



Ngaremlengui Protected Areas Management Plan 2013-2017

Protecting our natural resources, biodiversity and culture and promoting our traditional conservation practices in order to ensure the sustainability of our resources, our economy and our way of life.

Ngaremlengui State Government

*Prepared by the
Ngaremlengui Management Planning Team with
assistance from A.L. Isechal and
Palau Conservation Society*

*Funding support from
the David & Lucile Packard Foundation*

Prologue

We, the people of Ngaremlengui, have long recognized and respected our land and ocean and how they have supported generations of Ngaremlengui people. It is our desire to ensure that this continues for many more generations. This document outlines this vision and is intended to guide the management of the system of protected areas in the state of the Ngaremlengui. Although each protected area was legislated separately, this plan is an attempt to integrate the management of these areas in order to ensure the maximization of available resources and to allow for cohesive management approaches and strategies.

The goals, objectives and regulations set forth in this plan provide the direction and framework for protected areas management in Ngaremlengui. This plan also institutionalizes natural resource management by assigning roles and responsibilities of existing state entities and creating a program within the state government to facilitate the implementation of this plan. The budget proposed aims to clarify program needs and to inform decisions regarding the allocation of resources.

The plan is a result of a long process of extensive review and consultation with our community and our partners. It is designed to change over time as we gauge our progress, learn from our actions and adapt to new situations. What will remain constant is our deep concern for our home and the resources that sustain us now and into the future.

Technical support for the development of this plan was provided by the Palau Conservation Society and other Belau Watershed Alliance Technical Team partners like The Nature Conservancy (TNC), Palau International Coral Reef Center (PICRC), The Belau National Museum (BNM), and the Bureau of Agriculture.

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|--------------------|-------|----------------------------|-------|
| _____ | _____ | _____ | _____ |
| Wilson Ongos | Date | Abby Rdialul | Date |
| Governor | | Chairman | |
| Ngaremlengui State | | Ngaremlengui Planning Team | |

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1. INTRODUCTION

1.1 Management authority

All natural resources within state of Ngaremlengui and out to 12 miles of the shoreline is within state jurisdiction. The management of the named protected areas through the implementation of this plan is tasked to the Governor of Ngaremlengui State. The Governor may create and/or assign state entities or employees to oversee and/or implement management activities within these sites as necessary and in accordance with the relevant statutes of the State. This plan is not intended to take away from or hinder traditional management authority as it is understood by the people of Ngaremlengui and recognized by the state government.

1.2 Planning process

This plan is the result of a long, participatory planning process that roughly began in 2008 after the signing of the two pieces of legislation that created the Ngermeskang Nature Reserve and the Ngermeskang Bird Sanctuary. The first Conservation Action Planning workshop was held in December 2008. The scope of this plan, roles of BWA technical team members and the timeline of the plan's completion were also decided at this December meeting. The planning lost some momentum and the plan remained a draft until 2012.

In February of 2012, the Governor resumed work with the planning team and requested assistance from Palau Conservation Society. This iteration of the management plan retained most of the draft plan but includes newly refined objectives and a revised budget.

The planning process loosely followed the PIMPAC guide to management planning and incorporated TNC's Conservation Action Planning (CAP) tool. The BWA technical team facilitated this planning process and took the liberty to revise, repeat, or otherwise alter the PIMPAC process when necessary to suit local conditions.

1.3 SWOT analysis

The following table is a strength/weaknesses and opportunities/threats (SWOT) analysis. This was developed in order guide the strategies set forth in this plan. Ultimately, the goal is to develop strategies that have the most conservation impact. The goals and objectives outlined in the following section are largely drawn from the Ngaremlengui CAP exercise.

| | <i>Internal</i> | <i>External</i> |
|-----------------|--|--|
| <i>Positive</i> | <p>Strengths</p> <ul style="list-style-type: none"> • Political will • Newly created protected areas • Resource management lessons of Ngermeduu Bay • Active involvement of traditional leadership | <p>Opportunities</p> <ul style="list-style-type: none"> • Technical assistance from the BWA • Other partner agencies who are willing to help • Potential for developing ecotourism ventures within protected areas |
| <i>Negative</i> | <p>Weaknesses</p> <ul style="list-style-type: none"> • Lack of funding • Lack of public infrastructure • Lack of trained human capacity for management • No master development plan • Lack of public awareness | <p>Threats</p> <ul style="list-style-type: none"> • Unregulated development • Storms, droughts, bleaching events and other global impacts • Pollution • Potential ship groundings |

1.4 Scope, adoption and revision of the plan

This plan covers all protected areas that occur within the jurisdiction of Ngaremlengui state. New regulations created through the development of this plan only apply to legislated protected areas. Sections of this plan that apply to areas outside these formally designated protected areas, do so only to the extent that such rules and regulations are mandated by existing statutes of the state.

This plan will have been formally adopted when it has been approved by the Management Planning Team and endorsed by the Governor of Ngaremlengui and the Ngaremlengui state legislature through a process deemed appropriate by each of the entities.

Conflicts arising from the implementation of this plan will be resolved by the Governor and other relevant parties through a mechanism deemed appropriate by all. Conflict arising from the incompatibility of the contents of this plan with any national or state plans will require a revision to the specific section/s of this plan. Such revisions will be similarly adopted and incorporated.

All aspects of this plan will be reviewed and revised, if necessary, within 3 years of its adoption.

2. SITE DESCRIPTION

2.1 Physical description

Ngaremlengui, like most states in Babeldaob, consists of relatively flat ridge tops, steep stream valleys and flatter lands near the coast. About 83% of the entire state has a slope gradient of greater than 30%.

Soils with the potential to support agriculture roughly occur in the center of the state near the Ngermeskang River and a small patch to the north around the Mekaud River near Ngerchelchuu Mountain. Soils that are capable of supporting agro-forestry generally occur in large patches throughout the state inland of the mangrove areas. About 68% of soils in Ngaremlengui are rated as moderately or highly erodible or are actively eroding.



Figure 1 Aerial photo of Ngermetengel

Imeong and Ngermetengel are the two main villages in Ngaremlengui. The elementary school and dock are located in Ngermetengel. An agriculture extension of the Palau Community College (PCC) and medical dispensary are located in the upper Ngermeskang watershed. The state capitol building is located at Uluang, Organic farm is at Ngermeskang area, and two quarries are located in Ngedesaker and Nguukl. An aquaculture hatchery facility operated by PCC is adjacent to the Ngermetengel dock. The Compact Road runs through the center of Ngaremlengui. There is a system of unpaved roads that connect to adjacent states. These roads are narrow and some become impassable in periods of heavy rain.

Water is supplied to Imeong from a diversion on an unnamed stream a short distance southeast of the village. Ngermetengel is supplied from a diversion on the Bubs Stream. Supplemental water is supplied by rooftop rainwater catchment systems at individual homes. There is a lack of a centralized community wastewater collection or disposal facilities. Homes and businesses are served by either pit toilets or septic systems.

Solid waste collection is on an ad hoc basis with disposal in unsanitary landfills. Electrical power to the state is from a distribution system originating at the national power plant in Aimeliik. Electrical power lines are installed on poles that generally follow the unpaved road system. These poles will need to be moved to follow the Compact Road and the Ngaremlengui turn off. Telephone and cable television services are supplied via an offshore fiber optic cable.

2.2 Biophysical setting

The following figures describe both the terrestrial and marine habitats found in Ngaremlengui. These figures show a wide range of habitats both on land and sea, all of which are represented in the protected areas that have been formally designated by the state. Some of these unique habitats are further described as conservation values in Section 2.4.

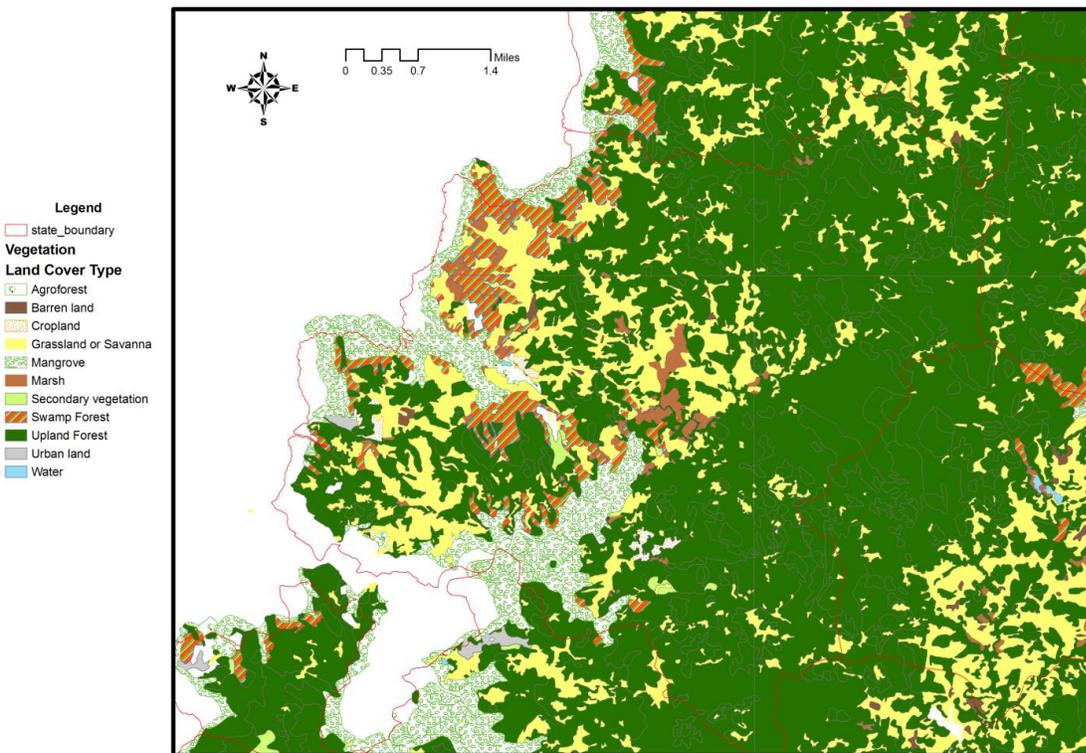


Figure 2 Ngaremlengui State land cover taken from Palau RMDSS report

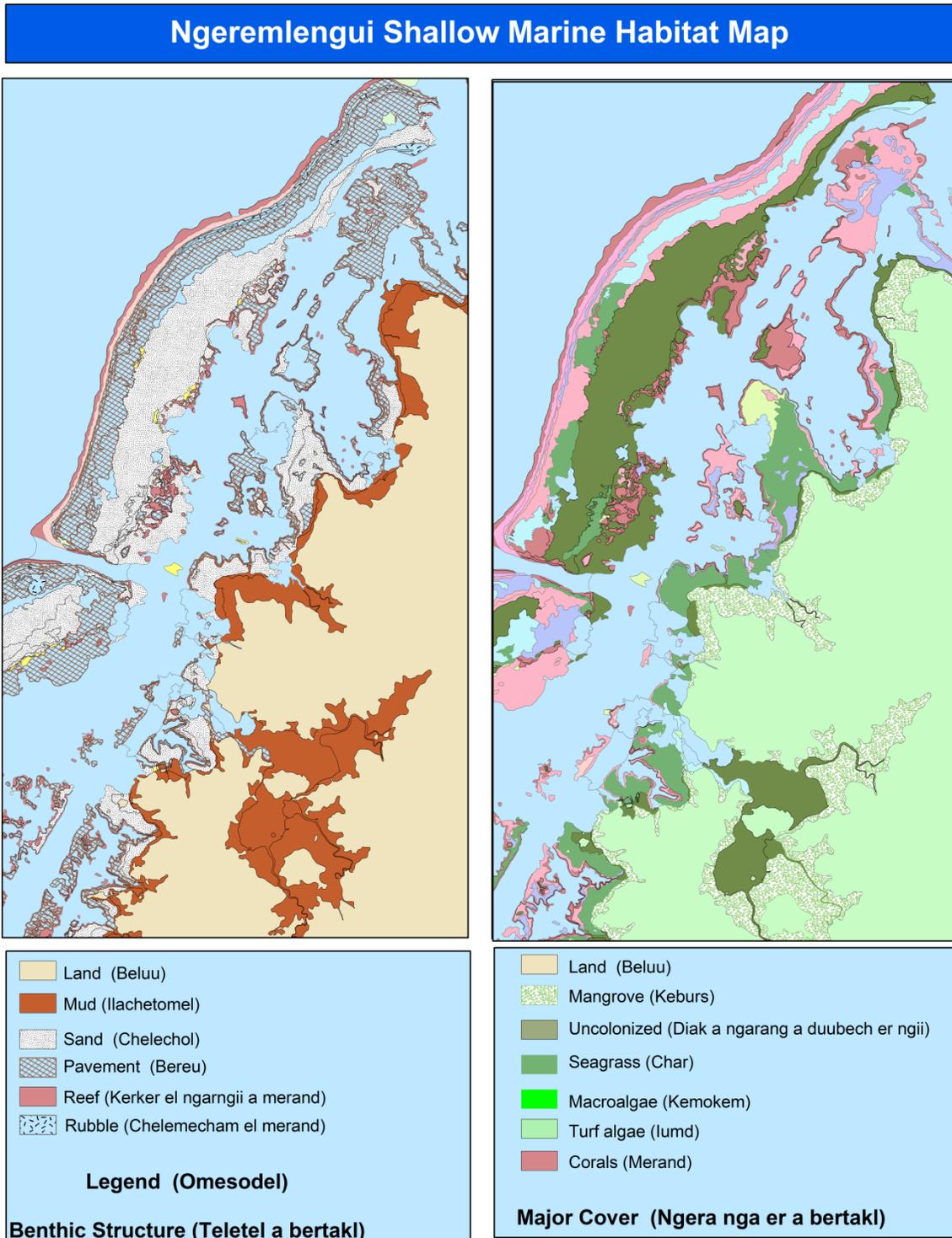


Figure 3 Ngaremlengui benthic habitat map by NOAA and adapted by PICRC.

2.3 Socioeconomic setting

Like most Babeldoab states, a majority of the people of Ngaremlengui reside in Koror. Virtually all of Ngaremlengui's residents are concentrated in the villages of Ngermetengel and Imeong. Both villages are comprised of about 80 households.

In order to accommodate the people of Ngaremlengui currently residing in Koror, the state public land authority is developing a lease program to lure residents to the state.

A majority of the working population is employed by either the state or national government. Slightly more than 40% are involved in some level of subsistence, particularly gardening and fishing. According to the latest census, the average household income is about \$3,300 annually. This clearly indicates the residents' dependence on subsistence fishing and agriculture to supplement their income.

There is a desire for greater economic development, the nature and level of which are outside the scope of this plan, in order to increase the tax base, provide jobs and improve the livelihoods of the people of Ngaremlengui. However, since many of Ngaremlengui's residents depend on their marine and terrestrial resources for subsistence, residents also strongly feel that these economic benefits should not come at the expense of their resources. This very desire—of ensuring the sustainability of natural resources while embracing economic development—is the essence of this plan.

2.4 Conservation values

Conservation targets are species, communities, or ecological systems that represent the biological diversity of a particular area. A good set of conservation targets should be designed to include those elements of the system that, if properly conserved, will result in the conservation of the full diversity of the landscape. The following bulleted list of conservation targets are what the people of Ngaremlengui value. They are intentionally very general and include all the resources found in each of the habitat type.

- **Upland Watershed Forest**

The upland forests are considered the most diverse in Micronesia (Stemmerman, 1981), and have highest rate of endemism. This type of forest contains mostly native plants. It is a good example of tropical oceanic island rainforest vegetation. The huge trees found in these areas form a dense canopy and are hung with thick woody vines. The trunks of the great buttressed trees are covered with carpet of mosses and the branches of the trees have trailing curtains of ferns and orchids. In Ngeremlengui, one can find the rare and endemic *Parkia parvifoliola* (Palauan name Kmekumer) in this forest. This forest type accounts for over 70% of total land area. This endemic tree is mainly restricted to this watershed area. It occurs elsewhere in a few locations with only one or two scattered trees. This was the only known healthy population found. It occurs along the trail up to the Ngeremlengui waterfall. The forest in this location has a high diversity of species and appears to be primary old growth forest. It is also an upper watershed area that drains into the Ngermeduu Bay Conservation Area.

- **Savanna**

Savannas are areas of land supporting a layer of herbaceous, fern or low shrub cover. In Ngeremlengui, this type of land cover accounts for nearly 16% of total land area. Tall shrubs and trees, if present, are

widely scattered. The soils are generally poorly drained. Some of the savannas on Babeldaob are a result of human activities such as land clearing, mining, or wildfire. Many scientists suggest that Babeldaob was once entirely occupied by forest. Pollen core studies have shown that there was an increase in pollen of grassland plants around the same time that humans began settling Palau. The study suggests that most of the savannas in Babeldaob were previously forested and never recovered after the initial human disturbance. The reasons for forest clearing are unknown. A likely reason was war. The best way to see the enemy coming towards a village from the sea is to have a lookout point on higher ground. If Babeldaob was mostly forest, clearings would have had to be made for this purpose.

It should be considered that the occurrence of savannas that are periodically exposed to fire account both for an increase in overall biodiversity and the number of endemic species in Babeldaob. There are endemic plants only found in open savanna including approximately 5 species of *Hedyotis*, at least one species of *Pandanus*, and 2 species of *Trichomanes* and there are even more endemics associated with the savanna edge ecotone. It is important to maintain representative habitats of savanna and grasslands in Babeldaob to conserve the overall biodiversity. Further long term studies are needed to determine if there is a correlation between fire and savanna biodiversity and endemism.

- **Wetlands**

There are a total of 440 hectares of wetland habitat in Ngeremlengui, occurring primarily along the upper Ngarmeskang and Ngkdebuul drainages. This conservation target includes all natural, cultivated and swamp forests. Wetlands are an important habitat for many unique and rare plants and animals.



Figure 4 Ngermeskang River

- **Rivers, Streams and Riparian Areas**

Permanent surface freshwater sources on the island of Babeldaob are from streams, lakes, ponds, and springs. In fact, the only perennial streams in Palau are found on Babeldaob. The streams on Babeldaob discharge an estimated 500 million gallons of water daily. The rivers, stream and riparian areas of Babeldaob, especially the ones found in Ngeremlengui, are home to many unique animal species including 15 species of mollusk, 18 species of shrimps and crabs, and more than 40 species of fresh water fish.

- **Mangrove System**

There are over 500 hectares of mangrove forests found in Ngeremlengui State. The mangrove system has been selected as a target due to their importance in shoreline protection, as a buffer and sediment traps, and as biologically extremely productive areas (key nursery areas for many marine resources). This target includes the mangrove flora, several bird species, reptiles (including the saltwater crocodile), fish species (including a range of reef species that use the mangroves as nursery areas), mangrove crabs, and clams.

- **Coral Reefs**

The fringing reefs along western Babeldaob (which encompasses Ngeremlengui reefs) have diverse and complex bathymetry and account for more fringing reef slope length than all other fringing reef habitats of the main Palau islands combined. The complexity is attributed to numerous partial channels, fingers, and indentations. Toachel Mlengui in Ngeremlengui state is critically important as a migratory pathway between the lagoon and ocean, and also acts as an essential conduit between Ngeremeduu Bay and offshore lagoon and ocean reefs. It is also a known fish aggregation and spawning area. Coral abundance and coral diversity are exceptionally high on the walls of the western passes, by far the highest of any other passes in the main Palau islands.

- **Species of Concern**

The marine and terrestrial areas of Ngeremlengui State are home to many unique, rare and endemic species of plants and animals including the saltwater crocodiles, rabbitfish, dugongs, turtles and rare endemic tree *Parkia parvifolia*. The conservation target of species of concern was identified to draw special attention to these plant and animal species that are highly vulnerable to additional pressure of overharvesting or habitat degradation.

- **Cultural and Historical Resources**

Cultural and historical resources include the *Milad's Cave*, *Beluu ra Imeyungs* and *Ngesisech*. These resources were selected as targets due to its cultural and historical significance, and for its value in attracting visitors to the state.

3. MANAGEMENT APPROACH

3.1 Vision statement

Protecting our natural resources, biodiversity and culture and promoting our traditional conservation practices in order to ensure the sustainability of our resources, our economy and our way of life.

3.2 Goals and objectives

The following goals and objectives have been developed in order to guide activities associated with the management and use of Ngaremlengui's natural resources to ensure that such activities are compatible with the above vision. These goals are not restricted to the Ngaremlengui's system of protected areas but rather to the entire state.

Goal 1: Maintain ecological integrity and protect biodiversity

| | |
|---------------|--|
| Objective 1.1 | Develop a master development plan in order to guide development and minimize environmental impact by the end of 2017. |
| Objective 1.2 | Develop a simple monitoring plan to gauge the status of key biological indicators and to better understand natural or human impacts by the end of 2014. |
| Objective 1.3 | Initiate or cultivate partnerships to encourage at least two research projects focusing on key species or ecological processes and that have potential to inform management actions by 2014. |

Goal 2: Strengthen enforcement and increase compliance

| | |
|---------------|---|
| Objective 2.1 | Develop and incorporate into this plan a structure of penalties that is consistent with the existing state statutes by the end of 2013. |
| Objective 2.2 | Establish and maintain an enforcement and surveillance program by the end of 2013. |

Goal 3: Develop and promote alternative livelihood activities including income-generating activities that do not degrade the environment

| | |
|---------------|--|
| Objective 3.1 | Develop a tourism/visitor plan that incorporates protected areas, cultural sites, and other attractions by 2013. |
| Objective 3.2 | Develop and incorporate into this plan a structure of fees that is consistent with existing state statutes by the end of 2013. |

| | |
|---------------|---|
| Objective 3.3 | Develop strategies or plans to promote agro-forestry and ensure food security |
|---------------|---|

Goal 4: Program development

| | |
|---------------|---|
| Objective 4.1 | Establish a natural resource management program and/or commission that consolidates protected area boards and other relevant state entities to provide centralized leadership in the implementation of this plan and to advise other state planning processes by the end of 2012. |
| Objective 4.2 | Increase staff resource management capacity by providing to at least 3 staff training opportunities through site exchanges or through collaboration with partner agencies by the end of 2013. |
| Objective 4.3 | Conduct review of this plan and make necessary revisions every 3 years, the first of which will be completed by the end of 2015 |

Goal 5: Education and awareness

| | |
|---------------|--|
| Objective 5.1 | Develop an educational program to support the first four goals by the end of 2013. |
| Objective 5.2 | Develop and disseminate at least 3 educational, promotional, or outreach products annually by the end of 2017. |
| Objective 5.3 | Plan and implement at least 2 activities like community meetings or target group outings annually by 2017. |

3.3 Program structure

The following structure is being proposed in order to implement the activities being proposed in this plan. A new Department of Conservation, under the supervision of the Governor, will be the entity that is responsible for implementing the actions outlined in this plan.



3.4 Roles and responsibilities

The implementation of this management plan will require the coordinated efforts of various individuals and entities within Ngaremlengui State Government, as well as institutions and organizations external to the state. A Program Manager based at the state government and under the direction and supervision of the Governor will coordinate all efforts required to attain the objectives of this plan. The following is a brief description of key implementing stakeholders in this plan.

| Stakeholder | Role | Responsibilities |
|-------------------------------|--|---|
| People of Ngaremlengui | Stewards of Ngaremlengui's natural resources | To care for and sustainably use Ngaremlengui's natural resources so that future generations have access to these same resources |
| Governor | To oversee and provide leadership in the implementation of this plan | Design and implement a permit system |

| | | |
|---------------------------------------|---|--|
| | | <p>Collect fees</p> <p>Hire and supervise the PA manager</p> <p>Provide an annual report on the progress of the implementation of this plan</p> |
| Ngaremlengui State Legislature | To conduct oversight and enact policies to support the implementation of this plan | <p>Review of existing PA and other relevant legislations</p> <p>Enact new legislation that facilitates more streamlined protected area management</p> <p>Review annual and progress reports of the implementation of this plan</p> <p>Allocate resources to assist in management</p> |
| Protected Areas Manager | To oversee day-to-day management activities and to coordinate the activities of the various individuals or entities that are necessary to ensure proper implementation of this plan | <p>Responsible for overall management</p> <p>Coordinate all activities in the protected areas</p> <p>Manage conservation officers</p> <p>Prepare required reports of the sites and program</p> <p>Coordinate and implement awareness and education program, including dissemination materials and information</p> <p>Facilitate annual program review with relevant stakeholders</p> |
| Conservation Officers | Perform and report daily management tasks | <p>Undertake and execute site management activities</p> <p>Conduct surveillance and law enforcement activities</p> |

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| | | <p>Conduct awareness activities</p> <p>Maintain a daily journal of activities and events</p> <p>Operate and maintain equipment and property (such as boats, engines, radios, buoys, signs, etc.)</p> |
| Office support staff | Administrative support | <p>Ensure proper hiring procedures</p> <p>Facilitate staff evaluations</p> <p>Manage payroll</p> <p>Assist in the procurement of services, equipment and supplies</p> <p>Assist in financial reporting</p> |

4. ZONING AND REGULATIONS

The endorsement of this plan will put into place a new system of resource management zones and accompanying regulations. This system, along with existing national and state statutes and regulations, will form a management framework with which the state will support the goals and the objectives of this plan. Like all aspects of this plan, these zones and regulations will be subject for review and possible revision in 3 years.

The designations are not intended to be land use zones, but merely indicative of the special management requirements of the areas.

Zones PA1 to PA6 consist of the legislated protected areas within Ngaremlengui. General use zone is a catch all designation that captures other significant ecological or cultural sites or features that may require special management through existing rules and regulations.

4.1 Resource management zones

| | |
|-------------------------------------|---|
| General Use | General Use Zone includes all marine and terrestrial areas within the jurisdiction of the state of Ngaremlengui not otherwise covered by any of the following zones. No new regulations promulgated through this management plan apply to this particular zone; however, all pre-existing national and state statutes and regulations remain in effect. |
| Ngermeskang Nature Reserve—Zone PA1 | This area covers the upper Ngermeskang upland forest and headwaters of the Ngermeskang River. This area is designated for conservation purposes and low impact research and recreational |

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| | activities. Harvesting and exploitation of resources or any alterations to the landscape is limited to the harvesting of plants for cultural medicinal uses and the establishment and improvement of recreational infrastructures. |
| Ngermeskang Bird Sanctuary—Zone PA2 | Conserved for its significance as one of Babeldaob's largest wetland areas and for its bird diversity. In order to protect the ecological integrity of the wetland and the biodiversity it harbors, development on the site is limited to low impact ecotourism activities. Pre-existing farm leases will be honored until new lease conditions or resettlement is negotiated. |
| Mecherong Outer Reef—Zone PA3 | |
| Bkul Lengriil—Zone PA4 | |
| Tewachel Mlengui—Zone PA5 | Grouper spawning aggregation. This channel is also the main shipping channel in Palau. |
| Ngermeduu Conservation Area—Zone PA6 | This is particular site is shared with the two states of Ngatpang and Aimeliik. The CACC has been given management authority of this site and currently being managed through the implementation of the Ngermeduu Management Plan endorsed by the three states. |

4.2 Summary of allowable and prohibited activities

The following table is a list of allowable activities within each of the zone designations. The color code means that the activity is allowable (green), allowable but requires a permit (yellow), or prohibited (red). Activities that do not apply to a particular zone remain blank (white).

It is noted that all national and state mandates apply to all zones (i.e. harvesting ban or seasonal closures of vulnerable species and state building permit requirements).

All permits will be granted by the Department of Conservation at the discretion of the Governor until such time that permit fees and requirements are formalized and integrated into this plan.

| Activities | Ngermeskang Nature Reserve ZONE PA1 | Ngermeskang Bird Sanctuary ZONE PA2 | Bkul Lengriil ZONE PA3 | Mecherong Outer Reef Zone PA4 | Tewachel Mlengui Grouper Spawning Area ZONE PA5 | Nature Trails and Visitor Center Areas | General Mangrove Areas | Cultural and Historical Sites | Forest (not included in Pas) |
|--------------------|-------------------------------------|-------------------------------------|------------------------|-------------------------------|---|--|------------------------|-------------------------------|------------------------------|
| Terrestrial | | | | | | | | | |
| Clearing | Red | Red | | | | Yellow | | Green | Green |
| Burning | Red | Red | | | | Red | | Red | Yellow |
| Farming | Red | Yellow | | | | Red | | Red | Green |

| | | | | | | | | | |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Logging | Red | Red | | | | Red | | Yellow | |
| Mining/Quarrying | Red | Red | | | | Red | | Red | Yellow |
| Road | Yellow | Red | | | | Yellow | Yellow | Yellow | |
| Infrastructure | Red | Red | | | | Yellow | Yellow | Yellow | |
| Hunting | Red | Red | | | | Red | | Green | Green |
| Fishing | Red | Red | | | | Red | | | |
| Hiking | Yellow | Yellow | | | | Yellow | | Green | Green |
| Camping | Red | Red | | | | Yellow | | Yellow | Yellow |
| Recreation | Yellow | Yellow | | | | Yellow | | Yellow | Yellow |
| Traditional Medicine | Yellow | Yellow | | | | Yellow | | Green | Green |
| Research (limited impact) | Yellow | Yellow | | | | Yellow | | Yellow | Yellow |
| Mangoves | | | | | | | | | |
| Clearing | | | Red | | | | Yellow | | |
| Aquaculture | | | Red | | | | Yellow | | |
| Harvesting | | | Red | | | | Green | | |
| Boating | | | Red | | | | Green | | |
| Logging | | | Red | | | | Yellow | | |
| Research (limited impact) | | | Yellow | | | | Yellow | | |
| Marine | | | | | | | | | |
| Aquaculture (1) (clam) | | | Red | Red | | | | | |
| Netting | | | Red | Red | | | | | |
| Boating | | | Red | Red | Green | | | | |
| diving, photography | | | Yellow | Yellow | Yellow | | | | |
| Crabbing (trapping) | | | Red | Red | | | | | |
| Harvesting for aquarium fish, coral and other marine organisms | | | Red | Red | Red | | | | |
| Harvesting for sea cucumber, trochus, lobster and other invertebrates | | | Red | Red | Red | | | | |
| Limited impact research | | | Yellow | Yellow | Yellow | | | | |
| Line fishing | | | Red | Red | Red | | | | |
| Shipping (other than a designated shipping area) | | | Red | Red | Red | | | | |
| Tourism program | | | Yellow | Yellow | Yellow | | | | |
| Traditional use of marine resources | | | Yellow | Yellow | Yellow | | | | |
| Trolling | | | Red | Red | Red | | | | |

4.3 Summary of protected areas legislation

The following table is a list of protected area legislations. The list is not comprehensive and is intended only as a guide to facilitate the initiation of a more comprehensive review of relevant state laws pertaining to protected areas and resource management. This review is listed as an activity under Objective 4.1 (see

Appendix 2) and will result in a more complete summary, include the IUCN category associated with each protected area.

| Protected Area | Purpose | Reference | Year |
|---|--|----------------------|------|
| Ngermeduu and Compact Road Mitigation and Conservation Act | Established the Ngermeduu Conservation Area | Public Law No. 4-17 | 1999 |
| Fishing Conservation Act of 1987 | Establishes marine protected areas of Usas, Mecherong and Tewachel Mlengui Grouper Spawning Area (commonly referred to as Bkul a Beluu). Usas was repealed in a later legislation. | Public law No. 13-87 | 1987 |
| Ngaremlengui Conservation Act | Commits the state to designate up to 10% of its land area and at least 5% of its territorial waters as permanent conservation areas | Unavailable | 2006 |
| Bkul Lengriil Conservation Area Act | Designates Bkul Lengriil as a protected area (includes mangroves). | Unavailable | --- |
| Ngermeskang Nature Reserve Act | Establishes the Ngermeskang Nature Reserve. This act also creates and grants management authority of the reserve to the Ngermeskang Nature Reserve Board. | Unavailable | 2008 |
| Ngermeskang Bird Sanctuary Act | Establishes the Ngermeskang Bird Sanctuary. | Unavailable | --- |

4.3 Fees and penalties

A structure of fees and penalties will be developed within one year of the endorsement of this plan. See Objectives 2.1 and 3.

REVISED 11/27/2012

5. ADDITIONAL SECTIONS

| 5.1 Annual Operational Budget | | | | |
|---|--|-------|---------------------|--------------------------------|
| Budget Category | Description | Units | Cost | Total |
| Staff | Protected Areas Manager @ \$12,000/yr | 1 | \$20,000 | \$95,000 |
| | Ranger @\$10,000/yr | 6 | \$60,000 | |
| | Office support staff @\$10,000 | 1 | \$15,000 | |
| General office expenses | Utilities, communication services, and office supplies | 1 | \$12,000 | \$12,000 |
| Contractual | Professional fees and contracts | 1 | \$10,000 | \$10,000 |
| Education and community relations | Development and dissemination of education and promotion materials | 1 | \$5,000 | \$10,000 |
| | Community meetings, hosting of student and community groups etc. | 1 | \$5,000 | |
| Enforcement | Fuel | 1 | \$20,000 | \$28,000 |
| | Boat and vehicle maintenance | 1 | \$5,000 | |
| | Supplies | 1 | \$3,000 | |
| Monitoring and evaluation | Local training, meetings, and other monitoring related activities | 1 | \$2,000 | \$3,000 |
| | Supplies | 1 | \$1,000 | |
| Miscellaneous | Travel | 1 | \$5,000 | \$22,400 |
| | Annual program evaluation, reporting, and work planning | 1 | \$1,000 | |
| | Overhead | 10% | \$16,400 | |
| Total Operational Cost | | | | \$180,400 |
| Initial Program Inputs: Capital Items, Infrastructure, and Planning | | | | |
| Office equipment | Computer | 1 | \$2,000 | \$3,600 |
| | Printer | 1 | \$800 | |
| | Projector | 1 | \$800 | |
| Capital items | Vehicle | 1 | \$18,000 | \$50,000 |
| | Boat and engine | 2 | \$32,000 | |
| Monitoring and enforcement equipment | GPS unit @\$300/each | 2 | \$600 | \$5,100 |
| | Set of snorkel gear @\$500/each | 3 | \$1,500 | \$4,600 |
| | Flashlights, camera, binoculars, etc | 1 | \$3,000 | |
| Infrastructure | Dock facilities improvements | 4 | \$10,000 | \$65,000 \$55,000 |
| | Site preparation and construction of visitors center | 1 | \$30,000 | |
| | Initial hiking trail development (Bird Sanctuary and Nature Reserve) | 1 | \$25,000 | |
| Additional planning | Development of tourism plan including fee structure | 1 | \$5,000 | \$31,000 |
| | Development of an enforcement component to this management plan | 1 | \$1000 | |
| | Legal and policy development (review of existing environmental laws and streamlining of legal framework) | 1 | \$5000 | |
| | Integration of natural resource planning into broader planning initiatives (i.e. development of master plan) | 1 | \$20,000 | |
| Total Initial Program Input | | | | \$154,700 \$90,600 |
| GRAND TOTAL | | | | \$335,100 \$271,000 |

5.2 Monitoring, evaluation and reporting

A monitoring plan will be developed in collaboration with local resource management agencies and incorporated into this plan by the end of 2010. This monitoring plan will not only focus on biological and ecological indicators but will also gauge public support of this plan and the progress of its implementation. See Objective 1.2.

5.3 Enforcement

A detailed enforcement and surveillance plan will be developed during future planning activities related to the development and implementation of this plan. See Objective 2.2.

6. APPENDICES

Appendix 1: Management Planning Team

| Individual | Entity |
|---------------------|---------------------------------------|
| Alan Olson | Belau National Museum |
| Abby Rdialul | Ngaremlengui PLA |
| Aldrin Tellei | Stakeholder |
| Blas Lawrence | Ngaremlengui State Legislature |
| Burt Maidesil | Ngaremlengui State |
| Davis Tamtremg | Ngaremlengui State Legislature |
| Franz Ngiltii | Ngaremlengui State Legislature |
| Elvira Franz | Ngaremlengui State Legislature |
| Elbuchel Sadang | Palau Conservation Society |
| Joyce Beouch | Palau Conservation Society |
| Lillian Marcil | Ngaremlengui State Legislature |
| Loma Roberts | BWA Steering Committee |
| Lukes Isechal | Palau International Coral Reef Center |
| Madraisau Sulial | Ngaremlengui State Legislature |
| Maireng Malsol | Ngaremlengui State Government |
| Marciana Maidesil | Ngaremlengui State Government |
| Mary Frances Vogt | Ngaremlengui PLA |
| Meluat Reched | Ngaremlengui State Government |
| Jody Yusim | Ngaremlengui State Government |
| Noel Ngiratmab | Ngaremlengui State Legislature |
| Obichang Skebong | Stakeholder |
| Oleiau Ibutirang | Ngaremlengui State Government |
| Patricia Franz | Stakeholder |
| Rosania Ngiraikelau | Stakeholder |
| Samil Beouch | Stakeholder |
| Steven Victor | Palau International Coral Reef Center |
| Swenny Ongidobel | House of Delegates |
| Thomas Taro | Ngaremlengui State Legislature |
| Umiich Sengebau | The Nature Conservancy |
| Webster Franz | Ngaremlengui State Legislature |
| Wilson Ongos | Governor, Ngaremlengui State |
| Witness Elbelau | Ngaremlengui State Government |

Appendix 2: Tentative Workplan

YEAR 1 REVISED AS OF 11/27/12

| OBJECTIVE | ACTIVITY | Yr 1 | Yr 2 | Yr 3 | Yr 4 | Yr 5 |
|--|--|------|------|------|------|------|
| Obj 1.1 Develop a master development plan in order to guide development and minimize environmental impact by 2017. | Enact planning commission legislation and appoint commission members | X | | | | |
| | Leadership meetings and consultations | X | X | X | X | X |
| | Review existing state master plan models | | X | | | |
| | Consult states who are involved in similar planning processes and agencies or organizations who are leading planning initiatives | X | X | | | |
| | Secure funding for necessary consultancy | X | X | X | | |
| | Hire necessary consultants | X | X | X | X | X |
| | Draft, review, revise master plan | | | X | X | X |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Endorsement of master plan by Governor and Olbiil | | | | | X |
| Obj 1.2 Develop a simple monitoring plan to gauge the status of key biological indicators and to better understand natural or human impacts by the end of 2014. | Consult with relevant agencies | X | | | | |
| | Draft monitoring plan | | X | | | |
| | Incorporate into the management plan | | X | | | |
| | Implement monitoring plan | X | X | X | X | X |
| Obj.1.3 Initiate and cultivate partnerships to encourage at least two research projects focusing on key species or ecological processes and that have potential to inform management actions by 2014. | Collaborate with BNM on further research in the Bird Sanctuary | X | X | X | X | X |
| | Collaborate with local partners to assess the state of Ngeremlengui's reefs | X | X | X | X | X |
| | Participate or assist in the implementation of research activities | | X | X | X | X |
| Obj 2.1 Develop and incorporate into this plan a penalty structure that is consistent with existing state statutes by the end of 2013. | Formalize a group to develop penalty structure | X | | | | |
| | Develop a penalty structure with relevant local partners | X | | | | |

| | | | | | | |
|--|---|---|---|---|---|---|
| | Incorporate into management plan | | X | | | |
| | Implement penalty structure | | X | X | X | X |
| Obj 2.2 Establish and maintain an enforcement and surveillance program by the end of 2013. | Formalize a group to develop enforcement plan (may be the same group that develops the penalty structure) | X | | | | |
| | Draft enforcement plan in consultation with local partners and community | | X | | | |
| | Incorporate into management plan | | X | | | |
| | Implement enforcement plan | | X | X | X | X |
| Obj 3.1 Develop a tourism/visitor plan that incorporates protected areas, cultural sites, and other attractions by 2013. | Assign a group or hire a consultant to draft a tourism plan | | X | | | |
| | Draft tourism/visitor plan that includes identification of sites, needed infrastructure and appropriate fees and adheres to existing agreements with tour companies | | X | | | |
| | Incorporate into management plan | | X | | | |
| | Implement tourism plan | | X | X | X | X |

| | | | | | | |
|---|---|---|---|---|---|---|
| Obj 3.2 Develop and incorporate into this plan a structure of fees and that is consistent with existing state statutes by the end of 2013. (This may be included as part of the tourism/visitor plan in Obj 3.1.) | See activities under Objective 3.1 | | X | X | X | X |
| Obj 3.3. Develop strategies or plans to promote agro-forestry and ensure food security by 2014 | Consult with relevant agencies and organization | X | X | X | X | X |
| | Identify potential projects and develop project plans | X | X | | | |
| | Implement projects or programs | | X | X | X | X |
| Obj 4.1 Establish a natural resource management program and/or commission that consolidates protected area boards and other relevant state entities to provide centralized leadership in the implementation of this plan and to advise other state planning processes by the end of 2012. | Hire and continually employ all necessary staff | X | X | X | X | X |
| | Conduct a review of the Ngarmeduu Conservation Area Management in conjunction with the other two states of Ngatpang and Aimeliik. | X | | | | |
| | Conduct review of all other protected areas legislation. | X | | | | |
| | Draft and enact legislation that incorporates all protected areas in the state and consolidates all resource management boards into a single entity with the sole task of implementing this plan. | | X | | | |
| Obj 4.2 Increase staff resource management capacity by providing to | Identify management capacity needs | | X | X | X | X |

| | | | | | | |
|--|--|---|---|---|---|---|
| at least 3 staff training opportunities through site exchanges or through collaboration with partner agencies by the end of 2013. | Identify capacity building opportunities through relevant partners | X | X | X | X | X |
| | Staff participate in capacity building activities | X | X | X | X | X |
| Obj 4.3 Conduct review of this plan and make necessary revisions every 3 years, the first of which will be completed by the end of 2015. | Conduct annual work planning to review the implementation of the management plan and track progress of the this workplan | X | X | X | X | X |
| | Provide annual programmatic and financial report to Governor and state legislature | X | X | X | X | X |
| | Conduct 3-year review of management plan | | | X | | |
| Objective 5.1 Develop educational program to support the first four goals by the end of 2011. | Collaborate with local partner to gain access to educational and awareness programs regularly. | X | X | X | X | X |
| Objective 5.2 Develop and disseminate at least 3 educational, promotional, or outreach products annually by the end of 2010. | Collaborate with partners to develop materials and products to be disseminated | X | X | X | X | X |
| Objective 5.3 Plan and implement at least 2 activities like community meetings or target group outings annually by 2010. | Plan and hold regular meetings and/or field trips | X | X | X | X | X |

Year 1 Work Plan, in order of priority – Ngaremlengui Protected Areas (Ngermeskang Bird Sanctuary)

√ In progress

× Completed

[QTR1: Oct - Dec] [QTR2: Jan - Mar] [QTR3: Apr - Jun] [QTR4: Jul - Sep]

Revised as of 11/27/2012

| REF NO. | OBJECTIVE / ACTIVITY | GENERAL PAN STRATEGY | QTR1 | | | QTR2 | | | QTR3 | | | QTR4 | | | Brief note on progress, completion, or hold |
|---------|--|-----------------------------|------|---|---|------|---|---|------|---|---|------|---|---|---|
| | | | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | |
| 4.1 | Establish a natural resource management program and/or commission that consolidate protected area boards and other relevant state entities to provide centralized leadership in the implementation of this plan and to advise other state planning processes by the end of 2012. | Administrative & Regulatory | | | | | | | | | | | | | |
| 4.1a | Hire and continually employ all necessary staff | | | | | | | | | | | | | | |
| 4.1b | Conduct a review of the Ngarmeduu Conservation Area Management in conjunction with the other two states of Ngatpang and Aimeliik | | | | | | | | | | | | | | |
| 4.1c | Conduct review of all other protected areas legislation | | | | | | | | | | | | | | |
| 4.1d | Draft and enact legislation that incorporates all protected areas in the state and consolidates all resource management boards into a single entity with the sole task of implementing this plan. | | | | | | | | | | | | | | |
| 5.1 | Develop educational program to support the first four goals by the end of 2012 | Education & Awareness | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |

| | ACTIVITY | | QTR 1 | | | QTR 2 | | | QTR 3 | | | QTR 4 | | | Brief note on progress, completion, or hold |
|------|--|-----------------------------|-------|--|--|-------|--|--|-------|--|--|-------|--|--|---|
| 5.2 | Develop and disseminate at least 3 educational, promotional, or outreach products annually by the end of 2012. | Education & Awareness | | | | | | | | | | | | | |
| 5.3 | Plan and implement at least 2 activities like community meetings or target group outings annually by 2012 | Education & Awareness | | | | | | | | | | | | | |
| 2.1 | Develop and incorporate into this plan a penalty structure that is consistent with existing state statutes by the end of 2013. | Administrative & Regulatory | | | | | | | | | | | | | |
| 2.1a | Formalize a group to develop penalty structure | | | | | | | | | | | | | | |
| 2.1b | Incorporate into management plan | | | | | | | | | | | | | | |
| 2.1c | Implement penalty structure | | | | | | | | | | | | | | |
| 2.2 | Establish and maintain an enforcement and surveillance program by the end of 2013 | Enforcement & Surveillance | | | | | | | | | | | | | |
| 2.2a | Formalize a group to develop enforcement plan (may be the same group that develops the penalty structure) | | | | | | | | | | | | | | |
| 2.2b | Draft enforcement plan in consultation with local partners and community | | | | | | | | | | | | | | |
| 2.2c | Incorporate into management plan | | | | | | | | | | | | | | |
| 2.2d | Implement enforcement plan | | | | | | | | | | | | | | |

| | ACTIVITY | | QTR 1 | | | QTR 2 | | | QTR 3 | | | QTR 4 | | | Brief note on progress, completion, or hold |
|------|---|-----------------------------|-------|--|--|-------|--|--|-------|--|--|-------|--|--|---|
| 3.1 | Develop a tourism/visitor plan that incorporates protected areas, cultural sites, and other attractions by 2013 | Education & Awareness | | | | | | | | | | | | | |
| 3.1a | Assign a group or hire a consultant to draft a tourism plan | | | | | | | | | | | | | | |
| 3.1b | Draft tourism/visitor plan that includes identification of sites, needed infrastructure and appropriate fees and adheres to existing agreements with tour companies. | | | | | | | | | | | | | | |
| 3.1c | Incorporate into management plan | | | | | | | | | | | | | | |
| 3.1d | Implement tourism plan | | | | | | | | | | | | | | |
| 3.2 | Develop and incorporate into this plan a structure of fees and that is consistent with existing state statutes by the end of 2013. (This may be included as part of the tourism/visitor plan in obj. 3.1) | Administrative & Regulatory | | | | | | | | | | | | | *SEE ACTIVITIES UNDER OBJECTIVE 3.1 |
| | | | | | | | | | | | | | | | |
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ENDNOTES

ⁱ Due to early and separate PAN membership acquisition for Ngermeskang Bird Sanctuary, the management plan's Year 1 Work Plan including Year 1 Budget were adjusted to reflect implementation for Year 1 will be limited for Ngermeskang Bird Sanctuary while the state works on acquiring membership for remaining protected areas in Ngaremlengui.