



PEBACC+

Pacific Ecosystem-
based Adaptation to
Climate Change Plus



Project co-funded by



Tree Stocktaking Assessment Report

**Tree Stocktaking, Replacement, Maintenance and
Monitoring of Tagabe River Catchment, Vanuatu.**

November 2024



*Mahogany seedlings at the PEBACC+ project site in Aku Farm, Efate
were planted alongside kava crops. © Lokol Solutions.*

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Environment Programme



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Table of Contents

Objectives of Survey	3
Survey Methodology	3
Free, Prior and Informed Consent (FPIC).....	3
Site Map.....	4
Findings	5
Tree Stocktaking	5
Tree maintenance and replacement planting	6
Species inventory	6
Next Steps	7
Risk and Mitigation.....	7
Annex	8

Objectives of Survey

1. Conduct a comprehensive inventory of the current state of all planted tree seedlings and other floral species within the specified areas (39 hectares (ha) in the UNELCO compound within the Tagabe river lower catchment and 33 ha in Aku Farm within the Tagabe river upper catchment).
2. Conduct a tree stocktaking to document the number, species, and condition of plant species planted at each site (UNELCO and Aku).
3. Identify and record areas with plant losses and determine the causes of these losses.

Survey Methodology

The following steps were applied to ensure consistency of assessments across both sites:

Preparation

1. Obtain free, prior and informed consent (FPIC) from the leaseholder.
2. Review the site map and divide the site into smaller areas for total visual count.
3. Set date for tree inventory and tree stocktaking, preferably before cyclone season.
4. Prepare tools: printed site map, GPS, tree species tally sheet, bush knife and PPE.

Delivery of tree stocktaking

5. For each small area, conduct a complete visual count of the tree species and record it on the tree species tally sheet.
6. Combine the total count of tree species and record it on the tally sheet.
7. Estimate the area of the site that needs to be replanted.
8. Estimate the type of tree species and number of seedlings that need to be sourced for replanting.

Delivery of tree species inventory

9. During the tree stocktaking, list other trees and plant species observed at the site.
10. List pests (plant or animal) that appear to disturb planted seedlings from developing.

Presentation of findings

11. Tree inventory data (tree species count and condition) is presented in a table.
12. Tree stocktaking is presented visually through the Relive app.
13. A revised map of planting areas and identified replanting areas is shared through Google maps.
14. A list of pests are presented on a table.

Free, Prior and Informed Consent (FPIC)

Landowner consent

The Paramount Chief of the people of Ifira has provided written consent allowing the PEBACC+ project to implement activities within the Tagabe river catchment. In addition to the landowner consent, FPIC was also sought consent from the two lease holders, Aku Farm and UNELCO.



Leaseholder consent

Prior to the delivery of this assessment, the survey team consulted with representatives from Aku Farm and UNELCO to seek free, prior and informed consent. For Aku Farm, verbal and written consent was provided by Mr. Loic Dinh. UNELCO representatives have requested to delay activities at their site, as they would like more time to review and amend the consent form.

Site Map

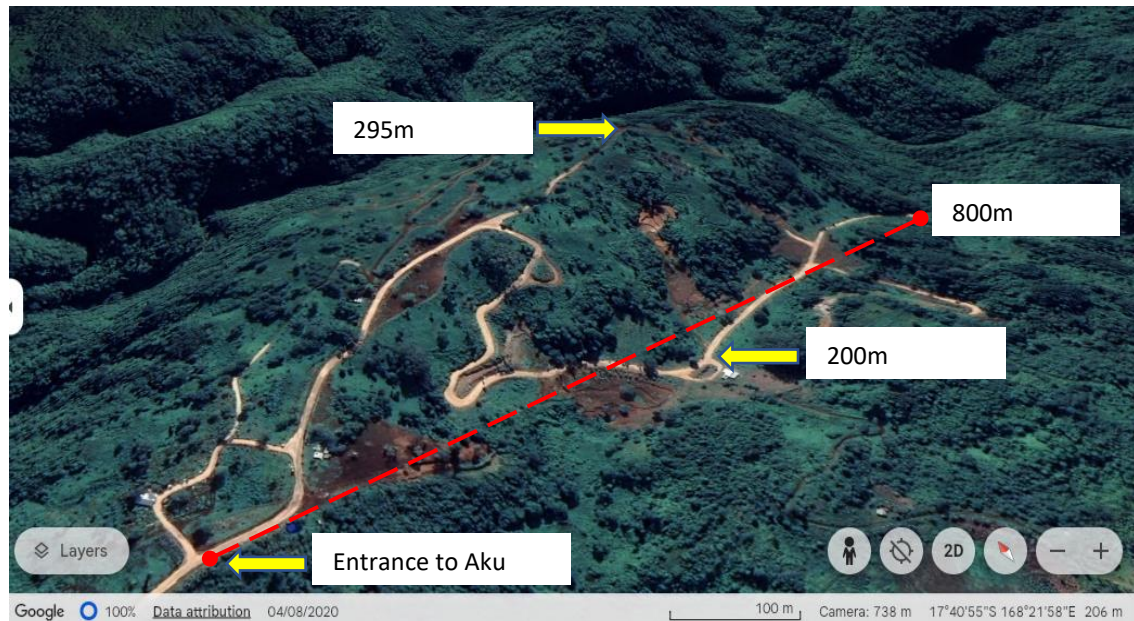


Figure 1. Topographic imagery of Aku Farm (August 2020). (Source: Google Map)



Figure 2. Image of Aku Farm with four areas for assessment: 1. South Ridge, 2. East Valley, 3. North Ridge, 4. West Hillside. Note: The areas shaded yellow (9.54ha) will be maintained monthly, while areas shaded red (0.94ha) are marked for replacement planting. This was identified during the tree stocktaking (6 November).

This assessment is focused on Aku Farm. A satellite map of the site is provided below with Figure 1 displaying the 33 ha property, with the highest elevation of 295m above sea level and the lowest elevation at 200m above sea level.

In Figure 2, the site is divided into the following four areas to allow the team to perform visual counting for tree stocktaking:

- Area 1. South Ridge
- Area 2. East Valley
- Area 3. North Ridge
- Area 4. West Hillside

Findings

The following findings are presented for the tree inventory and stocktaking at Aku Plantation, upper catchment for Tagabe river.



Tree Stocktaking

Five tree species were planted at Aku Farm. It was easy to identify the planting areas as the seedlings were planted in rows with about 5-meter spacing between each row. For each row, the seedlings were planted at about 5 to 8 meters apart, and rows ended once they reached the edge of a cliff or a patch of forest.

A total count of 1,673 planted trees was recorded in healthy condition across the 33 ha Aku Farm site. A breakdown of species and count is provided in Table 1. A short video of the tree stocktaking activity can be accessed here: ['Tree Stocktaking, Aku Plantation, Erangorango.' | Relive](#)

Table 1. Summary of Tree stocktaking, Aku Farm (6 November 2024).

Tree species	Count	Condition
Whitewood (<i>Endospermum myrmecophilum</i>)	1,178	All counted trees are healthy, average tree height: all > 3m.
Mahogany (<i>Swietenia macrophylla</i>)	439	All counted trees are healthy; average tree height: 80% >2m, 20% <1m.
Kauri (<i>Agathis silbae</i>)	17	All counted trees are healthy, average height: <0.5m.
Natangura palm (<i>Metroxylon warburgii</i>)	39	All counted trees are healthy, average height: >2m.
Total count of planted trees	1,673	

Tree maintenance and replacement planting

We estimate that at least 8.6 ha of the planting area at Aku Farm will require fortnightly maintenance (Table 2). This covers about 26% of the 33 ha site. The maintenance would include clearing of the thick grass that reduces light availability for seedlings (kauri and mahogany) as well as clearing of vines that cover the branches of larger whitewood, mahogany and natangura palm.

Table 2. Summary of areas for maintenance and replacement planting, Aku Farm.

Location	Area for maintenance (ha)	Area for replanting (ha)
Area 1 (South Ridge)	1.79	-
Area 2 (East Valley)	3.07	0.46
Area 3 (North Ridge)	1.95	0.48
Area 4 (West Hillside)	1.79	-
Total Area	8.6ha	0.94ha

We have identified 0.94 ha that require replacement planting in two locations, Area 2 (East Valley) and Area 3 (North Ridge). We estimate that approximately 300 seedlings would be sufficient to cover the replanted area with a preference for fast-growing seedlings like mahogany and whitewood. The East Valley planting area also appears to be a waterlogged area and has a high concentration of weedy grass and shrubs.

We noted that the trees planted outside of Aku Plantation, along the creeks, were also growing well. However, they are not included in the stocktaking. An interactive map with photos of the areas for tree maintenance and replanting can be accessed through this link: [Aku Farm](#)

Species inventory

Aku Farm has a variety of fruit trees and plants that are grown both for commercial and aesthetic purposes. The majority of these are located along the South Ridge and West Hillside areas of the farm. These include varieties of citrus, noni, passionfruit, pineapple and guava as well as numerous ornamental plants. The trees and plants cultivated at Aku Farm for commercial purposes include sandalwood, noni, varieties of kava and sweet potato.

There are several plant species identified as weeds, which will be targeted for removal during maintenance. These are listed in Table 3. In addition to weeds, tracks from feral pigs were observed through the areas identified for replacement planting and coconut rhinoceros beetles damaged the leaves of coconut palms.

Table 3. Plants identified as weeds that disturb growth of planted seedlings, Aku Farm.

Common name	Scientific name	Impact on planting area
Turkey berry / pea eggplant	<i>Solanum torvum</i>	Thorns prevent access for maintenance
Nil grass	<i>Mimosa pudica</i>	Prickly plant that shades seedlings
Big leaf	<i>Meremia peltata</i>	vine; wraps around branches and leaves

One-day / mile-a-minute	<i>Mikania micrantha</i>	vine; wraps around branches and leaves
Raspberry	<i>Rubus rosifolius</i>	Prickly shrub that shades seedlings
Guinea grass	<i>Megathyrsus maximus</i>	Fast-growing, shades seedlings and high moisture retention.

Next Steps

- Coordinate with the Department of Forestry nursery to allocate 300 seedlings for the replacement planting activity (seedlings will be available mid-December).
- Develop a replacement planting plan.
- Once replacement planting is complete, conduct fortnightly maintenance of replanting areas and monthly maintenance of the rest of the planting areas (details to be provided in a replacement planting plan).
- Continue to engage youth in the communities with replacement planting and maintenance activities.

Risk and Mitigation

- No risks identified for activities at Aku Farm.
- UNELCO have set a timeframe of 18 November to provide their signed consent form, giving us access to their Tagabe site. This will delay the delivery of activities and reporting for the UNELCO site until consent is given. In the meantime, the activities at Aku Farm will proceed as scheduled in the contract.

