestered or avoided emission through participants' activities in previous reporting periods which have not yet been issued as PVCs

** Number of tCO₂ sequestered or avoided emission through participants' activities this reporting period.

C3 Allocation of issuance request

Table 6: Allocation of issuance request

Buyer name/ Unsold Stock	No. PVCs transacted	Registry ID (if available) or Project ID if destined for Unsold Stock	Tech spec(s) associated with issuance
Buyer name: ZeroMission	3,357	100000000000432	AD-DtPF
Unsold Stock	1,527	Not available at this time	AD-DtPF
TOTAL			

C4 Data to support issuance request

- Monitoring data for areas of land and participants which support this issuance request is provided in Annex 1. Loru Monitoring Report 1 D3.3 (1) v1.0 20151009.

PART D: SALES OF PLAN VIVO CERTIFICATES**D1: Sales of Plan Vivo Certificates**

None sold because this is first issuance.

Table 7: Sales of Plan Vivo Certificates

Vintage	Buyer	No of PVCs	Price per PVC (\$)*	Total sale amount (\$)*	Price to participants per PVC (\$)*	% Sale price received by participants
n/a	n/a	n/a	n/a	n/a	n/a	n/a

*Pricing reported for internal monitoring purposes only. Pricing information will be removed from the final published document.

PART E: MONITORING RESULTS**E1: Ecosystem services monitoring**

- Monitoring results that supports the request for new issuances is provided in annex 1.
- No PVC units have been previously issued.
- All monitoring targets were met.
- No corrective actions remain outstanding.

E2: Maintaining commitments

- No participants have resigned or been removed from the project.

E3: Socioeconomic monitoring

- Results of monitoring of socioeconomic impacts according to our monitoring plan for the reporting period are provided in annex 1.

E4: Environmental and biodiversity monitoring

- Results of monitoring of biodiversity impacts according to our monitoring plan for the reporting period are provided in annex 1.

PART F: IMPACTS**F1: Evidence of outcomes**

- Research outcomes:
Weaver, S.A. 2015. Practitioner perspective on REDD: Commercial challenges in project-based rainforest protection financing in the Asia Pacific region. *Asia Pacific Viewpoint*, Vol. 56 (1):140-152. <http://onlinelibrary.wiley.com/doi/10.1111/apv.12090/abstract>

- McGregor, A. Weaver, S.A., Challies, E., Howson, P., Astuti, R., and Haalboom, B. 2015. Practical critique: Bridging the gap between critical and practice-oriented REDD+ research communities. *Asia Pacific Viewpoint*, Vol. 55 (3): 277–291.
<http://onlinelibrary.wiley.com/doi/10.1111/apv.12064/abstract>

PART G: PAYMENTS FOR ECOSYSTEM SERVICES

G1: Summary of PES by year

- No payments have been made to date because this is the first issuance of PVC units.

Table 8: Summary of payments made and held in trust

1. Reporting year (mm/yy – mm/yy)	2. Total previous payments (previous reporting periods)	3. Total ongoing payments (in this reporting period)	4. Total payments made (2+3)	5. Total payments held in trust	6. Total payments withheld
n/a	n/a	n/a	n/a	n/a	n/a
TOTAL					

PART H: ONGOING PARTICIPATION

H1: Recruitment

- The only recruitment in this reporting period has been the recruitment of the original project owner – the Serkar clan.

H2: Project Potential

- There is no project waiting list at this stage.

Table 9: Details of potential project participants

Wider engagement	
No smallholder households with <i>plan vivos</i>	n/a
No community groups with <i>plan vivos</i>	n/a
Approximate number of households (or individuals) in these community groups (if known)	n/a

H3: Community participation

- Community meetings held throughout this reporting are described in Section 3.1.6 of the PD and associated evidence requirements and are restricted to meetings required for PD development and monitoring for the first ex post issuance. All meeting outcomes have been audited by the on-site validation and verification audits undertaken for this project.

PART I: PROJECT OPERATING COSTS

I1: Allocation of costs

Table 10. Allocation of Costs: Loru Project Costs & Revenue For Calendar Yrs 1 & 2					
Cost Categories	Costs Y1 2013	Costs Y2 2014	Total	Revenue* PVC Sales	Revenue ** Other Sources
Landowner Project Costs					
Project Rangers & management	\$3,250	\$3,250	\$6,501	\$0	\$6,501
Rents/Leases	\$0	\$0	\$0	\$0	\$0
Administration & Governance	\$2,639	\$2,639	\$5,279	\$0	\$5,279
Verification	\$0	\$0	\$0	\$0	\$0
Programme Subscription	\$385	\$385	\$770	\$0	\$770
Contingency	\$627	\$627	\$1,255	\$0	\$1,255
LO Project Costs Total	\$6,902	\$6,902	\$13,804	\$0	\$13,804
LO Opportunity Costs	\$10,000	\$10,000	\$20,000	\$20,000	\$0
Project Coordinator Costs					
Project implementation support	\$4,278	\$4,278	\$8,555	\$0	\$8,555
Project rangers and management	\$0	\$0	\$0	\$0	\$0
Reporting	\$2,830	\$2,830	\$5,660	\$0	\$5,660
Rents/Leases	\$0	\$0	\$0	\$0	\$0
Verification	\$1,500	\$1,500	\$3,000	\$0	\$3,000
Field expenses	\$0	\$0	\$0	\$0	\$0
Travel	\$1,168	\$1,168	\$2,335	\$0	\$2,335
Fees & Taxes	\$168	\$168	\$336	\$0	\$336
Administration	\$994	\$994	\$1,989	\$0	\$1,989
PC Costs Total	\$10,937	\$10,937	\$21,875	\$0	\$21,875
Programme Operator Costs					
Project Management	\$2,000	\$2,000	\$4,000	\$0	\$4,000
Technical support	\$2,000	\$2,000	\$4,000	\$0	\$4,000
Sales & Marketing	\$3,000	\$3,000	\$6,000	\$0	\$6,000
Project Support	\$2,000	\$2,000	\$4,000	\$0	\$4,000
Credit issuance fees	\$976	\$976	\$1,952	\$1,952	\$0
Credit transfer fees	\$49	\$49	\$98	\$98	\$0
Rotation 2 Internal Subsidy	\$0	\$0	\$0	\$0	\$0
Overhead	\$2,005	\$2,005	\$4,010	\$0	\$4,010
PO Costs Total	\$12,030	\$12,030	\$24,060	\$2,050	\$24,060
Costs Total	\$39,869	\$39,869	\$79,738	\$22,050	\$59,738

* Revenue from PVC unit sales have not yet occurred but this shows the sales burden for first issuance in order to cover project costs to this point. This does not cover project costs for project implementation, management and monitoring activities for second issuance (i.e. 2015-2017 activities), which need to be funded through PVC sales from first issuance plus revenue from other sources.

** Revenue from other sources has occurred and covered all costs in that column. The net PVC sales burden for the first two years of commercial project activity is US\$22,050 (wholesale) or US\$11,025 annually for the first two years of sales activity (2016 and 2017).

Annex 1. Monitoring Results For Issuance Request

Supplied in the following pages in the form of the First Project Monitoring Report using the latest VCS Monitoring Report template.



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European Union



Report prepared by

Sean Weaver, Nakau Programme Pty Ltd, October 2015.

Suggested citation:

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LORU FOREST PROJECT MONITORING REPORT 1

Document Prepared By Sean Weaver, Nakau Programme Pty Ltd

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Project Title	<i>Loru Forest Project</i>
Version	<i>1.0</i>
Report ID	<i>N/A</i>
Date of Issue	<i>9 October 2015</i>
Project ID	<i>N/A</i>
Monitoring Period	<i>16 January 2013 to 15 January 2015.</i>
Prepared By	<i>Live and Learn Environmental Education Society Committee (Vanuatu). (Project Coordinator) and the Nakau Programme Pty Ltd (Programme Operator)</i>
Contact	<i>Anjali Nelson, anjali.nelson@livelearn.org, Live & Learn Vanuatu (+678) 27455</i>

Please note that text in grey boxes signifies requirements of the VCS Monitoring Report Template unless otherwise stated.

1. Project Details

1.1 SUMMARY DESCRIPTION OF THE IMPLEMENTATION STATUS OF THE PROJECT

Provide a summary description of the implementation status of the project, including the following (no more than one page):

- A summary description of the implementation status of the technologies/ measures (e.g. plant, equipment, process, or management or conservation measure) included in the project.
- The relevant implementation dates (e.g. dates of construction, commissioning, and continued operation periods).
- The total GHG emission reductions or removals generated in this monitoring period.

Project implementation began on 16 January 2013. This is the first verification event.

1.2 SECTORAL SCOPE AND PROJECT TYPE

Indicate the sectoral scope(s) applicable to the project, the AFOLU project category and activity type (if applicable) and whether the project is a grouped project.

AFOLU Avoided Deforestation – Deforestation to Protected Forest (AD-DtPF). First activity instance of a grouped project.

1.3 PROJECT COORDINATOR

Provide contact information for the project proponent(s). Copy and paste the table as needed.

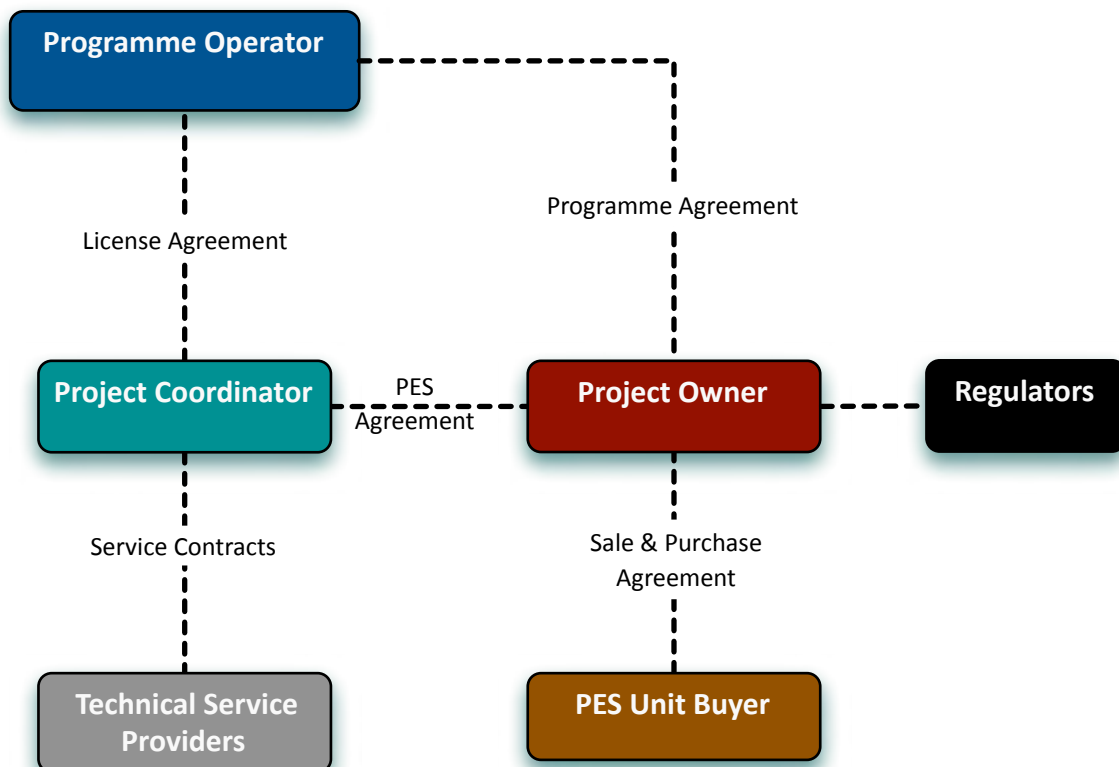
Organization name	Live and Learn Environmental Education Society Committee (Vanuatu). Abbreviated to 'Live and Learn Vanuatu'.
Contact person	Anjali Nelson
Title	REDD+ Regional Project Advisor
Address	Erakor House (Erakor Bridge/Korman Stadium) PO Box 1629, Port Vila, Vanuatu
Telephone	Tel: +678 27448 , Fax: +678 27455
Email	anjali.nelson@livelearn.org

1.4 OTHER ENTITIES INVOLVED IN THE PROJECT

Provide contact information and roles/responsibilities for any other project participant(s). Copy and paste the table as needed.

Organization name	Ser-Thiac
Role in the project	Project Owner
Contact person	Serg Warakar
Title	REDD+ Field Officer
Address	Erakor House (Erakor Bridge/Korman Stadium) PO Box 1629, Port Vila, Vanuatu
Telephone	Tel: +678 27448 , Fax: +678 27455
Email	serge.warakar@livelearn.org

Figure 1.4 Nakau Programme Legal Structure (from Section 2.13.2 of the Loru PD Part A)



1.5 PROJECT START DATE

Indicate the project start date, specifying the day, month and year.

16 January 2013

1.6 PROJECT CREDITING PERIOD

Indicate the project crediting period, specifying the day, month and year for the start and end dates and the total number of years.

16 January 2013 to 15 January 2044 (30 years).

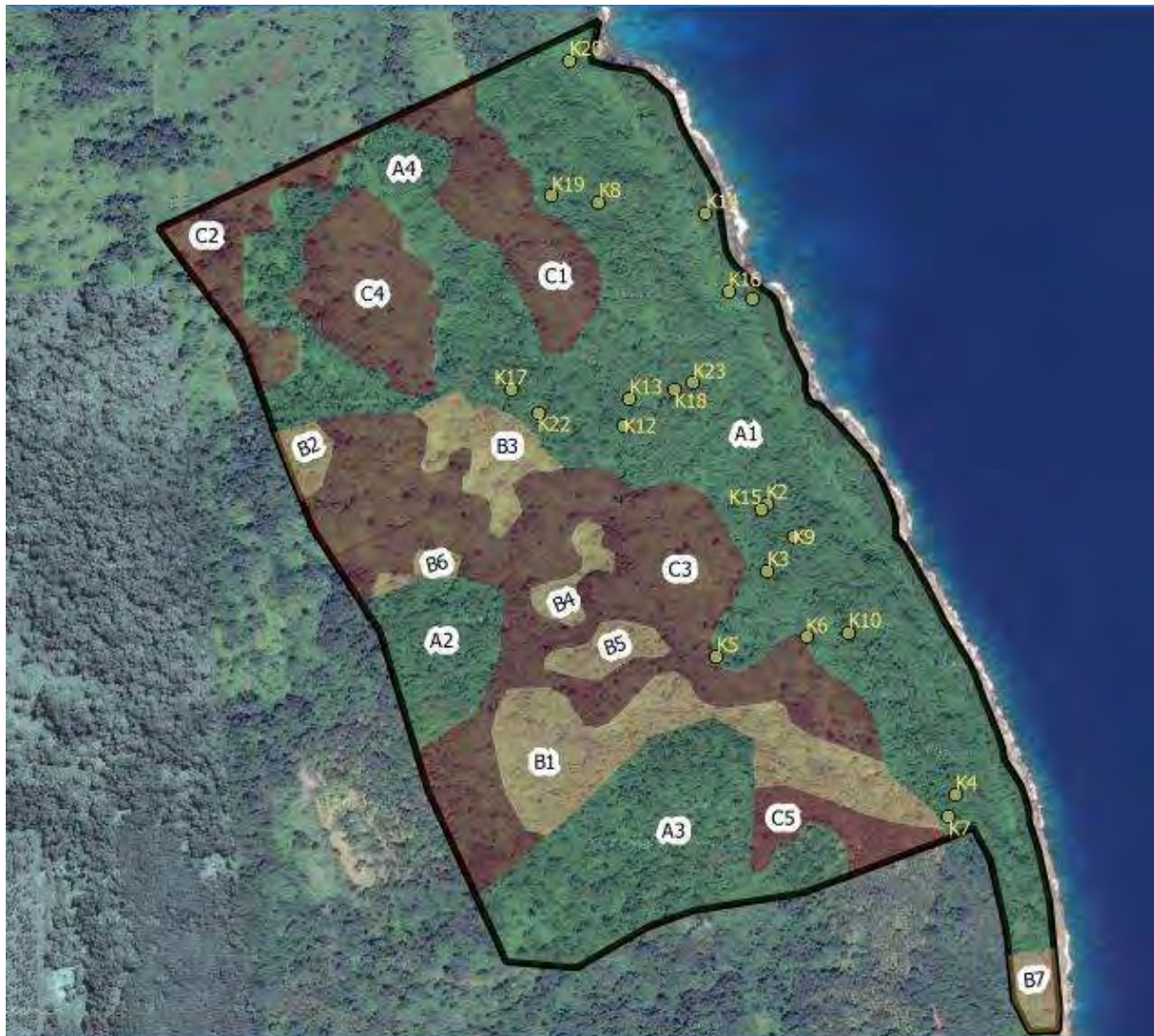
1.7 PROJECT LOCATION

Indicate the project location and geographic boundaries (if applicable) including geodetic coordinates. For grouped and AFOLU projects, coordinates may be submitted separately as a KML file.

Project Location: Loru, Santo, Vanuatu.

Project boundaries: Depicted in Figure 1 below:

Figure 1.7 Project Boundaries



Black line = Project Area boundary

Zone A = Tall Forest Eligible Forest Area (165.6 ha); Management Areas: A1-A4

Zone B = Tall forest to be included in Eligible Forest Area at 2nd Verification (following Zone B inventory); Management Areas: B1-B6

Zone C = Non-forest allocated for agroforestry; Management Areas: C1-C5

K2-23 = randomly located forest inventory sample plots located in Zone A1, with results extrapolated to Zones A2-A4. Inventory to be undertaken in Zones A2-A4 prior to second verification.

1.8 TITLE AND REFERENCE OF METHODOLOGY

Provide the title, reference and version number of the methodology or methodologies applied to the project. Include also the title and version number of any tools applied by the project.

This project applies two Nakau Programme methodology elements:

1. Nakau Methodology Framework D2.1 v1.1 20150513
2. Technical Specifications Module (C) 2.1 (AD-DtPF): D2.2.1 v1.0, 20150815

1.9 OTHER PROGRAMMES

Include the following information, as applicable:

- *Emission Trading Programmes and Other Binding Limits: Where the project reduces GHG emissions from activities that are included in an emissions trading program or any other mechanism that includes GHG allowance trading (as identified in the project description, or where such programs or mechanisms have subsequently emerged) demonstrate that net GHG emission reductions or removals generated during this monitoring period have not be used for compliance under such programs or mechanisms. Examples of appropriate evidence are provided in the VCS Standard.*
- *Other Forms of Environmental Credit: Indicate whether the project has sought or received another form of GHG-related environmental credit, including renewable energy certificates, during this monitoring period. Include all relevant information about the GHG-related environmental credits and the related program. Additionally, provide a list of all and any other programs under which the project is eligible to create another form of GHG-related environment credit.*

Participation under Other GHG Programmes: Indicate whether the project is registered under any other GHG programs and, where this is the case, provide the registration number and details. Provide details of any GHG credits claimed under such programs.

No other programmes apply.

2. Implementation Status

2.1 IMPLEMENTATION STATUS OF THE PROJECT ACTIVITY

Describe the implementation status of the project activity(s), include information on the following:

- *The operation of the project activity(s) during this monitoring period, including any information on events that may impact the GHG emission reductions or removals and monitoring.*
- *Where applicable, describe how leakage and non-permanence risk factors are being monitored and managed for AFOLU projects.*
- *Any other changes (e.g. to project proponent or other entities).*

The Loru Forest Project was implemented starting on 16 January 2013. This monitoring report represents project implementation results for the first verification event, representing two vintages (16 January 2013 to 15 January 2015).

This is the first Project Monitoring Report for this project and is presented as a Simplified Project Monitoring Report as provided for in Section 8.1.5 of the PD and Section 8.1.5 of the Technical Specifications Module applied: Technical Specifications Module (C) 2.1 (AD-DtPF): D2.2.1 v1.0, 20150815. The reason for presenting a Simplified Project Monitoring Report for the first verification is due to the fact that although the project start date was 16 January 2013 the methodology and PD were not available until immediately prior to issuance of this first Project Monitoring Report. This is because the Nakau Programme methodologies and the PD for this project were in development between the project start date and the present (i.e. methodology and PD validation took place immediately prior to verification of this first monitoring report). Pursuant to Section 8.1.5 of the PD and Technical Specifications Module Applied this project supplies the equivalent of a Director's Certificate asserting that the material components of the Project Monitoring Plan have been executed (Appendix 3).

2.2 DEVIATIONS

2.2.1 Methodology Deviations

Describe and justify any methodology deviations applied during this monitoring period. Include evidence to demonstrate the following:

- *The deviation does not negatively impact the conservativeness of the quantification of GHG emission reductions or removals.*
- *The deviations relates only to the criteria and procedures for monitoring or measurement, and do not relate to any other part of the methodology*

There are no methodology deviations in this monitoring report.

2.2.2 Project Description Deviations

Describe any project description deviations applied during this monitoring period and explain the reasons for the deviation. Identify whether the deviation impacts the applicability of the methodology, additionality or the appropriateness of the baseline scenario and provide an explanation of the outcome.

Describe and report on any project description deviations applied in previous monitoring reports.

There are no deviations from the Project Description in this monitoring report.

2.3 GROUPED PROJECT

For a grouped project, provide relevant information about new instances of the project activity(s) and demonstrate and justify how each new instance of the project activity(s) meets the eligibility criteria set out in the project description. Address each eligibility criteria separately.

This is the first activity instance for a grouped project under the activity type: Avoided Deforestation: Deforestation to Protected Forest for the Nakau Programme.

3. Monitoring Plan

Describe the process and schedule followed for monitoring the data and parameters, set out above, during this monitoring period, include details on the following:

- *The organizational structure, responsibilities and competencies of the personnel that carried out the monitoring activities.*
- *The methods used for generating/measuring, recording, storing, aggregating, collating and reporting the data on monitored parameters.*
- *The procedures used for handling any internal auditing performed and any non-conformities identified.*
- *The implementation of sampling approaches, including target precision levels, sample sizes, sample site locations, stratification, frequency of measurement and QA/QC procedures. Where applicable, demonstrate whether the required confidence level or precision has been met.*

Where appropriate, include line diagrams to display the GHG data collection and management system.

This section replicates Section 8 in the Loru PD Part B D3.2b v1.0 20151009 with the only difference being that section numbering in this section replaces 8.x with 3.x.

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

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

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

- Carbon benefits
- Community benefits
- Biodiversity benefits

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

3.1 CARBON MONITORING

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

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

3.1.1 Monitored And Non-Monitored Parameters - Carbon

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

Monitored and non-monitored data are listed in Table 3.1.1 below, and presented in the sequence in which measurement of GHG emissions and emission reductions are calculated.

Table 3.1.1 Monitored and Non-Monitored Parameters – Carbon (monitored parameters in green)					
Notation	Parameter	Unit	Equation	Origin	Monitored
EFA	Eligible Forest Area	ha	-	PD	Monitored
LF/ULF	Forest stratification (logged/unlogged forest)	ha	-	PD	Area calculated in PD
AGBE	Above Ground Biomass Emitted	m ³ yr ⁻¹	4.1.1	Calculated from inventory	Not monitored Updated each Baseline Revision
BGBE	Below Ground Biomass Emitted	m ³ yr ⁻¹	4.1.2	Root-shoot ratio (proportion of AGBE)	Not monitored Updated each Baseline Revision
TM3	Total Emissions in m ³	m ³ yr ⁻¹	4.1.3	Sum of AGBE and BGBE	Not monitored Updated each Baseline Revision
GTCO2	Gross Total Emissions in tCO ₂ e	tCO ₂ e yr ⁻¹	4.1.4a 4.1.4b 4.1.4c	Conversion factors from wood volume to emissions	Not monitored Updated each Baseline Revision

			4.1.4d		
GBEWP	Gross Baseline Emissions	tCO ₂ e yr ⁻¹	4.1.5	Conversion factors from wood products calculation	Not monitored Updated each Baseline Revision
ItWP	Long Term Wood Products	tCO ₂ e yr ⁻¹	4.1.6	Calculated through conversion factors based on volume of wood harvested.	Not monitored
NBEA	Net Baseline Emissions Avoided	tCO ₂ e yr ⁻¹	4.1.7	Default factors based on GBE	Not monitored Updated each Baseline Revision
ER	Enhanced Removals	tCO ₂ e yr ⁻¹	5.1.1	Default values derived from mean sequestration rates for relevant forest types and subsequently derived from project-specific data	Not Monitored Updated each Monitoring Period
TAL	Total Activity Shifting Leakage	tCO ₂ e yr ⁻¹	5.2.1	Derived from Activity Shifting Leakage Analysis	Monitored Updated each Monitoring Period

3.1.2 Monitored Parameters - Carbon

Complete the table below for all data and parameters monitored during the project crediting period (copy the table as necessary for each data unit/parameter). Data and parameters determined or available at validation are included in Section 3.1.1 above.

Monitored data and parameters are summarized in the tables below.

Data Unit / Parameter:	Eligible Forest Area (Eligible Forest Area)
Data unit:	Ha
Description:	Forest area included in baseline and project scenario, and area upon which crediting is based (EFA _{LF} &/or EFA _{ULF})
Source of data:	Aerial imagery and Project Boundary Inspection
Description of measurement methods and procedures to be applied:	<p>Aerial imagery (sub-meter accuracy) to define Eligible Forest Area boundary; boundary survey inspections (sub-meter accuracy) using GPS.</p> <p>Measure any reversals occurring in the Eligible Forest Area.</p> <p>Monitored by means of Eligible Forest Boundary Inspections that record any reversal incident occurring within the Eligible Forest Area. The area of any reversal above and beyond the <i>de minimis</i> threshold is measured using GPS units set up for sub-meter accuracy and measuring tapes. Area subject to reversal is removed from the Eligible Forest Area until the reversal has recovered the carbon volume lost in the reversal. This is calculated by means of sequestration rates and the estimate of the forest age for the area subject to the reversal. Forest age of the area subject to the reversal is calculated by:</p> <ul style="list-style-type: none"> • Dendrochronology on stumps in the case of a timber harvest reversal • Dendrochronology on adjacent living trees of equivalent size of

	burnt stumps
Frequency of monitoring/recording:	Aerial imagery: 5-yearly Eligible Forest Boundary inspections: annually
Value monitored:	Area
Monitoring equipment:	Aerial imagery/satellite data to sub-meter accuracy Hand held GPS unit, photography
QA/QC procedures to be applied:	Maximum periodicity of 5-yearly 3 rd party verification of Project Monitoring Reports.
Calculation method:	Subtract reversal area from the Eligible Forest Area and recalculate the Net Carbon Credits by means of the Buffer Account Rules (Section 5.5.2 this document).

Data Unit / Parameter:	Total Activity Shifting Leakage
Data unit:	tCO ₂ e/yr
Description:	Leakage caused by activity shifting
Source of data:	Project Area Inspection (outside Eligible Forest Area)
Description of measurement methods and procedures to be applied:	<p>Site visit of indigenous forest lands owned and controlled by the Project Owner to assess commercial timber harvesting activity in comparison with the Baseline Activity and Project Activity as stated in the PD.</p> <p>Where commercial indigenous timber harvesting is occurring on lands owned and controlled by the Project Owner but lying outside the Eligible Forest Area, and where such harvesting has been declared in the PD, the following assessment will be undertaken:</p> <ul style="list-style-type: none"> Records of timber harvesting activity are inspected and verified against the timber harvesting plan stated in the PD. Timber harvesting sites are inspected to verify that they are occurring in the areas specified in the PD. <p>Where commercial indigenous timber harvesting is occurring on lands owned and controlled by the Project Owner but lying outside the Eligible Forest Area, and where such harvesting has not been declared in the PD (i.e. and thereby constitutes Activity Shifting Leakage), the following assessment will be undertaken:</p> <ul style="list-style-type: none"> Records of timber harvesting activity are inspected and annual timber harvesting volumes and species are recorded. Timber harvesting sites are inspected to determine area of harvesting activity. Calculations are made using the baseline GHG emissions measurement methodology in the Technical Specifications Module 2.1 (C) (AD-DtPF), to determine the volume of Activity Shifting Leakage. Net Carbon Credits are recalculated to account for Total Activity Shifting Leakage (TAL) The Project Owner is notified of the consequence of any continuation of Activity Shifting Leakage in terms of the reduction in Net Carbon Credits for the Project.

	The Project Owner is instructed to terminate Activity Shifting timber harvesting or risk suspension or termination from the Nakau Programme.
Frequency of monitoring/recording:	Annual Leakage Inspection and results incorporated into the annual Project Management Report. 5-yearly 2 nd party verification of Project Management Reporting by the Programme Operator.
Value monitored:	m ³ yr ⁻¹
Monitoring equipment:	GPS unit, measuring tape, photography
QA/QC procedures to be applied:	Maximum periodicity of 5-yearly 3 rd party verification of Project Monitoring Reports.
Calculation method:	Activity Shifting Leakage method specified in Section 5.2.1 of the Technical Specifications Module (C) 2.1 (AD-DtPF): D2.2.1 v1.0, 20150815.

3.1.3 Monitoring Roles And Responsibilities - Carbon

Specific project monitoring roles for projects applying this Technical Specifications Module are summarised in Table 7.1.3. Project Owners and Project Coordinators are required to assign specific roles to specific stakeholders in the PD, and use this convention in the implementation and monitoring of the Project Activity.

Specific project monitoring roles for this project is presented in Table 4.1.3 below:

Table 4.1.3 Project Monitoring Roles/Responsibilities	
Task	Responsibility
Eligible Forest Area Boundary Inspections	Project Owner with assistance from the Project Coordinator where needed
Eligible Forest Area Inspections	Project Owner with assistance from the Project Coordinator where needed
Project Management Reporting	Project Owner with assistance from the Project Coordinator
Aerial imagery/mapping	Project Coordinator
Project Monitoring data management	Project Coordinator

3.1.4 Information Management Systems - Carbon

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

3.1.5 Simplified Project Monitoring Report Methodology - Carbon

This project will submit a simplified Project Monitoring Report for its first verification. The Simplified Project Monitoring Report will fulfil all components of the latest VCS Monitoring Report Template with the exception that Section 3.2 will list the data and parameters

monitored but the full monitoring procedures will not be implemented until the second verification. In place of data generated from monitoring activities the Project Owner will supply the equivalent of a Director’s Certificate to assert that the Project Activity has taken place according to the requirements of the Nakau Methodology Framework and the Technical Specifications Module (C) 2.1 (AD-DtPF): D2.2.1 v1.0, 20150815.

3.1.6 Standard Operating Procedure: Project Monitoring – Carbon

All projects applying this Technical Specifications Module are required to develop a Standard Operating Procedure (SOP) for Monitoring. Projects have the option to submit a simplified SOP for Monitoring when submitting the PD for validation and/or for first verification. Projects electing to supply a simplified SOP for Monitoring for PD and first verification are required to establish a simplified SOP for Monitoring for first verification and then follow the full monitoring SOP thereafter. The simplified SOP for Monitoring requires the Project Coordinator to prepare the first Project Monitoring Report based on the requirements of the Nakau Methodology Framework and this Technical Specifications Module.

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

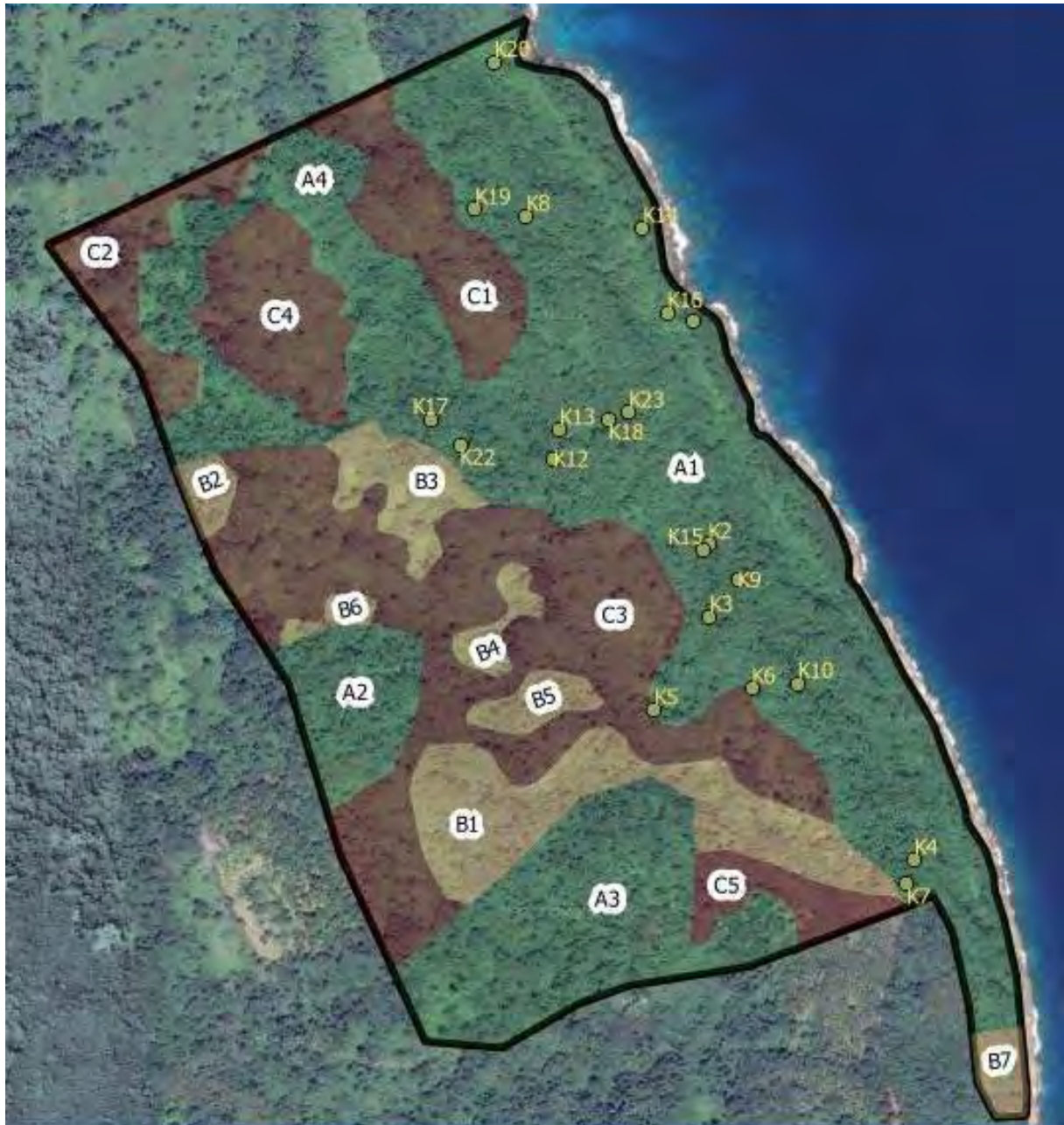
Table 3.1.6 Monitoring Schedule - Carbon				
Carbon				
Activity	Frequency	Responsibility	Human Resources	Financial Resources
Eligible Forest Area	6-monthly inspection 3-yearly aerial imagery	Landowner (rangers); Project Coordinator	Rangers employed by the project from the landowner community; Project Coordinator staff	PES unit price accounts for employment of rangers and Project Coordinator staff*
Eligible Forest Boundary	6-monthly inspection 3-yearly aerial imagery	Landowner (rangers); Project Coordinator	Rangers employed by the project from the landowner community; Project Coordinator staff	PES unit price accounts for employment of rangers and Project Coordinator staff
<i>De minimis</i> timber harvesting inspections	6-monthly inspection 3-yearly aerial imagery	Landowner (rangers); Project Coordinator	Rangers employed by the project from the landowner community; Project Coordinator staff	PES unit price accounts for employment of rangers and Project Coordinator staff
Activity Shifting Leakage	Annual inspection 3-yearly calculation	Project Coordinator and Landowner	Rangers employed by the project from the landowner community; Project Coordinator staff	PES unit price accounts for employment of rangers and Project Coordinator staff

* Evidence to support the assertion of the unit price accounting for monitoring costs can be found in Appendix 1 (Sheets ‘Loru Pricing’ and ‘Loru Budget’).

3.1.6.1 Forest Management Areas

The Forest Management Areas for the Loru Forest Project are presented in Figure 3.1.6.1.

Figure 3.1.6.1 Loru Forest Project management zones and inventory plots



The Eligible Forest Area is restricted to Zone A1-A4. The A1-A4 boundary is delineated by describing a line from the southern most point in Zeon C1 to the nearest point in Zone B3 in Figure 3.1.6.1 above.

3.1.6.2 Eligible Forest Boundary Inspections

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

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

Method:

Make observations of the Eligible Forest Area boundary during the course of the 6-monthly Eligible Forest Area Inspections. This is conducted during the walking of line transects from one side of an Eligible Forest Area boundary to another, and by viewing the Eligible Forest Area boundary in both directions along the boundary from the point on each transect line as it meets the Eligible Forest Area boundary. If reversals at the Eligible Forest Area boundary are observed at points along the boundary that do not coincide with the line transect then the reversal is recorded using the Eligible Forest Boundary Inspection Template (Appendix 6 of Loru PD Part B D3.2b v1.0 20151009).

Recurrence: 6-monthly inspections.

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

3.1.6.3 Eligible Forest Area Inspections

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

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

Method:

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

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

Small Area Transect Method: For forest management areas less than 100m long, start with the Transect Base Point, then locate a single transect running through the longest axis of the

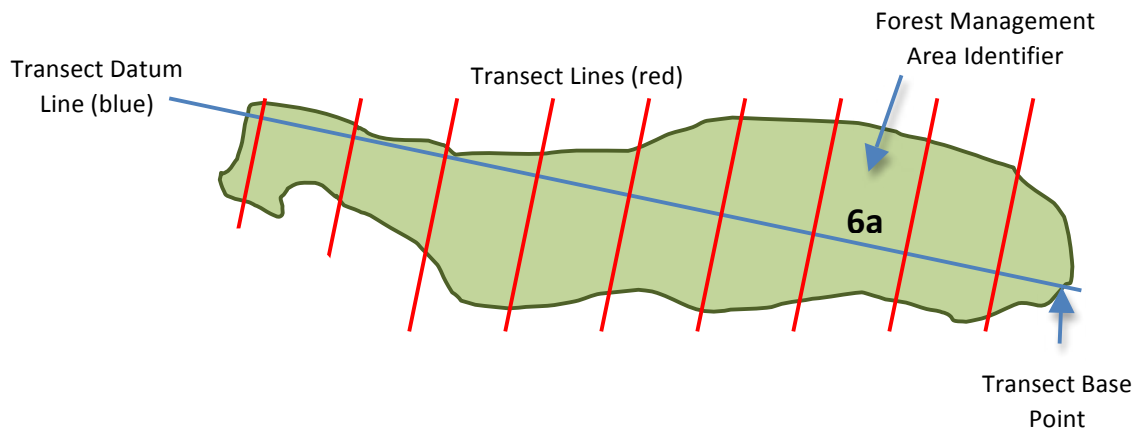
forest patch (and curving the transect where necessary in order to keep the transect within the forest boundary).

Transect Survey Procedure: Walk the full length of each transect line and on the Project Area Inspection Template (Appendix 7, Loru PD Part B D3.2b v1.0 20151009) record the following Reversal Events:

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

For each Reversal Event record the location with a GPS unit and describe the event using the Eligible Forest Area Inspection Checklist. For each timber harvesting Reversal Event record the stump diameter, the species of harvested tree where possible, any evidence of on-site timber processing, log hauling, and collateral damage.

Figure 3.1.6.3 Eligible Forest Area Inspection Transect Location



Recurrence: 6-monthly inspections.

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

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

3.1.6.4 De Minimis Timber Harvest Inspection

De minimis timber harvesting inspections will be undertaken 6-monthly in conjunction with the 6-monthly Eligible Forest Area Inspections described in Section 4.1.6.3.

The *de minimis* timber harvesting volume for the Loru Forest Project is 60m³ per year. This amounts to <5% of the total allowable annual commercial timber harvest in the Baseline Scenario in the Eligible Forest Area as provided for in the Technical Specifications Module applied. There has been no *de minimis* timber harvesting in this monitoring period.

3.1.6.5 Activity Shifting Leakage Inspection

Activity Shifting Leakage Inspections will be undertaken annually in the Loru Forest Project following first verification. These inspections will be undertaken in conjunction with the 6-monthly Eligible Forest Area Inspections described in Section 3.1.6.3.

The project will record Activity Shifting Leakage events using the template supplied in Appendix 9 Loru PD Part B D3.2b v1.0 20151009.

3.1.7 Monitoring Resources and Capacity - Carbon

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

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

According to the Technical Specifications Module (C) 2.1 (AD-DtPF): D2.2.1 v1.0, 20150815:
The Project Monitoring Plan must identify (and provide evidence for) the resources available to undertake monitoring, including:

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

The financial and human resources allocated to project monitoring are presented in Table 3.1.6 above.

3.1.8 Community Monitoring - Carbon

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

- 5.9. *A monitoring plan must be developed for each project intervention which specifies:*
- 5.9.7. *How communities will participate in monitoring, e.g. by training community members and gradually delegating monitoring activities over the duration of the project*
- 5.9.8. *How results of monitoring will be shared and discussed with participants*
- 5.10. *Where participants are involved in monitoring, a system for checking the robustness of monitoring results must be in place, e.g. checking a random sample of monitoring results by the project coordinator.*

According to the Technical Specifications Module (C) 2.1 (AD-DtPF): D2.2.1 v1.0, 20150815:

The Project Monitoring Plan must include:

- *A description of how the Project Owner and/or other local people will participate in*

monitoring in compliance with the Project Participation Protocol specified in Section 3.1 of the PD (applying Section 3.1 of the Nakau Methodology Framework).

- *A description of how the results of monitoring will be shared and discussed with participants with reference to the Project Monitoring Workshops specified in Section 3.1.7 of the PD (applying Section 3.1.7 of the Nakau Methodology Framework).*
- *A description of the quality controls used to safeguard the integrity and accuracy of data gathered from monitoring activities involving Project Owners and/or other local people.*

Community involvement in monitoring is set out in Table 3.1.6 above.

3.1.8.1 Community Participation In Monitoring

The Project Owner will recruit rangers with responsibilities to undertake project monitoring tasks described in Table 3.1.6. Ser-Thiac Ltd (the landowner community business entity responsible for this project) 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 Ser-Thiac.

3.1.8.2 Sharing Results of Community Monitoring

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

3.1.8.3 Quality Controls for Community Monitoring

Quality controls for community monitoring are described in Section 3.1.8.2.

3.2 COMMUNITY IMPACT MONITORING

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

3.2.1 Monitored And Non-Monitored Parameters – Community

Monitored and non-monitored community impact data are listed in Table 3.2.1 below.

Table 3.2.1 Monitored and Non-Monitored Parameters – Community Impacts				
Notation	Parameter	Unit	Origin	Monitored
FA	Food & Agriculture	Various	Community Impact Survey	Monitored
W	Water accessibility	%	Community Impact Survey	Monitored
H	Household Income	Vatu	Community Impact Survey	Monitored
P	Participation	Number & %	Community Impact Survey	Monitored

3.2.2 Monitored Parameters – Community

Monitored data and parameters are summarized in the tables below.

Data Unit / Parameter:	Food & Agriculture
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"> 1.1 How often do you buy food? 1.2 How big is your family garden? 1.3 How often do you eat free food from your garden? 1.4 How often do you run out of food? 1.5 How often do you eat food from the forest? 1.6 How much do you make selling food?
Frequency of monitoring/recording:	3-yearly
Value monitored:	Various
Monitoring equipment:	Social survey equipment
QA/QC procedures to be applied:	3-yearly 3 rd party verification of Project Monitoring Reports.
Calculation method:	Compare responses with previous survey

Data Unit / Parameter:	Water Accessibility
Data unit:	Various
Description:	Access to water has been a key issue for project owners in Loru. We want to

	know if improved access to water results from the project. Further, access to water being such a basic need, is another indicator of overall wellbeing. The impact of this on women deserves special attention by interviewers.
Source of data:	Community Impact Survey
Description of measurement methods and procedures to be applied:	Structured interviews pursuing the following questions: 1.1 Do you run out of water? 1.2 Are there days when you can use as much as you like?
Frequency of monitoring/recording:	3-yearly
Value monitored:	Various
Monitoring equipment:	Social survey equipment
QA/QC procedures to be applied:	3-yearly 3 rd party verification of Project Monitoring Reports.
Calculation method:	Compare responses with previous survey

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

Data Unit / Parameter:	Project Participation
Data unit:	Various
Description:	We want to use this monitoring as a chance to assess how well the 'REDD+ Enterprise' (i.e. the cooperative or family business) is doing at engaging the project owners and earning local trust. This indicates resilience and overall wellbeing if the faith in this institution is high.

Source of data:	Community Impact Survey
Description of measurement methods and procedures to be applied:	Structured interviews pursuing the following questions: 4.1 How many youth do you know that are engaged with the REDD+ Enterprise? 4.2 Are you given the opportunity to access information about the REDD+ Enterprise's finances and activities? 4.3 Do you trust the REDD+ Enterprise?
Frequency of monitoring/recording:	3-yearly
Value monitored:	Various
Monitoring equipment:	Social survey equipment
QA/QC procedures to be applied:	3-yearly 3 rd party verification of Project Monitoring Reports.
Calculation method:	Compare responses with previous survey

3.2.3 Monitoring Roles And Responsibilities - Community

Specific project monitoring roles for projects applying this Technical Specifications Module are summarised in Table 7.1.3. Project Owners and Project Coordinators are required to assign specific roles to specific stakeholders in the PD, and use this convention in the implementation and monitoring of the Project Activity.

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

3.2.4 Information Management Systems - Community

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

3.2.5 Simplified Project Monitoring Report Methodology - Community

This project will submit a simplified Project Monitoring Report for its first verification.

3.2.6 Standard Operating Procedure: Project Monitoring – Community

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

Table 3.2.6 Monitoring Schedule – Community Impacts				
Community				
Activity	Frequency	Responsibility	Human Resources	Financial Resources
Food, consumption, agriculture	3-yearly	Project Coordinator	Project Coordinator staff	PES unit price accounts for employment of Project Coordinator staff*

Water accessibility	3-yearly	Project Coordinator	Project Coordinator staff	PES unit price accounts for employment of Project Coordinator staff
Household income	3-yearly	Project Coordinator	Project Coordinator staff	PES unit price accounts for employment of Project Coordinator staff
Participation	3-yearly	Project Coordinator	Project Coordinator staff	PES unit price accounts for employment of Project Coordinator staff

* Evidence to support the assertion of the unit price accounting for monitoring costs can be found in Appendix 1 (Sheets 'Loru Pricing' and 'Loru Budget').

3.2.6.1 Baseline Community Impacts

Baseline community impacts were measured during project development and have been measured and presented in Section 5.2.2.3 of the Loru Forest Project PD Part A D3.2a v1.0 20151009.

3.2.6.2 Project Community Impacts

Project community impacts will be measured by means of a 3-yearly community impact survey to quantify change in the community impact indicators described in Section 3.2.2 above.

3.2.6.3 Net Community Impact Enhancements

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

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

3.3 BIODIVERSITY MONITORING

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

3.3.1 Monitored And Non-Monitored Parameters – Biodiversity

Monitored and non-monitored community impact data are listed in Table 3.3.1 below.

Table 3.3.1 Monitored and Non-Monitored Parameters – Community Impacts				
Notation	Parameter	Unit	Origin	Monitored
SSA	Significant species - Animals	Presence/absence	Biodiversity Survey	Monitored
SSP	Significant species - Plants	Presence/absence	Biodiversity Survey	Monitored

3.3.2 Monitored Parameters – Biodiversity

Monitored data and parameters are summarized in the tables below.

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

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

3.3.3 Monitoring Roles And Responsibilities - Biodiversity

Specific project monitoring roles for projects applying this Technical Specifications Module are summarised in Table 7.1.3. Project Owners and Project Coordinators are required to assign specific roles to specific stakeholders in the PD, and use this convention in the implementation and monitoring of the Project Activity.

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

3.3.4 Information Management Systems - Biodiversity

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

3.3.5 Simplified Project Monitoring Report Methodology - Biodiversity

This project will submit a simplified Project Monitoring Report for its first verification.

3.3.6 Standard Operating Procedure: Project Monitoring – Biodiversity

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

Table 3.3.6 Monitoring Schedule – Biodiversity				
Community				
Activity	Frequency	Responsibility	Human Resources	Financial Resources
Biodiversity Survey - Animals	3-yearly	Project Owner	Project Rangers	PES unit price accounts for employment of Project Coordinator staff*
Biodiversity Survey - Plants	3-yearly	Project Owner	Project Rangers	PES unit price accounts for employment of Project Coordinator staff

* Evidence to support the assertion of the unit price accounting for monitoring costs can be found in Appendix 1 (Sheets ‘Loru Pricing’ and ‘Loru Budget’).

3.3.6.1 Baseline Biodiversity Impacts

Baseline biodiversity impacts (i.e. survey of a reference area supporting habitat types in the baseline) have not been measured. A baseline biodiversity survey is optional under the Plan Vivo standard minimum requirements for biodiversity, but it is the aspiration of the Loru

Forest Project to undertake a baseline biodiversity survey to enable comparison between baseline and project biodiversity indicators and generate a net biodiversity impact assertion.

3.3.6.2 Project Biodiversity Impacts

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

3.3.6.3 Net Biodiversity Impact Enhancements

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

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

3.4 MONITORING RESOURCES

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

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

5.9.6. Resources and capacity required

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

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

A summary of financial resources for project monitoring is presented in Tables 3.1.6, 3.2.6, and 3.3.6 above. Human resource and capability for monitoring is sourced from three key project stakeholder entities:

Project Monitoring Stakeholder	Capability
Project Owner	Carbon and Biodiversity Monitoring Project rangers have been trained by the Project Coordinator and the Programme Operator during project development and in particular, during the Project Owner participation in the carbon stock inventory. Rangers have supervision support from the Project Coordinator and the Programme Operator.
Project Coordinator	Community Impact Monitoring Community impact monitoring will be undertaken by the Project Coordinator. The capability of the Project Coordinator to

	undertake community impact monitoring has been demonstrated during project development and the completion of the community impact baseline survey with results presented in Section 5.2.2 of the PD Part A. The Project Coordinator has supervision support from the Programme Operator, whose supervision was applied during project development. Training of new Project Coordinator staff will be undertaken by both incumbent Project Coordinator staff and the Programme Operator. The capability of the Project Coordinator is summarised in Section 2.13.4 of the Loru PD Part A D3.2a v1.0 20151009.
Programme Operator	The Programme Operator has demonstrated its capability in providing supervision and guidance to Project Coordinators during the course of programme design and project development.

3.5 COMMUNITY MONITORING

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

- 5.9. *A monitoring plan must be developed for each project intervention which specifies:*
- 5.9.7. *How communities will participate in monitoring, e.g. by training community members and gradually delegating monitoring activities over the duration of the project*
- 5.9.8. *How results of monitoring will be shared and discussed with participants*
- 5.10. *Where participants are involved in monitoring, a system for checking the robustness of monitoring results must be in place, e.g. checking a random sample of monitoring results by the project coordinator.*

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 Serakar Clan will play a central role in project monitoring, including participating in 6-monthly eligible forest area inspections, continuous biodiversity survey, and annual activity shifting inspections jointly with the Project Coordinator. The Serakar Clan will be surveyed in 3-yearly community impact surveys.

3.5.1 Community Participation In Monitoring

The Project Owner has recruited rangers with responsibilities to undertake project monitoring tasks described in Table 3.1.6. Ser-Thiac Ltd (the landowner community business entity responsible for this project) is responsible for recruitment and management of rangers for this project. The Project Coordinator has provided supervision and support for ranger activities during project development and for this simplified version of the Project Monitoring Report. The Project Coordinator has already started delegating responsibilities to the Project Owner.

3.5.2 Sharing Results of Community Monitoring

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

3.5.3 Quality Controls for Community Monitoring

Quality controls for community monitoring are described in Section 8.1.8.2 of the Loru PD Part A D3.2a v1.0 20151009 and have been fulfilled for this Monitoring Report.

4. Quantification of GHG Emission Reductions and Removals

4.1 BASELINE EMISSIONS

Quantify the baseline emissions and/or removals, providing sufficient information to allow the reader to reproduce the calculation. Attach electronic spreadsheets as an appendix or separate file to facilitate the verification of the results.

Gross Annual Baseline Emissions Avoided: 1,760 tCO₂e. The first Monitoring Period is 16 January 2013 – 15 January 2015 (i.e. 2 years) (Appendix 1, Sheet 'Loru Carbon' Cell E9).

Gross Annual Baseline Emissions Avoided for the first monitoring period are 3,520 tCO₂e (i.e. 1,760 x 2).

Annual Baseline Removals: 34 tCO₂e. Baseline Removals for the first monitoring period are 68 tCO₂e (Appendix 1, Sheet 'Loru Carbon' Cell E10).

Annual Net Baseline Emissions Avoided: 1,726 tCO₂e (Appendix 1, Sheet 'Loru Carbon' Cell E11).

4.2 PROJECT EMISSIONS

Quantify the project emissions and/or removals, providing sufficient information to allow the reader to reproduce the calculation. Attach electronic spreadsheets as an appendix or separate file to facilitate the verification of the results.

Annual Net Project Removals: 1,326 tCO₂e (Appendix 1, Sheet 'Loru Carbon' Cell E15).

4.3 LEAKAGE

Quantify leakage emissions providing sufficient information to allow the reader to reproduce the calculation. Attach electronic spreadsheets as an appendix or separate file to facilitate the verification of the results.

There has been no activity shifting leakage in this monitoring period. There has been no market leakage in this monitoring period (due to the insignificant volume of baseline timber harvesting in relation to the national domestic timber market).

Leakage for this monitoring period is 0 tCO₂e (Appendix 1, Sheet 'Loru Carbon' Cell E12).

4.4 NET GHG EMISSION REDUCTIONS AND REMOVALS

Quantify the net GHG emission reductions and removals, summarizing the key results using the table below. Specify breakdown of GHG emission reductions and removals by vintages.

For AFOLU projects, include quantification of the net change in carbon stocks. Also, state the non-permanence risk rating (as determined in the AFOLU non-permanence risk report) and calculate the total number of buffer credits that need to be deposited into the AFOLU pooled buffer account. Attach the non-permanence risk report as either an appendix or a separate document.

Net Carbon Credits (NCC) is calculated as follows:

Net Carbon Credits								
Year	Net Baseline Emissions Avoided (NBEA) (tCO ₂ e)	Buffer NBEA (tCO ₂ e)	Net Project Removals (NPR) (tCO ₂ e)	Buffer NPR (tCO ₂ e)	Gross Carbon Credits (NBEA + NPR) (tCO ₂ e)	Buffer total (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net Carbon Credits (tCO ₂ e)
2013	1,726	345	1,326	265	3,052	610	0	2,442
2014	1,726	345	1,326	265	3,052	610	0	2,442
Total	3,452	690	2,652	530	6,104	1,220	0	4,884

For due diligence on the above calculations see Loru Carbon Budget & Pricing Spreadsheet (Appendix 1, Sheet 'Loru Carbon' Cells E4-19). Note that the annual accounting periods for this Monitoring Report are:

- 16 January 2013-15 January 2014
- 16 January 2014-15 January 2015

5. Quantification of Habitat Hectare Units

This project markets Habitat Hectare units that are mutually exclusive to carbon offsets. This is for purposes of marketing the rainforest protection project to buyers not interested in carbon offsetting but interested in supporting rainforest protection through the purchase of payment for ecosystem service units.

When a buyer purchases a Habitat Hectare unit from this project, the equivalent volume of carbon offsets is retired in the registry. In this manner carbon offsets are used as a registered proxy of Habitat Hectare units.

One Habitat Hectare unit equals one hectare of rainforest protected inside the eligible forest area for one year.

5.1 BASELINE HABITAT HECTARES

Quantify the baseline hectares of protected rainforest. Attach electronic spreadsheets as an appendix or separate file to facilitate the verification of the results.

Baseline hectares of rainforest protected inside the eligible forest area: 0ha (Appendix 1, Sheet 'Loru HH' Cell E4).

5.2 PROJECT HABITAT HECTARES

Quantify the project hectares of protected rainforest. Attach electronic spreadsheets as an appendix or separate file to facilitate the verification of the results.

The eligible forest area (EFA) is 147 ha in size. Project Habitat Hectares of rainforest protected inside the eligible forest area: 118 ha yr⁻¹. This amounts to the EFA – 20% (Appendix 1, Sheet 'Loru HH' Cell E8).

5.3 LEAKAGE

Quantify hectare leakage.

There has been no activity shifting leakage in this monitoring period. There has been no market leakage in this monitoring period (due to the insignificant volume of baseline timber harvesting in relation to the national domestic timber market).

Leakage for this monitoring period is 0 ha.

5.4 NET HABITAT HECTARE UNITS

Quantify the net Habitat Hectare units produced by vintages arising from the quantification of the net change in hectares protected. Also, state the non-permanence risk rating (as determined in the AFOLU non-permanence risk report) and calculate the total number of buffer credits that need to be deposited into the AFOLU pooled buffer account. Attach the non-permanence risk report as either an appendix or a separate document.

Net Habitat Hectares (NHH) is calculated as follows:

Net Habitat Hectares						
Year	Gross Habitat Hectares (GHH) (ha)	Buffer (GHH) (ha)	Leakage (ha)	Net Habitat Hectares (NHH) (ha)	Net Carbon Credits equivalent (mutually exclusive to HHs) (tCO ₂ e)	Net Carbon Credits / Habitat Hectare (tCO ₂ e)
2013	147	29	0	118	2,442	20.72
2014	147	29	0	118	2,442	20.72
Total	294	58	0	236	4,884	-

For due diligence on the above calculations see Loru Carbon Budget & Pricing Spreadsheet (Appendix 1, Sheet 'Loru HH' Cells E4-10). Note that the annual accounting periods for this Monitoring Report are:

- 16 January 2013-15 January 2014
- 16 January 2014-15 January 2015

6. Quantification of Community Impacts

6.1 BASELINE COMMUNITY IMPACTS

Quantify the baseline community impacts, providing sufficient information to allow the reader to reproduce the calculation. Attach electronic spreadsheets as an appendix or separate file to facilitate the verification of the results. Present community impacts measured and for each quantify the baseline as modeled.

At first verification the Loru Forest Project has only undertaken baseline community impact monitoring. These results are presented in Section 5.2.2.2 of the Loru Forest Project – Project Description Part A D3.2a v1.0 20151009.

6.2 PROJECT COMMUNITY IMPACTS

Quantify project community impacts providing sufficient information to allow the reader to reproduce the calculation. Attach electronic spreadsheets as an appendix or separate file to facilitate the verification of the results. Present community impacts measured and for each quantify project performance for that impact.

Because the Loru Forest Project has only completed baseline community impact monitoring at the time of first verification there is no contrasting data to enable project community impacts. The first occasion where project community impacts can be measured and reported for monitoring will be at the second verification event.

6.3 NET COMMUNITY IMPACT ENHANCEMENTS

Quantify the net community impact enhancements summarizing the key results using the table below. Specify breakdown of community impact enhancements.

Net community impact enhancements will become available for the first time at the second verification event. This monitoring report reproduces the community baseline as presented in Section 5.2.2.3 of the Loru Forest Project PD Part A D3.2a v1.0 20151009.

6.3.1 Community Baseline

Criteria 1: The landscape provides sufficient quality and quantity of food			
Question	Measure	Average	Comments
1.1 How often do you buy food?	Days per week	4.6	Respondents are buying basic foodstuffs from local cooperative store such as rice, sugar and oil.
1.2 How big is your family garden?	Hectares	0.7	Garden plot sizes are relatively small but allow food for consumption and sale.
1.3 How often do you eat free food from your garden?	Days per week	5.3	This question was misunderstood as respondents thought they were being asked how often they ate from their large garden rather than home garden. Observations are that some of the food eaten every day is food they have grown.
1.4 How often do you run out of food?	Times Per Month	0	Respondents spoke about eating simply some days (rice and green veg only).
1.5 How often do you eat food from the forest?	Times Per month	2.5	Food from Loru was mainly sourced by men who went to shoot wild game for special events.
1.6 How much do you make selling food?	Vatu Per Month	9750 VUV	Women only sell food at market in town. This works on a roster system and they go twice a month to market.

Criteria 2: Access to clean water occurs all year round			
Question	Measure	Average	Comments
2.1 Do you run out of water?	% 'yes'	100%	Respondents noted that in dry season they regularly run out of water for weeks at a time as they rely purely on rainwater and their storage is not large.
2.2 Are there days when you can use as much as you like?	% 'yes'	100%	Respondents noted that in wet season their tanks were full all the time as storage capacity was low and rainfall high.

Criteria 3: Household income and assets increase allowing for improved livelihood opportunities and quality of living.					
3.1 Access to Education	Of those surveyed with children of school age, 95% were attending school. Generally children attend school from 4 - 15 years. Only 2 respondents noted their children were in tertiary education.				
	Female Adult	Male Adult	Female Youth (<25yrs)	Male Youth (<25yrs)	Comments
3.2 Personal Monthly Income (VUV)	17750	11591	8143	400	Women sell food, men make money from Copra mainly
3.3 Travel to town (times per week)	1.2	1.7	1.7	0.2	n/a
3.4 Hours spent cooking (per day)	2.7	0.4	1.9	0	n/a

3.5 Hours spent householder chores (per day)	2	0.8	2	0	n/a
3.6 Hours spent Gardening (Per day)	4.6	7.5	5.9	4.5	n/a
3.7 Hours spent resting	1.8	3.6	2.6	9.3	n/a

Criteria 4: The Community REDD+ Enterprise contributes to the wellbeing of its members.		
	Measure	Across all groups
4.1 How many youth do you know that are engaged with the REDD+ Enterprise?	Number of Youth	Average of 10 youth identified by respondents
4.2 Are you given the opportunity to access information about the REDD+ Enterprise's finances and activities?	Percentage "yes"	72%
4.3 Do you trust the REDD+ Enterprise?	Percentage "yes"	90%

Tabulation of baseline and project community impacts, and net community impact enhancements will be presented at the second verification event.

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

7. Quantification of Biodiversity Impacts

7.1 BASELINE BIODIVERSITY IMPACTS

Quantify the baseline biodiversity impacts, providing sufficient information to allow the reader to reproduce the calculation. Attach electronic spreadsheets as an appendix or separate file to facilitate the verification of the results. Present biodiversity impacts measured and for each quantify the baseline as modeled.

At first verification the Loru Forest Project has only undertaken the first Project Biodiversity Impact Monitoring survey. These results are presented in Section 5.3.1 of the Loru Forest Project – Project Description Part A and are reproduced below.

At the second verification event, the Loru Forest Project:

- a. Will present results of the second Project Biodiversity Monitoring survey, and
- b. Aspires to present the first Baseline Biodiversity Monitoring.

7.2 PROJECT BIODIVERSITY IMPACTS

Quantify project biodiversity impacts providing sufficient information to allow the reader to reproduce the calculation. Attach electronic spreadsheets as an appendix or separate file to facilitate the verification of the results. Present biodiversity impacts measured and for each quantify project performance for that impact.

The Loru Forest Project has completed the first (project scenario) biodiversity impact monitoring survey recording significant species present inside the project boundary. The biodiversity value of the project has been recorded and is presented in Section 5.3 of the Loru Forest Project PD Part A D3.2a v1.0 20151009 and reproduced below:

7.2.1 Loru Forest Project Biodiversity Survey 2015

The following species of animals and plants were identified in within the project boundary during the forest and first (project scenario) biodiversity inventory undertaken in 2015.

IUCN Classification: VU = Vulnerable; EN = Endemic; CR = Critically Endangered (see Explanatory Notes in Appendix 1 of this document). CEPF = Critical Ecosystem Partnership Fund. CEPF Priority sites for investment are listed for the East Melanesian Islands Biodiversity Hotspot can be accessed here: http://www.cepf.net/SiteCollectionDocuments/east_melanesian_islands/EMI_ecosystem_profile.pdf

Endemism = whether endemic to the country (C), or to the island (I) or site (S).

Table 7.2.1a: Significant Animal Species Located With The Project Area						
Taxonomic Group: insects						
Common Name	Taxonomic Name	IUCN	CEPF	Endemism	Cultural Significance	Reference
Sacco's Emperor	<i>Polycon sacco</i>					D. Kalfatak
Taxonomic Group: mammals						
Common Name	Taxonomic Name	IUCN	CEPF	Endemism	Cultural Significance	Reference
Vanuatu Flying Fox	<i>Pteropus anetianus</i>	EN	Priority (Control of over exploitation)	C	Food / hunting	D. Kalfatak
Taxonomic Group: Birds						
Common Name	Taxonomic Name	IUCN	CEPF	Endemism	Cultural Significance	Reference
Incubator Bird	<i>Megapodius freycinet layardi</i>	CR,EN		C		D. Kalfatak
Vanuatu Kingfisher	<i>Halycon farquhari</i>	EN		C		D. Kalfatak
Vanuatu Flycatcher	<i>Neolalage banksiana</i>	EN	Y/N	C		D. Kalfatak
Vanuatu Fruit Dove	<i>Ptilinopus tannensis</i>	EN		C		D. Kalfatak
Vanuatu White-eye	<i>Zosterops flavifrons</i>	EN		C		D. Kalfatak
Santo Mountain Starling	<i>Aplonis santovestris</i>	EN	Priority (Control of invasive species)	I		EMI Ecosystem Profile
Vanuatu Imperial Pigeon	<i>Ducula bakeri</i>	EN	Priority (Control of invasive species)	C		EMI Ecosystem Profile
Golden Whistler,	<i>Pachycephala pectoralis</i>	EN		C		D. Kalfatak
Taxonomic Group: Crustaceans						
Common Name	Taxonomic Name	IUCN	CEPF	Endemism	Cultural Significance	Reference
Coconut Crab	<i>Birgus latro</i>	EN/C R		C		D. Kalfatak

Table 7.2.1b Indigenous plant species identified in the Conservation Area (non-endemics)				
Scientific name:	Family name:	Common name:	Language name:	Plant Form
Macaranga indica	Euphorbiaceae	Navenue	None	Tree
Macaranga tannarius	Euphorbiaceae	Navenue	None	Tree
Codiaeum variegatum	Euphorbiaceae	Nahahali	None	Shrub
Antiaris toxicaria	Moraceae	Melektri	None	Tree
Dysoxylum arborecense	Meliaceae	Wael stingwud	Netpo	Tree
Micromelum minutum	Rutaceae	None	None	Tree

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Murraya paniculata	Rutaceae	None	None	Shrub
Micropiper latifolia	Piperaceae	Wael kava	None	shrub
Piper astro caledonicum	Piperaceae	None	Nvulkoha	Shrub
Hemigraphis reptans	Acanthaceae	None	Naiettiet	Herb
Selaginella durvilei	Selaginellaceae	None	Natwal	Herb
Christella dentata	Telypteridaceae	None	Thavthav	Herb
Desmodium ormocarbooides	Fabaceae	None	Natiwarkar	Shrub
Cordyline fruticosa	Agavaceae	Nagaria	None	Shrub
Pometia pinnata	Sapotaceae	Nadao	Neseri	Tree
Stephania japonica	Menispermaceae	None	None	Liane
Cayratia trifolia	Vittata	None	None	Lian
Pueraria lopata	Fabaceae	None	Nwehea	Creeper
Epiprenum pinnatum	Araceae	Nawalu	None	Climber
Entada phasiloides	Fabaceae	Snekrop	None	Liane
Pycnarrhena ozanta	Menispermaceae	None	None	Liane
Dendrocnide latifolia	Urticaceae	Nagalat	Noclath	Tree
Dendrocnide harvyii	Urticaceae	Nagalat	Noclath	Tree
Dendrocnide moroides	Urticaceae	Nagalat	Noclath	Tree
Dracontomelon vitiense	Anarcadiaceae	Nakatapol	Natbol	Tree
Gatus	Zingerberaceae	None	Nreter	Shrub
Geophila repens	Rubiaceae	None	Nmuthmuthvra	Herb
Adenanthera pavonina	Fabaceae	None	Nthera	Tree
Semecarpus tannaensis	Anarcadiaceae	Green nawalas	Nle	Tree
Semecarpus vitiensis	Anarcadiaceae	Red nawalas	Nle	Tree
Barringtonia edulis	Lecythidaceae	Navele	Naruth	Tree
Ervatamia obtuiscula	Apocynaceae	Lastic tri	Nabangbang	Shrub
Elatostema beccari	Urticaceae	None	Naskehro	Herb
Pterocarpus indicus	Fabaceae	Bluwota	Nula	Tree
Endospermum medullosum	Euphorbiaceae	Waetwud	Nocmac	Tree
Pisonia umbellifera	Nyctaginaceae	None	Nene	Tree
Acalypha forsteriana	Euphorbiaceae	None	Nkas	Tree
Bischofia javanica	Euphorbiaceae	Nakoka	Noukar	Tree
Burckella obovata	Sapotaceae	Naduledule	Nenget	Tree
Canarium indicum	Burseraceae	Nagai	Nanga	Tree
Planchonella sp.	Sapotaceae	None	Namsem	Tree
Pongamia pinnata	Fabaceae	None	Ntorula	Tree
Cleidion	Euphorbiaceae	None	Nlahare	Tree
Bampusa vulgaris	Graminea	Bampu	Nerienkar	Tree
Dysoxylum bijucum	Meliaceae	Stingwud	Naspu	Tree
Mimosop elengi	Sapotaceae	Natariu	Ner	Tree
Garuga floribunda	Burseraceae	Namalaus	Naleu	Tree
Inocarpus fagiferae	Fabaceae	Namambe	Namav	Tree
Tectaria	Aspleniaceae	None	None	Fern
Pteris pacifica	Adiantaceae	None	None	Fern
Vaavea amicorum	Meliaceae	None	None	Tree

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Trophis scandens	Moraceae	None	None	Liane
Diospyros samoensis	Ebenaceae	Blakwud	Nrues	Tree
Instia bijuca	Fabaceae	Natora	Ntor	Tree
Gyrocarpus americanus	Hernandiaceae	Kenutri	Nene	Tree
Fluggea flexuosa	Euphorbiaceae	Namamao	Nvacer	Tree
Terminalia cataba	Combretaceae	Natapoa	Ntau	Tree
Alphitonia phasiloides	Rhamnaceae	Navasvas	Nwerie	Tree
Pipturus argenteus	Urticaceae	None	Elwe	Tree
Premna serratifolia	Verbenaceae	None	Nvenven	Tree
Castanospermum australe	Fabaceae	Bintri	Nas	Tree
Erythina variegata	Fabaceae	Narara	Nrur	Tree
Spondias dulcis	Anacardiaceae	Naus	Neu	Tree
Cananga odorata	Annonaceae	Tiare	Nares	Tree
Metroxylon warburgii	Palmae	Natagura	Ndalo	Tree
Alpinia pacifica	Zingerberaceae	Wael zinger	None	Shrub
Alpinia popurea	Zingerberaceae	Wael Zinger	None	Shrub
Hornstedtia lycostoma	Zingerberaceae	Wael Zinger	None	Shrub
Graptophyllum pictum	Acanthaceae	None	Naro	Shrub
Ficus septica	Moraceae	None	Nworworo	Tree
Ficus wassa	Moraceae	Nabalango	None	Tree
Kleihovia hospita	Sterculiaceae	None	Nedal	Tree
Myristica fatua	Myristicaceae	Nadaedae	None	Tree
Ventilago neo ebudicum	Rhamnaceae	None	None	Tree
Hibiscus tiliacues	Malvaceae	Burao	None	Tree

Table 7.2.1c Endemic plant species identified in the Conservation Area				
Scientific name:	Family name:	Common name:	Language name:	Plant Form:
<i>Meryta neo ebudicum</i>	Araliaceae	None	None	Tree
<i>Calamus vanuatuensis</i>	Arecaceae	Wael ken	None	Climber
<i>Smilax vitiense</i>	Smilacaceae	None	None	Liane
<i>Anodendron paniculata</i>	Apocynaceae	None	Nwenuk	Liane
<i>Pseuderanthemum sp</i>	Acanthaceae	None	None	Shrub
<i>Ground orchid</i>	Orchidaceae	Ground Orchid	None	Herb
<i>Graptophyllum pictum</i>	Acanthaceae	None	None	Shrub
<i>Pandanus tannaensis</i>	Pandanaceae	Wael Pandanus	None	Shrub
<i>Sterculia banksiana</i>	Sterculiaceae	None	None	Tree
<i>Corynocarpus similis</i>	Corynocarpaceae	None	Nethov	Tree
<i>Claoxylon falax</i>	Euphorbiaceae	None	Nvaoc	Tree
<i>Phaleria pentecostalis</i>	Thymelaeaceae	None	None	Shrub
<i>Dysoxylum aneityensis</i>	Meliaceae	Stingwud	Napuvén	Tree
<i>Dysoxylum arborecense</i>	Meliaceae	Wael stingwud	Netpo	Tree
<i>Palaquium neo ebudicum</i>	Meliaceae	None	Nwalmav	Tree

<i>Litsea aneityensis</i>	Lauraceae	None	Nowthroloc	Tree
<i>Osmoxylon orientale</i>	Araliaceae	None	Navarku	Tree
<i>Polycias samoensis</i>	Araliaceae	Wael nalalas	Nesthul	Tree
<i>Glochidion ramiflorum</i>	Euphorbiaceae	Wael Namamao	Nelakar	Tree
<i>Celtis paniculata</i>	Cannabaceae	None	Nousokar	Tree
<i>Cythandra efatensis</i>	Gesneriaceae	None	None	Shrub
<i>Psychotria milnei</i>	Rubiaceae	None	Nkerkeraroth	Shrub
<i>Psychotria fosteri</i>	Rubiaceae	None	Nkerkeraroth	Shrub
<i>Psychotria sp</i>	Rubiaceae	None	Nkerkeraroth	Shrub
<i>Nothonoides repada</i>	Urticaceae	None	None	Climber
<i>Syzygium gracilipes</i>	Myrtaceae	None	Naskar	Shrub
<i>Evodia hortensis</i>	Myrtaceae	Nabwagi	None	Shrub

Table 7.2.1d Invasive plant species identified in the Conservation Area				
Scientific name:	Family name:	Common name:	Language name:	Plant Form:
<i>Urena lopata</i>	Fabaceae	None	None	Shrub
<i>Meremia peltata</i>	Convolvulaceae	Big leaf	None	Vine
<i>Mikania micrantha</i>	Asteraceae	Mael-minit (Mile-a-minute)	None	Vine
<i>Solanum torvum</i>	Solanaceae	Biko	None	Shrub
<i>Sida rhombifolia</i>	Malvaceae	Broom wed (broom weed)	None	Shrub
<i>Mimosa pudica</i>	Fabaceae	Grass nil	None	Herb
<i>Achyranthes aspera</i>	Amaranthaceae	None	None	Herb

7.3 NET BIODIVERSITY IMPACT ENHANCEMENTS

Quantify the net biodiversity impact enhancements summarizing the key results using the table below. Specify breakdown of biodiversity impact enhancements.

Tabulation of baseline and project biodiversity impacts, and net biodiversity impact enhancements will be presented at the second verification event.

	Baseline biodiversity impacts	Project biodiversity impacts	Net biodiversity impact enhancements
Impact 1			
Impact 2...			

APPENDICES

APPENDIX 1. LORU PROJECT CARBON BUDGET & PRICING SPREADSHEET

Supplied as a separate file.

APPENDIX 2 GEOREFERENCING DATA

Supplied as a separate file.

APPENDIX 3. DIRECTOR'S CERTIFICATE SIMPLIFIED PROJECT MONITORING

Supplied as a separate file.