# Loru Forest Project - Annual Report 2020-2024

An avoided deforestation project at Loru, Santo, Vanuatu.

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

NAKAU

live & learn
ENVIRONMENTAL EDUCATION

# Table of Contents

# Loru Forest Project Annual Report 2020-2024

Submitted by: The Nakau programme Pty Ltd
Date of submission: 31/08/2025

## Summary

**Project overview**

| | |
|---|---|
| Reporting period | 16 January 2020 to 15 January 2025. |
| Geographical areas | Loru, Santo, Vanuatu |
| Technical specifications in use | Avoided Deforestation<br>TS Module (C) AD-DtPF D2.2.1 v1.0 20150815 |

| Project indicators | Historical To 15/1/2020 | Added/ Issued this period 01/2020 – 01/2025 | Total |
|---|---|---|---|
| No. smallholder households with PES agreements | NA | NA | NA |
| No. community groups with PES agreements (where applicable) | 1 | 0 | 1 |
| Approximate number of households (or individuals) in these community groups | Est 50 adults | 0 | 130adults 187ppl total[1] |
| Area under management (ha) where PES agreements are in place | 200.6 | -13.55 | 187.05 |
| Total PES payments made to participants (USD) | $45,590.01 | $56,070.24 | $101,660.25 |
| Total sum held in trust for future PES payments (USD) | $4,904.29 | $8,462.26 | $13,366.65 |
| Allocation to Plan Vivo buffer ($tCO_2$) | 5,299 | 3623 | 8,922 |
| Saleable emissions reductions achieved ($tCO_2$) | 21,203 | 14,490 | 35,693 |
| Unsold Stock at time of Submission (PVC) (Aug 2025) | 0 | | |
| Total Unsold Stock (PVC) | 14,490 | | |
| | | | |
| **Plan Vivo Certificates (PVCs) issued to date** | | | 21,203 |
| **Plan Vivo Certificates requested for issuance (2020 Vintage)** | | | 2898 |
| **Plan Vivo Certificates requested for issuance (2021 Vintage)** | | | 2898 |
| **Plan Vivo Certificates requested for issuance (2022 Vintage)** | | | 2898 |
| **Plan Vivo Certificates requested for issuance (2023 Vintage)** | | | 2898 |
| **Plan Vivo Certificates requested for issuance (2024 Vintage)** | | | 2898 |
| **Plan Vivo Certificates available for future issuance (REDD only)** | | | 0 |
| **Total PVCs issued (including this report)** | | | 35,693 |

[1] No new households or participants have been added to the project, the historical figures reflect an estimate from 2015, while the new figures reflect a much more accurate survey of project participants (Serakar family members) completed in 2024. See Section H *Ongoing Community Participation* for details.

## Introduction & Project Background

The Loru Forest Project was established in 2015 in order to protect the Loru coastal rainforest (one of the last stands of lowland rainforest on the East Coast of Espiritu Santo) from deforestation and forest degradation. It also aims to provide livelihood benefits for the Serakar Clan (the customary landowners). Loru holds great cultural significance to the clan, but they were under increasing pressure to develop the land for non-forest land uses common in the surrounding area such as coconut and cattle grazing.

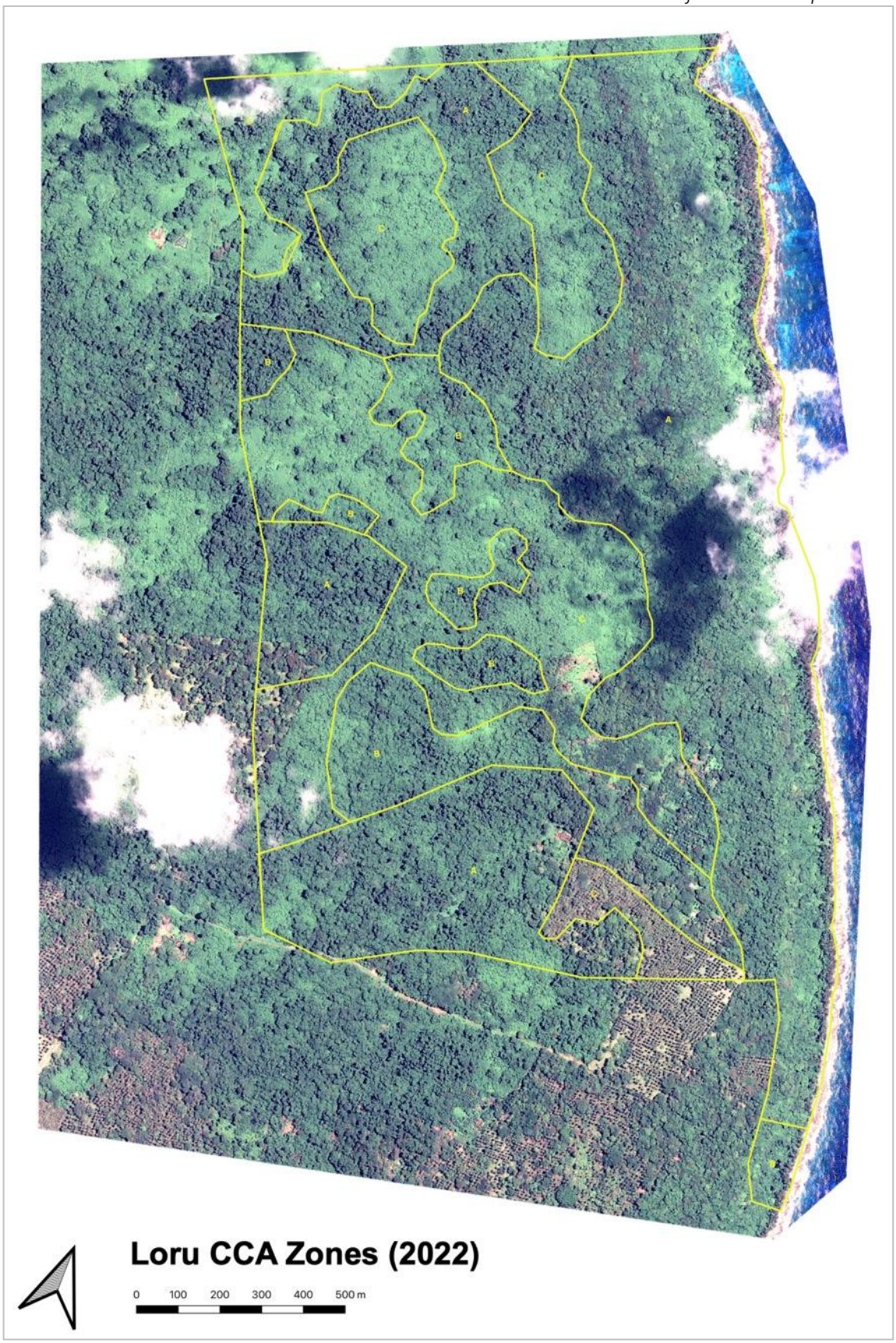
The project objective is to generate income through the sale of carbon offsets from the conservation forest area. This income replaces the opportunity cost for landowners who have given up the right to log and clear their forests under this project, and addresses a core economic driver for deforestation. The project employs the legal instrument of a Community Conservation Area to protect the tall coastal rainforest within the project boundary. The project area is managed through implementation of the Loru Conservation Area Management Plan, which prohibits and restricts certain activities such as land clearing. Active management also includes exclusion of cattle and removal of invasive weeds to facilitate forest protection.

The project has also established a tree nursery to generate revenue and promote forest conservation and increased planting of productive tree species. The project further aims to provide livelihoods training and support for root crop production and nut production/processing as an additional income source that relies directly on forest protection. These initiatives aim to address drivers of deforestation but are not currently included in carbon accounting.

The Project Area is divided into three management zones.

- Zone A Avoided Deforestation. Mature secondary forest to be protected through the removal of cattle and agreement not to clear the area for gardens or copra during project period. The landowners to receive carbon payments to compensate for lost income from deforestation. Zone A is monitored by means of regular forest inspections to ensure that it remains intact
- Zone B Avoided Deforestation (regrowth forest). Secondary degraded tall forest margins protected to enhance natural regeneration. No harvesting of nut trees allowed (clan enforced decision). During the second Monitoring Period, the project team undertook an inventory of Zone B to enable it to calculate emissions reductions and produce carbon offsets for issuance.
- Zone C Agroforestry. Non-forest land currently infested with invasive vine *Merremia peltalta* (often present in mixed thickets with *Hibiscus tiliaceus*). The clan actively develops land through agroforestry in this zone using a mix of tree crops (e.g. fruit, nuts), timber crops and root crops producing agroforestry cash crops, timber and subsistence food. There are no carbon revenues from this zone, but income is generated through sale of agroforestry crops.

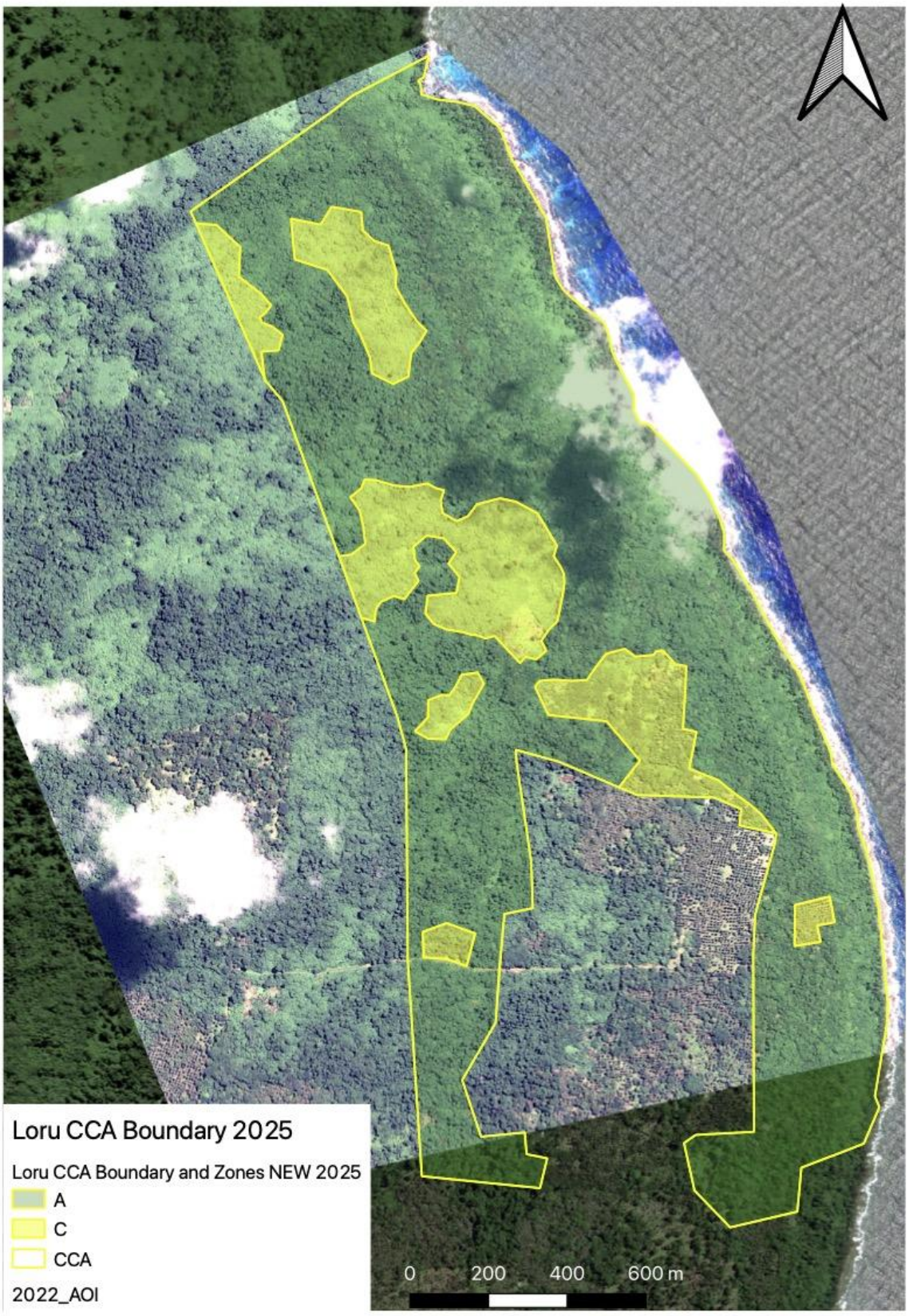
Figure 1: Conservation signage at the Loru Forest project (photo; Alex McClean, Nakau)




*Zone A (165.6 ha) = Tall Forest Eligible Forest Area*
*Zone B (35ha) = Regrowth forest Eligible Forest Area*
*Zone C (91ha) = Non-forest allocated for agroforestry;*

Figure 2 Loru CCA boundary and Zones as per 2015 PDD

Figure 3: Loru CCA New boundary and zones (2025)



# Part A: Project updates

## A1 Key events

Figure 4: Key Events, Loru Forest Project 2020-2024

| Date | Event | Notes |
|---|---|---|
| Jan 2020 | Annual Forest Monitoring 2020 | By Serthiac Rangers |
| April 2020 | Cyclone Harold | Category 5 cyclone, 30% of Vanuatu population effected, some damage east coast Santo area. |
| April 2020 | Monitoring of cyclone damage | Field monitoring of cyclone damage to the project area by LLV/Serthiac and remote sensing by Nakau revealed no reduction in forest area. See 'Challenges' section below for further details. |
| May 2020 | Verification Audit | Verification complete audit for 2017-2019 complete (CPMA International and Dep Forests Vanuatu) |
| Mar 2020 – Sept 2022 | COVID restrictions | COVID international lockdowns (Vanuatu). Nakau not able to visit the project site during this period. LLV still able to undertake travel within Vanuatu and continue activities at Loru up until Jan 2022. |
| 2022 | Agroplot 7 established | Agroplot 7 established (Enviro Plot) in partnership with Vanuatu Government (DEPC). This reflects the recognition that Serthiac & LLV's innovative 'agroplot' method has gained within Vanuatu as a means of incentivising farmers to manage weeds and undertake integrated reforestation plantings. See 'successes' section below for more details. |
| Jan-Sep 2022 | COVID restrictions | COVID inter island lockdowns (Vanuatu).<br>Field level activities and monitoring by Serthiac was able to continue with remote support from Nakau, and an LLV staff member pre-placed close to Loru (at Luganville) before lockdowns were in force. |
| Mar 2022 | Annual Forest Monitoring 2021 | By Serthiac Rangers. 2021 annual ranger monitoring at Loru CCA delayed due to heavy rains in late 2021. Supported by LLV field staff. |
| Aug 2022 | Serthiac Governance Workshop | Facilitated by Live and Learn, with attendance from Serthiac family |
| Aug 2022 | Nakau Field trip to Loru CCA | Project Site informal monitoring<br>Annual Project Meeting (Nakau-LLV- Serthiac)<br>Avenza Forest Monitoring Training |
| Oct 2022 | Annual Forest Monitoring 2022 | By Serthiac Rangers. Supported by LLV field staff. |
| Oct 2022 | CLA survey | By Live and Learn |
| Feb 2023 | Twin Tropical Cyclones Judy & Kevin | Impacts in southern Islands of Vanuatu, no impact at Loru CCA.<br>LLV availability to support Serthiac reduced due to cyclone response (Feb-April 2022) |
| Mar 2023 | Plan Vivo/Nakau field trip to Lou CCA | Project site informal monitoring<br>Comms content gathering |
| May 2023 | Remote Sensing Monitoring | Loru 2019-2022 (Nakau contractor) |
| August 2023 | Annual project partners meeting (online) | Update on forest change assessment results<br>Update on boundary clarifications<br>Loru CCA confirmed as pilot site for ne merremia-carbon project |
| Sep 2023 | Nakau/LLV field trip to Loru CCA | Merremia prevalence survey undertaken at Loru to map presence/absence of *Merremia peltata* (invasive vine), in support of developing new invasive species approach to carbon projects in Vanuatu. |

| | | |
|---|---|---|
| | | Follow up field monitoring on remote sensing analysis of first change at Loru CCA (2019-2022)<br>First identification of boundary discrepancies at Loru CCA. |
| Sep 2023 | Annual Forest Monitoring 2023 | By Serthiac Rangers. Supported by LLV field staff. |
| Nov 2023 | Workshops | Forest Carbon Education Workshop – a refresher after 5 years |
| Feb 2024 | Field work | Mapping Loru CCA boundary, corrected location. |
| April 2024 | Field work | Mapping the extension area of Loru CCA (proposed new area to the south of the CCA to compensate for areas removed from the project to the west, as a result of the land boundary discrepancy). |
| May 2024 | Community consultation workshop | Conducted benefit sharing plan review workshop with Serthiac |
| June 2024 | Project Meeting | Plan Vivo meeting re: boundary changes Loru CCA. Online meeting discussing need to change boundary locations at Loru. |
| June 2024 | Field work | Conducted forest inventory survey at Loru CCA to support upcoming baseline revision<br>Conducted merremia biomass survey at Loru CCA to support carbon accounting in new invasive species method. |
| August 2024 | Community consultation | Consultation workshop with community at Loru on CCA land use and boundary changes<br>On ground works for Merremia management approach commenced, paid for by DFAT grant funding (contract signed October 2024). |
| September 2024 | Field work, community consultation and stakeholders' consultation workshop | A relevant stakeholder's workshop conducted with DoCC, DoF, and DEPC in Vanuatu.<br>Serthiac's AGM took place.<br>A capacity building workshop was conducted for CRxN staffs |
| Oct 2024 | Community consultation | The review on CCA management plan was taken place<br>Land use planning was consulted and given consent. |
| Nov 2024 | Field work | Annual forest and biodiversity monitoring conducted and mapping merremia in extension boundary. |

## A2 Successes and challenges

### Successes

Figure 5 Loru Project successes summary

| Year | Successes |
|---|---|
| 2020 | • Passed 2nd verification audit for 2017-2019. |
| 2021 | • Chosen as a site for MFAT funded Climate Resilient Islands project (CRI). |
| 2022 | • Chosen as a site to pilot new Nakau invasive species/regeneration method<br>• Hosted rangers from all CCA's in Vanuatu for a 1-week ranger training at Loru CCA<br>• New ranger appointed: Rocco Dan<br>• Agroplot 7 established ("Enviro Plot") in partnership with Vanuatu Government (DEPC) |
| 2023 | • Serthiac rangers and youth volunteers trained in weed prevalence survey method<br>• New positions appointed at Serthiac: Chairman - Warakar Ser; Head Ranger - Skip Ser; Finance Officer - Dorolyn Ser<br>• Serthiac upgraded Finance system to Xero |
| 2024 | • New forest inventory completed<br>• Field trip to Loru with WWF, DFAT, DoCC.<br>• New works commence on ground for merremia approach. |

The Loru project has seen a number of successes over the reporting period 2020-2023, despite the challenges of cyclones and COVID outlined below. In particular the project passed it's 2nd verification audit in early 2020, despite the onset of COVID and global travel bans (with assistance from Vanuatu Department of Forestry). In addition Loru is being recognised more often as a leader in conservation, is growing and changing as the project reaches 10 years of operation, and is trialling new methods of forest regeneration in partnership with DEPC, Nakau and Live & Learn Vanuatu (LLV).

### *Recognition for the Loru Project*

The project continues to be more widely recognised as a pioneer in the space of conservation and carbon market finance in Vanuatu and globally. Following on from being awarded the 2019 UN Equator award, Loru was also chosen in 2021 as a site for the MFAT funded Climate Resilient Islands project (being implemented across multiple locations in Vanuatu, Fiji, PNG and other Pacific countries); hosted rangers from all Community Conservation Area's in Vanuatu for a 1-week ranger training by Vanuatu Department of Environment (DEPC) and Live & Learn Vanuatu; was chosen as one of two sites to pilot the new Nakau invasive species/forest regeneration method (see below for further details); and was chosen in 2022 as a site for establishment of a trial merremia management plot with the Vanuatu Department of Environment, leading to establishment of agroplot 7 in the Loru CCA (known as the "Environment plot").

In September 2024, a delegation of donors and stakeholder related to the DFAT funded Climate Resilient by Nature program (including WWF, Australian High Commission Port Vila and Vanuatu Director the Department of Climate Change) visited Loru. CRxN has been funding piloting of the new invasive species method at Loru from 2023 on and the various stakeholders were interested to see progress and hear from community. Results were very positive, directly leading to strong support from both Vanuatu government and donor partners to support scaling up the approach to a national level program (likely a future grouped project under Plan Vivo Climate v5).

### *Growth and Generational Change*

The Loru project continues to grow in strength and Serthiac grow in their capacity as rangers and a community business. After operating for close to 10 years, Serthiac has seen a generational change in its staffing, with long time head ranger Kaltabang Fred and finance officer Lenny Fred standing down at the end of 2022. While this presented some challenges for Serthiac operationally (see below), it also provided the opportunity for generational change with the following family members being appointed in early 2023:

- Chairman - Warakar Ser
- Head Ranger - Skip Ser (previously chairman)
- Finance Officer - Dorolyn Ser
- Ranger – Rocco Ser

In particular Dorolyn and Rocco represent a new generation of Serakar family members being employed on the project. They were children when the Nakau/LLV started working at the Loru CCA in 2015, and benefits from the carbon sales were used to pay their school fees during their teen years. They are now employed on the project.

In addition, Serthiac's financial reporting processes have continued to grow and strengthen over time. Previously, all reporting was based on handwritten reports and copies of bank transaction logs from BSP Bank (Luganville branch). In 2023 Nakau and LLV supported Serthiac to transition all accounting to Xero online finance system, with the finance officer Dorolyn Ser and LLV staff trained in use of Xero. This represents a significant step forwards in financial management capacity and increases transparency of reporting to the broader family and project partners regarding financial acquittals.

### *New Invasive Species Method*

In 2022 Loru CCA was chosen by Nakau as one of two pilot sites for Nakau's proposed new invasive species/forest regeneration carbon project method. This method is being developed to address key challenges identified for new forest carbon projects in Vanuatu, including: relatively low deforestation rates across the country due to a moratorium on export of round logs introduced by the Vanuatu government in 2002 (and increasingly enforced in recent years); as well as relatively high threat to forests for the invasive woody vine *Merremia peltata.* This method will seek to protect and regenerate forests through clearing effected forests of vines in the canopy to assist natural regrowth and clearing suppressed non-forest areas of vine thickets for reforestation planting.

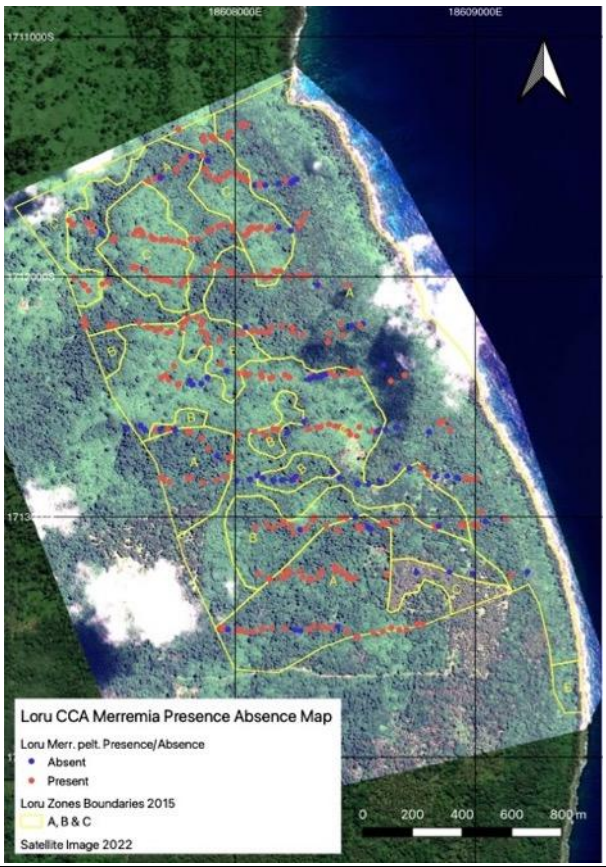
The Serthiac rangers have successfully been using their credit sales income for 8+ years to pay rangers and community members to clear forest and thicket areas of vines for create livelihoods benefits (e.g. more garden space, areas for voluntary reforestation etc). They will now seek to use this experience and apply it to the proposed activities for carbon financed forest regeneration, once validated and verified by Plan Vivo (planned for submission in 2025).

By the end of 2023, Nakau, LLV and Serthiac have completed the following steps towards developing this new methodology:

- Feasibility Study complete
- Pilot sites established and funded under DFAT/WWF Climate Resilient by Nature program (CRxN)
- Technical Specification development commenced by Fundação de Pesquisas Florestais do Paraná (FUPEF), due for completion early 2024.

Figure 6 (left) Loru CCA weed prevalence survey data, Sept 2023 (right) Serthiac rangers and youth volunteers cutting transects in order to undertake weed surveys

- National Program approach (Solomon Islands) submitted to Plan Vivo for validation (to be used for invasive species approach in Vanuatu also)
- Weed prevalence survey Loru CCA (Sep 2023)




- Weed management planning commenced at Loru (due for completion 2024)

## Challenges

Figure 7 Loru Project challenges summary

| Year | Challenges |
|---|---|
| 2020 | Cyclone Harold |
| 2021 | COVID lockdowns, global and local |
| 2022 | HR issues with outgoing Finance officer and Operations manager |
| 2023 | Conservation Boundary discrepancies |
| 2023 | Conservation Area zone discrepancies |
| 2024 | Avenza monitoring data was inaccurate due to cloudy weather, requiring the team to repeat the monitoring. |

The project has faced a number of significant external and internal challenges over the reporting period, including multiple cyclones, the global COVID pandemic, staff turnover and identification of land boundary discrepancies. However, despite these challenges, the close partnership between Serthiac, Live & Learn Vanuatu and Nakau has been effective at meeting these challenges as implementing strategies to address each.

### *Cyclone Harold*

In early April 2020, Cyclone Harold began to develop in the South Pacific, making land fall in Vanuatu as a category 5 cyclone on the 6th of April, moving across the south coast of Santo Espiritu Island. The cyclone caused devastation for urban areas across the country (particularly around Luganville in SE Santo Island), including the destruction of critical infrastructure, housing and crops, leaving 30% of Vanuatu population effected.

A state of emergency was declared, and communication was cut to the Khole village community and Loru CCA for more than a week. This period coincided with the planned field visits for the Loru project 2nd verification audit.

Actions taken to manage the situation included:

- Live & Learn Vanuatu staff contacted Khole village to confirm everyone's safety and any impacts on the EFA from cyclone damage – verbal reports were that damage was minimal.
- Contact was made to Vanuatu Department of Forestry staff to assist with the completion of the verification audit once emergency response activities were complete (May 2020).
- Nakau sourced remote sensing data and analysis of the Loru CCA area[2] to verify that impacts on the Loru forest were minimal as reported.

[2] Sentinel 2 imagery for January and April 2020, as well as open source NDVI analysis from the Landviewer platform (https://eos.com/landviewer) to assess health and density of the vegetation in the EFA.

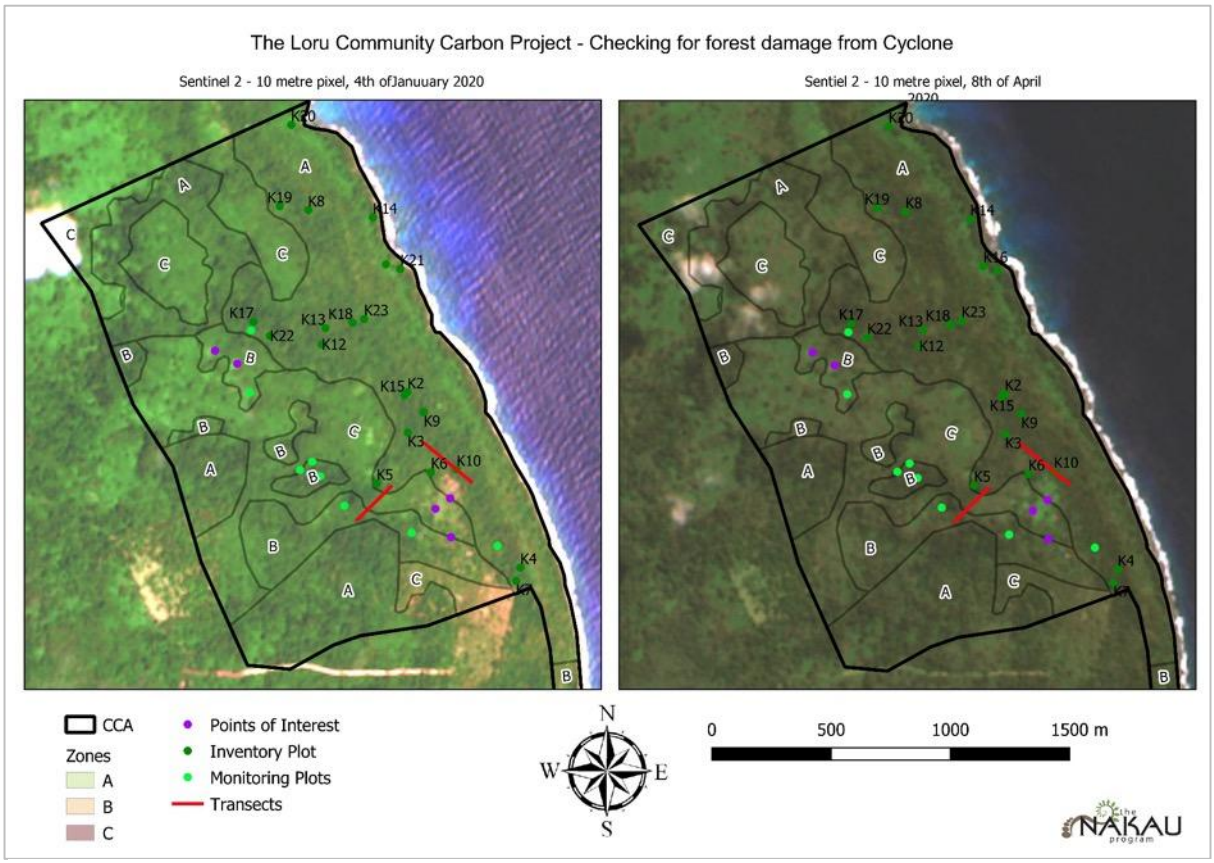



Figure 8 Cyclone Harold remote sensing forest loss confirmation, Loru CCA

Note, further cyclones in 2022 (TC Kevin and TC Judy) did not impact Loru at all, but have led to further conversations between Nakau and LLV about cyclone readiness and how projects will continue to operate under a state of emergency. Informally the following options have been identified for use in the future:

- Nakau and LLV including emergency contingency into both budgets and timelines for grant funded work at Loru and elsewhere to allow for frequent emergencies in Vanuatu.
- LLV to ensure staff located close to projects sites (eg: Luganville) to allow for easy access post disaster and during lockdowns.
- Serthiac to be made aware it can use it's "safety money" account (established under Nakau methodology benefit sharing approach) to respond to disasters in the project area, and continue project activities post disaster.

### *COVID lockdowns*

The global COVID pandemic presented a long running obstacle to some of LLV and Nakau's activities at the Loru project site with COVID international lockdowns effecting travel between Australia and Vanuatu running from March 2020 – Sept 2022, and COVID inter island lockdowns (Vanuatu) running from Jan-Sep 2022.

While this proved challenging, the project approach involving 3 partners (Serthiac, LLV and Nakau) proved flexible and resilient in adapting to the circumstances while still providing support to the Loru project during this period.

Actions taken to manage the situation included:

- Regular weekly meetings online (already common for Nakau and LLV)
- Increase is support provided by LLV to Serthiac and the project during international lockdowns.
- Support to Serthiac for March 2022 monitoring activities provided by local LLV Santo office (not

affected by inter-island lockdowns).
- Nakau and LLV field trips re-commenced to Loru in Sept 2022 as soon as lockdowns were lifted.

*Staff Turnover at Serthiac*

As outlined above, 2022 saw significant staff turnover at Serthiac with long time Head Ranger Kaltabang Fred and finance officer Lenny Fred standing down at the end of 2022. While still remaining within Khole village and available to support the board of Serthiac through the land management and finance committees, this still represented a significant loss in skills and experience. Furthermore, legal requirements to pay severance benefits from a small business to two long term employees led to a request from the Serthiac board to LLV and Nakau for advice and support on managing the financial and HR implications of this transition.

Actions taken to manage the situation included:
- Immediate recruitment of new positions from within the Serakar family to replace outgoing staff (see above).
- Financial monitoring work by LLV to ensure Serthiac finances were in order, and cash reserves sufficient to make legally required severance payments.
- Advice offered to Serthiac board regarding handover process and payment of severances.
- Agreement to shift Serthiac to Xero to allow for more accurate, transparent financial reporting, and easier deployment of support form Nakau/LLV to Serthiac regarding finances (completed in 2024).

*Conservation Boundary discrepancies*

While undertaking field monitoring exercises in September 2023, a combined monitoring team from Nakau, LLV and Serthiac rangers identified discrepancies between the project boundary as recorded in the PDD and the project area as understood by the landowners (the Serakar family).

As a result, an estimated 69.06ha of crediting area (EFA) was identified as potentially not currently under legal protection (CCA) and cultural protection (tabu area), including 21.04ha owned by the Project owners, and 48.02ha owned by a neighbouring landowner outside the project. These are relatively small areas compared to other projects, but represent a sizeable percentage of the Loru project due to its small size (original total project area 293ha, and total crediting area (AD) 200.6 ha).

The source of the discrepancy is likely human error created by miscommunication in 2014 when the original maps were produced, leading to Serthiac rangers/LLV confirming the boundary as they understood it on the ground rather than and depicted on the draft maps.

Actions taken to manage the situation (at the time of writing) included:
- Confirmation of the Serakar clan land boundary based on Vanuatu government land titles and field confirmations by LLV/Serthiac.
- Consultation with Plan Vivo (July 2024) regarding the discrepancy, and agreement that all crediting areas not within the Serakar clan land title will be removed from the project permanently (to be actioned in the 2020-2024 monitoring report).
- Reduction in credits for the next issuance in line with the 2020-2024 monitoring report.
- Consultation with and agreement from Serthiac board for each of the above, and agreement that Serthiac would lead any conversations with neighbouring landowners necessary.
- Consultation with Serthiac board around a potential extension of the project area to the south (on land owned by Serakar clan) to compensate for crediting area lost due to boundary adjustment (to be actioned in 2025 as part of the new v5 PDD).

*Minor Forest Loss Detected*

Remote sensing analysis of forest change was completed for the current monitoring period in May 2023 by Nakau using a GIS consultant from the University of the South Pacific. High resolution imagery (Pleiades imagery, 0.5m pixel resolution) was used in this analysis classifying the project area into forest; agroforest; bare soil; water; rock; clouds; and buildings.

Micro changes of forest canopy was detected at 6 locations within the crediting area (zones A & B). Field based follow up monitoring in September 2023 confirmed only one of these constituted conversion of forest to non-forest (total area 0.668ha). This area falls into the area to be removed from the project due to boundary re-adjustments (see above) and so will be permanently removed from the project/crediting area, in line with the PDD and Plan Vivo requirements.

Actions taken to manage the situation:

- Field based follow up monitoring from a team of Nakau, LLV and Serthiac rangers in Sept 2023.
- Consultation with Plan Vivo regarding the forest loss and handling these areas
- Removal of the forest loss area from the project in line with PDD and PV standard requirements.
- Meeting with Serthiac board to discuss actions needed to prevent future forest loss. Agreed follow up actions include:
    - Need to mark the zones on the ground (painted trees, signs, concrete pins etc) to ensure community members know the crediting area boundary.
    - LLV to provide a repeat of the original carbon education workshop for the Serthiac family (carbon education and CCA rules)
    - Need an info sign at the entrance to the CCA, and at the turnoff to the main road so the general public know the CCA location and rules.
    - Fix the external boundary wire fence

For full details see Annex 1: Loru Forest Monitoring Field Report (2020-2024)

## A3 Project developments

In response to issues recorded above (see challenges) related to land boundary discrepancies and forest loss detection, the following changes to the PDD are being made:

- EFA area reduction and corresponding reduction in credits requested for issuance, to amend the boundary discrepancy identified in 2023 (outlined above)
- Boundary extension of the Loru CCA and project EFA to compensate for the reduction in the EFA resulting from the project boundary discrepancy detected in 2023 (see above).
- Internal zone boundary adjustment to ensure zone boundaries match the forest/non-forest areas on the ground at the Loru CCA (numerous inaccuracies were detected during field monitoring in September 2023).
- Combining Zones A+B. An internal review of the Loru carbon accounting reveals that there is no difference between forest carbon stocks or growth rates for the forest in Zones A and B. Therefore these zones will be combined in carbon accounting for the 2020-2024 annual report to make carbon accounting more accurate and streamlined.

These changes result in an overall reduction of 66.80ha to the conservation area, and a 13.55ha reduction in the crediting area for the project.

Table 1:Document updates

| PDD (including technical specifications) document version: | | |
|---|---|---|
| **PDD section** | **Date change** | **Short description of update** |
| 1.1.2 Summary Information | September 2025 (in progress) | Project Area, Eligible Forest area<br>Buffer credit estimate<br>Net Carbon Credits |
| 2.4 Geographic Boundaries | September 2025 (in progress) | The project maps have been updated to reflect the reduction in the project area on the western boundary, the addition of a new extension on the southern side, the combining of zones A and B into a single "Eligible Forest Area" zone, and the remapping of the zone boundaries between forest and non-forest areas. |
| 2.4.1 Project area | September 2025 (in progress) | The project areas have been re-calculated to reflect the updated project boundary maps (as described above) |
| Loru PDD Part B Sections 4 & 5 Carbon accounting | September 2025 (in progress) | The project carbon accounting has been updated to reflect the new project areas based on changes to the project boundary maps (as described above), and to incorporate new forest inventory data collected in 2024. |
| Loru PDD Part B Section 5.4 Risk Assessment | September 2025 (in progress) | Project Risk Assessment updated as per PV4 requirements. |

Table 2: Progress against corrective actions

| Document | Corrective action | Activity against this |
|---|---|---|
| *NA* | *NA* | *NA* |

## A4 Future Developments

The main future development expected on this project is the migration of the Loru project from Plan Vivo Std v4 to v5, which will be used to make a number of required and/or beneficial changes to the project, as follows:

- Establishment of a national grouped project PDD for Vanuatu (NCP-Van) with Loru as the first project site, as per the Plan Vivo grouped project approach.
- New "Invasive Species" Tech Spec to be added to the project for approval by Plan Vivo (likely to be 2 tech specs covering forest restoration in forest areas and reforestation in non-forest areas).
- 10yr baseline revisions as required by Plan Vivo, including: baseline scenario re-assessment; carbon baseline re-assessment (forest inventory); social baseline re-assessment; biodiversity baseline re-assessment (likely a desktop assessment of original baseline and ranger data collected so far).

# Part B: Project activities

## B1 Project activities generating Plan Vivo Certificates

The Loru Project is an avoided deforestation project, operated by a single landowner group (the Serakar family) where the primary activity is the protection of the forest within the project area through establishment, and monitoring of a Community Conservation Area.

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 | 187.05 | *0* | 1 |

Project activities undertaken during the period to monitor the forest are detailed in table 8 below.

Figure 10 Loru CCA forest monitoring activities 2020-2024

| Date | Activity | Details |
|---|---|---|
| Jan 2020 | Annual Forest Monitoring 2020 | By Serthiac Rangers |
| Mar 2022 | Annual Forest Monitoring 2021 | By Serthiac Rangers. 2021 annual ranger monitoring at Loru CCA delayed due to heavy rains in late 2021. |
| Oct 2022 | Community Livelihoods Assessment | Household survey by Live and Learn, results to be included in 2020-2024 monitoring report. |
| Oct 2022 | Annual Forest Monitoring 2022 | By Serthiac Rangers |
| May 2023 | Remote Sensing Monitoring | Loru 2019-2022 (Nakau contractor) |
| Sep 2023 | Annual Forest Monitoring 2023 | By Serthiac Rangers |
| Sep 2023 | Nakau/LLV field trip to Lou CCA | Merremia prevalence survey<br>Follow up field monitoring on remote sensing analysis of first change at Loru CCA (2019-2022)<br>First identification of boundary discrepancies. |
| May 2024 | Forest Inventory | Forest inventory to support new carbon baseline |
| Oct 2024 | Annual Forest Monitoring 2024 | By Serthiac Rangers |

Figure 9 LLV Ranger Rexley Bune undertaking annual forest monitoring with Serthiac Rangers (Sept 2023)


Figure 11 Loru agroforestry "agroplots" locations

## B2 Project activities in addition to those generating Plan Vivo Certificates

The Serakar clan engages in a number of activities at the Loru CCA site in addition to the activities that generate PVCs.

### *Invasive Species management (Zone B)*

As mentioned above, the Serthiac rangers have successfully been using their credit sales income for 8+ years to pay rangers and community members to clear forest and thicket areas of vines for create livelihoods benefits. This primarily focusses on management of the invasive woody vine *Merremia peltata* and takes a number of forms:

- Paying ranges to maintain cleared areas around pathways and gardens
- Occasionally paying the women's group casual wages to clear and maintain areas free from vines, usually on request from the women's group when extra income is needed (e.g.: school fees time, Christmas time etc)
- Running weed clearing and tree planting days with school students on public holidays to teach them about nature, conservation and the work in the CCA.

### *"Agroplot" agroforestry (Zone C)*

The "agroplot" agroforestry activity has been a key component of the project since it's outset. Focused in zone C, this activity aims to clear the non-forest areas covered in dense vine thickets in order to reforest these degraded areas through tree planting. The vines are cleared by paying rangers using credit sales income to fence and clear the area. Tree planting is undertaken through volunteer working bees, and each garden is allocated to a family within the clan who then maintains it. In order to reduce labour associated with weeding, the families plant vegetable crops between the reforestation plantings, changing crops to

more shade tolerate root crops as the seedlings grow. After
5 years the trees are mature enough to shade out all weeds, and most food crops are reduced to only taro. This has been a very successful method for reforesting degraded areas and reducing labour. It has gained support from the Vanuatu department of Environment (DEPC) at Loru and is being promoted further through DEPC support to LLV ranger trainers.

*Ranger Training Location*

The Locu CCA is increasingly being used as a location for training rangers from other CCA's, both LLV and DEPC (see section A2 *Successes and Challenges* above). Benefit sharing revision discussions in 2024 show interest from the rangers and the community for establishing more facilities on site to support this (camping areas, toilet block, covered outdoor training area etc).

*Ecotourism*

The Loru CCA has long been recognized by local and international tourist operators as a location for nature tours supported by the Serthiac rangers. This dropped off significantly during COVID due to the cessation of cruise ships visiting Santo Island and the reduction in international tourists in general/ This has started to pick up again with tourist operators paying to groups of tourists for bird watching tours at the site several times per year.

This was always part of the projects original benefit sharing and business plan. Lack of phone and Wi-Fi at Khole village and the CCA itself has been identified as the main barrier to increasing bookings. Benefit sharing revision discussions in 2024 show interest from the community in using credit sales income to install Wi-Fi to assist this side of the business.

*Community Livelihoods Support*

The Serakar family has always had a strong emphasis on using the income from carbon credit sales to support the livelihoods of their family members and the broader community. During the period they have paid the school fees of many of the children in the family each year (on a rotating year by year bases for each household), have supported the women's savings groups to help the women of the family start businesses and have assisted members to build better quality housing for themselves and their adult children. For the broader community they have started building a new *nakamal* (the village meeting hall), fixed the roof on the village church, as well as installing solar lighting around the village to improve safety at night. (see impacts section for more details and photos)

Figure 12 Root crops grown in reforestation "agroplots" at the Loru CCA

# Part C: Plan Vivo Certificate issuance submission

## C1 Contractual statement

The issuance for this report is based on signed PES agreements with participants (the Serthiac Family Business) complying with all the minimum requirements stated in these agreements.

## C2(a) Issuance request for projects where issuance is made on the basis of new land being added to the project (e.g. woodlots, calculated *ex-ante*)

Table 4: Issuance request for Plan Vivo Certificates allocated to new participants and land

| Tech. Spec. used | No of participants/ groups allocated | Total area allocated (ha) | Carbon Potential ($tCO_2$/ha) | Total ER's ($tCO_2$) | % buffer | No. of PVCs allocated to buffer this period | Saleable ER's ($tCO_2$) from this period |
|---|---|---|---|---|---|---|---|
| *NA* | *NA* | *NA* | *NA* | *NA* | *NA* | *NA* | *NA* |

## C2(b) Issuance request for *ex-post* projects

Table 5: Statement of tCO2 reductions available for issuance as Plan Vivo Certificates based on activity for reporting period 16th Jan 2020 – 15th Jan 2025

| 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 |
|---|---|---|---|---|---|---|---|---|---|
| Forest Area 2020 | 187..05 | AD:DtPF Avoided Deforestation | 0 | 3622.6 | 20 | 724.5 | 2898.1 | 2898 | 0 |
| Forest Area 2021 | 187.05 | AD:DtPF Avoided Deforestation | 0 | 3622.6 | 20 | 724.5 | 2898.1 | 2898 | 0 |
| Forest Area 2022 | 187.05 | AD:DtPF Avoided Deforestation | 0 | 3622.6 | 20 | 724.5 | 2898.1 | 2898 | 0 |
| Forest Area 2023 | 187.05 | AD:DtPF Avoided Deforestation | 0 | 3622.6 | 20 | 724.5 | 2898.1 | 2898 | 0 |
| Forest Area 2024 | 187.05 | AD:DtPF Avoided Deforestation | 0 | 3622.6 | 20 | 724.5 | 2898.1 | 2898 | 0 |
| **TOTAL** | | | | **18113** | | **3623** | **14490.5** | **14490** | **0** |

## 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 |
|---|---|---|---|
| Unsold Stock | 14490 | Loru Forest Project, Account ID: 103000000011516 | AD:DtPF Avoided Deforestation |
| **TOTAL** | **14490** | | |

# Part D: Sales of Plan Vivo Certificates

## D1: Sales of Plan Vivo Certificates

The table below shows the sales of Plan Vivo certificates for historic and current reporting periods.

Table 7: Sales of Plan Vivo certificates, Loru Project

| Date | Buyer | No of PVCs | Price per PVC ($USD) | Total sale amount ($USD) | Price to participants per PVC | % Sale price received by participants |
|---|---|---|---|---|---|---|
| Historical Sales Information: | | | | | | |
| Jun-16 | ZeroMission #1 | 3357 | $10.28 | $34,509.96 | $5.07 | 49.32% |
| Dec-16 | ZeroMission #2 | 4179 | $10.28 | $42,960.12 | $5.07 | 49.32% |
| Jul-17 | Ekos | 1330 | $10.87 | $14,457.10 | $5.07 | 46.64% |
| Jul-17 | Ekos | 557 | $16.19 | $9,017.83 | $7.04 | 43.48% |
| Jul-17 | Ekos | 21 | $7.47 | $156.87 | $5.07 | 67.87% |
| Jul-17 | Ekos* | 25 | $- | $- | $- | |
| Apr-18 | ZeroMission | 299 | $10.28 | $3,073.72 | $5.07 | 49.32% |
| *TOTAL HISTORICAL* | | ***9768*** | | ***$10,4175.6*** | | |
| Sales from Current Reporting Period: | | | | | | |
| Aug-20 | ZeroMission | 2000 | $12.00 | $24,000.00 | $6.00 | 50.00% |
| Jul-20 | ZeroMission | 3897 | $10.08 | $39,281.76 | $5.04 | 50.00% |
| Dec-20 | Reef Ecologic | 41 | $12.64 | $518.24 | $6.32 | 50.00% |
| Dec-20 | ZeroMission | 233 | $9.00 | $2,097.00 | $4.50 | 50.00% |
| Dec-20 | ZeroMission | 1209 | $12.00 | $14,508.00 | $6.00 | 50.00% |
| Mar-21 | ZeroMission | 233 | $12.00 | $2,796.00 | $6.00 | 50.00% |
| Jan-21 | ARCADIA | 1329 | $12.00 | $15,948.00 | $6.00 | 50.00% |
| Aug-21 | Ekos*** | 2493 | $12.00 | $29,916.00 **** | $6.00 | 50.00% |
| *TOTAL CURRENT REPORTING PERIOD* | | *11,435* | | *$129,065.00* | | |

| | |
|---|---|
| Total Credits Sold (since project inception) | 21203 |
| Total Credits Issued for Sale (since project inception) | 21203 |
| Unsold | 0 |
| Total Sales USD (since project inception) | $233,240.60 |
| Total Payments to Participant (since project inception) | $115,026.80 |

* 25 credits previously reported as unsold, however, had been sold and retired in 2017. Total sales price

had been included with other sale at the same time.

** Total amount received for sale of all credits to Ekos in 2017.

*** Previously recorded as 2500 credits, however this was incorrect, with the actual amount sold and transferred being 2493.

**** In the Sales and Payments sheet, the total amount calculated for the participant for this payment was incorrect. Instead of being based on the standard breakdown (consistent with other sales for this project), the participant's share was calculated at 60% rather than 50%. The remaining 50% was still allocated to the Project Coordinator and Nakau, which meant the total allocation added up to 110%. This error has now been corrected, which adjusts the balance owed to the project participant.

# Part E: Monitoring results

### E1: Ecosystem services monitoring

Regular ecosystem services monitoring (aka forest monitoring) was undertaken on an annual basis at the project site during the reporting period of 2020-2024.

| Table 8.1.1 Monitored and Non-Monitored Parameters (monitored parameters in green) | | | | | |
|---|---|---|---|---|---|
| **Notation** | **Parameter** | **Unit** | **Equation** | **Origin** | **Monitored? (2020-2024)** |
| EFA | Eligible Forest Area | ha | - | PD | Yes |
| TAL | Total Activity Shifting Leakage | $tCO_2e\ yr^{-1}$ | 5.2.1 | Derived from Activity Shifting Leakage Analysis | Yes |

Forest monitoring activities undertaken during the period to meet the above indicator reporting requirements are included in Figure 13: Forest Monitoring activities (2020-2024)below.

Figure 13: Forest Monitoring activities (2020-2024)

| Date | Activity | Details |
|---|---|---|
| Jan 2020 | Annual Forest Monitoring 2020 | By Serthiac Rangers |
| Mar 2022 | Annual Forest Monitoring 2021 | By Serthiac Rangers. 2021 annual ranger monitoring at Loru CCA delayed due to heavy rains in late 2021. |
| Oct 2022 | Annual Forest Monitoring 2022 | By Serthiac Rangers |
| May 2023 | Remote Sensing Monitoring | Loru 2019-2022 (Nakau contractor) |
| Sep 2023 | Annual Forest Monitoring 2023 | By Serthiac Rangers |
| Oct 2024 | Annual Forest Monitoring 2024 | By Serthiac Rangers |
| August 2024 | Remote Sensing Monitoring | Loru 2019-2024 (Nakau in house) |

Evidence detailing monitoring completed and details of results and findings are attached in the following appendixes:

- Evidence of completion of forest monitoring by rangers – see Appendix 5 in forest and biodiversity monitoring report.
- GIS Assessment of forest change 2019-2022 – Annex 1: *Remote Sensing Forest Change Assessment and Classification for the Loru Rainforest Conservation Project* (Veitata 2023)
- GIS Assessment of forest change 2019-2024 – Annex 1: Loru Community Conservation Area Remote Monitoring Report (Nakau 2025)
- Results of combined field based and remote forest monitoring – Annex 1: *Forest Change*

*Confirmation, Field Monitoring Report* (Nakau 2025)

As a result of the above activities, remote sensing analysis of the Loru CCA between 2019-2022 detected 6.27ha of forest change, with 1.24ha confirmed as actual land use change within the crediting area. These two areas were physically inspected in September 2023 by Nakau and LLV, including community interviews. These areas have now been removed from the project crediting area permanently, as a result of boundary and zoning changes to the project. A second forest change assessment completed in 2025 covering the period 2020-2025 shows that no forest loss has been detected within the new Loru Forest Project crediting area (Area A). Specifically forest loss detected at these two sites are now located outside the crediting area at Loru.

In addition, boundary discrepancies have been identified between the Project Area Boundary, the project owner's land boundary, and the project owner's understanding of the extent of the protected area, estimated as 69.06ha. Further areas of Zone A & B forest have been incorrectly classified as forest in the past, and numerous minor classification inconsistencies between Zones A, B and C have been detected. These will require rectifying to ensure accurate carbon accounting and land management on the ground.

Together these boundary and zone changes result in an overall reduction of 66.80 ha to the conservation area, and a 13.55ha reduction in the crediting area for the project.

For full details please see the *Loru Project Forest Monitoring Field Report (2020-2024)* in Appendix 1.

Carbon accounting has been adjusted accordingly in section C above. Details of updates to the PDD area recorded in Section A# (Project Developments) above.

No forest loss meeting the activity shifting leakage was detected for the project during the period 2020-2024.

### E2: Maintaining commitments

No participants have been removed from the project requiring the maintenance of commitment to previously issued credits.

### E3: Socioeconomic monitoring

The socioeconomic monitoring component is designed to evaluate the extent to which the Loru Conservation Forest carbon project delivers tangible and intangible benefits to customary landowners.

| Monitored and Non-Monitored Parameters – Community Impacts | | | | |
|---|---|---|---|---|
| Notation | Parameter | Unit | Origin | Monitored? (2020-2024) |
| FA | Food & Agriculture | Various | Household Surveys | Yes |
| W | Water accessibility | % | Household Surveys | Yes |
| H | Household Income | Vatu | Household Surveys | Yes |
| P | Participation | Number & % | Household Surveys | Yes |

Socioeconomic surveys were conducted in 2025 to track changes over time with baseline data in 2016 with additional questions added to provide data to be used for the establishment of a new baseline from 2025 onwards. All 24 households within the Serakar clan located at Khole village were included in the survey, with respondents being either the head of household, their spouse, or youth aged more than 16 years old.

The socioeconomic monitoring framework was structured around four key indicators designed to capture the potential impacts of the forest carbon project on customary landowners and their communities. These indicators are:

1. Food Security – assessing household access to sufficient, diverse, and nutritious food, as well as the stability of food production and consumption over time.
2. Water Security – evaluating the reliability, accessibility, and quality of water resources for drinking, household use, and small-scale agriculture.
3. Livelihood and Financial Security – examining the stability and diversity of income sources, household economic resilience, and the ability of families to meet essential needs and adapt to external shocks.
4. Awareness and Understanding of the Carbon Project – measuring community knowledge of the forest carbon initiative, perceptions of its objectives, and the degree of participation and ownership among customary landowners.

The following table presents a summary of the results from the 2016 and 2025 surveys. The complete survey report for 2025 is provided as appendix 4.

Overall most results show a positive trend since 2016, including in ongoing reliance on gardens for food, increase in monthly income and increased trust in the project. A few key indicators show negative trends (such as occurrences of running out of food and water, and overall garden size). This is possibly due to a change in methodological approach to measuring these indicators, as this survey served the dual purpose of monitoring against the 2016 baseline, as well as establishing a new baseline for 2025 onwards (for which a new method will be used). These trends will be investigated in discussion groups with project participants in late 2025 to seek community input on interpretation of these results, and to determine which represent a genuine negative trend that requires a response from the project.

Figure 14: key findings from social economic survey in 2016 and 2025 and the net community impact based on indicators.

| Questions | Unit | Results 2016 | Results 2025 | Net community impact enhancements |
|---|---|---|---|---|
| Count of gender and age class | Number | Grand total: 40 | Female: 17<br>Male: 7<br>Adult: 22<br>Elder: 2<br>Youth: 0<br>Grand total 24 | Change in individuals survey to household survey level. All 24 households represented in both surveys. |
| | | | Food security | |
| How often do you buy food? | Times/ week | Grand total: 4.6 | Female: 5.47<br>Male: 6.14<br>Adult: 7<br>Elder: 5.54<br>Youth: no data<br>Grand total: 5.66 | Local customary landowner purchased food from the store more often in the household level compared to individual level. There is no tangible evidence that forest carbon project causing people to switch their diets from local produce to store. |
| Size of garden (hectare) | Hectare | Grand total: 0.70 | Female: 0.31<br>Male: 0.15<br>Adult: 0.28<br>Elder: 0.3<br>Youth: no data<br>Grand total: 0.25 | The average size of household gardens is estimated and may have decrease slightly. The method for estimating was altered to improve accuracy and may account for this reduction. Households typically grew the same vegetables but had more available for their household. |
| How often do you eat food from your garden? | Times/wee k | Grand total: 5.30 | Female: 5.7<br>Male: 4.58<br>Adult: 5.52<br>Elder: 3 | Consumption of food from gardens has increased slightly in frequency in 2025. |

| | | | | |
|---|---|---|---|---|
| | | | Youth: no data<br>Grand total: 5.41 | |
| How often do you eat food from forest? | Times/ month | Grand total: 2.5 | Female: 5.82<br>Male: 10.5<br>Adult: 7.72<br>Elder: 1.5<br>Youth: no data<br>Grand total: 7.2 | Consumption of food from the forest has increased in frequency in 2025. |
| How much do you make from selling food from your garden? | Vanuatu/ month | Grand total: 9750 | Female: 14014.7<br>Male: 13571.42<br>Adult: 15147.72<br>Elder: 0<br>Youth: no data<br>Grand total: 138885.41 | There has been an increase in household's income from sales of garden produce. |
| Do you ever run out of food? | % Yes | Grand total: 0% | Female: 18%<br>Male: 0<br>Adult: 14%<br>Elder: 0%<br>Youth: no data<br>Grand total: 13% | There has been a reduction of food availability and accessibility. The proportion of household reported ever run out of food is higher than the baseline. |
| | | | Water security | |
| Do you ever run out of water? | % Yes | Grand total: 1% | Female: 63%<br>Male: 43%<br>Adult: 62%<br>Elder: 0%<br>Youth: no data<br>Grand total: 57% | The survey results reveal an alarming trend: a higher percentage of households reported running out of clean water. The main reason cited was water scarcity during the dry season. This indicates that insufficient access to clean water in the dry season remains a persistent issue in Loru |
| How long do you run out of water? | Days/year | | Female: 20.7<br>Male: 14.66<br>Adult: 19.3<br>Elder: 0<br>Youth: no data<br>Grand total: 19.3 | |
| | | | Livelihood and financial security | |
| What is your monthly income? | Vanuatu/ month | Female: 17750<br>Male: 11591 | Female: 27630.63<br>Male: 35000<br>Adult: 31051.9<br>Elder: 0<br>Youth: no data<br>Grand total: 29640 | There has been an increase of income for female and male households. Total population average is lower than for all adults, due to inclusion of one elder, earning no income. |
| | | | Awareness and understanding of carbon project | |
| Are you given the opportunity to access finance information of the project? | % Yes | Grand total: 72% | Female: 88%<br>Male: 100%<br>Adult: 91%<br>Elder: 100%<br>Youth: no data<br>Grand total: 92% | There has been a substantial increase in access to project information, including finance and overall project management |
| Do you trust the REDD+ enterprise? | % Yes | Grand total: 90% | Female: 100%<br>Male: 100%<br>Adult: 100%<br>Elder: 100%<br>Youth: no data<br>Grand total: 100% | There has been an increase and strong trust on REDD+ project. Local customary landowners trust the project 100% regarding gender and age class. |

| | | | | |
|---|---|---|---|---|
| How many times do you drink kava? | Times/ week | | Female: 0<br>Male: 2.8<br>Adult: 4.25<br>Elder: 4<br>Youth: no data<br>Grand total: 4.2 | |
| How many times do you smoke cigarettes? | Times/ week | | Female: 0<br>Male: 1.8<br>Adult: 0.5<br>Elder: 7<br>Youth: no data<br>Grand total: 1.8 | |
| How many times do you drink alcohol? | Times/ week | | Female: 0<br>Male: 0.8<br>Adult: 0.75<br>Elder: 1<br>Youth: no data<br>Grand total: 0.8 | |
| How many times do you leave Khole village? | Times/ week | Female: 1.2<br>Male: 1.7 | Female: 0.94<br>Male: 1.5<br>Adult: 1.13<br>Elder: 1<br>Youth: no data<br>Grand total: 1.12 | There has been a reduction of number of times households leaves Khole village among male, and female households |
| Hours spending on cooking | Hours/ day | Female: 2.7<br>Male: 0.4 | 2022 data<br>Female: 2.29<br>Male: 1.53<br>Adult: 1.95<br>Elder: no data<br>Youth: 1.67 | We no longer assess this indicator in 2025 and going forward. Therefore, there is no available data for comparison. Data collected in 2022 used here instead. |
| Hours spending on cleaning/household chores | Hours/ day | Female: 2<br>Male: 0.8 | Female: 2.38<br>Male: 1.79<br>Adult: 2.16<br>Elder: no data<br>Youth: 1.33 | We no longer assess this indicator in 2025 and going forward. Therefore, there is no available data for comparison. Data collected in 2022 used here instead. |
| Hours spending on gardening/working | Hours/ day | Female: 4.6<br>Male: 7.5 | Female: 5.71<br>Male: 5.26<br>Adult: 5.59<br>Elder: no data<br>Youth: 4.33 | We no longer assess this indicator in 2025 and going forward. Therefore, there is no available data for comparison. Data collected in 2022 used here instead. |
| Hours spending on resting | Hours/ day | Female: 1.8<br>Male: 3.6 | Female: 2.33<br>Male: 2.95<br>Adult: 2.54<br>Elder: no data<br>Youth: 3.67 | We no longer assess this indicator in 2025 and going forward. Therefore, there is no available data for comparison. Data collected in 2022 used here instead. |

## E4 Environmental and biodiversity monitoring

Forest and biodiversity monitoring conducted annually from 2021-2024 aims to monitor the presence of the key selected species.

| Monitored and Non-Monitored Parameters – Biodiversity Impacts |
|---|

| Notation | Parameter | Unit | Origin | Monitored? (2020-2024) |
|---|---|---|---|---|
| SSA | Significant species - Animals | Presence/absence | Biodiversity Survey | Yes |

The monitoring conducted by using randomly selected line transect in which monitoring team record flora, fauna, disturbance and management activities along the line transect. The monitoring team use Avenza to record data. Data manipulation, analysis and visualization were conducted by using R program (version 3.4).

The frequency of detection and trend of key indicator species is shown in Figure 16: Key indicator species detection trends over time between 2021-2024..

An analysis of species detection frequency over time revealed several notable trends. The *yellow-fronted white-eye* (bird) exhibited a consistent increase in detection from 2021 to 2024, suggesting either a population increase, improved detectability due to habitat management, or seasonal variation in activity. Similarly, the *golden whistler* showed a rising detection trend, particularly evident from 2022 onwards, which may reflect habitat conditions favourable to its breeding or foraging behaviour.

In contrast, *coconut crab* showed a fluctuating trend, with detection frequencies varying across the four years. This may be attributed to seasonal activity, or survey method (coconut crabs are nocturnal). A similar pattern was observed for the *Tanna fruit dove*, which exhibited intermittent detection, indicating possible spatial movement or sensitivity to survey timing and methods.

Importantly, endemic species to Vanuatu including the Vanuatu kingfisher, Vanuatu imperial pigeon, Vanuatu megapode, Tanna fruit dove, Vanuatu flying fox and coconut crab continue to be recorded within the conservation area throughout the monitoring period. Their sustained presence reaffirms the ecological significance of the site and underscores the importance of ongoing conservation management to protect habitat for Vanuatu's unique biodiversity.

The observed patterns highlight the value of multi-year biodiversity monitoring as a tool to assess species presence, detect population trends and guide adaptive management. Overall, the increasing trend in detections for multiple endemic and indicator species suggests a positive biodiversity response to ongoing forest restoration and protection efforts under the project framework.

The full report on forest and biodiversity monitoring is attached as appendix 5.

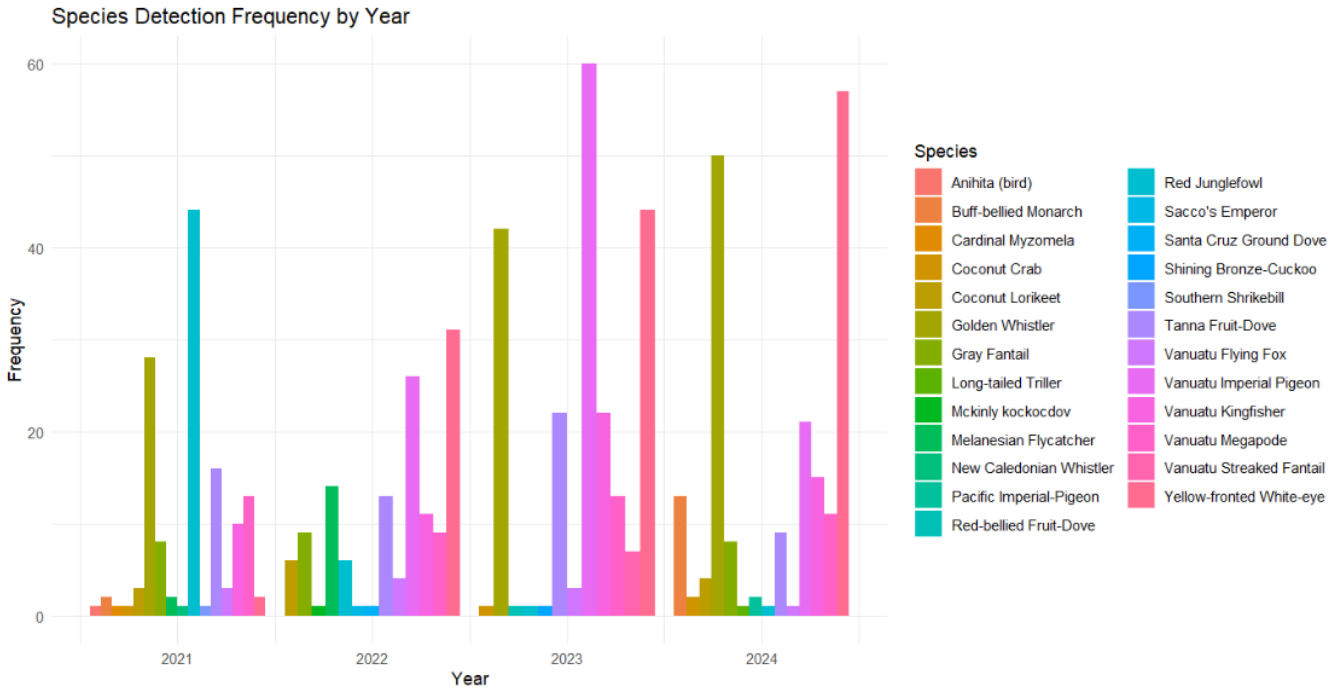



Figure 15: All species detected during the survey period between 2021-2024

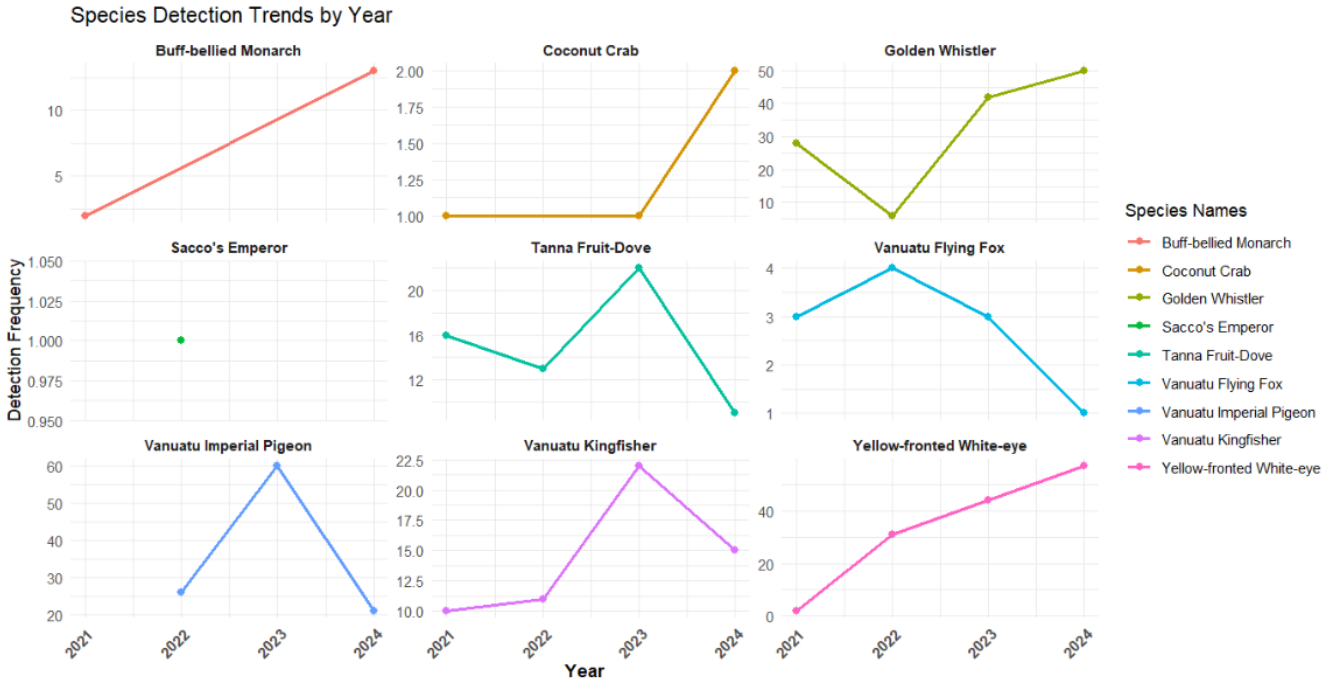



Figure 16: Key indicator species detection trends over time between 2021-2024.

Figure 17: key indicator species impact monitoring at Loru Community Conservation Area (CCA) between 2021-2024

| Common name | Scientific name | IUCN | Year | Obs. type | Freq. of detection | Net Impact in CCA |
|---|---|---|---|---|---|---|
| **Insect** | | | | | | |
| Sacco's Emperor | *Polycon sacco* | | 2022 | Seen | 1 | Only observed in 2022. |
| **Birds** | | | | | | |
| Vanuatu Megapode* | *Megapodius layardi* | LC | 2021 | Seen | 13 | Continuously present and observed numerous times between each monitoring period. |
| | | | 2022 | | 9 | |
| | | | 2023 | | 13 | |
| | | | 2024 | | 11 | |
| Vanuatu Kingfisher* | *Todiramphus farquhari* | NT | 2021 | Seen | 10 | Continuously present and observed numerous times between each monitoring period. More frequent observations found in forest areas. |
| | | | 2022 | | 11 | |
| | | | 2023 | | 22 | |
| | | | 2024 | | 15 | |
| Buff-bellied Monarch* | *Neolalage banksiana* | LC | 2021 | Seen | 2 | Continuously present and observation increase from 2022 to 2024. |
| | | | 2024 | | | |
| Tanna fruit-Dove* | *Ptilinopus tannensis* | LC | 2021 | Seen | 16 | Continuously present and observed numerous times between each monitoring period. |
| | | | 2022 | | 13 | |
| | | | 2023 | | 22 | |
| | | | 2024 | | 9 | |
| Vanuatu Imperial Pigeon* | *Ducula bakeri* | LC | 2021 | Seen | 44 | Continuously present and fluctuate observations between monitoring periods. |
| | | | 2022 | | 26 | |
| | | | 2023 | | 60 | |
| | | | 2024 | | 21 | |
| Yellow-fronted White-eye* | *Zosterops flavifrons* | LC | 2021 | Seen | 2 | Continuously present and observation increase between monitoring period from two observations to 57 in 2024. |
| | | | 2022 | | 31 | |
| | | | 2023 | | 44 | |
| | | | 2024 | | 57 | |
| Santo Mountain Starling* | *Aplonis santovestris* | EN | NA | NA | NA | No observation. |
| Golden Whistler | *Pachycephala pectoralis* | LC | 2021 | Seen | 28 | Continuously present and observation increase between monitoring periods. |
| | | | 2022 | | 6 | |
| | | | 2023 | | 42 | |
| | | | 2024 | | 50 | |
| **Crustacean** | | | | | | |
| Coconut Crab* | *Birgus latro* | VU | 2021 | Seen | 1 | Continuously present and observed during the day. |
| | | | 2023 | | 1 | |
| | | | 2024 | | 2 | |
| **Mammals** | | | | | | |
| Vanuatu Flying fox* | Pteropus anetianus | VU | 2021 | Seen | 3 | Continuously present and observed numerous times between monitoring periods. |
| | | | 2022 | | | |
| | | | 2023 | | | |
| | | | 2024 | | | |

# Part F: Impacts

## F1: Evidence of outcomes

### Evidence of outcome on community

The impacts of the project, particularly in terms of community benefit are significant. The project conserves the forest, monitors biodiversity, but also provides significant benefit to the Serakar clan and local Khole village community through:

- Creation of paid ranger and admin employment based in Khole village
- Direct befit to the Serakar family through payment of school fees for children in the family, purchasing of water tanks for family members, support for families seeking to build better quality housing, support to the women's group to set up small businesses such as stores and root crop sales to the local market
- Benefits to the broader community in the form of investment into local infrastructure (fixing the church roof, building a new meeting hall and installing solar lighting in public spaces).

Quantitative evidence of impacts is presented above in section E3. However photographic and story-based evidence is presented here to indicate the impacts experienced by the project owners as a result of the carbon financing of their conservation project.

| Blog Post | Link |
|---|---|
| Forests as Climate resilience blog | https://nakau.org/news/forests-as-climate-resilience |
| Loru community benefits story | https://stories.nakau.org/conservation-for-community-loru |
| Why we do Land Use Planning | https://nakau.org/news/land-use-planning |
| Merremia Control in Vanuatu | https://nakau.org/news/merremia-control-in-vanuatu |
| The Loru Conservation Story | https://stories.nakau.org/tabu-dakbus |
| Nakau Vimeo Channel | https://vimeo.com/nakau |

Figure 18 Rose Moses in her small shop established with benefits from project credit sales

Figure 19 Rachel Ser with her family's watertank (above), and Losaline Rii outside her home-in-progress (below)

## Evidence of outcome on environment and biodiversity

The presence of globally threatened and endemic species of Vanuatu such as the Buff-bellied Monarch, Tanna fruit Dove, Vanuatu kingfisher, Vanuatu megapode, Vanuatu flying fox, Vanuatu imperial pigeon, and coconut crab continues to be recorded within the project area. Notably, the number of detections has increased for several of these species. This trend suggests that the forest carbon project is contributing positively to the conservation of biodiversity, supporting both species persistence and potential population recovery.

Figure 20: Key endemic species recorded at Loru. From left to right, Vanuatu kingfisher, Tanna fruit dove, Vanuatu flying fox, and Buff-bellied monarch. Photo: Ret Thaung/Nakau

# Part G: Payments for Ecosystem Services

## G1: Summary of PES payments to participants

The table below summarizes the payments made to date and separate payments from previous reporting periods from ongoing payments in the current reporting period. All payments have been made in line with the terms of PES agreements signed.

Table 8: Summary of payments made and held in trust

| 1. Reporting period | 2. Total previous payments (prev reporting periods) | 3. Total ongoing payments (this reporting period) | 4. Total payments made (2+3) | 5. Total payments held in trust | 6. Total payments withheld |
|---|---|---|---|---|---|
| 15th Jan 2015 – 14th Jan 2016 | $- | $- | $- | $- | $- |
| 15th Jan 2016 – 14th Jan 2017 | $- | $9,648.03 | $9,648.03 | $28,559.49 | $- |
| 15th Jan 2017 – 14th Jan 2018 | $9,648.03 | $11,523.30 | $21,171.33 | $27,807.04 | $- |
| 15th Jan 2018 – 14th Jan 2019 | $21,171.33 | $16,126.76 | $37,298.09 | $13,196.21 | $- |
| 15th Jan 2019 – 14th Jan 2020 | $37,298.09 | $8,291.92 | $45,590.01 | $4,904.29 | $- |
| 15th Jan 2020 – 14th Jan 2021 | $45,590.01 | $7,481.61 | $53,071.62 | $39,023.18 | $- |
| 15th Jan 2021 – 14th Jan 2022 | $53,071.62 | $18,578.64 | $71,650.26 | $43,376.54 | $- |
| 15th Jan 2022 – 14th Jan 2023 | $71,650.26 | $18,710.51 | $90,360.77 | $24,666.03 | $- |
| 15th Jan 2023 – 14th Jan 2024 | $90,360.77 | $11,299.48 | $101,660.25 | $13,366.55 | $- |

Total payments made to project participants (the Serthiac Clan) has averaged around 50% of the income from credit sales (see **Error! Reference source not found.** in section D above). This follows an updated pricing agreement signed between Nakau, Serthiac and Live & Learn Vanuatu in September 2020 that reduces payment to Nakau and Serthiac in order to increase payments to L&L Vanuatu (see Figure 21 below).

In line with Plan Vivo Standard V4 section 8.12[3], the justification for this change as outlined in the agreement (attached as an annex to this report), is that an increased share of the sales revenue was required to be disbursed to LLV to cover the costs of monitoring and support to Serthiac, which are relatively more expensive on such a small project. Care was taken to ensure Serthiac remains profitable under this new arrangement.

Furthermore, Nakau intends to address this in the long term by establishing a national program of projects in Vanuatu that will cover costs of monitoring to all projects by LLV, allowing the sales revenue to be re-assessed for increase back to 60% for Serthiac. Nakau expects this to be renegotiated during the next monitoring period (2025-2028) after establishment of the NCP-Vanuatu in 2025.

[3] 8.12: *"Projects selling Plan Vivo Certificates should aim to deliver at least 60% of the proceeds of sales on average to communities as PES, meaning project coordinators should not draw on more than 40% of sales income for ongoing coordination, administration and monitoring costs. Where less than 60% is delivered projects must justify why this is not possible, why the benefits delivered to communities are fair and that they are able to effectively incentivise activities."* (https://www.planvivo.org/Handlers/Download.ashx?IDMF=a677d7d1-ce55-4925-aeea-71b8c95caf1c)

Figure 21 Updated revenue percentage split

| Partner Name | Percentage of Revenue (PDD 2015) | Percentage of Revenue (updated pricing agreement 2020) |
|---|---|---|
| Serthiac Family Business | 60% | 50% |
| Live & Learn Vanuatu | 20% | 32% |
| The Nakau Programme Pty Ltd | 20% | 18% |

# Part H: Ongoing participation

## H3: Community participation

The Loru project participants are the members of the Serakar clan, most of whom live in Khole village, NE Santo Espiritu island Vanuatu.

The original PDD estimated the adult population of the Serakar clan in 2014 as "approximately 50" people. An updated family tree and survey of clan members by LLV shows the numbers in 2024 are much higher (see table 16 below). The updated figured will be used for future reporting and the re-assessment of the livelihoods baseline in 2025.

Table 9: Summary of community participation, Loru Project 2024.

| Category | Total | Men | Wmn | Youth |
|---|---|---|---|---|
| Serthiac Employees | 7 | 4 | 3 | 2 |
| Serthiac Board and Committee Members | 5 | 3 | 2 | |
| Serakar Family Members (Project Owners) | 187 | 104 | 83 | 57 |
| Khole Village Population | 500+ | - | - | - |
| Average participation at workshops | 20 | 8 | 8 | 4 |

Regular community meetings as part of the project during the period included:

- Serthiac quarterly board meetings (See Annex 7 – Serthiac Quarterly Reports)
- Serthiac quarterly land management meetings (See Annex 7 – Serthiac Quarterly Reports)
- Serthiac quarterly finance committee meetings (See Annex 7 – Serthiac Quarterly Reports)
- Serthiac Annual General Meeting (AGM)
- Nakau/LLV/Serthiac annual project meeting (Aug 2023 online, Sep 2022 in person)
- Weekly meetings between Nakau and LLV for project team support (Loru Project and other projects in development in Vanuatu)
- Minimum quarterly monitoring visits to the Loru site by LLV (often more frequent)
- 6 monthly monitoring visits to the Loru site by Nakau (see section A1 *Key Events* for details)

Other project meetings include (See Annex 7, Field Trip Reports and Participation Lists for details):

- Ranger forest monitoring/Avenza training (March 2022, October 2022, Sep 2023)
- Community Carbon Education workshop (Nov 2023 2023)
- Land Use Planning workshops by LLV (Nov 2023)
- Serthiac governance training workshops by LLV (Aug 2022)
- Loru boundary confirmation meetings (2023, 2024)
- Serthiac benefit Sharping Plan Update (2024)
- Loru Weed Management Planning and Consultation (

No grievances were raised during the 4 year reporting period. Nakau has revised and updated it's standard grievance mechanism approach, to be rolled out in Loru in early 2025. This will include training on handling grievances and complaints, and a revision of roles for grievance management from all 3 project partners (Serthiac, LLV and Nakau).

## Part I: Operating Costs

A summary of expenditure for the period 16 January 2020 to 15 January 2025 is presented below, cover all 3 organisations: Serthiac, Live and Learn Vanuatu and Nakau.

Table 10: Allocation of costs

| Cost Categories | Contribution from sale of PVCs (USD) | Contribution from other sources (USD) | Average cost per year (USD) |
|---|---|---|---|
| **Project Participant (Serthiac) Costs** | | | |
| Ranger Salaries and Wages | $2,244.78 | | $561.19 |
| Conservation & restoration works | $8,708.15 | | $2,177.04 |
| Monitoring & Reporting | $8,708.15 | | $2,177.04 |
| Administrative costs (inc rent, overheads and admin wages) | $10,550.34 | | $2,637.59 |
| Community Benefit Projects | $18,910.26 | | $4,727.56 |
| **PP Project Costs Total** | **$49,121.67** | | **$12,280.42** |
| **PP Total Costs** | **$49,121.67** | | **$12,280.42** |
| **Project Coordinator (LL) Costs** | | | |
| Salaries and Wages | $16,981.78 | $59,391.29 | $19,093.27 |
| Conservation & restoration works | $1,916.82 | $0.00 | $479.20 |
| Monitoring & Reporting | $2,032.99 | $7,110.08 | $2,285.77 |
| Training, Support and meetings | $1,858.73 | $6,500.65 | $2,089.85 |
| Administrative costs (inc rent, overheads) | $1,029.56 | $3,600.74 | $1,157.58 |
| **PC Costs Total** | **$23,819.89** | **$76,602.76** | **$25,105.66** |
| **Project Coordinator (Nakau) Costs** | | | |
| Salaries and Wages | $15,267.30 | $63,343.22 | $19,652.63 |
| Conservation & restoration works | $0.00 | $0.00 | $0.00 |
| Monitoring & Reporting | $2,278.41 | $9,453.00 | $2,932.85 |
| Training, Support and meetings | $1,864.15 | $7,734.27 | $2,399.61 |
| Administrative costs (inc rent, overheads) | $755.52 | $3,134.63 | $972.54 |
| **PC Costs Total** | **$20,165.39** | **$83,665.12** | **$25,957.63** |
| | | | |
| **Project Costs Total** | **$93,106.95** | **$160,267.89** | **$34,947.04** |

## Annexes

| | |
|---|---|
| Annex 1 | Monitoring results for issuance request (attached) |
| Annex 2 | Ongoing monitoring results for all participants (N/A) |
| Annex 3 | Reallocation of commitments (N/A) |
| Annex 4 | Socioeconomic monitoring results (attached) |
| Annex 5 | Conservation and monitoring results (attached) |
| Annex 6 | Impacts (N/A) |
| Annex 7 | Community meeting records (summary) (attached) |
| Annex 8 | Other Supporting Documents (attached) |