# Loru Forest Project: Issuance Request 2020

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

Date of submission: 10 August 2020

## SUMMARY

| Project overview | |
|---|---|
| Reporting period | 16 January 2017 – 15 January 2020 (3 years) |
| Geographical areas | Loru, Santo, Vanuatu |
| Technical specifications in use | TS Module (C) AD-DtPF D2.2.1 v1.0 20150815 |

| Project indicators | Historical | Added/ Issued this period 2017 - 2019 | Total |
|---|---|---|---|
| No. smallholder households with PES agreements | Not applicable | Not applicable | Not applicable |
| No. community groups with PES agreements (where applicable) by Dec 2014 | 1 | 0 | 1 |
| Approximate number of households in these community groups | 50 | 0 | 50 |
| Area under management (ha) where PES agreements are in place | 165.6 ha | 34.3 | 200.6 ha |
| Total PES payments made to participants (USD) | $37,298 | $8,291 | $45,590 |
| Total sum held in trust for future PES payments (USD) | n/a | $4,904 | $4,904 |
| Plan Vivo Certificates (PVCs) issued | 9,768 | 11,435 | 21,203 |
| Allocation to Plan Vivo buffer to date | 2,440 | 2,859 | 5,299 |
| Unsold Stock at time of submission (PVC) | | | 25 |
| **Plan Vivo Certificates (PVCs) requested for issuance this reporting period** | | | **11,435** |
| **2013** | | | **587** |
| **2014** | | | **587** |
| **2015** | | | **587** |
| **2016** | | | **587** |

| | |
|---|---|
| 2017 | 3,029 |
| 2018 | 3,029 |
| 2019 | 3,029 |
| Available for future issuance (REDD only) | 0 |

# PART A: PROJECT UPDATES

## A1 Key events

- Please see Annual Report 2017 – 2018 and Annual Report 2019 for key events and updates on project

## A2 Successes and challenges

- Please see Annual Report 2017 – 2018 and Annual Report 2019 for key events and updates on project

## A3 Project developments

- In this second Monitoring Period, a forest inventory of Zone B enabled the existing Technical Specifications to be applied to Zone B. This issuance request seeks the issuance of PVCs for Zone A for the last 3 years and for Zone B backdated to the beginning of the project in 2013.

Table 1: Document updates

| PDD (including technical specifications) document version: | | |
|---|---|---|
| PDD section | Date change | Short description of update |
| *Not applicable* | | |

Table 2: Progress against corrective actions

| Document | Corrective action | Activity against this |
|---|---|---|
| *Not applicable* | | |

## A4 Future Developments

- Please see Annual Report 2017 – 2018 and Annual Report 2019 for key events and updates on project

# 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 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 2017 – 15 January 2020

| 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 and B 2017* | *200.6* | TS Module (C) AD-DtPF | *0* | *3,786* | *20* | *757* | *3,029* | *3,029* | *0* |
| *Zone A and B 2018* | *200..6* | TS Module (C) AD-DtPF | *0* | *3,786* | *20* | *757* | *3,029* | *3,029* | *0* |
| *Zone A and B 2019* | *200.6* | TS Module (C) AD-DtPF | *0* | *3,786* | *20* | *757* | *3,029* | *3,029* | *0* |
| *Zone B 2013* | *35* | TS Module (C) AD-DtPF | *O* | *734* | *20* | *147* | *587* | *587* | *0* |
| *Zone B 2014* | *35* | TS Module (C) AD-DtPF | *0* | *734* | *20* | *147* | *587* | *587* | *0* |
| *Zone B 2015* | *35* | TS Module (C) AD-DtPF | *0* | *734* | *20* | *147* | *587* | *587* | *0* |
| *Zone B 2016* | *35* | TS Module (C) AD-DtPF | *0* | *734* | *20* | *147* | *587* | *587* | *0* |
| TOTAL | | | **2,937** | **14,294** | | **2,859** | **11,435** | **11,435** | **0** |

*This amount includes annual volumes from Zone B for all previous years of the project (i.e. since 2013)

** Number includes Buffer Units from annual volumes for Zone B for all previous years of the project (i.e. since 2013)

### C3 Allocation of issuance request

No PVCs from this issuance have been allocated. The below table shows the issuance from the previous issuances.

**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 |
|---|---|---|---|
| *ZeroMission* | *7835* | *n/a* | TS Module (C) AD-DtPF D2.2.1 v1.0 20150815 |
| *Ekos* | *1908* | *n/a* | TS Module (C) AD-DtPF D2.2.1 v1.0 20150815 |
| *Unsold stock* | *25* | | |

### C4 Data to support issuance request

Monitoring data for areas of land and participants which support this issuance request is provided in the Loru Monitoring Report 2 D3.3 v1.0 20200704.

## PART D: SALES OF PLAN VIVO CERTIFICATES

### D1: Sales of Plan Vivo Certificates

**Table 7: Sales of Plan Vivo Certificates**

| Buyer / sale | Invoice date | Units | Wholesale Price* | Sale value* |
|---|---|---|---|---|
| ZeroMission | June 2016 | 3357 | | |
| ZeroMission | June 2017 | 4179 | | |
| Ekos | July 2017 | 1330 | | |
| Ekos | July 2017 | 557 | | |
| Ekos | July 2017 | 21 | | |
| ZeroMission | April 2018 | 299 | | |
| | | **9444** | | |

| | | |
|---|---|---|
| Total units sold | Average price | Total value of sales (USD) |

*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 Loru Monitoring Report 2 D3.3 v1.0 20200704.
- 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 Loru Monitoring Report 2 D3.3 v1.0 20200704.

## E4: Environmental and biodiversity monitoring

- Results of monitoring of biodiversity impacts according to our monitoring plan for the reporting period are provided in Loru Monitoring Report 2 D3.3 v1.0 20200704.

# PART F: IMPACTS

## F1: Evidence of outcomes

Please see Loru Monitoring Report 2 D3.3 v1.0 20200704.

# PART G: PAYMENTS FOR ECOSYSTEM SERVICES

## G1: Summary of PES by year

Table 8: Summary of payments made and held in trust

| 1. Reporting years (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 |
|---|---|---|---|---|---|
| 01/13 – 01/14 | 0 | 0 | 0 | 0 | 0 |
| 01/14 – 01/15 | 0 | 0 | 0 | 0 | 0 |
| 01/15 – 01/16 | 0 | 0 | 0 | 0 | 0 |
| 01/16 – 01/17 | 0 | $9,648 | $9,648 | $7,371 | 0 |
| 01/17 – 01/18 | $9,648 | $11,523 | $21,171 | $27,807 | 0 |
| 01/18 – 01/19 | $21,171 | $16,127 | $37,298 | $14,754 | 0 |
| 01/19 – 01/20 | $37,298 | $8,292 | $45,590 | $4,904 | 0 |

| | | | | | |
|---|---|---|---|---|---|
| At end period | $45,590 | 0 | | | |
| **TOTAL** | **$45,590** | **0** | **$45,590** | **$4,904** | **0** |

# PART H: ONGOING PARTICIPATION

## H1: Recruitment

- No additional recruitment occurred during this monitoring period

## 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 *plan vivos* | n/a |
| No community groups with *plan vivos* | n/a |
| Approximate number of households (or individuals) in these community groups (if known) | n/a |

## H3: Community participation

- Please see Annual Report 2017-2018 and Annual Report 2019

# PART I: PROJECT OPERATING COSTS

## I1: Allocation of costs

**Table 10: The below table shows the average annual expenditure from project start until the end of the current monitoring period (15 January 2020)**

| **Project entity** | | **Average Annual Expenditure ($USD)** |
|---|---|---|
| Project owner | Serthiac | $5,975.71 |
| Project coordinator | Live & Learn* | $14,728.14 |
| | Nakau** | $4,149.61 |
| | **TOTAL (average)** | **$23,511.63** |

*This expenditure incorporates the increased costs of VVB verification which triples the cost of first and second verification events

**This does not reflect actual expenditure but payments made to Nakau to support project. The majority of the work has required donor funding.

| Table 11. Allocation of Costs: Loru Project Costs Years 8, 9 & 10 | | | | |
|---|---|---|---|---|
| | **Costs** | Revenue | Revenue | Revenue |
| **Cost Categories** | | PVC Sales @ $12/unit 45/35/20 split | PVC Sales @ $10/unit 45/35/20 split | PVC Sales @ $12/unit + Annual Donor contribution (USD5000) |
| **Landowner Project Costs** | | | | |
| Project Rangers & management | $2,770 | | | |
| Rents/Leases | $0 | | | |
| Administration & Governance | $2,249 | | | |
| Verification | $0 | | | |
| Programme Subscription | $385 | | | |
| Contingency | $540 | | | |
| **LO Project Costs Total** | **$5,944** | | | |
| **LO Opportunity Costs** | **$10,000** | | | |
| **LO Total Costs** | **$15,944** | **$16,357** | $13,361 | **$16,357** |
| **Project Coordinator Costs** | | | | |
| Project implementation support | $3,286 | | | |
| Project rangers and management | $0 | | | |
| Reporting | $798 | | | |
| Rents/Leases | $0 | | | |
| Verification | $8,271 | | | |
| Field expenses | $0 | | | |
| Travel | $1,627 | | | |
| Fees & Taxes | $47 | | | |
| Administration | $1,403 | | | **Annual confirmed donor USD5000 |
| **PC Costs Total** | **$15,433** | $12,722 | $10,602 | **$15,904** |
| **Programme Operator Costs** | | | | |
| Project Management | $2,000 | | | |
| Technical support | $2,000 | | | |
| Sales & Marketing | $1,000 | | | |
| Project Support | $2,000 | | | |
| Credit issuance fees | $1,000 | | | |
| Credit transfer fees | $60 | | | |
| Rotation 2 Internal Subsidy | $0 | | | |

| | | | | |
|---|---|---|---|---|
| Overhead | 0 | | | |
| PO Costs Total | $8,060 | $7270 | $6,058 | $9,087 |
| | | | | |
| Costs Total | $39,437 | $3098 | $9,417 | $41,348 |

The above table shows that even with a relatively high carbon price, the increased verification costs make the project financially unviable when income relies on carbon sales alone. Should a confirmed annual philanthropic donation be used to support Live & Learn as Project Coordinator, the project can operate at cost for coordinators and at profit for the landowners.

# Loru Forest Project - Monitoring Report 2, 2020

An avoided deforestation project at Loru, Santo, Vanuatu.

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

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Report prepared by

Anjali Nelson, Michael JB Dyer, Nakau Programme Pty Ltd, with contributions from Dr Sean Weaver, Ekos

Suggested citation:

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# LORU FOREST PROJECT MONITORING REPORT 2

Document Prepared By Anjali Nelson and Michael JB Dyer, Nakau Programme Pty Ltd

With contributions by Dr Sean Weaver, Ekos

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| | |
|---|---|
| **Project Title** | *Loru Forest Project* |
| **Version** | *1.0* |
| **Report ID** | *N/A* |
| **Date of Issue** | *9 April 2020* |
| **Project ID** | *N/A* |
| **Monitoring Period** | *16 January 2017 to 15 January 2020.* |
| **Prepared By** | *Live & Learn Vanuatu (Project Coordinator) and the Nakau Programme Pty Ltd (Programme Operator)* |
| **Contact** | *Anjali Nelson, anjali.nelson@nakau.org, Nakau Programme* |

# 1. Project Details

## 1.1. SUMMARY DESCRIPTION OF THE IMPLEMENTATION STATUS OF THE PROJECT

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

## 1.2 SECTORAL SCOPE AND PROJECT TYPE

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

## 1.3 PROJECT COORDINATOR

| | |
|---|---|
| Organization name | Live and Learn Vanuatu |
| Contact person | Glarinda Andre |
| Title | Local Projects Manager |
| Address | Winston Churchill Avenue (opposite Central School)<br>Port Vila, Efate, Vanuatu |
| Telephone | Tel: +678 27448 |
| Email | glarinda.andre@livelearn.org |

## 1.4 OTHER ENTITIES INVOLVED IN THE PROJECT

| | |
|---|---|
| Organization name | Serthiac (community business) |
| Role in the project | Project Owner |
| Contact person | Lenny Fred |
| Title | Administration Officer |
| Address | Khole Village, Espiritu Santo, Vanuatu |
| Telephone | Tel: +678 7731264 |
| Email | lwarele@gmail.com |

## 1.5 PROJECT START DATE

16 January 2013

## 1.6 PROJECT CREDITING PERIOD

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

## 1.7 PROJECT LOCATION

Project Location: Loru, Santo, Vanuatu.

Project boundaries: Depicted in Figure 1 below:

| Please see online version for map |
|---|

Black line = Project Area boundary, Zone A = Tall Forest Eligible Forest Area (166 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.

Georeferencing data is provided in Appendix 2.

## 1.8 TITLE AND REFERENCE OF METHODOLOGY

This project applies two Nakau Programme methodology elements:

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

## 1.9 OTHER PROGRAMMES

No other programmes apply.

# 2. Implementation Status

## 2.1 IMPLEMENTATION STATUS OF THE PROJECT ACTIVITY

The Loru Forest Project was implemented starting on 16 January 2013. This monitoring report represents project implementation results for the second verification event, representing three vintages (16 January 2017 to 15 January 2020).

## 2.2 DEVIATIONS

### 2.2.1 Methodology Deviations

There are no methodology deviations in this monitoring report. In this second verification event the project has applied the Technical Specifications Module outlined above to Zone B. A forest inventory has been undertaken in Zone B.

### 2.2.3 Project Description Deviations

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

## 2.3 GROUPED PROJECT

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. Data and Parameters

## 3.1 MONITORED AND NON-MONITORED PARAMETERS

Non-monitored parameters are derived from default values or are measured at one time only. Monitored parameters are measured during each Monitoring Period. Monitored and non-monitored data are listed in Table 8.1.1 below (aligning with Table 8.1.1 in the Technical Specifications Module (C) 2.1 (AD-DtPF): D2.2.1 v1.0, 20150815, and the Loru Forest Project - Project Description Part B D3.2b v1.0 20151009.

Table 8.1.1 Monitored and Non-Monitored Parameters (monitored parameters in green)

| Notation | Parameter | Unit | Equa-tion | Origin | Monitored |
|---|---|---|---|---|---|
| EFA | Eligible Forest Area | ha | - | PD | Monitored |
| LF/ULF | Forest stratification (logged/unlogged forest) | ha | - | PD | Area calculated in PD |
| 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 $tCO^2e$ | $tCO_2e\ yr^{-1}$ | 4.1.4a 4.1.4b 4.1.4c 4.1.4d | Conversion factors from wood volume to emissions | Not monitored Updated each Baseline Revision |
| GBEWP | Gross Baseline Emissions | $tCO_2e\ yr^{-1}$ | 4.1.5 | Conversion factors from wood products calculation | Not monitored Updated each Baseline Revision |
| ltWP | Long Term Wood Products | $tCO_2e\ yr^{-1}$ | 4.1.6 | Calculated through conversion factors based on volume of wood harvested. | Not monitored |
| NBEA | Net Baseline Emissions Avoided | $tCO_2e\ yr^{-1}$ | 4.1.7 | Default factors based on GBE | Not monitored Updated each Baseline Revision |
| ER | Enhanced Removals | $tCO_2e\ yr^{-1}$ | 5.1.1 | Default values derived from mean sequestration rates for relevant forest types and subsequently derived from project-specific data | Not Monitored Updated each Monitoring Period |

| | | | | | |
|---|---|---|---|---|---|
| TAL | Total Activity Shifting Leakage | $tCO_2e\ yr^{-1}$ | 5.2.1 | Derived from Activity Shifting Leakage Analysis | Monitored Updated each Monitoring Period |

## 3.2 DATA AND PARAMETERS MONITORED

*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 0 (Data and Parameters Available at Validation) above.*

### 3.2.1 GHG Data Monitored

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

| Data Unit / Parameter: | Total Activity Shifting Leakage |
|---|---|
| Data unit: | $tCO_2e/yr$ |
| Description: | Leakage caused by activity shifting |
| Source of data: | Project Area Inspection (outside Eligible Forest Area) |
| Description of measurement methods and procedures to be applied: | Site visit of indigenous forest lands owned and controlled by the Project Owner to assess commercial timber harvesting activity in comparison with the Baseline Activity and Project Activity as stated in the PD.<br>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:<br>• Records of timber harvesting activity are inspected and verified against the timber harvesting plan stated in the PD.<br>• Timber harvesting sites are inspected to verify that they are occurring in the areas specified in the PD.<br>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:<br>• Records of timber harvesting activity are inspected and annual timber harvesting volumes and species are recorded.<br>• Timber harvesting sites are inspected to determine area of harvesting activity.<br>• 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.<br>• Net Carbon Credits are recalculated to account for Total Activity Shifting Leakage (TAL)<br>• 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.<br>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. |
| Value monitored: | $m^3\ yr^{-1}$ |
| Monitoring equipment: | GPS unit, measuring tape, photography |
| QA/QC procedures to be applied: | 3-yearly 3rd party verification of Project Monitoring Reports. |

| | |
|---|---|
| Calculation method: | Activity Shifting Leakage method specified in Section 5.2.1 of the Technical Specifications Module 1.1 (C) (IFM-LtPF). |

### 3.2.2 Community Data Monitored

| **Data Unit / Parameter:** | **Food sources, consumption patterns, agricultural production** |
|---|---|
| Data unit: | Descriptive |
| Description: | Evaluating Food Security |
| Source of data: | Serakar clan and neighboring communities affected by the project and applying the same ration of respondents as per the baseline survey defined in Section 5.2.3.4 of the PD. |
| Description of measurement methods and procedures to be applied: | Structured interviews using questionnaire survey questions from Section 5.2.3.3 of the PD. |
| Frequency of monitoring/recording: | 3 yearly |
| Value monitored: | 1.1 Estimated days / week<br>1.2 Estimated hectares<br>1.3 Estimated days / week<br>1.4 Estimated times per month<br>1.5 Estimated times per month<br>1.6 Estimated vatu per month |
| Monitoring equipment: | No technical equipment required |
| QA/QC procedures to be applied: | Cross referencing from the full set of interviewees |
| Calculation method: | Comparison with numerical data in baseline survey and previous monitoring surveys. |

| **Data Unit / Parameter:** | **Accessibility of water & water use** |
|---|---|
| Data unit: | Descriptive |
| Description: | Evaluating water security |
| Source of data: | Serakar clan and neighboring communities affected by the project and applying the same ration of respondents as per the baseline survey defined in Section 5.2.3.4 of the PD. |
| Description of measurement methods and procedures to be applied: | Structured interviews using questionnaire survey questions from Section 5.2.3.3 of the PD. |
| Frequency of monitoring/recording: | 3 yearly |
| Value monitored: | Percentage full year water access |
| Monitoring equipment: | No technical equipment required |
| QA/QC procedures to be applied: | Cross referencing from the full set of interviewees |

| | |
|---|---|
| Calculation method: | Comparison with numerical data in baseline survey and previous monitoring surveys. |

| Data Unit / Parameter: | Household income |
|---|---|
| Data unit: | Descriptive |
| Description: | Evaluating changes in household income and impact on lifestyle |
| Source of data: | Serakar clan and neighboring communities affected by the project and applying the same ration of respondents as per the baseline survey defined in Section 5.2.3.4 of the PD. |
| Description of measurement methods and procedures to be applied: | Structured interviews using questionnaire survey questions from Section 5.2.3.3 of the PD. |
| Frequency of monitoring/recording: | 3 yearly |
| Value monitored: | 3.1 Number of youth in primary, secondary, and tertiary education<br>3.2 Estimated vatu per month<br>3.3 Estimated times per week<br>3.4 Estimated hours per day<br>3.5 Estimated hours per day<br>3.6 Estimated hours per day<br>3.7 Estimated hours per day |
| Monitoring equipment: | No technical equipment required |
| QA/QC procedures to be applied: | Cross referencing from the full set of interviewees |
| Calculation method: | Comparison with numerical data in baseline survey and previous monitoring surveys. |

| Data Unit / Parameter: | Participation in project |
|---|---|
| Data unit: | Descriptive |
| Description: | Level of direct participation in the Loru Forest Project |
| Source of data: | Serakar clan and neighboring communities affected by the project and applying the same ration of respondents as per the baseline survey defined in Section 5.2.3.4 of the PD. |
| Description of measurement methods and procedures to be applied: | Structured interviews using questionnaire survey questions from Section 5.2.3.3 of the PD. |
| Frequency of monitoring/recording: | 3 yearly |
| Value monitored: | 4.1 Number of youth engaged directly in project<br>4.2 Loru Forest Project information accessibility |
| Monitoring equipment: | No technical equipment required |

| | |
|---|---|
| QA/QC procedures to be applied: | Cross referencing from the full set of interviewees |
| Calculation method: | Comparison with numerical data in baseline survey and previous monitoring surveys. |

### 3.2.3 Biodiversity Data Monitored

| Data Unit / Parameter: | Presence of significant animal species |
|---|---|
| Data unit: | Animal species |
| Description: | Significant animal species to be recorded |
| Source of data: | Biodiversity surveys as routine part of forest ranger role description |
| Description of measurement methods and procedures to be applied: | Biodiversity survey by means of animal presence/absence recorded |
| Frequency of monitoring/recording: | 3-yearly collation of data gathered regularly throughout the monitoring period |
| Value monitored: | Presence/absence by species |
| Monitoring equipment: | No technical equipment required |
| QA/QC procedures to be applied: | Calibrate ranger identification with annual biodiversity inspections by Project Coordinator |
| Calculation method: | Updating species presence/absence list |

# 4. Monitoring Plan

The monitoring schedule for the monitored parameters is as followed:

| Monitoring Schedule | | |
|---|---|---|
| Theme | Activity | Frequency |
| Carbon | | |
| | Eligible Forest Area | 6-monthly inspection<br>3-yearly aerial imagery |
| | Activity Shifting Leakage | Annual inspection<br>3-yearly calculation |
| Community | | |
| | Food, consumption, agriculture | 3 yearly |
| | Water accessibility | 3 yearly |
| | Household income | 3 yearly |
| | Participation | 3 yearly |
| Biodiversity | | |
| | Presence of significant species | Continuous ranger activity<br>3-yearly collation of data |

## 4.1 MONITORING ROLES AND RESPONSIBILITIES

Monitoring roles and responsibilities are presented in the SOP below.

## 4.2 STANDARD OPERATING PROCEDURE: PROJECT MONITORING

### 4.2.1 Standard Operating Procedure: Project Monitoring - Carbon

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

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

#### 4.2.1.1 Forest Management Areas

The Forest Management Areas for the Loru Forest Project are presented in Figure 8.1.6.1.

#### 4.2.1.2 Eligible Forest Boundary Inspections

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

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

Method:

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

Recurrence: 6-monthly inspections.

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

#### 4.2.1.3 Eligible Forest Area Inspections

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

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

Method:

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

starting point along the Transect Datum Line. Use a compass bearing to mark out parallel transect lines through the Forest Management Area, with transects located between 100m and 500m intervals and orientated perpendicular to the Transect Datum Line.

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

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

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

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

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

*Figure 8.1.6.3 Eligible Forest Area Inspection Transect Location*

| Please see online version for figure |
|---|

Recurrence: 6-monthly inspections.

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

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

#### 4.2.1.4 *De Minimis* Timber Harvest Inspection

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

The *de minimis* timber harvesting volume for the Loru Forest Project is 60$m^3$ per year. This amounts to <5% of the total allowable annual commercial timber harvest in the Baseline Scenario in the Eligible Forest Area as provided for in the Technical Specifications Module applied.

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

#### 4.2.1.5 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 8.1.6.3.

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

### 4.2.2 Monitoring Resources and Capacity - Carbon

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

### 4.2.3 Community Monitoring - Carbon

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

#### 4.2.3.1 Community Participation In Monitoring

The Project Owner will recruit rangers with responsibilities to undertake project monitoring tasks described in Table 8.1.6. 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.

#### 4.2.3.2 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.

#### 4.2.3.3 Quality Controls for Community Monitoring

Quality controls for community monitoring are described in Section 8.1.8.2.

## 4.3 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.

### 4.3.1 Monitored And Non-Monitored Parameters – Community

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

| 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 |

### 4.3.2 Monitored Parameters – Community

Monitored data and parameters are summarized in the tables below.

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

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

| Data Unit / Parameter: | Water Accessibility |
|---|---|
| Data unit: | Various |
| Description: | Access to water has been a key issue for project owners 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:<br>1.1 Do you run out of water?<br>1.2 Are there days when you can use as much as you like? |
| Frequency of monitoring/recording: | 3-yearly |
| Value monitored: | Various |
| Monitoring equipment: | Social survey equipment |
| QA/QC procedures to be applied: | 3-yearly 3rd party verification of Project Monitoring Reports. |
| Calculation method: | Compare responses with previous survey |

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

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

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

### 4.3.3 Monitoring Roles and Responsibilities - Community

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

### 4.3.4 Information Management Systems - Community

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

### 4.3.5 Simplified Project Monitoring Report Methodology - Community

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

### 4.3.6 Standard Operating Procedure: Project Monitoring – Community

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

| 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 |

#### 4.3.6.1 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.

#### 4.3.6.2 Project Community Impacts

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

#### 4.3.6.3 Net Community Impact Enhancements

Tabulation of baseline and project community impacts.

## 4.4 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.

### 4.4.1 Monitored And Non-Monitored Parameters – Biodiversity

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

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

### 4.4.2 Monitored Parameters – Biodiversity

Monitored data and parameters are summarized in the tables below.

| Data Unit / Parameter: | Significant Species - Animals |
|---|---|
| Data unit: | Presence/absence |

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

### 4.4.3 Monitoring Roles And Responsibilities - Biodiversity

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

### 4.4.4 Information Management Systems - Biodiversity

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

### 4.4.5 Simplified Project Monitoring Report Methodology - Biodiversity

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

### 4.4.6 Standard Operating Procedure: Project Monitoring – Biodiversity

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

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

#### 4.4.6.1 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.

#### 4.4.6.2 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.

#### 4.4.6.3 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… | | | |

# 5. Quantification of GHG Emission Reductions and Removals

## 5.1 BASELINE EMISSIONS

Annual Baseline Emissions: 2217tCO2e. The second Monitoring Period is 16 January 2017 – 16 January 2020 (i.e. 3 years) (Appendix 1, Sheet 'Loru Zone A&B Carbon Inventory v2' Cell D9).

Baseline Emissions for the second monitoring period are 6651 tCO2e (i.e. 2217 x 3).

Annual Baseline Removals: 42 tCO2e (Appendix 1, Sheet 'Loru Zone A&B Carbon Inventory v2' Cell D10). Baseline Removals for the second monitoring period are 126 tCO2e

Annual Net Baseline Emissions: 2175 tCO2e (Appendix 1, Sheet 'Loru Zone A&B Carbon Inventory v2' Cell D11).

In this monitoring period, the project is seeking issuance for Annual Baseline Emissions from Zone B for previous monitoring periods (i.e. since 2013). Please see Net GHG Emissions and Removals below for breakdown.

## 5.2 PROJECT EMISSIONS

Annual Net Project Removals: 1,611 tCO2e (Appendix 1, Sheet 'Loru Zone A&B Carbon Inventory v2' Cell D15).

## 5.3 FOREST MONITORING

Given this is the first project monitoring period where Serthiac and Live & Learn Vanuatu were responsible for monitoring, the technical requirements of the Monitoring Plan proved challenging. Evidence is available for monthly management by the Serthiac Rangers, managing all the Zones of the CCA. This included signage and boundary monitoring, monitoring for any illegal extraction from Zone A as well as keeping track of de minimus extraction.

While the Land Management Committee reports provide a simplified 'diary' of activities, the first transect walks using GPS were conducted with the support of Live & Learn Vanuatu, who were also developing skills in this area. Capacity building for monitoring remain a key priority for the Loru project in the coming monitoring period.

## Results

The rangers and LLV team have described obvious regeneration of forest in Zone A and Zone B, due to the successful sustained removal of cattle from the conservation area and protection from timber removal. Despite *de minimus* removal being allowed, Rangers have not given permission for any tree removal to take place. Satellite imagery, collected in 2019 shows some visible areas of regeneration in Zone B and C, where new trees have grown (See figure below, areas of interest). Satellite imagery also shows no clear areas indicating removals from Zone A or B. A comparison in aerial imagery is show below. All maps and coordinates can be found in Appendix 3.

Transect walks for inspection of the eligible area occurred during the second Monitoring Period. The team completed three transects; one transect was walked twice (1 of April 2019 and on the 30 of January 2020) and another was walked once (29 January 2019). Please see Appendix 2 for Transect Walk report which includes the report for biodiversity monitoring.

During Transect Walks the community rangers and the LLV team did not observe any disturbance along the transects, corridors nor along the CCA boundary, as cattle have been kept out of the area. There was no major destruction of the forest or forest clearing observed along the transects in Zone A and B. Inspecting the sub-metre pixel satellite imagery, collected on the 25$^{th}$ of May 2019, there was no visible disturbance or destruction of forest in Zone A or Zone B.

Rangers have provided quarterly reports on activities undertaken in the Community Conservation Area. An example report on activities, approved at a Land Management Committee Meeting, is provided in Appendix 4.

.

Please see online version for map

## 5.4 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).

There has been no commercial timber harvesting undertaken by the Serakar clan in this period.

Leakage for this monitoring period is 0 tCO2e (Appendix 1, Sheet 'Loru Zone A&B Carbon Inventory v2' Cell D12).

## 5.5 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) ($tCO_2e$) | Buffer NBEA ($tCO_2e$) | Net Project Removals (NPR) ($tCO_2e$) | Buffer NPR ($tCO_2e$) | Gross Carbon Credits (NBEA + NPR) ($tCO_2e$) | Buffer total ($tCO_2e$) | Leakage emissions ($tCO_2e$) | Net Carbon Credits ($tCO_2e$) |
| 2017 | 2175 | 435 | 1611 | 322 | 3786 | 757 | 0 | 3029 |
| 2018 | 2175 | 435 | 1611 | 322 | 3786 | 757 | 0 | 3029 |
| 2019 | 2175 | 435 | 1611 | 322 | 3786 | 757 | 0 | 3029 |
| **Total** | 6525 | 1305 | 4833 | 966 | 11358 | 2271 | 0 | 9087 |

In this issuance, carbon credits for Zone B that were not calculated during previous monitoring periods have been added for issuance in this second monitoring period. They are presented in the table below:

| Net Carbon Credits from previous Monitoring Periods |
|---|

| Monitoring Period 1a | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Year | Zone B Net Baseline Emissions Avoided (NBEA) ($tCO_2e$) | Zone B Buffer NBEA ($tCO_2e$) | Zone B Net Project Removals (NPR) ($tCO_2e$) | Zone B Buffer NPR ($tCO_2e$) | Zone B Gross Carbon Credits (NBEA + NPR) ($tCO_2e$) | Zone B Buffer total ($tCO_2e$) | Zone B Leakage emissions ($tCO_2e$) | Zone B Net Carbon Credits ($tCO_2e$) |
| 2013 | 449 | 90 | 286 | 57 | 734 | 147 | 0 | 587 |
| 2014 | 449 | 90 | 286 | 57 | 734 | 147 | 0 | 587 |
| Monitoring Period 1b | | | | | | | | |
| 2015 | 449 | 90 | 286 | 57 | 734 | 147 | 0 | 587 |
| 2016 | 449 | 90 | 286 | 57 | 734 | 147 | 0 | 587 |
| Total | **1796** | **360** | **1144** | **228** | **2936** | **588** | **0** | **2348** |

For due diligence on the above calculations see Loru Carbon Budget & Pricing Spreadsheet (Appendix 1, Sheet 'Loru Zone A&B Carbon Inventory v2').

# 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.***

The Community Livelihood Assessment (CLA) baseline data was collected in 2014, with the aim of evaluating the direct and indirect socio-economic impacts from the Loru community carbon project. The CLA allows Live & Learn to measure any positive impacts and identify and mitigate potential areas of concern. The assessment is divided into four thematic criteria, containing 22 overarching questions. The criteria, questions and the baseline value are presented in the Net Impacts analysis below.

## 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.***

In June 2019, an external contractor undertook the CLA social impact survey. Forty surveys were completed and were supplemented by surveyor notes and observations. The survey consisted of 22 questions in an interview-style led by the surveyor, with the assistance of a local translator. Due to the small sample size of youth, female and male youths were grouped together in the data analysis. The raw data from the 2019 survey can be found at Appendix 5. The results of the 2019 survey of community impact is shown in Net Impacts below.

## 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.***

The Loru Carbon Project, has a positive net impact across the four criteria over the monitoring period. The table below provides a summary of the net impact of the Loru Carbon project across the four criteria over the course of the monitoring period. There has been an improvement in access to water, with now 35 % of the community having access to water year-round. Water access is also being shared throughout the community when there is a shortage.

Access to locally grown food has increased and the community has more access to food from their gardens and the forest. The average income has increased for both men and women. To date, the community reports to maintain trust in the Loru Carbon Project and the broader community has increased access to the project's financial information.

| | Baseline | 2019 | Net project impact enhancement |
|---|---|---|---|
| Improved access to water year round | 100% of the community stated that they ran out of water during the dry season | 65% of the community reported they ran out of water during the dry season | 35% of the community now has access to water year round. |
| Increased consumption of locally grown food | The community ate food:<br>5.5 times per week from their garden;<br>2.4 times per month from the forest | The community ate food:<br>5.9 times per week from their garden;<br>6 times per month from the forest | The community eats 7 % more often from their gardens and 147 % more from the forest. |
| Increased income | Average income: 14,750 vatu per month | Average income: 24,225 vatu per month | Income has increased by 64% and 38% for women. |
| Positive perception and transparency of community REDD+ | 100% of the community trust the REDD+ enterprise;<br>82% reported access to REDD+ financial information | 100% of the community trust the REDD+ enterprise;<br>90% reported access to REDD+ financial information | Community trust has remained at 100% and access to financial information has increased by 10%. |

A more detailed analysis of each criteria is below:

### Criteria 1: Food Security

The 2019 survey suggests the community have increased access to high quality locally grown and gathered food. How often recipients bought food and how often they ran out of food did not change significantly from the baseline. This suggests the community is not spending any increased income on store-bought food to maintain food security.

Income received from food and the size of garden plots decreased. These declines likely reflect errors in the survey data, as both measures are based on estimates from participants. In the baseline, no men reported they earned any money from selling food, however in the 2019 survey, ten of the 16 men reported income from food. The question may have been misunderstood as household income or reflect men now selling food instead of copra.

The survey found participants eat more frequently from their garden and the forest. The surveyor also observed a plentiful supply of locally grown and gathered food being eaten. Men and women also worked in their gardens six days a week.

The table below displays the food security impact of the Loru Carbon project over the course of the monitoring period.

| Criteria 1: The landscape provides sufficient quality and quantity of food | | | | | |
|---|---|---|---|---|---|
| **Question** | **Measure** | **Baseline average** | **2019 average** | **Net Impact (%)** | **Comment** |
| 1.1. How often do you buy food? | Times per week | 4.6 | 4.6 | 0 | Participants mainly buy basic food items (sugar, biscuits, rice) from a local store. |
| 1.2. How big is your family garden? | Hectare | 0.7 | 0.4 | -45.93 | Many participants did not know the size of the total garden size as many had several small garden plots. The decrease is likely due to a survey error as garden plots are allocated. |
| 1.3. How often do you eat free food from your garden? | Times per month | 5.5 | 5.9 | 7.07 | This 7% increase suggests an increasing supply of locally grown food as the community move from copra to food growing and have increased access to garden sites in the Loru agroforestry sites. |
| 1.4 How often do you run out of food? | Meals per year | 0 | 0.1 | 0 | Respondents mentioned they occasionally would not have food from their garden available but could always buy rice from the store. The one recipient who answered she ran out of food for two meals may have misunderstood the question. |
| 1.5 How often do you eat food from the forest? | Times per month | 2.4 | 5.6 | 147 | This 1.5 times increase could reflect women increasingly gathering fruit from trees in the forest as they grow. Forest food sources include fruits, nuts and hunted wild pig. |
| 1.6 How much do you make selling food? | Vatu per month | 9750 vatu (adult women) | 9270 vatu (adult women)<br>9325 vatu (men and women) | -16 % (women)<br>17 % (men) | Women sell food to the market in town once or twice a month. Respondents do not record their income so the discrepancy between years could be due to survey error. |

### Criteria 2: Water Security

The community identified increased water access as a priority issue in the baseline. Since the baseline survey, 35% of participants now have access to water year-round. Several participants

noted they had purchased water tanks in the last few years and no longer ran out of water during the dry season. Water security has increased for the greater community as the individuals with rainwater tanks frequently shared with other family members.

The table below displays the water security impact of the Loru Carbon project over the course of the monitoring period.

| Criteria 2: Access to clean water occurs all year round | | | | | |
|---|---|---|---|---|---|
| **Question** | **Measure** | **Baseline average** | **2019 average** | **Net impact (%)** | **Comment** |
| 2.1 Do you ever run out of water? | % yes | 100% | 65% | 35 % | Many participants regularly run out of water during the dry season. Several participants noted they had bought larger water tanks in the last few years and others were able to access local water sources (e.g. from the school if they were a teacher). |
| 2.2. How long do you usually have no water? | Days per year | No information | 33.5 | 33.5 | Of those who answered 'yes' to running out of water, the length of time of water shortage varied widely from a week to several months. |

## Criteria 3: Household income and improved livelihoods

There was no significant change in access to education. School attendance increased by 3% and university attendance decreased by one value. The changes are likely from children and youth starting and finishing schooling. Measuring the impact on access to education will be difficult to quantify in the short-term.

The table below displays the access to education impact of the Loru Carbon project over the course of the monitoring period.

| Criteria 3: Access to Education | | | | |
|---|---|---|---|---|
| **Question** | **Measure** | **Baseline average** | **2019 average** | **Net Impact (%)** |
| 3.1. Access to education | Percentage of school age children at school | 95% | 98% | 3 |
| | Number at University | 2 | 1 | -50 % |

The average income increased 64% and 38% for men and women, respectively. This result could be inflated by some participants answering with their household income rather than personal income. It is difficult to distinguish between personal and household income as both men and women work in their gardens, but only women sell the food in the market.

Nevertheless, the result suggests the project and other factors have had a positive impact on income. The community has shifted from copra plantations to increased food production, in part because of a low copra price. This shift could help explain the increase in average income.

There was a 24% increase in trips out of Khole to town, which could be a result of increased income or more participants with jobs outside the village.

While the time-use survey was hard for participants to answer accurately, a notable finding is a 47% decline in the amount of time men spent resting, while women experienced no change. This decreases the extra average rest time of men compared to women from 3.5 hours to 50 minutes.

Additionally, the average time men spent on cooking and household chores has increased by 42 mins and 12 mins respectively. A shift to men and women both working in their garden (rather than women working in the garden and men working on copra), may have led to domestic tasks being shared more evenly.

The table below displays the livelihoods and time-use impact of the Loru Carbon project over the course of the monitoring period.

| **Criteria 3:** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Question** | **Measure** | **Baseline Female** | **2019 Female** | **Baseline Male** | **2019 Male** | **Baseline Youth** | **2019 Youth** | **Baseline** | **2019** |
| 3.2 Personal monthly income | Vatu per month | 17,750 | 24,479 | 11,591 | 23,844 | 4569 | 16,833 | 14,750 | 24,225 |
| **Comment** | Participants received income from work income, selling food at the market and selling copra. | | | | | | | | |
| 3.3 Travel to town | Times per week | 1.4 | 1.5 | 1.2 | 1.8 | 1 | 3.3 | 1.3 | 1.6 |
| 3.4 Hours spent cooking | Hours per day | 2.4 | 1.3 | 0.3 | 1 | 1 | 0.4 | 1.4 | 1.2 |
| 3.5 Hours spent on household chores | Hours per day | 2.1 | 2.4 | 0.6 | 0.8 | 1.2 | 0.7 | 1.2 | 1.8 |
| 3.6 Hours spent gardening | Hours per day | 5.1 | 5.7 | 5.7 | 5.7 | 3.9 | 4.0 | 5.4 | 5.7 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 3.7 Hours spent resting | Hours per day | 2.1 | 2 | 5.4 | 2.9 | 5.7 | 3.6 | 3.7 | 2.4 |

The survey indicates the carbon project is perceived positively by the community and the project operates transparently. Access to project information is high, with 90% of participants reporting they could access information, increasing since the baseline by 28% for women, and 10% overall. Youth access to information is lower at 67%, however, they are continually engaged with the project, in small initiatives such as school holiday tree planting and by attending family meetings and working at the project site. The reported trust in the 'REDD+' project remains at 100%.

The table below displays the Community wellbeing impact of the Loru Carbon project over the course of the monitoring period.

| Question | Measure | Baseline | 2019 | Comment |
|---|---|---|---|---|
| 4.1 How many youth do you know that are engaged with the enterprise? | Number of youth | 10 | 13 | This answer varied widely between 5 and 36 depending on what the participant knew about the project activities and what they included in their understanding of 'engaged'. Most participants answered around 12, which is line with observations of the youth who could be considered 'actively engaged'. A couple of participants noted that a large group of children helped planting trees during school holidays. |
| 4.2 Are you given the opportunity to access information about REDD+ finances and activities? | % yes | 82%<br>75% (women)<br>85% (youth) | 90%<br>96% (women)<br>67% (youth) | Participants generally had easy access to the finance reports created by the finance committee, however some participants noted they would not ask to see it. |
| 4.3 Do you trust the REDD+ enterprise? | % yes | 100% | 100% | This question was answered enthusiastically and many recipients assured the surveyor they had a high opinion of the Loru project. |

# 7. Quantification of Biodiversity Impacts

## 7.1 BASELINE BIODIVERSITY IMPACTS

The project biodiversity baseline was completed in 2015. The findings from the baseline are displayed in the Net Biodiversity Impact section below.

## 7.2 PROJECT BIODIVERSITY IMPACTS

The Loru Forest Project completed the first (project scenario) biodiversity impact monitoring surveys recording significant species present inside the project boundary. Biodiversity observations were recorded 4 times during transact walks for forest monitoring and through monitoring 8 plots. The data was collected on the below dates by the following observers:

1. April 2018
    a. Kaltapang Fred – Head of Loru Ranger
    b. Kalsakau Ser – Chairman Local Management Committee
    c. Caleb Ser – Loru Ranger
    d. Frank Joel – Forest Officer (Santo)
    e. James Toa – Forest Officer (Santo)
    f. Serge Warakar – LLV Project Officer
2. January 2019
    a. Kaltabang Fred – Head of Loru Ranger
    b. Kalsakau Ser – Chairman Loru LMC
    c. Keleb Ser – Loru Ranger
    d. Rolenas Tavue Baereleo – Senior Conservation Officer, DEPC
    e. Emely Tasale – EDA project officer (Local NGO)
    f. Jessie Kampai – Project Officer LLV
    g. Serge Warakar – Project Officer LLV
3. April 2019
    a. Kaltabang Fred – Head of Loru Ranger
    b. Kalsakau Ser – Chairman Loru LMC
    c. Keleb Ser – Loru Ranger
    d. Rolenas Tavue Baereleo – Senior Conservation Officer, DEPC
    e. Emely Tasale – EDA project officer (Local NGO)
    f. Jessie Kampai – Project Officer LLV
    g. Serge Warakar – Project Officer LLV

   h. Glarinda Andre – Team Leader LLV
4. January 2020
   a. Kaltabang Fred – Head of Loru Ranger
   b. Kalsakau Ser – Chairman Loru LMC
   c. Keleb Ser – Loru Ranger
   d. Serge Warakar – Live & Learn Vanuatu

The biodiversity surveys were also opportunities to undertake forest monitoring to check for disturbance. Rangers also undertook training during the period for improved biodiversity monitoring which will hopefully take place in the next monitoring period.

The assessment team witnessed significant change in the Loru Project Area. As a result of the ongoing protection of Zone A and restoration of Zone B there has been no net decrease in biodiversity. No major destruction or disturbance was observed. Cattle have been continuously excluded from the area leading to evidence of forest regeneration in the understory across Zone A and Zone B. Invasive species control, mainly of the *Meremia peltata,* appears successful in Zone A and B with restoration being observed in all three zones.
In the perception of lead surveyor, Serge Warakar, the presence of invertebrates, birds, bats and plant species has noticeably increased over the seven-year period since the carbon project began. The Sacco's Emperor, *Polycon sacco,* was observed when completing each transect when prior it had been a rare sighting. The Coconut crab, *Birgus latro,* was observed along several transects, including in the day, which was previously uncommon and observations increased towards the coastal area of Loru.
The Vanuatu Megapod, *Megapodius freycinet layardi,* was observed across all transects and their abundance were notably increasing, especially with the 500 metre-long transect. The abundance of other bird species increased along the transects in Zone A and B. Observations of the Vanuatu flying fox, *Pteropus anetianus,* increased in Zone A, with the abundance increasing in some areas.

The Transact walk report is at Appendix 2.

## 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***

| Biodiversity Impact Monitoring 2017 - 2020 | | | | | | |
|---|---|---|---|---|---|---|
| Common Name | Taxonomic Name | Date Observed | Name and role of Observer | Location of observation (description or GPS location) | Remarks | Net impact in CCA |
| Sacco's Emperor | *Polycon sacco* | | | | | |
| | | 11/04/2018 | See list above | E 167.16092°<br>S 15.20417° | Present | Continuously present |
| | | 30/01/2019 | See list above | S 15.20657<br>E 167.16832 | Present | |
| | | 01/04/2019 | See list above | S 15.20479<br>E 167.16705 | Present | |
| | | 10/01/2020 | See list above | S 15.20276<br>E 167.16663 | Present | |
| Vanuatu Flying Fox | *Pteropus anetianus* | | | | | |
| | | 11/04/2018 | See list above | E 167.16092°<br>S 15.20417° | Present | Continuously present and abundance increasing in Zone A |
| | | 30/01/2019 | See list above | S 15.20657<br>E 167.16832 | Present | |
| | | 01/04/2019 | See list above | S 15.20479<br>E 167.16705 | Present | |
| | | 10/01/2020 | See list above | S 15.20276<br>E 167.16663 | Present | |
| Incubator Bird | *Megapodius freycinet layardi* | | | | | |
| | | 11/04/2018 | See list above | E 167.16092° | Present | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | S 15.20417° | | Continuously present, with abundance increasing in Zone A. |
| | | 30/01/2019 | See list above | S 15.20657<br>E 167.16832 | Present | |
| | | 01/04/2019 | See list above | S 15.20479<br>E 167.16705 | Present | |
| | | 10/01/2020 | See list above | S 15.20276<br>E 167.16663 | Present | |
| Vanuatu Kingfisher | *Halycon farquhari* | | | | | |
| | | 30/01/2019 | See list above | S 15.20657<br>E 167.16832 | Present | Observations increased |
| | | 30/01/2019 | See list above | S 15.20657<br>E 167.16832 | Present | |
| | | 01/04/2019 | See list above | S 15.20479<br>E 167.16705 | Present | |
| | | 10/01/2020 | See list above | S 15.20276<br>E 167.16663 | Present | |
| Vanuatu Flycatcher | *Neolalage banksiana* | | | | | |
| | | 11/04/2018 | See list above | E 167.16092°<br>S 15.20417° | Present | Observations increased |
| | | 30/01/2019 | See list above | S 15.20657<br>E 167.16832 | Present | |
| | | 01/04/2019 | See list above | S 15.20479<br>E 167.16705 | Present | |
| | | 10/01/2020 | See list above | S 15.20276<br>E 167.16663 | Present | |
| Vanuatu Tanna Fruit Dove | *Ptilinopus tannensis* | | | | | |
| | | 11/04/2018 | See list above | E 167.16092°<br>S 15.20417° | Present | Observations increased |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | 30/01/2019 | See list above | S 15.20657<br>E 167.16832 | Present | |
| | | 01/04/2019 | See list above | S 15.20479<br>E 167.16705 | Present | |
| | | 10/01/2020 | See list above | S 15.20276<br>E 167.16663 | Present | |
| Vanuatu White-eye | *Zosterops flavifrons* | | | | | |
| | | 11/04/2018 | See list above | E 167.16092°<br>S 15.20417° | Present | Observations increased |
| | | 30/01/2019 | See list above | S 15.20657<br>E 167.16832 | Present | |
| | | 01/04/2019 | See list above | S 15.20479<br>E 167.16705 | Present | |
| | | 10/01/2020 | See list above | S 15.20276<br>E 167.16663 | Present | |
| Golden Whistler, | *Pachycephala pectoralis* | | | | | |
| | | 11/04/2018 | See list above | E 167.16092°<br>S 15.20417° | Present | Observations increased |
| | | 30/01/2019 | See list above | S 15.20657<br>E 167.16832 | Present | |
| | | 01/04/2019 | See list above | S 15.20479<br>E 167.16705 | Present | |
| | | 10/01/2020 | See list above | S 15.20276<br>E 167.16663 | Present | |
| Coconut Crab | *Birgus latro* | | | | | |
| | | 11/04/2018 | See list above | E 167.16092°<br>S 15.20417° | Present | Observations and abundance increased. Now observed in the |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | 30/01/2019 | See list above | S 15.20657<br>E 167.16832 | Present | day time and more observations in the coastal area. |
| | | 01/04/2019 | See list above | S 15.20479<br>E 167.16705 | Present | |
| | | 10/01/2020 | See list above | S 15.20276<br>E 167.16663 | Present | |

Please see online version for image

FIGURE 1 COCONUT CRAB OBSERVED IN LORU

# APPENDICES

## APPENDIX 1 LORU ZONE A&B CARBON INVENTORY

Supplied as a separate file.

## APPENDIX 2 TRANSACT WALK REPORT

Supplied as a separate file.

## APPENDIX 3 GEOREFERENCING DATA

Supplied as a separate file.

## APPENDIX 4 SAMPLE LMC REPORT

Supplied as a separate file.

## APPENDIX 5 COMMUNITY LIVELIHOODS RAW DATA

Supplied as a separate file.