ECOSYSTEM-BASED MANAGEMENT PLAN

Kubulau District, Bua Province, Fiji

4/30/2012
Wildlife Conservation Society

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ENDORSEMENT

On this day, , at in the District of Kubulau, Bua Province, Vanua Levu, in the Republic of Fiji Islands, we, the traditional leaders of Kubulau, endorse this management plan, and urge the people of Kubulau to make every effort to ensure its effective implementation.

Tui Kubulau	Tui Nadi
Tui na Vanua	Ra Masi, Turaga ni Yavusa Kaiwai
Buli Navatu	Buli Kiobo
Masi Rokowaqa, Turaga ni Yavusa Suetabu	Buli Levuka
Tui Naro	Turaga ni Yavusa Nawaimate
Turaga ni Yavusa Tikinaisau	Turaga ni Yavusa Vatusugu
Turaga ni Yavusa Rewa	Turaga ni Yavusa Kilaka
Chair, Kubulau Resource Management C'tee	Roko Levu, Bua
Roko Tui Veivuke, Kubulau	Mata ni Tikina

ACKNOWLEDGMENTS

The Kubulau Resource Management Committee wishes to recognise the vision and leadership of the chiefs of Kubulau District, and celebrate their enduring commitment to sustainable management of Kubulau's precious ecosystems for the benefit of present and future generations.

For over a decade, the people of Kubulau have supported the conservation and sustainable use of the district's natural resources, and have given freely of their time and expertise to ensure that management decisions are informed by the best available knowledge. Their ongoing support is gratefully acknowledged.

The adoption of this management plan is a significant milestone for ecosystem-based management at a local, national and regional level, only made possible by the contributions of a diverse range of partners, stakeholders and donors, including:

Wildlife Conservation Society
WWF South Pacific Programme
Wetlands International
Coral Reef Alliance
Greenforce
Partners in Community Development
Conservation International
Environmental Law Association
University of the South Pacific
LMMA Network
Moody's Namena Resort
Jean-Michel Cousteau Resort
Tui Tai Adventure Cruises
Namale Resort
Koro Sun Dive
Nai'a Scuba Diving
Fiji Aggressor
Sere ni Wai

iTaukei Land Trust Board
iTaukei Lands and Fisheries Commission
Ministry of Fisheries and Forests
Department of Environment
Department of Agriculture
Department of Tourism
Department of Health
Bua Provincial Council
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Secretariat of the Pacific Community
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1 INTRODUCTION

This management plan seeks to provide for the sustainable management of terrestrial, freshwater, estuarine, coastal and marine ecosystems in Kubulau District and adjacent coastal waters. The management objectives for Kubulau are listed in the box below.

Management objectives

- To maintain or restore marine resources to levels which the ecosystem is able to support[1]
- To maintain ecosystem connectivity and function across Kubulau District[1]
- To protect and provide good habitats for endemic forest species[2]
- To ensure sustainable land management by the communities of Kubulau[2]
- To protect water catchments in order to provide reliable sources of clean drinking water to the communities of Kubulau[2]
- To provide economic opportunities to the communities of Kubulau[2]

References

[1] Wildlife Conservation Society (2007) *Draft Kubulau* Qoliqoli *Management Plan*.

[2] Wildlife Conservation Society (2006) *Draft Kilaka Nature Reserve Management Framework and Guidelines*.

The management plan was originally prepared on behalf of the Kubulau Resource Management Committee in 2009, based on community and stakeholder consultation undertaken over the course of a number of years. In particular, the 2009 management plan reflected the outcomes of the *Kubulau Ecosystem-Based Management Planning Workshop* (Namalata, 25-27 February 2009) and subsequent consultations with community, civil society, government and private sector stakeholders. Content was integrated from previous planning documents, including the *Namena Marine Reserve Management Plan*, the draft *Kubulau Qoliqoli Management Plan* and the draft *Kilaka Forest Reserve Management Plan*.

This updated version of the management plan has applied the principles of adaptive management, and reflects the outcomes of the *Kubulau Adaptive Management Workshop* (Nakorovou, 27-28 July 2011) and the *Kubulau Management Support Workshop* (Kilaka Village, 12-14 October 2011). The planning process has been informed by extensive scientific and socio-economic research, as well as local and traditional ecological knowledge. It is anticipated that the plan will be reviewed and amended periodically to reflect monitoring results and evolving management priorities.

The key components of this management plan are:

- a **description of the site**, including site boundaries, demographics, resource tenure, resource use and protected area boundaries;
- a description of key **management institutions** and **external stakeholders**;
- an explanation of **management roles and processes**, including preparation, implementation, amendment and review of the management plan;
- discussion of **compliance and enforcement** issues, including protocols for enforcement of national laws and community rules;

- discussion of **habitat management** issues for terrestrial, freshwater, estuarine, coastal and marine ecosystems:
    - a **habitat description**, including flora and fauna, endemic and endangered species and species of cultural and economic significance;
    - discussion of **key threats** and **underlying causes** of those threats for each habitat;
    - recommended **best practices** for each habitat;
    - **management rules** for each habitat, including national laws and community rules;
    - proposed **management activities** for each habitat;
- discussion of **sustainable financing** issues, including self-financing.

2 ECOSYSTEM-BASED MANAGEMENT

2.1 ECOSYSTEM-BASED MANAGEMENT PRINCIPLES

This management plan seeks to promote an integrated approach to management of terrestrial, freshwater, estuarine, coastal and marine ecosystems in Kubulau District. In particular, the plan reflects a community-driven, ecosystem-based management approach.

Ecosystem-based management is 'an integrated approach to management that considers the entire ecosystem, including humans'.[1] Ecosystem-based management aims to maintain ecosystems in a healthy, productive and resilient condition so that they can meet human needs into the future. For island communities, ecosystem resilience is particularly important for recovery from strong impacts of climate change.

In particular, ecosystem-based management:

- emphasises connectivity within and between systems, such as between land and sea (**Figure 2.1**);
- emphasises the protection and restoration of ecosystem structure, function and key processes;
- focuses on a specific ecosystem and the range of activities affecting it;
- integrates ecological, social, economic, and institutional perspectives.[2]

Use of land and resources by humans may result in significant alteration of ecosystem structure, function and processes, including connectivity within and between ecosystems (**Figure 2.2**).

Modification of ecosystems may reduce their health, productivity and resilience, and must be managed to ensure ongoing availability of ecosystem services.

Ecosystem-based management has objectives and targets that:

- focus on maintaining the natural structure of ecosystems and their productivity;
- incorporate human use and values of ecosystems in management the resource;
- recognise that ecosystems are dynamic and constantly changing;
- are based on a shared vision of stakeholders;
- are based on scientific knowledge, adapted by continual learning and monitoring.[3]

What is an ecosystem?

An ecosystem includes all of the plants, animals, microbes, soil, air and water within a physical space and the interactions between them. Humans are a central part of both marine and terrestrial ecosystems.

The linkages within and between ecosystems arise from biological interactions (for example, seabirds hunting for marine fish to feed their offspring) and physical processes (for example, sediments transported downstream by river networks).[1]

[1] *Scientific Consensus Statement on Marine Ecosystem-Based Management*
[2] *Scientific Consensus Statement on Marine Ecosystem-Based Management*
[3] Grieve and Short, WWF EBM Toolkit

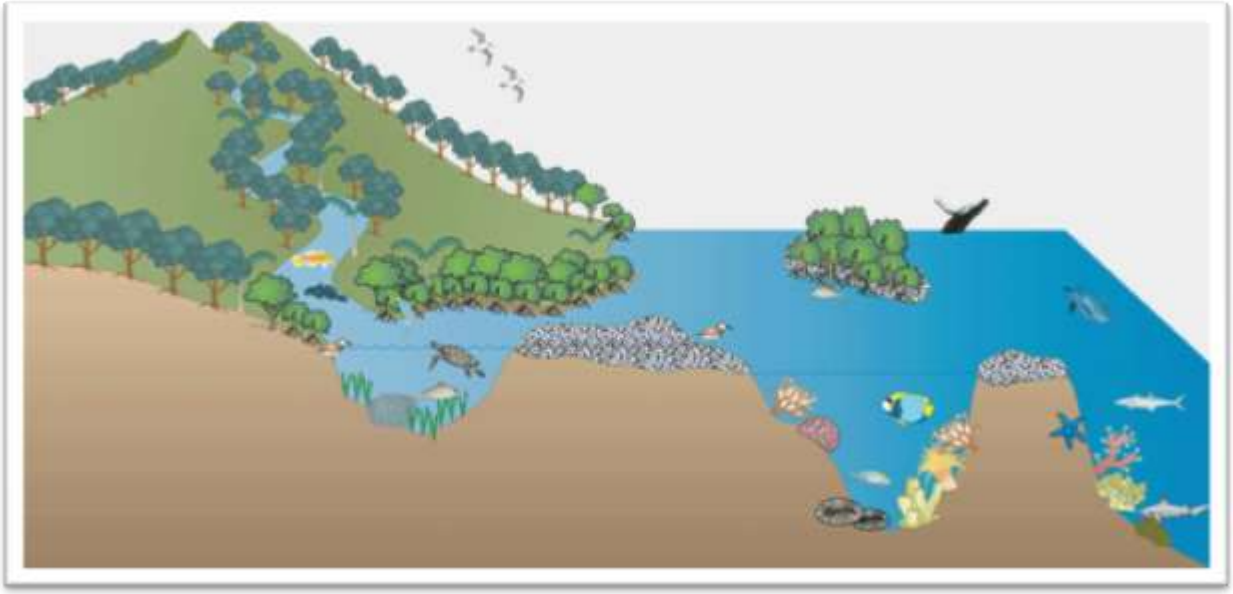

Figure 2.1. Schematic diagram of healthy connectivity between adjacent terrestrial, freshwater, coastal and marine ecosystems.[4]

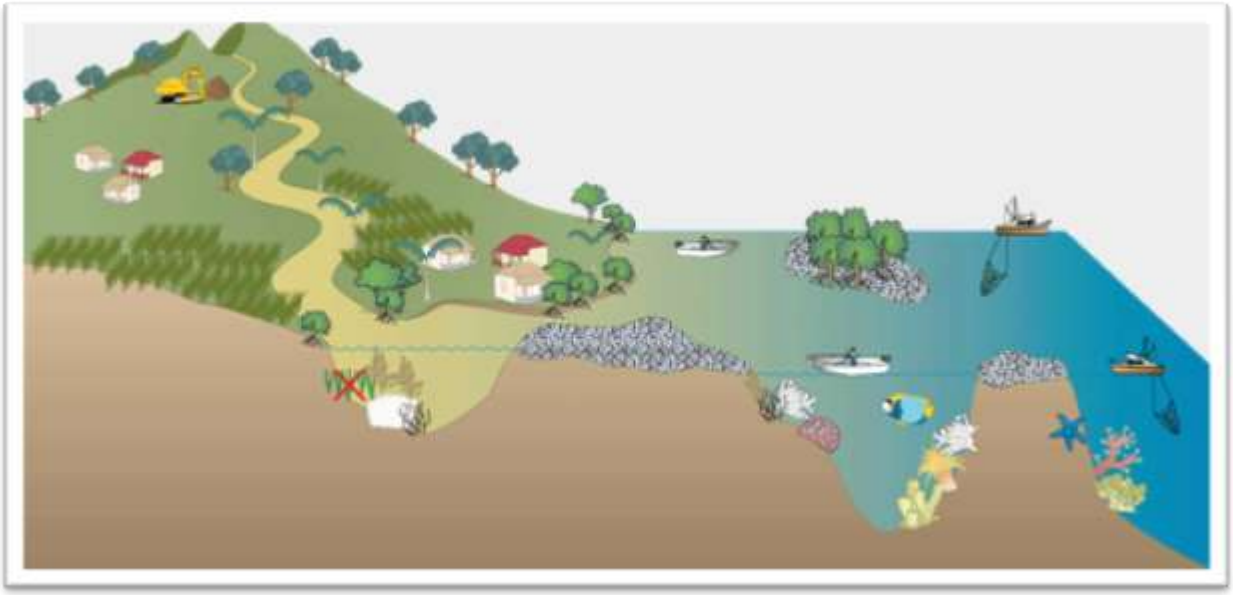

Figure 2.2. Schematic diagram depicting interruption to ecosystem connectivity due to human activity.

[4] Symbols courtesy of the Integration and Application Network (http://ian.umces.edu/symbols).

2.2 ECOSYSTEM-BASED MANAGEMENT IN KUBULAU

Ecosystem-based management in Kubulau is community-driven, and centres around a shared vision of ***'healthy people, processes and systems'***. The overarching goal of ecosystem-based management in Kubulau is 'preservation of the functional integrity of Kubulau's ecosystems, from the ridge to the reef, through community-based management'.

The following key messages have been identified for ecosystem-based management in Kubulau:

- ***Inland and coastal communities need to manage their actions and resources together.***

  Connectivity between ecosystems makes each biome susceptible to degradation from factors arising in adjacent areas. For example, the health and resilience of coral reef ecosystems may be affected by clearing and burning in coastal catchments. Cooperation between inland and coastal communities is a central feature of ecosystem-based management in Kubulau.

- ***Ridge to reef management protects habitats for all stages of life.***

  Many organisms move between habitats during phases of their life cycles. For example, key food fish species in Kubulau move between marine, estuarine and freshwater ecosystems throughout their life cycle. Preserving ecosystem connectivity and the integrity of adjacent ecosystems has been identified as a priority for ecosystem-based management in Kubulau.

- ***Public health and livelihoods depend on environmental health.***

  Ecosystem-based management enhances the long-term productivity of local ecosystems, providing a strong foundation for local livelihoods, food security and nutrition. Managing environmental threats (such as contamination of fresh water) promotes positive public health outcomes, including prevention of communicable disease.

- ***Successful ridge-to-reef management depends on broad stakeholder input.***

  The effectiveness of government interventions in natural resource management issues is often undermined by fragmentation of responsibilities and jurisdiction between government agencies. Ecosystem-based management seeks to integrate management activities across sectoral boundaries and promote synergies between agencies, partner organisations and communities. This ensures that the concerns and priorities of a broad range of stakeholders are taken into account in management decisions, at the same time improving the quality of decision-making.

- ***Healthy ecosystems are the best defence against climate change impacts to livelihoods.***

  Only intact, healthy ecosystems can provide the full range of benefits that humans want and need over long periods of time. By maintaining and restoring 'natural infrastructure' such as mangroves, coral reefs and watershed vegetation, communities in Kubulau may reduce their vulnerability to the predicted effects of climate change such as extreme weather events, storm surges, rising sea levels and changing precipitation patterns.

- ***The success of protected areas for conservation and livelihood relies on bottom-up community engagement and top-down planning.***

  Bottom-up community engagement increases awareness, understanding, acceptance and ownership of decisions, with associated benefits for monitoring, compliance and implementation. Using management planning processes that respect and reinforce the roles of traditional leaders, together with this broad community engagement, strengthens long-term prospects for community-based resource governance.

3 SITE DESCRIPTION

3.1 SITE BOUNDARIES

This management plan covers Kubulau District and the adjacent customary fishing ground (*qoliqoli*).

Kubulau District is an administrative unit (*tikina*) of Bua Province, in south west Vanua Levu. Vanua Levu is the second largest island in the Republic of Fiji (**Figure 3.1**). The seaward boundary of the *tikina* is the high water mark. The landward boundaries of the *tikina* are contiguous with the traditional boundaries of indigenous land-owning clans (*mataqali*), as recorded by the *iTaukei* Lands and Fisheries Commission. The total area of the *tikina* is 98.5 square kilometres.

The boundaries of the Kubulau *qoliqoli*, as recorded by the *iTaukei* Lands and Fisheries Commission, extend from the high water mark to the outer edge of the fringing coral reefs, and include a number of small islands, including Navatu and Namenalala (**Figure 3.2**). The total area of the *qoliqoli* is 258.4 square kilometres.

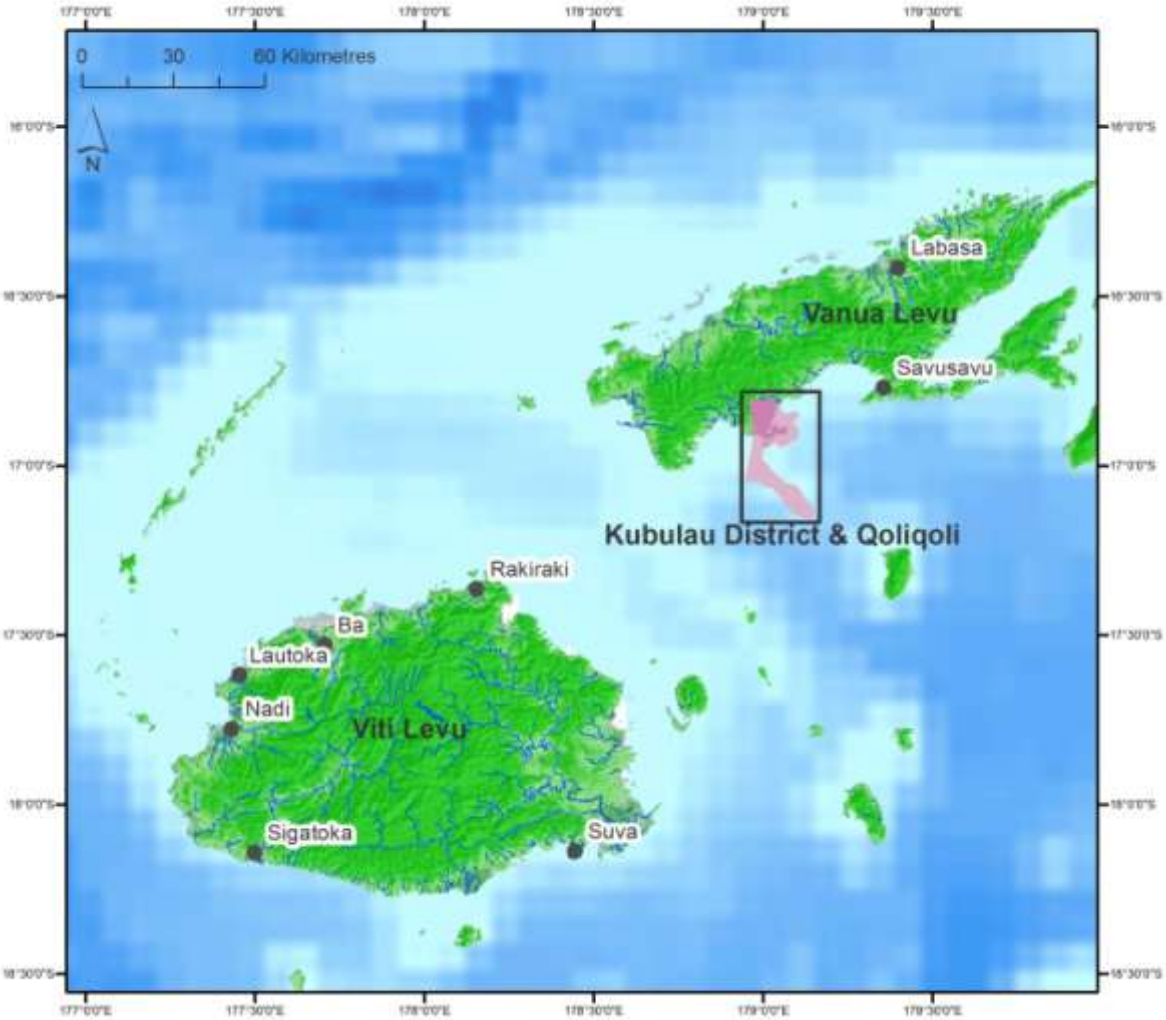

Figure 3.1. Kubulau District, Republic of Fiji.

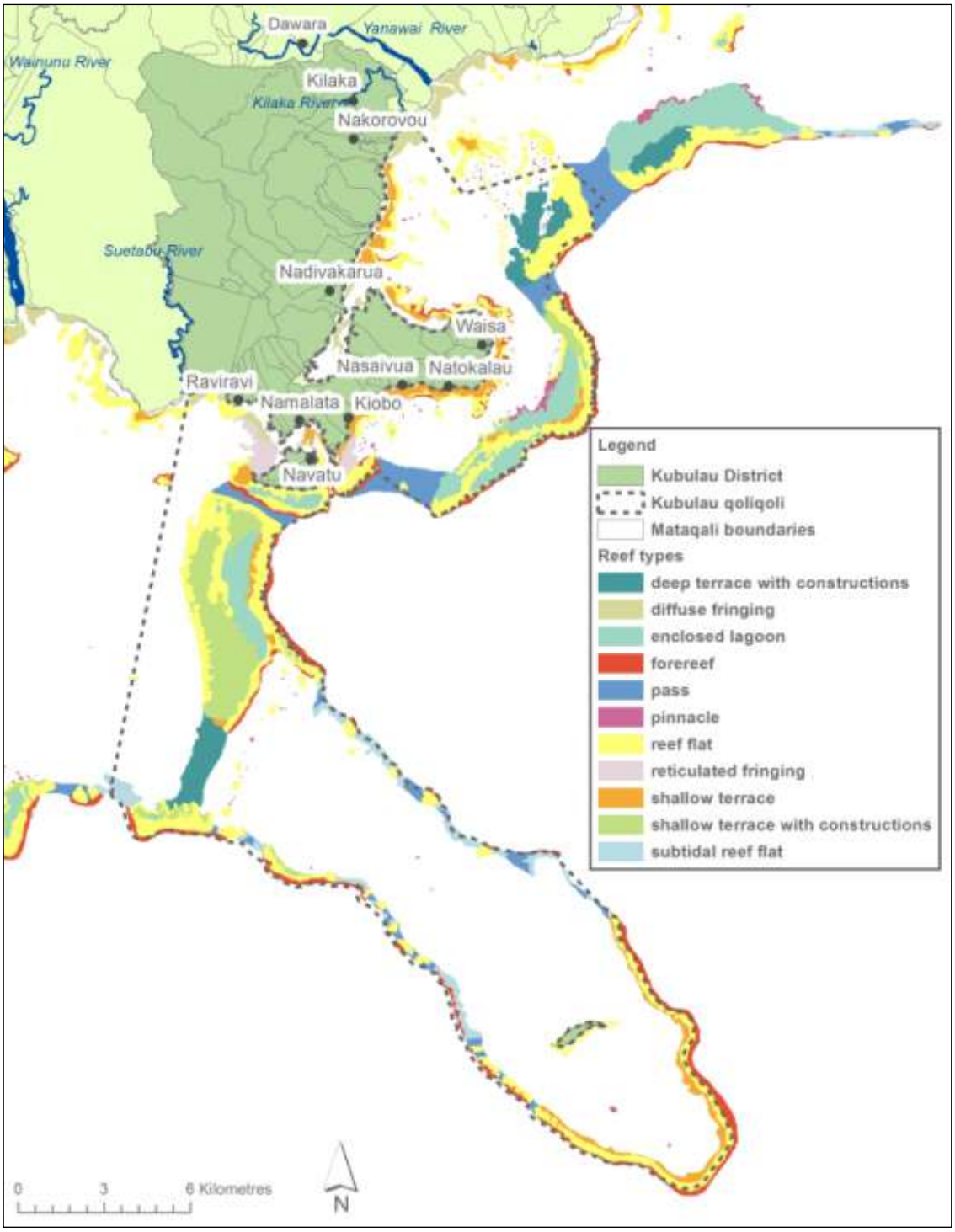

Figure 3.2. Kubulau District (*tikina*) and Customary Fishing Ground (*qoliqoli*).

3.2 DEMOGRAPHICS

The total population of Kubulau District is approximately 1,000 people. The population of the district is predominantly indigenous Fijian. There are ten villages in the district, including three inland villages (Nakorovou, Kilaka, Nadivakarua) and seven coastal villages (Waisa, Natokalau, Nasasaivua, Kiobo, Navatu, Namalata, Raviravi). Village size ranges from approximately 50 to 200 people.

Children and young adults make up a large proportion of the population, with 44% of people in the 0-19 year age range (**Figure 3.3**). The percentage of the population in each age range is as follows:[5]

Age	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89
%	23%	21%	15%	13%	11%	8%	4%	3%	2%

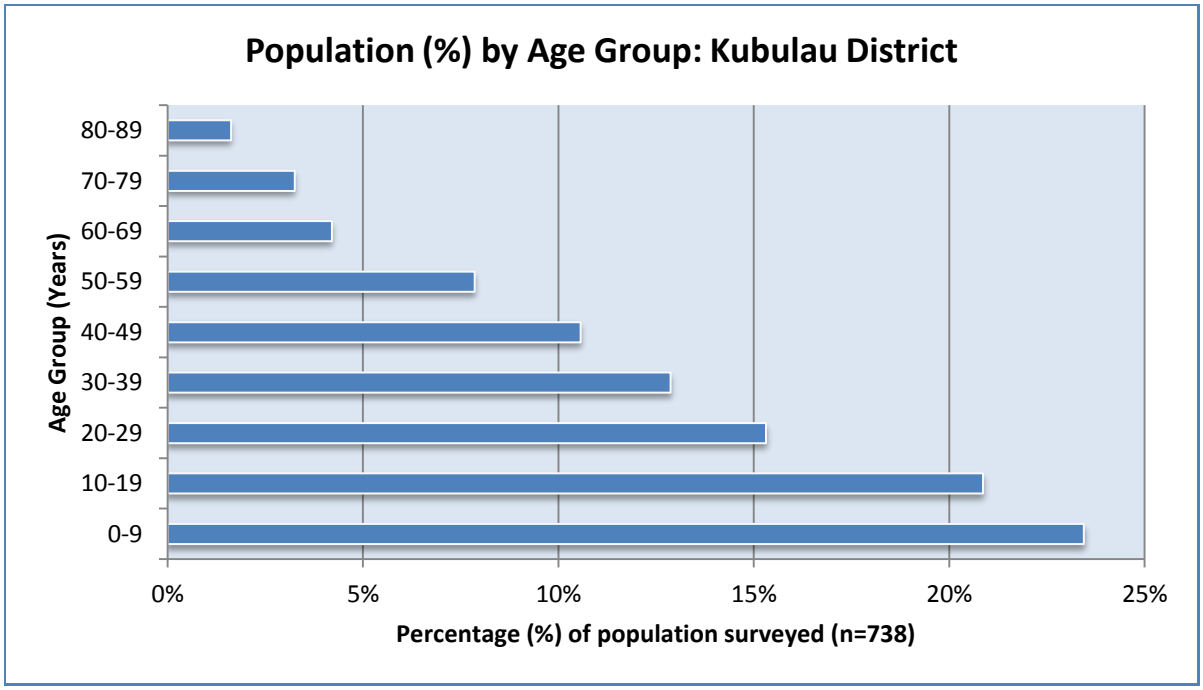

Figure 3.3. Population (%) by age group: Kubulau District, 2005.

[5] WCS (2005) *Socioeconomic Survey: Kubulau District*

3.3 RESOURCE TENURE

3.3.1 TERRESTRIAL RESOURCES

In Kubulau District, the large majority of land is *iTaukei* (native) land (9024 ha, 91.7%). This land is owned by 57 landowning clans (*mataqali*). Land ownership boundaries for each *mataqali*, as mapped by the iTaukei Lands and Fisheries Commission, are marked on **Figure 3.2**. The remaining land in Kubulau is freehold land (802 ha, 8.1%) and crown land (18 ha, 0.2%).

The *iTaukei Lands Act* recognises and maintains customary ownership of *iTaukei* lands, and provides a legal basis for traditional communal decision-making about land use and management of terrestrial resources.[6] Decisions about occupation, use and management of land are made primarily at the *mataqali* level, within traditional decision-making structures and processes.

The *iTaukei Lands Trust Act* establishes the *iTaukei* Lands Trust Board (NLTB) and allows the NLTB to enter into leases and licences on behalf of *iTaukei* landowners. Leases and licences must only be granted with the consent of the majority of landowners.

The use and management of *iTaukei*, freehold and crown land is subject to the national laws of Fiji, including legislation such as the *Forest Decree 1992* and the *Environment Management Act 2005*.

3.3.2 FRESHWATER RESOURCES

Under Fijian law, rivers and streams, and the land underneath them, belong to the government.[7] Extraction of streambed resources, such as gravel, requires approval from the Department of Lands.[8]

The *Fisheries Act* recognises subsistence fishing rights for traditional resource owners within their customary freshwater fishing grounds (*qoliqoli*).

The Minister for Fisheries may declare restricted fishing areas by publishing a notice in the government gazette. There are currently no gazetted freshwater restricted areas in Kubulau District.

3.3.3 COASTAL AND ESTUARINE RESOURCES

Coastal land above the high tide mark may be *iTaukei* land, freehold land or crown land. Estuaries and coastal waters, and land below the high tide mark, belong to the government.[9] Extraction of resources from land below the high tide mark requires approval from the Department of Lands.[10]

The *Fisheries Act* recognises subsistence fishing rights for traditional resource owners within their customary estuarine and coastal fishing grounds (*qoliqoli*), including mangrove areas. The *Fisheries Act*, as currently administered, does not recognise the traditional right of resource owners to control access to their *qoliqoli* and to establish and enforce restricted fishing areas (*tabu*).

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[6] *ITaukei Lands Act* [Cap 133], s.3.
[7] *Deed of Cession 1874*, *Rivers and Streams Act* [Cap 136], s.2.
[8] *Crown Lands Act* [Cap 132], s.10.
[9] *Deed of Cession 1874*.
[10] *Crown Lands Act* [Cap 132], s.10.

The Minister for Fisheries may declare restricted fishing areas by publishing a notice in the gazette. There are currently no gazetted estuarine or coastal restricted areas in Kubulau District.

Any person wishing to fish for 'trade or business' must obtain a fishing licence from the Department of Fisheries. Licences are only granted with the written permission of the relevant chief, and may be granted subject to conditions, including conditions prohibiting fishing in *tabu* areas.

3.3.4 MARINE RESOURCES

The *Fisheries Act* recognises and maintains subsistence fishing rights for traditional resource owners within their customary fishing ground (*qoliqoli*). The boundaries of the Kubulau *qoliqoli*, as mapped by the *iTaukei* Fisheries Commission, are marked on **Figure 3.2**.

The *Fisheries Act*, as currently administered, does not recognise the traditional right of resource owners to control access to their *qoliqoli* and to establish and enforce restricted fishing areas (*tabu*).

The Minister for Fisheries may establish a restricted fishing area ('marine reserve') by making or amending regulations and publishing them in the Government Gazette. There are currently no gazetted restricted areas within Kubulau *qoliqoli*.

Any person wishing to fish for 'trade or business' must obtain a fishing licence from the Department of Fisheries. Licences are only granted with the written permission of the relevant chief, and may be granted subject to conditions, including prohibiting fishing in *tabu* areas. In 2009, the Tui Kubulau issued letters of consent that prohibited fishing in Namena, Nasue and Namuri marine reserves.

Resource owners in Kubulau recognise the customary authority of the district Hierarchy Council (*Bose Vanua*) to make decisions about use and management of marine resources at the *qoliqoli* level, including the establishment of district marine reserves.

Decisions about additional management measures for village fishing grounds (*i kanakana*) have been made at the village level, including the establishment of village *tabu* areas.

3.4 RESOURCE USE

Income Generating Activities

Households in Kubulau are highly dependent on fishing and farming to meet their subsistence needs, and rely heavily on fishing, farming and copra harvesting to generate cash income (**Figure 3.4**).

In 2005, surveyed households reported participation in the following income generating activities:

Income generating activity	Households	Percentage
Fishing	88	62%
Copra Harvesting	122	86%
Farming	108	76%
Livestock	26	18%
Business	6	4%
Other	10	7%

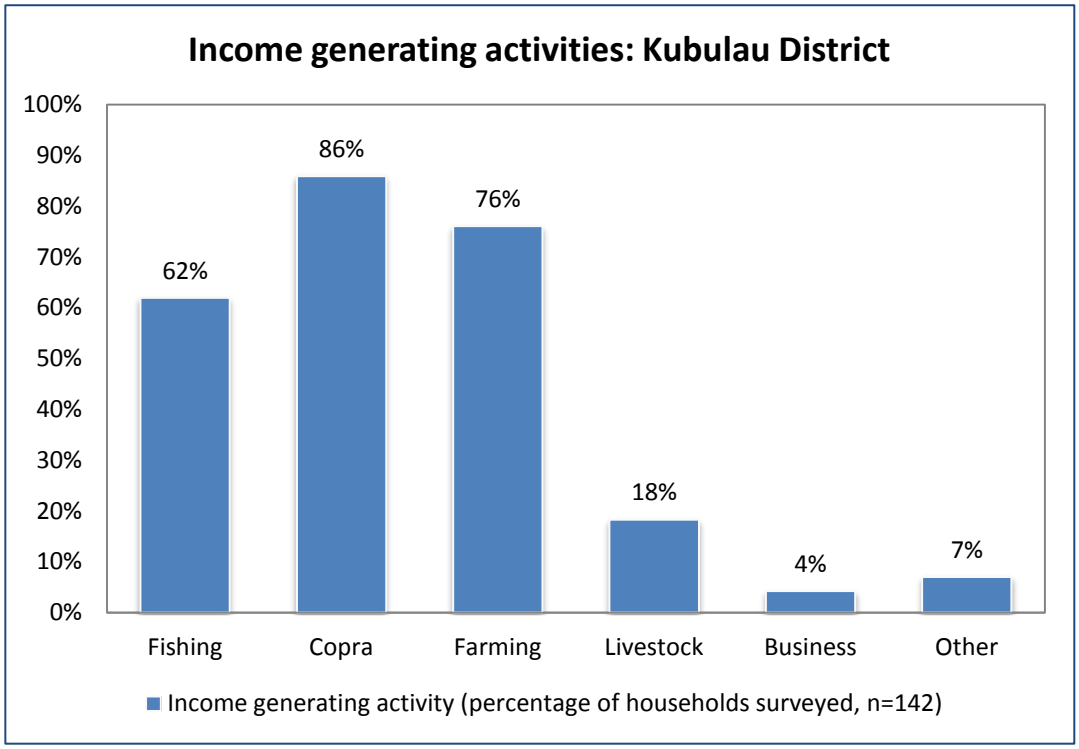


Figure 3.4. Income generating activities by household: Kubulau District, 2005.

The large majority of households in coastal villages reported fishing (84%) and copra harvesting (89%) as income generating activities. Most coastal households also farm crops (63%) as a source of income, while only three coastal households (4%) reported raising livestock for sale.

Households in inland villages are less reliant on fishing, with only half (50%) reporting fishing as an income generating activity. Most households in inland villages farm crops (95%) and harvest copra (72%), and a higher proportion (34%) of households raise livestock for sale than in coastal villages. [11]

[11] WCS (2005) *Socioeconomic Survey: Kubulau District*

Fishing Methods

The most common types of fishing gear are nets, fishing lines, spear and snorkel. Targeted fishing areas include the intertidal zone (low tide) and reefs (high tide, night time). Distribution of fishing effort varies between calm and windy days (**Figure** 3.5).

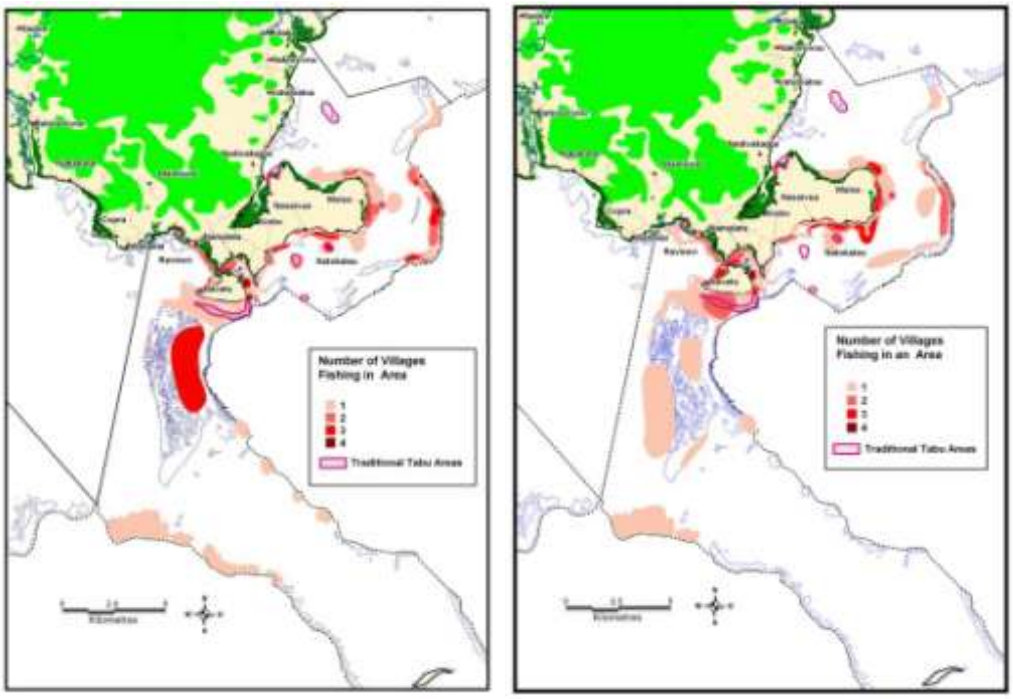


Figure 3.5. Distribution of fishing effort on calm days (left) and windy days (right).[12]

Farming Methods

The most commonly farmed crops are cassava, taro (*dalo*) and kava *(yaqona*). The most common farming implements are hand tools such as shovels, forks and cane knives. Slash and burn shifting agriculture is common, and riparian zones are considered to be desirable farming areas. The use of pesticides is common, particularly in the inland villages.

Copra Production

Copra production involves establishment and maintenance of coconut plantations, harvesting of mature coconuts and drying of coconut flesh (using the sun and/or wood fired dryers). Firewood for copra dryers is harvested locally, and includes timber from mangroves.

Other Resource Use

Local households also derive income from lease payments for commercial land use activities, including native forest logging and plantation forestry.

In the past, the district has been affected by downstream impacts of gold and copper mining, and there are currently proposals to mine for bauxite in Kubulau and adjacent districts.

For more information about land use distribution, refer to **Figure 3.6**.

[12] WCS (2005) *Socioeconomic Survey*.

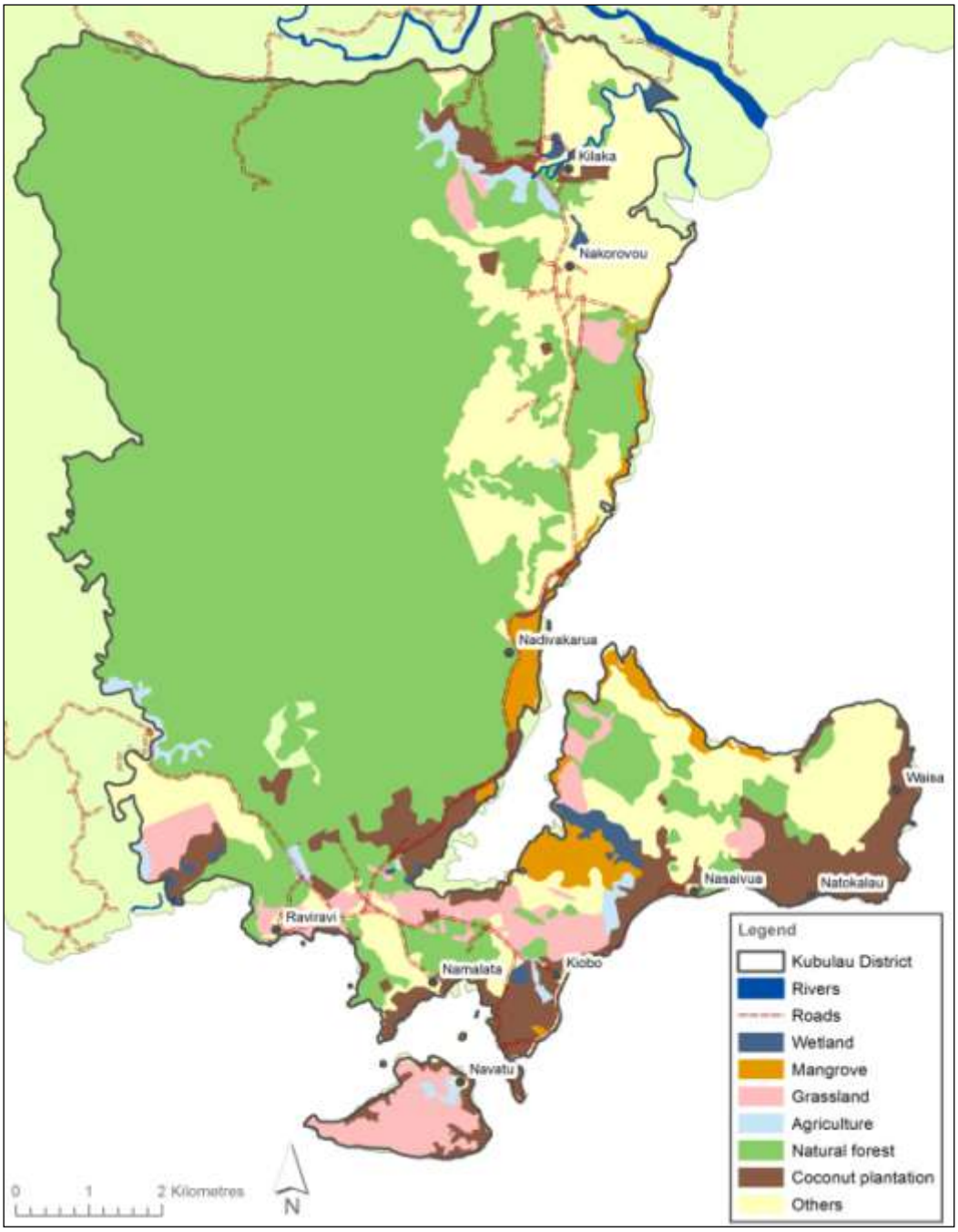


Figure 3.6. Land use distribution, Kubulau District.[13]

[13] Prepared by Wildlife Conservation Society (2007), based on GIS data provided by Department of Lands.

3.5 PROTECTED AREA BOUNDARIES

There are a total of twenty-six protected areas in Kubulau District, including twenty-four coastal and marine protected areas, two terrestrial protected areas (Kilaka Nature Reserve and Namena Island), and one proposed freshwater *tabu* area. The management rules associated with the protected areas are included in Sections 8.5, 9.5, 10.5 and 11.5.

3.5.1 TERRESTRIAL PROTECTED AREAS

There is currently one legally protected terrestrial area in Kubulau District. Namena Island has been leased by the landowning clan to Joan and Thomas Moody for a tourist resort on the condition that more than 90% of the island is managed as a strict nature reserve. The total area of the reserve is approximately 40 hectares, or 0.4% of the total land area of the district.

In 2006, draft management guidelines were prepared for the proposed Kilaka Nature Reserve.[14] The proposed nature reserve is located on land belonging to *mataqali* Nadicake-Kilaka, in the upper catchment of the Kilaka River. The area has been identified as a 'high conservation priority', due to the presence of numerous endemic species, uncommon vegetation types and old growth forest, as well as its value as an important water catchment.[15] The draft management guidelines for the proposed reserve provide for the establishment of a community-based management committee and prohibition of logging, clearing, grazing, hunting and fishing.

At the Kubulau Adaptive Management Workshop in July 2011, landowners agreed to extend the boundaries of the proposed Kilaka Nature Reserve. The total area of the proposed reserve is approximately 1225 hectares, or 12% of the total land area of the district (**Figure 3.7**). The decision to extend the reserve was partly driven by the knowledge of potential benefits for communities from community-managed forests under REDD+. The UN Reducing Emissions from Deforestation and Forest Degradation (REDD) Programme is an effort to create a financial value for the carbon stored in forests, offering incentives for developing countries to reduce emissions from forested lands and invest in low-carbon paths to sustainable development. REDD+ goes beyond deforestation and forest degradation, and includes the role of conservation, sustainable management of forests and enhancement of forest carbon stocks.

This management plan prohibits clearing, burning or farming within 30 metres of the bank of a river or stream, and in drinking water catchments. Mapping of village water sources was undertaken at the *Kubulau Management Support Workshop* in October 2011, informed by maps of water catchments (**Figure 3.7**).[16] KRMC members have decided not to pursue legal protection of their water catchments at this time, because of the significant impact this would have on their faming activities which occur within the water catchment. However, Namalata and Nadivakarua have proposed the establishment of new buffer zones of 200m radius around their water sources. Rules for these proposed buffer zones will be determined by the communities at a later date, but are expected to prohibit clearing and farming. For other villages, the water sources are somewhat more secure because they are away from agricultural areas.

[14] Wildlife Conservation Society (2006) *Draft Kilaka Nature Reserve Management Framework and Guidelines*.
[15] Keppel, G. (2005) *Summary Report on Forests of the Mataqali Nadicake Kilaka, Kubulau District, Bua, Vanua Levu*, Biology Department, University of the South Pacific. Unpublished report.
[16] Water catchment data provided by Department of Lands.

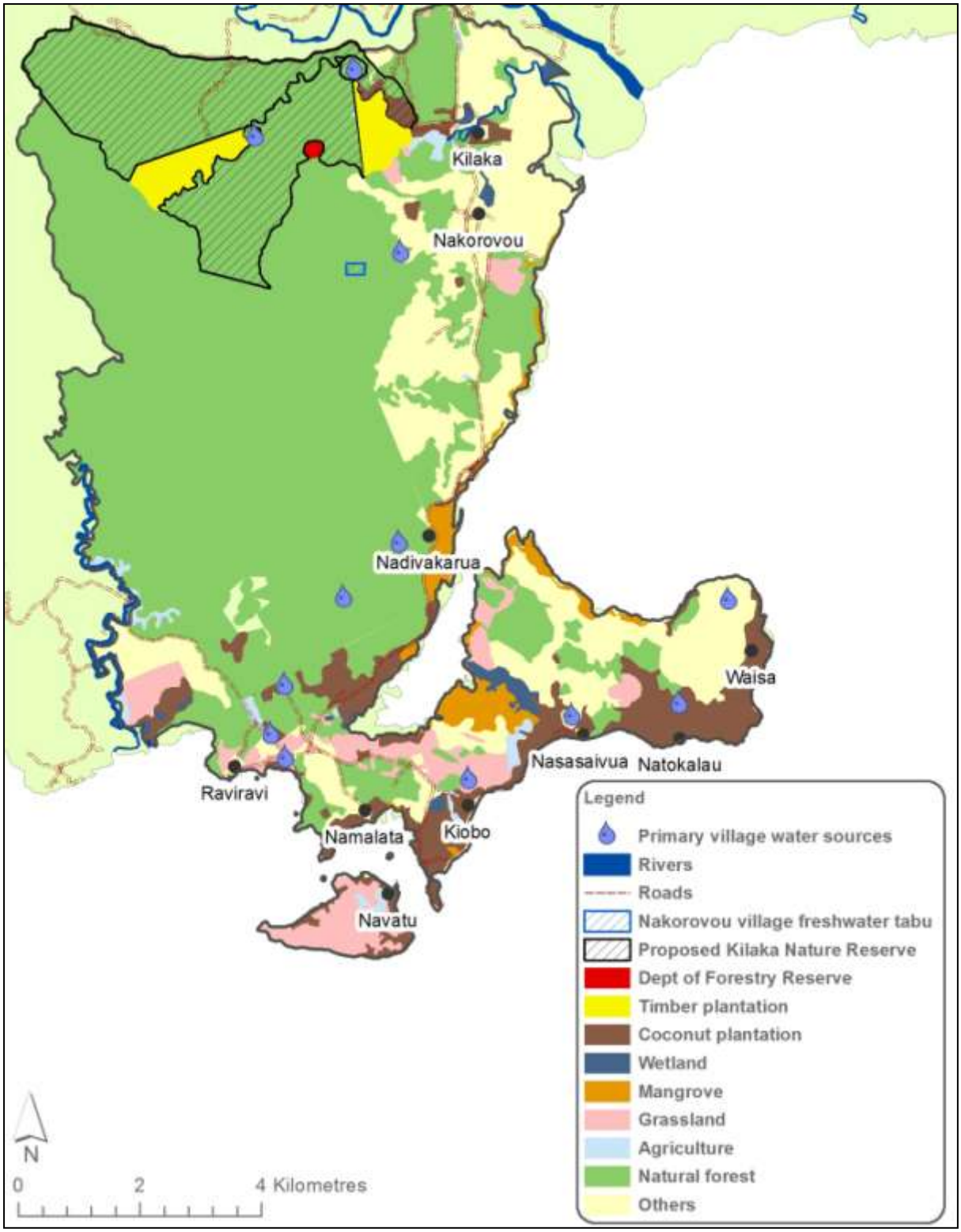


Figure 3.7. Terrestrial and freshwater protected areas and village water sources in Kubulau District, not including Namena Island, 90% of which is managed as a strict nature reserve.

3.5.2 FRESHWATER PROTECTED AREAS

At the Kubulau Adaptive Management Workshop in July 2011, Nakorovou village proposed a freshwater *tabu* area (**Figure 3.7**). Management rules applying to this *tabu* area have not yet been determined. This is currently the only freshwater protected area in Kubulau District.

3.5.3 COASTAL AND ESTUARINE PROTECTED AREAS

This management plan prohibits cutting of mangroves for commercial use throughout Kubulau. The total area of mangroves in Kubulau is about 750 hectares, or 7.5% of the land area of the district.

In addition, Kilaka, Raviravi, Namalata and Nadivakarua have declared five mangrove *tabu* areas, covering a total of 155 hectares, an area equivalent to 20.7% of the total mangrove area (**Figure 3.8**). Mangrove cutting and fishing is prohibited in these *tabu* areas. In addition, Nakorovou village has declared a mangrove gear restriction area (Rewa bota), covering about 100 hectares. The use of fine nets is prohibited in this area. Nadivakarua has declared a coastal beche-de-mer *tabu* area (approximately 27 ha) where fishing of *dario* (*Holothuria scabra*) is prohibited. A summary of the areas of these *tabu* areas and changes since the 2009 EBM plan is shown in **Table 3.1**. For information about management rules for these coastal and estuarine protected areas, refer to Section 10.5 MANAGEMENT RULES – COASTAL AND ESTUARINE HABITATS.

The use of fishing nets (except hand nets, wading nets or cast nets)[17] is prohibited by law in estuaries and within 100 metres of the mouth of any river or stream.[18]

Table 3.1. Community declared coastal reserves, Kubulau *qoliqoli*.

Protected area name	Village	Area (km^2)	Changes since 2009 EBM plan
Bagata	Kilaka	0.91	No change
Vatumakawa	Nadivakarua	0.43	Split into two tabu areas – Vatumakawa & Namoaqa. Slight changes to match reef edge in updated reef map
Namoaqa	Nadivakarua	0.26	New beche-de-mer *tabu* area
Toba Tabu	Nadivakarua	0.26	No change
Rewa Bota	Nakorovou	1.01	Slight changes to match reef edge in updated reef map changes to match updated reef boundary maps
Buiyayamo	Namalata	0.09	No change
Nasoga	Raviravi	0.08	No change
	TOTAL	**2.83**	

3.5.4 MARINE PROTECTED AREAS

[17] Refer to Appendix 2 for definitions of net types.
[18] *Fisheries Regulations*, r.7

Communities of Kubulau have declared seventeen marine protected areas, including three district marine reserves, established by the *Bose Vanua*, and fourteen village *tabu* areas, established by the ten villages of the district.

The total area covered by these three marine reserves and fourteen *tabu* areas is 117.5 square kilometres, an area equivalent to 45% of the total *qoliqoli* area (Table 3.2).

These marine protected areas were selected by resource owners based on information obtained from scientific research, socio-economic survey data and local and traditional ecological knowledge. The boundaries and management measures for these marine protected areas have been refined over time in response to biological monitoring data and community feedback. For information about management rules for these marine protected areas, refer to Section 11.5 MANAGEMENT RULES – MARINE HABITATS. There are currently no gazetted marine protected areas in the Kubulau *qoliqoli*.

Table 3.2. Community declared marine reserves, Kubulau *qoliqoli* [19]

Protected area name	Village	Area (km^2)	Changes since 2009 management plan
Bovici	Kilaka	0.05	No change
Yamotu ni Oqo	Kilaka	0.15	No change
Yamotu ni Kake	Kilaka	0.15	No change
Yamotu Lase kei Vutia	Nakorovou	0.73	Two patch reefs joined, and *tabu* extended to three separate patch reefs nearby
Tua ni nuku & Vatuveisaqai	Waisa	0.97	Significantly extended and shifted further north
Cakau Vusoni	Natokalau	0.26	Slight changes to match reef edge in updated reef map
Yamotu ni Walu	Natokalau	1.28	Significantly extended
Cakau Lekaleka	Nasasaivua	0.39	Slight changes to match reef edge in updated reef map
'New *tabu*'	Nasasaivua	0.63	New *tabu* area
Cakau Naitaga	Kiobo	2.07	Slight changes to match reef edge in updated reef map
Senibuco	Kiobo	0.38	New *tabu* area
Nakali	Navatu	1.25	Slight changes to match reef edge in updated reef map
Dromuninuku	Navatu	1.06	New beche-de-mer *tabu* area
Cakau Dranive	Raviravi	0.19	New *tabu* area
Namena	District	88.01	500m buffer added
Nasue	District	11.39	500m buffer added on offshore side, and 100m buffer added on inshore side
Namuri	District	8.29	500m buffer added
	TOTAL	**117.51**	

[19] Community Consultation on Reserve Conditions within Kubulau *qoliqoli*, 2005. Modified at Kubulau Management Planning Workshop, February 2009.

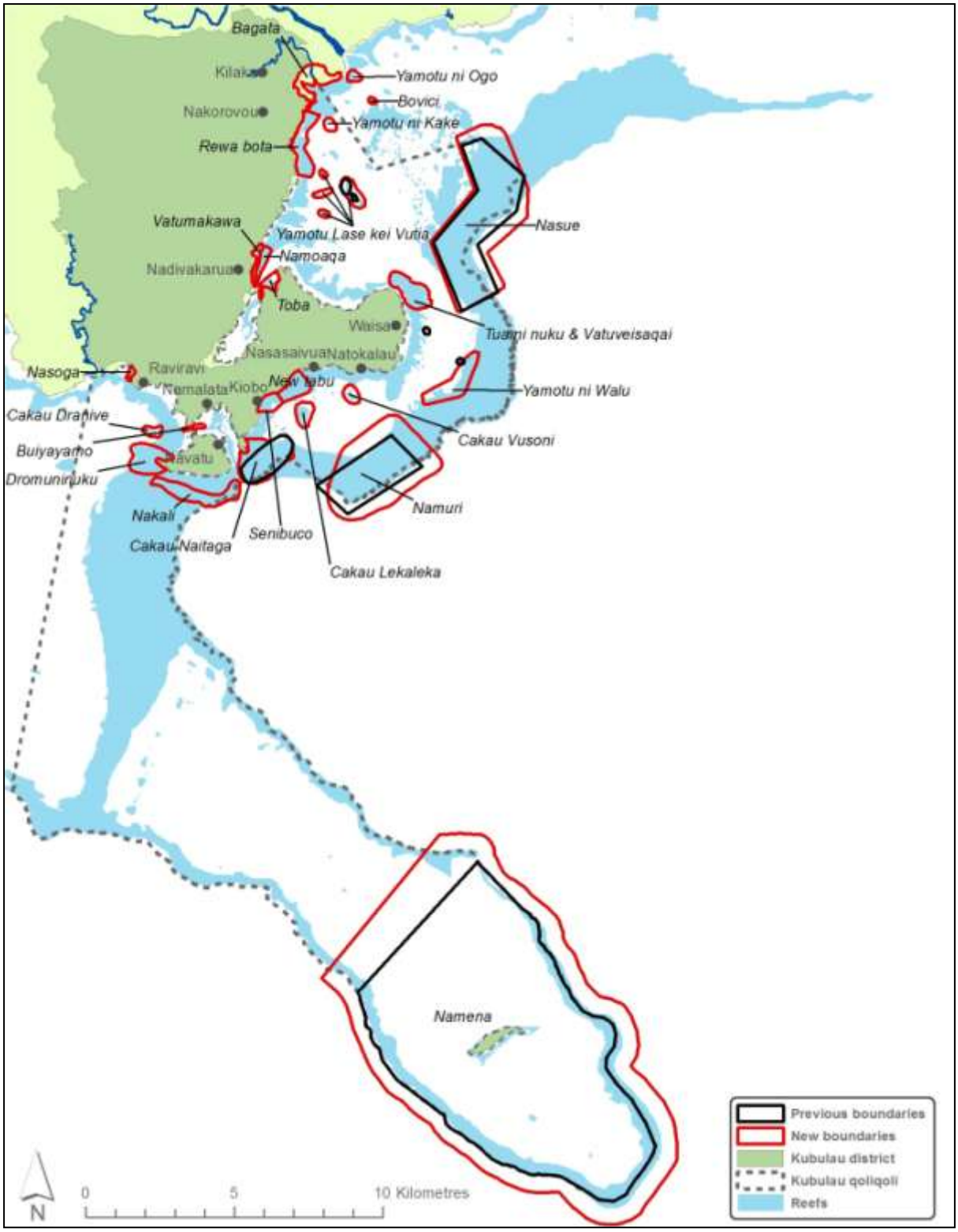


Figure 3.8. Coastal and marine protected areas, Kubulau District.

LEGAL MECHANISMS FOR ESTABLISHING PROTECTED AREAS

1.0. LEGAL PROCESS FOR ESTABLISHING MARINE PROTECTED AREAS

There are two mechanisms available for legally protecting marine areas under the *Fisheries Act*:

1. restricted areas
2. fishing licence conditions.

The key features of these mechanisms, and the process for using them, are described below.

1.1. Restricted Areas

Key Features

The Minister for Fisheries can declare 'restricted areas', commonly known as marine reserves. Fishing in a restricted area without a permit is an offence. The penalty for fishing in a restricted area with a permit is $500 and/or three months imprisonment.

Process

The Minister may create a restricted area by either (a) creating regulations specifically for the new restricted area; or (b) amending the existing list of restricted areas in the *Fisheries Regulations*.

In either case, the Minister must take the proposed regulations (or amendment) to Cabinet for approval. The members of Cabinet are the Prime Minister and Ministers. Cabinet meets regularly to make decisions on matters of national policy. If Cabinet approves the regulations (or amendment) the Minister will then publish the regulations in the Government Gazette.

Before the Cabinet meeting, an officer of the Department of Fisheries will prepare a written submission to be presented to Cabinet by the Minister. The Cabinet submission will include a brief description of the proposal, background, discussion and recommendations.

If resource owners want the Minister for Fisheries to declare a restricted area in their *qoliqoli*, the *turaga ni yavusa* should discuss the proposal with the Fisheries Department, and then submit a written proposal to the Minister, highlighting the conservation significance of the area, and providing evidence that establishment of the restricted area is supported by the *vanua*.

Only the Minister for Fisheries may remove or modify a restricted area. To remove or modify a restricted area, the Minister must revoke or amend the relevant regulations, following the same process for creating a restricted area.

1.2. Fishing Licence Conditions

Key Features

Any person who wants to fish for 'trade or business' must apply for a fishing licence (unless they are only fishing with a line from the shore or with a spear).

Fishing licences can include legally binding conditions. Licence conditions can be used to prohibit fishing in particular areas, including *tabu* areas.

Breaching licence conditions is an offence. The penalty for breaching a licence condition is $500 and/or three months imprisonment.

Process

Fishing licences are issued by Fisheries Department licensing officers. Before issuing a fishing licence, the Fisheries Department will request a letter of consent from the *turaga ni yavusa*.

The *turaga ni yavusa* can use the letter of consent to ensure that *tabu* areas are included in the licence conditions. It is important to clearly define the rules of the *tabu* area(s) in the letter of consent, and attach a map that clearly and accurately illustrates the *tabu* boundaries.

Licences expire on 31 December each year. This means that a new letter of consent will be required each year, and provides an opportunity to modify the rules or boundaries of the *tabu* area(s).

2.0. LEGAL PROCESS FOR ESTABLISHING TERRESTRIAL PROTECTED AREAS

There are a number of mechanisms available for legally protecting terrestrial areas, including:

1. nature reserves
2. protected catchment areas
3. conservation leases.

The key features of these mechanisms, and the process for using them, are described below.

2.1. Nature Reserves

Key Features

The Minister for Forests may declare nature reserves. It is an offence to log, clear, burn, build, plant, graze, hunt or fish in a nature reserve (maximum penalty: $10,000 fine or 2 years imprisonment).

Logging licences must not be issued in a declared nature reserve. Mining leases must not be issued in a declared nature reserve without the approval of the Conservator for Forests.

Process

The Minister for Forests may only declare a nature reserve on the recommendation of the Forestry Board. The Forestry Board is an advisory board, chaired by the Conservator for Forests. In the case of *iTaukei* land, the Minister must also obtain the consent of landowners and the iTaukei Land Trust Board (TLTB) before establishing a nature reserve.

If landowners want the Minister to declare a nature reserve on their land, the *turaga ni mataqali* should discuss the proposal with the NLTB and the Forest Department, and then prepare a written proposal to the Conservator for Forests, highlighting the conservation significance of the area, and providing evidence of support from NLTB and the *mataqali*.

Only the Minister for Forests may remove or modify a nature reserve. The Minister may only remove or modify a nature reserve on the recommendation of the Forestry Board.

However, on a practical level the Forestry Board has stated that they have no capacity to support the further establishment of Nature Reserves at this time, and therefore cannot accept any new reserves until further notice.

2.2. Protected Catchment Areas

Key Features

The Minister for Water may declare any area of land or water to be a water supply catchment area. It is an offence to commit any act which causes pollution of water within a declared catchment area (maximum penalty: $100).

Logging licences must not be issued in a declared catchment area. Mining leases must not be issued in a declared catchment area without the approval of the Commissioner for Water Supply.

Process

The Minister must publish notice of his/her intention to declare a protected catchment area in the Gazette. The notice must describe the proposed catchment area, and allow at least two months for any owner, lessee or licensee of the area to object in writing to the proposed declaration. The Minister must consider any such objections before making a decision about declaration of the area.

If landowners want the Minister to declare a water supply catchment area on their land, the *turaga ni mataqali* should discuss the proposal with NLTB and the Department of Water, and then prepare a written proposal to the Minister, highlighting the conservation significance of the area, and providing evidence of support from NLTB and the *mataqali*. This written proposal is required to include a full survey of the water catchment which can often be prohibitively expensive for community-led conservation projects.

Only the Minister for Water may remove a declared catchment area.

2.3. Conservation Leases

Key Features

The iTaukei Land Trust Board (TLTB) may issue leases over *iTaukei* land. Since development leases (for example, for logging or tourism development) cannot be issued over land that is already leased, leases can be used for conservation purposes if there is a lessee who is willing to pay to conserve a particular area (for example, Moody's Resort on Namenalala Island).

Process

The terms and conditions of *iTaukei* land leases are negotiated by TLTB on behalf of landowners. The consent of more than 50% of the relevant *mataqali* is required before TLTB will issue a lease. Lease payments are negotiated by NLTB based on standard payment criteria.

If landowners have identified a lessee who is willing to enter into a conservation lease over part of their land, the *turaga ni mataqali* and the lessee should discuss the proposal with TLTB, highlighting the conservation significance of the area, and providing evidence of support from the *mataqali.*

If the lessee fails to make lease payments, or breaches the conditions of the lease, TLTB may terminate the lease.

4 MANAGEMENT INSTITUTIONS

4.1 KUBULAU HIERARCHY COUNCIL

The Kubulau Hierarchy Council (*Bose Vanua*) consists of the paramount chief (*Tui Kubulau*) and clan chiefs (*turaga ni yavusa*) of Kubulau.

The communities of Kubulau recognise the traditional authority of the *Bose Vanua* to make decisions in relation to a wide range of matters affecting community life, including the use and management of natural resources.

The *Bose Vanua* has formally endorsed this management plan, and entrusted the Kubulau Resource Management Committee with primary responsibility for its implementation.

4.2 KUBULAU RESOURCE MANAGEMENT COMMITTEE

The Kubulau Resource Management Committee (KRMC) consists of one representative from each village, nominated by their village and appointed by the *Bose Vanua*.

KRMC representatives may be appointed for a three year term, with the option of reappointment for a further three years. The position of chair of KRMC is a six year term. All terms begin from 2009, when the *Bose Vanua* approved the first *Kubulau Ecosystem-based Management Plan*. No representative may serve on the committee for more than six years.

The purpose of the committee is to promote and support sustainable management of natural resources in Kubulau District. The functions of the committee are:

- to coordinate **implementation** of the management activities identified in this plan
- to **raise awareness** of the management rules and activities set out in this management plan
- to coordinate **enforcement** of the management rules set out in this management plan
- to assess proposed **resource use and development activities**, to ensure they are consistent with this management plan, national laws and ecosystem-based management principles
- to provide **information and advice** on resource management and alternative livelihoods
- to **organise training** on sustainable resource management and alternative livelihoods
- to **liaise with stakeholders**, including resource users, conservation partners and donors
- to transparently **manage and distribute funds** for resource management and other activities
- to **monitor and report** to resource owners and stakeholders on implementation of this plan.

The KRMC will meet with the stakeholder consultative group (below) four times per year, and may hold additional meetings as necessary. Two-thirds of members must be present to make decisions. The KRMC Chair reports to the *Bose Vanua*, and attends *Bose Vanua* meetings as an observer.

4.2.1 KRMC SUB-COMMITTEES

The following KRMC sub-committees were established on 7 May 2009 to increase community involvement in resource management activities, and to provide a focus for management activities:

- Resource Management
- Science
- Community Development and Finance
- Education
- Communication.[20]

The functions of each sub-committee are summarised in **Table 4.1** below.

Each sub-committee is chaired by a member of the KRMC.

KRMC members will discuss the formation of the sub-committees in a village meeting in each village, and invite community members to express an interest in joining a sub-committee. The members of each sub-committee will be selected and appointed by the chair of that sub-committee, and should include at least two community members.

Sub-committee members may be appointed for a three year term, with the option of reappointment for a further three years. No person may serve on the same sub-committee for more than six years.

Each sub-committee meets as necessary, and is required to report regularly to the KRMC.

4.2.2 KRMC STAKEHOLDER CONSULTATIVE GROUP

The stakeholder consultative group includes government agencies, non-government organisations and the private sector. KRMC meets with the stakeholder consultative group four times per year to discuss resource management issues.

Members of the stakeholder group support sustainable resource management in Kubulau by:

- undertaking scientific and socio-economic research
- providing scientific and technical information and advice
- providing training and capacity building support
- liaising with donors and assisting with fundraising
- monitoring and reporting poaching in marine reserves

[20] KRMC Consultation Meeting, Raviravi, 7 May 2009.

- raising awareness of KRMC's management achievements
- relaying concerns and accomplishments of community to government.

The roles of each external stakeholder are described briefly below.

Table 4.1. KRMC sub-committee functions.

KRMC SUB-COMMITTEE FUNCTIONS
RESOURCE MANAGEMENT
Maintaining moorings Coordinating patrols and enforcement Managing surveillance boat (coordinating trips, fuel budgeting) Collecting infringement data Preparing annual reports
SCIENCE AND RESEARCH
FLMMA community monitoring (with Greenforce) Collecting data (CPUE, mangroves, climate change) Preparing annual reports Providing of advice and support to fish wardens Making recommendations on fishing licenses, research and other policies
COMMUNITY DEVELOPMENT AND FINANCE
Coordinating sustainable financing initiatives Coordinating micro-finance program Supporting community development initiatives Supporting community capacity building Preparing annual reports Fundraising Distributing benefits from reserve user fees and village visits
EDUCATION
Screening scholarship applications Distributing scholarships Monitoring student performance Preparing yearly reports
COMMUNICATION
Interacting with tourists and tour operators Developing communication protocols Coordinating village visits Implementing awareness programs Liaising with other organisations on awareness package Gathering information on village stories for EBM newsletter Marketing and promotion Establishing and maintaining website

4.3 KUBULAU BUSINESS DEVELOPMENT COMMITTEE

The Kubulau Business Development Committee (KBDC) is a committee of Kubulau people in Suva, appointed by the *Bose Vanua*. KBDC consists of two representatives from each village. Representatives are appointed for a five year term, with the option of reappointment for a further five years by the *Bose Vanua* if required. No representative may serve on the committee for more than 10 years.

The purpose of the committee is to assist the existing KRMC set up new development activity and to identify improvements to current revenue generating activity. The functions of the committee are:

- to improve and sustain existing revenue from Namena MPA
- to look at new means of Business Development in Kubulau
- to assist KRMC with a business strategy for any development
- to work and liaise with NGOs operating in Kubulau
- to consult with the *Bose Vanua* for strategic decision-making

KBDC meets every month, meets with the KRMC four times per year, and may hold additional meetings as necessary. A minimum of 10 members must be present to make decisions. The KBDC Chair reports to the *Bose Vanua*, and attends *Bose Vanua* meetings as an observer.

5 EXTERNAL STAKEHOLDERS

5.1 GOVERNMENT AGENCIES

Government agencies with functions relevant to the use, conservation and management of land and natural resources in Kubulau District include:

5.1.1 DEPARTMENT OF FISHERIES

The Department of Fisheries is responsible for promoting the sustainable use and management of fisheries resources. The department bears statutory responsibility for administering and enforcing the *Fisheries Act*, including issuing fishing licences, declaring restricted fishing areas and responding to illegal fishing activities. The department also provides fisheries extension and training services.

5.1.2 DEPARTMENT OF FORESTRY

The Department of Forestry is responsible for promoting the sustainable use and management of forest resources. The department bears statutory responsibility for administering and enforcing the *Forest Decree*, including issuing logging licences, declaring forest reserves and responding to illegal logging activities. The department also provides forestry extension and training services.

5.1.3 DEPARTMENT OF AGRICULTURE

The Department of Agriculture seeks to promote a productive and sustainable agricultural sector. The department provides extension services and advice in relation to farm management, soil and water conservation, sustainable farming methods, alternative livelihoods and rural microfinance.

5.1.4 DEPARTMENT OF ENVIRONMENT

The Department of Environment is responsible for promoting environmental protection and sustainable natural resource use. The department is responsible for administering and enforcing the *Environment Management Act 2005*, including provisions dealing with environmental impact assessment of development proposals (e.g. tourist resorts, forestry, mining) and pollution control. The department is also responsible for formulation and implementation of national environmental policies, including the National Biodiversity Strategy and Action Plan and Climate Change Policy.

5.1.5 DEPARTMENT OF TOURISM

The Department of Tourism is responsible for promoting tourism development, including sustainable tourism in rural areas. The department provides advice and extension services for individuals and communities interested in developing local tourism enterprises, and provides marketing support for existing tourism enterprises.

5.1.6 DEPARTMENT OF HEALTH

The Department of Health is responsible for delivery of medical care (including rural health services), and public health programs (including disease control, health promotion and environmental health). The department seeks to improve environmental health by monitoring pollution and promoting safe

water supply and sanitation (including rural toilet upgrading). The department, together with local authorities, is responsible for administering and enforcing the *Public Health Act* [Cap 111].

5.1.7 NATIONAL TRUST OF FIJI

The National Trust of Fiji is responsible for promoting and protecting natural and cultural heritage throughout Fiji. The trust manages nine natural and cultural heritage sites (e.g. Waisali Forest Park, Yadua Taba Iguana Sanctuary) and supports community -based conservation projects in five sites (e.g. Bouma Heritage Park, Koroyanitu Heritage Park). The trust works with local communities to promote heritage protection, nature conservation and sustainable tourism initiatives.

5.1.8 ITAUKEI LANDS AND FISHERIES COMMISSION

The iTaukei Lands and Fisheries Commission was established to register ownership of *iTaukei* lands and customary fishing grounds. The commission is empowered under the *iTaukei Lands Act* (formerly *Native Lands Act)* and *Fisheries Act* to resolve disputes in relation to *iTaukei* land and fishing rights, and is the custodian of the *iTaukei* land register and the register of customary fishing rights.

5.1.9 ITAUKEI AFFAIRS BOARD

The *iTaukei* Affairs Board was established by the *iTaukei Affairs Act* and is responsible for the aspirations of *iTaukei* (indigenous Fijians) and acts as a repository for information pertaining to their good governance and wellbeing. The board develops, implements and monitors policies and programs to ensure the good governance and well being of the *iTaukei*.

5.1.10 ITAUKEI LANDS TRUST BOARD

The iTaukei Lands Trust Board (TLTB, formerly Native Lands Trust Board) is empowered to grant leases over *iTaukei* land under the *iTaukei Lands Trust Act*. The TLTB must exercise its powers for the benefit of the landowners, and may issue *iTaukei* land leases subject to conditions. TLTB is responsible for ensuring compliance with lease conditions, and may cancel any land lease if the conditions of the lease are breached.

5.1.11 POLICE FORCE

The police are responsible for maintaining law and order, preserving the peace, protecting life and property, preventing and detecting crime, and enforcing all laws and regulations with which they are directly charged. Police have a general duty to prevent the commission of any offence,[21] and are specifically empowered to enforce the *Fisheries Act*[22] and the *Forest Decree*.[23] Official police force policy encourages the reporting of offences by members of the public. The nearest police stations to Kubulau are located in Nabouwalu and Savusavu.

5.1.12 NATIONAL DISASTER MANAGEMENT OFFICE

[21] *Criminal Procedure Code*, s.51.
[22] *Fisheries Act,* s.7, Power of inspection and detention.
[23] *Forest Decree,* ss.34-36, Power of inspection, Power of arrest, Power of seizure.

The National Disaster Management Office (NDMO) was established as the coordinating centre of the Fiji Government in times of national disasters. The NDMO operates under the *National Disaster Management Act*. It coordinates the national management of disaster activities through the Ministry of Provincial Development's organisational structures at national, divisional, provincial or district levels as well as at local level with communities.

5.2 NON-GOVERNMENT ORGANISATIONS

5.2.1 WILDLIFE CONSERVATION SOCIETY

The Wildlife Conservation Society (WCS) is committed to the conservation of wild animals and wild places around the world. The WCS approach emphasises scientific research, capacity-building, strong partnerships and local engagement. The WCS South Pacific Program works closely with communities in Kubulau District to promote and support ecosystem-based management, by conducting scientific and social research and facilitating community-based management planning processes.

5.2.2 CORAL REEF ALLIANCE

The Coral Reef Alliance (CORAL) unites and empowers communities to save coral reefs. It provides tools, education, and inspiration to residents of coral reef destinations to support local projects that benefit both reefs and people. CORAL works with the villages of Kubulau to support well managed marine protected areas, reduce local reef threats, raise community awareness, promote responsible tourism, and support financially sustainable businesses. Originally founded in 1994 to galvanize the dive community for conservation, CORAL is the only international non-profit organization that works exclusively to protect our planet's coral reefs.

5.2.3 FIJI LOCALLY MANAGED MARINE AREA NETWORK

The Fiji Locally Managed Marine Area (FLMMA) Network brings together local communities, academic institutions, non-government organisations and government agencies with a common interest in community-based management of marine resources. The network provides a mechanism for community conservation practitioners to exchange knowledge, skills, experiences and monitoring data. The FLMMA secretariat is currently hosted by the Department of Fisheries.

5.2.4 PARTNERS IN COMMUNITY DEVELOPMENT FIJI

Partners in Community Development Fiji (PCDF) works in partnership with local communities to promote equitable and sustainable livelihoods. PCDF's work encompasses health and community awareness, sustainable management of marine and forest resources, small-business development and good governance. PCDF has a skilled group of community outreach workers and technical experts who utilise participatory tools in their community work.

5.2.5 GREENFORCE

Greenforce is an international volunteer organisation that works with local communities in Kubulau, primarily by undertaking marine surveys of coral reefs.

5.2.6 NATURE FIJI-MAREQETI VITI

NatureFiji-MareqetiViti is Fiji's only domestic NGO working solely for the conservation and sustainable management of Fiji's unique natural heritage. In 2010 NatureFiji-MareqetiViti ran an awareness campaign on the Fiji Forest Policy (focussing on the concept of Permanent Forest Estates) across all the *mataqali* in Vanua Levu who own a significant tract of native forest. This work will continue in the future, with pilot sites for establishing Permanent Forest Estates in Vanua Levu and Viti Levu, although it is not yet know whether these pilot sites will fall within Kubulau District.

5.3 PRIVATE SECTOR

Dive operators have played an active role in promoting protection of the Namena Marine Reserve, and provide funding for scholarships and reserve management through the reserve user fee system.

Dive operators active in the Kubulau area include: Moody's Namena Resort, Jean-Michel Cousteau Fiji Islands Resort, Nai'a, Tui Tai Expeditions, Namale Resort, Koro Sun Dive, Sere ni Wai and Fiji Aggressor. These dive operators have cooperated with the Coral Reef Alliance (CORAL) and resource owners to develop a voluntary code of conduct for dive operations in Namena Marine Reserve (**APPENDIX 4 – NAMENA MARINE RESERVE RECREATIONAL USE GUIDELINES**).

Moody's Namena Resort actively assists with monitoring of unauthorised fishing activity in the marine reserve and also manages the Namena Island forest reserve.

In addition to dive operators, the logging company Valebasoga Tropikboards Limited operates in Kubulau, near Nadivakarua village; Fiji Pine was active in the area a few years ago, establishing pine plantations, but there has been no more planting recently.

6 MANAGEMENT ROLES AND PROCESSES

6.1 PREPARATION OF THE MANAGEMENT PLAN

The management plan was originally prepared on behalf of the Kubulau Resource Management Committee in 2009, based on community and stakeholder consultation undertaken over the course of a number of years. In particular, the 2009 management plan reflected the outcomes of the *Kubulau Ecosystem-Based Management Planning Workshop* (Namalata, 25-27 February 2009) and subsequent consultations with community, civil society, government and private sector stakeholders. This updated version of the management plan has applied the principles of adaptive management, and reflects the outcomes of the *Kubulau Adaptive Management Workshop* (Nakorovou, 27-28 July 2011) and the *Kubulau Management Support Workshop* (Kilaka Village, 12-14 October 2011).

6.1.1 MANAGEMENT RULES

This management plan includes **management rules** for terrestrial, freshwater, coastal, estuarine and marine ecosystems. These management rules are a synthesis of community rules and national laws.

The community rules were proposed by village representatives during planning and consultation meetings, and have been endorsed by the Kubulau Resource Management Committee (KRMC) and the Kubulau Hierarchy Council (*Bose Vanua*). These community rules are not legally enforceable, but represent a shared commitment to sustainable management of natural resources in Kubulau.

The national laws were passed by parliament, and are enforceable by government, police and the courts. Key legislation included in the management rules include the *Fisheries Act, Forest Decree, Environment Management Act* and *Endangered and Protected Species Act*.

6.1.2 MANAGEMENT ACTIVITIES

This management plan also includes **management activities** for terrestrial, freshwater, coastal, estuarine and marine ecosystems. These management activities were identified by village representatives during planning and consultation meetings and have been endorsed by the KRMC and the *Bose Vanua*. The stakeholder(s) responsible for implementing each activity are identified in the management activity tables.

6.2 IMPLEMENTATION OF THE MANAGEMENT PLAN

The Kubulau Resource Management Committee bears overall responsibility for implementation of this management plan. The committee is accountable to the Kubulau Hierarchy Council (*Bose Vanua*) for timely and effective implementation of the plan, in collaboration with local communities (*vanua*), village leaders, civil society partners, government agencies and the private sector. The Kubulau Business Development Committee also has a role in the amendment and implementation of this management plan, as shown in **Figure 6.1**.

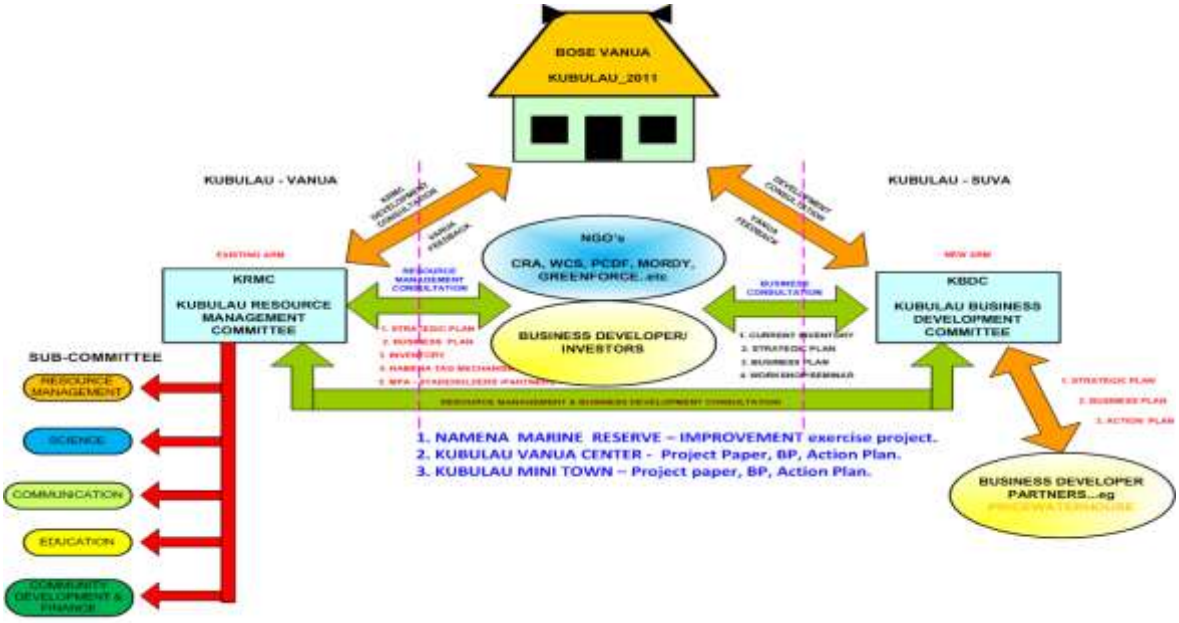


Figure 6.1. The relationships between Kubulau Resource Management Committee, Kubulau Business Development Committee and *Bose Vanua*.

6.2.1 MANAGEMENT RULES

The Kubulau Resource Management Committee is responsible for raising awareness of the management rules set out in this plan, monitoring compliance with the rules and taking action to ensure enforcement of the rules.

The management rules provide for certain decisions to be made by persons other than the KRMC. For example, certain village *tabu* areas may be opened by the relevant *turaga-ni-yavusa*. In such cases, the decision must be communicated to the KRMC as soon as practicable, to ensure that the KRMC is able to effectively monitor overall implementation of the management plan.

6.2.2 MANAGEMENT ACTIVITIES

The Kubulau Resource Management Committee is responsible for liaising with the responsible stakeholder(s) identified for each management activity to ensure that the activity is completed in a timely and effective manner.

6.3 AMENDMENT OF THE MANAGEMENT PLAN

The process for amending this management plan varies depending on the nature of the amendment.

6.3.1 DISTRICT-LEVEL MANAGEMENT RULES

For amendments to **district-level management rules** – that is, rules that apply throughout the district, or to designated district reserves (including Namena, Nasue and Namuri marine reserves):

1. The proposed amendment must be **submitted in writing** to the KRMC.

2. The KRMC Chair must **present** the proposed amendment to the *Bose Vanua*.

3. The *Bose Vanua* may instruct the KRMC to **consult** with resource owners and/or external stakeholders in relation to the amendment.

4. If the *Bose Vanua* instructs the KRMC to consult with **resource owners**, KRMC members must raise the proposed amendment at **village meetings** in every village in the district.

5. If the *Bose Vanua* instructs the KRMC to consult with **stakeholders**, KRMC must provide **written notice** to all relevant stakeholders, and allow a reasonable period for comment.

6. The KRMC Chair must report to the *Bose Vanua* on **consultation outcomes**.

7. The *Bose Vanua* may **reject** or **approve** the amendment.

8. If the *Bose Vanua* **rejects** the amendment, the KRMC must:

    a. post a **written notice** in the village hall in each village in the district; and

    b. provide **written notice** to all relevant external stakeholders.

9. If the *Bose Vanua* **approves** the amendment, the KRMC must:

    a. explain the amendment in a **village meeting** in each village in the district.

    b. post a **written notice** in the village hall in each village in the district;

    c. provide **written notice** to all relevant external stakeholders; and

    d. insert a copy of the written notice in each copy of this **management plan**.

6.3.2 VILLAGE-LEVEL MANAGEMENT RULES

For amendments to **village-level management rules** – that is, rules that only apply to a particular village, or to designated village *tabu* areas:

1. The proposed amendment must be **approved** by the village chief (*turaga ni yavusa*).

2. The village chief must provide **written notice** of the amendment to the *Bose Vanua*.

3. The KRMC must:

    a. explain the amendment in a **village meeting** in each village in the district.

    b. post a **written notice** in the village hall in each village in the district;

    c. provide **written notice** to all relevant external stakeholders; and

d. insert a copy of the written notice in each copy of this **management plan**.

6.3.3 CLAN-LEVEL MANAGEMENT RULES

For amendment of **clan-level management rules** – that is, rules that only apply to the land of a particular *mataqali* or *yavusa* – the proposed amendment:

1. The proposed amendment must be **approved** by head of that clan.

2. The head of the clan must provide **written notice** of the amendment to the *Bose Vanua*.

3. The KRMC must:

    a. explain the amendment in a **village meeting** in each village in the district.

    b. post a **written notice** in the village hall in each village in the district;

    c. provide **written notice** to all relevant external stakeholders; and

    d. insert a copy of the written notice in each copy of this **management plan**.

6.3.4 OTHER AMENDMENTS

Other amendments may be made as necessary by the KRMC, with the approval of the *Bose Vanua*.

The KRMC must provide written notice to external stakeholders of any changes to the management plan, and insert a copy of the notice in each copy of the management plan, including the copy kept by each village.

6.4 REVIEW OF THE MANAGEMENT PLAN

This management plan will be reviewed, and amended as necessary, every five (5) years. However, if a need arises to amend the plan before this time, then the early amendment can take place with the approval of KRMC.

The review process must provide an opportunity for village representatives and other relevant stakeholders to comment on the content and implementation of the management plan.

The proposed amendments must be endorsed by the KRMC, the KBDC and the *Bose Vanua*.

Copies of the amended management plan must be distributed to each village in the district and all members of the stakeholder consultative group.

7 COMPLIANCE AND ENFORCEMENT

7.1 PROMOTING COMPLIANCE

The management rules set out in this management plan represent a synthesis of community rules and national laws relevant to ecosystem management. The community rules are based on extensive consultation and have been endorsed by the Kubulau Hierarchy Council (*Bose Vanua*). The national laws were created by the national parliament, and are legally binding on all people throughout Fiji.

The Kubulau Resource Management Committee (KRMC) is responsible for coordinating activities to **raise awareness** of these management rules, and to **promote voluntary compliance** with the rules.

In particular, KRMC is responsible for:

- distributing one copy of this **management plan** to **every village** in the district.
- posting copies of the **management rules** in **every village hall** in the district.
- organising **meetings** to explain the management rules in **every village** in the district.
- organising **meetings** in **neighbouring districts** to explain the management rules.
- producing **flyers** and other materials to **raise awareness** of the management rules.

KRMC will emphasise the benefits of the rules, and highlight the communities' common interest in sustainable management of natural resources and ecosystems in the district.

KRMC will work with chiefs, church leaders, government officers and other stakeholders to promote awareness of, and respect for, the management rules.

7.2 MONITORING AND SURVEILLANCE

KRMC is responsible for coordinating monitoring and surveillance activities to identify breaches of the rules set out in this management plan.

In particular, the KRMC resource management sub-committee is responsible for:

- ensuring adequate training of community fish wardens.
- securing adequate resources and equipment for marine patrols.
- establishing a monitoring and surveillance program to identify breaches of management rules for terrestrial, freshwater and estuarine ecosystems.
- ensuring adequate recording and reporting of breaches.

7.3 ENFORCEMENT

The options available for enforcement of management rules will depend on whether the rule is a community rule and/or a national law. The management rule tables in this management plan indicate whether each rule is a '**national'** law or a '**district**' community rule.

For example, in the extract below (**Table 7.1**):

- taking *davui* is prohibited by national law;
- taking groupers in August is prohibited by a community rule; and
- dynamite fishing is prohibited by both national law and by a community rule.

The footnotes to the table identify the source of the management rule.

Table 7.1. Extract from management rule table for marine ecosystems.

RULE	EXCEPTIONS	NATIONAL	DISTRICT
Taking *davui* is prohibited.	-	✗ [1]	
Taking any species of grouper during the month of August is prohibited.	-		✗ [2]
Dynamite fishing is prohibited	-	✗ [3]	✗ [4]

NOTES
[1] *Fisheries Regulations* r.22.
[2] Kubulau Management Plan Review Workshop, January 2007
[3] *Fisheries Act (Cap 158)* s 10(4).
[4] Kubulau Management Plan Review Workshop, January 2007

7.3.1 ENFORCEMENT OF NATIONAL LAWS

Government officers and police are responsible for enforcing national laws. Courts may impose penalties for breaches of national laws, including fines and prison sentences, and may make other orders, including cancellation of certain types of licence.[24] In some cases, government agencies have the power to suspend or cancel licences[25] or issue binding orders and notices.[26]

Members of the public, including resource owners, can improve law enforcement by monitoring and reporting breaches, and advocating for stricter enforcement by government.

[24] For example, fishing licences may be cancelled if the court finds the licence holder guilty of a fisheries offence: *Fisheries Act,* s.8.
[25] For example, the Conservator for Forests may revoke a logging licence if a breach has occurred or is likely to occur: *Forest Decree,* s.19.
[26] For example, the Director of Environment may issue a prohibition notice to prevent an immediate threat or risk to the environment: *Environment Management Act 2005*, s.21.

COMMUNITY FISH WARDENS

Community fish wardens play a special role in enforcement of the *Fisheries Act*. Fish wardens who have been appointed by the Permanent Secretary for Fisheries have the legal power to:

- order a person to display their fishing licence, gear or catch;
- board and search fishing vessels; and
- if they reasonably suspect that an offence has been committed, take the offender, the vessel, gear and catch to the nearest police station or port.[1]

Obstructing a fish warden from boarding and searching a vessel is a criminal offence.[2]

It is important to note that fish wardens only have the power to enforce the *Fisheries Act*. They do **not** have the legal power to enforce other legislation or community rules.

[1] *Fisheries Act*, s.7(1).
[2] *Fisheries Act*, s.7(2).

Detaining or assaulting a person or taking their things without legal authority is a criminal offence. This means, for example, that it is illegal to seize a fishing vessel only because it was found fishing in a *tabu* area.

If a community rule has been breached, it may be useful to investigate whether a national law has also been breached. For example, if a vessel is found fishing in a *tabu* area, investigate whether the vessel has been fishing for trade or business without a licence, using a prohibited fishing method (e.g. poison, dynamite, undersized nets) or taking legally protected fish (e.g. undersized fish).

If you believe that a national law has been breached, the following **enforcement protocol** should be followed:

1. Report the incident to the KRMC, providing as much detail as possible, including:
    - description of the incident
    - location of the incident
    - time and date of the incident
    - name and contact details of the alleged offender
    - registration number of the offender's vessel or vehicle
    - names and contact details of any witnesses
    - photographs, video and/or physical evidence.

- If KRMC believes that a law has been breached, KRMC may report the breach to the police and/or relevant government agency. Relevant government agencies are identified in the management rule tables.

- KRMC must record the details of any report that it makes to the police and/or government agency, including the name and contact details of the officer who received the report.

- KRMC must record the details of any action taken by the police or government agency (e.g. investigation, verbal warning, cancellation of licence, prosecution).

- If KRMC is dissatisfied with the response of the police or government agency, KRMC may:

    - contact the relevant officer's supervisor;
    - report the lack of action to the *Bose Vanua*;
    - report the lack of action to partner organisations; and/or
    - report the lack of action to the media.

In any case, KRMC may also initiate the community-based enforcement protocol described below.

7.3.2 ENFORCEMENT OF COMMUNITY RULES

Community-based rules must be enforced in a manner that does not breach national laws. It is a criminal offence to assault or detain a person or take their property without legal authority. This means, for example, that it is illegal to seize a vessel only because it was found fishing in a *tabu* area.

If a community rule has been breached, the following **enforcement protocol** should be followed:

1. Report the breach to the KRMC, providing as much detail as possible, including:

    - description of the incident
    - location of the incident
    - time and date of the incident
    - name and contact details of the alleged offender
    - registration number of the offender's vessel or vehicle
    - names and contact details of any witnesses
    - photographs, video and/or physical evidence.

2. KRMC must attempt to contact the person alleged to have breached the rule, to inform them of the alleged breach and to ask them to explain their side of the story.

3. If KRMC believes that a community rule has been breached, KRMC must inform the *Bose Vanua* of the breach, and may recommend an enforcement response.

4. If the *Bose Vanua* believes that a community rule has been breached, it may order such enforcement action(s) as it considers appropriate within the bounds of the law, including, but not limited to:

    - a verbal or written warning
    - taking the offender to task in a village meeting
    - ordering the offender to perform a community service
    - declaring the offenders' household ineligible for the Namena scholarship fund
    - in the case of a licensed fishing vessel, placing the offender on notice that the Tui Kubulau will not issue a letter of consent for them or their vessel for a fixed period.

Note: This enforcement protocol may also be used for breaches of national laws, especially in cases where KRMC considers the response of the police or relevant government agency to be inadequate.

8 MANAGEMENT OF TERRESTRIAL HABITATS

8.1 TERRESTRIAL HABITAT DESCRIPTION

The terrestrial habitats of Kubulau include a mix of natural vegetation types – rain forest, mesic forest, wetlands and coastal vegetation – and human-modified vegetation types – gardens and plantations, pasture (grasslands maintained by grazing), *talasiga* (grasslands maintained by burning) and secondary forest (at various stages of recovery following logging, clearing or burning).[27]

8.1.1 TERRESTRIAL FLORA

Mesic forest is the dominant forest type in the low-lying, near coastal areas of Kubulau. Towards the coast, *Intsia bijuga* (vesi) is a dominant component of this forest, as are *Fagraea gracillipes* (buabua), *Myristica castaneifolia* (male), *Kingiodendron platycarpum* (cibicibi), *Maniltoa sp.* (cibicibi levu), *Cynometra insularis* (cibicibi lailai), *Gymnostoma vitiense* (cau) and *Dacrydium nidulum* (yaka). Further inland, *Endospermum robbieanum* (vulavula), *Heritiera ornithocephala* (savai), *Agathis macrophylla* (dakua, tahua mahadre), *Sterculia vitiense* (waciwaci) and *Podocarpus neriifolius* (bauwaka) increase in importance. Most of the coastal forests, which are located on relatively flat terrain, have been clear-felled and only tiny fragments of intact mesic forest remain. [28]

Rainforest is mostly found in the north of Kubulau District, above 200 metres in elevation. Dominant components of this forest are *Retrophyllum vitiense* (tahua salusalu), *Calophyllum* spp. (damanu), *Myristica* spp. (male, malamala), *Gironniera celtidifolia* (masivau), *Parinari insularum* (sea), *Semecarpus vitiensis* (malawaci), *Pagiantha thurstonii* (tabua kei ra kalavo) and *Syzygium* spp. (yasiyasi). Other important species include *Palaquium porphyreum* (bauvudi), *Garcinia myrtifolia* (raubu), *Firmania diversifolia* (cara), *Geissois imthurnii* (vo'a) and *Dysoxylum* sp. (tarawau kei soge). In the northernmost corner of Kubulau District is an extensive plateau dominated by *Atuna racemosa* (maki'a). Remaining patches of primary rainforest are generally in excellent condition, with very large individual trees, high floristic diversity, and healthy populations of indicator species.[29]

8.1.2 THREATENED AND ENDEMIC SPECIES

The primary forests of Kubulau District are characterised by a high degree of endemism. In 2005, during a two day forest survey, Keppel recorded a total of 288 indigenous plant species, including 126 endemic species. Of these, *Veitchia filifera*, *Parsonsia smithii*, *Cyrtandra harveyi* , *C. reticulata*, *Medinilla kabii*, *Endospermum robbieanum*, *Macaranga membranacea*, *Amaracarpus muscifer* and *Ixora coronata* are endemic to Vanua Levu.[30]

During the survey, several unique and very rare species were collected. A new species of *Terminalia* was discovered, *Astronidium kasiensis* was found for the first time outside the Mount Kasi region, and *Zanthophyllum myrianthum* was collected for the second time ever. Other rare species collected include the critically endangered *Gardenia anapetes* (tirikiloki), the endangered *Geissois imthurnii*

[27] Keppel, G. (2005) *Summary Report on Forests of the Mataqali Nadicake Kilaka, Kubulau District, Vanua Levu*.
[28] Ibid.
[29] Ibid.
[30] Ibid.

(vure) and the vulnerable *Intsia bijuga* (vesi).[31] Thirty-five of the species collected are protected under the *Endangered and Protected Species Act 2002*, including two CITES listed species.[32]

8.1.3 ECONOMICALLY AND CULTURALLY IMPORTANT RESOURCES

A number of economically and culturally important tree species are found in the mesic forests and rainforests of Kubulau. *Intsia bijuga* (vesi) is particularly prized as a high quality construction and carving timber, and has been over-harvested in many parts of the country. The Pacific kauri, *Agathis macrophylla* (tahua mahadre, dakua makadre), is also valued for its high quality timber. Fijian sandalwood, *Santalum yasi* (yasi dina), is also present in Kubulau, and is harvested for its high value heartwood, which is used to produce fragrant oil. Sandalwood attracts a premium price, and populations of the species have been depleted throughout its range due to overharvesting.

Local households surveyed in 2008 identified cassava (*tavioka*), taro (*dalo*), taro leaves (*rourou*), breadfruit (*uto*), coconuts (*niu*), kava (*yaqona*), bananas (*jaina*), plaintain (*vudi*), yams (*uvi, tivoli*), edible hibiscus (*bele*) and fern shoots (*ota*) as key subsistence resources harvested from the land. With the exception of fern shoots and wild yams, these resources are cultivated in village gardens and plantations. Terrestrial resources harvested for sale include copra, kava *(yaqona*), taro (*dalo*), cassava *(tavioka*), plaintain *(vudi*) and pandanus leaves (*voivoi*).[33]

8.2 TERRESTRIAL MANAGEMENT TARGETS

During the *Ecosystem-Based Management Planning Workshop* (February 2009), the following management targets were identified for terrestrial ecosystems in Kubulau:

1. Maintain or restore **riparian vegetation**.
2. Maintain or restore **drinking water catchments**, including groundwater catchments.
3. Maintain or restore populations of **indicator species**, including tree frogs and banded rails.
4. Maintain the availability of **non-timber forest products**, including edible ferns (*ota*).
5. Maintain or improve availability of **sandalwood** (*yasi dina*).

8.3 TERRESTRIAL THREATS

Participants in the *Ecosystem-Based Management Planning Workshop* (February 2009) identified the following key threats to the health and productivity of terrestrial ecosystems in Kubulau:

- shifting cultivation;
- farming in riparian areas;
- farming in water catchments;
- unsustainable burning;
- unsustainable logging practices; and

[31] Ibid. See also: IUCN Red List of Threatened Species.
[32] Ibid. See also: *Endangered and Protected Species Act 2002*, *Convention on International Trade in Endangered Species*.
[33] WCS (2008) *Socioeconomic Survey: Kubulua District*.

- invasive species.

A number of linkages were identified between these threats, such as:

- burning to clear land for shifting cultivation; and
- increased vulnerability to invasive species due to logging and clearing.

Underlying causes identified by participants included:

- unsustainable farming:
    - lack of awareness of farming impacts;
    - lack of awareness of sustainable farming practices;

- lack of community rules to protect riparian zones and water catchments.
- unsustainable burning:
    - lack of awareness of burning impacts;
    - laziness and *yaqona* abuse.

- unsustainable logging:
    - lack of awareness of logging impacts;
    - failure to comply with code of practice.

These threats and causes are illustrated graphically in **APPENDIX 5 – TERRESTRIAL THREAT DIAGRAM**.

8.4 TERRESTRIAL BEST PRACTICE

To maintain and restore the health, productivity and resilience of terrestrial ecosystems, the following practices are recommended:

RECOMMENDATION	RATIONALE
FARMING	
Do not use fire to clear land for farming.	Burning reduces soil fertility, increases soil erosion and reduces downstream water quality.
Do not clear, burn or farm within 100 metres of the banks of a river of stream.	Broad riparian buffers reduce soil erosion and improve downstream water quality.
Do not farm steep slopes. Use terrace and contour planting to control soil erosion.	Farming steep slopes increases soil erosion and reduces downstream water quality.
FORESTS AND WATER CATCHMENTS	
Do not allow clearing, burning, logging or grazing in old growth forests.	Old growth forests are home to many unique species, and may take centuries to fully recover.
Do not allow clearing, burning, logging or grazing within 100 metres of old growth forests.	Logging and grazing near old growth forest increases the risk of invasive species.
Do not allow clearing, burning, logging or grazing within 100 metres of a river of stream.	Broad riparian buffers reduce soil erosion and improve downstream water quality.
Do not allow clearing, burning, logging, farming or grazing in drinking water catchments.	Clearing, burning, logging and grazing reduces the quality and quantity of drinking water.
Monitor logging operations and report breaches of logging code of practice or licence conditions.	Community monitoring ensures compliance with environmental protection rules.
Replant logged areas using local native species.	Restoring forests after logging helps to maintain water catchment health and biological diversity.
INVASIVE SPECIES	
Do not introduce invasive species.	Invasive species reduce agricultural productivity and threaten native plants and animals.

8.5 MANAGEMENT RULES – TERRESTRIAL HABITATS

The following rules apply to land throughout Kubulau District.

Rule	Exceptions	National	District	Management Actions
LOGGING				
Commercial logging operations must not be commenced without environmental impact assessment (EIA) and approval from the Department of Environment.		✘ [34]		Monitor new logging operations and report breaches to the Department of Environment and Forest Department.
Commercial logging operations must not be commenced without the consent of landowners and approval from the iTaukei Land Trust Board and Forest Department.		✘ [35]		Monitor new logging operations and report breaches to the iTaukei Land Trust Board and Forest Department.
Logging operations must comply with logging licence conditions and the *Forest Harvesting Code of Practice.*		✘ [36]		Monitor compliance with *Forest Harvesting Code of Practice* and notify Forest Department of breaches.
Rare tree species, fruit trees, seed trees and tree species with value for non-timber forest products must not be felled.		✘ [37]		Monitor compliance with *Forest Harvesting Code of Practice* and notify Forest Department of breaches.

[34] *Environment Management Act 2005*, Schedule 2, Part 1.
[35] *ITaukei Lands Trust Act, Forest Decree 1992.*
[36] *Forest Decree 1992, Fiji Forest Harvesting Code of Practice 2008.*
[37] *Fiji Forest Harvesting Code of Practice 2008.*

Rule	Exceptions	National	District	Management Actions
Felling any of the protected tree species listed in **APPENDIX 1 – PROTECTED SPECIES** is prohibited.		✘ [38]		Report breaches to Department of Environment.
PROTECTED SPECIES				
Hunting birds, or collecting their eggs, is prohibited.	Hunting introduced bird species (see footnote).[39] Licensed hunting of Fruit Pigeons (15 May to 13 June).	✘ [40]		Report breaches to Department of Primary Industry.
Taking any of the protected terrestrial species listed in **APPENDIX 1 – PROTECTED SPECIES** is prohibited.		✘		Report breaches to Department of Environment.
DEVELOPMENT				
Industrial or commercial development must not be undertaken without environmental impact assessment.		✘ [41]		Report breaches to Department of Environment.

[38] *Endangered and Protected Species Act 2002.*
[39] *Birds and Game Protection Act* , s.2, Schedule 1. The following introduced species are not protected by law: Malay Turtle Dove, Red-vented Bulbul, House (or Brown) Mynah, Field (or Grey) Mynah, Java Rice sparrow, Strawberry Finch, European Starling. All other bird species are protected.
[40] *Birds and Game Protection Act*, ss.3, 6. Note: the *Birds and Game Protection Act* also allows hunting of Barking Pigeons, but this species is now protected under the *Endangered and Protected Species Acxt 2002.*
[41] *Environment Management Act 2005*.

8.5.1 KILAKA PROPOSED FOREST RESERVE

The following rules apply to the Kilaka village **Kilaka Proposed Forest Reserve**, as marked on Figure 3.7. **Terrestrial and freshwater protected areas and village water sources in Kubulau District, not including Namena IslandFigure 3.7**. All rules are sourced from the *Draft Kilaka Nature Reserve Management Framework and Guidelines* (Wildlife Conservation Society, 2006).

Rule	Exceptions
CLEARING, BURNING AND FARMING	
Clearing of land within the reserve for any purpose is prohibited, including for planting, research, and hunting.	-
LOGGING	
Cutting of trees within the reserve, for any purpose, is prohibited.	-
LIVESTOCK	
Grazing of livestock within the boundary of the reserve is prohibited.	-
DEVELOPMENT	
Construction of any sort is prohibited within the boundary of the reserve and within a distance of 1km of the reserve.	-
ACCESS	
Entry to the reserve is prohibited.	With permission of landowning *mataqali* and with proper guide if required by the *mataqali*
Bringing pet animals into the reserve is prohibited.	-

Rule	Exceptions
Parking any vehicle less than 1km from the boundary of the reserve is prohibited.	-
RESEARCH	
Conducting scientific research within the reserve is prohibited.	With the permission of the landowning *mataqali.*
DAMAGE PREVENTION	
Bringing any material into the reserve that can cause or ignite fire is prohibited.	-
Carrying destructive tools or items into the reserve is prohibited (e.g. poisons).	-

8.6 TERRESTRIAL MANAGEMENT ACTIONS

Management actions for terrestrial ecosystems in Kubulau District:[42]

ISSUE	PROPOSED ACTIVITY	IMPLEMENTATION	LEAD	ACTIONS
CLEARING, BURNING AND FARMING				
Lack of catchment protection rules and guidelines	Prohibit clearing, burning and farming in the identified water catchment areas	KRMC *Bose Vanua*	KRMC village reps	1. Get information (booklets, posters, etc in Fijian) on effects of clearing, burning and farming in catchment areas 2. Communications Sub-committee to meet with chiefs and request that clearing, burning and farming be prohibited near drinking water sources 3. Communications Sub-committee to hold village meetings
Past clearing of catchment areas and stream buffers	Deliver training on revegetation using native plants	KRMC Department of Forestry EBM partners	KRMC village reps	1. Obtain Fijian copies of booklets "Guide to Planting Local Tree Species for Forest Restoration" and "Use of Vetiver Grass in Extremely Degraded Areas" 2. Arrange re-planting training workshop at district level

[42] Kubulau Management Planning Workshop, February 2009. KRMC Consultation Meeting, Raviravi, May 2009.

ISSUE	PROPOSED ACTIVITY	IMPLEMENTATION	LEAD	ACTIONS
Past clearing of catchment areas and stream buffers	Establish community nursery	KRMC *Vanua Kubulau* EBM partners	KRMC village reps	1. Obtain Fijian copies of Community Nursery Manual 2. Arrange visit to another community nursery in Wailevu district 3. identify and obtain seedlings needed for revegetation and farming (e.g. drought tolerant crops) 4. Obtain any resources needed for the nursery 5. Establish and maintain the community nursery
Past clearing of catchment areas and stream buffers	Restore native vegetation in catchment areas and stream buffers	KRMC *Vanua Kubulau* Department of Forestry	Communications sub-committee	1.Identify priority areas for replanting in catchment areas and stream buffers 2. Identify which species should be planted in these areas, according to booklets obtained 3. Obtain any resources needed for the replanting (e.g. seedlings for revegetation from community nursery or from Dept of Forestry) 4. Plant native vegetation in priority areas and maintain it
Lack of awareness of sustainable farming practices	Education on sustainable farming practices, including alternatives to burning and shifting cultivation	EBM partners	KRMC village reps	1. Obtain eductional materials on sustainable farming practices 2. Arrange talanoa session with communities to discuss sustainable farming, based on educational materials 3. Arrange visit to model farm in Wailevu district

ISSUE	PROPOSED ACTIVITY	IMPLEMENTATION	LEAD	ACTIONS
Lack of community land use rules and guidelines	Implement land-use rules, including protection of stream buffers and water catchments	KRMC Land Use Department	Turaga-ni-koro in each village	1. Arrange land use planning workshop to discuss national land use rules 2. KRMC to compare national land use rules with existing EBM land use rules, and amend EBM rules accordingly to reflect any stricter national land use rules 3. *Bose Vanua* to agree on any amendments to EBM rules
Lack of community land use rules and guidelines	Deliver workshop on community land use planning, including land use mapping	KRMC Land Use Department EBM partners	KRMC village reps	1. Contact Land Use Dept and EBM partners to request district workshop on community land use planning (including educational materials, land use maps etc) 2. Arrange district workshop on land use planning
UNSUSTAINABLE LOGGING				
Failure to comply with Forest Harvesting Code of Practice	Training for landowners on monitoring compliance with Forest Harvesting Code of Practice	Department of Forestry EBM partners Kubulau Forest Wardens	KRMC village reps	1. Identify Forest Wardens for Kubulau 2. Train the Kubulau Forest Wardens so that they know the Forest Harvesting Code of Practice 3. As part of the Forest Warden training, develop a forest monitoring plan
Failure to comply with Forest Harvesting Code of Practice	Monitor, record and report breaches of the Forest Harvesting Code of Practice	KRMC, Department of Forestry, NLTB, Kubulau Forest Wardens	*Qoliqoli* and District Management Sub-committee	1. Implement forest monitoring plan

ISSUE	PROPOSED ACTIVITY	IMPLEMENTATION	LEAD	ACTIONS
MINING				
Lack of community involvement in mining proposals	Monitor mining proposals in and near Kubulau to ensure that environmental impacts are fully assessed	*Mataqali* reps *Turaga-ni-koro* KRMC EBM partners Other experts (e.g. FELA, USP)	*Mata-ni-tikina*	1. All to monitor mining proposals in and near Kubulau and share information Establish a system to ensure that maps of proposed mining sites reach the communities 2. Arrange for external experts in EIA and mining to visit *mataqali* reps and explain the effects of mining on the environment, and the proper procedure for environmental impact assessment 3. *Mataqali* reps to follow up on the results of any environmental impacts assessment 4. Arrange *talanoa* session with communities to raise awareness of mining
CLIMATE CHANGE				
Crop failure because of droughts	Establish and maintain nursery of drought tolerant varieties of important crops	KBDC SPC KRMC village reps *Turaga-ni-koro* in each village	KBDC	1. KBDC to liaise with SPC to identify the drought tolerant species available 2. KBDC to request those species and deliver to Kubulau, with the drought action plan planting manual (DISMAC) 3. KRMC village reps with Turaga-ni-koro to establish and maintain nursery of drought tolerant varieties

ISSUE	PROPOSED ACTIVITY	IMPLEMENTATION	LEAD	ACTIONS
Drinking water source is not reliable in droughts	Purchase rainwater tanks for public gathering areas (e.g. community halls) in each village.	KRMC (Community Development and Finance Sub-committee)	KBDC	1. Requests submitted by villages to Community Development Fund, following process in EBM Plan 2. When requests are approved, purchase the tanks 3. Install the tanks
Crop failure because of droughts	Establish model farms to trial organic farming and permaculture	KRMC EBM partners	KRMC village reps	1. Arrange field visit to another model farm(e.g. Wailevu, Ra) 2. Review objectives for model farm(s) in Kubulau 3. Identify potential locations for model farm(s) 4. Make a plan for establishing model farm(s) in Kubulau
Damage to crops and homes from cyclones	Plant crops that grow low to the ground during cyclone season	*Turaga-ni-koro*	*Turaga-ni-koro*	
Damage to crops and homes from cyclones	Cut leaves of cassava prior to cyclones	*Turaga-ni-koro*	All community members	1. Community members to cut leaves of cassava prior to cyclones, based on warnings from *Turaga-ni-koro*
Damage to crops and homes from cyclones	Designate disaster response focal point in each village to monitor climate hazard warnings (e.g. tropical cyclones) via radio or phone	*Turaga-ni-koro*	*Turaga-ni-koro*, disaster committee members	
Damage to crops and homes from cyclones	Rebuild damaged houses from cyclones in less vulnerable locations	*Turaga-ni-koro*	*Turaga-ni-koro*, disaster committee members	

9 MANAGEMENT OF FRESHWATER HABITATS

9.1 FRESHWATER HABITAT DESCRIPTION

The freshwater ecosystems of Kubulau include two rivers, a lake, streams and wetlands. During 2007-2008, Wetlands International undertook field surveys during wet and dry seasons in the Kilaka and Suetabu Rivers and Wacua Lake. The purpose of the surveys was to document fish species, the quality of their aquatic and riparian habitats and the degree of connectivity from headwaters through mid-reach and estuarine systems to nearshore marine systems.[43]

Kilaka had better water quality and more intact natural riparian vegetation than the Suetabu. Kilaka upper catchment (within the proposed forest reserve) had high water quality and intact primary rainforest riparian zones, the mid catchment had reduced quality due to road crossing and subsistence gardens and the lower catchment was mostly intact large mangrove forest. Suetabu had reduced water quality and clarity due to logging, commercial farming and coconut plantations.[44]

There are also extensive freshwater wetland areas in Kubulau District, dominated by *Pandanus tectorius* (vadra). Many of these areas have been drained and burnt by local residents, but restoration efforts may be warranted, as this ecosystem type is highly threatened in Fiji.[45]

9.1.1 FRESHWATER FAUNA

The freshwater surveys documented 68 species of fresh and estuarine fishes, representing 41% of the total species known from Fiji. Fifty-three native species were documented from the Kilaka River and 45 species from the Suetabu River. Only the invasive Tilapia, *Oreochromis mossambica*, was found in Wacua Lake. Both river systems, however, are free of invasive fish species, which is very rare globally and at a national level represents about a quarter of known invasive-free catchments.[46]

Of the species collected, 98% interact with marine systems for feeding or breeding, with only one freshwater resident identified (*Redigobius leveri*). Eight distinct life history patterns were identified for this ichthyofauna: estuarine migrants (36%), amphidromous (21%), freshwater wanderers (13%), facultative catadromy(12%), obligate catadromy (7%), marine migrants (4%), marine wanderers (3%), freshwater residents (2%) (**Figure 9.1**). The most highly migratory group, crossing five habitat types, are the amphidromous and obligate catadromous species, including three endemics and many of the important food fishes. About 28% of the fauna are identified as invertivore specialists, preying on small crustaceans and mollusks which are also mainly amphidromous and highly migratory.[47]

Much of the invertebrate fauna observed were freshwater prawns (*Macrobrachium* sp), shrimp species (*Palaemon* sp., *Caridina* sp.) freshwater snails (Neritidae, Thiaridae) and freshwater crabs (*Varuna* sp.), all of which are amphidromous, highly migratory species and will traverse the entire catchment during their lives.

[43] Jenkins, A. and Mailautoka, K. (2009) *Synopsis of results from freshwater and estuarine surveys in Kubulau District, Vanua Levu, Fiji*.
[44] Jenkins, A. and Mailautoka, K. (2009) *Synopsis of results from freshwater and estuarine surveys in Kubulau District, Vanua Levu, Fiji*.
[45] Keppel, G. (2005) *Summary Report on Forests of the Mataqali Nadicake Kilaka, Kubulau District, Vanua Levu*.
[46] Jenkins, A. and Mailautoka, K. (2009) *Synopsis of results from freshwater and estuarine surveys in Kubulau District, Vanua Levu, Fiji*.
[47] Jenkins, A. and Mailautoka, K. (2009) *Synopsis of results from freshwater and estuarine surveys in Kubulau District, Vanua Levu, Fiji*.

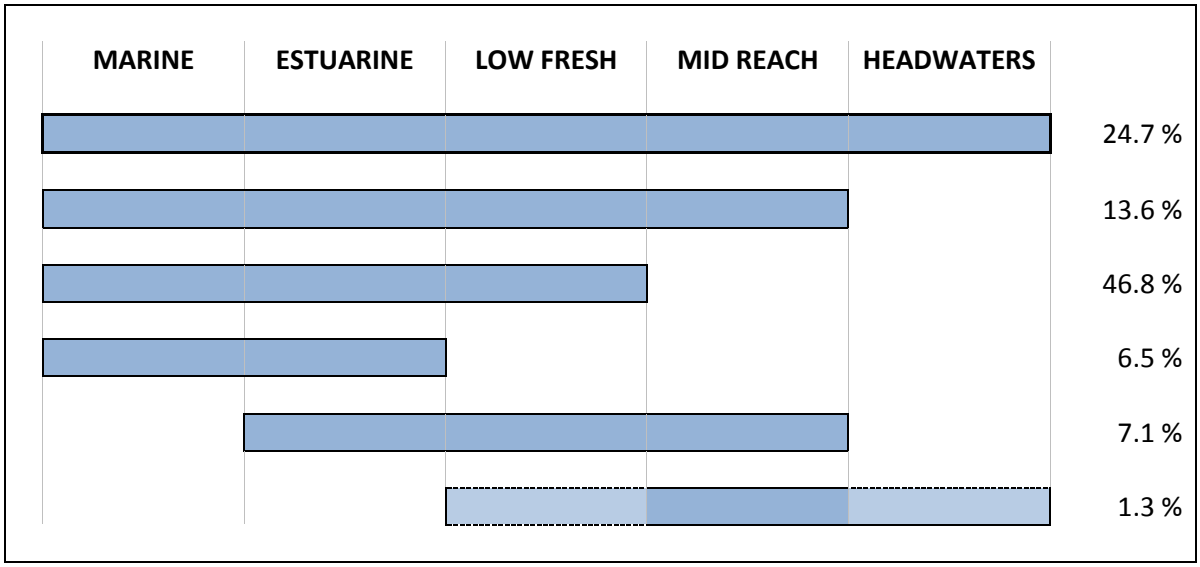


Figure 9.1. Habitat ranges of Fiji freshwater fish. Percentages for freshwater fish of Kubulau are similar to the national totals.

9.1.2 THREATENED AND ENDEMIC SPECIES

Four species of fishes (Family Gobiidae) endemic to Fiji were found in Kubulau, representing 36% of the total known endemic species in Fiji. Kilaka contains three endemics, *Redigobius leveri*, *Stiphodon* sp. and *Stenogobius* sp. and Suetabu contains two endemics, *Glossogobius* sp. and *Stenogobius* sp.[48]

9.1.3 ECONOMICALLY AND CULTURALLY IMPORTANT RESOURCES

In Kubulau, a number of key food fish species spend part of their life in the lower freshwater reaches, including snappers (*Lutjanus argentimaculatus, L. johnii*), ponyfishes (*Leiognathus equllus, L. splendens*) and goat fishes (*Upeneus sulphureus, U. vittatus*). Other key food fish species range from nearshore marine waters to the mid-reaches of freshwater, including trevally (*Carangoides chrysophrys*), mullet (*Liza melinoptera*) and tarpon (*Megalops cyprinoids*). Mid-water reaches support important food fish, such as the eloetrids (*Butis amboinensis*, *Giurus hoedti*, *Ophiocara porocephala*), as well as populations of gobies that exhibit seasonally important migrations which have great economic value in Fiji (such as *Redigobius bikolanus*). All of these fish are likely to decline if tilapia are introduced.

Local households surveyed in 2008 identified freshwater prawns (*ura*), shellfish (*sici*), mussels (*kai*) and fish (*ika*) as subsistence resources harvested from the freshwater habitats. Only one respondent reported harvesting freshwater resources for sale (freshwater prawns (*ura*), 1kg/per month). [49]

9.2 FRESHWATER MANAGEMENT TARGETS

During the *Ecosystem-Based Management Planning Workshop* (February 2009), the following management targets were identified for freshwater ecosystems in Kubulau:

1. Reduce or eliminate **water-borne diseases.**

[48] Jenkins, A. and Mailautoka, K. (2009) *Synopsis of results from freshwater and estuarine surveys in Kubulau District, Vanua Levu, Fiji*.
[49] WCS (2008) *Socioeconomic Survey: Kubulua District*.

2. Maintain or restore **riparian vegetation**.

3. Maintain abundance and biomass of **freshwater food species** (*saqa, duna, damu, ura, vo*).

4. Maintain abundance and biomass of key **indicator species**, including amphidromous fish.

9.3 FRESHWATER THREATS

Participants in the *Ecosystem-Based Management Planning Workshop* (February 2009) identified the following key threats to the health and productivity of freshwater ecosystems in Kubulau:

- farming in riparian zones
- logging in riparian zones
- poor waste management
- invasive fish species
- mining.

Farming, logging and mining were identified as key drivers of soil erosion, resulting in nutrification and sedimentation of streams, rivers, estuaries and coastal marine waters.

Underlying causes identified by participants included:

- farming in riparian zones:
  - preferred location: rich soil, close to village
  - lack of awareness of farming impacts
  - lack of awareness of sustainable farming practices
  - lack of community rules to protect riparian zones

- logging in riparian zones:
  - lack of awareness of logging impacts
  - failure to comply with logging code of practice.

- poor waste management:
  - leaking sewerage
  - rubbish dumping
  - livestock waste
  - farming waste.

- invasive fish species
  - deliberate introduction of tilapia
  - accidental introduction of tilapia.

These threats and causes are illustrated graphically in **APPENDIX 6 – FRESHWATER THREAT DIAGRAM**.

The management rules and management activities set out below seek to respond to these threats.

9.4 FRESHWATER BEST PRACTICE

To maintain and restore the health, productivity and resilience of freshwater ecosystems, the following practices are recommended:

RECOMMENDATION	RATIONALE
Do not clear, burn or farm within 100 metres of the bank of a river or stream.	Riparian buffers reduce soil erosion and improve downstream water quality.
Restore degraded river banks and riparian zones by planting native trees and shrubs.	Riparian vegetation reduces erosion and provides food and shade for freshwater fauna.
Use fertilisers and pesticides only as necessary, and always follow manufacturer's instructions.	Fertilisers cause algal growth and eutrophication. Many pesticides are toxic to people and animals.
Do not build crossings, weirs or other structures in a manner that prevents fish migration.	Migration up and down rivers is a vital part of the life cycle of many fishes, including food fish.
Do not allow logging within 100 metres of the bank of a river or stream.	Riparian buffers reduce soil erosion and improve downstream water quality.

9.5 MANAGEMENT RULES – FRESHWATER HABITATS

The following rules apply to freshwater habitats of Kubulau District, including rivers, streams, lakes, seasonally inundated areas and riparian zones.

Rule	Exceptions	National	District	Management Actions
FISHING METHODS				
Fish in freshwater must only be caught using a hand net, portable fish trap, spear or line and hook.	Shellfish	✘ [50]		Monitoring by fish wardens. Report breaches to Fisheries Department.
Fishing with poison is prohibited	-	✘ [51]	✘ [52]	Monitoring by fish wardens. Report breaches to Fisheries Department.
CLEARING, BURNING AND FARMING				
Clearing or burning vegetation within 30 metres of the bank of a river or stream is prohibited throughout Kubulau District.	Clearing approved by KRMC.		✘ [53]	Raise awareness of rule. Monitor compliance and report breaches to KRMC.
Farming cleared land within 10 metres of the bank of a river or stream is prohibited throughout Kubulau District.	Harvesting crops planted on or before 1 January 2010.		✘ [54]	Raise awareness of rule. Monitor compliance. Report breaches to KRMC.

[50] *Fisheries Regulations* r 10. Refer to Appendix 2 for definitions of net types.
[51] *Fisheries Regulations* r 8.
[52] Kubulau Management Plan Review Workshop, January 2007.
[53] Kubulau Management Plan Review Workshop, January 2007, Kubulau Management Planning Workshop, February 2009.
[54] Kubulau Management Plan Review Workshop, January 2007, Kubulau Management Planning Workshop, February 2009.

Rule	Exceptions	National	District	Management Actions
Clearing, burning, farming or grazing in drinking water catchments is prohibited throughout Kubulau District.			✘ [55]	Raise awareness of rule. Consider marking boundaries of drinking water catchments.
Agricultural leaseholders must not clear, burn or cultivate any land within 24 feet (7.2m) of a river or stream.		✘ [56]		Monitor compliance with lease conditions. Notify the iTaukei Land Trust Board of breaches.
LIVESTOCK				
Construction of pigsties within 30 metres of the bank of a river or stream is prohibited throughout Kubulau District.			✘ [57]	Raise awareness of rule. Monitor compliance. Report breaches to KRMC.
Construction of pigsties in drinking water catchments is prohibited throughout Kubulau District.			✘ [58]	Raise awareness of rule. Monitor compliance. Report breaches to KRMC.
LOGGING				
Logging within 30 metres of the bank of a river or stream is prohibited throughout Kubulau District.			✘ [59]	*Turaga-ni-mataqali* to ensure that rule is included in iTaukei land lease and/or forest licence as a condition of consent. Monitor compliance. Report breaches to Forest Department.

[55] Kubulau Management Plan Review Workshop, January 2007, Kubulau Management Planning Workshop, February 2009.
[56] *iTaukei Land Trust (Leases and Licences) Regulations 1984*, *r.23*, Fourth Schedule, cl.25. *Conditions of lease for agricultural purposes*.
[57] KRMC Consultation Meeting, Raviravi, May 2009.
[58] KRMC Consultation Meeting, Raviravi, May 2009.
[59] KRMC Consultation Meeting, Raviravi, May 2009.

Rule	Exceptions	National	District	Management Actions
Logging in drinking water catchments is prohibited throughout Kubulau District.			✗ [60]	*Turaga-ni-mataqali* to ensure that rule is included in iTaukei land lease and/or forest licence as a condition of consent. Monitor compliance. Report breaches to Forest Department.
Logging operations must leave buffer strips beside rivers and streams: • > 20m stream width: 30m buffer • 10-20m stream width: 20m buffer • 0-10m stream width: 10m buffer.	Exception: bridges and stream crossings approved by Forest Department.	✗ [61]		Monitor compliance with *Forest Harvesting Code of Practice* and notify Forest Department of breaches. ***Note:*** *Stream width is measured from bank to bank. Buffer width is horizontal distance measured from stream bank.*
Logging roads must be constructed at least 20m from the outer edge of any stream buffer.		✗ [62]		Monitor compliance with *Forest Harvesting Code of Practice* and notify Forest Department of breaches. ***Example:*** *In the case of a 30m stream buffer, the road must be at least 50m from the stream (30m + 20m = 50m).*
Trees and tree crowns must not be felled into rivers or streams.		✗ [63]		Monitor compliance with *Forest Harvesting Code of Practice* and notify Forest Department of breaches.
WASTE DISPOSAL				
Dumping waste in rivers and streams, or on the banks of rivers and streams, is prohibited.		✗ [64]	✗ [65]	Report breaches by commercial or industrial facilities to Department of Environment. Report other breaches to KRMC.

[60] KRMC Consultation Meeting, Raviravi, May 2009.
[61] *Fiji Forest Harvesting Code of Practice 2008.*
[62] *Fiji Forest Harvesting Code of Practice 2008.*
[63] *Fiji Forest Harvesting Code of Practice 2008.*
[64] *Litter Decree 1991, s8.*
[65] Kubulau Management Plan Review Workshop, January 2007, Kubulau Management Planning Workshop, February 2009.

Rule	Exceptions	National	District	Management Actions
PROTECTED SPECIES				
Taking any of the protected freshwater species listed in **APPENDIX 1 – PROTECTED SPECIES** is prohibited.		✘		Report breaches to Department of Environment.
INVASIVE SPECIES				
The introduction of tilapia is prohibited throughout Kubulau District.			✘ [66]	Report breaches to KRMC.
DEVELOPMENT				
Houses and village structures must not be built within 30m of any stream without environmental impact assessment.		✘ [67]		Report breaches to Department of Environment.

[66] Kubulau Management Planning Workshop, February 2009.
[67] *Environment Management Act 2005*, Schedule 2, Part 3.

9.6 FRESHWATER MANAGEMENT ACTIONS

Management actions for freshwater ecosystems in Kubulau District.

ISSUE	PROPOSED ACTIVITY	IMPLEMENTATION	LEAD	ACTIONS
WATER POLLUTION				
Rubbish dumping in rivers, creeks and mangroves	Develop rules for proper disposal of waste	*Mata-ni-tikina* KRMC Ministry of Health EBM partners	Community Health Hygiene Group	1. Arrange workshop to review and update district rules for proper disposal of waste 2. Community Health Hygiene Group to educate the communities about the importance of proper disposal of waste through *talanoa* sessions, signboards, posters (from Ministry of Health)
Rubbish dumping in rivers, creeks and mangroves	Promote 'reduce, reuse and recycle'	*Turaga-ni-koro* Department of Environment	Community Health Hygiene Group	1. Arrange workshop to raise awareness about what can be recycled, reused etc (in waste management session) 2. After workshop, Community Health Hygiene group to ensure that communities are separating rubbish (e.g. into burn-ables, bury-ables, sell-ables)

Discharge of sewage	Promote proper use and maintenance of septic tanks and composting toilets	*Turaga-ni-koro* Community nurse KRMC EBM partners	*Turaga-ni-koro*	1. Arrange workshop to promote proper user and maintenance of septic tanks and how to set up composting toilets, including lessons learnt from Macuata 2. Develop proposal for composting toilets and training on their proper use and maintenance
Livestock waste	Move pigsties away from rivers, creeks and mangroves, and prevent cattle grazing near rivers and creeks	*Mata-ni-tikina* KRMC	*Turaga-ni-koro*	1. Arrange workshop on provincial by-laws 2. Distribute copies of provincial by-laws 3. Put up signboards about why livestock cannot be kept near rivers and creeks
Limited awareness of waste management issues	Raise awareness of the impacts of improper disposal of waste and promote proper waste management	KRMC Community Health Hygiene Group Ministry of Health	KRMC village reps	1. Arrange workshop to raise awareness of provincial by-laws and to identify sites for village rubbish pits 2. Carry out village-level planning for waste disposal techniques
INVASIVE FISH SPECIES				
Introduction of tilapia	Increase awareness of impacts of invasive fish species.	KRMC Goby Youth Ambassadors EBM partners	Communication Sub-committee	1. Launch of Joji Goby comic and puppet shows in 2 schools 2. Goby Youth Ambassadors to conduct monthly monitoring of rivers and creeks and report to KRMC village reps

10 MANAGEMENT OF ESTUARINE AND COASTAL HABITATS

10.1 COASTAL AND ESTUARINE HABITAT DESCRIPTION

The coastline of Kubulau District is approximately 69 kilometres in length, including Namena and Navatu islands. The mangrove forests and estuaries of Kubulau's coast are highly productive ecosystems, and play a key role in maintaining the health and resilience of Kubulau's coastal fisheries. They function as hatchery, nursery, and feeding ground and are habitats that teem with life. Live and decaying mangrove leaves and roots nourish plankton, algae, shellfish, fish and crabs. Many of the food fish caught in Kubulau spend some time in mangroves or depend on food chains linked to these coastal ecosystems.

10.1.1 FLORA AND FAUNA

Two mangrove species have been recorded in Kubulau. The district has a large dominant *Bruguiera gymnorhiza* zone with a small a very narrow *Rhizophora stylosa* zone. Despite evidence of a substantial net loss of mangroves between 1954 and 2001, the district has relatively large areas of intact mangrove forest, covering about 750 hectares in total. These forests are in very good growth condition, especially those that are found along rivers and creeks.

Preliminary assessment of seagrass beds in the district identified *Syringodium isoetifolium* as the dominant species in intertidal and shallow subtidal areas, with *Halodule* sp. found in certain areas. *Halophila ovalis* was sometimes found occurring with the other sea grass species. Algal species found amongst the seagrass or occurring in discrete patches included the calcareous *Halimeda species*, the red alga, *Dyctiota* sp. and the brown alga, *Sargassum* sp.

Estuarine and coastal ecosystems, including mangroves, are key habitats for fish and invertebrate species in the Kubulau. During the 2007-2008 survey conducted by Wetlands International, 26 fish species were collected in the lower reaches of the Kilaka and Suetabu Rivers, including more than 80% estuarine dependent species.

10.1.2 THREATENED AND ENDEMIC SPECIES

One of the mullet species collected in the lower reaches of the Suetabu River (*Liza melinoptera*) is listed as vulnerable on the IUCN Red List. The endemic *Stenogobius sp.* was collected in the lower reaches of the Kilaka River.

10.1.3 ECONOMICALLY AND CULTURALLY IMPORTANT SPECIES

Estuaries and mangroves are important habitat for food fishes. Nearly two thirds of fish species collected in the lower reaches of the Suetabu were large preferential food fishes, including snappers (*Lutjanus* spp.), ponyfish (*Leiognathus* spp.), goatfish (*Upeneus* spp.), trevally (*Carangoides*) and tarpons (*Megalopidae*).

Local households surveyed in 2008 identified mangrove crabs (*qari*), red clawed crabs (*kuka*), land crabs (*lairo*), mud lobsters (*mana*) , shellfish (*sici*) and eels (*duna*) as key subsistence resources, and mangrove crabs (*qari*) as the main resource harvested for sale from estuarine and coastal habitats.[68]

Mangrove trees are harvested for firewood (for domestic use and copra drying) and for construction timber. There are currently no licensed commercial mangrove harvesting operations in Kubulau.

10.2 COASTAL AND ESTUARINE MANAGEMENT TARGETS

During the *Ecosystem-Based Management Planning Workshop* (February 2009), the following management targets were identified for coastal and estuarine ecosystems in Kubulau:

1. Maintain or increase total area of **mangroves**.

2. Maintain or increase abundance and biomass of **crabs**.

3. Maintain or increase abundance and biomass of **food fish**, including *damu* and *nuga*.

4. Maintain or increase abundance and biomass of **rare fish**, including *nuga ni vatu*.

10.3 COASTAL AND ESTUARINE THREATS

Participants in the *Ecosystem-Based Management Planning Workshop* (February 2009) identified the following key threats to the health and productivity of estuarine and coastal ecosystems in Kubulau:

- mangrove cutting
- poor waste management
- over-exploitation of mangrove fisheries
- future coastal development.

Underlying causes identified by participants included:

- mangrove cutting:
  - lack of awareness of the importance of mangroves
  - harvesting firewood for copra dryers
  - harvesting firewood for commercial sale
  - timber harvesting for construction

- poor waste management:
  - lack of rubbish disposal pits
  - livestock waste (pigs and cattle)
  - lack of awareness of health impacts
  - lack of awareness of environmental impacts
  - lack of community waste management rules

- over-exploitation of mangrove fisheries:
  - use of fine mesh nets

[68] WCS (2008) *Socioeconomic Survey: Kubulua District*.

    - over-harvesting of invertebrates
    - lack of awareness of importance of mangrove fisheries

- future coastal development:
    - potential source of income
    - scenic location for tourist development.

These threats are illustrated graphically in **APPENDIX 7 – COASTAL AND ESTUARINE THREAT DIAGRAM**.

The management rules and management activities set out below seek to respond to these threats.

10.4 COASTAL AND ESTUARINE BEST PRACTICE

To maintain and restore the health, productivity and resilience of coastal and estuarine ecosystems, the following practices are recommended:

RECOMMENDATION	RATIONALE
Limit harvesting of mangroves to ensure no net loss in mangrove area.	Mangroves are valuable as a fish hatchery, nursery, feeding ground and habitat.
Restore degraded mangrove areas by planting native mangrove species.	Mangroves reduce coastal erosion and provide valuable protection from storm surges.
Do not take undersized crabs or female crabs.	Releasing undersized crabs and female crabs increases the productivity of the population.

10.5 MANAGEMENT RULES – COASTAL AND ESTUARINE HABITATS

The following rules apply throughout the coastal and estuarine habitats of Kubulau District. The management rules listed for Kubulau *qoliqoli* (below) also apply to estuaries and coastal waters, including mangrove areas.

Rule	Exceptions	National	District	Management Actions
FISHING NETS				
Using a net within 100m of the mouth of any river or stream is prohibited	Fishing with a hand net, wading net or cast net.[69]	✗ [70]		Monitoring by fish wardens. Report breaches to Department of Fisheries.
Using a net in an estuary is prohibited	Fishing with a hand net, wading net or cast net. [71]	✗ [72]		Monitoring by fish wardens. Report breaches to Department of Fisheries.
Laying nets overnight in mangrove areas and around mangrove edges is prohibited.	Fishing approved by *turaga ni yavusa* on special occasions.		✗ [73]	Monitoring by fish wardens. Report breaches to KRMC.
SIZE LIMITS				
Taking undersized fish, crabs, shells or beche-de-mer is prohibited (minimum legal size limits listed in APPENDIX 3 – FISH SIZE LIMITS).		✗ [74]	✗ [75]	Raise awareness. Distribute fish size limit tables and rulers. Monitoring by fish wardens. Report breaches to Department of Fisheries.

[69] Refer to Appendix 2 for definitions of net types.
[70] *Fisheries Regulations* r.7
[71] Refer to Appendix 2 for definitions of net types.
[72] *Fisheries Regulations* r.7
[73] Kubulau Management Planning Workshop, February 2009.
[74] *Fisheries Regulations* rr. 18, 19, 21, 25B.
[75] Kubulau Management Planning Workshop, February 2009.

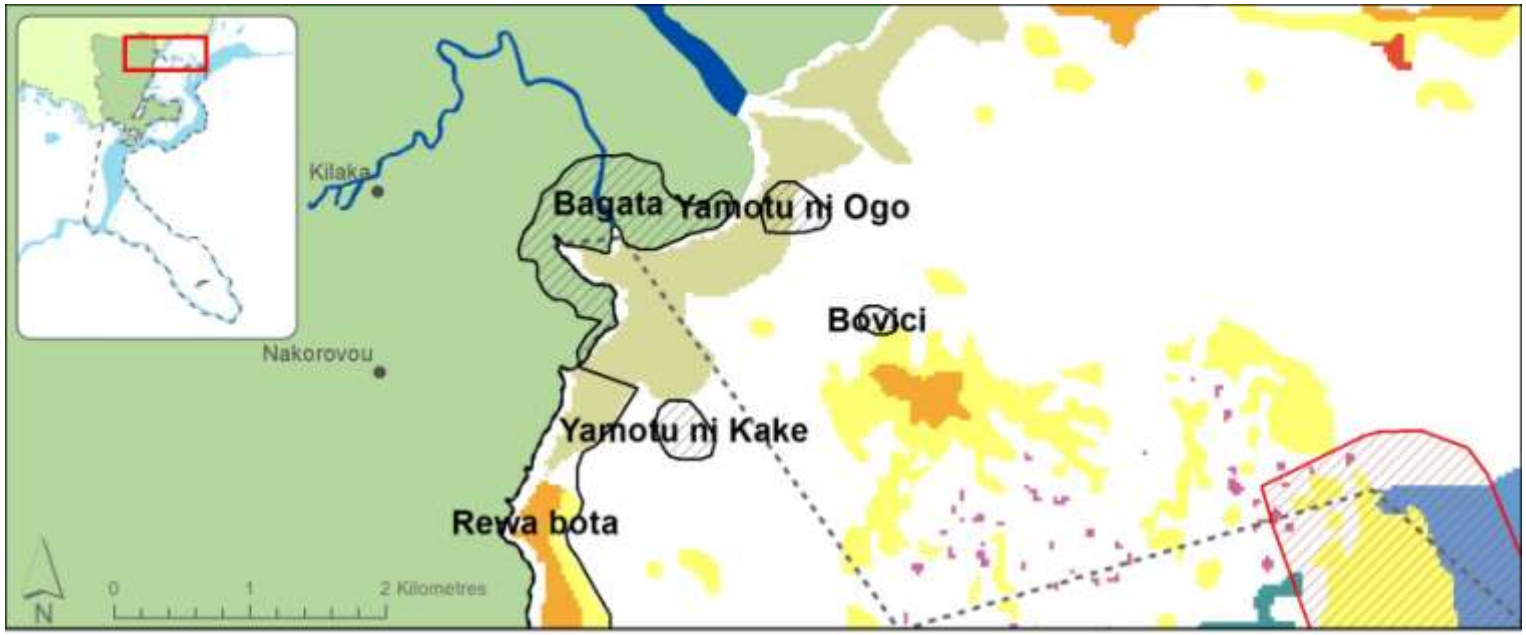
Rule	Exceptions	National	District	Management Actions
PROTECTED SPECIES				
Taking any of the protected species listed in Appendix 1 is prohibited.		✘ [76]		Report breaches to the Department of Environment.
MANGROVE CUTTING				
Cutting mangroves for commercial purposes is prohibited throughout Kubulau District.	Commercial mangrove harvesting approved by KRMC, Forest Department and Department of Lands.	✘ [77]	✘ [78]	Monitor. Report breaches to KRMC, Forest Department and Department of Lands.
WASTE DISPOSAL				
Dumping waste in estuaries, mangroves, beaches and foreshores is prohibited.		✘ [79]	✘ [80]	Report breaches by commercial or industrial facilities to Department of Environment. Report other breaches to KRMC.
LIVESTOCK				
Construction of pigsties within 30m of mangrove areas is prohibited.			✘ [81]	Report breaches to KRMC.

[76] *Fisheries Regulations*, *Endangered and Protected Species Act 2002*.
[77] *Crown Lands Act* [Cap. 132], s.32. *Forest Decree 1992,* ss.9, 22. Customary rights to harvest timber for domestic firewood and village construction are protected in the *Forest Decree*.
[78] *Draft Kubulau Qoliqoli Management Plan 2007*.
[79] *Litter Decree 1991, s8*.
[80] Kubulau Management Plan Review Workshop, January 2007, Kubulau Management Planning Workshop, February 2009.
[81] Kubulau Management Planning Workshop, February 2009.

Rule	Exceptions	National	District	Management Actions
DEVELOPMENT				
Houses and village structures must not be built within 30m of high tide mark without environmental impact assessment.		✘ [82]		Report breaches to Department of Environment.
Industrial or commercial development must not be undertaken without environmental impact assessment.		✘ [83]		Report breaches to Department of Environment.

[82] *Environment Management Act 2005*, Schedule 2, Part 3.
[83] *Environment Management Act 2005*.

10.5.1 KILAKA VILLAGE – BAGATA

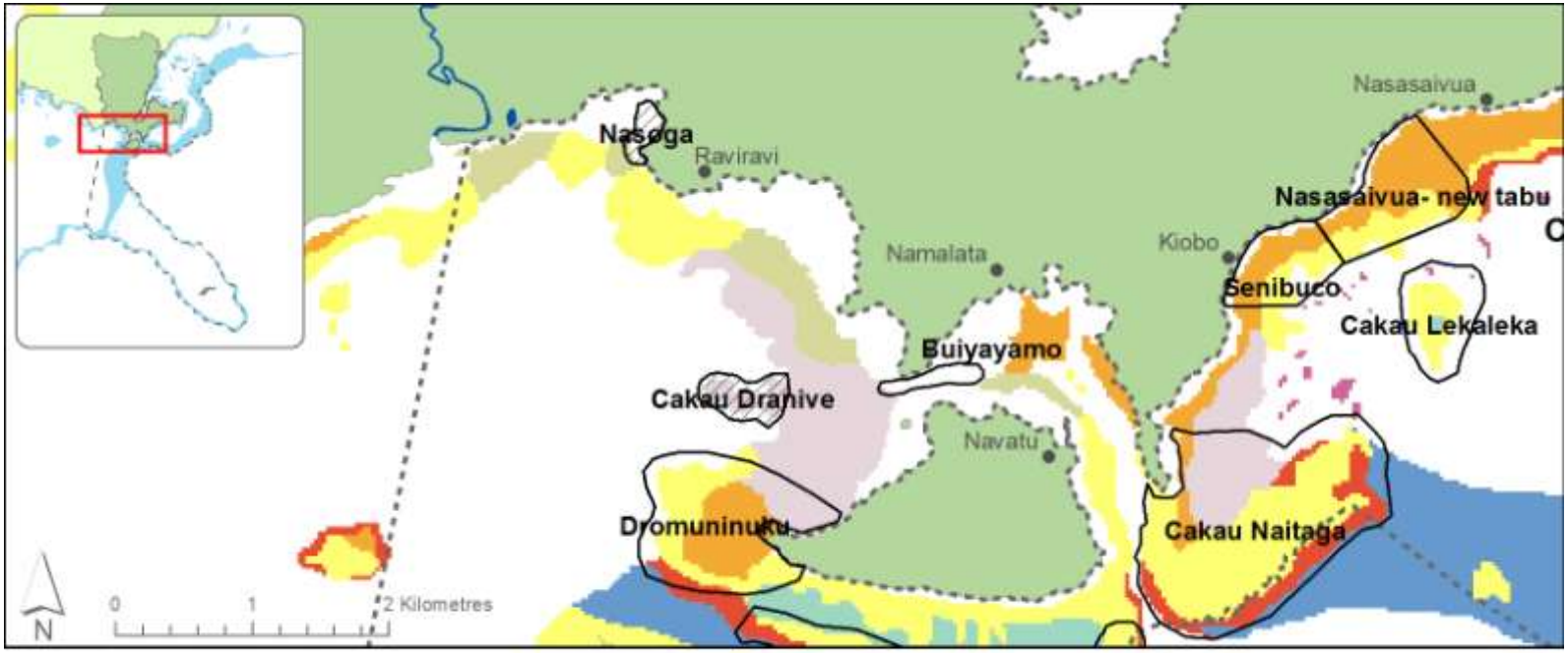


Kilaka village coastal *tabu* areas	Rule	Exceptions
Bagata	Taking any aquatic animal, including fish and crabs, is prohibited.[1]	Fishing authorised by *turaga ni yavusa*. May only be opened on special occasions.
Bagata	If the *tabu* is opened, using nets with a mesh smaller than 75mm is prohibited.[1]	Fishing with a hand net.
Bagata	Cutting mangroves for any purpose is prohibited.[1]	None

1. KRMC Consultation Meeting, Raviravi, May 2009.

Figure 10.1. Location and rules for Kilaka village Bagata mangrove *tabu* area.

10.5.2 RAVIRAVI VILLAGE – NASOGA

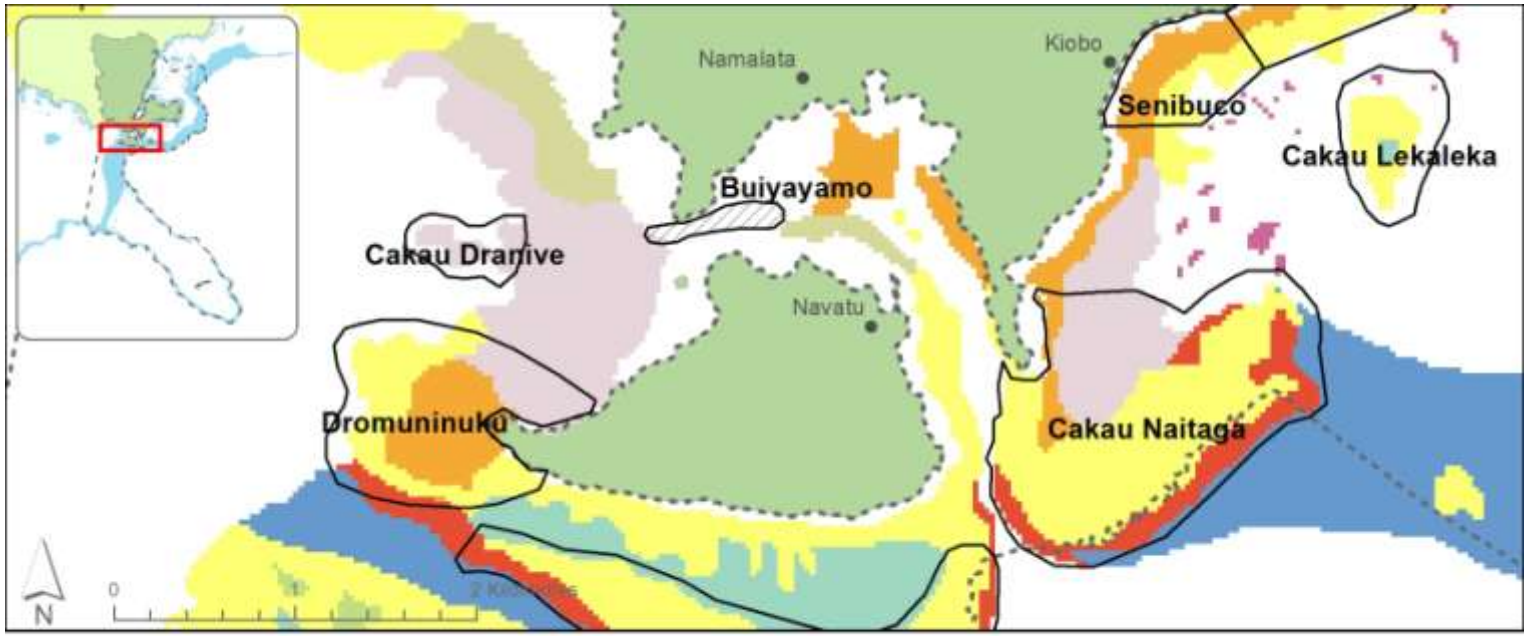


Raviravi coastal village *tabu* areas	Rule	Exceptions
Nasoga	Taking any aquatic animal, including fish and crabs, is prohibited.[1]	Fishing authorised by *turaga ni yavusa*. May only be opened on special occasions.
Nasoga	If the *tabu* is opened, using nets with a mesh smaller than 75mm is prohibited.[2]	Fishing with a hand net.
Nasoga	Cutting mangroves for any purpose is prohibited.[2]	None

1. Community Consultation on Reserve Conditions within Kubulau Qoliqoli, 2005. Modified at Kubulau Management Planning Workshop, February 2009.
2. KRMC Consultation Meeting, Raviravi, May 2009.

Figure 10.2. Location and rules for Raviravi village Nasoga mangrove *tabu* area.

10.5.3 NAMALATA VILLAGE – BUIYAYAMO

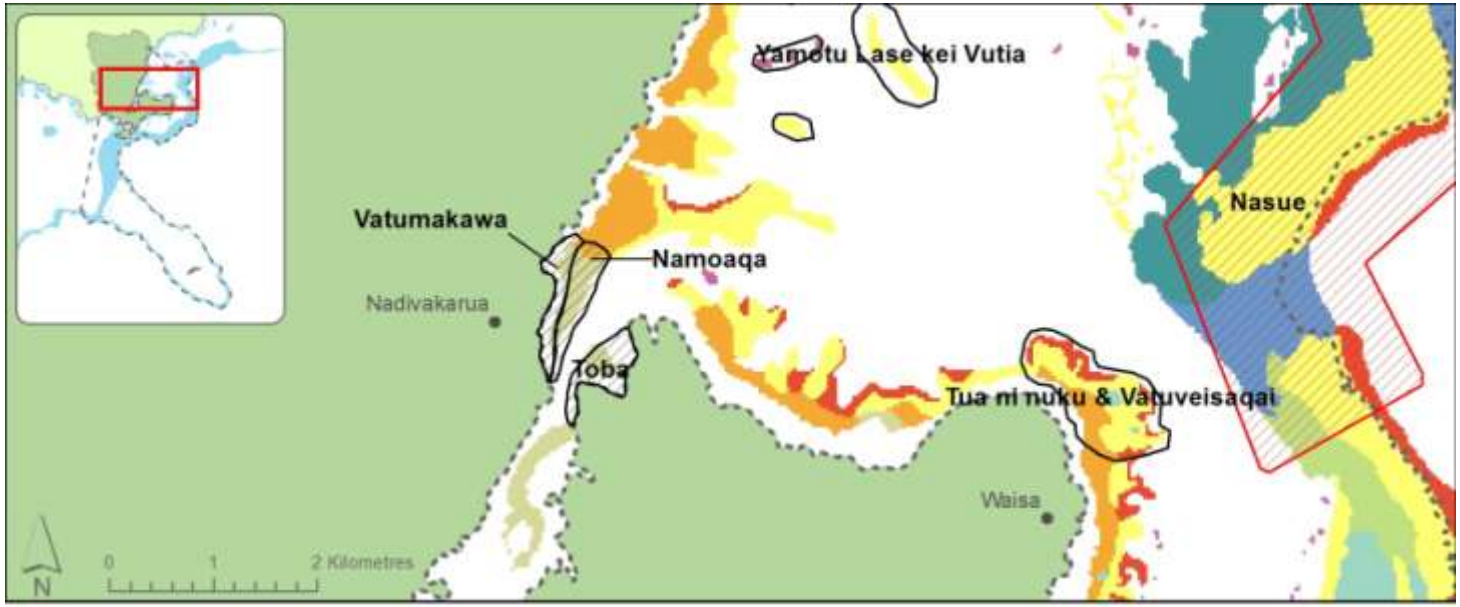


Namalata village *tabu* areas	Rule	Exceptions
Buiyayamo	Taking any aquatic animal, including fish and crabs, is prohibited.[1]	Fishing authorised by *turaga ni yavusa*. May only be opened on special occasions. This is a 5 year closure (2009-2014).
Buiyayamo	If the *tabu* is opened, using nets with a mesh smaller than 75mm is prohibited.[2]	Fishing with a hand net.
Buiyayamo	Cutting mangroves for any purpose is prohibited.[2]	None

1. Community Consultation on Reserve Conditions within Kubulau Qoliqoli, 2005. Modified at Kubulau Management Planning Workshop, February 2009.
2. KRMC Consultation Meeting, Raviravi, May 2009.

Figure 10.3. Location and rules for Namalata village Buiyayamo mangrove *tabu* area

10.5.4 NADIVAKARUA VILLAGE – TOBA, VATUMAKAWA AND NAMOAQA

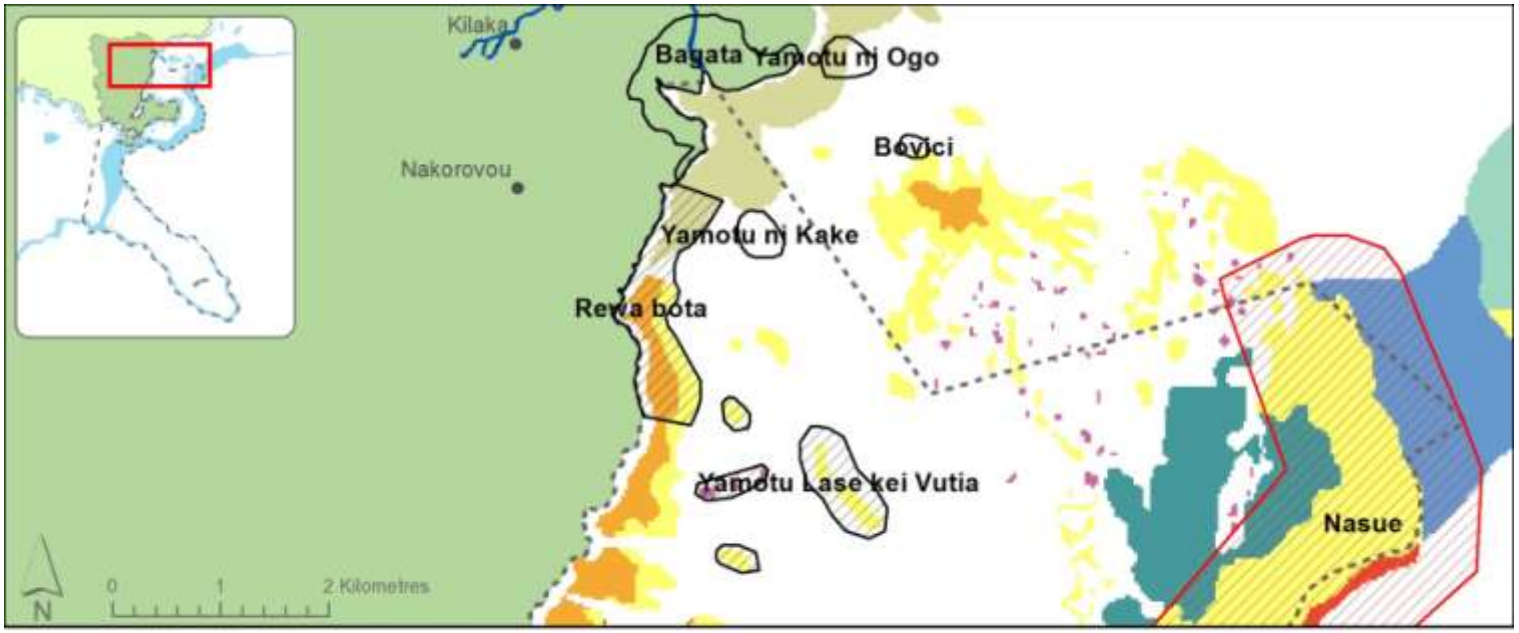


Nadivakarua village *tabu* areas	Rule	Exceptions
Toba	Taking any aquatic animal, including fish and crabs, is prohibited.[1]	Fishing authorised by Tui Nadi. May only be opened on special occasions.
Toba	If the *tabu* is opened, using nets with a mesh smaller than 75mm is prohibited.[2]	Fishing with a hand net.
Toba	Cutting mangroves for any purpose is prohibited.[2]	None
Vatumakawa	Taking any aquatic animal, including fish and crabs, is prohibited.[2]	Fishing authorised by *turaga ni yavusa*. May only be opened on special occasions.
Vatumakawa	If the *tabu* is opened, using nets with a mesh smaller than 75mm is prohibited.[2]	Fishing with a hand net.
Vatumakawa	Cutting mangroves for any purpose is prohibited.[2]	None
Namoaqa	Taking the beche-de-mer *Holothuria scabra* is prohibited.[3]	Fishing authorised by Tui Nadi.

1. Community Consultation on Reserve Conditions within Kubulau Qoliqoli, 2005. KRMC Consultation Meeting, Raviravi, May 2009.
2. KRMC Consultation Meeting, Raviravi, May 2009.
3. Nadivakarua village consultation on updated network of *tabu* areas and district MPAs, March 2012.

Figure 10.4. Location and rules for Nadivakarua village Toba and Vatumakawa mangrove *tabu* areas, and Namoaqa beche-de-mer *tabu* area.

10.5.5 NAKOROVOU VILLAGE – REWA BOTA (GEAR RESTRICTION AREA)



Nakorovou village coastal *tabu* areas	Rule	Exceptions
Rewa bota	Use of nets around mangrove edges is prohibited.[1]	None

1. Kubulau Management Planning Workshop, February 2009. KRMC Consultation Meeting, Raviravi, May 2009.

Figure 10.5. Location and rules for Nakorovou village Rewa Bota gear restriction area.

10.6 MANAGEMENT ACTIONS

Management actions for coastal and estuarine ecosystems in Kubulau District.

ISSUE	PROPOSED ACTIVITY	IMPLEMENTATION	LEAD	ACTIONS
MANGROVE CUTTING				
Cutting for construction timber and firewood (copra dryers, commercial sale)	Establish and enforce mangrove *tabu* areas (especially Kilaka River)	KRMC	KRMC village reps	1. Mark the boundaries of the mangrove *tabu* areas 2. Put up a signboard to indicate *tabu* area
Commercial development	Monitor coastal development proposals in Kubulau to ensure that environmental impacts are fully assessed	*Mataqali* reps *Turaga-ni-koro* KRMC EBM partners Other experts (e.g. FELA, consultants)	*Mata-ni-tikina*	1. All to monitor commercial development proposals in and near Kubulau and share information 2. Arrange for external experts to visit *mataqali* reps and explain the effects of commercial development on the environment, and the proper procedure for environmental impact assessment 3. *Mataqali* reps to follow up on the results of any environmental impacts assessment 4. Arrange *talanoa* session with communities to raise awareness of commercial development projects

11 MANAGEMENT OF MARINE HABITATS

11.1 MARINE HABITAT DESCRIPTION

The 261.6 square kilometres within the Kubulau *qoliqoli* covers a diverse array of habitats, including reef flats dominated by macroalgae, seagrass beds, coastal fringing reefs, soft bottomed lagoons, patch reefs, offshore barrier reefs and channels supporting fish spawning aggregations. There are currently 19 marine protected areas managed by Kubulau communities. Biological monitoring surveys from 2007-2008 found that while some MPAs (e.g. Namena Marine Reserve) are effective in terms of increasing fish biomass and abundance, the fisheries benefits and biodiversity of other areas have been compromised by overharvesting (e.g. Nakali *tabu*) or poaching (e.g. Nasue MPA).[84]

11.1.1 FLORA AND FAUNA

Of all sites assessed in the *qoliqoli*, fish diversity within families monitored[85] is greatest within the Namena Marine Reserve (2007: 114 species; 2008: 122 species). Fish diversity estimates from rapid surveys in 2003 across the entire Vatu-i-Ra/Lomaiviti seascape, including surveys in Namena, showed comparable biodiversity to sites in Indonesia (West Bali, West Java) and Papua New Guinea (New Britain).[86] In addition, fish sizes and biomass of targeted food fish species were equal to or greater than that measured in studies across multiple locations in Indonesia and Papua New Guinea.[87] In April 2009, surveys by Wetlands International documented 342 fish species, with a predicted fish fauna of 635 species for Kubulau outer reefs and surrounds, representing 73% of the total Fijian coral reef fish fauna and 20% of the diversity in the Indo-West-Pacific.

11.1.2 THREATENED AND ENDEMIC SPECIES

The fish communities of Kubulau are particularly unique in Fiji due to the high abundance of co-occurring endemics, including *Pomacentrus microspilus*, *Cirrhilabrus marjorie, Ecsenius fijiensis, Meiacanthus oulouensis, Plagiotremus flavus, Siganus uspi*, as well as a group of regionally endemic damselfishes found only in Fiji and Tonga (*Amphiprion barberi, Neoglyphidodon carlsoni, Pomacentrus callainus, P. spilotoceps*).[88] Endemic fish represented, on average, 4.6% of the marine fish fauna observed on any outer reef dive in April 2009.

Within Kubulau *qoliqoli* there are frequent sightings of fish listed on the IUCN Red List (20 species; 6% of total reef fish fauna), including the endangered Napoleon wrasse (*Cheilinus undulatus*). Kubulau *qoliqoli* has been identified as a priority site for cetaceans in Fiji,[89] with frequent sightings of resident pilot whales and dolphins and sightings of humpback whales during migration seasons.

[84] Jupiter S, Callow M, Tui T, Patrick A, Moy W, Yakub N, Cakacaka A, Naisilisili W, Dulunaqio S, Shah S (2009) Integrating EBM science to provide recommendations for re-designing an MPA network in Fiji. Presentation at the International Marine Conservation Congress, Fairfax, VA, May 20-24

[85] WCS (2009) WCS-Fiji scientific monitoring protocol handbook. Version 2.0. WCS: Suva, 42 pp.

[86] Marnane M, Allen G, Farley L, Sivo L, Dulunaqio S (2003) Scientific report on an expedition to the Vatu-i-Ra/Lomaiviti passage. 10-14 May 2003: a collaborative study undertaken by the Wildlife Conservation Society, Conservation International, the Namena Reef Conservation Group and Nai'a Diving Expeditions. WCS: Suva, 15 pp.

[87] Ibid.

[88] A. Jenkins, personal observation.

[89] Fiji Government and WWF (2009) The whale sanctuary management plan development workshop. Suva, 2-3 April.

11.1.3 ECONOMICALLY AND CULTURALLY IMPORTANT SPECIES

Local households surveyed identified the followed preferred food fish: Unicorn Surgeonfish, Trochus, Camouflage Grouper, Thumbprint Emperor, Blacksaddled coral grouper, Beche-de-mer, Fingerlip mullet, Lobsters, Orange-striped Emperor, Squaretail coral grouper, Trochus, Blacksaddle coral grouper, Narrow barred spanish mackerel, Golden rabbitfish, Longnose Emperor, Many-spotted sweetlip, Pacific longnose parrotfish, Slipper Lobster, Whitespotted Grouper, Blacklip Pearlshell, Red Snapper and Trevally. Respondents identified Unicorn Surgeonfish, Emperors (Thumbprint, Longnose) and Groupers (Blacksaddle, Camouflage, Squaretail) as preferred fish for sale.[90]

Giant clams and sea cucumbers were likely once plentiful in Kubulau, but their populations have been severely affected by commercial extraction. Green, hawksbill, loggerhead and leatherback turtles are found in Kubulau waters, with important nesting sites on Namenalala Island.

11.2 MARINE MANAGEMENT TARGETS

During the *Ecosystem-Based Management Planning Workshop* (February 2009), the following management targets were identified for marine ecosystems in Kubulau:

1. Increase **fish abundance and biomass**, including food fish and endangered species.
2. Increase **invertebrate abundance and biomass**, including clams and *beche-de-mer*.
3. Maintain or improve **coral reef** health, productivity and resilience.
4. Maintain **turtle abundance**, including green, hawksbill, loggerhead and leatherback turtles.
5. Maintain **spawning aggregations** by protecting spawning sites, including reef channels.

11.3 MARINE THREATS

Participants in the *Ecosystem-Based Management Planning Workshop* (February 2009) identified the following key threats to the health and productivity of marine ecosystems in Kubulau:

- over-fishing
- destructive fishing practices
- harvesting *tabu* areas too frequently.

Underlying causes identified by participants included:

- over-fishing:
  - lack of awareness of community management rules
  - lack of awareness of national fisheries legislation
  - lack of awareness of *tabu* boundaries
  - lack of law enforcement by police and fisheries officers

[90] WCS (2008) *Socioeconomic Survey: Kubulua District*.

    - community management not supported by legislation
    - lack of resources and equipment for enforcement by fish wardens

- destructive fishing practices:
    - failure to comply with ban on destructive fishing methods.

- harvesting *tabu* areas too frequently:
    - lack of awareness of impacts of overharvesting
    - lack of alternative income.

Lack of alternative income sources was identified as an underlying driver of over-exploitation of marine fisheries. Participants emphasised the need to develop small business proposals and to prioritise education for youth to improve their career prospects.

These threats and causes are illustrated graphically in **APPENDIX 8 – MARINE THREAT DIAGRAM**.

The management rules and management activities set out below seek to respond to these threats.

11.4 MARINE BEST PRACTICE

To maintain and restore the health, productivity and resilience of marine ecosystems, the following practices are recommended:

RECOMMENDATION	RATIONALE
Do not take fish or invertebrates that are gravid (eg. large stomach fish, berried crustaceans).	Protecting gravid fish and crustaceans increases the productivity of the fishery.
Do not take fish in migratory 'bottlenecks' during peak migration seasons.	Targeting migrating fish in reef channels or estuaries reduces the productivity of the fishery.
Consider relocating giant clams to marine protected areas or *tabu* areas.	Protecting clams until they reach reproductive size will help local clam populations to recover.
Do not take fish smaller than the recommended size limits listed in **Table 11.1** below.	Catching fish that have not yet reproduced reduces the productivity of the fishery.

Table 11.1. Recommended size limits for selected marine species.

To maintain ecosystem health and productivity of fish stocks, the following size limits are recommended. For legal size limits, refer to **Appendix 3 – Fish Size Limits.**

Family	Common Name(s)	Fijian Name	Minimum	Source	Example(s)
Acanthuridae	**Surgeonfish, Tang**	Balagi	**25cm**	2	*Acanthurus xanthopterus* – Yellowfin Surgeonfish
	except Lined Bristletooth (*Ctenochaetus striatus*)	Dridri	20cm	Modified from 2	*Ctenochaetus striatus* – Lined Bristletooth
	Unicornfish	Ta	**30cm**	1	*Naso unicornis* – Bluespine Unicornfish

Family	Common Name(s)	Fijian Name	Minimum	Source	Example(s)
Belonidae, Hemiramphidae	**Garfish, Needlefish, Halfbeaks**	Saku Busa	**30cm** **30cm**	1 1	*Tylosurus crocodilus* – Hound Needlefish *Hemiramphus far* – Black-barred Halfbeak *Belone*
Caragidae	**Trevally** *except* Blue Trevally (*Carangoides ferdau*)	Saqa Vilu saqa	**30cm**	1 1	 *Caranx melampygus* – Bluefin Trevally
Carcharhinidae, Sphyrnidae	**Sharks, including Hammerhead Sharks**	Qio	**150cm**	2	
Chanidae	**Milkfish**	Yawa	**30cm**	1	*Chanos chanos*
Haemulidae	**Sweetlips**	Sevaseva	**25cm**	2	 *Plectorhinchus chaetodonoides* – Many-spotted Sweetlips

Family	Common Name(s)	Fijian Name	Minimum	Source	Example(s)
Labridae	**Wrasse**		**25cm**	2	*Chelinus chlorourus* – Floral Wrasse *Chelinus oxycephalus* – Snooty Wrasse
	except Tuskfish (*Choerodon* spp.) *except* Humphead Wrasse (*Cheilinus undulatus*)	Labe Varivoce	30cm No take	2 4	
Lethrinidae	**Emperors, Bream**	Sabutu	**25cm**	2	 *Lethrinus obsoletus* – Orange-striped Emperor
		Kabatia	**25cm**	2	*Lethrinus harak* – Thumbprint Emperor
	except Longface Emperor (*Lethrinus olivaceus*) *except* Sweetlip Emperor (*Lethrinus miniatus*) *except* Spangled Emperor (*Lethrinus nebulosus*)	Doknivudi Belenidawa Kawago	38cm 38cm 45cm	2 2 2	

Family	Common Name(s)	Fijian Name	Minimum	Source	Example(s)
Lutjanidae	**Snapper**	Damu, Kake	**30cm**	1	*Lutjanus argentimaculatus* – Mangrove Red Snapper *Lutjanus ehrenbergii* – Blackspot Snapper
	except Yellowtail Blue Snapper (*Paracaesio xanthura*)		38cm	2	
	except Red Snapper (*Lutjanus bohar*)	Bati	No take	2	
	except Humpback Snapper (*Lutjanus gibbus*)	Sabutu damu	No take	2	
	except Chinamanfish (*Symphorus nematophorus*)	Tevulu	No take	2	
	Jobfish	Utouto	**38cm**	2	*Aprion virescens* – Green Jobfish *Aphareus furca* – Smalltooth Jobfish
Gerreidae	**Mojarra**	Matu	**10cm**	1	*Gerres oyena* – Blacktip Silver Biddy

Family	Common Name(s)	Fijian Name	Minimum	Source	Example(s)
Leiognathidae	**Ponyfish**	Kaikai	**10cm**	1	 *Leiognathus equulus* – Common Ponyfish *Photopecotralis bindus* – Orangefin Ponyfish *Gazza minuta* – Toothpony
Muglidae	**Mullet**	Kanace	**30cm**	2	
Mullidae	**Goatfish**	Ki	**15cm**	1	 *Upeneus vittatus* – Yellowstriped Goatfish
		Ose	**15cm**	1	*Parupeneus barberinus* – Dash-and-dot Goatfish

Family	Common Name(s)	Fijian Name	Minimum	Source	Example(s)
Scaridae	**Parrotfish**	Ulavi	**25cm**	2	*Chlorurus bleekeri* – Bleeker's Parrotfish *Chlorurus sordidus* – Bullethead Parrotfish *Bolbometopon muricatum* – Bumphead Parrotfish
	except Bumphead Parrotfish (*Bolbometopon muricatum*)	Kalia	No take	5	
Scombridae	**Spanish Mackerel**	Walu	**75cm**	2	*Scomberomorus commerson*
	Wahoo	Wau	**75cm**	2	*Acanthocybium solandri*

Family	Common Name(s)	Fijian Name	Minimum	Source	Example(s)
	Indian Mackerel	Salala	**20cm**	1	*Rastrelliger kanagurta*
Serranidae	**Groupers**	Kawakawa	**38cm**	2	*Plectropomus leopardus* – Leopard Coral Grouper
	except Malabar Grouper (*Epinephelus malabaricus*)	Kasala	38cm	2, 3	
	except Orange Spotted Grouper (*Epinephelus coioides*)	Kasalanitoga	38cm	2, 3	
	except Blacksaddle Coral Grouper (*Plectropomus laevis*)	Batisai	50cm	2	
	except Brown-Marbled Grouper (*Epinephelus fuscoguttatus*)	Delabulewa	50cm	2	
	except Camouflage Grouper (*Epinephelus polyphekadion*)	Kawakawa	50cm	2	
	except Giant Grouper (*Epinephelus lanceolatus*)	Kavu	No take	4	

Family	Common Name(s)	Fijian Name	Minimum	Source	Example(s)
Siganidae	**Rabbitfish**	Nuqa	**20cm**	1	
	except Foxface Rabbitfish (*Siganus uspi*)		No take	4	*Siganus uspi* – Foxface Rabbitfish
Sphyraenidae	**Barracuda**	Ogo	**30cm**	2	*Sphyraena barracuda* – Great Barracuda
		Silasila	**30cm**	2	*Sphyraena forsteni* – Bigeye Barracuda
Portunidae	**Swimming Crab** (*Scylla serrata*)	Qari dina	**14cm**	3	
Trochidae	**Trochus Shell** (*Trochus niloticus*)	Sici	**9cm (max. 12cm)**	3	

Family	Common Name(s)	Fijian Name	Minimum	Source	Example(s)
	Beche-de-mer *except* Black Teatfish (*Holothuria whitmaei*) *except* White Teatfish (*Holothuria fuscogilva*) *except* Golden Sandfish (*Holothuria scabra var versicolor*) *except* Blackfish (*Actinopyga miliaris*) *except* Surf Redfish (*Actinopyga mauritiana*) *except* Curryfish (*Stichopus hermanni*) *except* Redfish (*Thelenota ananas*)	Sucuwalu, Dri	**20cm** 30cm 35cm 30cm 25cm 25cm 35cm 45cm	3 3 3 3 3 3 3 3	
Pteriidae	**Pearl Oyster Shell** *(Pinctada margaritifera)*	Civa	**10cm**	1	

Measurement method: (1) Fish: measure from the point of the snout to the middle of the tailfin when the fish is laid flat. (2) Swimming crab: measure across the widest part of the carapace (3) Trochus: measure across the whorl. (4) Beche-de-mer: measure live not dried (4) Pearl Oyster Shell: measure from the butt or hinge to the opposite lip.

Sources:

1. *Fisheries Act, Fisheries Regulations.*
2. *Fish Size and Bag Limits for Queensland*, Department of Primary Industries and Fisheries, Queensland, Australia (March 2009).
3. *Environmental Code*, South Province, New Caledonia (2009).
4. *Endangered and Protected Species Act* (2002).
5. *Draft Inshore Fisheries Regulations*.

11.5 MANAGEMENT RULES – MARINE HABITATS

MANAGEMENT RULES – KUBULAU *QOLIQOLI*

The following rules apply throughout the **Kubulau Qoliqoli**, as mapped by the ITaukei Land and Fisheries Commission, and marked on **Figure 3.2**.

RULE	EXCEPTIONS	NATIONAL	DISTRICT	MANAGEMENT ACTIONS
COMMERCIAL FISHING				
Fishing for 'trade or business' without a fishing licence is prohibited	Fishing with a line from the shore or with a spear.	✗ [91]		Monitoring by fish wardens. Report breaches to Fisheries Department.
Breaching the conditions of a fishing licence is prohibited	-	✗ [92]		Monitoring by fish wardens. Report breaches to Fisheries Department.
FISHING METHODS				
Dynamite fishing is prohibited	-	✗ [93]	✗ [94]	Monitoring by fish wardens. Report breaches to Fisheries Department.
Fishing with poison is prohibited	-	✗ [95]	✗ [96]	Monitoring by fish wardens. Report breaches to Fisheries Department.
Fishing with SCUBA is prohibited	-	✗ [97]	✗ [98]	Monitoring by fish wardens. Report breaches to Fisheries Department.

[91] *Fisheries Act (Cap 158)* s 5(3)
[92] *Fisheries Act (Cap 158)* s 5(3)
[93] *Fisheries Act (Cap 158)* s s 10(4).
[94] Kubulau Management Plan Review Workshop, January 2007
[95] *Fisheries Regulations* r 8.
[96] Kubulau Management Plan Review Workshop, January 2007
[97] *Fisheries (Restrictions on use of Breathing Apparatus) Regulations 1997* r 4.
[98] Kubulau Management Plan Review Workshop, January 2007

RULE	EXCEPTIONS	NATIONAL	DISTRICT	MANAGEMENT ACTIONS
Fishing with a compressor is prohibited	-	✘ [99]	✘ [100]	Monitoring by fish wardens. Report breaches to Fisheries Department.
Longline fishing is prohibited	-		✘ [101]	No letters of consent to be issued for longline fishing vessels. Report unlicensed vessels to Fisheries Department.
Trawling is prohibited	-		✘ [102]	No letters of consent to be issued for trawlers. Report unlicensed vessels to Fisheries Department.
Shark finning is prohibited.	-		✘ [103]	Monitor shark populations. Report unlicensed vessels to Fisheries Department.
FISHING NETS				
Using undersized fishing nets is prohibited (minimum net mesh sizes listed in Appendix 2).	Hand net.[104]	✘ [105]	✘ [106]	Monitoring by fish wardens. Report breaches to KRMC.
Using *lawa ni busa* is prohibited.[107]	Fishing for needlefish (*busa*) in the month of July.		✘ [108]	Monitoring by fish wardens. Report breaches to KRMC.
Using a net in the sea within 100m of the mouth of a river or stream is prohibited	Fishing with a hand net, wading net or cast net.	✘ [109]		Monitoring by fish wardens. Report breaches to Fisheries Department.

[99] *Fisheries (Restrictions on use of Breathing Apparatus) Regulations 1997* r 4.
[100] Kubulau Management Plan Review Workshop, January 2007
[101] Kubulau Management Plan Review Workshop, January 2007
[102] Kubulau Management Plan Review Workshop, January 2007
[103] Kubulau Management Plan Review Workshop, January 2007
[104] Refer to Appendix 2 for definitions of net types.
[105] *Fisheries Regulations* r 14.
[106] Kubulau Management Plan Review Workshop, January 2007
[107] Refer to Appendix 2 for definitions of net types.
[108] Meeting of the Bose Vanua, July 2009.
[109] Kubulau Management Plan Review Workshop, January 2007

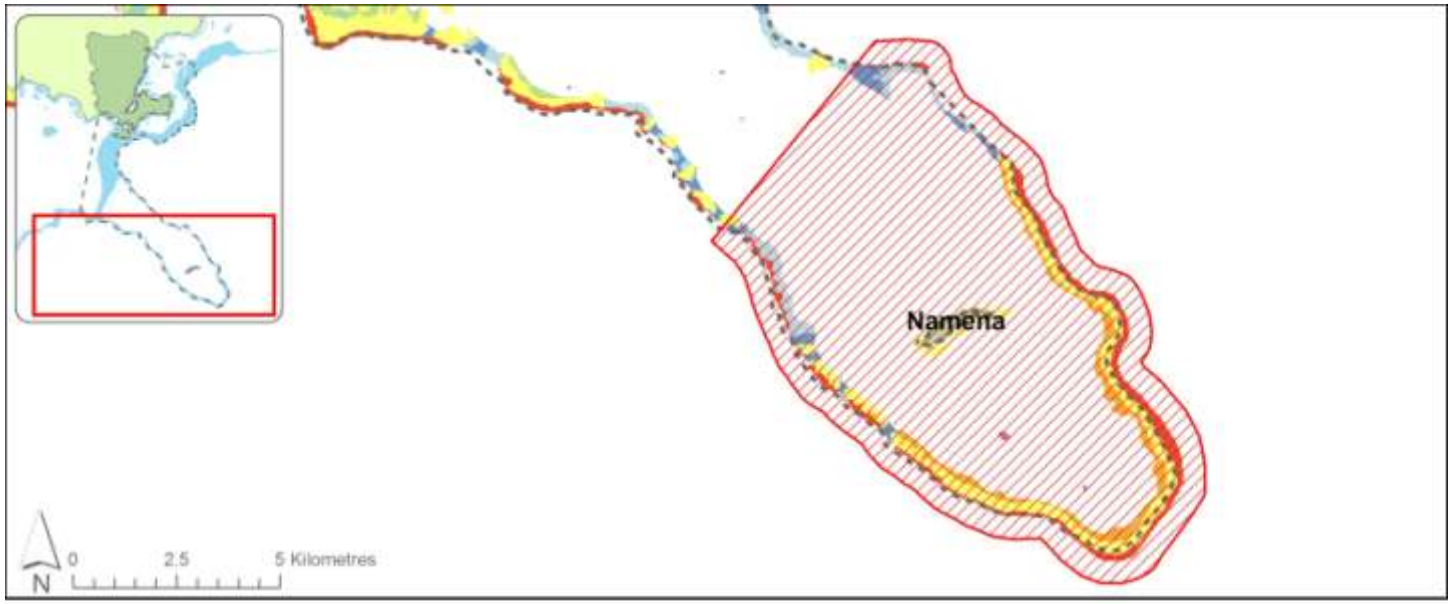
RULE	EXCEPTIONS	NATIONAL	DISTRICT	MANAGEMENT ACTIONS
SIZE LIMITS				
Taking undersized fish, crabs, shells or beche-de-mer is prohibited (minimum legal size limits listed in Appendix 3).	Fish caught by children under 16 years old using a hook and line from the shore or wading near the shore and not sold or displayed for sale.	✗ [110]		Raise awareness. Distribute fish size limit tables and rulers. Monitoring by fish wardens. Report breaches to Fisheries Department.
PROTECTED SPECIES				
Taking Humphead Wrasse is prohibited.		✗ [111]	✗ [112]	Monitoring by fish wardens. Report breaches to Fisheries Department.
Taking Bumphead Parrotfish is prohibited.		✗ [113]	✗ [114]	Monitoring by fish wardens. Report breaches to Fisheries Department.
Taking turtles or their eggs is prohibited.		✗ [115]	✗ [116]	Monitoring by fish wardens. Report breaches to Fisheries Department.
Taking *davui* is prohibited.		✗ [117]		Monitoring by fish wardens. Report breaches to Fisheries Department.

[110] *Fisheries Regulations* rr. 18, 19, 21, 25B.
[111] *Endangered and Protected Species Act 2002*.
[112] Kubulau Management Plan Review Workshop, January 2007
[113] *Endangered and Protected Species Act 2002*.
[114] Kubulau Management Plan Review Workshop, January 2007
[115] The moratorium on taking or killing turtles contained in *Fisheries (Moratorium on Molesting, Taking or Killing of Turtles) Regulations 1997,* r.20A, expired on 31 December 2008. As at 16 July 2009, the Department of Fisheries was preparing regulations to extend the moratorium for a further 10 years. In the interim, *Fisheries Regulations*, r.20, prohibits (a) the taking of turtle eggs (b) the taking of any turtle with a shell less than 455mm in length, and (c) the taking of any turtles in the months of November, December, January or February.
[116] Kubulau Management Plan Review Workshop, January 2007
[117] *Fisheries Regulations* r.22.

RULE	EXCEPTIONS	NATIONAL	DISTRICT	MANAGEMENT ACTIONS
Taking Giant helmet shell is prohibited.		✘ [118]		Monitoring by fish wardens. Report breaches to Fisheries Department.
Taking whales and dolphins is prohibited.		✘ [119]	✘ [120]	Monitoring by fish wardens. Report breaches to Fisheries Department.
Taking any of the protected marine species listed in Appendix 1 is prohibited.		✘ [121]		Monitoring by fish wardens. Report breaches to Department of Environment.
SEASONAL CLOSURE				
Taking any species of grouper during the month of August is prohibited.			✘ [122]	Monitoring by fish wardens. Report breaches to KRMC.
RESEARCH				
Research may only be undertaken in the Kubulau *qoliqoli* with KRMC permission.	-		✘ [123]	Monitoring by fish wardens. Report breaches to KRMC.

[118] *Fisheries Regulations* r.23.
[119] *Fisheries Regulations* r.25, *Endangered and Protected Species Act 2002*, s.3.
[120] Kubulau Management Plan Review Workshop, January 2007
[121] *Fisheries Regulations*, *Endangered and Protected Species Act 2002*.
[122] Kubulau Management Plan Review Workshop, January 2007
[123] Draft Namena Marine Protected Area Management Plan, April 2007

11.5.1 NAMENA MARINE RESERVE

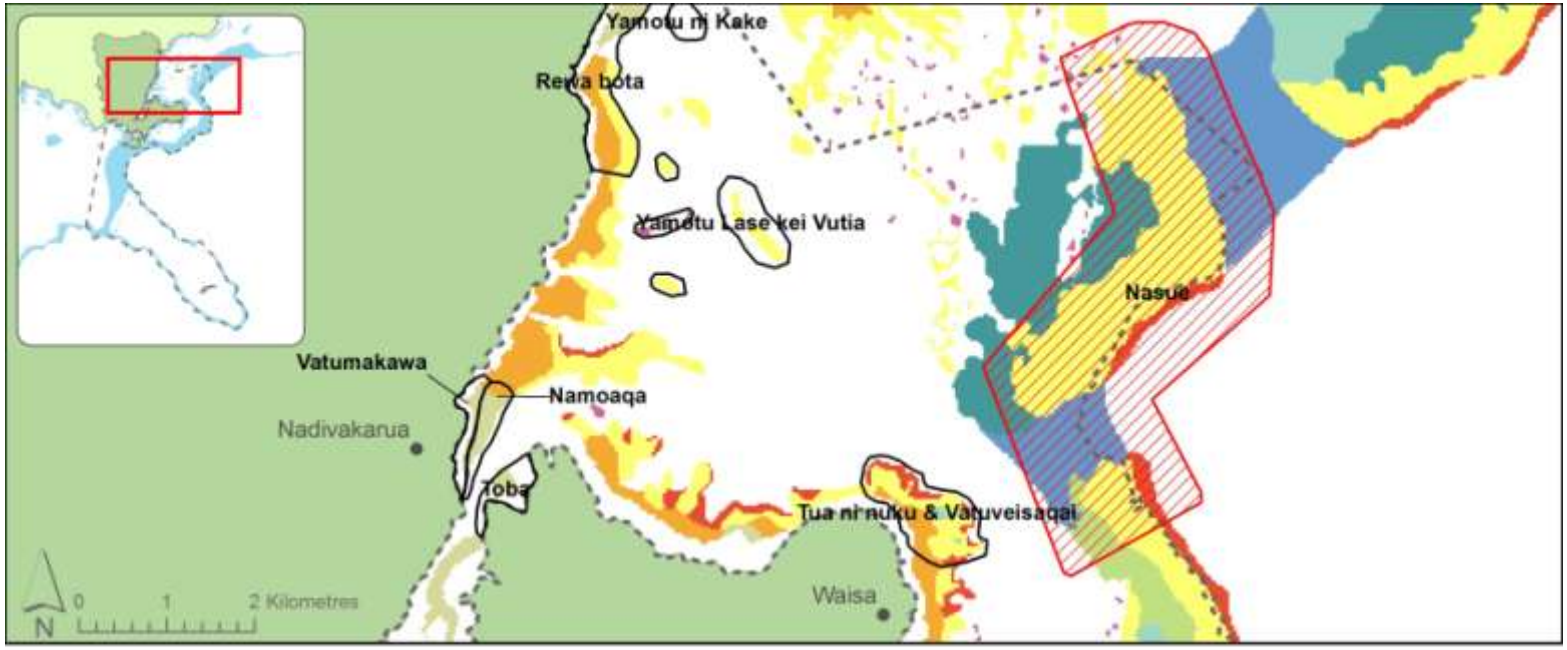


Marine Protected Area	Rule	Exceptions
Namena	Taking any aquatic animal, including fish and beche-de-mer, is prohibited.[1]	The reserve may only be opened by the *Bose Vanua* for the funeral of the Tui Kubulau or the Tui Nadi.
Namena	Removing anything, living or non-living, from Namena Reserve is prohibited.[1]	The reserve may only be opened by the *Bose Vanua* for the funeral of the Tui Kubulau or the Tui Nadi.
Namena	Diving, snorkelling or kayaking without a marine reserve user tag is prohibited.[1,2]	Resource owners. Research authorised by KRMC.
Namena	Marine recreation providers, including dive operators, must comply with the Namena Marine Reserve Recreational Guidelines.[3]	None
Namena	Use of anchors within the marine reserve is prohibited.[1]	None

1. Draft Namena Marine Protected Area Management Plan, April 2007.
2. Marine reserve user tags are available for purchase from KRMC, local dive operators and selected resorts.
3. The *Namena Marine Reserve Recreational Use Guidelines* were developed in consultation with resource owners and tourism operators, and constitute a voluntary code of conduct for operators in the reserve.

Figure 11.1. Location and rules for Namena Marine Reserve.

11.5.2 NASUE DISTRICT MARINE PROTECTED AREA

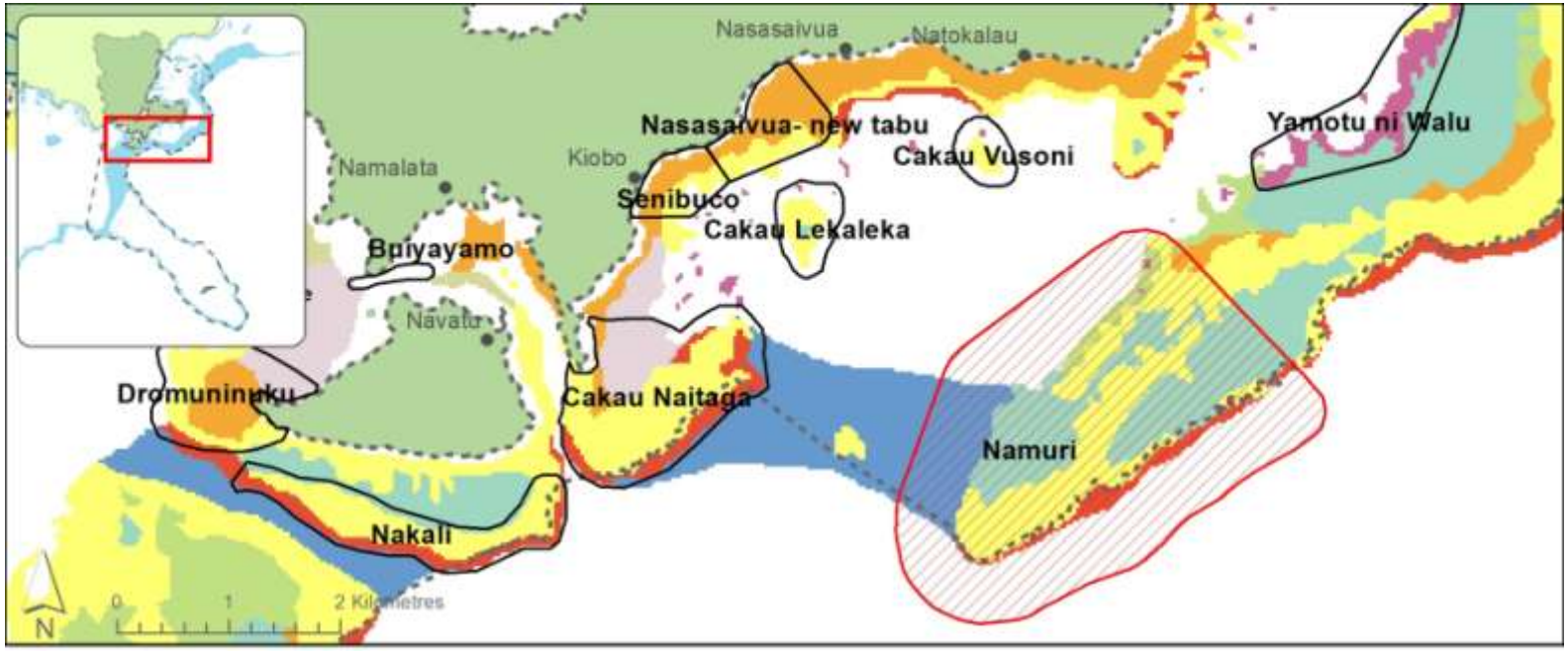


Marine Protected Area	Rule	Exceptions
Nasue	Taking any aquatic animal, including fish and beche-de-mer, is prohibited.[1]	None
Nasue	Use of anchors within the marine reserve is prohibited.[2]	Use of anchors during research authorised by KRMC.

1. Draft Kubulau Qoliqoli Management Plan, November 2005
2. KRMC Consultation Meeting, Raviravi, May 2009

Figure 11.2. Location and rules for Nasue District Marine Protected Area.

11.5.3 NAMURI DISTRICT MARINE PROTECTED AREA

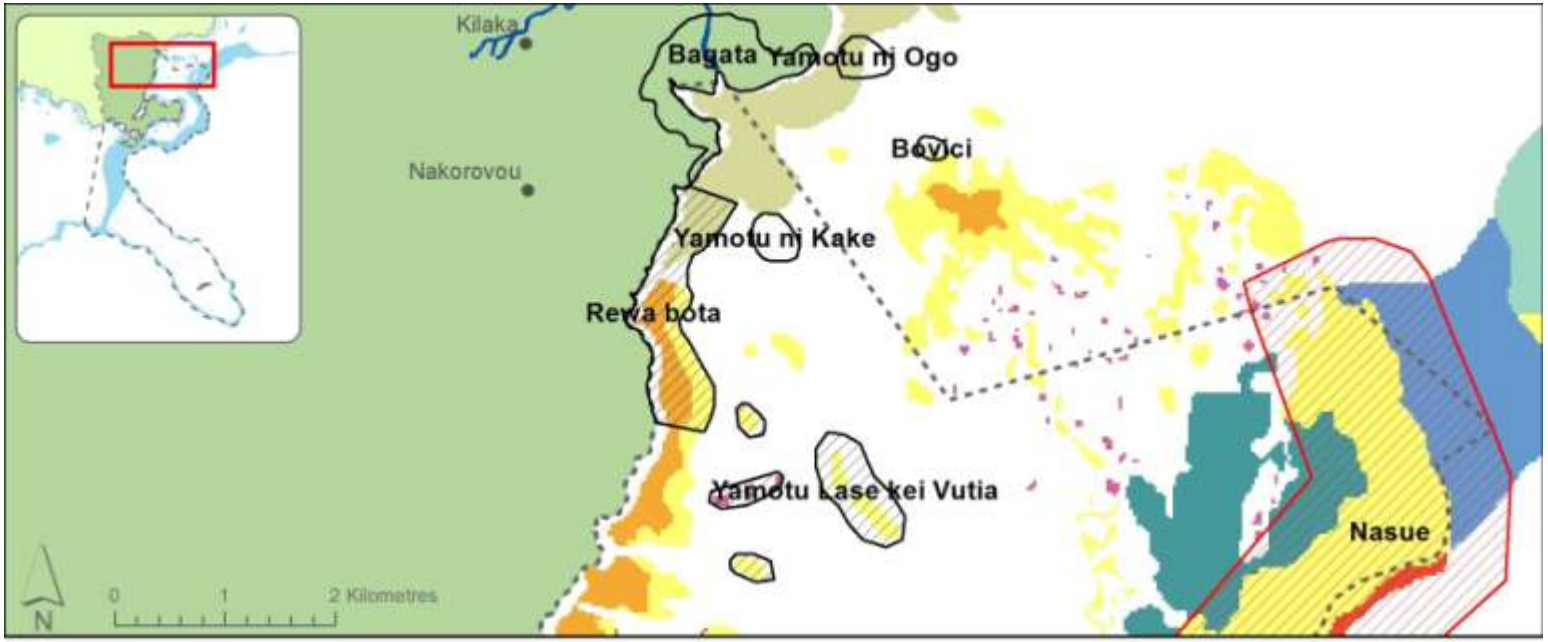


Marine Protected Area	Rule	Exceptions
Namuri	Taking any aquatic animal, including fish and beche-de-mer, is prohibited.[1]	None
Namuri	Use of anchors within the marine reserve is prohibited.[2]	Use of anchors during research authorised by KRMC.

1. Draft Kubulau Qoliqoli Management Plan, November 2005
2. KRMC Consultation Meeting, Raviravi, May 2009

Figure 11.3. Location and rules for Namuri District Marine Protected Area.

11.5.4 NAKOROVOU VILLAGE – YAMOTU LASE KEI VUTIA

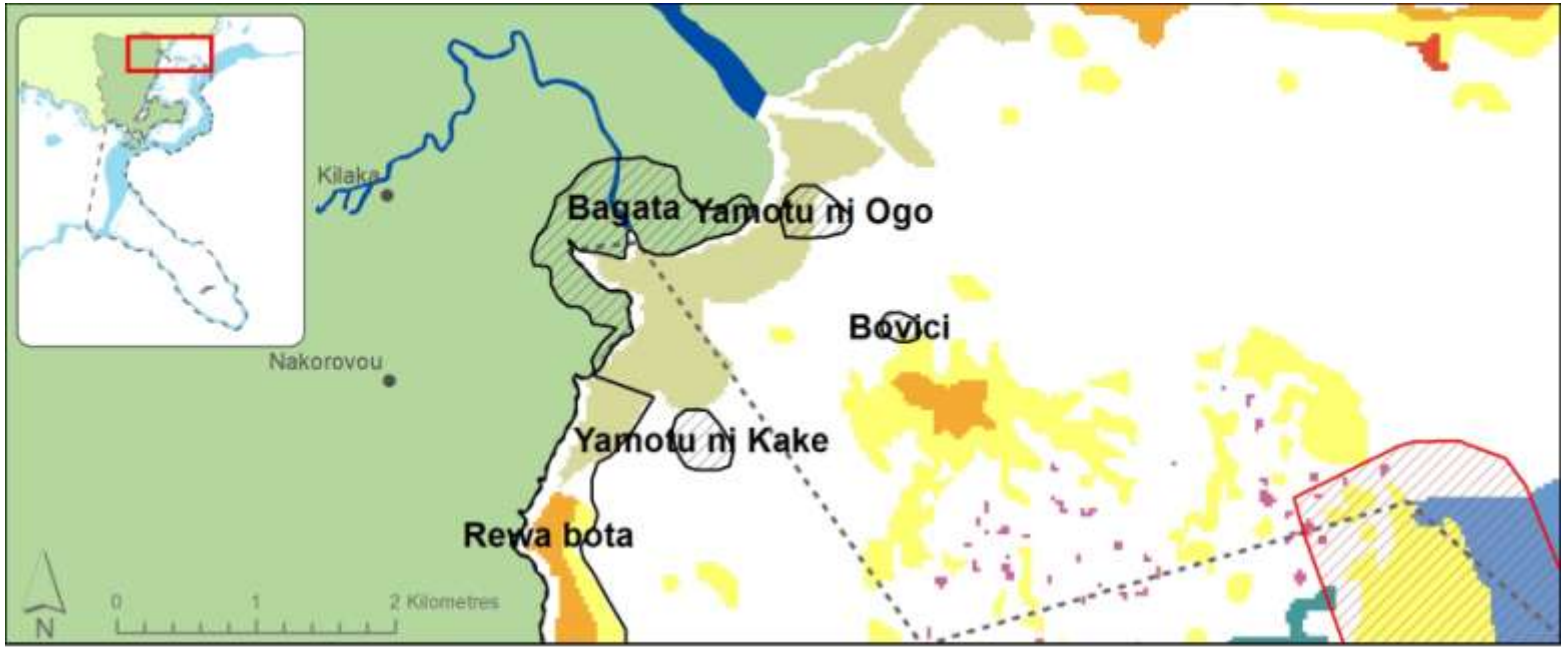


Nakorovou village marine *tabu* areas	Rule	Exceptions
Yamotu Lase kei Vutia	Fishing using lines and nets, and diving for trochus and beche-de-mer, is prohibited.[1]	Fishing authorised by *turaga ni yavusa*, *turaga ni mataqali* and a community member. May be opened each year for Saint Teresa feast day, 1 Oct.
Yamotu Lase kei Vutia	Use of anchors within the *tabu* area is prohibited.[2]	Use of anchors during research authorised by KRMC.

1. Community Consultation on Reserve Conditions within Kubulau Qoliqoli, 2005. Modified at Kubulau Management Planning Workshop, February 2009. Formerly part of Bota Rewa *tabu* area.
2. KRMC Consultation Meeting, Raviravi, May 2009.

Figure 11.4. Location and rules for Nakorovou village marine *tabu* area.

11.5.5 KILAKA VILLAGE – BOVICI, YAMOTU NI KAKE AND YAMOTU NI OGO

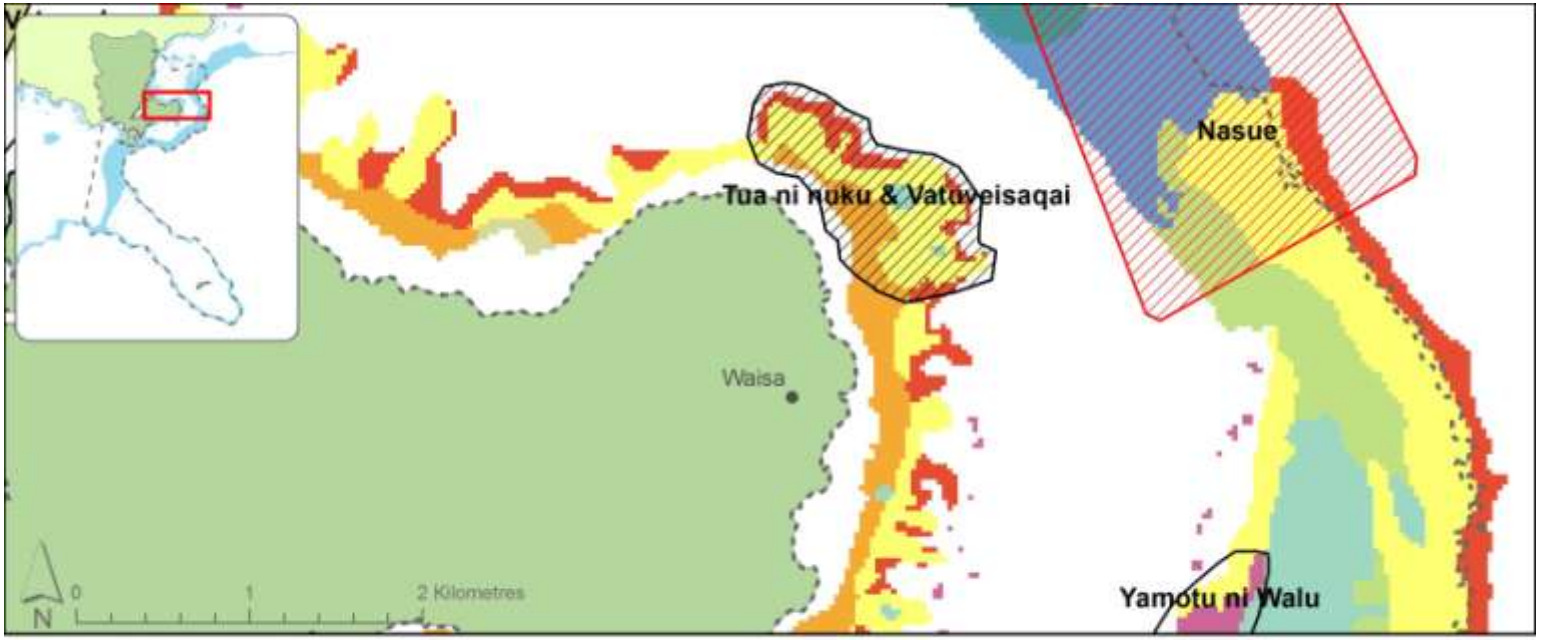


Kilaka village marine *tabu* areas	Rule	Exceptions
Bovici **Yamotu ni Kake** **Yamotu ni Ogo**	Taking any aquatic animal, including fish and beche-de-mer, is prohibited.[1]	Fishing authorised by *turaga ni yavusa*. May only be opened for major functions, such as district church gatherings, funerals of chiefs and district workshops.
Bovici **Yamotu ni Kake** **Yamotu ni Ogo**	Entry into *tabu* area prohibited.[2]	Entry authorised by *turaga ni yavusa*.
Bovici **Yamotu ni Kake** **Yamotu ni Ogo**	Diving in *tabu* area prohibited.[2]	Diving authorised by *turaga ni yavusa*.

1. Community Consultation on Reserve Conditions within Kubulau Qoliqoli, 2005. Clarified at Kubulau Management Planning Workshop, February 2009.
2. Kubulau Management Planning Workshop, February 2009.

Figure 11.5. Location and rules for Kilaka village marine *tabu* areas.

11.5.6 WAISA VILLAGE – TUA NI NUKU & VATUVEISAQAI

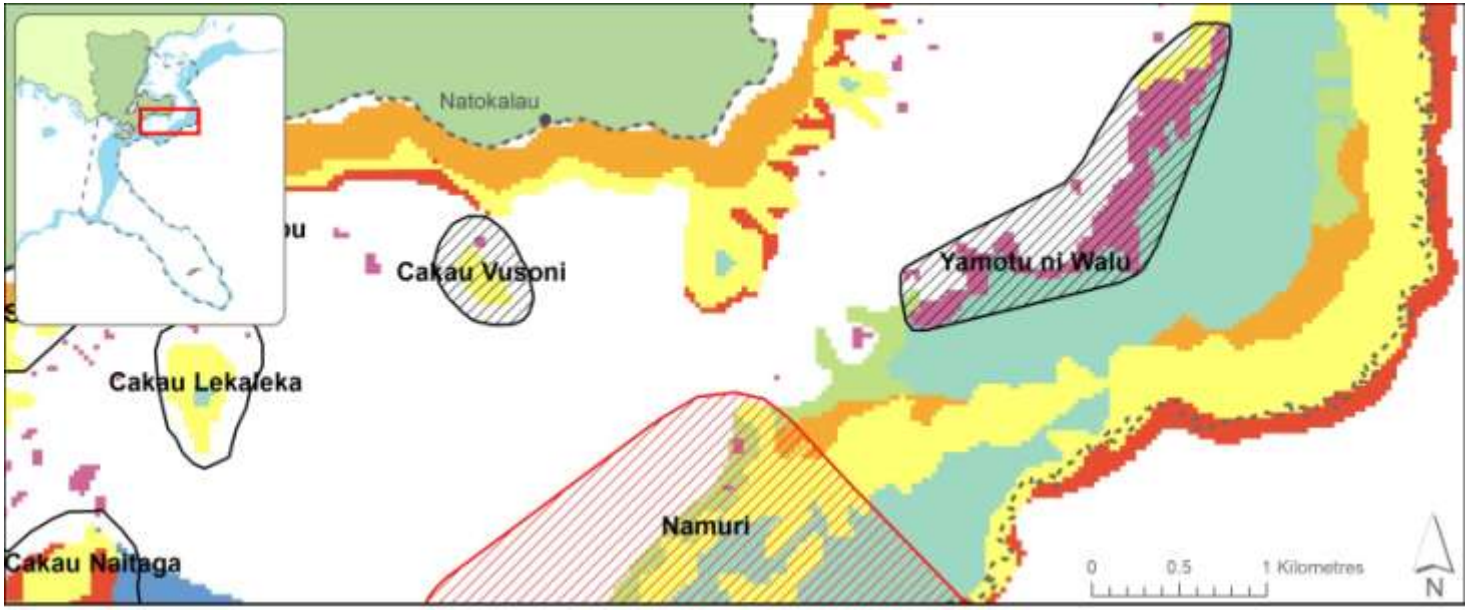


Waisa village *tabu* areas	Rule	Exceptions
Tua ni nuku & Vatuveisaqai	Taking any aquatic animal, including fish, trochus and beche-de-mer, is prohibited.[1]	Fishing authorised by village meeting.

1. Community Consultation on Reserve Conditions within Kubulau Qoliqoli, 2005. Modified at at Kubulau Management Planning Workshop, February 2009.
2. Boundary and name change agreed at Waisa village consultation on updated network of *tabu* areas and district MPAs, March 2012.

Figure 11.6. Location and rules for Waisa village Tua ni nuku & Vatuveisaqai marine *tabu* area.

11.5.7 NATOKALAU VILLAGE – CAKAU VUSONI

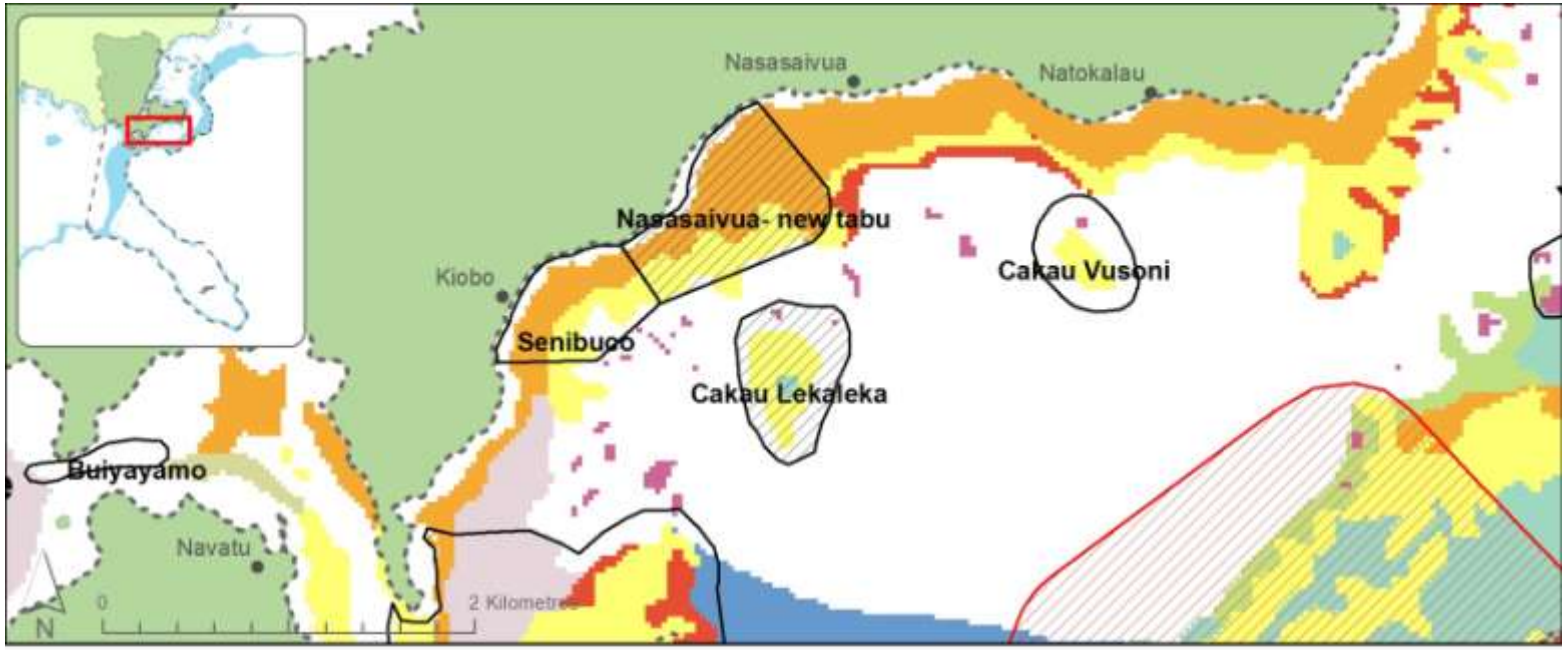


Natokalau village *tabu* areas	Rule	Exceptions
Cakau Vusoni	Taking any aquatic animal, including fish, beche-de-mer and trochus, is prohibited.[1]	Fishing authorised by *turaga ni mataqali*. This is a 5 year closure (2009-2014).
Yamotu ni Walu	Taking any aquatic animal, including fish, beche-de-mer and trochus, is prohibited.[2]	Fishing authorised by *marama ni yavusa* and *turaga ni mataqali*. May only be opened for official functions, including funerals and major church services.

1. Community Consultation on Reserve Conditions within Kubulau Qoliqoli, 2005. Modified at at Kubulau Management Planning Workshop, February 2009.
2. Community Consultation on Reserve Conditions within Kubulau Qoliqoli, 2005. Modified at at Kubulau Management Planning Workshop, February 2009.

Figure 11.7. Location and rules for Natokalau village Cakau Vusoni and Yamotu ni Walu marine *tabu* areas.

11.5.8 NASASAIVUA VILLAGE – CAKAU LEKALEKA

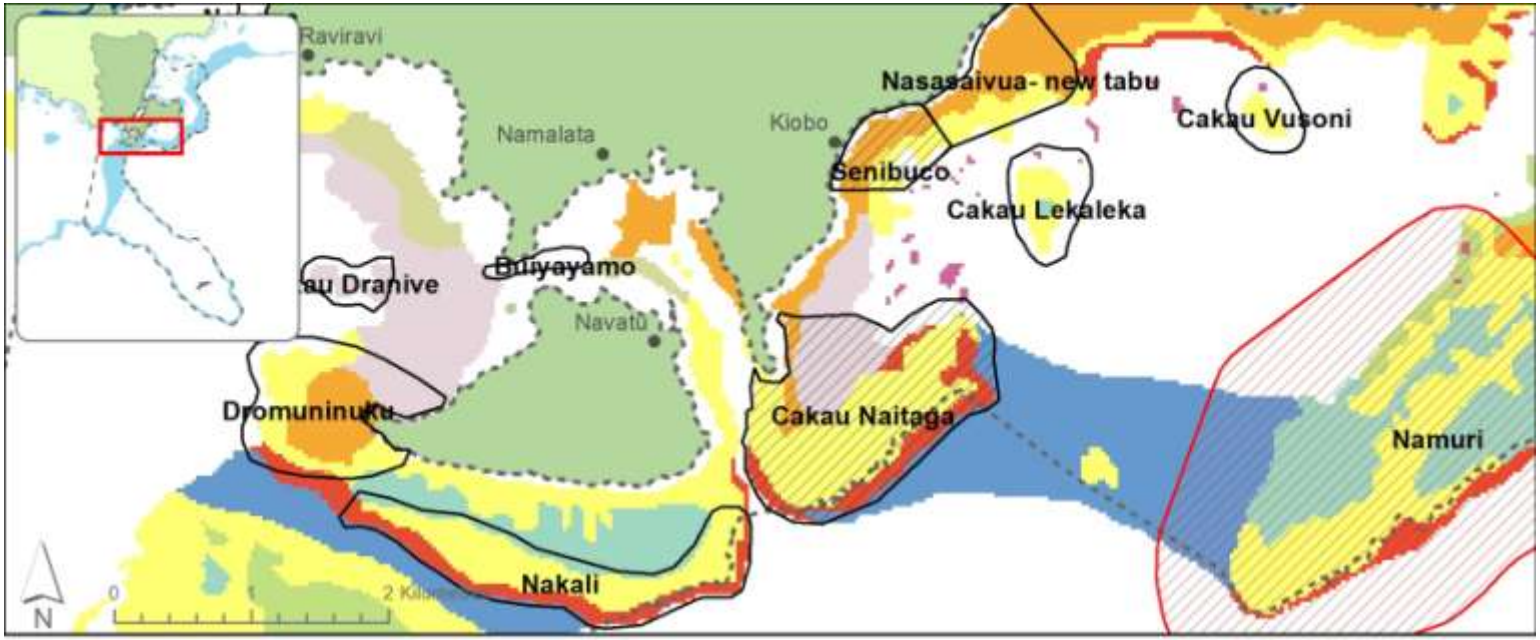


Nasasaivua village *tabu* areas	Rule	Exceptions
Cakau Lekaleka 'New *tabu*'	Taking any aquatic animal, including fish, beche-de-mer and trochus, is prohibited.[1, 2]	Fishing authorised by the Buli Levuka. May only be opened for genuine functions (weddings, funerals).
Cakau Lekaleka 'New *tabu*'	If the *tabu* is opened, using nets for commercial purposes is prohibited.[2, 3]	None

1. Community Consultation on Reserve Conditions within Kubulau Qoliqoli, 2005. Modified at Kubulau Management Planning Workshop, February 2009. Cakau Lekaleka boundary change agreed at Nasasaivua village consultation on updated network of *tabu* areas and district MPAs, March 2012.
2. 'New *tabu*' added at Kubulau Adaptive Management Workshop, July 2011.
3. Kubulau Management Planning Workshop, February 2009. Cakau Lekaleka boundary change agreed at Nasasaivua village consultation on updated network of *tabu* areas and district MPAs, March 2012.

Figure 11.8. Location and rules for Nasasivua Cakau Lekaleka and 'New *tabu*' marine *tabu* areas.

11.5.9 KIOBO VILLAGE – CAKAU NAITAGA AND SENIBUCO

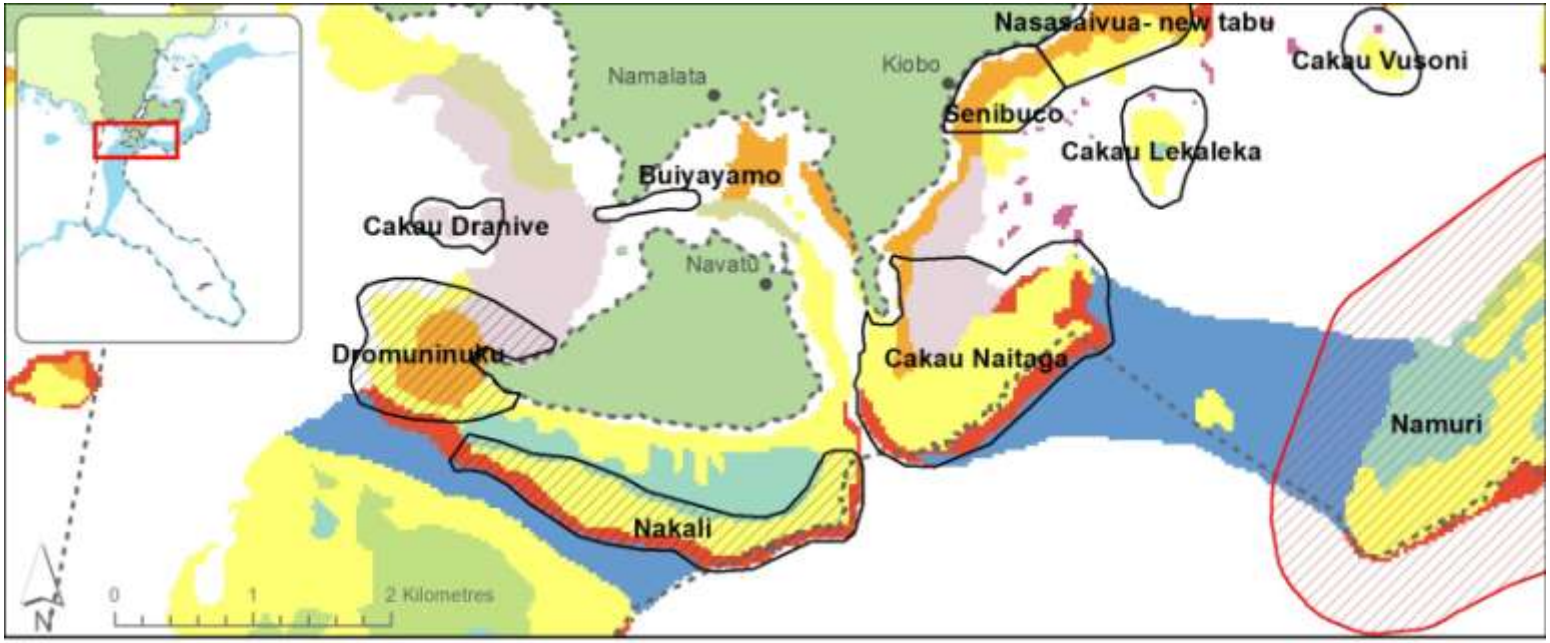


Kiobo village *tabu* areas	Rule	Exceptions
Cakau Naitaga **Senibuco**	Taking any aquatic animal, including fish and beche-de-mer, is prohibited.[1, 2, 3]	Fishing authorised by Tui Kubulau. May only be opened for major church gatherings.

1. Community Consultation on Reserve Conditions within Kubulau Qoliqoli, 2005 (Cakau Naitaga).
2. Kubulau Adaptive Management Workshop, July 2011 (Senibuco).
3. Boundary extension to Cakau Naitaga agreed at Kiobo village consultation on updated network of *tabu* areas and district MPAs, March 2012.

Figure 11.9. Location and rules for Kiobo village Cakau Naitaga and Senibuco marine *tabu* areas.

11.5.10 NAVATU VILLAGE – NAKALI AND DROMUNINUKU

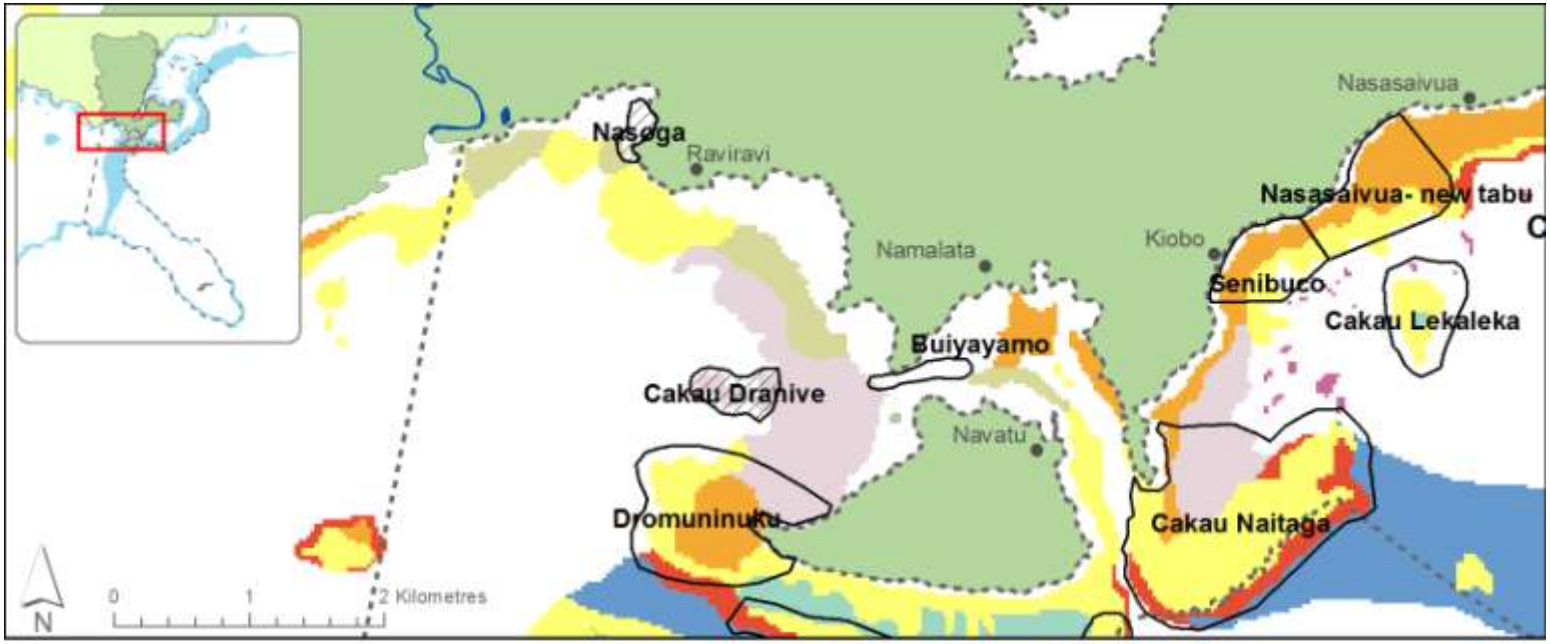


Navatu village *tabu* areas	Rule	Exceptions
Nakali	Taking any aquatic animal, including fish and beche-de-mer, is prohibited.[1]	Fishing authorised by Buli Navatu. May only be opened up to three times per year, preferably in January, June and November.
Dromuninuku	Taking beche-de-mer is prohibited.[2]	None

1. Community Consultation on Reserve Conditions within Kubulau Qoliqoli, 2005. Confirmed at Kubulau Management Planning Workshop, February 2009.
2. *Tabu* proposed at Navatu village consultation on updated network of *tabu* areas and district MPAs, March 2012.

Figure 11.10. Location and rules for Navatu village Nakali and Dromuninuku marine *tabu* areas.

11.5.11 RAVIRAVI VILLAGE – CAKUAU DRANIVE



Raviravi marine village *tabu* areas	Rule	Exceptions
Cakau Dranive	Taking any aquatic animal, including fish, beche-de-mer and trochus, is prohibited.[1]	Fishing authorised by *turaga ni yavusa*. May only be opened on special occasions.

1. *Tabu* proposed at Raviravi village consultation on updated network of *tabu* areas and district MPAs, March 2012.

Figure 11.11. Location and rules for Raviravi village marine *tabu* area.

11.6 MANAGEMENT ACTIONS

Management actions and actions for marine ecosystems in Kubulau District.

ISSUE	PROPOSED ACTIVITY	IMPLEMENTATION	LEAD	ACTIONS
UNSUSTAINABLE FISHING				
Lack of awareness of *qoliqoli* management rules	Produce and distribute flyers to raise awareness of **adapted** management rules (including posting flyers at provincial offices, police stations and Fisheries Department)	KRMC WCS	*Mata-ni-tikina*	1. Request flyers from WCS 2. Distribute flyers
Lack of enforcement by police and fisheries officers	Participate in FLMMA enforcement workshop to discuss legislative and administrative reform	KRMC	Chairman of KRMC	1. Chairman of KRMC to continue to engage with FLMMA about upcoming workshops 2. Chairman of KRMC to attend appropriate workshops to feed in Kubulau questions and examples, and to feed back shared experiences to KRMC
Lack of enforcement by community fish wardens	Develop and distribute enforcement protocol	KRMC EBM partners Department of Fisheries Department of Police	KRMC	1. Conduct a refresher fish warden training to inform fish wardens on enforcement protocols 2. Distribute the protocol to all fish wardens again

Lack of enforcement by community fish wardens	Increase number of patrols by securing funds for fuel and additional patrol boats	KRMC EBM partners	KRMC	1. KRMC to liaise with Cousteau's Resort about securing funds for 24 hour monitoring of MPAs and *tabu* areas for 1 year.
Lack of enforcement by community fish wardens	Increase effectiveness of patrols by securing funds for marine radio(s)	KRMC EBM partners	Fish Warden Committee	1. Write and submit a proposal for marine radios
Lack of awareness of MPA boundaries	Mark MPA boundaries using buoys and lines donated by local communities	KRMC, *Mata-ni-tikina*, *turaga-ni-koro*, and other community members	Fish Warden Committee	1. Maintain MPA boundaries and replace lost buoys

12 SUSTAINABLE FINANCING

12.1 OVERVIEW

This management plan aims to support long-term sustainable development in Kubulau by maintaining the health and productivity of the district's ecosystems – in particular, the coastal fisheries that most village households rely on as a source of food and income.

The ecosystem management measures described in this plan, including continuing protection for Namena Marine Reserve, present opportunities for KRMC and local communities to generate cash income, primarily through sustainable tourism.

To ensure Kubulau's long-term viability as a tourist destination, adequate funds must be invested in effective management of the district's key attraction, the Namena Marine Reserve, to ensure that the reserve maintains its reputation as a premiere diving destination. Income generated by sustainable business opportunities within Kubulau District and *qoliqoli* may also be used to support local sustainable development initiatives, such as:

1. scholarships for tertiary education;
2. small grants and loans for community based sustainable microenterprise initiatives; and
3. management and restoration of terrestrial, freshwater and marine ecosystems.

Professional, transparent accounting and reporting is needed to ensure efficient and equitable use of funds, and to support sustainable resource management and community development. The Kubulau Business Development Committee (KBDC) – made up of Kubulau residents living in Suva – provides business and community development support to KRMC. The intention is for KBDC to manage the funds from Namena in the future.

12.2 INCOME GENERATION

To date, KRMC's primary sources of income have been: 1) user fees for Namena Marine Reserve; and 2) external funding from partner organisations and donors through significant in-kind contributions, including equipment, time and labour.

In the long-term, KRMC aims to make its management activities self-sustaining, with little or no reliance on external funding sources. In order to achieve this aim, KRMC and the Coral Reef Alliance (CORAL) have developed the *Namena Marine Reserve Business Plan*, a five year plan to:

1. sustainably grow the Namena Marine Reserve into a renowned tourist destination;
2. contribute to the long-term sustainable development of Kubulau District; and
3. derive economic benefits and develop alternative livelihoods for the people of Kubulau.

The business plan recognises the potential for the Namena Marine Reserve to be a self-sustaining marine protected area, capable of generating sufficient revenue to cover the costs of its effective management, as well as supporting local economic development through distribution of scholarships and microenterprise grants.

The business plan highlights the need to promote Namena Marine Reserve as a premiere tourist destination using a range of marketing tools, including the Namena Reserve website (**Figure 12.1**), brochures, word-of-mouth, media coverage and partnerships with tour operators.

In the future, the marine reserve user fee system may be extended beyond Namena Marine Reserve to include dive sites within other marine protected areas in the Kubulau *qoliqoli*.

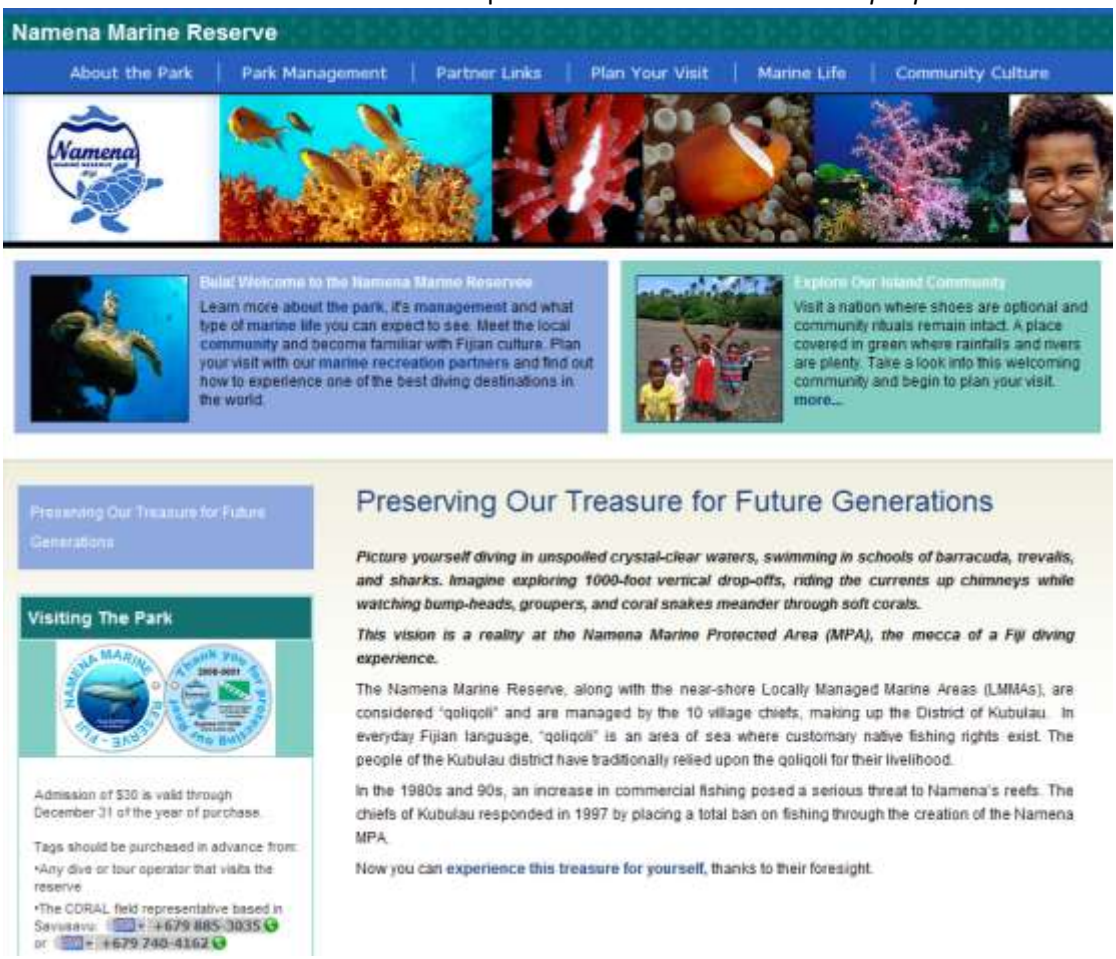


Figure 12.1 Namena Marine Reserve Website (www.namena.org).

12.3 MARINE RESERVE MANAGEMENT

To ensure that Namena Marine Reserve retains the abundance and diversity of fish that make it a world-class diving destination, adequate resources must be allocated to management of the reserve.

Effective management of the reserve, including research, monitoring and enforcement, requires an investment in salaries, equipment, supplies and other expenses. In particular, the *Namena Marine Reserve Business Plan* includes cost estimates for the following management expenses:

- staff salaries, including enforcement officers
- biological and socio-economic monitoring
- boat maintenance, fuel and enforcement equipment
- installation of moorings to prevent anchor damage and maintenance
- communication
- office expenses, including marketing expenses
- staff training and development
- production of marine reserve user tags.

Qualified community members will be given first priority for staff positions, and the district scholarship fund (see below) will provide opportunities for community members to undertake training in relevant fields, such as fisheries management and computer studies.

Currently all *qoliqoli* boundary monitoring activities, mooring maintenance, community biological surveys (using FLMMA methods), KRMC and KBDC meetings; attendance at Bose Vanua meetings and quarterly stakeholder meetings are all supported through the management funds. The following chain represents the current process for accessing management funds:

12.4 SCHOLARSHIP FUND

Village chiefs and community members in Kubulau have identified education as a key priority for community development in their district, and have agreed that funds from marine reserve user fees will be used to provide scholarships for students from households throughout the district.

Scholarships will be allocated in a fair and equitable manner, based on a simple application process, clear selection criteria and transparent decision-making process.

The current process starts with parents expressing an interest to the *turaga-ni-koro* during a village meeting, which is then raised at the *Bose Vanua* meeting for approval or rejection. Prior to Bose Vanua discussions the budget and number of available scholarships should be discussed with KBDC and KRMC.

It was recommended at the Kubulau Management Support Workshop (Kilaka village, October 2011) that the Education sub-committee, supported by KBDC, should closely monitor students' performance. This performance monitoring information should be made available to *Bose Vanua* and *bose-va-koro* to determine whether scholarships should continue.

12.5 MICROENTERPRISE GRANTS

Funds from marine reserve user fees may be used to directly support local economic development through a microenterprise fund. The fund is intended to provide small grants to community members to establish sustainable business initiatives, such as local tourism ventures, craft-making and agricultural diversification. Grants will be allocated through a transparent selection process.

KRMC and KBDC will also work to facilitate access to external microenterprise grants and loans, including working with existing microfinance institutions and community development organisations.

All community development proposals from the communities should go to the Community Development and Finance sub-committee. The sub-committee should liaise with KBDC to short-list proposals according to the budget and then present recommendations to *Bose Vanua* where a decision will be made. These grants do not have to be repaid, but would require financial reporting to document how the grant has been spent. The KRMC Chairman has responsibility to ensure the proper documentation is in place.

12.6 TRANSPARENCY AND ACCOUNTABILITY

To ensure that the use of funds is efficient and equitable, and that the long-term goals of sustainable resource management and community development are realised, KRMC is committed to accountability and transparency in all aspects of its operations, including management of funds.

Each year, KRMC with assistance from KBDC, will prepare an annual budget, setting out its projected income and expenditure for the financial year. The annual budget will be presented to the *Bose Vanua* and made available for inspection by community members, stakeholders and the public on request.

KRMC will prepare quarterly financial reports, including a detailed account of all expenditure. Each quarterly financial report will be presented to the *Bose Vanua* and to a meeting of the stakeholder consultative group (see Section 4.2.2 KRMC Stakeholder Consultative Group). Each financial report will be made available for inspection by community members, stakeholders and the public on request.

KRMC and KBDC will prepare an annual report, including a description of its activities and detailed accounts of its income (including user fees, grants and other income) and expenditure (including management costs, scholarships, microenterprise grants and other expenses) throughout the year.[124] Copies of the report will be distributed to each village, relevant stakeholders and donors, and posted online.

KRMC and KBDC will periodically meet with partner organisations and stakeholders to conduct an evaluation of management effectiveness and review progress made in implementing this management plan.

[124] Draft Kubulau *Qoliqoli* Management Plan, November 2005.

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APPENDIX 1 – PROTECTED SPECIES

The following species are legally protected throughout Fiji. Possessing, selling or exporting these species without a permit is a criminal offence.

PART 1 – PROTECTED MARINE AND FRESHWATER FAUNA

SCIENTIFIC NAME	COMMON NAME	FIJIAN NAME	LEGISLATION
FISH SPECIES			
Bryaninops dianneae	Species of goby		*Endangered and Protected Species Act 2002*, s.3(d)
Ecsenius fijiensis	Species of blenny		*Endangered and Protected Species Act 2002*, s.3(d)
Mesopristes kneri		Reve	*Endangered and Protected Species Act 2002*, s.3(d)
Plagiotremus laudandus flavus	Species of blenny		*Endangered and Protected Species Act 2002*, s.3(d)
Plectranthias fijiensis	Species of sea bass		*Endangered and Protected Species Act 2002*, s.3(d)
Rotuma lewisi	Species of common wriggler		*Endangered and Protected Species Act 2002*, s.3(d)
Thamnaconus fijiensis	Species of filefish		*Endangered and Protected Species Act 2002*, s.3(d)
Cheilinus undulatus	Humphead wrasse		*Endangered and Protected Species Act 2002*, s.3(e)
Epinephelus lanceolatus	Giant Grouper		*Endangered and Protected Species Act 2002*, s.3(e)
Bathygobius petrophilus			*Endangered and Protected Species Act 2002*, s.3(e)
Hippocampus kuda	Spotted seahorse		*Endangered and Protected Species Act 2002*, s.3(e)
Lairdina hopletupus			*Endangered and Protected Species Act 2002*, s.3(e)
Meiacanthus bundoon			*Endangered and Protected Species Act 2002*, s.3(e)
Parmops echinatus			*Endangered and Protected Species Act 2002*, s.3(e)
Redigobius leveri			*Endangered and Protected Species Act 2002*, s.3(e)
Redigobius sp			*Endangered and Protected Species Act 2002*, s.3(e)
Siganus uspi			*Endangered and Protected Species Act 2002*, s.3(e)
MARINE REPTILES			
Cheloniidae spp.	Green turtle		*Endangered and Protected Species Act 2002*, s.3(a)
Dermochelys coriacea	Leatherback turtle		*Endangered and Protected Species Act 2002*, s.3(a)
Eretmochelys imbricate	Hawksbill turtle		
Caretta caretta	Loggerhead turtle		
Natator depressus	Flatback turtle		
Lepidochelys olivacea	Olive Ridley turtle		

MARINE MAMMALS			
Phocaena spp.	Dolphin		*Fisheries Regulations*, r.25
Delphis spp.	Porpoise		*Fisheries Regulations*, r.25
MARINE INVERTEBRATES			
Charonia tritonis	Davui shell		*Fisheries Regulations*, r.22
Cassis cornuta	Giant helmet shell		*Fisheries Regulations*, r.23
CORALS			
Antipatharia spp.	Black corals		*Endangered and Protected Species Act 2002*, s.3(b)
Helioporidae spp.	Blue corals		*Endangered and Protected Species Act 2002*, s.3(b)
Scleractinia spp.	Stony corals		*Endangered and Protected Species Act 2002*, s.3(b)
Tubiporidae spp.	Organ pipe corals		*Endangered and Protected Species Act 2002*, s.3(b)
Milleporidae spp.	Fire corals		*Endangered and Protected Species Act 2002*, s.3(b)
Stylasteridae spp.	Lace corals		*Endangered and Protected Species Act 2002*, s.3(b)
SEABIRDS			
Fregata ariel	Lesser frigatebird	Manumanunicagi	*Endangered and Protected Species Act 2002*, s.3(d)
Nesofregetta albigularis	Polynesian storm-petrel		*Endangered and Protected Species Act 2002*, s.3(d)
Phethon lepturus	White-tailed tropicbird	Lawedua	*Endangered and Protected Species Act 2002*, s.3(d)
Procelsterna cernula	Blue noddy		*Endangered and Protected Species Act 2002*, s.3(d)
Pseudobulweria macgillivrayi	Fiji petrel	Kacau ni Gau	*Endangered and Protected Species Act 2002*, s.3(d)
Pseudobulweria rostrata	Tahiti petrel	Kacau ni Taiti	*Endangered and Protected Species Act 2002*, s.3(d)
Puffinus inherminieri	Audubon's shearwater		*Endangered and Protected Species Act 2002*, s.3(d)
Sula dactylatra	Masked booby	Toro	*Endangered and Protected Species Act 2002*, s.3(d)
Sula leucogaster	Brown booby	Toro	*Endangered and Protected Species Act 2002*, s.3(d)
Sterna anaethetus	Bridled tern		*Endangered and Protected Species Act 2002*, s.3(d)
Sterna bergii	Crested tern	Idre	*Endangered and Protected Species Act 2002*, s.3(d)
Sterna fuscata	Sooty tern		*Endangered and Protected Species Act 2002*, s.3(d)

PART 2 – PROTECTED TERRESTRIAL FAUNA

SCIENTIFIC NAME	COMMON NAME	FIJIAN NAME	LEGISLATION
MAMMALS			
Emballonura semicaudata	Polynesian sheath tailed bat		*Endangered and Protected Species Act 2002*, s.3(d)
Notopteris macdonaldi	Fijian blossom bat		*Endangered and Protected Species Act 2002*, s.3(d)
Pteralopex acrodonta	Taveuni flying fox		*Endangered and Protected Species Act 2002*, s.3(d)
Chaeropon bregullae	Fijian mastiff bat		*Endangered and Protected Species Act 2002*, s.3(e)
BIRDS			
Clytorhynchus nigrogularis	Black-faced shrikebill	Kiro	*Endangered and Protected Species Act 2002*, s.3(d)
Dendrocygna arcuata	Wandering whistling-duck	Gadamu	*Endangered and Protected Species Act 2002*, s.3(d)
Erythrura kleinschmidti	Pink-billed parrotfinch	Sitibatitabua	*Endangered and Protected Species Act 2002*, s.3(d)
Gallicolumba stairii	Friendly ground-dove	Qilu	*Endangered and Protected Species Act 2002*, s.3(d)
Lamprolia victoria	Silktail	Sisi	*Endangered and Protected Species Act 2002*, s.3(d)
Mayrornis versicolor	Ogea monarch		*Endangered and Protected Species Act 2002*, s.3(d)
Myzomela chermesina	Rotuma myzomela	Armea	*Endangered and Protected Species Act 2002*, s.3(d)
Nesoclopeus poecilopterus	Barred-wing rail	Saca	*Endangered and Protected Species Act 2002*, s.3(d)
Poliolimnas cinereus	White-browed crake		*Endangered and Protected Species Act 2002*, s.3(d)
Porzana tabuensis	Spotless crake	Mo	*Endangered and Protected Species Act 2002*, s.3(d)
Trichocichla rufa	Long-legged warbler	Manu Kalou	*Endangered and Protected Species Act 2002*, s.3(d)
Aerodramus spodiopygia	White rumped swiftlet	Kakabacea	*Endangered and Protected Species Act 2002*, s.3(e)
Anas superciliosa	Pacific black duck	Ganiviti	*Endangered and Protected Species Act 2002*, s.3(e)
Aplonis tabuensis	Polynesian starling	Vocea	*Endangered and Protected Species Act 2002*, s.3(e)
Ardea novaehollandiae	White faced heron	Belomatavula	*Endangered and Protected Species Act 2002*, s.3(e)
Artamus mentalis	Fiji woodswallow	Kiro	*Endangered and Protected Species Act 2002*, s.3(e)
Butorides striatus	Mangrove heron	Gadamu	*Endangered and Protected Species Act 2002*, s.3(e)
Cacomantis pyrrophanus	Fan tailed cuckoo	Sitibatitabua	*Endangered and Protected Species Act 2002*, s.3(e)
Cettia ruficapilla	Fiji bush warbler	Qilu	*Endangered and Protected Species Act 2002*, s.3(e)
Clytorhynchus vitiensis	Lesser shrikebill	Sisi	*Endangered and Protected Species Act 2002*, s.3(e)
Columba vitiensis	White throated pigeon		*Endangered and Protected Species Act 2002*, s.3(e)
Ducala latrans	Barking pigeon	Armea	*Endangered and Protected Species Act 2002*, s.3(e)
Cucula pacifica	Pacific pigeon	Saca	*Endangered and Protected Species Act 2002*, s.3(e)
Egretta sacra	Reef heron		*Endangered and Protected Species Act 2002*, s.3(e)
Erythrura pealii	Fiji parrotfinch	Mo	*Endangered and Protected Species Act 2002*, s.3(e)

Foulehaio carunculata	Wattled honeyeater	Manu Kalou	*Endangered and Protected Species Act 2002*, s.3(e)
Gallirallus philippensis	Banded rail	Kakabacea	*Endangered and Protected Species Act 2002*, s.3(e)
Gymnomyza viridis	Giant forest honeyeater	Ganiviti	*Endangered and Protected Species Act 2002*, s.3(e)
Halcyon chloris	White collared kingfisher	Vocea	*Endangered and Protected Species Act 2002*, s.3(e)
Hirundo tahitica	Pacific swallow	Belomatavula	*Endangered and Protected Species Act 2002*, s.3(e)
Lalage maculosa	Polynesian triller	Kiro	*Endangered and Protected Species Act 2002*, s.3(e)
Mayrornis lessoni	Slaty monarch	Gadamu	*Endangered and Protected Species Act 2002*, s.3(e)
Myiagra azureocapilla	Blue crested broadbill	Batidamu	*Endangered and Protected Species Act 2002*, s.3(e)
Myiagra vanikorensis	Vanikoro broadbill	Matayalo	*Endangered and Protected Species Act 2002*, s.3(e)
Myzomela jugularis	Orange breasted myzomela	Delakula	*Endangered and Protected Species Act 2002*, s.3(e)
Pachycephala pectorulis	Golden whistler	Ketedromo	*Endangered and Protected Species Act 2002*, s.3(e)
Petroica multicolor	Scarlet robin	Diriqwala	*Endangered and Protected Species Act 2002*, s.3(e)
Phigys solitarius	Collared lorry	Kula	*Endangered and Protected Species Act 2002*, s.3(e)
Ptilinopus layardi	Whistling dove	Soqeda	*Endangered and Protected Species Act 2002*, s.3(e)
Ptilinopus luteovirens	Golden dove	Bunako	*Endangered and Protected Species Act 2002*, s.3(e)
Ptilinopus perousii	Many coloured fruit dove	Kuluvotu	*Endangered and Protected Species Act 2002*, s.3(e)
Ptilinopus porphyraceus	Crimson crowned fruit dove	Kuluvotu	*Endangered and Protected Species Act 2002*, s.3(e)
Ptilinopus victor	Orange dove	Bune	*Endangered and Protected Species Act 2002*, s.3(e)
Rhipidura personata	Kadavu fantail		*Endangered and Protected Species Act 2002*, s.3(e)
Rhipidura spilodera	Streaked fantail	Sasaira	*Endangered and Protected Species Act 2002*, s.3(e)
Turdus poliocephalus	Island thrush	Tola	*Endangered and Protected Species Act 2002*, s.3(e)
Xanthotis provocator	Kadavu honeyeater	Kikou	*Endangered and Protected Species Act 2002*, s.3(e)
Zosterops exploratory	Fiji white eyes	Qiqi	*Endangered and Protected Species Act 2002*, s.3(e)
Zosterops lateralis	Silvereye	Qiqi	*Endangered and Protected Species Act 2002*, s.3(e)
REPTILES			
Hemiphyllodacrylus typus	Indo pacific tree gecko		*Endangered and Protected Species Act 2002*, s.3(d)
Emoia Campbelli	Montane tree skink		*Endangered and Protected Species Act 2002*, s.3(d)
Emoia mokosariniveikau	Turquoise tree skink		*Endangered and Protected Species Act 2002*, s.3(d)
Emoia nigra	Pacific black skink		*Endangered and Protected Species Act 2002*, s.3(d)
Leiolopisma alazon	Lauan ground skink		*Endangered and Protected Species Act 2002*, s.3(d)
Gehyra mutilata	Stumped toed gecko		*Endangered and Protected Species Act 2002*, s.3(e)
Gehyra oceanica	Oceanic gecko		*Endangered and Protected Species Act 2002*, s.3(e)
Gehyra vorax	Giant forest gecko		*Endangered and Protected Species Act 2002*, s.3(e)
Hemidactylus frenatus	House gecko		*Endangered and Protected Species Act 2002*, s.3(e)

Hemidactylus garnotii	Fox gecko		*Endangered and Protected Species Act 2002*, s.3(e)
Lepidodactylus gardineri	Rotuman gecko		*Endangered and Protected Species Act 2002*, s.3(e)
Lepidodactylus lugubris	Mourning gecko		*Endangered and Protected Species Act 2002*, s.3(e)
Lepidadactylus manni	Mann's forest gecko		*Endangered and Protected Species Act 2002*, s.3(e)
Nactus pelagicus	Pacific slender toed gecko		*Endangered and Protected Species Act 2002*, s.3(e)
Cyptablepharus eximius	Pacific snake eyed gecko		*Endangered and Protected Species Act 2002*, s.3(e)
Emoia caeruleocauda	Blue tailed gecko		*Endangered and Protected Species Act 2002*, s.3(e)
Emoia concolor	Green tree skink		*Endangered and Protected Species Act 2002*, s.3(e)
Emoia cyanura	Browntail copper striped skink		*Endangered and Protected Species Act 2002*, s.3(e)
Emoia impar	Bluetail copper striped skink		*Endangered and Protected Species Act 2002*, s.3(e)
Emoia parkeri	Fijian copper headed skink		*Endangered and Protected Species Act 2002*, s.3(e)
Emoia trossula	Dandy skink		*Endangered and Protected Species Act 2002*, s.3(e)
Lipinia noctua	Moth skink		*Endangered and Protected Species Act 2002*, s.3(e)
Ramphotoyhplops flaviventer	Flowerpot snake		*Endangered and Protected Species Act 2002*, s.3(e)
AMPHIBIANS			
Platymantis vitiensis	Fiji tree frog		*Endangered and Protected Species Act 2002*, s.3(e)

PART 3 – PROTECTED PLANTS

SCIENTIFIC NAME	COMMON NAME	FIJIAN NAME	LEGISLATION
PLANTS			
Polyalthia angustifolia			*Endangered and Protected Species Act 2002*, s.3(d)
Agathis vitiensis		Dakua / Dakua Makadre	*Endangered and Protected Species Act 2002*, s.3(d)
Kingiodendron platycarpum		Moivi	*Endangered and Protected Species Act 2002*, s.3(d)
Storckiella vitiensis		Vesida	*Endangered and Protected Species Act 2002*, s.3(d)
Garcinia pseudoguttifera		Bulu	*Endangered and Protected Species Act 2002*, s.3(d)
Garcinia myrtiflora		Laubu	*Endangered and Protected Species Act 2002*, s.3(d)
Terminalia vitiensis			*Endangered and Protected Species Act 2002*, s.3(d)
Geissois ternate var 2		Vuga	*Endangered and Protected Species Act 2002*, s.3(d)
Vupaniopsis leptobotrys		Malawaci	*Endangered and Protected Species Act 2002*, s.3(d)
Weinmannia spiraeoides			*Endangered and Protected Species Act 2002*, s.3(d)
Weinmannia vitiensis			*Endangered and Protected Species Act 2002*, s.3(d)
Debeneria vitiensis		Masiratu	*Endangered and Protected Species Act 2002*, s.3(d)
Bischofia javanica		Koka	*Endangered and Protected Species Act 2002*, s.3(d)
Gonystylus punctatus		Mavota	*Endangered and Protected Species Act 2002*, s.3(d)
Endiandra elaeocarpa		Damabi	*Endangered and Protected Species Act 2002*, s.3(d)
Hibiscus storckii			*Endangered and Protected Species Act 2002*, s.3(d)
Medinilla kandavuensis			*Endangered and Protected Species Act 2002*, s.3(d)
Astronidium floribundum			*Endangered and Protected Species Act 2002*, s.3(d)
Astronidium kasiense		Rusila	*Endangered and Protected Species Act 2002*, s.3(d)
Acacia richii		Qumu	*Endangered and Protected Species Act 2002*, s.3(d)
Mimosaceae spec.div		Vavai-loa	*Endangered and Protected Species Act 2002*, s.3(d)
Mimosaceae spec.div		Vavai-vula	*Endangered and Protected Species Act 2002*, s.3(d)
Veitchia vitiensis			*Endangered and Protected Species Act 2002*, s.3(d)
Veitchia filifera			*Endangered and Protected Species Act 2002*, s.3(d)
Acmopyle sahniana		Drautabua	*Endangered and Protected Species Act 2002*, s.3(d)
Dacrycarpus imbricatus		Amunu	*Endangered and Protected Species Act 2002*, s.3(d)
Decusscicarpus vitiensis		Dakua salusalu	*Endangered and Protected Species Act 2002*, s.3(d)
Podocarpus neriifolius		Kuasi	*Endangered and Protected Species Act 2002*, s.3(d)
Dacrydium nidulum		Yaka	*Endangered and Protected Species Act 2002*, s.3(d)
Turrillia ferruginea		Kauceuti	*Endangered and Protected Species Act 2002*, s.3(d)

Turrillia vitiensis		Kauceuti	*Endangered and Protected Species Act 2002*, s.3(d)
Alphitonia zizyphoides		Doi	*Endangered and Protected Species Act 2002*, s.3(d)
Gardenia vitiensis		Ndrega, Meilango	*Endangered and Protected Species Act 2002*, s.3(d)
Mastixiodendron robustum		Duvula	*Endangered and Protected Species Act 2002*, s.3(d)
Gardenia vitiensis		Ndrega meilago	*Endangered and Protected Species Act 2002*, s.3(d)
Santatum yasi		Yasi	*Endangered and Protected Species Act 2002*, s.3(d)
Manikara spec.div		Bausagali-damu	*Endangered and Protected Species Act 2002*, s.3(d)
Manikara spec.div.		Bausagali-vula	*Endangered and Protected Species Act 2002*, s.3(d)
Planchonella garberi		Sarosaro	*Endangered and Protected Species Act 2002*, s.3(d)
Planchonella umbonata		Bauloa	*Endangered and Protected Species Act 2002*, s.3(d)
Sterculia vitiensis		Waciwaci	*Endangered and Protected Species Act 2002*, s.3(d)
Gmelina vitiensis		Rosawa	*Endangered and Protected Species Act 2002*, s.3(d)
Barringtonia asiatica		Vutu	*Endangered and Protected Species Act 2002*, s.3(e)
Boodia brackenridgei			*Endangered and Protected Species Act 2002*, s.3(e)
Cordia subcordata		Nawanawa	*Endangered and Protected Species Act 2002*, s.3(e)
Canarium harveyi var 1		Kaunicina	*Endangered and Protected Species Act 2002*, s.3(e)
Cynometra insularis		Cibicibi	*Endangered and Protected Species Act 2002*, s.3(e)
Intsia bijuga		Vesi	*Endangered and Protected Species Act 2002*, s.3(e)
Gymnostoma vitiensis		Velau	*Endangered and Protected Species Act 2002*, s.3(e)
Parinari insularum		Sa	*Endangered and Protected Species Act 2002*, s.3(e)
Calophyllum inophyllum		Dilo	*Endangered and Protected Species Act 2002*, s.3(e)
Calophyllum vitiensis		Damanu	*Endangered and Protected Species Act 2002*, s.3(e)
Lumnitzera littorea		Sagali	*Endangered and Protected Species Act 2002*, s.3(e)
Terminalia capitanea		Tiviloa	*Endangered and Protected Species Act 2002*, s.3(e)
Terminalia luteola		Mbausomi tivi	*Endangered and Protected Species Act 2002*, s.3(e)
Terminalia psilantha		Mbausomi	*Endangered and Protected Species Act 2002*, s.3(e)
Terminalia pterocarpa		Tivi	*Endangered and Protected Species Act 2002*, s.3(e)
Terminalia simulans			*Endangered and Protected Species Act 2002*, s.3(e)
Terminalia strigillosa.		Tivi losi	*Endangered and Protected Species Act 2002*, s.3(e)
Acsmithia vitiense			*Endangered and Protected Species Act 2002*, s.3(e)
Geissois imthurnii		Vure	*Endangered and Protected Species Act 2002*, s.3(e)
Geissois stipularis		Vure	*Endangered and Protected Species Act 2002*, s.3(e)
Geissois superba		Vure	*Endangered and Protected Species Act 2002*, s.3(e)
Geissois ternate			*Endangered and Protected Species Act 2002*, s.3(e)

Spiraeanthemum graeffei		Katakata, Kutukutu	*Endangered and Protected Species Act 2002*, s.3(e)
Spiraeanthemum serratum			*Endangered and Protected Species Act 2002*, s.3(e)
Weinmannia exigua			*Endangered and Protected Species Act 2002*, s.3(e)
Cyathea micropelidota			*Endangered and Protected Species Act 2002*, s.3(e)
Cyathea plagiostegia			*Endangered and Protected Species Act 2002*, s.3(e)
Cycas seemannii			*Endangered and Protected Species Act 2002*, s.3(e)
Degeneria roseiflora		Karawa yaranggele	*Endangered and Protected Species Act 2002*, s.3(e)
Endospermum robbieanum		Kauvula	*Endangered and Protected Species Act 2002*, s.3(e)
Ischaemum byrone			*Endangered and Protected Species Act 2002*, s.3(e)
Calophyllum amblyphyllum		Ndamanu	*Endangered and Protected Species Act 2002*, s.3(e)
Calophyllum leueocarpum			*Endangered and Protected Species Act 2002*, s.3(e)
Garcinia adinantha		Raumba, mbulumanga	*Endangered and Protected Species Act 2002*, s.3(e)
Geniostoma calcicola			*Endangered and Protected Species Act 2002*, s.3(e)
Geniostoma clavigerum			*Endangered and Protected Species Act 2002*, s.3(e)
Geniostoma stipulare			*Endangered and Protected Species Act 2002*, s.3(e)
Neuburgia macroloba		Vathea	*Endangered and Protected Species Act 2002*, s.3(e)
Astronidium degeneri			*Endangered and Protected Species Act 2002*, s.3(e)
Astronidium inflatum			*Endangered and Protected Species Act 2002*, s.3(e)
Astronidium lepidotum			*Endangered and Protected Species Act 2002*, s.3(e)
Astronidium palladiflorum			*Endangered and Protected Species Act 2002*, s.3(e)
Astronidium saulae			*Endangered and Protected Species Act 2002*, s.3(e)
Astronidium sessile			*Endangered and Protected Species Act 2002*, s.3(e)
Mediniila deeora			*Endangered and Protected Species Act 2002*, s.3(e)
Medinilla kambikambi		Kambikambi	*Endangered and Protected Species Act 2002*, s.3(e)
Medinilla spectabilis			*Endangered and Protected Species Act 2002*, s.3(e)
Medinilia waterhousei		Tangimauthia	*Endangered and Protected Species Act 2002*, s.3(e)
Vavaea amicorunt		Cevua	*Endangered and Protected Species Act 2002*, s.3(e)
Xylocarpus granatum		Dabi	*Endangered and Protected Species Act 2002*, s.3(e)
Samanea saman		Raintree	*Endangered and Protected Species Act 2002*, s.3(e)
Myristica castaneifolia		Kaudamu	*Endangered and Protected Species Act 2002*, s.3(e)
Cleistocalyx decusssatus		Yasimoli	*Endangered and Protected Species Act 2002*, s.3(e)
Cleistocalyx eugenioides		Yasiyasi	*Endangered and Protected Species Act 2002*, s.3(e)
Alsmiltia longipes			*Endangered and Protected Species Act 2002*, s.3(e)
Balaka longirostris			*Endangered and Protected Species Act 2002*, s.3(e)

Balaka macrocarpa			*Endangered and Protected Species Act 2002*, s.3(e)
Balaka microcarpa			*Endangered and Protected Species Act 2002*, s.3(e)
Balaka seemannii			*Endangered and Protected Species Act 2002*, s.3(e)
Calamus vitiensis			*Endangered and Protected Species Act 2002*, s.3(e)
Clincistigma exorrhizum			*Endangered and Protected Species Act 2002*, s.3(e)
Cyplhosperma tangs			*Endangered and Protected Species Act 2002*, s.3(e)
Cyplhosperma trichospatdix			*Endangered and Protected Species Act 2002*, s.3(e)
Gulubia microcarpa			*Endangered and Protected Species Act 2002*, s.3(e)
Neuveitchia storckii			*Endangered and Protected Species Act 2002*, s.3(e)
Physokentia rosea			*Endangered and Protected Species Act 2002*, s.3(e)
Physeikentia thurstunii			*Endangered and Protected Species Act 2002*, s.3(e)
Pritchardia thurstanii			*Endangered and Protected Species Act 2002*, s.3(e)
Veitchia joannis			*Endangered and Protected Species Act 2002*, s.3(e)
Veichia pedionoma			*Endangered and Protected Species Act 2002*, s.3(e)
Veitchia petiolata			*Endangered and Protected Species Act 2002*, s.3(e)
Veitchia simulans			*Endangered and Protected Species Act 2002*, s.3(e)
Dacrydium nausoriense		*Yaka, tangitangi*	*Endangered and Protected Species Act 2002*, s.3(e)
Podocarpus affinis			*Endangered and Protected Species Act 2002*, s.3(e)
Gardenia anapetes		*Tirikiloki*	*Endangered and Protected Species Act 2002*, s.3(e)
Gardenia candida			*Endangered and Protected Species Act 2002*, s.3(e)
Gardenia grievei		*Ndelandrega*	*Endangered and Protected Species Act 2002*, s.3(e)
Gardenia hillii			*Endangered and Protected Species Act 2002*, s.3(e)
Guetcarda speciosa		*Buabua*	*Endangered and Protected Species Act 2002*, s.3(e)
Bruguiera gymnorhiza		*Dogo*	*Endangered and Protected Species Act 2002*, s.3(e)
Pommetia pinnata		*Dawa*	*Endangered and Protected Species Act 2002*, s.3(e)
Palayuium hornei		*Sacau*	*Endangered and Protected Species Act 2002*, s.3(e)
Palayuium purphyreum		*Bauvudi*	*Endangered and Protected Species Act 2002*, s.3(e)
Trichospermum richii		*Mako*	*Endangered and Protected Species Act 2002*, s.3(e)

APPENDIX 2 – NET SIZE LIMITS

NET TYPE	DEFINITION	NATIONAL	DISTRICT
Hand net	'Hand net' means a net fixed on a frame or on two poles, which can be moved in all directions by one person, with a maximum width of 1.5 metres.[125]	No minimum mesh size [126]	No minimum mesh size [127]
Cast net	'Cast net' means a round net with weights around its edges, which is used by being cast over fish in such a way that it sinks to the bottom.[128]	30mm [129]	30mm [130]
Whitebait or sardine net	Must only be used for taking whitebait or sardines, and must not be more than 10.5 metres wide or 1.5 metres high. It is prohibited to join two such nets together.	30mm [131]	30mm [132]
Wading net	'Wading net' means a net fixed on a frame or on two poles which can be moved in all directions by two persons, with a maximum width 4.3 metres.[133]	50mm [134]	75mm [135]
Lawa-ni-busa	'*Lawa-ni-busa*' means a wading net used for taking needlefish (*busa*). The net must only be used for taking *busa* and must not be more than 4.3 metres wide. It is prohibited to join two such nets together.	-	30mm [136]
Other nets	Any net that does not fall within the above definitions, including nets that exceed the listed size limits.	50mm [137]	75mm [138]

Mesh measurement method: Measure the distance between two diagonally opposite corners of the mesh, when the net is wet and stretched.[139]

[125] *Fisheries Act,* s.2.
[126] Fisheries Regulations, r.13.
[127] KRMC Consultation Meeting, Raviravi, May 2009.
[128] *Fisheries Act,* s.2.
[129] Fisheries Regulations, r.14.
[130] KRMC Consultation Meeting, Raviravi, May 2009.
[131] Fisheries Regulations, r.15.
[132] KRMC Consultation Meeting, Raviravi, May 2009.
[133] *Fisheries Act,* s.2.
[134] Fisheries Regulations, r.16.
[135] Draft Namena Marine Protected Area Management Plan, April 2007
[136] Draft Namena Marine Protected Area Management Plan, April 2007. KRMC Consultation Meeting, Raviravi, May 2009.
[137] Fisheries Regulations, r.16.
[138] KRMC Consultation Meeting, Raviravi, May 2009.
[139] Fisheries Regulations, r.12.

APPENDIX 3 – FISH SIZE LIMITS

It is an offence under the *Fisheries Regulations* to kill, take, sell or display for sale any of the following species if they are less than the minimum length listed below.[140]

Fijian Name	Common Name	Genus	Minimum Length
Ogo	Barracuda	*Sphyrona*	300 mm
Saqa (excluding vilu saqa)	Crevally, Trevally, Pompano	*Caranx*	300 mm
Kanace	Grey Mullet	*Mugil*	200 mm
Ika Droka	Glassperch, Aholehole	*Dules*	150 mm
Nuqa	Ketang, Spinefoot Rabbitfish	*Siganus*	200 mm
Salala	Long-jawed Mackerel	*Rastrelliger*	200 mm
Saku Busa	Longtom, Garfish, Greengar	*Belone*	300 mm
Yawa	Milk Fish	*Chaos*	300 mm
Matu	Mojarra	*Gerres*	100 mm
Ulavi	Parrotfish	*Scarichthys*	250 mm
Kaikai	Pouter, Slimy, Soapy, Peperek	*Gazza*	100 mm
Donu, Kawakawa, Kavu	Rock Cod, Grouper, Salmon Cod	*Serranus*	250 mm
Kawago, Dokonivudi, Musubi	Sea Bream, Pig-faced Bream	*Lethrinus*	250 mm
Kabatia, Kake	Small Sea Bream	*Lethrinus*	150 mm
Sabutu	Small Sea Bream	*Lethrinus*	200 mm
Balagi	Surgeon Fish	*Hepatus*	200 mm
Ki, Ose	Surmullet, Goatfish, Whiskercod	*Mulloidichthys, Pseudopeneus, Upeneus*	150 mm
Damu	Snapper	*Lutjanus*	300 mm
Ta	Unicorn-Fish, Leather jacket	*Naso*	300 mm
Qari dina	Swimming Crab	*Scylla serrata*	125 mm
Sici	Trocas shell	*Trochus niloticus*	90 mm
Civa	Pearl Oyster Shell	*Pinctade margaratifera*	100 mm
Sucuwalu, Dri	Beche-de-mer	*Holothuria scabra*	76 mm

Measurement method: (1) Fish: measure from the point of the snout to the middle of the tailfin when the fish is laid flat. (2) Trochus: measure across the whorl. (3) Pearl Oyster Shell: measure from the butt or hinge to the opposite lip.

[140] *Fisheries Regulations,* rr.18, 19, 21, 25B.

APPENDIX 4 – NAMENA MARINE RESERVE RECREATIONAL USE GUIDELINES

Leave only your bubbles….

NAMENA MARINE RESERVE RECREATIONAL USE GUIDELINES

1) Namena Marine Reserve Fee – All divers must pre-purchase a FJ$30 dive tag before diving or snorkelling within the Namena Marine Reserve.

2) Fishing is totally prohibited within the Namena Marine Reserve including its 500m buffer.

3) Removing anything alive or dead from the Namena Marine Reserve is strictly prohibited.

4) Exert Personal control: Do not make any contact with the corals or other parts of the reef. Always be aware of where your fins are; have the knowledge and the skills to make sure you don't damage or disturb any coral reef, sand flats, grass beds, etc.

5) Gloves: the use of gloves is prohibited in the Namena Marine Reserve.

6) Turtles, their nests, and their eggs are totally protected in the Namena Marine Reserve. Do not touch or disturb turtles when diving; stay far enough away from them so your presence does not alter their behavior. Respect nesting turtles or turtle nests: Please do not anchor within 50 meters of Namenalala Island between the months of October and March. Namena is one of the last known Hawksbill nesting sites in Fiji – Let's make sure it stays a safe haven for these magnificent creatures.

7) Whales and Dolphins: stay at least 100 meters away, stay at or below 'no-wake' speed, and stay on course parallel to the whales or dolphins. Always allow the animals to control the encounter, and leave the area should they appear agitated.

8) Use only the night-dive markers provided, do not drop weighted lines on to reef tops.

9) Do not jeopardise the reef for a good photo or video opportunity.

10) Do not throw rubbish overboard or on the beach. If you come across litter, pick them up and dispose properly.

11) Do not empty the bilge, used detergents, or dispose of any oil or fuel or any other chemicals while within the Namena Marine Reserve.

12) It is prohibited to feed the fish within the Namena Marine Reserve.

13) You are required to seek a permit from the Kubulau Resource Management Committee before you install a mooring of any kind. They will need to approve the design and location.

14) Anchoring is not allowed. The Namena Marine Reserve is to be respected as an anchor free zone.

Regulations for **use of public buoys** (the white color marker buoys):

- First come first serve; the buoy cannot be reserved.
- Boats longer than 110 feet (33.5 meters) or weighing more than 150 tonnes cannot tie on to the buoy.
- Only one boat per buoy.
- Time limit on a buoy if another dive boat is waiting to dive the site is maximum two hours.

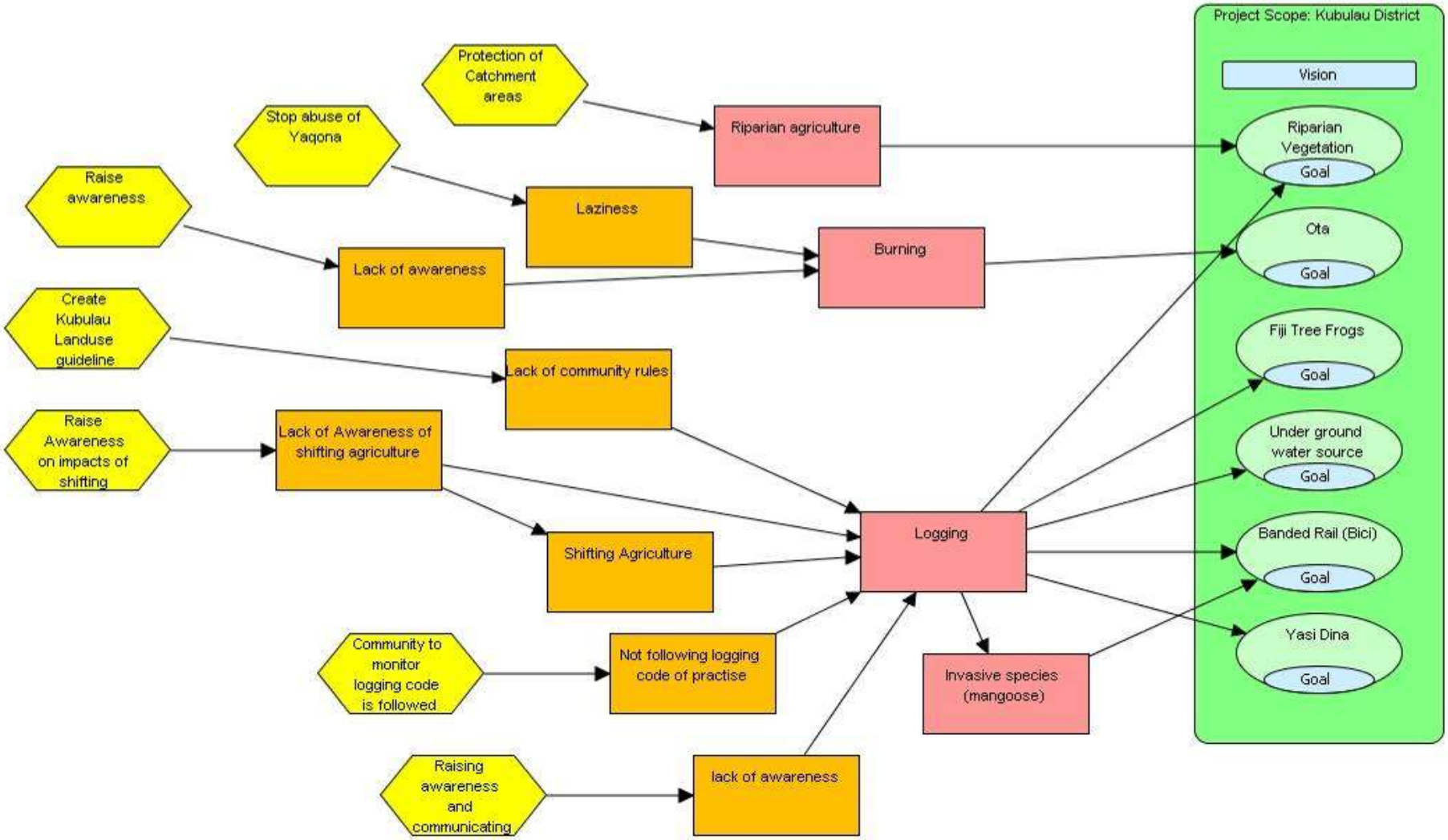
Regulations on **how to tie to a buoy**:

- Always tie from the bow.
- The tie on line should not be shorter than 100 feet (30 meters).

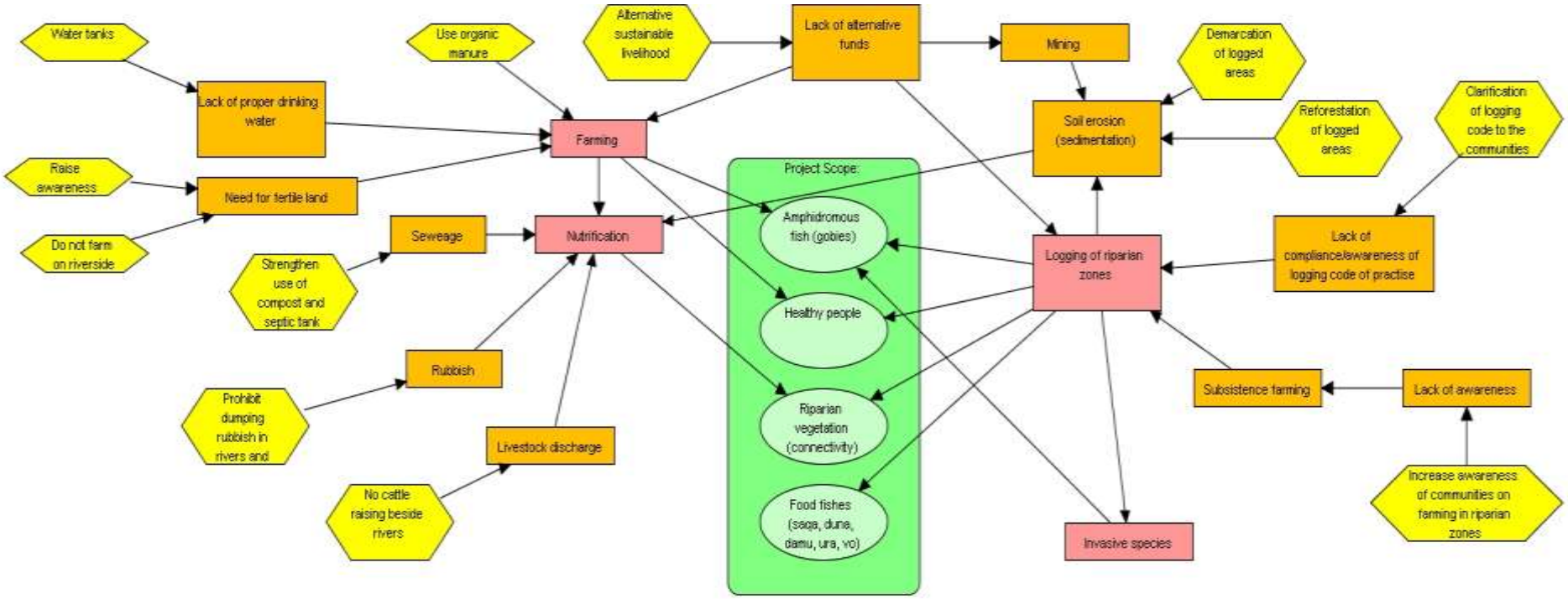
Regulations for how to **navigate** in the Namena Marine Reserve:

- Always navigate on the seaside of the mooring buoys in the dark blue water.
- Pass slowly at least 300 meters away from a boat tied to a buoy.
- The international 'rules of the road' for how to avoid collision should be adhered to in the waters of the Namena Marine Reserve.
- As a courtesy to the Moody's Namena, who help us monitor compliance of the reserve, all vessels should identify themselves upon entering Namena Marine Reserve via radio channel 14.

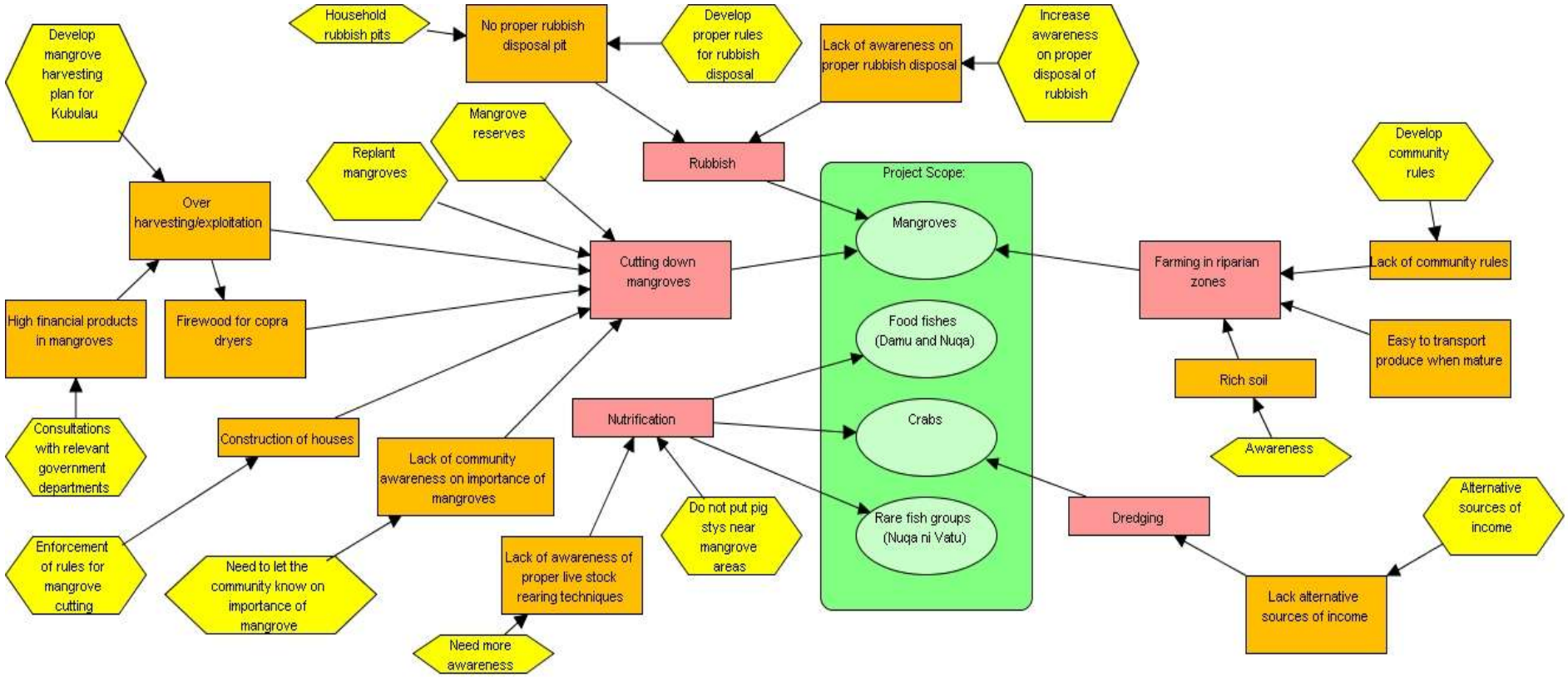
APPENDIX 5 – TERRESTRIAL THREAT DIAGRAM



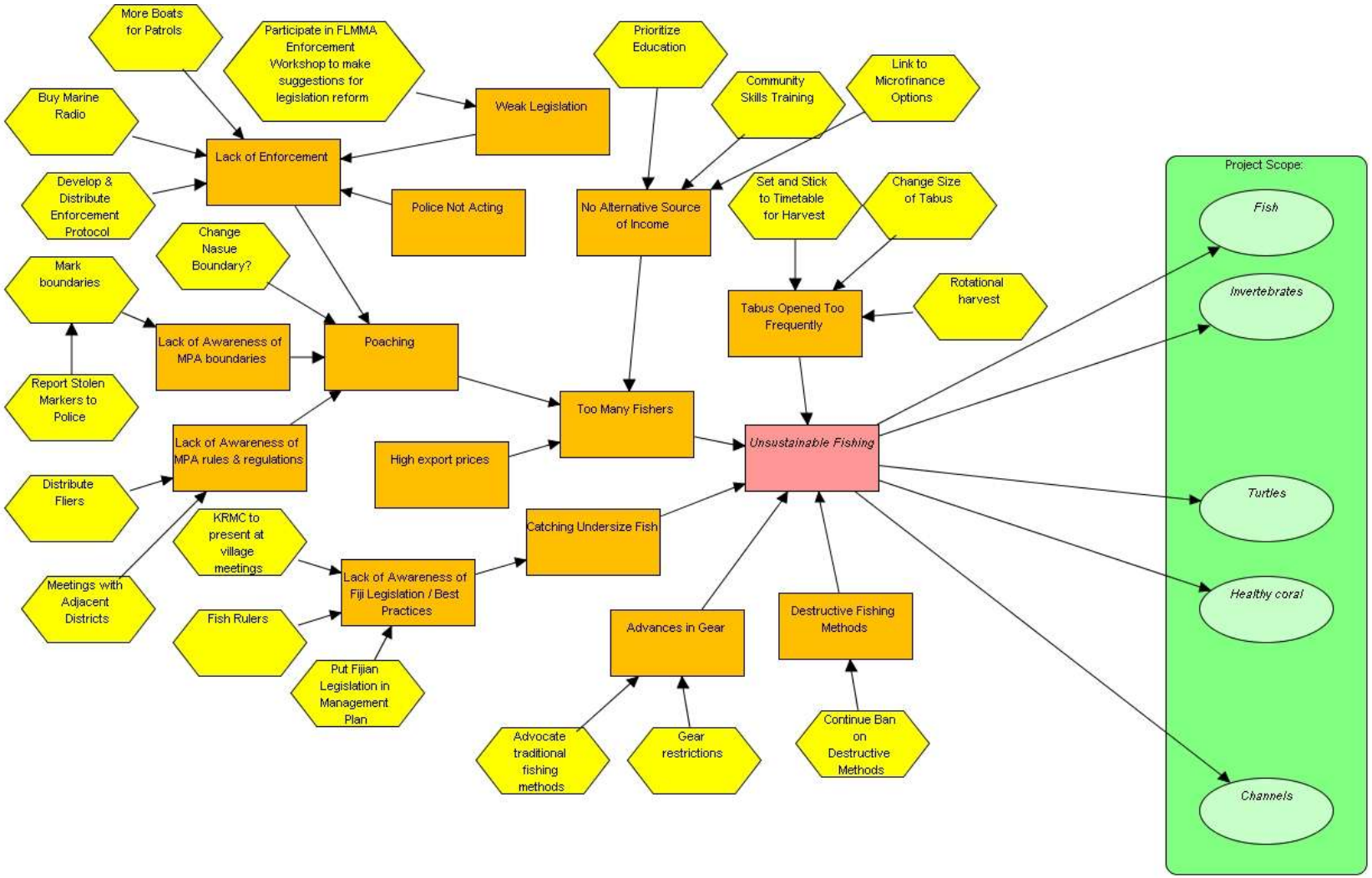
APPENDIX 6 – FRESHWATER THREAT DIAGRAM



APPENDIX 7 – COASTAL AND ESTUARINE THREAT DIAGRAM



APPENDIX 8 – MARINE THREAT DIAGRAM



APPENDIX 9 – USEFUL CONTACTS

KUBULAU RESOURCE MANAGEMENT COMMITTEE

KRMC Chairman, Mr Paulo Kolikata
Ph: 8291308/8508853/8509188

GOVERNMENT AGENCIES

iTaukei Lands Trust Board
Deputy General Manager – Operations
Mr Solomoni Nata
Ph: 3312733
Email: snata@tltb.com.fj

iTaukei Lands and Fisheries Commission
Chairman, Ratu Vananalagi Vesikula
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Email: vananalagi.vesikula@govnet.fj

Bua Provincial Office
Acting Roko Tui Bua, Jale Sigarara
Ph: 8836027

Fisheries Officer Bua, Alifereti Ului Tuinamata
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Department of Fisheries
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Divisional Fisheries Officer Northern
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Department of Environment
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Ministry of Agriculture
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Agriculture Extension Officer, Mr Laisiasa Qurai
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Acting Director, Land and Water Resources Management Division, Mr Colin Simmons
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Department of Tourism
Principal Tourism Officer, Mr Donald Mitchell
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National Trust of Fiji
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Email: **eerasito@nationaltrust.org**

SPC-GTZ
Land Use Planning and Facilitation Specialist
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NON-GOVERNMENT ORGANISATIONS

Wildlife Conservation Society Fiji Program
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Fiij Locally Managed Marine Area Network
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