Nasoata Island Mangrove Conservation Area (NIMCA) Co-management Plan

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MANGROVE ECOSYSTEMS FOR CLIMATE CHANGE ADAPTATION AND LIVELIHOOD

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INTRODUCTION:

The co-management plan for Nasoata Mangrove Islands was supported and initiated through the IUCN Oceania Regional Office – MESCAL or Mangrove Ecosystem for Climate Change adaptation and Livelihoods (MESCAL) project. The project was funded by the German Development fund or BMU and implemented in five Pacific Island countries (Fiji, Solomon Islands, Samoa, Tonga and Vanuatu). The project seeks to address the key challenges of mangrove management to increase resilience of the Pacific people to climate change and improve livelihoods. This is to be achieved through empowerment of communities, increasing institutional capacity, increased biological and social baseline knowledge and exploring carbon credits for mangrove protection.

Fiji has the 3rd largest mangrove area in the Pacific with an estimated total mangrove area of about 46,600 ha. The MESCAL Fiji project have worked to improve decision making, development of a national mangrove management plan, improving government official capacity and increasing awareness. Rewa Delta is the largest strands of mangrove in Fiji and was chosen as the MESCAL project demonstration site where biodiversity baseline, carbon assessment and awareness work were carried out. Nested in the mouth of the Rewa delta is Nasoata Island where one of Fiji's most unique mangrove diversity occurs along with the associated biodiversity of unique sea birds.

The co-management plan for Nasoata is to guide the sustainable management of marine and coastal resources of Nakorovou and neighbouring villages, Dreketi district and Rewa province. At national level it will be a component of the Fijian Government's submission for Nasoata Island to get global Ramsar Site status and support as part of Fiji's commitment and obligation under the Ramsar convention.

> *"The conservation and wise use of all wetlands through local national and regional action, and international cooperation as a contribution to sustainable development throughout the world"*
>
> - Ramsar Convention Mission

1. CO- MANAGEMENT – DEFINITION, AIM, PRINCIPLES AND PROCESS

Co-Management is:

> ***'co-management –***
>
> *A situation in which two or more social actors negotiate, define and guarantee amongst themselves a fair sharing of management functions, entitlements and responsibilities for a given territory, area or set of natural resources*
>
> *Borrini-Feyerbend et al, 2007*

- A pluralist approach to managing natural resources , incorporating a variety of partners in a variety of roles, generally to the end goals of environmental conservation, sustainable use of NRs and the equitable sharing of resources-related benefits and responsibilities
- a political and cultural process *par excellence*: seeking social justice and "democracy" in the management of natural resource
- a process that needs some basic conditions to develop, among which are: full access to information on relevant issues and options, freedom and capacity to organise, freedom to express needs and concerns, a non-discriminatory social environment, the will of partners to negotiate, confidence in the respect of agreements, etc.
- a complex, often lengthy and sometimes confused process, involving frequent changes, surprises, sometimes contradictory information, and the need to retrace one's own steps
- the expression of a mature society, which understands that there is no "unique and objective" solution for managing natural resources but, rather, a multiplicity of different options which are compatible with both indigenous knowledge and scientific evidence and capable of meeting the needs of conservation and development (and that there also exists a multitude of negative or disastrous options for the environment and development)

(*Borrini-Feyerbend et al, 2007)*

AIM:

The aim of mangrove co-management is to ensure sustainable use of resources for the benefit of the local population while at the same time maintaining the protection function of the mangroves and associated ecosystem. The aim and principle of co-management for Nasoata was based on some core community-based management approaches developed in Fiji and the region through MESCAL and other initiatives such as the Asia-Pacific Locally managed Marine Areas which are:

(i) *Community at heart*: community interest and wellbeing is main goal or central.
(ii) *Community ownership*: Any co-management should be community driven and ensure community ownership and participation.
(iii) *Partnership*: Ensuring acceptance and understanding of co-management and their respective roles and responsibilities by all stakeholders and their commitment to play anactive role.
(iv) *Adaptive management*: Through participatory approach develop a community management plan that will ensure community ownership and leadership of their formal or informal management processes.
(v) *Social justice and equity*: To ensure that all parties are treated equal and no one is disadvantaged or not heard.
(vi) *Sustainable use of natural resources*: To ensure that the goal of sustainable use of natural resources are not compromised.

PROCESS:

The steps of developing the Nasoata co-management were guided by the following steps or process:

a. **Community Engagement**: Conducting awareness, community dialogues, discussions, focus groups and planning activities with communities to increase their understanding of the importance of mangrove habitat in Nasoata, their reliance on marine resources. This step also involved assessing their interest and commitment to the conservation and sustainable use of Nasoata Island resources.
b. **Understanding of state of biodiversity** : This involved engaging an expert on Nasoata biodiversity to provide information and training to villagers and stakeholders on the biodiversity status, uniqueness and impact of human and natural processes.
c. **Engagement of other stakeholders**: Other stakeholders such as government, other surrounding villages, districts and provinces were the target of this process to ensure understanding of their respective roles, responsibilities and buy-in.
d. **Multi-stakeholder planning, negotiation & agreements**: After stakeholders and communities were engaged they were then brought together to a joint planning and open discussion forum to identify threats, collect community knowledge on their resources, document community historical timeline and decide on the management boundaries, rules and governance structure.
e. **Co-management plan finalisation & endorsement**: This process involved developing the co-management plan and conducting final consultation and endorsement with communities and stakeholders

Community-Based Adaptive Management the integration of design, management and monitoring in order to learn and to improve responses to management efforts - carried out by, or with a major role played by, local communities (Jupiter, 2013)

CBRM as an approach emphasizes a community's capability with regard to managing resources. It is inherently evolutionary, participatory and locale-specific and considers the technical, sociocultural, economic, political and environmental factors impinging upon the community (Sanjise, 1995)

2. NASOATA ISLAND - SITE DESCRIPTION

NASOATA ISLANDS TENURE

The community related that the Nasoata was initially owned by Mr Davis, Mr Turner, Mr Morris Hedstrom, Mr Garnet, Mr Chandra Kali before it was bought by the village of Nakorovou (Yavusa Wainisue) in 1964. The Nakorovou village bought back the island through a Fijian folk-song group from the village called the 'Via *mila* ni Tebara' and copra or *'ta niu'*. The Nasoata Island is currently under the ownership of the village of Nakorovou (Yavusa Wainisue) but HELD IN TRUST UNDER CUSTODIAN of the I Taukei Land Trust Board (ITLTB, 2014).

Private property: with privatization of rights through the establishment of individuals or company-held ownership

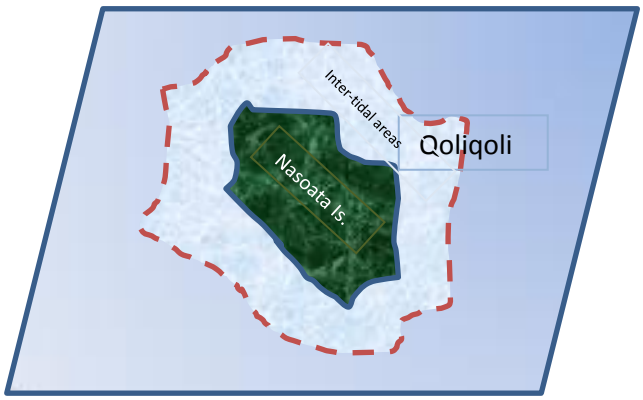
Community property: in which the resource is controlled by an identifiable community od users or collectively and regulations are made and enforced locally;

Open Access: Absence of property rights
In reality many marine coastal resource are held under regimes that combine the characteristics of two or more of these types. The 4 property rights regimes are ideal, analytical types; they do not exist in the real world. Strictly speaking, pure communal property systems are always embedded in state property systems and state law, deriving their strength from them. Resource managers cannot function effectively unless they know the property rights regime they are dealing with.

State property: with sole government jurisdiction and centralized and regulatory controls

Bromley (1991).

<u>Tenure Map of Nasoata</u>



QOLIQOLI: Under the custodian of the Roko Tui Dreketi and open access to the customary owners of Rewa Province. This area is under the Fisheries Act (Cap 158) which also includes the intertidal area.

NASOATA ISLAND: Freehold land owned by the village of Nakorovou but Held-In-Trust and under custodian by the I Taukei Trust Board.

RAMSAR SITE BOUNDARY: The imaginary boundary following the inter-tidal area around Nasoata Island but still under the Qoliqoli boundary. This boundary is proposed to be a 'tabu area' but **approval and support need to be obtained from the Roko Tui Dreketi**. In principle the district representatives of Rewa have given their support during the consultation conducted by the Department of Environment in 2013.

The Nasoata Island Mangrove Conservation Area (NIMCA) is located in Rewa Province in the southeast of Viti Levu, Fiji's largest and most populous island, and about 10 km to the northeast of Suva, the capital city. The main mouth of the Rewa River, Fiji's largest river is located about 3 km to the west. There are coral reefs, including Nasilai Reef, located a further one km to the south and extending to the southeast of the island. Sagasaga and Valolo are two smaller mangrove islands located about 0.5 and one km, respectively, to the northeast of the island (See Figure 1, on next page).

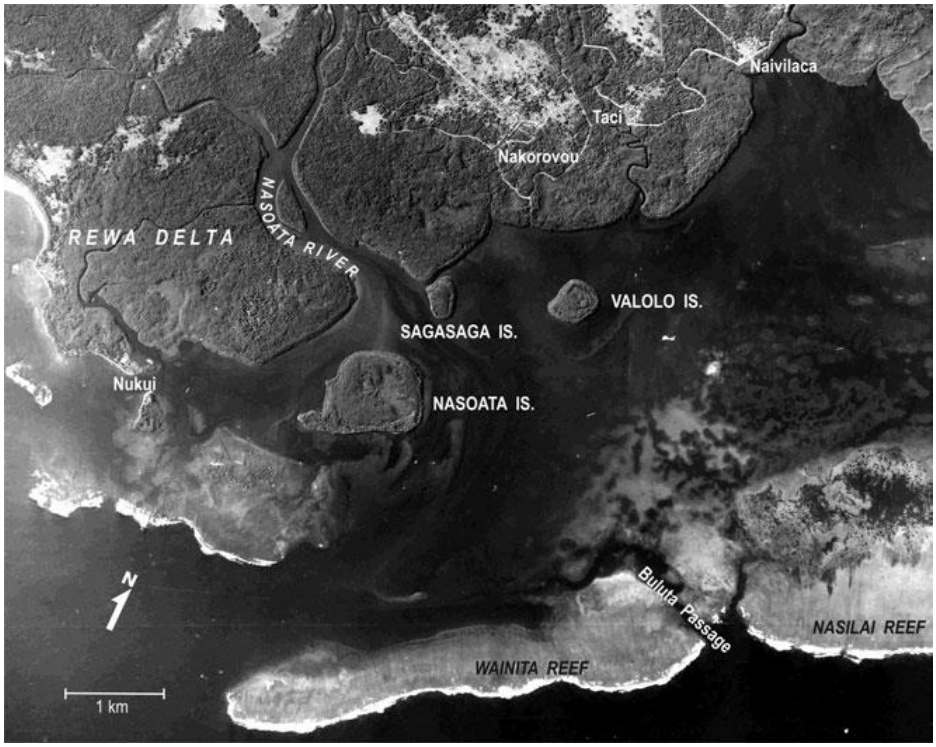


Figure 1. Annotated aerial photograph of a portion of southeastern Viti Levu centered on Nasoata Island and the lower reaches of the Nasoata River, one of the tributaries of the Rewa River, showing the main mangrove islands of Nasoata, Valolo and Sagasaga, portions of the Rewa River Delta, fringing reefs, mudflats and associated intertidal seagrass beds, offshore barrier reefs, reef passes and the locations of Nakorovou Village (the owners and custodians of Nasoata) and other Fijian villages (*koro*) that use the area as an important fishing ground (*iqoliqoli*) and the islands as resource island (*ikanakana*).

Elevation: The maximum elevation of Nasoata is about 1.2 m above mean sea level along the beach ridge on the higher south-central portion of the island. The interior and northern parts of the islands are intertidal.

Total Area: The total area of the proposed NMICA is about 176 ha (1.8) km^2. This includes the actual supratidal and subtidal areas (about 76 hectares/0.76 km^2) and the surrounding intertidal

Climate: Nasoata lies just off the windward southeastern portion of Viti Levu and has a wet, tropical oceanic climate. The area receives about 3000 mm mean annual rainfall, with some rainfall being experienced on an average of about 250 days per year. The average annual mean temperature is 25 ^{o} C (77 ^{o} F) with an average monthly range of about 6 ^{o}C. The temperature seldom rises above 32 ^{o} or falls below 16 ^{o} C (Smith 1979 in Thaman *et al*. 2006). The Southeast Tradewinds, which affect the southern coast of the island, are relatively consistent during the cooler, drier season between April and October. They shift more to the northeast later in the year. During the warm, wet season between mid-November and mid-April the entire Fiji group experiences gale force winds.

Destructive tropical cyclones, storm waves and associated heavy rainfall are common during this period. This leads to flooding and accelerated runoff in the Rewa River system and accelerated erosion on the southern coast of the island. This increased river flow brings with it increased sediment loads that affect not only the central low-lying portions of Nasoata, but also the surrounding seagrass beds and nearby coral reefs. The increased river flow with its high sediment load also significantly reduces the biogenic proportion of beach sand on the more upraised southern portions of the island. The high river flows and storm waves also bring flotsam and propagules of many inland plants to the island. High waves and spring tides, reinforced by the predominant tradewinds, have also led to extensive deposits of pumice (*soata* in Fijian), which are found throughout the low-lying areas of the southeastern portion of the island. This is the origin of the island's name, Nasoata (literally ''the pumice'' or place of the pumice).

3. THE *YAUBULA* – General Ecological Features and Noteworthy Fauna

Nasoata Islands has one of the most intact mangrove areas in Fiji and by extension, the Western Pacific. The flora is composed of some 123 species of vascular plants from 54 families, of which 87 species are assumed to be native (Appendix 3). The introduced species are found almost entirely in the limited area of non-wetland on the southern portion of the island, with only the pond apple (*Annona glabra*), being found along the southern margin of the mangrove. There are no gymnosperms on the island.

Nasoata is a Fijian word which means "the pumice/place of pumice" – a resource from Fiji and Tonga's undersea volcanoes. In a survey carried out in 2004, the island was divided into 8 different zones or vegetation types which are:

(1) *Rhizophora* Forest
(2) *Bruguiera gymnorrhiza* swamp forest
(3) Mixed Tidal Forest
(4) Episodic Swamp Forest
(5) Inland Coastal Forest/Coconut Wood
(6) Littoral Forest & Strand Vegetation
(7) Seagrass Beds
(8) Ruderal Vegetation

Figure 2 is a general vegetation map showing these vegetation types.

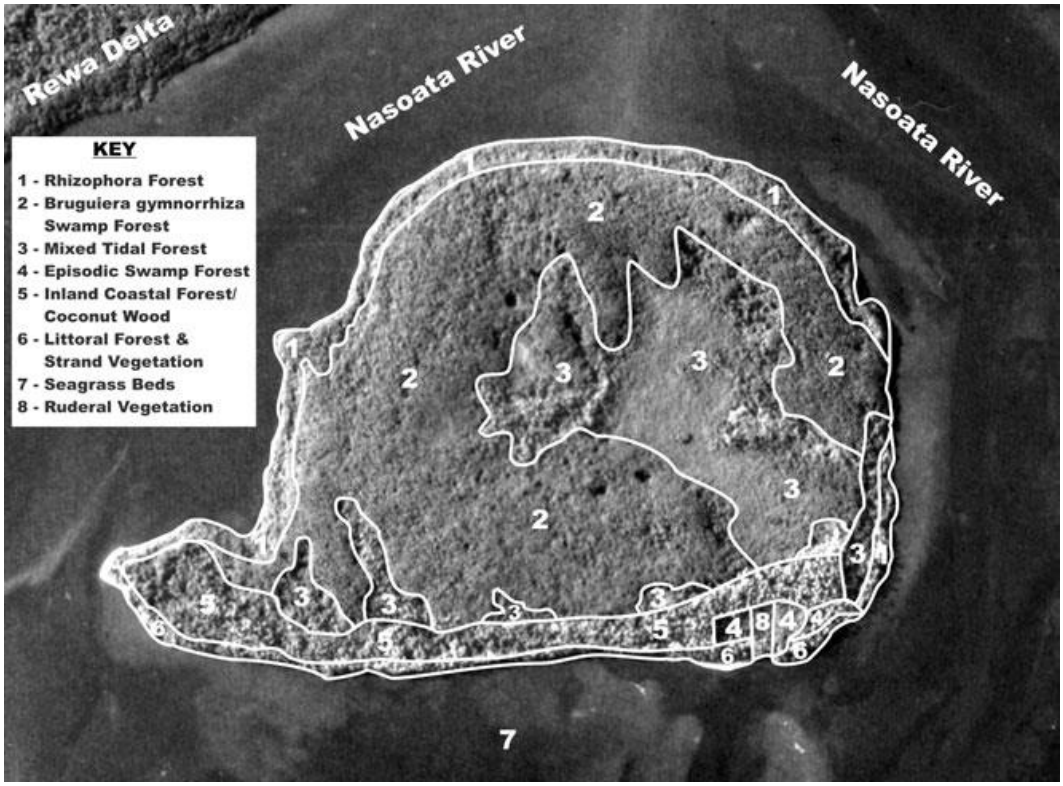


Figure 2. Generalized vegetation map of Nasoata Island, Rewa Delta, Viti Levu, Fiji Islands (prepared by Baravi Thaman from a 1994 aerial photograph)(Source: Thaman *et al*. 2005).

The islands shoreline which faces the ocean side is described as coastal littoral which consists of mangrove species and coconut palms as well as **niu** (*Cocos nucifera*). SW Nasoata – provides the role of protecting Nasoata from extreme events, however extreme coastal erosion is evident. The island is known for its thick *Rhizophora* or **tiri** thicket and locally known as **'veikaka'**. Other mangrove species include *Rhizophora samoensis/mangle* or **tiri wai**, *Rhizophora stylosa* or stilt mangrove and locally known as **tiri solo**. Another

unique characteristic of the island is its *Bruguiera gymnorrhiza* mangrove swamp forests or **bolavou** swamp. Other Nasoata list of plants is attached by Prof. Randy Thaman. Nasoata is also an important seabird and migratory bird habitat and birds found include Crested tern, **icō** (*Sterna bergii*), Mangrove Heron, **visako** *(Butorides striatus*), Pacific black duck, **ga ni Viti** *(Anas superciliosa).*

Nasoata is a source of important targeted species for subsistence for the surrounding communities which includes mangrove lobster *or* **manā** (*thalassoma anomala*), Red-clawed mangrove crab or kuku damu (*Sesarma erythrodactyla*), landcrab or **tubā, lairo** (*Cardisoma carniflex*). Other important marine species targeted include the three-spot swimmer crab or, **bukucula** (*Portunus sanguinolentus*), Lampshell or ivoce (*Lingula unguis, ark clam*, cockle or **kaikoso** (*Anidara antiquata*) – bivalve mollusk and Cone shells or **vuru** (fig cone, *Conus figulinus* and virgin cone, *C. virgo*). Also found on the island is the pacific boa or **gata** (*Candoia bibroni*), spider or **viriviritalawa** (*Arachnida*) and Shield bug or **vonu** (*Tectocoris diopthalmus*) – Hemiptera. One particular threatened mangrove species identified is the red-flower black mangrove or **sagale** *(Lumnitzera littorea*and is recommended to be the main candidate for forest restoration of Nasoata.

SPECIAL ECOLOGICAL FEATURES

Endemism: As stressed above, although there are no endemics, Nasoata has, perhaps the most intact and speciose mangrove flora of any place in Fiji and in the oceanic islands of Melanesia, particularly in terms of mangrove associated woody and herbaceous species that are under threat in most areas in Fiji.

Shorebirds: The most important fauna are the rich shorebird and seabird avifauna and the rich invertebrate fauna, particularly the culturally important crustacean fauna. Of particular interest is the abundance of the Pacific black duck which is commonly seen in flocks feeding or resting on the extensive intertidal mudflats and seagrass beds, including about 60 in three flocks counted from one spot in April 2001 (Thaman 2004). This was the largest number ever seen at one time in Fiji by resident bird expert Dick Watling who has studied birds in Fiji for over 35 (Watling 2004) years. Also common to occasional are the collared kingfisher, the wattled honeyeater and the Vanikoro broadbill. Of interest were over 300 waders observed on the mudflats in April 2001, most of which were wandering tattlers that are the last waders to leave on their northern migration (they leave in late April or early May). Other common waders include golden plovers, bar-tailed godwits, turnstones and whimbrels. It was estimated that if these waders occur around Nasoata in the same proportion as they do at Suva Point, where the numbers are regularly monitored, then peak numbers in February to March at Nasoata would be estimated to be approximately 900-1000, a very impressive number by Fijian standards**.**

Terrestrial mammals: The only indigenous terrestrial mammals are non-resident fruit bats (*Pteropus tonganus*), which fly from the mainland to feed on the island.

Crustacean fauna: The crustacean fauna is particularly diverse and representative. Most notable is the mangrove or mud lobster or **mana** (*Thalassina anomala*), which is caught using an ingenious traditional snaring system. There are two species of mangrove crabs, the red-clawed mangrove crab or **kuka damu** (*Sesarma erythrodactyla*) and the black mangrove crab, **kuka vulu** or **uka loa** (*Metapograpsus messor*). There is also the larger mud crab, **qari** (*Scylla serrata*). These three crab species are very common in the mangrove habitats. In addition, the land crab, **lairo** or **tubā** (*Cardisoma carniflex*) in found in more well-drained sites. All of these species are hunted in season and sold at local markets as an important source of cash income. Commonly caught prawns or shrimp include **ura** (*Penaeus* spp.), **kadikadi** (*Macrobrachium equidens*) and **moci** (*Palaemon concinnus*)**.** These species are also sold. The rock crab, **taqara** (*Grapsus albolineatus*), the box crab, **cugavotu** (*Calappa hepatica*), a number of species of fiddler crabs, **toto** (*Uca* spp.) and hermit crabs, **uga** (*Ceonobita* spp.) occur along the coastline or on the mudflats. The latter is considered a preferred bait species for linefishing. Penaeid prawns or shrimps (*Penaeus* spp.) are common on the reef flat and seasonally caught for local consumption and sale.

4. THE *VANUA* – Social and Cultural Context and Values

In Fijian *vanua* means land and also refers to a tribe (people), their physycal land, their social structures, cultural and spiritual ties to their land and sea. Nasoata is an island which is owned by the village or *vanua* of Nakorovou or *Yavusa Vuniyavu* with their chiefly title the *Turaga Na Tui Waina*. The island is part of the district of *Dreketi* in the province or *vanua* of *Rewa,* head of the powerful government or *matanitu qaqa* of Burebasaga confederacy with the Roko Tui Dreketi as the paramount chief. Suva city, the capital of Fiji, is also part of the Rewa province located at least 20 km south of Nasoata island, The province comprises nine tikina (or districts) which are; Rewa, Noco, Dreketi, Burebasaga, Toga, Vutia, Suva, Raviravi and Sawau.

Nakorovou Village and the other Rewa Delta villages associated directly with Nasoata Island constitute a very traditional river and mangrove-dependent culture. They have over the centuries, developed an intimate knowledge of the river, the mangroves and associated seagrass beds and coral reef ecosystems and their ecology, biodiversity and economic, social and ecological importance to their cultural continuity.

This knowledge has served, and will continue to serve as the foundation for the long-term preservation and sustainability of the Nasoata Island. The villages, their cultural practices, rituals, openness and hospitality offer a great resource, not only for ecotourism but also for cultural exchange, education and participatory action that will ensure that the ideals of the Ramsar Convention are achieved.

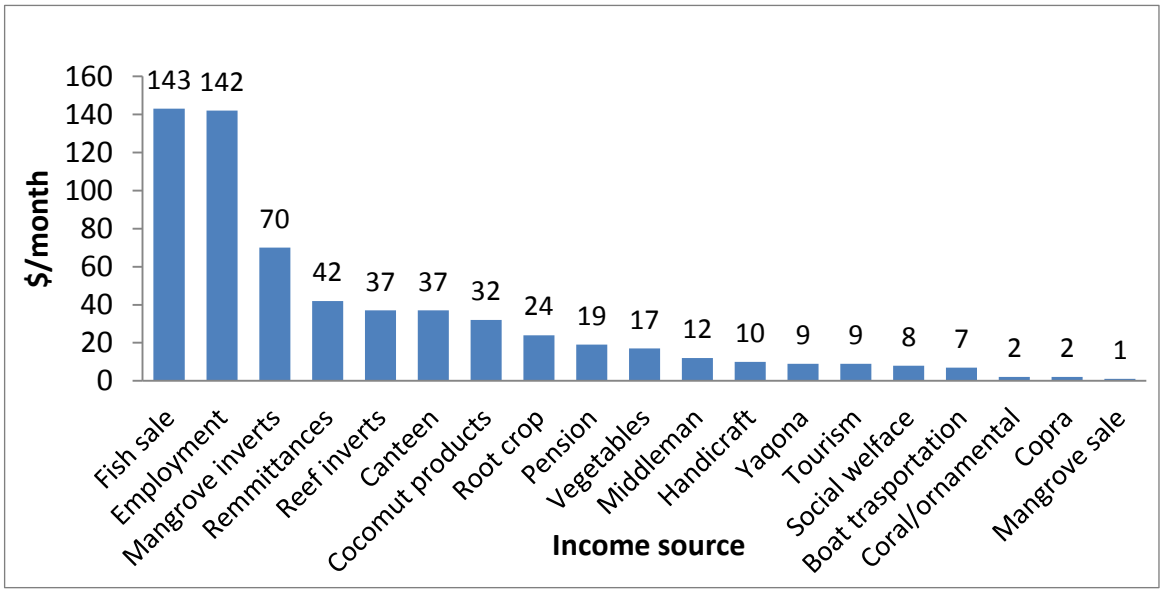
Nasoata is renowned among local Rewa Villages as their renewable breadbasket (*ikanakana*) and sustainable source of a wide range of marine foods, medicinal plants and other materials essential to sustainable livelihoods of the surrounding villages. Associated with this is a wealth of traditional knowledge and language related to the very sophisticated mangrove-adapted fishing techniques that have been developed over generations

Livelihood and Food Security (Income and Resource Use Patterns)

In a recent MESCAL study in 2013 (in press) to document social, cultural and economic importance of mangrove system to communities within Rewa Delta it showed that the primary income source is the sale of fish, which is engaged in by 46% of households, followed by the sale of mangrove invertebrates (34% of households). The sale of mangrove wood for firewood is the least dependent source of income at only 1% of the total household income.

The average household monthly income is $253. The highest income, as highlighted in Income source and average household monthly income – graph below.

Income source and average household monthly income



Income is gained from the sale of fish at $143/month followed by employment at $142. The third highest income comes from the sale of mangrove invertebrates ($70/month), followed by remittances ($42/month).

From the above results, it is clear that the mangroves and their associated resources play an important role in the economic activities of the ten study sites. The majority of income gained is from the sale of fish and mangrove invertebrates such as mud lobster and mud crab. Most of these resources live or are associated with the mangrove system throughout their life cycle. The mangrove system acts as a home or refuge to these resources, therefore its sustainability is not only critical to the resources *per se* but, more importantly, to the communities in this region who depend on these resources for their livelihoods. (MESCAL, 2013)

5. NASOATA CO-MANAGEMENT PLAN

A. THE VISION

In any co-management having a vision with agreement from all relevant stakeholders is very important to drive and guide the whole co-management process. In Nasoata a stakeholder meeting was conducted where stakeholders presented their guiding vision for Nasoata. The vision below was developed by the Nasoata village and discussed with other stakeholders.

Vision Statement:

Nasoata Island will bring Unity, Progress and Prosperity to the Nakorovou Community

The vision specific goals of the vision were; (i) Secure financial resources to develop Nasoata Island, (ii) increase knowledge and understanding of the new generation on the importance of natural resource conservation and management and (iii) strengthen community unity and working together to achieve our community aspirations. The vision will specifically achieve the following:

Nasoata will be a consistent source of income for the future generation of the Nakorovou community

Nasoata will be a research destination or laboratory for tertiary institutions and other researchers in Fiji and abroad

Nasoata will be a nature tourism destination for healthy coastal plants, seabirds, marine resources, healthy coral reefs and mangrove habitat. Also as a sustainable tourism activities such as yacht anchorage and other marine based tourism activities such as kayaking.

B. THREATS AND MANAGEMENT CHALLENGES:

In any co-management, threat identification and agreements by stakeholders are crucial to ensure their support and buy-in in actions to rectify these management challenges. The following were the threats identified by the Nakorovou community and the relevant stakeholders such as government, NGOS and academic institutions. The process of threat identification also included communities identifying the underlying root causes of these threats to a healthy marine environment in Nasoata.

Threat 1: Over harvesting of Marine Resources

Since the island is uninhabited and the owners are not visible from the island it has become a target of illegal harvesting on the islands for mud crabs, coconut crabs, coconut and leaves for sale in the nearby markets. The near shore, mud-flats and coral reefs are also rich habitats for ark clam (*Anadara antiquata*) or **kaikoso**, fishing and reef gleaning. Most surrounding areas also face the issue of overharvesting due to shift from subsistence to cash economies and due to the tenure of the marine areas, it becomes an open harvesting area for the whole province as they all have user-rights to the marine resources as it is part of their traditional fishing ground or Qoliqoli.

The causes outlined were increasing demand for cash income by the communities and illegal access to the island. This has caused the steady decline of marine resources and overharvesting of islands coconut and burning by fishers who uses the islands to camp during fishing trips.

Threat 2: Flooding and Siltation

A popular view is that frequent flooding in Fiji has increased over recent decades and this has contributed to siltation and sedimentation of river channels (e.g Cochrane, 1969; Morrison *et al*.,1990). Nasoata island which is located at the Rewa river mouth definitely would be highly impacted by flooding along the Rewa River. This would include large floods induced by cyclones and Rewa is known to always been flooded in most cyclones, flash floods or storm surges.

Nasoata and the Rewa River is highly impacted by the effects of flooding and siltation. This impact include loss of human lives, damage or complete loss of agricultural crops, livestock are swept away, damage to roads and bridges (wash outs, landslides and slips) which affect transport to markets, education and healthcare (Raj, 2004).

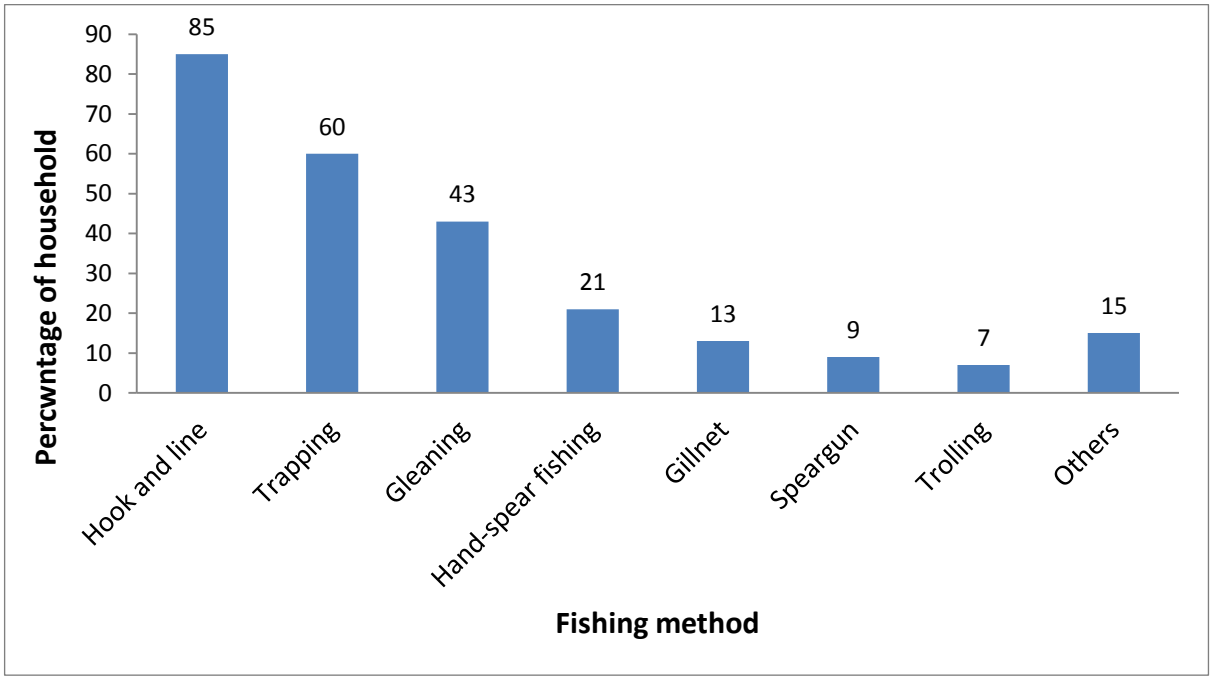
The communities attributed this siltation effect on their fisheries and increase flooding to deforestation along the river banks and logging activities upriver. The impacts observed by communities are pollution of their fishing grounds, high mortality of marine resources such as *lumi and kaikoso*, fish and *dio*

The history of Nasoata showed that the island has changed ownership at least 3 times and was once a coconut plantation and a cattle farm. This would mean that the island biodiversity may have been altered greatly over the years.

Threat 3: Use of Destructive Fishing Gear

The term “destructive fishing method” has often been used for wide range of activities from classical overfishing (non-sustainable use) to outright destruction of the resource and environment (e.g use of explosives or dynamite fishing) (Bidesi, 2011). Any fishing methods can be destructive if improperly used. By early 1980s, three quarters of the countries in the Pacific island region had reported reef degradation (Dahl & Baumgart 1982). Nearly half of the cases were related to damage from illegal fishing with fish poisoning and explosives. Destructive fishing method usually range from explosives, modern poison (cyanide, bleach, pesticides), fish drives and traditional poison (plant and animal compound that stun and kill fish)

The type of fishing gears used by the community of Nakorovou includes spear fishing, gillnet, hand line, crab traps and gleaning. In the past the main type of fishing gears used were fish traps or *ba-ni-ika* before introduction of gillnets in 2000. The identified destructive fishing method by the communities includes use of modern and traditional fish poisoning and use of undersize nets. It was observed that gillnet may be the most destructive fishing methods as a lot of their collection are made along mangrove areas. It has also been reported that illegal coral harvesters have been collecting corals and live-rock off the reef adjacent to Nasoata Island. There had been very little to no enforcement of illegal use of gears such as gillnets and this contributed to increase use of destructive fishing practices and overharvesting of marine resources.



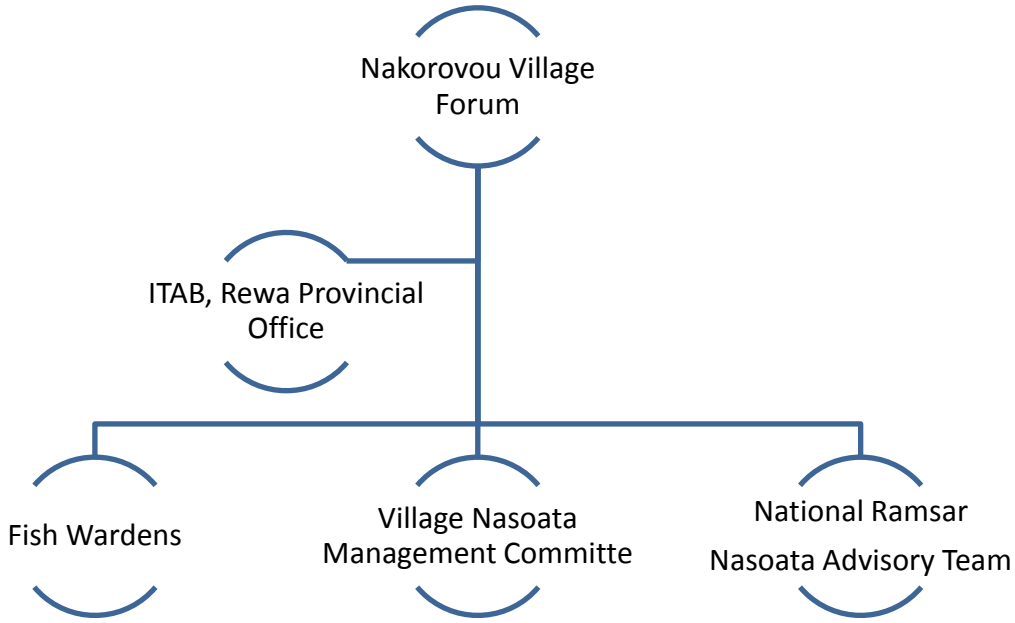
Percentage of households that utilize different types of fishing gear – Source MESCAL Technical Report 'In Press'

Threat 4: Invasives

There are a number of invasive species that are present on Nasoata. The main ones that have established significantpopulations include pond apple (*Annona glabra*), trailing daisy or wedelia (*Sphagneticola trilobata*) and Para grass (*Brachiara mutica*). Only the pond apple, which has invaded the southern margins of the mangrove in the southern part of the islands, has significantly impacted the core part of NIMCA, although, if not managed the trailing daisy could become a problem. In terms of invasive species, the only species of concern is the presence of the introduced mongoose (*Herpestes auropunctatus*), which is common on the island and is a major threat to groundnesting birds and crabs. Rats (*Rattus* spp.) also occur on the island but is not considered as much a threat to the local fauna.

C. GOVERNANACE STRUCTURE:

The governance proposed for the Nasoata Islands is based on strengthening current governance structures at community level. It proposes to leave the overall decision making to the Village Decision Making Forum and the need to establish a Nasoata island management committee in the village. It proposes a direct link to the National Ramsar Committee as an advisory body. It also proposes that I Taukei Affairs Board (ITAB) and the Provincial Office provide support as part of their government mandate and role.



Nakorovou Village Forum:

- Be responsible for the overall management and decision making of Nasoata Islands and other related businesses outlined in the Co-Management Action Plan
- Appoint a Village Nasoata Management Committee
- Provide opportunity for the Nasoata Island management issues to be discussed and decisions agreed to by the whole community

Village Nasoata Management Committee (Chairman, Treasurer, Nasoata Field Officer (secretary), Warden representative)

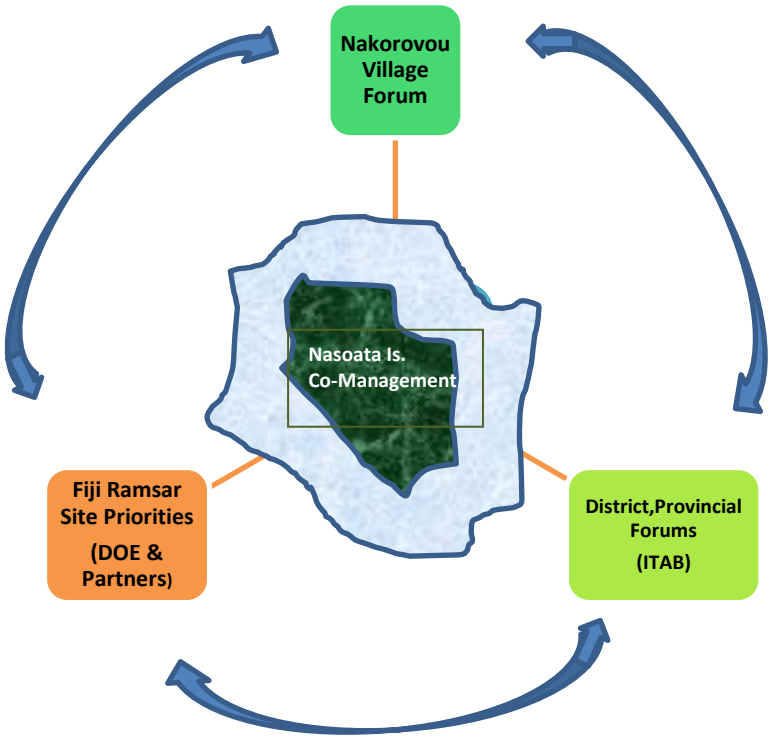
- Responsible to execute decisions made by the Village Forum
- Prepare quarterly work activities and budget
- Ensure timely execution of Nasoata Island work plans
- Prepare required reports to village forum and other forums such as district and provincial.
- Provide assessment of progress and provide recommendations to village forums and other stakeholders for decision making

Fish Wardens:

- Ensure enforcement plan are executed
- Provide reports to village forum and relevant bodies
- Provide required reports to other authorities such as DOE, Police and Fisheries
- Conduct awareness activities relevant to their roles.

Relationship Chart of Stakeholder Groups in Relation to Nasoata

The relationship chart shows how Nasoata Island is supported by the Nakaorovu village, The District and Provincial Forums and the link to National Priorities and this case the Ramsar.

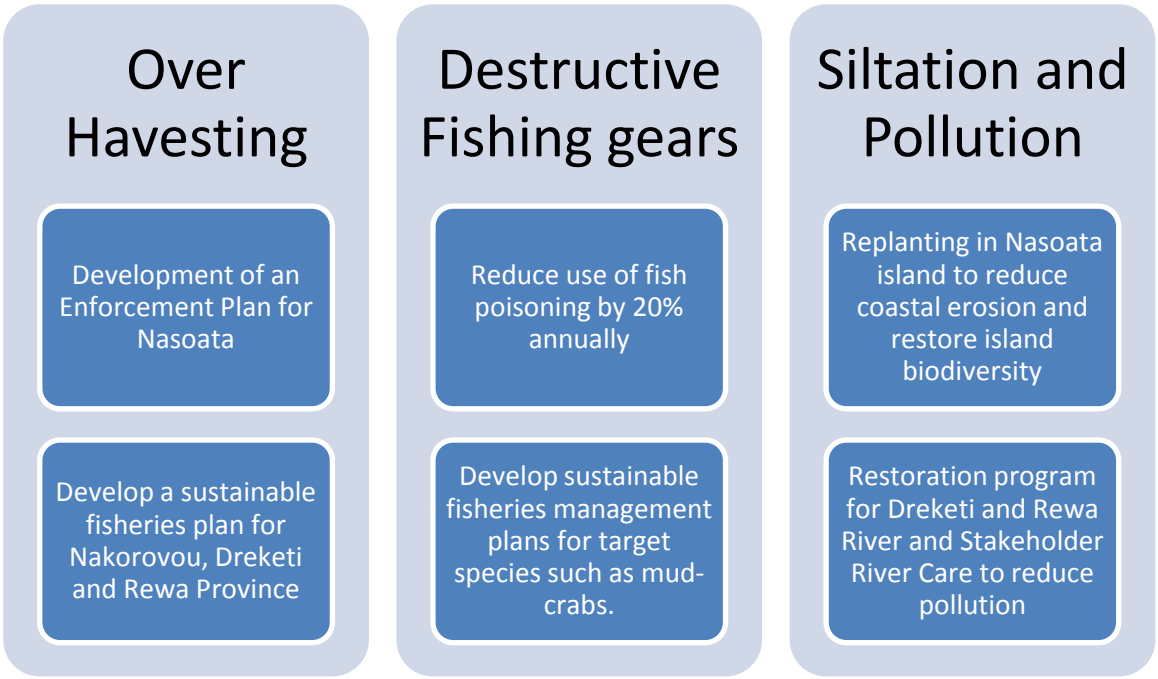


STAKEHOLDERS	ROLES	INTERESTS
Nakorovou Village	Overall management of Nasoata	Increase income from proper management of Nasoata Develop tourism and research field trip and income to the island Monitoring and Enforcement
District and Rewa Province	They are co-managers of the Qoliqoli of the vanua of Rewa where Nasoata is located and have user rights on Qoliqoli and management rules	Open access to their Qoliqoli which includes Nasoata Island surrounding areas and possibly share on benefits from Nasoata
Government and Conservation Groups	Provide information and technical advice on biodiversity, sustainable resource use Strengthen capacity and governance institutions	To declare Nasoata as Fiji's second Ramsar Site and demonstrate success over-time

The Co-Management ACTION PLAN MATRIX below is set out with issues, objective and actions and then details the role of stakeholders and the monitoring indicators to guide the implementers. The Action Plan is planned for at least three years to initiate the actions.

It is designed to ensure the goals of co-management are strengthened where the communities and this case the Nakorovou village, will initiate and drive the plan. Also to initiate district to provincial level engagement and implementation. The approach is to demonstrate actions at Nasoata Island, Nakorovou village and then build on the successes and challenges to engage the Dreketi district and then the province of Rewa. The summary below gives the overview and summary of threats identified by the communities and previous studies and the Nakorovou Stakeholders proposed Actions.

Summary of Threats and Co-Management Action Plans



ACTION PLAN MATRIX

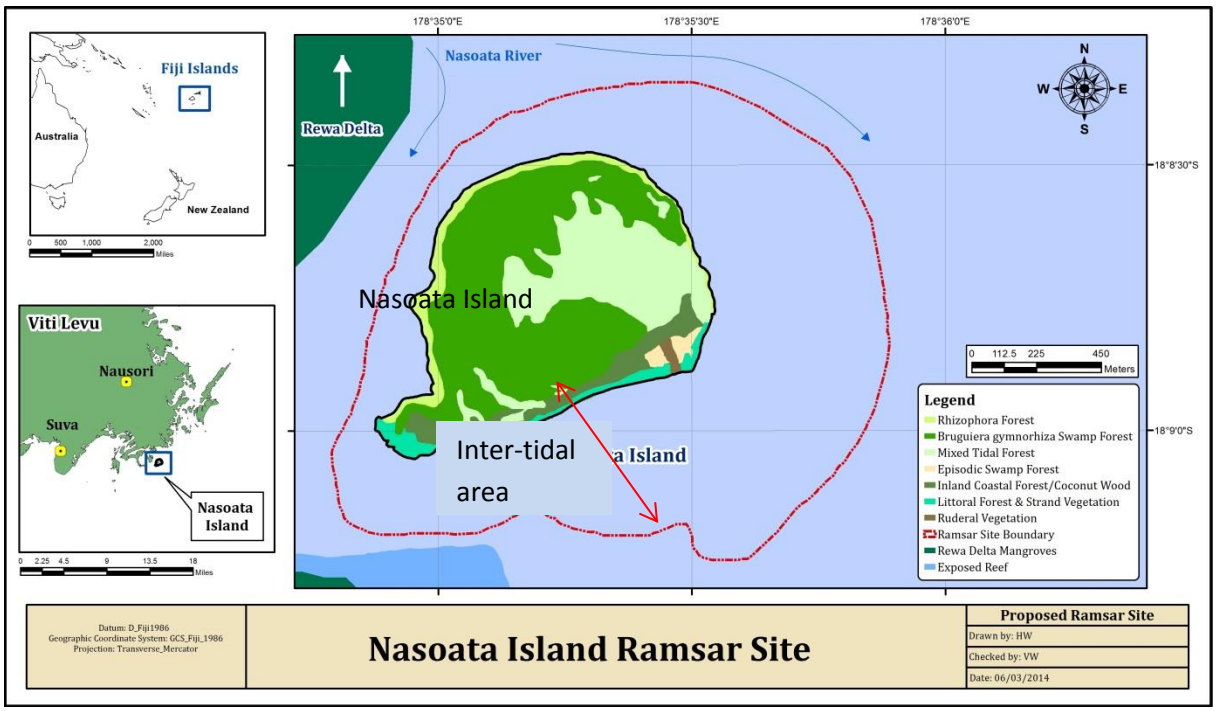
OVER HARVESTING			
ISSUES	**OBJECTIVES & ACTIONS**	**RESPONSIBLE/ROLES**	**MONITORING FOR ADAPTING/IMPROVING ACTIONS**
POACHING	**Objective:** Enforcement plan developed for Nasoata Islands and surrounding Qoliqoli areas		
	Actions:		
	1. Develop an awareness campaign to increase awareness of surrounding communities on importance of sustainable NRM and Nasoata islands management arrangement	DOE: to develop awareness campaign ITAB: to organise awareness and campaign with Govt. and NGOs	Awareness reports at village, district and province. Enforcement and poaching reports at village, district and province meetings
	2. Produce an enforcement plan to include training of fish wardens and on-the-island presence of wardens.	DOE/DOF: to facilitate development of the enforcement plan DOF: to conduct the fish warden training	Finance reports and wardens activities at village meetings
	3. Put in place an enforcement fund to support wardens activities through community fundraising, donor support	NK: to run a fundraising drive to start the fund and then seek outside support	

LACK OF MANAGEMENT ARRANGEMENT	**Objective:** To develop a sustainable fisheries and resource management plan for the Qoliqoli of Rewa that support Nasoata Ramsar site **Actions**		
	1. Engage districts and the provincial office for a province-wide Qoliqoli management or strategy that includes Nasoata Ramsar	ITAB: to take the lead in organising through the provincial office a process to develop the plan	District reports on their monthly activities issues and lessons

DESTRUCTIVE FISHING GEARS			
ISSUES	**OBJECTIVES & ACTIONS**	**RESPONSIBLE/ROLES**	**MONITORING FOR ADAPTING/IMPROVING ACTIONS**
FISH POSIONING GILLNET	**Objective:** To reduce at least by 20% annually the use of fish poisoning, undersize nets and other illegal gears. **Actions**		
	1. Secure agreement and endorsement from the district of Dreketi to totally ban fish poisoning and gill netting throughout the district	Nakorovou Village: to prepare and submit the proposal to Dreketi district by July 2014	Reported number of infringements at village and district level
	2. Conduct a province and district wide campaign on impact of gillnets and sustainable harvesting on their fisheries and economic activities	ITAB and provincial office: To develop and conduct the campaign at Dreketi district and Rewa province	Rewa CO report on target village women fish catches Nakorovou fish warden catch data reports
	3. Develop a Dreketi and Rewa province sustainable fisheries management plan targeting target species such as mana, qari, kaikoso and other high value marine products	NGO: to explore some options such as improving target species habitats	Nakorovou crab management plan by end of 2014 Dreketi sustainable fisheries plan by end of 2014 Rewa sustainable fisheries management plan by 2015

FLOODING AND SILTATION			
ISSUES	**OBJECTIVES & ACTIONS**	**RESPONSIBLE/ROLES**	**MONITORING FOR ADAPTING/IMPROVING ACTIONS**
NASOATA ISLAND COASTAL EROSION RIVER BANK DEFORESTATION	**Objective:** To carry out recovery of Nasoata Island eroded areas and Nakorovou village as pilots. To carry out river bank recovery in Dreketi and along Rewa river banks through a community-base replanting and recovery to reduce river bank erosion. **Actions**		
	1. Carry out a Nasoata Island replanting and restoration of coastal trees	Nakorovou village: establish a coastal tree nursery in the village for Nasoata DOE/NGOs: Assist in terms of securing resources for restoration	Nasoata recovery report and assessments by village and researchers
	2. Obtain a Dreketi and Rewa River bank restoration program at district and provincial level	Nakorovou village: seek endorsement from province Dreketi district: Seek endorsement and engagement from province and vanua	Dreketi and Rewa province restoration activities reports Water quality testing reports using MESCAL baseline
WATER POLLUTION	**Objective:** To reduce pollution of rivers around Nasoata Island and along Rewa River **Actions**		
	1. Identify and map water pollution sources around Nasoata and along the Rewa River 2. Work with relevant authorities, villages and district to agree on a River Care guideline for Rewa River to improve water quality	DOE/NGOs – To initiate a River Care programme in collaboration with Nakorovou, Dreketi and Rewa Province	Water Quality reports

E. NASOATA ISLAND RAMSAR SITE MANAGEMENT RULES



The management rules proposed for the management of Nasoata Island are based on community consultations and technical advice from experts. The rules outlined below needs endorsements from the Nakorovou Village and support from government, district and provincial leaders. The management rules covers the **intertidal areas marked in red** and the **land area of Nasoata Island.**

AREAS	RULES	ENFORCEMENT
ACCESS	1. Any person (s) who wishes to visit or carry out any form of activities should write to the Nakorovou Village and obtain written approval at least 1 month to give sufficient time for the village to review and provide necessary consultation for approvals and support.	Any person entering without prior approval is liable to be prosecuted under relevant freehold land trespassing laws. Nakorovou village can demand a fine approved by relevant government authorities
ACTIVITIES – NOT ALLOWED	The following activities are not allowed on the Island and inter-tidal areas: 1. No harvesting of mangroves, coconut palm leaves or any plants or trees are allowed. 2. No fishing are allowed around the inter-tidal areas of Nasoata Islands. 3. No harvesting of crabs and other marine life on the island unless requested and approved by the Nakorovou village to meet the purposes of sustainable resource management on the island. 4. No burning of any form is allowed on the islands. 5. No planting or introduction of any animal or marine life is allowed unless approved by Nasoata Village for restoration purposes. 6. No dumping of any form of waste material allowed on the islands 7.	Nakorovou village can demand a fine approved by relevant government and provincial authorities
ACTIVITIES - ALLOWED	The following activities are allowed: 1. Replanting for restoration purposes 2. Tourism activities and visits 3. Eradication of invasive plants and animals 4. Enforcement activities approved by the Nakorovou village 5. Research and education visits approved by the Nakorovou Village.	Nakorovou village and Ramsar Advisory Committee to administer approval of activities

F. ENABLING MECHANISM TO SUPPORT NASOATA ISLAND CONSERVATION AREA

The co-management arrangement will need local and external enabling mechanisms to be strengthened or to be in place if they're not already so. The enabling mechanism 'action plan' below is to guide the stakeholders in working in their different areas of influence to put in place the required enabling mechanism in place.

The actions proposes that the Nakorovou village take the lead in putting the community-level enabling mechanism in place and DOE, Ministry of Lands and I Taukei Lands Trust Board to lead the government level policy and legislative support.

MANAGEMENT ACTION	ENABLING MECHANISM REQUIRED	ACTIONS
Community Level **Establishment of Nasoata as a national Ramsar Site**	(i)Roko Tui Dreketi, Provincial and District resolution to declare Nasoata and its inter-tidal areas as Ramsar site with its management guidelines.	(a)Nakorovou to request the Roko Tui Dreketi traditionally (b) Nakorovou village to visit all the Dreketi villages to present the co-management plan and seek their commitment to abide by it.
	(ii)Nakorovou village members fully support the Nasoata Island co-management guideline	Resolution of village conflict
Government Level **Establishment of Nasoata as a national Ramsar Site**	(iii)Current freehold status to include a legal recognition of the Ramsar Site boundary of the island. (iv)Inter-tidal areas to be also leased as government foreshore conservation lease.	I Taukei Land Trust Board to advise Ministry of Lands and DOE to organise the lease as part of government support to the Ramsar Site.

6. RESOURCE MOBILISATION PLAN

Any plan will not be realised until we are clear of how it will be resourced and implemented. The Co-Management Action Plan is based a lot on the motivation and initiative of the Nakorovou Village. The resource mobilisation for the action plan will need to be based on the following:

- Costing of the Action Plan and identifying available & needed resources
- Biodiversity Economic Value
- Reliance on natural resources of local residences
- Opportunities for mobilising resources
- Making a case for biodiversity investments

Components:

a. Cost of the Co-Management Action Plan over the next 3 years& Identification of available resources
b. Develop short-term resource mobilisation activities (proposals, fundraising etc)
c. What are some long-term financing strategies (tourism, local students study trips)

Resource Mobilization Strategies:

STRATEGIES	ACTIVITIES	RESPONSIBLE
1. Donor Support	Develop a GEF Small Grant Proposal to fund – island restoration activities such as nursery set up, replanting costs and 1 year island enforcement cost. GEF 6 – secure an allocation to support Ramsar site support work	National Ramsar Committee (NMC) Nakorovou Village
2. Nasoata Eco/research-tours	Develop a concept of tourism activities for Nasoata with a percentage of profit to fund core running costs such enforcement costs, rehabilitation and awareness	Nakorovou Village with support from NMC

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