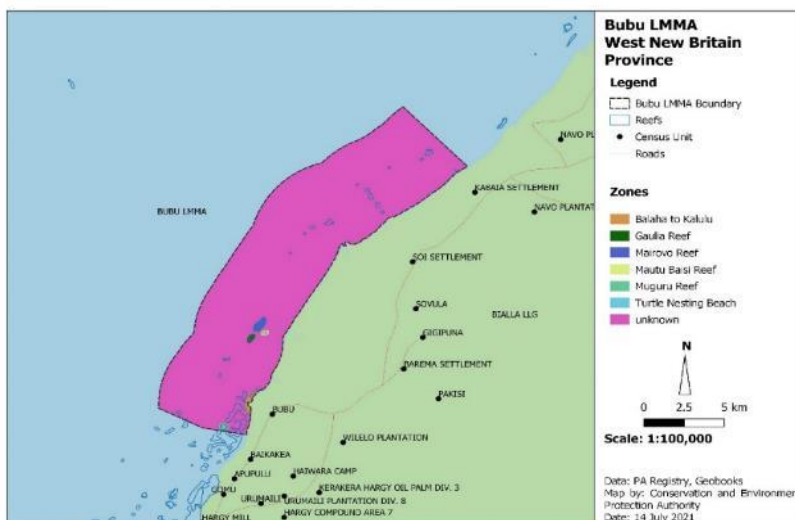
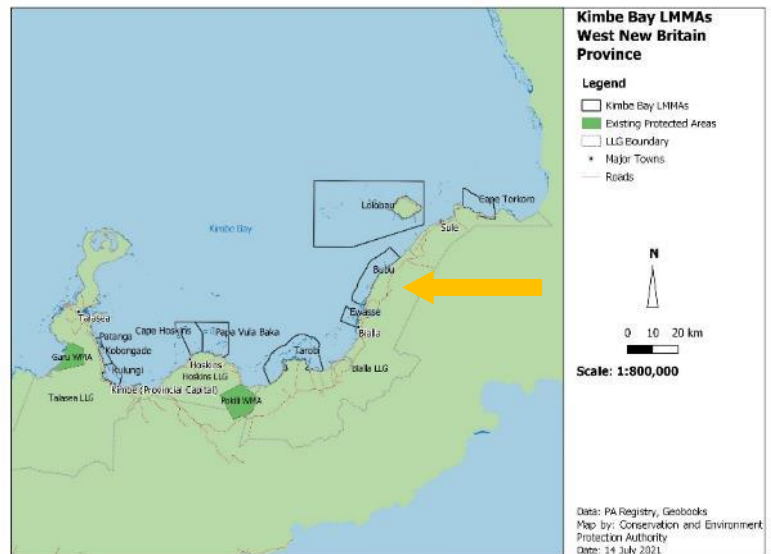


Bubu Locally Managed Marine Area

Talasea District, West New Britain Province

Bubu Locally Managed Marine Area (LMMA) is located in Kimbe Bay a few kilometres north east of the Hargy Oil Palm Mill near Biälla town, within East Nakanai LLG. The LMMA is approximately 20km long (from Haliu Village west of Bubu Village to Kabaya Village) and extends about 5km from the coastline. The LMMA is surrounded by oil palm plantations and plantation settlements, a hydro power station and facilities upstream on the Lovo River, and four nearby Land Settlement Schemes (LSS) including Vilelo, Barema, Soi and Kabaya.



Management objectives:

- ✓ To protect all our marine habitats and unique areas such as the turtle nesting beaches
- ✓ To encourage the use of traditional fishing and practice sustainable harvesting methods to ensure the fish, invertebrates and marine turtle populations are restored to continue to provide for the community's sustenance as in the past.

Bubu LMMA in brief

Established: 12/08/2011

Size: 0.35 km²

Ownership: Customary land (8 main clans)

Management: Outdated Management Plan; Management Committee (recently selected, not functional); no work plan

Staff/volunteer: No staff; community looks after LMMA based on traditional knowledge and the matrilineal tenure arrangements; 29 volunteer workers

Finance: No budget

Other: No equipment and facilities, no tourism

Our people

Customary landowners of the LMMA comprise eight main clans, including Gararua, Lahurhu, Kabulubulu, Ugeuge, Bobiso, Keakea, Lololo and sub clans, and Ababe.

History, culture and traditions

*Like its neighbouring Ewasse and Tarobi LMMAs, the marine tenure system here is predominantly **matrilineal** and includes territorial and resource (fish, shellfish, seaweed and other marine resources) rights over reefs and seas which are controlled communally at the clan level. Access is through the mother's lineage so that a man has primary rights over his mother's property, and these rights pass to his sisters' eldest daughter, ...but her brother is the primary person who speaks on her behalf on land and other resource matters'.*

Traditional rules

*'There are also traditions like **'Merarobo'** which is a tabu on fishing, collecting shells etc. at a certain reef or site to honour the death of a community member. These Merarobo can be in place from one to three years and are opened for access after traditional feast ceremonies. This helps the conservation area but is done using the marine tenureship and is observed by all clans.*

*In the Management Plan there are **No Take Zones, No Go Zones (Preservation Zones), Conservation Zones, Habitat Protection Zones and specific sites - spawning aggregation and sea turtle nesting sites. Everyone including settlers are guided by the permitted and not permitted access rules for each site in the LMMA. These arrangements are captured in the Management Plan which also sets out fines for breaking the laws. Fines vary differently for the same offence depending on whether the person is a customary landowner, outside community person with customary rights and outsiders with no customary rights.***

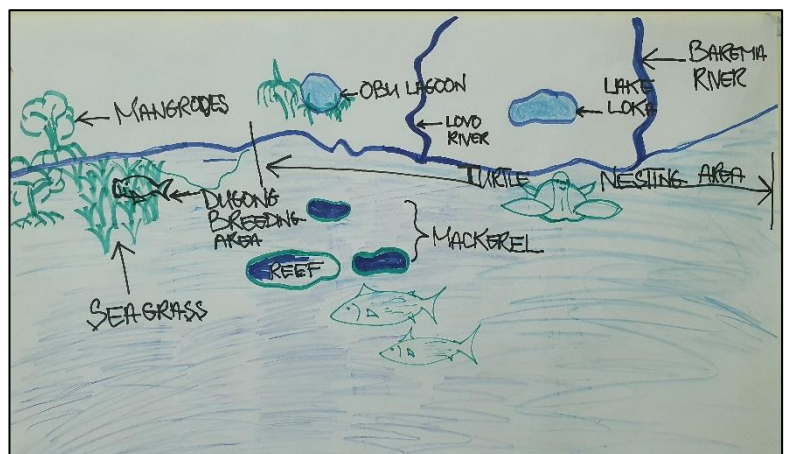


The Talasea shell money mainly used in bride price payments. Local women from Bubu collect these shells and sell them for a living.

Image: <https://www.worthpoint.com/worthopedia/west-britain-shell-money-papua-guinea-282012860>

Participants' perspective on what they like about Bubu LMMA

Our LMMA is important to us as it is a nesting site for the leather back turtle. The main purpose of the conservation/protection of the area is purposely to strengthen the protection of the turtle. We also like the coral reef. Its colour attracts more fish, and it is also the nurture zone for the marine animals. We have sea grass, which is the main food source for the marine animals. There are mangroves and swamps which are the breeding zones. We also have lakes and rivers and secret sites. Our marine resource areas are treated as treasures mainly because that's where all our daily needs like food are acquired from. We use our marine area commonly for fishing, leisure or at times sporting. Apart from fishing from the sea, we have other resources like sago from the swamp the mangroves with all its resources like very popular kina shells, crabs and fish.



Key Values, Condition and Trend

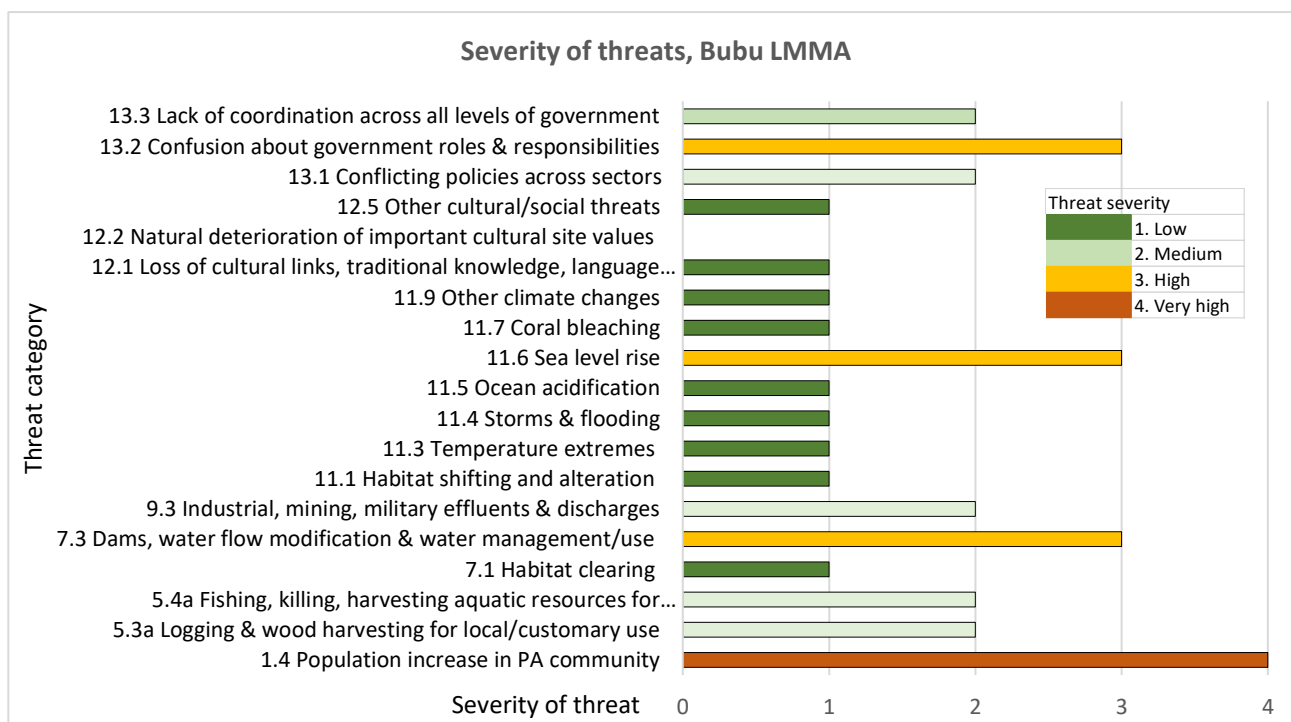
Value	Condition	Trend	Description
Marine turtle nesting site (Leather Back)	Poor	↓	Known as <i>La-parava</i> (sand or beach), a 35km stretch of beach from Gaekeke to Kabaiya. Impacted by sea level rise; increasing sedimentation in coastal areas; local consumption of turtle meat and eggs; crocodiles in the rivers are eating the turtles as they come up to lay their eggs.
Coral reef	Poor	↓	High spawning and breeding areas for reef fish in the three reefs in the LMMA. Impacted by coral bleaching; increased sediment from land-based activities (e.g. oil palm); wave action.
Sea grass	Very good	↑	Extends from Maeyaga to Ugu and Kurago. An important area for dugongs and rabbitfish (Kalili) that many local people consume. The coverage of sea grass is expanding.
Mangrove and swamp	Good	↑	Extends from Balaha to Kalulu. Some mangrove areas are improving; new mangrove areas appearing naturally and some planting. Impacted by harvesting (building houses and thatched roofs); expansion of oil palm plantations towards the mangrove and sago areas has claimed many of these areas.
Invertebrates	Good	↔	Mollusc population is very high. Bivalves are harvested – mainly two types of Kina shells (black and white). <i>Pulete</i> (shell used for the traditional money at Talasea). The locals harvest invertebrates (especially sea cucumber) to sell to earn income. Reduction in invertebrate species and size - we want to help improve it.
Lakes and rivers	Poor	↓	Seven rivers/creeks (Haliu, Balaha, Laio, Lovo, Barema, Galai, Soi, Loka, Koasa) drain into the LMMA and form estuaries that are an important ecotone for fish spawning and breeding. There are two lakes (Obu and Loka) with mainly <i>La Barema</i> (wild sago) growing. Sections of the lakes are tabu areas as they are <i>ples masalais</i> . Impacted by oil palm extension around Loka; sedimentation and erosion due to settlers/migration and unsustainable use of the natural resources.

Benefits and negatives related to Bubu proposed LMMA

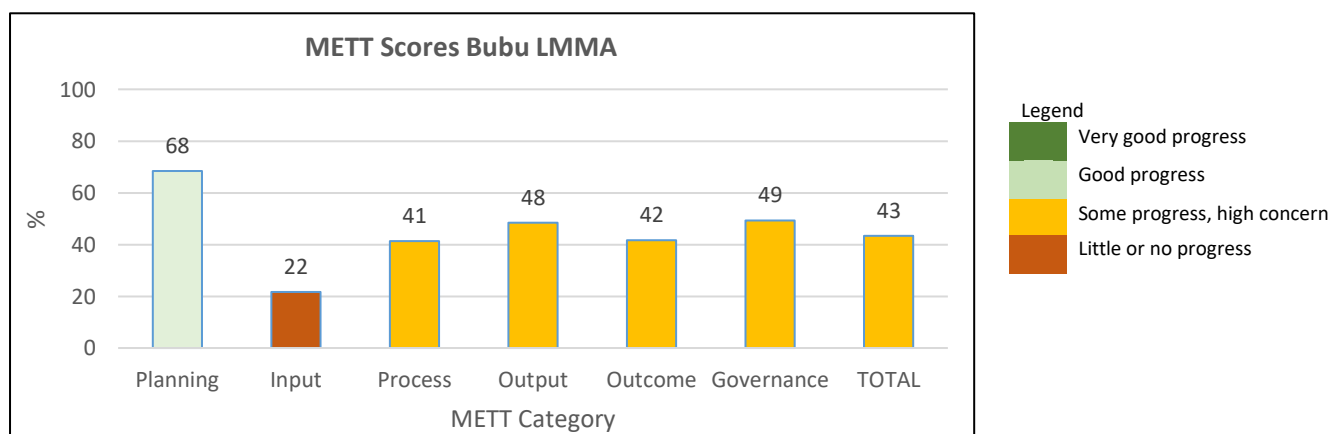
Benefits	<p>Source of income and livelihood support: Sea cucumber, kina shells, fish and crabs support and sustain our people (for consumption and sale) and populations are improving. <i>Pulete</i> (shell) is used as traditional money in Talasea).</p> <p>Intact beautiful scenery: We love the beautiful scenery which has potential to attracts tourists</p> <p>Healthy estuaries: They are important feeding and/or nursery habitat for ecologically important fish and invertebrates that we depend on. They also filter wash downs that protect the spawning and feeding areas in the LMMA. Since the LMMA has been established, fish aggregation (spawning and breeding) is better due to the improved state of the estuaries.</p> <p>Providing capacity building opportunity for locals around the marine environment, resources use and management. Locals have participated in training and workshops as a result of the partnerships that have been established (NFA, UNDP, CEPA).</p>
Negative impacts	<p>The creation of the LMMA has imposed restrictions on resource use and accessibility to areas in the LMMA. This has seen conflicts amongst the local people over the rules, zones and penalties in relation to resource accessibility and use. Such issues have caused disharmony in the society.</p> <p>Raising local expectations: The LMMA as a conservation project raised expectations amongst some locals in terms of monetary benefits, better lifestyles (house etc.). Education on the benefits of conservation needs to be undertaken. The impact of this is that people tend to lose interest and not abide by the rules as set out.</p>

Threats to Bubu LMMA’s values

Description	Extent, Severity and Impacts
Illegal migration and population boom	Increase in the number of outsiders moving into other parts of the community has resulted in access use/harvest of resources. Increased population and demand are making people resort to the use of destructive fishing methods.
Sea level rise	There is substantial evidence of sea level rise, including the decrease in the size of the beach area where turtles used to lay eggs. We need assistance to monitor this impact.
Lack of coordination across all levels of government	Sometimes the planned programs intended for communities do not reach the people, or if they do, locals are not consulted in the initial stages. This reduces the benefits for the locals and especially the management of the LMMA



Protected Area Management Effectiveness – Summary of Results



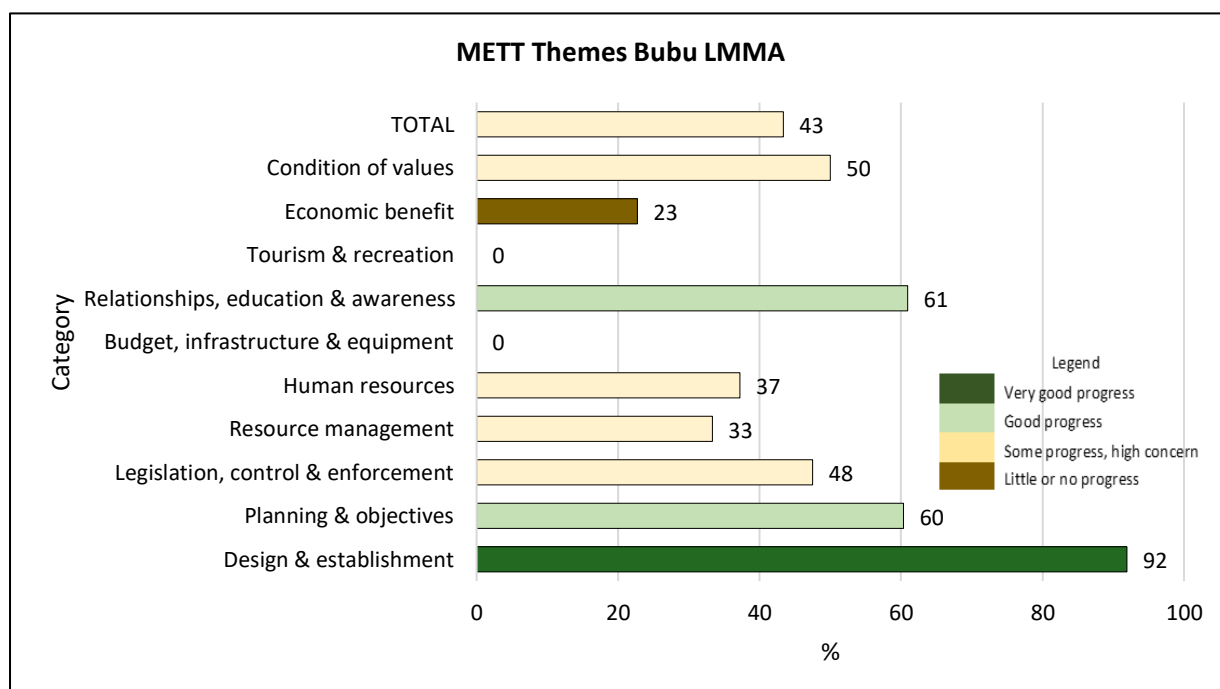
Evaluation – key findings

Element of evaluation	Result
<p>Planning</p>	<p>LMMA is recognized under the Biialla LLG Environment and Conservation Law, No 1 of 2003. Outdated Management Plan (2010) is only partially implemented Ecosystem and species’ needs are addressed in the agreed management objectives (only partially implemented); no work plan Outside planning frameworks do consider the LMMA but this needs to be strengthened PA boundaries and design are satisfactory (with a desire to expand the boundaries to include water catchments/lakes as they are captured in the management plan)</p>
<p>Inputs</p>	<p>Good information (scientific and socioeconomic) but more current information is required. Many locals have sound Traditional knowledge of the area and scientific knowledge gained from working with TNC. Conservation practice is based on training and education level. No staff, although a few people undertake important management activities (e.g. monitoring of values in zones and doing awareness raising) No budget or budget security; no equipment and facilities Very little input from the provincial and local level governments (LLG) (advice mainly); no support from CEPA, or District representatives. Some previous help from NGOs</p>
<p>Process</p>	<p>Rules and guidelines exist but are not enforced. Custom and traditional laws/systems of management are mainly used as it relates to resource management for food security and resilience Boundaries are mapped (GIS) and most landowners and outside residents are aware of the boundaries; only some respect the boundary; LLG/Districts are aware of boundaries Management committee meets on an ad hoc basis when there is a need (not routine) No equipment or facilities to assist management or enforcement No law enforcement; protection systems are partially effective in controlling outsider access The working environment is generally safe No research/survey work or monitoring. Some ad hoc resource management takes place Some initial discussion about likely impacts of climate change; no specific policies on carbon management and storage Broad understanding of ecosystem services Some irregular education and awareness training No contact/cooperation with adjacent government/commercial users, tourist operators Fees can be collected (but not currently) Customary landowners have limited input into management discussions (contribute through their clans and zone meetings); some management activities happen e.g. mangrove planting and management without technical support (on an ad hoc basis), but no routine management; no specific management programs to enforce zone rules/guidelines to help assess status of values</p>
<p>Governance</p>	<p>Rule of law: Most rules are agreed and documented, but there are weaknesses. Limited coordination between Management Committee and others. No prosecutions due to lack of enforcement; coordination is at the clan level and treatment of offenders is not uniform. Illegal entry and harvest of resources recurs and there is no enforcement/prosecution. Respect of rights: Some use/access rights clearly defined and documented. Most (>75%), people know their rights, but some are unclear about what the rules mean in terms of resources use. This requires more awareness or a review to make this specific. Full and effective participation: Decision-making structures in relation to the Management Committee are unclear including PA decision making (vaguely captured in the Management Plan and not widely known). Few women or young people are involved in decision making and have little influence on decisions. Transparency and accountability: PA decisions are made known to the community (during village/clan meetings) Dispute resolution: Processes are documented and known. Most are suitable across recurring PA issues, but gaps exist on who will lead. No evidence of cases being resolved. Lack of</p>

Element of evaluation	Result
	enforcement and consistency. Clan disputes are settled outside amongst disputing clans and not through such agreed processes. Benefit sharing: No benefit sharing arrangements; inequitable sharing of benefits; very little improvement in livelihoods over past 5 years (varies among individual family units)
Outputs	No communication with CEPA, provincial government and district representatives unlike at the LLG and ward levels; some communication with local NGO Mahonia Na Dari No current programs to improve community welfare despite opportunities to do so, while conserving the PA resources Community supports the PA but requires improvement through good management Some benefits to community from the PA (good livelihood sustenance at family unit), but this needs to be strengthened as markets are not well developed (especially fish) Minimal management of threats Connectivity is a key principle used in the establishment of the LMMA within Kimbe Bay
Outcomes	Despite no routine management actions, with the efforts of the locals, most natural values are in a good condition and the status of key species and habitats is stable or has improved in cases Cultural values are predominantly intact as people still practice and generally respect cultural norms and practices including rituals

METT Themes

Examining specific themes is an alternative way to picture Bubu LMMA’s management effectiveness. Bubu’s design and establishment show very good progress. There is good progress in relation to planning and objectives, although the management plan needs to be revised, and also relationships, education and awareness. Other themes demonstrate some progress but high concern. e.g. human resources and capacity, resource management, enforcement and control, and the overall condition of the LMMA’s values. Three areas (tourism and budget, infrastructure and equipment and Economic benefits) demonstrate little or no progress. Overall there has been some progress, but there is high concern for the future of the LMMA.



Strengths, Challenges and Ways Forward

Strengths	<ul style="list-style-type: none"> • Formally established as an LMMA (under Bialla LLG Environment and Conservation Law, No 1, 2003; now a part of East Nakanai LLG). • Management plan (outdated); agreed objectives; various zones/use types; fines to enhance compliance (although not fully implemented). • Good awareness and support by community despite having few resources. The locals have taken ownership and continue to protect the area. • Management strategies, control and enforcement measure documented e.g. bans on use of derris roots and breaking of reefs to harvest giant clams – these have resulted in increased species numbers and larger species. • Key values are in good condition, in part due to the establishment of zones with their agreed permitted access, use and guidelines and the continued customary practices and norms (closure periods, to honour a death) and locals are closely linked to their marine environment as this is what sustains their livelihoods.
Challenges	<ul style="list-style-type: none"> • Undertaking a broad-based review of the Management Plan (to ensure more effective management and support to achieve effective outcomes) with limited resources and capacity. • Surveillance and enforcement of rules is difficult with limited equipment and logistics. • Getting support from all levels of government to provide support and funding. • Reinforcing recognition of traditional maritime practices in the face of several threats. • Maintaining and teaching younger people the traditional knowledge of the sea and resource management in the face of rapid change. • Obtaining sufficient resources to improve management skills, surveillance work, monitoring and livelihood options for locals.
Ways forward	<ul style="list-style-type: none"> • Planning <ul style="list-style-type: none"> – review and develop an updated Management Plan, including revised objectives and clear definition of user/access rights – improve communication with outside planning frameworks that have the potential to impact on the PA (e.g. LLG, district and province governments and commercial land users) – expand the LMMA to include terrestrial environments (consider ‘starting with a buffer’). • Budget <ul style="list-style-type: none"> – seek budgetary support for programs to improve community sustainability and management e.g. working with the LLG to incorporate the revised Management Plan into the 5-year Ward development plans. – identify and purchase essential equipment for management (e.g. boat and motor). • Law enforcement and protection systems need to be agreed, clearly defined and equitably enforced. • Education, research and monitoring <ul style="list-style-type: none"> – enhance information on the LMMA’s resources (natural and cultural) (e.g. mangroves, seagrass, coral reefs and other marine species and habitats) to assist in improving management – develop a community-based monitoring program. • Enhance linkages (network and collaboration) and communication with all levels of government and neighbouring land users and settlements. • Improve/strengthen governance by having clear documentation of rules, roles and responsibilities; develop benefit sharing arrangements and dispute resolution processes and strive for greater equity, especially the inclusion of women and youth in all decision making • Awareness raising and capacity building <ul style="list-style-type: none"> – of the LMMA community e.g. incorporate into school programs – of communities near to the LMMA and outside e.g. mangroves and their importance - need to be made aware not to illegally use/harvest mangroves; general user/access rights clearly explained; include in women’s groups. • Sustainability projects and tourism <ul style="list-style-type: none"> – There is potential for nature based and ecotourism activities in the LMMA. Dive tourism has high potential and could be explored. – Facilitate the sustainable production and sale of local products.