PERE ENVIRONMENT AND CONSERVATION AREA MANAGEMENT PLAN

PERE COMMUNITY
Ward 14, 15, 16, 17, 18

Nali Sopat Penabu Local Level Government
Manus Province
Papua New Guinea

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# Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preamble</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>1.0 Introduction</strong></td>
<td>5</td>
</tr>
<tr>
<td>1.1 History on Management Planning Process</td>
<td>5</td>
</tr>
<tr>
<td>1.2 Site Description</td>
<td>6</td>
</tr>
<tr>
<td>1.3 Nali Sopat Penabu LLG Environment and Conservation Law, 2007</td>
<td>7</td>
</tr>
<tr>
<td>1.4 Pere Environment and Conservation Area Management Plan (PECAMP)</td>
<td>8</td>
</tr>
<tr>
<td>1.5 Functions of Pere Environment and Conservation Area</td>
<td>8</td>
</tr>
<tr>
<td>1.6 Description of Pere Environment and Conservation Area</td>
<td>8</td>
</tr>
<tr>
<td>1.6.1 Marine Landscape</td>
<td>9</td>
</tr>
<tr>
<td>1.6.2 Terrestrial Landscape</td>
<td>9</td>
</tr>
<tr>
<td>1.7 Description of Whose Plan It Is</td>
<td>10</td>
</tr>
<tr>
<td><strong>2.0 Definition of Terms</strong></td>
<td>10</td>
</tr>
<tr>
<td><strong>3.0 Community Resource-Use and Management Issues</strong></td>
<td>11</td>
</tr>
<tr>
<td>3.1 Description of Current Use</td>
<td>11</td>
</tr>
<tr>
<td>3.2 Description of Community Targets and Threats</td>
<td>13</td>
</tr>
<tr>
<td><strong>4.0 Management Objectives</strong></td>
<td>14</td>
</tr>
<tr>
<td>4.1 Long-term Management Objective/Goal</td>
<td>14</td>
</tr>
<tr>
<td>4.2 Specific Objectives of Pere Environment and Conservation Area</td>
<td>14</td>
</tr>
<tr>
<td>4.3 Strategies</td>
<td>17</td>
</tr>
<tr>
<td><strong>5.0 Specific Terms and Conditions</strong></td>
<td>17</td>
</tr>
<tr>
<td>5.1 Precautionary Approach to Marine Conservation</td>
<td>17</td>
</tr>
<tr>
<td>5.2 Zoning of the Management Area and Rules</td>
<td>18</td>
</tr>
<tr>
<td>5.2.1 No Takes or Tambu Reefs</td>
<td>18</td>
</tr>
<tr>
<td>5.2.2 General Use or Open Reef</td>
<td>19</td>
</tr>
<tr>
<td>5.2.3 Historical or Sacred Site</td>
<td>20</td>
</tr>
<tr>
<td>5.2.4 Selected commercial invertebrates, fin fish and corals</td>
<td>20</td>
</tr>
<tr>
<td>5.3 Controls and Enforcement of Rules</td>
<td>21</td>
</tr>
<tr>
<td>5.4 Fees and Penalties</td>
<td>21</td>
</tr>
<tr>
<td>5.4.1 Proceeds from fines</td>
<td>21</td>
</tr>
<tr>
<td>5.5 Administration</td>
<td>21</td>
</tr>
<tr>
<td>5.6 Monitoring and Evaluation</td>
<td>22</td>
</tr>
<tr>
<td><strong>6.0 Other</strong></td>
<td>22</td>
</tr>
<tr>
<td>6.1 Time Frame of Management Plan</td>
<td>22</td>
</tr>
<tr>
<td>6.2 Procedures for Reviewing and Updating the Plan</td>
<td>23</td>
</tr>
<tr>
<td>6.3 Conflict Resolution</td>
<td>24</td>
</tr>
<tr>
<td>6.4 Roles and Relationships with the Advisory Committee and Other Partners</td>
<td>24</td>
</tr>
<tr>
<td>6.5 Relationship Between Clans in the Agreement</td>
<td>24</td>
</tr>
<tr>
<td>6.6 Funding Issues</td>
<td>25</td>
</tr>
</tbody>
</table>
7.0 APPENDICES.................................................................................................................................................... 27

APPENDIX 1. COPY OF ENVIRONMENT AND CONSERVATION AREA AGREEMENT................................. 27
APPENDIX 2. MAP OF PERE ENVIRONMENT AND CONSERVATION AREA ................................................. 30
APPENDIX 3. MONITORING PLAN .................................................................................................................... 31

Socio-economic Monitoring Plan .................................................................................................................. 33
APPENDIX 4. PECAMP ACTIVITY PLAN ........................................................................................................ 34
PREAMBLE

The Pere Environment and Conservation Area Management Plan and Agreement provides for the safeguarding of the marine environment and the maintenance and restoration of fish populations and other marine resources in Pere Environment and Conservation Area, for the collective benefits of the current and future generations. This Plan and Agreement will be endorsed through the Nali Sopat Penabu Local Level Government (LLG) area through reinforcing the national laws on the environment and the conservation and traditional cultural sites as permitted by section 44(1)(p), (s) and (z) of the Organic Law on the Provincial and Local Level Governments, and for other purposes.

This management plan contains the ideas and aspirations of Pere people on how they wish to manage their marine area and resources. This plan will be used by Pere people living on Pere Island and those living outside Pere. The plan will be presented to Pere people, Pere 5 ward councilors and the clan(s) for approval and then to the Nali Sopat Penabu Local Level Government (LLG) for legal support and recognition under the LLG legal framework.

Made by the Nali Sopat Penabu Rural Local Level Government to come into operation in accordance with section 141 of the Organic Law on the Provincial and local Level Government and section 7 (5) of the Nali Sopat Penabu Rural Local Level Government Environment and Conservation Law No. 1 of 2007.
1.0 INTRODUCTION

1.1 HISTORY ON MANAGEMENT PLANNING PROCESS

In February 1997 the Manus Provincial Fisheries Awareness Team headed by Mr. Manuai Matawai, who is also from Pere village, conducted awareness on marine resource management at Pere village. Mr. Matawai and others in the community recognized that the abundance and size of fishes and invertebrates were declining. There was a clear need to raise awareness in the community about the threats to their marine system, to educate community members on the sources of these threats and to develop strategies to mitigate these threats. A simple management tool was introduced to mitigate threats and allow fish to increase in size and abundance and that was to close part of a reef which would in turn allow fish to reproduce and provide spill over. The Pere community was convinced, and interested to trial the idea and so decided to put tambu on a reef at Pere village front. It was closed to any fishing activity for a period of 8 months. After 6 months total closure in the same year, the Pere Community witnessed increases in size and abundance of fish at the tambu area. They were convinced that the concept or idea did work for them.

However, the community reopened the village front to fishing after the eight-month trial and there wasn’t any control on fishing activity, with a subsequent decline in abundance and size of target species. The village front remained open until 2004 when The Nature Conservancy, a Conservation, Non Government Organization conducted awareness on the reef fish spawning aggregation and the impact of Live Reef Food Fish Trade (LRFFT) and targeting of spawning aggregation sites. Through this awareness and their experiences, the community decided to put another closure again on the reef at village front, as well as putting management measures in place at a known grouper spawning site that occurs within their customary reef boundaries.

The Pere Community members communally agreed that the Pere Village front is completely closed to any fishing activity and was named as tambu area 1 and the grouper spawning site at Taloas reef named as tambu area 2 and is only open to line fishing for consumption only.

In March 2006 through The Nature Conservancy, a Pere community rep, Ms. Piwen Langarap attended a PNG LMMA Network meeting at Kavieng and submitted an application of membership on behalf of the Pere Locally Managed Marine Area (LMMA) and was awarded a provisional membership status. This initiative eventuated as a result of The Nature Conservancy’s community engagement at Pere since 2004. Through this meeting The PNG LMMA Network and The Nature Conservancy conducted training on community-based biological and socio-economic monitoring at Pere in October 2006 where 20 community members were trained. These community members were able to conduct biological monitoring of target indicator species and translate data into simple graphs for presentation to the community members during community meetings.

However, some of the challenges that the Pere community faced is the compliance and enforcement of communal rules which were never respected by the minority group of people from Pere and the community leaders decided that the Marine Conservation Area be empowered under a legal framework. Through this experience, The Nature Conservancy facilitated by engaging a lawyer, Dr. Eric Kwa to develop an Environment and Conservation law for the Nali Sopat Penabu Local Level Government (LLG) where clan or clans in the Nali Sopat Penabu LLG and, in particular, the clan or clans at Pere community can be empowered to develop a management plan which can be enforced and legally recognized under a legal framework.
In February 2007 the Nali Sopat Penabu LLG assembly enormously passed the bill on “Nali Sopat Penabu LLG Environment and Conservation Law 2007” at Pere village. It is the first LLG Environment and Conservation Law for the Province. It was presented to by LLG President and endorsed by the Inter-government relation Minister, Hon. Job Pomat in September 2007. And in November of the same year, the Centre for Environmental Law and Community Rights (CELCOR) conducted paralegal training at Pere to inform the community about their constitutional rights and understand the different laws of PNG and the constitution of PNG. The CELCOR team also went through the LLG Environment and Conservation Law with the community.

In February 2008 the Pere community hosted the 6th PNG LMMA Network meeting where members and partner NGOs from around PNG attended. The meeting was successful and inspirational. Straight after the meeting the Pere community participants headed by Ms. Piwen Langarap decided that a core group be formed to develop the Pere LMMA Management plan where their rules or regulations to manage their resources can be legally recognized and enforced under the law.

The Nature Conservancy, who has shown great commitment to Pere village, was able to assist and facilitate in the development of this management plan with the Pere Core team members. A series of awareness workshops to raise support and understanding of the plan was conducted by the Pere Core group members at Pere during a general meeting in the first week August 2008, and is an ongoing activity during community working days, which occur on the first week of each month.

The Pere community core group and the biological monitors have identified certain important target reef fish species and invertebrates or systems that the community depends on for their livelihood, and which they believed had been depleted (reduced size and abundance) and would like to ensure that these resources recover over time. The reef fishes and invertebrates that the community thinks that are important to them are beche-de-mer (Pis Lama), trochus shell (Lalai), clam shell, squaretail coral grouper Plectropomus areolatus (Kekwa), Epinephelus ongus (Kali Ndreken), Lethrinids spp. (Kolang), Siganids spp. (Pachar/Mwasai) and parrotfish (Ulah). The community would also like to maintain the current health of the coral reef, mangroves and reef fish spawning aggregation from further degradation.

The Community believes that setting a proper resource management mechanism and having it endorsed under a legal framework will help achieve their vision and goal.

1.2 SITE DESCRIPTION

Pere village is about 25km out of Lorengau town and is only accessible by sea transport. It is a coastal community within the Nali Sopat Penabu LLG located on the south coast of Manus Island in the northern part of Papua New Guinea. It is about 2 degrees south and 147 degrees east of the equator and is situated at the eastern boundary of the epicenter of global tropical marine biodiversity widely known by scientists as the “Coral Triangle”, (Figure 1) stretching from Bali in the west, to the Solomon Islands in the east, and to the top of the Philippines in the north. The Coral Triangle covers 2% of the world’s ocean and contains approximately 76 percent of the world’s 794 reef-building coral species and roughly 20 percent of all known fish species.
Pere is inhabited by a population of about 1000 people. The community is comprised of one ethnic group known as the Titan and 100% of the fishermen/women rely on marine resources for food and money. Thus Titan people are seafarers and they have a vast traditional ecological knowledge on reef fish, which includes in-depth knowledge on reef fish spawning aggregations. They fish nearly every day and the sea has always remained their life.

Pere’s traditional reef boundary is comprised of extensive fringing coral reefs and diverse reef food fish spawning aggregating species. Most of the healthy coral reefs are situated towards the western side of Pere, namely in Patusi Bay where most of the reef fish spawning aggregation sites are located (Tambu Area 3). The traditional reef tenure area is about 75km² of shallow reefs that support the people of Pere and the neighboring communities. The reefs that provide good habitat for the aggregating reef fish species are Toloas, Lelemot, Pwalondrol and Ken Ngylai. Fishes that aggregate to spawn at these sites are Lethrinus erythropterus, (Kolangindrou), Ephinephelus ongus (Kali Ndreken), Plectropomus areolatus (Kekwa), Ephinephelus fuscoguttatus (Kali Kot) and Siganus canaliculatus (Pachar).

1.3 NALI SOPAT PENABU LLG ENVIRONMENT AND CONSERVATION LAW, 2007

Pere Environment and Conservation Area has been prepared under the Provisions of the Nali Sopat Penabu Rural Local-Level Government Environment and Conservation Law, No.1 of 2007. This Act provides for the safeguarding of the environment and the flora and fauna in the Nali Sopat Penabu Local Level Government area in reinforcing the national laws on the environment as permitted by Section 44(1)(p), (s) and (z) of the Organic Law on Provincial Governments and Local Level Governments. The objectives of this Act is to protect the environment and the natural resources of Nali Sopat Penabu area while allowing for a compatible economic development that aims to improve the quality of life of people living in the area and meet the needs of future generations (a full description of the objectives of the Act) is given in Section 4 (a), (b), (c), (d) and (e) of the Act).
1.4 **Pere Environment and Conservation Area Management Plan (PECAMP)**

The primary goal of Pere Environment and Conservation Area Management Plan is to protect the coastal marine ecosystems and their habitats, which will in turn allow protection of biodiversity resulting in the replenishment of breeding stocks of fish, invertebrates and crustaceans to increase and multiply for all to use now and also into the future in a sustainable way.

1.5 **Functions of Pere Environment and Conservation Area**

The establishment of a protected or a managed marine area is an important component of Pere people’s marine resources conservation and management strategy. The main function of Pere Environment and Conservation Area is to protect and manage the various ecological systems and habitat types present in Pere’s traditional marine tenure and its surrounding coastal fringing reefs, off-shore reefs and the smaller islands. The protection and management of these areas is expected to function towards preserving various ecological systems and their linkages through movement of animals within systems which is expected to result in the conservation of faunal and floral diversity. Renewing of renewable resources through this conservation strategy will over time contribute to improving lifestyles of the people of Pere economically and culturally.

By allowing protected and marine managed areas to function through the “Pere Environment and Conservation Area” strategy, it will serve among others the following purposes at Pere’s traditional marine tenure:

- Protect reef fish spawning sites and spawning stocks at Taloas, Lelemot, Ken Ngylai, Pwalondrol and Ndroponon spawning aggregation sites.

- Increase fish stocks and other fishery resources within the Marine Protected Area.

- Allow for recovery of reef fishes within the MPA to increase biomass and promote spillover of fishes from within MPA to outside MPA areas.

- Marine habitats will be protected and provide for natural fish community structure and the opportunity to multiply and increase.

1.6 **Description of Pere Environment and Conservation Area**

Pere has been identified as one of the areas of interest (AOI) and is part of the Bismarck Sea MPA resilience network area. Pere environment and conservation area (marine tenure) covers an area of about 75 square kilometer of shallow reef areas. It also has a cluster of 30 islands surrounded by mangroves which provide good habitat for marine life. The management area consists of diverse reef fish spawning aggregations and healthy habitats. Pere marine area was identified as one of the top 5 high biodiversity areas in Manus Province as revealed by the Northern Bismarck Sea Rapid Ecological Assessment (NBREA) survey report that needs to be protected (Figure 2) (Hamilton et al. 2009).
1.6.1 Marine Landscape

Reefs: Pere’s traditional reef boundary comprised of coastal fringing coral reefs. Most of the healthy coral reefs are situated towards the western side of Pere (Patusi Bay) where most of the reef fish spawning aggregation sites are located. There were a few corals discovered at that area that were new to science as revealed by the Northern Bismarck Sea Rapid Ecological Assessment report (Turak et al. 2006)

The reefs that provide good habitat for aggregating reef fish species are Toloas, Lelemot, Pwalondrol and Ken Ngylai. Fishes that aggregate to spawn at these sites are *Lethrinus erythropterus*, (Kolangindrou) *Ephinephelus ongus* (Kali Ndreken), *Plectropomus areolatus* (Kekwa), *Ephinephelus fuscoguttatus* (Kali Kot) and *Siganus canaliculatus* (Puchar).

Islands: There is a cluster of 30 islands known as Kwichow located about 2 km south west of Pere village. These islands are surrounded with mangroves, sea grass, and *Acropora* corals. These islands are important because they provide a nursery and feeding place for many reef fish and birds. These islands are also identified as historical or sacred sites.

Mangroves and Sea grasses: The Pere coastline is mostly covered with mangroves. The sea grasses are fairly distributed around the entire conservation area from Pere right down to Taloas and along the coastline.

1.6.2 Terrestrial Landscape

Kwichow was the original settlement for the Pere people some thousand years ago but was abandoned since 1946 due to increasing population. It is now a home for the wild life. The present Pere village was once a coconut plantation owned by the Germans some hundred years ago and was acquired by the Pere people from the state. Pere village has a population of about
1000 people. 99% are the Titan tribe while 1% is outsiders. Pere village coastline is covered with white sandy beaches and is almost covered with dwelling houses. Towards the back of the village is covered with red clay, swampy areas and mangrove forest. Pere people have sago plots and undisturbed forest of approximately 10 km² about 2 km south west of Pere village.

1.7 DESCRIPTION OF WHOSE PLAN IT IS

The *Organic Law on Provincial Governments and Local Level Governments* permitted under section 44 (1) has provided an avenue for Local Level Governments throughout Papua New Guinea to institute environmental laws. Under this provision, the Nali Sopat Penabu LLG Environment and Conservation Law 2007 were established to empower clan or clans to manage their marine resources thus the formulation of “Pere Environment and Conservation Area Management Plan”.

One of the goals of the Pere Environment and Conservation Area Management Plan is to provide an opportunity for all users of Pere to have a say and express their views and concerns on how best to protect and manage their marine resources and help conserve natural biodiversity and support sustainable development for all the people at Pere Area of Interest (AOI).

Information contained in the Pere Environment and Conservation Area Management Plan is a representation of the general expression of the way the people of Pere would want to see their marine resources managed now and into the future for the benefit of all. The management plan has been drawn based on a bottom-up approach by the Pere people.

2.0 DEFINITION OF TERMS

“Act” refers to the Nali Sopat Penabu Rural Local Level Government *Environment and Conservation Law, No.1 of 2007*

“Advisory Committee” refers to the Nali Sopat Penabu Environment and Conservation Advisory Committee established by the Act (Section 9, 3, (a), (b), (c), (d), (e), (f), (g). The Committee includes 9 members, including representatives of landowners, women, youth, churches, NGOs and the LLG.

“Area of Interest” (AOI) Areas identified as high priority for biodiversity conservation in the Pere

“Conservation Area” means an area of nearshore waters and coastal resources that is largely or wholly managed at a local level by the coastal communities, land-owning groups, partner organizations, and/or collaborative government representatives who reside or are based in the immediate area.

“Conservation Areas Agreement” or “Agreement” means the agreement entered into between the Local-level Government and the landowners relating to the protection, conservation, development and management of the land and sea the clan has agreed to be protected and conserved as an environment and conservation area under “Section 8 of the Act”.

“General Use or Open Reef” means a reef area which is open to fishing or harvesting.

“Management Area” refers to an environment and conservation area declared under Section 8 of the “Act”.

10
“Management Committee” means a Pere Environment committee appointed by the Pere community and the leaders to facilitate and implement the plan and its activities.

“Management Plan” means any conservation area plans whether for land or sea, sustainable development plans or lists of customary rights to the use of land and water for the clans involved in the Agreement.

“Marine Protected Area” (MPA) IUCN MPA definition means any area of the intertidal or subtidal terrain, together with its overlying water and associated flora, fauna, historical, and cultural features, which has been reserved by law or other effective means, [including custom], to protect part of or all of the enclosed environment.”

“Pere Environment and Conservation Area Management Plan” refers to Pere Environment and Conservation Area Management Plan in short PECAMP.

“Pere Environment and Conservation Area” refers to the Pere Traditional marine tenure declared under the management plan.

“Sacred sites” means an area of a cultural value.

“Tambu Area (reef)” means or refers to the Marine Protected Area (MPA)

*The Pere Environment and Conservation Area Management Plan belongs to the people of Pere.*

### 3.0 Community Resource-Use and Management Issues

#### 3.1 Description of Current Use

There are three major clans namely Pere, Panchal and Patusi. The three major clans come under one identity as Pere village. Under the LLG Ward structure, Pere village is divided into 5 Wards with 5 ward councilors out of 18 wards as representative to the Nali Sopat Penabu LLG Assembly. The 5 wards are: Pere 1, Pere 2, Panchal 1, Mwachapwar/Loh and Patusi. But in Pere today the 5 ward councilors work together to manage the affairs of the community despite each ward councilor having their own obligation to their ward. This is because the people communally live together and do things together. Issues to be discussed within the community are first discussed at the community ward councilors meeting before bringing them to the general public for further discussion.

The traditional reef tenure within the Pere jurisdiction is open to all community members to use. Every person has user rights because of their cultural values, intermarriages between lineages and traditional beliefs and most importantly because they need to survive. There is no issue yet on the ownership. Issue of ownership only arises when it comes to the issue of benefits. The demarcation and ownership of reef is not made clear as yet. But in Pere today, the traditional reef tenure is communally managed by all despite having disputes on sea boundaries with other tribes.

**Freshwater:** Pere has a Southern Cross water tank supplied by the World Bank during the El Nino dry spell in 1997. The source of water is pumped from underground spring water to the overhead tank and is gravity fed to the entire village. Connection of water pipes is well distributed covering the 5 wards. Recently 5 Tuffa tanks were distributed to the 5 wards in Pere by the Community Development Scheme (CDS). Before the supply of these water tanks, every
household had their own catchment collecting rain water using open cut 200-litre drums or private water tanks. Most people collect water from water wells for washing dishes or laundry. But fresh drinking water is still a problem at Pere.

**Forest and Bush:** The bush and forest areas on Pere are mainly used by the people for the gathering of firewood, food collection (fruits and nuts) and building canoes and houses. There is a sago plantation 2 km southwest of Pere which supports their livelihood. Some bush and mangroves are still intact and undisturbed.

**Marine Environment and Resources:** The coastal villages/communities around Pere and the neighboring villages use the surrounding reefs and traditional fishing waters to obtain food such as fish, crabs, lobsters, clam shells, bivalves, mollusks, shells, turtles, algae (sea grapes), sea cucumbers and many more other edible marine organism

**Spawning Aggregation of Reef Fish:** There are also important reef areas around Pere that have been identified as areas where fish aggregate to spawn. The people have strongly expressed concern that fishing activities at these areas should be managed (‘Tambu’) to allow fish numbers to increase.

**Recreational Activities:** The common traditional sport for the people of Pere is traditional canoe racing, which is occasionally held during festive seasons.

**Research:** A study on the connectivity between the spawning site and the nursery areas of coral grouper (*Plectropomus areolatus*) was conducted from April 2007 and ended in June 2008 by The Nature Conservancy. The study is to investigate where the juvenile *Plectropomus areolatus* were born. About 400 individual female coral grouper were caught by local fishermen from two spawning sites around Pere were injected with Barium and released which will then produce a mark or signature to the baby fish when born on a special bone called the otolith. There were two distinctive marks (barium) used for the two respective sites which can be identified.

More than 500 juvenile *Plectropomus areolatus* were speared by local fishermen after a 6 month period and were processed by extracting the otoliths which is a pair of special bones located in the skull of the fish. The otoliths will then be analyzed to investigate where the fish were born. The Pere community is happy and waits to hear the result of the study, which will in turn assist them to come up with management decisions and a strategy to manage the species.

**Scientific monitoring of multi species grouper spawning site at Toloas**

The Nature Conservancy staff and trained monitors from Pere have been surveying a large grouper spawning aggregation site at Toloas since 2005 along permanent belt transects. Monitors use SCUBA gear and sample a deep (20m) and shallow water (10m) transect several days prior to the new moon in every month of the year (weather and logistics permitting). The deep transect primarily samples the core *E. fuscoguttatus* aggregation, while the shallow transect primarily samples the main *P. areolatus* aggregation. The purpose of monitoring has been to independently validate spawning seasons of both species and establish if the densities of aggregating fish are increasing following the introduction of management measures at this site in 2004. Knowledgeable local fishers from Pere report that *E. fuscoguttatus* aggregate in March, April, May and June prior to the new moon, whereas *P. areolatus* aggregate at this site in every month of the year, peaking in the months that *E. fuscoguttatus* aggregations form.

Independent monitoring has shown that local knowledge on this aggregation is highly accurate and closely mirrors the aggregation patterns seen through underwater scientific surveys (Figure 1). *E. fuscoguttatus* aggregate in March, April, May and June prior to the new moon, whereas *P.
areolatus aggregate at this site in every month of the year, peaking in the months that E. fuscoguttatus aggregations form. Aggregations of E. fuscoguttatus were smaller in 2007 than in 2008, but occurred during the same period. Whether this reflects natural variation or differences in fishing pressure on or outside the aggregation is unknown. In 2007 P. areolatus aggregated in relatively high densities in all months of the year, compared with 2006 where some months (i.e. January and February) had very low densities. This may represent some recovery in this species; further monitoring data will confirm this.

![Graph showing abundance of E. fuscoguttatus and P. areolatus per 1000 m² at a spawning aggregation site in Manus, PNG.](image)

**Figure 3.** Abundance of E. fuscoguttatus and P. areolatus per 1000 m² at a spawning aggregation site in Manus, PNG. Stars indicate months when no surveys were conducted (M. Matawai and R. Hamilton, unpublished data).

**Tourism:** Pere has the potential to tap into sustainable eco-tourism but lacks the financial capacity. A plan to diversify into eco-tourism is underway. It will be a home stay arrangement where tourists will be accommodated by families and feel like part of the community. The community will be designing a package that will attract tourist to Pere. Hopefully in the future, Pere will be an eco-tourism attraction.

### 3.2 Description of Community Targets and Threats

**Target Marine System and Resources Identified by Community.**

The following targets have been identified by the communities as important resources that require sustainable management and use:

- *Plectropomus areolatus* (Kekwa), *Epinephelus ongus* (Kali Ndrekhen), *Epinephelus fuscoguttatus* (Kali Kot) spawning site at Taloas, Lelemot and Ken Ngylai.
- *Siganid canaliculatus* (Pachar) spawning site at Pwalondrol to Ken Ngylai.
- *Lethrinus erythropterus* (Kolangi Ndrou) spawning site from Pwa Londrol to Ken Ngylai,
- Clam shell, trochus and beche-de-mer from Pere village front to Promolo
- Maintaining current health of coral reefs and mangroves
Issues Identified by Community

The community identified these root causes from a problem tree, and which they think impacted the decrease in abundance and size of fish in their customary marine tenure.

- Targeting reef fish spawning aggregation sites during spawning seasons
- Population increase due to limited awareness on family planning
- Un-regulated fishing practices (small mesh size fishing nets, day/night spear fishing, etc.)
- Overfishing
- Poaching
- Pollution
- Coral harvesting for lime and construction purposes and cutting of mangroves
- Lack of alternative livelihood projects
- Limited knowledge on marine ecology due to limited educational awareness
- Lack of enforcement of communal rules
- Lack of monitoring and research
- Funding issues
- Natural impacts (strong wind and currents, rising sea level, etc.)

4.0 MANAGEMENT OBJECTIVES

4.1 LONG-TERM MANAGEMENT OBJECTIVE/GOAL

The vision and goal of the people of Pere

**Vision:** “Our today and future generation will have healthy reefs, abundant fish and high value commercial fishery resources at Pere Environment and Conservation Area”

**Goal:** “To safeguard the marine environment, maintain and restore fish populations and other fishery resources in Pere Environment and Conservation Area for the collective benefits of the current and future generation”

4.2 SPECIFIC OBJECTIVES OF PERE ENVIRONMENT AND CONSERVATION AREA MANAGEMENT PLAN

To create the goals and objectives that would help to provide the guidelines and activities to achieve the vision, the list of problems from the issues identified was summarized and categorized into eight components. These were: creation of more tambu or marine reserves, enforcement, monitoring and research, restocking and replanting, awareness and education, alternative livelihoods, population and fund rising.
The components were then used to create eight goals, which were then used to create the objectives.

**Component 1: Tambu or Marine Reserve Areas**

**Goal:** Create more tambu areas within the Pere Customary Marine tenure.

**Objectives:**

1. By March 2009, five tambu or marine reserves are created at Pere Environment and Conservation Area.

**Component 2: Enforcement**

**Goal:** To develop a strategy to effectively implement and enforce rules and regulations set in the Pere Environment and Conservation Area Management Plan.

**Objectives:**

1. By March 2009, surveillance and monitoring plan is developed and ready to be implemented.
   2. By December 2009, number of incidents of poaching and breach of the management plan will have been reduced by 50% from that reported in the 2006 incident report.

**Component 3: Monitoring & Research**

**Goal:** To have ongoing community socio-economic and biological monitoring but complimented by a scientific research program by an external group.

**Objectives:**

1. By March 2009, Pere’s marine area baseline survey is carried out to determine the stock level of target indicator species and coral reef cover within the Pere traditional marine tenure.
   2. By March 2009, a monitoring plan for ongoing socio-economic and biological monitoring is developed and implemented.
   3. By end of 2011, biological and socio-economic monitoring datasets are available and stored in a data base system.

**Component 4: Restock & Replanting**

**Goal:** To organize and conduct replanting & restocking of coral, mangroves and marine sedentary species such as trochus, sea cucumber and clam shell at Pere’s Environment and Conservation Area.

**Objectives:**
1. By end of 2009, 1000 mangrove seedlings are planted in three selected areas within Pere Environment and Conservation Area.

2. By end of 2010, 1000 coral heads are collected from open areas and are planted in the 3 tambu areas of Pere Environment and Conservation Area.

3. By end of 2009, 1000 adults and juveniles of sedentary species (trochus & giant clam) are collected from outer reefs and transferred into marine reserve zone for restock at Pere Environment and Conservation Area.

Component 5: *Awareness & Education*

**Goal:** To create and design awareness and education programs and activities for different community stakeholders in Pere Environment and Conservation Area and nearby communities.

**Objectives:**

1. By end of 2009, there is increased awareness of the rules and regulations and other related information and knowledge about Pere Environment and Conservation Area and other conservation initiatives to community members of Pere Environment and Conservation Area and nearby communities.

2. By end of 2009, 80% of the people of Pere and the neighboring community have complied with all marine management rules and regulations.

Component 6: *Alternative livelihoods*

**Goal:** To create alternative livelihood activities that can sustain the high cost of living in Pere and to relieve fishing pressure on the reef system.

**Objectives:**

1. By end of 2010, 50% of Pere community will be earning their income and food security through community oriented livelihood projects.

Component 7: *Population*

**Goal:** To have awareness programs on family planning at Pere over time.

**Objectives:**

1. By end of 2010, more awareness programs on family planning will have been conducted at Pere and birth rate at Pere will have been reduced to 2% from 3.1% of 2008.

2. By middle of 2009, a program involving staff from nearby health centers and a retired nurse at Pere to carry out regular family planning at Pere community is developed.
Component 8: *Fundraising*

**Goal:** To create and organize fundraising activities for generation of funds to sustain and support the ongoing activities of Pere Environment and Conservation Area.

**Objectives:**

1. By 2010, Pere Environment and Conservation Area community initiatives would be a self-sustaining and are able to carry out its activities from funds generated through its fundraising program.

### 4.3 Strategies

1. Enforcement of rules and regulations on size limit on trochus shell and sea cucumber as stipulated under the National Fisheries Act.
2. Zoning of areas within the Pere environment and conservation area.
3. Monitoring of target indicator species to assess change. Scientific research priorities to help local community to manage their marine environment.
4. NGO, LLG, Government agencies and other stakeholders to work in partnership with the Pere community by providing technical advice, financing, training and manpower support in their conservation effort.
5. Provide alternate food security and income opportunities to the community in order to reduce fishing pressure on the reef system.
6. Regulate unfriendly fishing practices or fishing gear methods within the environment and conservation areas.
7. Raise community awareness on the management plan within the community and neighboring villages in order to gauge support and understanding and respect for our conservation regime.
8. Provide effective surveillance of illegal fishing activities and enforcement of management plan and the Act.
9. Provide sustainable financing of the management plan or activities within the community.
10. Raise community awareness on family planning.
11. Replanting of coral/mangroves and restocking of invertebrates at marine reserves and reef areas within the conservation area.
12. Create more marine reserves or tambu areas.

### 5.0 Specific Terms and Conditions

#### 5.1 Precautionary Approach to Marine Conservation
• In the absence of scientific data, the Pere people with advice from the partner NGO, has taken into account the uncertainties and set the management measures or rules to be applied.

• The Pere community in collaboration with the partner NGO and other stakeholders shall develop system to collect data and to understand research into conservation of the stock and the protection of habitats.

• The marine areas will be zoned and will target marine systems based on an Ecosystems Approach to Fisheries

**5.2 ZONING OF THE MANAGEMENT AREA AND RULES**

That the following management rules apply to:

• No Take Area, or Tambu (Closed) reefs and

• General Use or Open reefs

• Historical or Sacred Sites

• Selected commercial invertebrates, fin fish and corals

**5.2.1 No Takes or Tambu Reefs.**

1. That the clans in Pere to wit Pere 1, Pere 2, Panchal, Machapwar, Loh and Patusi have agreed that the reefs at Pere village front which starts from Mead Island (Mwren Kor) at GPS Position 02°12.05’S, 147°11.420’E to Ndratan Pat E Balamarut at position 02°12.532’S, 147°11.529’E to position 02°12.703’S, 147°10.866’E to 02°12.703’S. 147°10.190’E and to Kwin Ndroponon at position 02°12.289’S, 147°10.231’E is declared as **Tambu Area 1**.

2. And that the reefs which start from GPS position 02°12.703’S, 147°10.190’E and to Kwin Ndroponon at position 02°12.289’S, 147°10.231’E to Palan Kanandru at position 02°12.603’S, 147°08.237’E to Pat E Promolo at position 02°13.727’S, 147°07.342’E to Chopon e Chupeu at position 02°13.333’S, 147°09.053’E then back to position 02°12.703’S, 147°10.190’E is declared as **Tambu Area 2**.

3. And that the reefs at GPS position 02°13.727’S, 147°07.342’E to Pokata (E Mukeu) at 02°13.331’E, 147°06.504’E to Londriling (Mbruton) at 02°12.408’S, 147°06.504’E to Kalou Londriling (Ndrian) at 02°12.418’S, 147°07.457’E then back to position Polion at 02°13.727’S, 147°07.342’E is declared as **Tambu Area 3**.

4. That the reef owning clan (clans) signed in this plan in consultation with the ward councilors, community monitors and management committees will decide which No Take or tambu reef(s) to close with periods of closure that could be 6 or 12 months or even longer if so decided.

5. That once the reefs at the respective tambu area are closed, it is a no take zone and it is out of bounds to all people of Pere including reef owning clans, neighboring community and the public from fishing or harvesting. However, the community monitors and partners conducting biological surveys can enter these Tambu Reefs for the purpose of data collection for community information.
6. That this tambu area may be opened to harvest certain species of fish or invertebrates if so desired by the management committees, reef owners and ward councilors after consultation with the community monitors giving recommendation based on the level of fish stock.

7. That the notice to open and close the reef shall be announced to the community during community meetings.

8. That all rules governing General Use or Open Reefs shall apply to closed reefs when they are open.

5.2.2 General Use or Open Reef

That the General Use or Open Reefs are defined as those that are not made tambu as described in Section 5.2.1

That the following rules shall apply to the exploitation of resources on all open reefs:

1. That these fishing gears and practices are banned from use:
   a) Compressor / Hooker gear.
   b) Nets less than 2 ½ inches for targeting reef fish. Net less then 2 ½ inches may be used only for targeting fishes that do not grow bigger like Garfish and Sardines.
   c) Dynamiting and derris roots (poison roots) for stunning or killing fish.
   d) Use of crow bar or metal to harvest sea cucumber.
   e) Night diving (with use of torch) for targeting fish that are under protection during spawning season.
   f) Use of traditional seine net (Loh) at tambu area.

2. That further to rule 5.2.2 (1) the following rules shall be practiced to ensure sustainable harvesting:
   a) Night diving (with the use of torch and surface light) is allowed for harvesting fin fish for consumption and community activities including special festivity days and fund raising activities.
   b) All baby or undersize animals or resources are banned from harvesting.
   c) No person from Pere or the public including reef owners shall use any of the illegal gear listed under section 5.2.2 (1), (a).

3. That these rules apply to mangrove habitats. Mangroves are feeding and nursery areas for many fish and invertebrates:
   a) A 50 metre inward as buffer zones shall be protected from further destruction.
   b) Mangrove reforestation is applied.
   c) A person who chops down a mangrove within the buffer zone shall be responsible for replacing it by replanting 10 mangrove seedlings within that area.

4. That these rules apply to nearshore pollution:
a) Plastics, tins, batteries, and other household non-degradable things shall not be
thrown into waters. These shall be burnt or buried on land.

b) That all outboard motor operators shall reduce speed while inside or passing through
tambu areas.

5. That the community of Pere shall comply with the size limit on beche-de-mer and
trochus shell set by the National Fisheries Authority as well as other related legislation.

5.2.3 Historical or Sacred Site

1. That the Historical or Sacred Site on Kwitchow at GPS position GPS position
02°12.051’S, 147°09.118’E to 02°11.742’S, 147°09.502’E to 02°11.924’S, 147°02.573’E
to 02°12.253’S, 147°08.654’E to 02°12.253’S, 147°08.966’E and back to position
02°12.051’S, 147°09.118’E is declared a Historical or Sacred site.

2. That the historical or sacred site is the first settlement for the Pere people some
thousands of years ago as well as their burial place were skeletons of their ancestors are
kept that need to be preserved.

3. That the rules set under Section 5.2.2 (2), (3) shall apply.

4. That any tourist either local or foreign may pay some fees set by the management
committee and that the money may be paid to the community trust account.

5.2.4 Selected commercial invertebrates, fin fish and corals

That these rules shall apply to ensure the sustainable harvesting of the following resources:

1. Trochus Shell:
   a) Only shells that are between 8 cm and 12 cm (National Fisheries Regulation) shall
      be harvested.
   
   b) Harvest of trochus is not allowed in Tambu area 1 and 2.

2. Beche-de-mer
   a) No harvesting of beche-de-mer in tambu area 1 and 2.
   
   b) No harvesting of beche-de-mer during new moon season.
   
   c) No harvesting of undersize beche-de-mer (National Beche-de-mer Fishery
      Management Plan).
   
   d) No night diving or surface light for collecting beche-de-mer at tambu area during
      open season.

3. Kekwa (*Plectropomus areolatus*), Kali Kot (*Epinephelus fuscoguttatus*), Kali Mbuangou
   (*Epinephelus polyphakadion*), Kali Ndreken (*Epinephelus ongus*), Kolangindrou
   (*Lethrinus erythropterus*) and Pachar (*Siganus canaliculatus*):
   
   a) Harvesting or fishing for the aggregating reef fish namely Kekwa, Kali Kot, Kali
      Mbuangou, Kali Ndreken, Kolangindrou shall be restricted to daytime only.
b) That only line fishing is allowed to target Kekwa, Kali Kot and Kali Mbuangou only during the open season at Tambu area 3. Spear fishing may be allowed to target Kali Ndreken only.

4. Corals:
   a) Harvesting or collection of live corals is prohibited in tambu area 1, 2 and 3 and other areas that the reef owning clans sees that it is severely degraded that need protection and that it should be announced at the community meeting.
   
b) Harvesting of live corals for trade or sale is prohibited. Special consideration may be given to fishers who collect live corals for lime.

5.3 Controls and Enforcement of Rules

That the enforcement shall be the responsibility of the following groups:

- The reef owning tribe or group.
- The general community.
- The village Peace Officers and the village court.
- The environment committees.
- Nali Sopat Penabu LLG.

5.4 Fees and Penalties

a) The penalties set under section 30 of the Nali Sopat Penabu LLG Environment and Conservation Law may be applied to offenders.

b) All offences may be dealt with through the village court system or customary settlement and penalties may also be enforced at this level or taken further to higher court depending on the seriousness and nature of the offence.

5.4.1 Proceeds from fines

a) Pere has a community trust account to which all the proceeds from court fines may be paid into the bank account before it can be distributed to the reef owning clans or be expended towards the management plan activities specified under activity plan or other community projects agreed to by the reef owning clans and the 5 ward councilors of Pere.

5.5 Administration

a) Harvesting of marine resources are only restricted to the people of Pere but special consideration may be given to the neighboring community.

b) Management of tambu reefs and sacred sites shall be the responsibility of the owners, the ward councilors, the Pere community and the Nali Sopat Penabu LLG.
c) Endorsement of these rules shall be the responsibility of the Nali Sopat Penabu Local Level Government.

5.6 Monitoring and Evaluation

That a monitoring plan is designed to collect biological data on the target biological indicator species and socioeconomic data or relevant information, which can be used to track and assess changes and effectiveness of the plan. The information can later be presented to the Pere Community Ward Councilors, the Conservation Area Management Committee, Resource Owners, LLG and the general community.

1. That the Partner NGO field staff and the community monitors may jointly conduct:
   a) Biological surveys of all selected reefs before the date of closure to obtain baseline information. The closure and survey plans shall be according to the best scientific advice provided by The Nature Conservancy team.
   b) Resurvey the closed or tambu areas once a year or as specified under the monitoring plan.

2. That all surveys shall be reported to the community upon completion of the surveys for further assessment of the management indicators.
   a) That the community household survey shall be conducted after the management plan has been in effect for a period of two years and findings reported to the community after the completion of the survey.
   b) The management plan will be reviewed by the management committees, reef owning clans and other stakeholders when the results from that survey are available. Agreed changes will be able to be made at that time.
   c) That a monitoring plan is developed to assess or track the success of the plan (Appendix 3 of the Plan).

6.0 Other

6.1 Time Frame of Management Plan

1. That the PECAMP will effectively become recognized and useable by the Nali Sopat Penabu Local Level Government and the communitys as soon as it is signed by the following signatories:
   a) 5 Ward Councilors of Pere village.
   b) Representative of each of the Reef owning Clans from the following clans: Pere 1, Pere 2, Panchal, Mwachapwar, Loh and Patusi.
   c) Nali Sopat Penabu LLG President.

2. That the Pere Environment and Conservation Area Management Plan will be effectively in use for a period of 15 years from the date of the official launching of the plan and will be subject to review after every 3 years.
3. That the plan may be reviewed at any one time should there be any pressing issues arise during the event of implementation that need to be resolved.

6.2 Procedures for Reviewing and Updating the Plan

1. That the Pere Environment and Conservation Area Management Plan may be reviewed and updated at the end of every 3 years but should there be any pressing issues that need to be resolved, it can be reviewed at any time. The review team is comprised of the following stake holders:

   a) Pere Community representatives comprised of the reef owning clans and others.
   b) 5 Ward councilors.
   c) Nali Sopat Penabu LLG (Environment and Conservation Advisory Committee).
   d) The Nature Conservancy Representative and other partners.
   e) Ex. Officer of the Pere Asi Fishermen Association.

2. That the review team will focus on how effective, practical and beneficial the plan has been to the communities over the last 3 years. It will look at the advantages and disadvantages of the implementation and enforcement components of the plan.

   Some key component of the review will include:

   Enforcement of rules and regulation on size limit of trochus shell and sea cucumber as stipulated under the National Fisheries Act.

   a) Identify reasons behind why various rules or guidelines were followed or not followed.
   b) Identify why zoning systems, protected areas is working or not to achieve its goal.
   c) Is the current enforcement system working if not why or is it appropriate?
   d) What is the general consensus regarding the implementation of the management plan?
   e) Roles and responsibilities of PECAMP Committee members.
   f) What are the community’s suggestions for improvement to the management plan?

3. Feedback information required will mostly come from the users of the marine resources at Pere AOI. The team will also address the many issues relating to the zoning system, enforcement, potential mining exploration in the area and others as identified by the community and the review team.

4. That based on an adaptable approach method, feedback information received from the users will be used to ensure applicable and or appropriate changes as identified in the review will be made to the PECAM. The review team will ensure that changes made to the management plan are in line with the overall vision and objectives of sustainable marine resource use, management, preservation and conservation for all communities to benefit now and into the future.
6.3 CONFLICT RESOLUTION

That all conflicts arising from the use of the Pere Environment and Conservation Area will come under the responsibilities of PECAM Committees, Pere 5 ward Councilors, Village Court Magistrates and Reef owning Clan Leaders. Conflicts relating to customary rights or other issues within each village clan will be attended to by the respective clans. Any customary right conflicts emerging between the clans or tribes can be dealt with by the ward councilors and the village court magistrates.

6.4 ROLES AND RELATIONSHIPS WITH THE ADVISORY COMMITTEE AND OTHER PARTNERS

- Pere community is represented by Pere Environment and Conservation Area Management Committees, the reef owning clans, fishermen, youth group, church group, women’s group, Pere Asi Fishermen Association, Nali Sopat Penabu Local Level Government’s Advisory Committee and other partners or stakeholders whom will work closely to implement the plan.

- The role of the Pere Asi Fishermen Association is to facilitate and source funds from potential donors to fund community alternative livelihood projects or implementation of the activity plan (Appendix 4).

- That The Nature Conservancy’s (or other partner NGO once identified) main role will be to facilitate the Community-based Planning Process and Agreements and also may provide technical support or advice as required.

- That the role of the Pere Environment Committee is to collaborate, communicate and work in partnership with chiefs or resource owners, NGOs, Pere 5 ward councilors, Government Agencies and other stakeholders in effecting the implementation of the plan.

- The role of the 5 ward councilors is to oversee the implementation of the management plan and report back to the community and other partners or stakeholders.

- That all fishermen/women belong to Pere or the clans and that they have the obligation to implement and comply with the management plan.

6.5 RELATIONSHIP BETWEEN CLANS IN THE AGREEMENT

1. That the following clans have been identified to represent the village people.

<table>
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<tr>
<th>Pere1</th>
<th>Pere 2</th>
<th>Panchal</th>
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<td>Poyai</td>
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2. That the Ownership to the marine property may be similar to the land ownership. The traditional rights on the marine property consist of one or a combination of the following three elements: the right to catch a certain species, the right to use a certain fishing technique and the right to fish in a certain area. The elements of different rights may overlap. Traditional rights are still, at least partly upheld but they have lost their power in others due to modern techniques which have replaced traditional fishing methods which are outside the system of traditional ownership.

3. That in Pere today the traditional reef tenure within the Pere jurisdiction is open to all the community to use. Every person has the user rights and there is no real owner. Historically, the reef is free to every clan as identified above.

4. That though the marine tenure is communally managed, the clan leader authority within communities is very important especially in having an Agreement agreeable by all leaders in the communities because the resources belong to the people and the people are represented by clan leaders. Coordination, collaboration and communication between and within clan’s leaders will need to be respected and maintained so that a common understanding of the agreement can be achieved. To ensure there is smooth implementation of the PECAMP, it is important that there is transparency and open dialogue by all clan leaders on how the plan is to be implemented.

6.6 FUNDING ISSUES

Pere Asi Fishermen Association is a registered entity under the IPA which resources management is one of its objectives. It is agreed that the Association will act on behalf of the community and its members to fundraise and seek funds from internal and external donors and government agencies to support the community environment and conservation initiatives and, in particular, support the activities under the Pere Environment and Conservation Area Management Plan.

The responsibility of the Pere Environment and Conservation Area Management Committee is to collaborate with the Pere Asi Fishermen Association Executives and the 5 Pere ward councilors to seek or source funding for the management of Pere Environment and Conservation Area. The Treasurer of PERE Fishermen Association will be responsible for preparing and presenting to the Pere community on a quarterly basis the financial reports on all activities done for each quarter. This approach will also serve as a means for the monitoring and auditing of funds.

Funds will be required for the following activities:

- Training
- Restocking and replanting program
- Monitoring Equipment and Materials
- Monitoring and Surveillance
- Field Operations
- Institutional Support in partnership with Nali Sopat Penabu LLG
• Education Awareness

• Alternative livelihood programs or projects

• Audits

Funding for the Pere Environment and Conservation Area will be sourced from external and internal donors, Community fund raising, LLGs and also from fees collected for breaking laws under the “Nali Sopat Penabu LLG Environment and Conservation Law 2007.”

The Partner NGO, The Nature Conservancy’s (TNC) role will be to facilitate the Pere Environment and Conservation Area Management Plan and also the Agreement Process and where appropriate provide technical support and capacity building. Biological monitoring training for local monitors may also be facilitated by partner NGO and other partners or stakeholders.
ENVIRONMENT AND CONSERVATION AREA AGREEMENT

BETWEEN: Nali Sopat Penabu Rural Local Level Government

On the first Part,

AND: The Pere, Panchal, Machapwar/Loh and Patusi Clans at Pere Village in the Nali Sopat Penabu LLG

On the second Part

The parties having acknowledged the value and destiny of marine biodiversity located in the Nali Sopat Penabu Rural Local-level Government area and its effect on the people and the land and marine environment of the Nali Sopat Penabu Rural Local-level Government and the Manus Province,

HEREBY AGREE AS FOLLOWS:

(i) The Clan (s) members whose names and signatures which appear in Annexure A to this Agreement having agreed by consensus in a clan (s) meeting held on the 3rd March, 2009, will set aside their clan land and marine area or areas known as The Pere village front which starts from Mead Island (Mwren Kor) at GPS Position 02°12.05’S, 147°11.420’E to Ndratan Pat E Balamarut at position 02°12.532’S, 147°11.529’E to position 02°12.703’S, 147°10.866’E to 02°12.703’S. 147°10.190’ E and to Kwin Ndroponon at position 02°12.289’S, 147°10.231’E is declared as Tambu (Closed) Area 1 and and GPS position 02°12.703’S, 147°10.190’E and to Kwin Ndroponon at position 02°12.289’S, 147°10.231’E to Palan Kanandru at position 02°12.603’S, 147°08.237’E to Pat E Promolo at position 02°13.727’S, 147°07.342’E to Chopon e Chupeu at position 02°13.333’S, 147°09.053’E then back to position 02°12.703’S, 147°10.190’E as Tambu Area 2 the spawning site from Polion (E Mukeu) at GPS position 02°13.727’S, 147°07.342’E to Pokata (E Mukeu) at 02°13.331’E, 147°06.504’E to Londriling (Mbruton) at 02°12.408’S, 147°06.504’E to Kalou Londriling (Ndrian) at 02°12.418’S, 147°07.457’E then back to position Polion at 02°13.727’S, 147°07.342’E for the reef fish aggregating species as Tambu Area 3 and 30 clusters of islands (Kwitchow) and mangrove areas at GPS
position 02°12.051’S, 147°09.118’E to 02°11.742’S, 147°09.502’E to 02°11.924’S, 147°02.573’E to 02°12.253’S, 147°08.654’E to 02°12.253’S, 147°08.966’E and back to position 02°12.051’S, 147°09.118’E as **Historical or Sacred Sites**.

(ii) The Clan (s) members will initiate all compatible economic activities in the conservation area in accordance with the management plan of the area.

(iii) The Nali Sopat Penabu Local-level Government through the Environment and Conservation Area Committee will coordinate and monitor the management of the conservation area, and assist in the development of sustainable activities in the area in accordance with the management plan of the area.

(iv) This Agreement does not vest any right of land or resource ownership under this Agreement or Nali Sopat Penabu Environment and Conservation Act or any other law in the Local-Level Government, its agent or its successors.

(v) The ownership, rights and obligations of the Clan (s) over its customary land and marine area and its resources the subject of protection and management under this Act shall remain in totally with the Clan (s) and the Nali Sopat Penabu Rural local-level Government, its agents and successors shall acknowledge, respect and protect those rights and obligations and do all things within its power to protect those customary rights and obligation over the said conservation area.

(vi) This agreement is subject to review every three (3) years.

(vii) This agreement is enforceable in any court of competent jurisdiction.

Entered into......................... [day] day of.........................[month] **2009** [year]

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WITNESS

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Hon. JOHN. T. POPOT- PRESIDENT
Nali Sopat Penabu Rural
Local-level Government

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(Print Name)
Chairperson – Environment and Conservation Area Committee
Witness
APPENDIX 2. MAP OF PERE ENVIRONMENT AND CONSERVATION AREA

Pere Environment and Conservation Area

Locally Managed Marine Areas

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Key Boundary Points

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<td>3</td>
<td>Ntiraei Nkopeno</td>
</tr>
<tr>
<td>4</td>
<td>Ene Nkopeno</td>
</tr>
<tr>
<td>5</td>
<td>Pelen Kereenii</td>
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<tr>
<td>6</td>
<td>Peta Pomrot</td>
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<tr>
<td>7</td>
<td>Chopoy e Dure</td>
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<tr>
<td>8</td>
<td>Pogonen e Mokou</td>
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<tr>
<td>9</td>
<td>Mokoure e Mokou</td>
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<tr>
<td>10</td>
<td>Landing sites</td>
</tr>
<tr>
<td>11</td>
<td>Landing site (Nukmeti)</td>
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<tr>
<td>12</td>
<td>Chopoy Tahan</td>
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<tr>
<td>13</td>
<td>Ken Ngake</td>
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<tr>
<td>14</td>
<td>Pera Nadro</td>
</tr>
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<td>15</td>
<td>Kenchew</td>
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</tbody>
</table>

Map by Rico Pettersson
15 March 2015
rpettersson@tnc.org
## APPENDIX 3. MONITORING PLAN

<table>
<thead>
<tr>
<th>Best Indicator Identified</th>
<th>Monitoring Method and Communicating Analyzed Result</th>
<th>When to Carry Out Monitoring</th>
<th>Who Implements Monitoring Tasks</th>
<th>Area to be Surveyed</th>
<th>Reporting (Who will report results and to who)</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population of Ulah (Parrot fish), Kolang (<em>Lethrinid spp</em>) inside and outside tambu area</td>
<td>Belt transect</td>
<td>1) High tide</td>
<td>Pere biological monitors</td>
<td>Pere village front (Marine reserve) and outside marine reserve area</td>
<td>Monitors to present to community during community meeting week</td>
<td>Water proof papers, fins, Mask/ snorkels, pencil, 100metre tape, slate board</td>
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<tr>
<td></td>
<td>1) Under water Visual Count (UVC) of Ulah and Kolang population at 100m X 5m transect (500m²)</td>
<td>2) Every 6 months</td>
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<td></td>
<td>2) Communicate results at village and community council meeting after monitoring and at general meeting</td>
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<tr>
<td></td>
<td>Population and sizes of Tochus, Clams and Pislama inside and outside tambu area</td>
<td>Belt transect</td>
<td>1) High tide</td>
<td>Pere biological monitors</td>
<td>Pere village front (Marine reserve) and outside marine reserve area and Temporal No take Zone 1</td>
<td>Monitors to present to community during community meeting week</td>
</tr>
<tr>
<td></td>
<td>1) Under water Visual Census (UVC) count of trochus, clams and Pislama population at 100m X 5m transect (500m²)</td>
<td>2) Every 12 months</td>
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<tr>
<td></td>
<td>2) Communicate results at village and community council meeting after monitoring</td>
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<tr>
<td>Best Indicator Identified</td>
<td>Monitoring Method and Communicating Analyzed Result</td>
<td>When to Carry Out Monitoring</td>
<td>Who Implements Monitoring Tasks</td>
<td>Area to be Surveyed</td>
<td>Reporting (Who will report results and to who)</td>
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<tr>
<td>Population of <em>Plectropomus areolatus</em> (Kekwa) <em>Epinephelus fuscoguttatus</em> (Kali Kot) <em>Epinephelus polyphekadion</em> (Kali Mbuangou) <em>Epinephelus ongus</em> (Kali Ndraken)</td>
<td>Permanent transect (Belt transect) 1) UVC count of Kekwa, Kali Kot, Kali Mbuangou, Kali Ndreken within a permanent transect of 100m X 10 meter (1000m²)</td>
<td>1) High tide 2) Every Lunar period</td>
<td>Jerry, Manuai and Popei</td>
<td>Taloas reef</td>
<td>Manuai, Jerry and Popei to submit report to Rick Hamilton (TNC) and report result to community during community meeting</td>
<td>Water proof papers, fins, Mask/ snorkels, pencil, 100metre tape, slate board and scuba tanks</td>
</tr>
<tr>
<td>Number of mangrove seedling planted</td>
<td>Physical count of number of mangroves planted and assess mangroves health</td>
<td>Once a month after planting</td>
<td>Community biological monitors</td>
<td>The Taloas reef Palamarut and Nroponon</td>
<td>Matawai Pondrilei to report to the ward councilors and the community at meetings</td>
<td>Paper, slate board</td>
</tr>
<tr>
<td>Assess Fish population at FAD and reef fish spawning aggregation and other invertebrate</td>
<td>Collect data from local fishermen on CPUE (Catch per Unit of effort)</td>
<td>Every day or during opening season for harvesting</td>
<td>Pere Fishermen Association and community monitors</td>
<td>Fish caught from FAD and spawning site and landed at Pere and number of trochus shell and BDM collected</td>
<td>President of Pere Fishermen Ass to report to community and donor</td>
<td>CPUE catch data form, pencil or pen and weighing scale</td>
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</tbody>
</table>
### Socio-economic Monitoring Plan

<table>
<thead>
<tr>
<th>Socio-economic Factors</th>
<th>Indicators</th>
<th>Methods/Tools</th>
<th>Timing and scale</th>
<th>Who is responsible</th>
<th>Whom and where to report to</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Awareness increase</td>
<td>% Compliance with management rules</td>
<td>Household survey. No of compliance by household.</td>
<td>Every two years</td>
<td>The community biological monitors</td>
<td>Pere socioeconomic monitoring team leader to submit survey data to TNC for analysis and report back to community</td>
<td>Incident report form</td>
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<td>Monitoring survey form</td>
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<tr>
<td>Marine resources as the main source of household income</td>
<td>% dependence on marine resources</td>
<td>Base line and monitoring survey</td>
<td>Every two years</td>
<td>The community socioeconomic survey team</td>
<td>Socio-economic monitoring team to vanished data to TNC for analysis</td>
<td>Monitoring survey form and stationeries</td>
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<tr>
<td>Increase number of sea patrols</td>
<td>No of poaching reduces</td>
<td>Direct observation Reported cases at village court</td>
<td>Every month</td>
<td>Pere community</td>
<td>Pere Socioeconomic monitors</td>
<td>Boat, OBM, fuel, Spot light 12 volt battery</td>
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<tr>
<td>Alternate source of income</td>
<td>% dependence on alternate livelihood projects</td>
<td>Household survey</td>
<td>Every two years</td>
<td>Socioeconomic monitoring team</td>
<td>Socioeconomic monitoring team submit data to TNC for analysis and report back to community</td>
<td>Monitoring survey form and stationeries</td>
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<tr>
<td>Increase family planning awareness</td>
<td>Reduction in number of children born per year.</td>
<td>Count number of baby born per year</td>
<td>Once a year</td>
<td>Socioeconomic monitors</td>
<td>Socio economic monitoring keep data on morphology</td>
<td>Morphological data entry form</td>
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</tr>
<tr>
<td>Household income</td>
<td>% change in average household income level</td>
<td>Baseline and monitoring Survey</td>
<td>Every two years</td>
<td>Socioeconomic monitoring team</td>
<td>Socioeconomic monitoring team to submit data/report to TNC for analysis and report back to community</td>
<td>Monitoring survey form and stationeries</td>
</tr>
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<tr>
<td>Fund Raising</td>
<td>No of fund raising and funds received</td>
<td>Direct Observation</td>
<td>Monthly</td>
<td>Socioeconomic monitoring team</td>
<td>Community</td>
<td>Stationeries</td>
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<tr>
<td>Togetherness of the Pere MPA</td>
<td>Number of heads of Pere 1, Pere 2, Panchal, Machapwar/Loh and Patusi at MPA meeting</td>
<td>Direct observation Key informant interview</td>
<td>Once a month</td>
<td>Ward councilor and socioeconomic monitoring team</td>
<td>Monitoring team to keep track and record in data entry book</td>
<td>Stationeries</td>
</tr>
</tbody>
</table>
**APPENDIX 4. PECAMP ACTIVITY PLAN**

**Vision** “Our today and future generation will have healthy reefs, abundant fish and high value commercial fishery resources at Pere Environment and Conservation Area”

**Main Goal** “To safeguard the marine environment, maintain and restore fish populations and other fishery resources in Pere Environment and Conservation Area for the collective benefits of the current and future generation”

<table>
<thead>
<tr>
<th>Specific Goal</th>
<th>Objective</th>
<th>Activities</th>
<th>Tasks</th>
<th>Material needed</th>
<th>When to be done</th>
<th>Who will do it</th>
<th>Budget Est. (PGK)</th>
<th>Funding Source</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>To develop a Management Plan for the Pere Environment and Conservation Area</td>
<td>Pere Environment and Conservation Area program will have its management plan in place for implementation by Jan 2009.</td>
<td>-Develop draft management plan  - Zoning and Mapping</td>
<td>-Organize core group or community stake holders meeting  - Manuai to facilitate the management planning process  -Meeting with 5 ward councilors  -Develop final draft.  -Awareness of the final draft with the community</td>
<td>Transport, stationeries/photo copy and refreshment</td>
<td>Sept, 2008 And is on going</td>
<td>Manuai and the Pere Core group</td>
<td>500.00</td>
<td>LLG, TNC, Community</td>
<td>First Draft plan completed. Awareness of the plan executed on the 3rd March, at Pere. Pere community accepted and voted for the plan.</td>
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<td></td>
<td></td>
<td>500.00</td>
<td>LLG, TNC, Community</td>
<td>Final draft completed, and awaits formal approval and signing.</td>
</tr>
</tbody>
</table>

34
<table>
<thead>
<tr>
<th>Specific Goal</th>
<th>Objective</th>
<th>Activities</th>
<th>Material needed</th>
<th>When to be done</th>
<th>Who will do it</th>
<th>Budget Est. (PGK)</th>
<th>Funding Source</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>To develop a strategy to effectively implement and enforce rules and regulation set in the Pere Environment and Conservation Area Management Plan.</td>
<td>1. By Dec 2009, more surveillance patrols will take place in Pere’s Environment and Conservation Area</td>
<td>- Develop 3 years Surveillance and monitoring plan</td>
<td>- Organize meeting with stake holders at Pere, Manuai to facilitate</td>
<td>Refreshment and stationeries</td>
<td>Feb, 2009</td>
<td>Reef owning clans, ward councilors and management committees</td>
<td>100.00</td>
<td>The community Fund raising LLG support</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Conduct surveillance patrol</td>
<td>- Arrange transport and patrolling equipment - submit report</td>
<td>Boat/fuel, spot light, rations</td>
<td>Monthly (Lunar period) for 3 years</td>
<td>Pere Sea Rangers, Ward councilors, resource owners, core Group</td>
<td>5,000.00</td>
<td>The community through fund raising, LLG grant plus other partner support</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Distribute copies of management plan to village court officials and other stakeholders</td>
<td>- Manuai to print and photo copy management plan and distribute</td>
<td>Photo copies</td>
<td>March, 2009</td>
<td>Manuai and core group members</td>
<td>200.00</td>
<td>TNC, LLG</td>
</tr>
</tbody>
</table>

- Finalized the plan and organize signing ceremony.
- Submit invitation, preparation on logistics and refreshment - Prepare launching program
- Transport, fuel and refreshment, Photo copies and binding of management plan
- Conduct surveillance patrol
- Arrange transport and patrolling equipment - submit report
- Manuai to print and photo copy management plan and distribute
<table>
<thead>
<tr>
<th>Specific Goal</th>
<th>Objective</th>
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<th>Tasks</th>
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<th>Budget Est. (PGK)</th>
<th>Funding Source</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>To have ongoing community socio-economic and biological monitoring but complimented by scientific research program by an external group.</td>
<td></td>
<td>- Offenders are prosecuted at village court or district court</td>
<td>Law enforcers and community to prosecute</td>
<td>Refreshment and transport to town</td>
<td>On going</td>
<td>- The law enforcer and general community members</td>
<td>1000.00</td>
<td>Pere community</td>
<td>Monitoring plan done</td>
</tr>
<tr>
<td>Specific Goal</td>
<td>Objective</td>
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<td>Tasks</td>
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<tr>
<td>3. By end of 2009, biological and socio-economic monitoring data sets are available and stored in a data base system</td>
<td>- Create a data base system for Pere MMA</td>
<td>Manuai to collect data from community monitors and enter onto data base</td>
<td>Transport, Stationeries and refreshment</td>
<td></td>
<td>On going</td>
<td>Manuai and Community monitors</td>
<td>500.00</td>
<td>Community fund raise and partners</td>
<td></td>
</tr>
<tr>
<td>To create more tambu areas at Pere Marine Managed Area</td>
<td>1. By June 2009, Four tambu or marine reserves are created at Pere Environment and Conservation Area.</td>
<td>- Zoning and mapping of Pere MMA</td>
<td>Organize a meeting and Manuai to facilitate the discussion</td>
<td>GPS, Boat, fuel and refreshment</td>
<td>Jan, 2009</td>
<td>Manuai, Core group, 5 ward councilors, Resource owners.</td>
<td>500.00</td>
<td>Community and partners</td>
<td>Done</td>
</tr>
<tr>
<td></td>
<td>- Put up sign board at Tambu area</td>
<td>- Purchase materials for sign board</td>
<td>Flat iron, paints, cement and brush</td>
<td></td>
<td>April, 09</td>
<td>Manuai, Core group, 5 ward councilors, Resource owners</td>
<td>500.00</td>
<td>Community and partners</td>
<td></td>
</tr>
<tr>
<td>To organize and conduct replanting &amp; restocking of coral, mangroves and marine sedentary species such as trochus and clam shell at Pere’s Environment and Conservation Area</td>
<td>1. By end of 2010, 1000 mangrove seedlings are planted in three selected areas within Pere Environment and Conservation Area.</td>
<td>Carry out mangrove reforestation program</td>
<td>Purchase poly bags and collect mangrove seedlings and prepare nursery areas</td>
<td>Poly bags, seedlings, refreshment, transport</td>
<td>May, 2009</td>
<td>Pere Core group and community monitors</td>
<td>2,000.00</td>
<td>Community, LLG and other partners</td>
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<tr>
<td>2. By end of 2010, 1000 coral heads are planted at 3 tambu areas of Pere Environment and Conservation Area</td>
<td>Carry out coral replanting program</td>
<td>Purchase materials to build coral table</td>
<td>Boat, fuel, tie wire, arch mesh wire and refreshment</td>
<td>July, 2010 during community working days</td>
<td>Manuai and Pere Community monitors</td>
<td>5,000.00</td>
<td>Community fund raising, and LLG and source fund from Potential donor or partners</td>
<td></td>
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<tr>
<td>3. By end of 2009, 1000 adults and juvenile trochus 10 giant clam are transferred into marine reserve zone for restock at Pere Environment and Conservation Area</td>
<td>Carry out trochus restocking program.</td>
<td>Organize collection of seedlings and brood stock from outer reef</td>
<td>Boat, fuel, rations</td>
<td>May, 2009 during community working days</td>
<td>Pere 5 Ward councilors and Environment committee</td>
<td>5,000</td>
<td>Community fund raising, and LLG and source fund from Potential donor or partners</td>
<td></td>
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</tr>
<tr>
<td>To create and design awareness and education programs and activities at Pere and nearby communities</td>
<td>Conduct on going Community awareness on management rules and regulation to generate support and understanding</td>
<td>-Prepare copy of rules and regulation and map of MPA and distribute to community.</td>
<td>Printing, photocopies and materials</td>
<td>March, 09</td>
<td>Manuai to prepare draft</td>
<td>200.00</td>
<td>TNC and Pere Community</td>
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<td></td>
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<td>- Translate rules and regulation to simple language (Pidgin)</td>
<td>Printing, photocopies and materials</td>
<td>April, 09</td>
<td>Manuai</td>
<td>200.00</td>
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<td></td>
<td></td>
<td>- Community council meeting every Sunday</td>
<td>Printing, photocopies and materials and refreshment</td>
<td>On going</td>
<td>5 Pere ward councilor and Pere Environment committee chairman</td>
<td>200.00</td>
<td>Community trust acc</td>
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<tr>
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<tr>
<td>- Environment committee meeting</td>
<td>Printing, photocopies and materials and refreshment</td>
<td>On going</td>
<td>5 Pere ward councilor and Pere Environment committee chairman</td>
<td>Community trust acc</td>
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<tr>
<td>- General community meeting (1st wk of month)</td>
<td>Printing, photocopies and materials and refreshment</td>
<td>On going</td>
<td>5 Pere ward councilor and Pere Environment committee chairman</td>
<td>Community Trust Acc</td>
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<tr>
<td>- World Environment Day (June 2009)</td>
<td>Transport, Photocopies and printing</td>
<td>April, 2009 and ongoing during community meetings on the 1st week of each month</td>
<td>Pere Environment committee and the school</td>
<td>Pere community, LLG and partner support</td>
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<tr>
<td>2. By end of 2009, 70% of Pere people will have basic knowledge on marine ecology and functions of marine systems</td>
<td>Conduct on going awareness on marine ecology and other environmental issues</td>
<td>Transport, fuel, and rations</td>
<td>Matawai Pondrilei and Pomat Sori to coordinate</td>
<td>Pere Community, LLG and partners</td>
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<tr>
<td>To create alternative livelihood activities that can sustain the high cost of living in Pere and relief fishing pressure to the reef system</td>
<td>1. By end of 2010, 50% of Pere community will be earning their income through community oriented alternative livelihood projects.</td>
<td>- Develop proposal to fund alternate livelihood projects for Pere such as FAD, Sustainable Eco-tourism activities and other agricultural and livestock projects.</td>
<td>-Engage key community members and partners to develop proposal.</td>
<td>stationeries, postage, telephone and Transport</td>
<td>April, 2009 and will be on going</td>
<td>John Tapas and Pochalau Kilepak to coordinate</td>
<td>200.00</td>
<td>Pere Community, LLG and other partners</td>
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<td></td>
<td></td>
<td>ID potential donors.</td>
<td>postage, telephone and Transport</td>
<td>Same as above</td>
<td>John Tapas and Pochalau Kilepak to coordinate</td>
<td>100.00</td>
<td>Same as above</td>
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<td></td>
<td></td>
<td>Submit proposals to partners and donors.</td>
<td>postage, telephone and Transport</td>
<td>Same as above</td>
<td>John Tapas and Pochalau Kilepak to coordinate</td>
<td>100.00</td>
<td>Same as above</td>
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<td></td>
<td></td>
<td>-Promote small business project for women</td>
<td>ID small income business</td>
<td>postage, telephone and Transport</td>
<td>Same as above</td>
<td>Same as above</td>
<td>200.00</td>
<td>Same as above</td>
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<td></td>
<td></td>
<td>Source funding for business</td>
<td>postage, telephone and Transport</td>
<td>Same as above</td>
<td>Same as above</td>
<td>200.00</td>
<td>Same as above</td>
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<td></td>
<td></td>
<td>Organize business group</td>
<td>Refreshment and stationeries</td>
<td>Same as above</td>
<td>Same as above</td>
<td>200.00</td>
<td>Same as above</td>
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<td>To have ongoing awareness program on family planning at Pere</td>
<td>1. By end of 2010, more awareness program on family planning will have been conducted at Pere and birth rate at Pere will have been reduced to 2% from 3.1% of 2008</td>
<td>Organize family planning program at Pere.</td>
<td>- Liaise and arrange with Provincial Health Office to conduct family planning program outreach</td>
<td>Refreshment, transport and accommodation</td>
<td>June, 2009 and is ongoing</td>
<td>Ipak Kove to coordinate</td>
<td>2,000.00</td>
<td>Pere Community, LLG, Health office and other partners</td>
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<tr>
<td>Specific Goal</td>
<td>Objective</td>
<td>Activities</td>
<td>Tasks</td>
<td>Material needed</td>
<td>When to be done</td>
<td>Who will do it</td>
<td>Budget Est. (PGK)</td>
<td>Funding Source</td>
<td>Status</td>
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<td>2. By mid of 2009, a program involving staff from nearby health centers to carry out regular health visits to Pere community is developed</td>
<td>Develop Family Planning Awareness schedule or calendar for Pere for 3 year period.</td>
<td>- Liaise with health centre workers and draw up awareness schedule or work plans.</td>
<td>Transport, refreshment</td>
<td>June, 2009</td>
<td>Ipak Kove to coordinate</td>
<td>200.00</td>
<td>Pere Community</td>
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<td>To create and organize fundraising activities for generation of funds to sustain and support the ongoing activities of Pere Environment and Conservation Area</td>
<td>Develop a strategy or plan to raise fund for the community and implementation of the Plan and other livelihood projects or programs at Pere.</td>
<td>Conduct 2 meetings with 5 ward councilors and other local stake holders to discuss fund raising plan. Develop proposals and ID potential donors.</td>
<td>Refreshment and stationeries transport</td>
<td>March, 2009</td>
<td>Pere 5 ward councilors and Manuai to coordinate</td>
<td>500.00</td>
<td>Pere Community and LLG</td>
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<td>To evaluate and monitor progress of project and programs at Pere Village</td>
<td>Liaise with partner NGO to carry out review and evaluate status and progress of Conservation programs and project at Pere.</td>
<td>-Engage TNC or other partners to conduct review of Conservation programs/project. - Submit report to donors and partners or stake holders.</td>
<td>Accommodation, food, transport and allowance</td>
<td>January each year and is on going</td>
<td>Pere leaders and community monitors to coordinate</td>
<td>1,000.00</td>
<td>Pere community and other partners</td>
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</tbody>
</table>

**Total Cost Estimate over 3 year period**

| PGK 47,100.00 |