

**THE UNITED NATIONS DEVELOPMENT SMALL  
GRANT PROGRAMME  
COMMUNITY BASED ADAPTATION PROGRAMME**

**PROJECT PROPOSAL**

Submitted by

**'FASITOOTAI VILLAGE COUNCIL OF CHIEFS**

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## Table of Acronyms

ALC-WM	Anti Litre Campaign Waste Management
CBA	Community Based Adaptation
CIMP	Coastal Infrastructure Management Plan
CNRM	Coastal Natural Resource Management
EFKS	Ekalesia Kerisiano Faapotopotoga i Samoa
HDA	Human Driven Action
IAS	Impact Assessment Systems
IVA	Initial Vulnerability Assessment
LMS	London Mission Society (now known as EFKS)
MNRE	Ministry of Natural Resources and Environment
MOU	Memorandum of Understanding
MOE	Ministry of Education
MOH	Ministry of Health
MPA	Marine Protected Area
MSL	Mean Sea Level
PPC	P Pacific Consultants Ltd
PSC	Project Steering Committee
PUMA	Planning and Urban Management Agency
SMA	Special Management Area
STA	Samoa Tourism Authority
TEAP	Training Education Awareness Plan
UNDP	United Nations Development Program
VRA	Vulnerability Risk Assessment

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# COMMUNITY BASED ADAPTATION FULL PROPOSAL

## PROJECT SUMMARY

Table: 1 Summary of Project

Project Title	Reduce Impacts of Climate Change Driven erosion through protection and conservation of Mangroves, eco-systems, and Coral Reefs
Project Site	Fasitootai and Vailuutai; Aana Alofi III District
Proponent	Council of Chiefs of Fasito'otai & Project Steering Committee (PSC is made up of representatives of different village groups such as Council of Chiefs, Women's Committee, Untitled men's group (aumaga), Church Pastors, Church Youth Groups and Consultant).
Project Objectives	To protect and minimize impacts of climate changes to community existence, mangroves, environment and coral reef.
Authorized Representatives	Selected representatives of Project Steering Committee.
Cooperating Organizations	MNRE Division of Environment and Conservation, Australian Government Aid, UNDP, Samoa Tourism Authority, Fisheries
Start Up Date	August 2009
Project Duration Period	Two (2) years
Total Project Cost	USD\$305,000
Amt. Requested: CBA	USD\$50,000
Australia Govt.	USD\$50,000
Local Counterpart	Village In – kind USD\$40,000

Fig.1 – Location Map of Fasitootai & Project Area



## 1.0 RATIONALE OF THE PROJECT

### 1.1 Community/Ecosystem Context

**1.1.1 Population & Settlement** - Fasitootai and Vailuutai are comprised of approximately 1,472 and 662 people respectively and are located in the Aana Alofi III District, on the north-western shore of Upolu Island in Samoa. The total population of Fasitootai and Vailuutai is 2,134; 52% are male and 48% females. Vailu'utai is a sub-village of Fasitootai under the same traditional salutations (fa'alupega) therefore they are one village culturally, socially, and politically.

Originally village of high chiefs used to live as small communities further inland away from coastline below the mountain ridges ("Lalo-o-mauga") in the middle of the island for safety from enemies approaching the village from the sea and also close to good agricultural land for raising crops in plantations. Due to cultural changes within the village, the village of chiefs moved to populate the coastline of the village to what is now coastline many years ago. In 1906, the village decided to move slightly inland to form a new village centre on either sides of what is now become the main public road. The migration was accelerated during the 1918 Spanish deadly influenza epidemic to move away from the swamp or wetland (fa'a-taufusi) area adjacent to mangroves breeding mosquitos which would spread the disease. The swamp area (faa-taufusi) is still there.

**1.1.2 Social Dynamics** - The cultural structure of the village of Fasitootai is shown in Figure 2. Council of Chiefs made up of high ranking chiefs (taulagi) and orators (fale fitu) at the head with Religion and rest of different committees reporting to Council of Chiefs. Committees include: women committee, untitled men or *aumaga*, young women or *aualuma*, youth organization, school committee, sport activities committee, and development (atinae) committee.

Council of Chiefs has overall control and authority over the village. Village appoints a mayor or *pulenuu*, who is conferred by Government and acts as the village representative in the Government Office of Cultural Affairs. Religion is an integral part of village of great importance. Any committee in the village is always represented by religion through membership of the pastor of the EFKS or Ekalesia Faapotopotoga Kerisiano o Samoa the largest church denomination in Fasitootai.

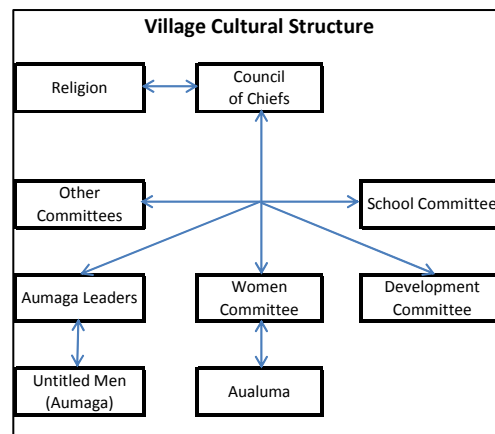


Figure 2

The first LMS Church (now the Congregation Christian Church of Samoa or EFKS) missionary, the Reverend John William officially started a church in Samoa, and he lived (**Figure 23**) in Fasito'otai about 200 meters from the seriously affected mangrove areas. Part of the foundation of his house and place are now partly immersed in seawater and has been washed away. Remains of his ship, which sank in Fasitootai's coastline is still there today.

A large percentage of the community undertakes paid employment, running small businesses, raising cattle, or relying on receiving of remittances from relatives living and working overseas especially in New Zealand, Australia, American Samoa and United States of America to provide for family needs and contributions towards village community projects such construction of new churches and schools or any community project of significant magnitude. In fact most of funds

raised for any of the village community are raised from overseas by members of the villages living there. Most people still depend on subsistence or semi subsistence farming and fishing

The majority if not all of the land is under customary land ownership; this land stretching from the centre of the island mountain ridges and sloping down to the coastline and sea. The land even though customary, it is owned by different extended families under the family matai(s) within the boundaries of the village. Within a family, the land is owned by all heirs of each extended family. Boundaries are not all surveyed and recorded, but physical trademarks on the land are recorded to identify boundaries. Location of these boundaries has been a cause of many disputes between families, some of these disputes often ended up in the Land and Title Court to settle.

**1.1.3 Ecosystem Type** –The project will help make the mangroves and coral reef more resilient to the effects of climate change. The mangroves are estimated to cover over 5-10 acres of coastline, which houses numerous flora and fauna. It also includes fresh water pools used for drinking, bathing and recreation. The coral reef includes lagoon, coral, fish and marine life habitats.

**1.1.4 Potential environmental benefits -**

This project seeks to secure Global Environmental Benefits under the **Biodiversity** and **Land Degradation** focal areas.

The project site encompasses the coral reefs and mangrove forest which houses threatened biodiversity as identified in the Samoan National Biodiversity Strategy and Action Plan. These include toloa (*Anas superciliosa*), tolaifatu (*Myiagra albiventris*), manuma (*Ptilinopus perousii*), manutati (*Ptilinopus porphyriaceus*) and several of the smaller sub species endemic birds such as the Samoan whistler (*Pachycephala falvifrons*), Samoan fantail (*Rhipidura nebulosa*) and the flat-billed kingfisher (*Todirhamphus chloris*).

List of birds noted during visitation of project area May 2009:

<b>Samoan Name</b>	<b>Scientific Name</b>	<b>Common Name</b>
Tuli	<i>Pluvialis fulva</i>	Pacific Golden Plover
Tuli	<i>Heteroscelus incanus</i>	Wandering Tattler
Gogo	<i>Sterna fuscata</i>	Sooty tern
Tiotala (Endemic)	<i>Todirhamphus chloris</i>	Flat-billed Kingfisher
Matu'u	<i>Ardec sacra</i>	Reef Heron
Seu (Endemic)	<i>Rhipidura nebulosa</i>	Samoan fantail
Iao.(Regionally endemic)	<i>Foulehaio carnunculata</i>	Wattled Honeyeater

The biodiversity GEB will be secured by protected globally significant species such as endemics and regional endemics and land degradation GEB by protecting the mangroves from further degradation from the effects of climate change-driven coastal erosion.

**1.1.5 Community Relationship with Targeted Ecosystem** – The mangroves and the coral reef are very important to the lives of the Fasitootai community members. The community relies on these ecosystems for food and also for livelihood. Fishermen use the reef. Local healers use the mangroves for various medicinal plants and the handicraft makers use various plants for decorations to name a few.

Additionally, the community is protected by these ecosystems. The reef acts as a natural barrier to storm surges during cyclones. The community is reliant upon numerous ecosystem services to sustain their lives, income generation and protect their land which is integrally linked to their cultural heritage.

## 1.2 Climatic Context

Situated on the leeward north coast of Upolu, Fasitootai experiences approximately 135 mm to 419mm monthly average<sup>1</sup>. Typical to all the other parts of Samoa, the tropical climate is marked by a distinct wet and warm (November – April) and dry and cool (May – October) seasons. Little seasonal variation in temperature is experienced throughout the year with A temperature range of only 1.7°C separates the average monthly temperatures of the coolest and warmest months.

The tropical cyclone season is recorded as the months of December to February. Cyclones blow from north westerly moving eastward or southeast. Normal trade wind is southeasterly. It is also during these months that approximately 66% of the total annual precipitation occurs. Thus, vulnerability to coastal erosion and flooding is significant during the wet and warm season.

### 1.2.2 Climate Risks' most Acute Times

Climate risks of hurricanes, floods, and drought, which affects community project area, are most acute during these times:

- Hurricane season coincides with wet season of the year, from Oct to March. Historical records had category 3 cyclones occurring between December and February in 1990, 1991, 2004 and 2005 as shown in Table 3 below:

Table 3: Major Cyclones in Samoa & Damages

	Cyclones	Date	Damages
1	Ofa	Feb. 1990	>10,000 residents homeless & serious damages to agriculture, environment, and ocean.
2	Val	Dec. 1991	>10,000 residents homeless & serious damages to agriculture, environment, and ocean.
3	Heta	Jan. 2004	Slightly less damages than above
4	Olaf	Feb. 2005	Slightly less damages than above

- Flooding time often occurs in January and February. Flooding increases runoff of nutrients from plantation using manure, sedimentation from dirt unsealed roads and agriculture next to shore and uncontrolled clearing of forest which causes a lot of soil erosion into the sea.
- Driest months are July and August with little to no rain. During drought, vegetation cover on soil is greatly thin down. Flooding after drought greatly increase erosion of soil with runoff to sea as often noted in most villages including Fasitootai. Increase suspended sedimentation greatly affect coral reef.

### 1.2.3 Baseline Climate Risks

Variations in the amplitude of El Nino events dictate the climate changes in Samoa. In recent experience, a weak El Nino event in Samoa often causes spell periods of below average rainfall for over a month. A sustained weak El Nino event over Samoa cause extended periods of dry

<sup>1</sup> Measured at Faleolo Airport, 2 villages to the west of Fasitootai



weather resulting in sustainable drought in 1983 and 1998. Samoa experienced a short drought period on October and November in 2008, a sign of a weak El Nino event. El Nino is a natural weather phenomenon which has always been in existence in the Pacific. Climate changes are not connected or result of El Nino effect.

#### **1.2.4 Climate Change Projections**

According the Samoa NAPA document the five (5) climatic changes affecting Samoa are:

- i. Drought
- ii. High frequency of heavy rain resulting in floods
- iii. Hot or high ambient temperature
- iv. High frequency of storms
- v. Sea level rising

Of these factors identified, this project seeks to address the climate risks faced by Fasitootai in terms of **damaging winds as a result of higher frequency of storms, sea level-rise and high frequency of heavy rains**. These factors alter the fragile terrestrial and marine biodiversity upon which the village relies on basic necessities and protection from storm surges

The incremental result of the intensity of cyclones and tropical storms on the terrestrial ecosystem can be quantified. A recent study noted that extreme wind gusts are to increase by approximately 7%<sup>2</sup>. It is also noted that there is substantial uncertainty in the maximum wind gust projections. Finally, currently an extreme wind gust of 70kt has a return period of 75 years. This will reduce to approximately 40 years by 2050. These extreme winds will lead to biodiversity loss and coastal erosion and in this case degradation of the mangroves.

Four category 3 cyclones hit Samoa over a period of 15 years as noted above table. Major damages to coastline, coral reef, and mangrove areas were experienced. Cyclone driven surges not only eroded shoreline, but also pushed sand onto shore to block entrance into mangrove area in Fasitootai.

Samoa's projection of sea levels based on analysis of a 10 years data indicate that the local change in sea level rise is projected to rise 3.8 mm per year for Samoa (Samoa Meterological Division – MNREM 2004). Also, the Fourth IPCC report estimates **sea-level rise** to be between 0.19 to 0.58 m by 2100. These two affects will have a dramatic effect on

#### **1.3 Impact Context**

The community of Fasitootai is highly vulnerable to the effects of climate change. The central risks associated with climate change to be addressed by this project include **coastal erosion and ecosystem (mangrove and coral reef) degradation**. Climate change impacts have a significant impact on Fasitootai's biodiversity. Reefs, providing habitat for numerous fish species, serve as a keystone ecosystem. However, as water temperatures increase with climate change, coral bleaching events are likely to grow more common, while increasingly intense tropical cyclones pose significant wave-related risks to the reef and shoreline. In addition to ecological value, degradation of coral reefs poses increased risks to coastal ecosystems and increases erosion, as the reefs serve as wave breaks and beach nourishers.

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<sup>2</sup> Climate Risk Profile for Samoa, Wairarapa J. Young, Samoan Meterology Division, March 2007,p. 1

The severe erosion can be seen in Exhibit 1. With **increased intensity and frequency of cyclones and storm surges** and **sea level rise**, a large portion of the coastline is now eroded. Gone with land is part of the mangrove area, which is a breeding ground for the reef fish.



Live coral in Fasitootai

Because mangrove and coral reef are habitats of fish and the many marine life, this has greatly affected the amount of fish and marine life that the community relies upon for food. Fish catches in the lagoon are no longer in abundant as it used to be. Community no longer get the fresh fish for their normal meals and therefore resorted to other non fresh food substitutes from shops like tin of herring, frozen meat, and other non nutritious food. People change their diet to unhealthy food, which as we now know causes all kinds of diseases like high blood pressure, kidney problems, obesity, and heart diseases. Young children and old people of the village were the most affected section of the village population in terms of their health without the diet of fresh fish and other nutritious food.

Community, realising the impact on the fresh fish supply, Council of Chiefs implemented a 'marine conservation program' for the entire lagoon area from shoreline to the reef; in which no one was allowed to fish in the area for a certain period. This allows the coral, fish and other marine life grow, strengthen and populate the reef. This helped restore and increase re-population of fish and marine life in the lagoon, but not to the full extend because there had not been any effort to protect mangrove and coral reef from climatic changes.

Additionally, the severe erosion and coastal flooding have led to the relocation of some of the population away from the coastline to plantation lands. With government's plantation road program and extending of electricity and water supplies inland, more people moved in land and build permanent homes to settle.

The weakening of coastal eco-systems has lead to substantial coastal erosion (**Figures 7, 8, 9, 10 & 11**), loss of floral and fauna (**Figure 15**) and their habitats. In addition, community members have noted a change in average wind and wave direction in recent years, which they say has played a large role in this degradation. During the project implementation phase, the proponents will research the effects of wind direction change on the coastal erosion and build this into the coastal protection design.

There are numerous climate change induced threats (to be discussed below), to the mangrove system located in the middle of the village and coral reefs. In the same area are three freshwater springs in the mangroves developed and maintained by the village into concrete lined pools for drinking, washing, and bathing. The names of the three spring water pools are: Vaiavii and Vainui in Fasitootai and Vaitoa in Vailuutai (**Figures 19, 20 & 21**). Over the years and up to present, the three pools are maintained as a source recreation for children (**Figure 31**) and backup water supply for the entire village, even though the village rely more and more to the commercially operated government central water system.

#### 1.4 Project Approach

This Community Based Adaptation (CBA) Project will introduce activities to increase the resilience of the local mangroves and coral reefs to climate change-driven erosion and flooding which are a result of **damaging winds as a result of higher frequency of storms, sea level-rise and high frequency of heavy rains.** This will support healthy ecosystems and the sustainable well being of people of Fasitootai and Vailuutai now and future generations.

There are numerous baseline pressures on the mangroves and coral reefs. In the following table they are listed along with the additional climate change pressures. The AusAID funds seeks to reduce the baseline pressures while the CBA GEF funds will help increase the resilience of the ecosystems to climate change effects.

<b>Baseline Threats on Ecosystems</b>	<b>Ways to remove or reduce baseline pressures</b>
<ul style="list-style-type: none"> <li>• Coastal Deforestation</li> <li>• Upland Deforestation</li> <li>• Mangrove Deforestation</li> <li>• Baseline Cyclones</li> <li>• Waste oil and other hazardous waste</li> <li>• Unsustainable Fishing Techniques</li> <li>• Sand mining</li> </ul>	<ul style="list-style-type: none"> <li>• Replant trees, mangroves on coast to allow roots to retain soil from getting washed away.</li> <li>• Community awareness program for protecting ecosystems</li> <li>• Stop cutting down mangroves or discharging waste into area.</li> <li>• Improve coastline infrastructure at mangrove stream mouth to minimize damages to mangrove by hurricane generated surges</li> <li>• Declare mangrove area as a special protected management area.</li> <li>• Village council to enforce protection of mangroves, containment, clean-up and safe storage of waste oil and other hazardous waste from car repair shop.</li> <li>• Assist owners of facilities to prepare facilities to contain spills and washout of waste oil, etc to ocean.</li> <li>• Village to declare a ban on use of dynamites, fishing poisoning using chlorox or other means.</li> <li>• Protect breeding and spawning area of fish and marine life in mangroves, coral reef, and lagoon.</li> <li>• Village declare a ban on fishing in lagoon and reef for a period to allow fish and marine life population to grow.</li> </ul>

The mangroves degradation over the past fifty years has been a combination of local human-induced pressures and compounded by climate change pressures. The mangroves are now currently dying and the land is receding at a rate of approximately 4 meters/year over the past 50 years. The approach of this project is to reduce the baseline pressures through AusAID funded activities such as cleanups (Output 2.2) and protection against human driven actions (Output 2.3) such as cutting down of mangroves and improper disposal of rubbish. The AusAID funds will also cost –share the implementation of many outputs such as the management plans and coastal reinforcements in that there is a baseline cyclonic and storm surge effect and the CBA GEF funds will augment this plan to make it increasingly resilient to the additional climate change pressures.

#### **1.4.4 Resilience of Ecosystems to Climate Changes**

How will this project make the mangroves and coral reef resilient to the projected **increase intensity of cyclones, storm surges** and **sea level rise** as a result of Climate Change?

1. Coastline infrastructure will reduce erosion and degrading of land and help protect the mangroves, which protect breeding habitat of fish and other marine life.
2. Community Awareness Programs (CAP) will inform the community and make them more aware of connection between ecosystems, their livelihood, and climate change which will make them receptive and supportive of policies that will dictate the initial development and sustainability of project.

3. The Special Protected Area (SPA) will allow fish population to increase and the resilience of the coral reef and mangroves to be increased in the face of climate change.
4. Reduce siltation reaching the coral by enhancing the mangrove system, which acts as a filter for silt.
5. Restoration of pools within the mangrove area and historical sites for development of eco-tourism, which will lessen the baseline pressures on the local ecosystems therefore increasing their resilience to the effects of climate change.

#### **1.4.5 Benefits to Community**

Here are some of the most important benefits that the project brings to the people and community of Fasitootai:

##### **Benefits to Family**

1. Raising awareness of climate change, its affects on ecosystems and their livelihoods. Makes community from oldest to youngest aware of importance of protecting ecosystems in the village;
2. Improve village's capacity to plan, develop, manage implementation and enforce management policies in the face of climate change for benefit of total community, which can be used on other village projects.
3. Protects breeding ground of fish and other marine life resulting in increased fish and other marine life population that provides food supply and livelihoods
4. Using of fish and other marine life for food increase their health;
5. Protects and restores fresh water pools a source for community drinking water and also for washing and bathing;
6. Economic commercial benefits from development of eco-tourism and fishing;
7. Increase their knowledge and understanding of children and students about the climate change which will improve the villages overall adaptive capacity, environment, ecosystems and ocean from education programs and getting involved in some of the activities such as mangrove and coral nurseries and replanting;
8. A fish farm would further increase their food supplies and sell rest for commercial benefits;
9. Protect family properties and assets;
10. Protects coral reef that acts as a barrier for coastline against cyclone generated surges and waves.

##### **Land and Ocean**

1. Stop erosion of coastline, which will protect the mangrove area;
2. Protect mangrove area and coral reef, habitat of fish and other marine life;
3. The mangroves, land and ocean will be stronger once people stop waste dumping into these systems;
4. Improve and maintain a healthy mangrove area;
5. Protect coastline forest and its wealth of trees, ferns, faunas, and medicine plants;
6. Protects different plants, ferns, and trees in coastal land which community uses for medicine, decorations, and boat and house building.;
7. Protect wildlife; birds and mammals which use this areas as their habitats;

##### **Church**

1. Unite families and people of village to protect mangroves, ocean, reef and all their habitats from Climate Change which is part of God's creation;

2. Makes people better Christians or human beings to understand and appreciate nature, mangroves, coral reef, ocean, and other surrounding environment.
3. Commercial benefits from increase fish supplies, and development of eco tourism increase financial resources to support church activities;
4. Preserve important historical religious sites (John Williams first home, and remains of his ship) for history of village for future generations;

Educational component will build climate change awareness and help build capacity amongst the villages. This will allow village to perform their part in helping reducing their risks to climate change as directed by chiefs. By educating the village; adults right down to children, they will not only be able to serve their families better, but will understand better reasons for doing it. Knowledge will empower the community understand climate change and how they can protect their valuable and non-replaceable eco-systems from this global problem.

#### **1.4.6 Potential to Upscale Policy Impacts**

The main key to sustainability of project is getting the community involved in the developing and take ownership of policies which will guide them in the continue management of protected coastline area and ecosystems beyond the 24 months project period.

Four (4) important policies, which will be developed by the community as part of the project outcomes, are:

1. Climate change resilient coastal natural resource management.
2. Coastal infrastructure management plan.
3. Memorandum of understanding to declare mangrove, coral reef, and ecosystems as a Special Protected Management Area.
4. Anti Litre and Waste Disposal Management Plan

These policies will bring all stakeholders to sign into a collective effort for the successful management of the protected area and ecosystems. The stakeholders are: different sectors of Fasitootai village community; owners of the particular coastline land where the mangroves are; Government through the Ministry of Natural Resources and Environment and Ministry of Education, and funding agencies such as UNDP, AusAid and European Union Community.

#### **1.4.7 Solving Constraints on Capacity and Awareness**

Here are important solutions to constraints in capacity and awareness:

1. For awareness translate all technical literature and information related to climatic changes into Samoan.
2. Promote competition in songs and plays writing and compositions to get message across.
3. Repetitive briefing of decision and policy makers such as village council and exchange of information.
4. Developing and introducing in school curriculum in science subjects topics of climate change, impact on ecosystems, ecosystems, and social impacts on village.
5. Introduce not only in the government primary and kindergarten schools but also in churches Sunday schools, aoga faifeau/fesoasoani, etc.
6. Set up activities such as a (i) mangrove nursery and replanting program in a protected area, (ii) an ocean living aquarium near mangrove area to allow children to explore and learn of many living creatures in ocean.
7. Development and preparation of resource materials of local relevance.
8. Increase consultations and awareness within each different sectors in villages ie, women committee, youth, young men, council of chiefs, and religious organizations.

## **2.0 PROJECT PLANNING**

### **2.1 Project Formulation**

Project was formulated in recognition by the Community of the severe impacts of climate change on the livelihood and welfare of the people of Fasitootai as a result of the degradation and erosion of the coastline, and the vulnerability of mangroves, which provides habitat and breeding place for fish and other marine life.

#### **Concepts**

The overall concepts are:

- to minimize further degradation of the shoreline land and forest
- to protect mangroves and fish breeding place
- to develop integrated management plans with all stakeholders including all sectors of the community to help implement these programs in a sustainable manner
- to protect coral reef and restore coral growth rate thereby restoring the richness of ocean with abundant fish and other marine life.
- to educate the community and make them more aware of the interrelations of climatic changes on degradation of the unprotected shoreline in Fasitootai, the dying coral reef and depleting eco systems, and reduction in fish population due to affect on fish habitats.
- to develop revenue earning project such a eco-tourism, fish farm, coral farm, to generate not only revenue but also to provide public and community awareness and education of younger members of the community of the importance of restoring these elements.

#### **Roles of Proponents and Community**

The proponents (with consultant included) are a committee made up of representatives of different sectors of the community, which includes the council of chiefs with an overall authority over the entire community, women's committee, youth and others. The committee is chaired by a senior *matai* of council of chiefs and reports to council of chiefs and different sectors of community. Appendix 2 provides the project structure and line of communications between community and other stakeholders including funding agencies and ministries of government.

Proponent Roles:

- Central planning and steering committee.
- Conduct consultation to collect opinions from different sectors of community to develop collective concepts of project.
- Consult with funding agencies (UNDP) to better understand requirements, format, and extend of details required in preparation of the Proposal.
- As a representative committee of entire community, the committee becomes the decision making body for quick decision to avoid delays.
- Facilitate or coordinator of various activities involving community members and other partners such a government ministries and funding agencies such as UNDP, Australian Aid, EU, etc.
- Hold consultations with rest of community and explain details of various activities of project.
- Provide overall management of project, project finance, including monitoring of progress and preparation of project progress reports.
- Approve detailed plans for solicitation of prices from contractors for infrastructure improvements.

- Negotiate final prices and submit recommendations to Committee for final approval award.
- Explain to the community their in-kind contribution towards the project

#### Community Roles:

- Supporting of project activities planned developed by the proponent or steering committee.
- Setting up a Project Steering Committee to provide overall management of the project
- Promote the project to different sectors of the community and address any concerns
- Rally support of all activities of projects amongst different sectors of village.
- Implement activities.
- Provide in-kind contributions to different activities.
- Commit resources (labour, land, and materials) to support project activities such as anti-litter campaign, community clean up.
- Set and enforce rules related to special management area, protection of mangroves, coral reef and eco systems.
- Collective approach of landowners with land affected by their project to get their support of protecting mangroves and coastline forests from being damaged and set aside as a special management area.
- Involve in preparation of various management plans require for various activities of project and provide community awareness program for rest of community from youngest to oldest member of community.

## **2.2 Project Implementation**

The successful implementation of the project will be due to the community of Fasitootai taking ownership of the project. The Project Steering Committee represented by all different sectors of the village will take the lead in the project planning, awareness and education programs; management plans consultations with different stakeholders, anti-litter clean up campaign, mangrove replanting program and security, upkeep and maintenance of three pools.

The different phases of the project which are being adhered to, some already implemented:

- Identify and understand the problem associated with climatic changes and development of project conceptual ideas
- Submission of initial proposal for funding and approval of funding
- Development of signed agreement with planned deliverables and time schedule
- Formation of Project Steering Committee and selection of officers such as Chairperson, secretary and treasury
- Endorsement by different sectors of village: Council of chiefs, women, young men and women, youth and religion
- Initial consultations is done with all those involved
- Informed community of projects and its various components and expectation and commitment from community and other stakeholders
- Selected consultant to assist put together proposal and coordinate consultations
- Consultant completed initial inspection of project area and discussion of conceptual plans an ideas of development plan
- Consultant completed VRA and IAS to determine baseline impacts for future monitoring of improvements of project to risks

- Consultant completed development of objectives and 4 outcomes with individual outputs for each outcome for their entire project and implementation time schedule of achievements
- Project Steering Committee with consultant develop: (a) Climate Change Resilient Coastal Natural Resource Management (CCR-CNRM), (b). Coastal Infrastructure Management Plan as relevant (CIMP), (c). Memorandum of Understanding to establish as a Special Management Area (MOU-SMA) the mangrove, pools, coastline, and coral reef.

### **2.3 Project Sustainability and Phase Out**

All Objectives and outcomes would be achieved and all outputs to have been implemented at end of two years. Included with outcomes are approved management plans developed as part of project by stakeholders including Project Steering Committee.

The project duration period is 24 months. However, in order for the project to be sustainable beyond the 24 months, it is intended that the Village Council of Chiefs endorse to keep the Project Steering Committee in place so that they continue to manage and implement activities of project.

### **3.0 COMMUNITY OWNERSHIP & BENEFITS**

Success of the project is driven by the village community themselves taking ownership and believing in the project for immediate and long term benefits to the village at large now and future generations.

This must start from the village Council of Chiefs, down to women committee, religion, untitled men (aumaga), young women (aualuma), children, and down to the youngest member of the community.

The Council of Chiefs will take leadership in this respect to drive a consistent message in all sectors of the village community.

This includes taking advantages and proper managing and maintaining transparency at all time of outside of the village resources whether be monetary or technical expertise from Government, World Organizations such UNDP, World Bank, European Community, Asian Development Bank, local businesses and Non Government Organization (NGO).

The three (3) most important things to any Samoan is his/her service to:

- 1) Family i.e. his parents, immediate family (children, wife, brothers and sisters), and chiefs and extended family,
- 2) Land and ocean, and
- 3) Church or religion.

All 3 things can be achieved if mangroves, coral reef, and ecosystems in Fasitootai are protected. How? To mention a few reasons:

### **4.0 PROPONENT DESCRIPTION**

Figure 2 above provides cultural structure in village and line of communication. Council of Chiefs has the overall authority of cultural setting and activities in the village.



For the Community Based Adaptation Project, a special Project Steering Committee was selected by the Council of Chiefs and different sectors of the village to be responsible for the planning, preparation of initial concept proposal for funding, selection of a consultant for preparation of the comprehensive proposal, and overall management of the implementation of this project when full funding is approved. Committee coordinates all consultations with different village sectors, funding agencies, and government ministries involved.

Committee is made up of representatives of all different sectors of village from Council of Chiefs, Women Committee, Religion, mayor (pulenuu), Untitled men (aumaga), Unmarried young females (aualuma), and Youth Groups. Full list of members of the Project Steering Committee is given in Appendix 1. Committee is chaired by a ranking chief from Council of Chiefs and they selected treasurer and secretary. Committee also selected the consultant who is responsible for drawing up the grant proposal to UNDP, prepare plans for infrastructure improvements, coordinates all consultations with different groups on different topics, and coordinates some of the activities with UNDP and other stakeholders. The consultant is P Pacific Consultants Ltd, an engineering, planning and management company.

Duties of the Committee:

1. Apply for the initial planning grant.
2. Apply for implementation grant from UNDP and other sources.
3. Select consultant and provide oversight of consultant's tasks.
4. Manage and accounting for all funds received from various sources for implementation of project.
5. Coordinate project with UNDP.
6. Conduct consultations with different sectors of village including Council of Chiefs
7. Develop various management plans for successful implementation of projects.
8. Maintains financial records and accounting of the project.
9. Hire an auditor to perform financial audit of the project every year.
10. Submit reports to funding agencies, Council of Chiefs and other sectors of village.
11. Conduct awareness programs.
12. Arrange, organize and take lead in clean up and disposal of waste in village.
13. Review and approve plans developed by consultant for implementation of project.

Appendix 2 below shows the communication structure between the Committee and rest of community and other stakeholders such as funding partners and Government ministries promoting community climatic change adaptation.

Mission of Committee:

*“To successfully implement the CBA project to improve resilience and sustainable protection of the mangrove, coral reef and eco-systems in Fasitootai against impacts of climate changes.”*

## **5.0 PROJECT DESCRIPTION**

### **5.1 Project Goal**

To improve the adaptive capacity and reduce vulnerability of Fasito'otai and Vailuutai mangrove and coral reef eco-system to the climate risks associated with storm surges, sea level rise, tropical cyclones, flooding.

### **5.2 Project Scope of Work**

The scope of work to be carried out is:

- 1) Preparing designs of shoreline protection on either side of mouth of stream-lagoon.

- 2) Study current flow in lagoon adjacent to shoreline protection prior and after construction of shoreline protection to determine impacts on coastal erosion.
- 3) Construct 200 meters of rock barriers on east side and similar length on west side of the mouth of stream and lagoon.
- 4) Deepening the mouth of stream and lagoon to allow the whole area to be always covered with seawater during lowest of tide.
- 5) Use the sand dug out from mouth of stream and lagoon to reclaim about 5,000 square meters area that was completely washed away by the ocean.
- 6) Replant mangroves in areas of coastline severely affected over the years. Mangroves will not only improve breeding grounds of fish and mud crabs, but also act as barriers to soften the impact of sea level rising and storm driven waves.
- 7) Renovate the three pools; repair and raise concrete walls, build retaining wall around pool, build shoreline protection around pool, clean out mud and large rocks blocking water flow, use small river rocks at floor of pool area.

### 5.3 Objective, Outcomes & Planned Outputs

<b><i>Outcome 1 - Climate change considerations integrated into local policy and planning processes.</i></b>	
Output 1.1:	Development of a Climate Change Resilient Coastal Natural Resource Management Plan (CNRM)
Output 1.2	Climate change projections and adaptation practices integrated into the village plans such as a Coastal Infrastructure Management Plan as relevant (CIMP).
Output 1.3	Obtain agreement with all stakeholders (Council of Chiefs, and other sectors of village, communal and private land owners, and partnering agencies such as MNRE) to declare the mangroves, eco-systems and coral reef, as a Special Protected Management Area. (MOU-SMA).

<b><i>Outcome 2 - Local community increased awareness, education, and understanding of climate changes and impacts on environment, land, eco-systems, and community.</i></b>	
Output 2.1	Training, Education and Awareness Program (TEAP) on climate change.
Output 2.2	Implement Anti-Litre & Disposal Campaign and organize village wide clean-up and improve Waste Management in adjacent areas to mangroves and lagoon and coral reefs to minimize discharge to mangroves and lagoon (ALC-WM).
Output 2.3	Awareness, Protection and Mitigation against Human Driven Actions that has long-term impacts on the mangroves, eco-systems, and coral reef increasing their vulnerability to climatic driven changes (APM-HDA).

<b><i>Outcome 3: Coral and mangroves eco-systems are better able to maintain eco-systems services in the face of climate change pressures.</i></b>	
Output 3.1	Re-enforcement of the stream-lagoon mouth against erosion and widening that is being driven by storm surge will stop undermining of mangrove trees, and protects and reduces mangrove damages from storm driven surges;

	always having mangrove roots covered with fresh seawater will maintain the health of the trees and allow abundant spawning of fish and other marine life inside the mangrove. (Shoreline Protection).
Output 3.2:	Deepening around the stream mouth and into the lagoon that has been filled up with sand deposited during storms surges to allow spawning area for fish, mud crabs, and other marine life to be always covered with at least 2 meters of seawater during all tides all year round Coupled with replant of coral or some other mean to create an artificial reef inside the deepened stream mouth. Deepening stream mouth will minimize eliminate breaking of waves in area during a cyclone and lessen erosion affect on coastline. (Deepen Stream Mouth).
Output 3.3	Natural coastal buffers (mangroves) re-enforced through mangrove nursery and replanting program in areas already damaged or newly threatened due to climate change (Nursery & Replanting).
Output 3.4	Review existing signed agreement with Government Ministry that established the ocean from the coastline, lagoon to coral reef as a Marine Protected Area (MPA) or <i>Faasao</i> to reduce non climate stresses on coral reef to enable them to recover quickly from non climate pressures such as contamination from bleaching, waste oil, chemicals, and lead based paint, sedimentation from flooding, and litre. This also allows fish population and all marine live that the village rely on for food supplies to multiply and grow without of being overfished.
Output 3.5	Raise and repair the concrete walls of spring water pools to protect against seawater and mud intrusion and also clear blockages at the eyes of springs to improve and increase amount of spring water flow (Refurbish Pools).

Strengthening the resilience of the mangroves by improving shoreline infrastructure will provide a buffer to preserve habitat of fish, mud crabs (see **Figure 16** of picture of small size catch of mud crabs), birds such as gogosina (*sterna sumatrana*), Gogo-uli (*sterna fuscata*), tuli (*Heteroscelus incanus*), matu'u (*heron ardec sacra*), and manumea (*Didunculus strigirostris*) that feed both on fish and other marine life and forest flowers, and fish, and protect coral from climate change – induced sedimentation. Without intervention or implementing any improvements, it is feared that the village will lose this mangrove system, as the mouth of the lagoon will (**Figure 29**) continue to widen – admitting more large waves and altering balance between saltwater from the ocean and fresh water in the lagoon. Currently the mangrove trees are less dense and some of the mangrove trees are uprooted and dying (**Figure 30**). Trees on coastline have their roots undermined and become unstable that they will just fall and get washed away by the tide or waves. Tree roots help retain the soil from getting eroded or washed away. Reinforcing shoreline with a low rock revetment will and reclaiming the area will restore resilience of shoreline against erosion. Other important factors of benefit from an increased resilient shoreline are: it protects the three fresh water pools behind the mangroves and settlement land from seawater inundation. The pools are very useful to the village for bathing and sometime providing for drinking.

No.	Pools	Threats	Remedies
1	Vaiavii	<ol style="list-style-type: none"> <li>1. Sea undermines concrete wall</li> <li>2. Spring partly blocked</li> <li>3. Mud build up at bottom of pool.</li> <li>4. No area restricted for drinking water.</li> </ol>	<ol style="list-style-type: none"> <li>1. Build rock retaining wall</li> <li>2. Re-excavate and clear eye of spring</li> <li>3. Remove mud and fill bottom of pool with smooth river rocks or gravel.</li> <li>4. Refrain from using water for drinking as water is not treated.</li> </ol>
2	Vainui	<ol style="list-style-type: none"> <li>1. King tides get over pool wall &amp; flood pool with seawater</li> <li>2. Spring partly blocked by dirt and mud</li> </ol>	<ol style="list-style-type: none"> <li>1. Raise level of concrete wall 1 meter above high water level. Renew concrete wall.</li> <li>2. Re-excavate and clear eye of spring</li> </ol>

		3. Mud build up at bottom of pool 4. High sea level undermining concrete wall	3. Excavate and remove mud and replace bottom of pool with smooth river rocks or gravel. 4. Extend shoreline protection using rocks around pool 1 meter above high water mark during king tide.
3	Vaitoa	1. Pool is well kept and maintained 2. Mud infiltration into pool 3. Concrete wall repair on sea side. 4. Drain to sea partly blocked by fill materials.	1. Continue upkeep of pool. 2. Dig out mud and fill bottom of pool with small river rocks. 3. Carry out minor repair to concrete wall. 4. Clear pool discharge drain into sea

Vainui pool (**Figure 20**) is closest to sea and sea level rising and frequent king tides often fill the pool due with sea water because the tide level is higher than pool concrete walls. This has stopped village from using the pool which was ones used by the community not only drinking and bathing but also for baptism service by one of the local church denominations. Wall of this pool needs to be raised at least 1 meter above the highest recorded king tide level.

<b><i>Outcome 4: Protection of eco-systems that buffer the community from climate change risks made more economically sustainable.</i></b>	
Output 4.1	Development of an Eco-Tourism Plan, aimed at generating economic incentives for protection of eco-systems that buffer the community from climate change impacts (ETP).
Output 4.2	Development of a seawater fish farm not only for economic incentive but for awareness and education community and children from kindergarten and primary school for sustainability (Fish Farm).
Output 4.3	Identify record, protect and restore historical sites such as first LMS Missionary John Williams first home in Samoa and his old vessel that sunk in the lagoon (Historical Sites). <b>(not climate change related, but included for completeness of vision)</b>
Output 4.4	Clean up Swamp and Wetland for future development of a freshwater fish farm (tilapia) for economic return (Wetland).

#### 5.4 Project Schedule – Fig. 4

		May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Dec-09	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	
No.	Tasks	Months	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	Submit Proposal																									
2	UNDP evaluate proposal																									
3	Finalize Agreement & Funding																									
4	Planning																									
5	Consultation with SP Committee																									
6	Prepare infrastructure designs																									
7	MNRE PUMA Consent																									
8	Material Supplies																									
9	Construction Prices																									
10	PS Committee Approvals																									
11	Output 1.1																									
12	Output 1.2																									
13	Output 1.3																									
14	Output 2.1																									
15	Output 2.2																									
16	Output 2.3																									
17	Output 3.1																									
18	Output 3.2																									
19	Output 3.3																									
20	Output 3.4																									
21	Output 4.1																									
22	Output 4.2																									
23	Output 4.3																									
24	Output 4.4																									
25	Reporting of VRA & IAS																									
	Baseline 0																									
	Report 1																									
	Report 2																									
	Report 3																									

### 5.5 Risk and Barriers

The main risks and barriers which hinder progress to implement improvements to reduce erosion of coastline which in has affected mangroves, eco-systems and coral reef:

**Table 4: Risks & Barriers and Suggested Solutions**

No.	Risks & Barriers	Solutions
1	No shoreline protection to stop erosion & area is low lying.	Construct shoreline protection or barriers and reclaim land that was eroded over the years.
2	Lack of awareness & understanding by community on problem and identifying cause(s) & solutions within village to enable whole community to be behind project	Have consultations and workshops inviting representatives from MNRE, UNDP, etc to participate.
3	No management plans to guide effort to protect and improve management of coastal zone.	Prepare management plan involving community in developing of plan.
4	Declare mangrove & coral reef as special management area.	Steering Committee to hold consultations with entire community including land owners to develop SMA plan.
5	Enforcement of plans	Council of chiefs to enforce as part of village activities.
6	Land acquisition	Involve stakeholders which include land owners.
7	Resources – funding, labor, etc.	UNDP and Aussie Aid to provide part of funding. Village

		provide in kind assistance for materials (rocks, fill materials) and labor.
8	Sustainability of program	Management plans will provide procedures for continuation. Get commitment of Community and partnering agencies such as MNRE, UNDP, etc. Use this project as a model for whole island.
9	Families encroaching mangrove area	Village Council to enforce stopping of this action.

## 5.6 Project Management

### 5.6.1 Management Structure

The management structure of project is set up as shown in the Communication Flow Chart in Appendix 2. Project Steering Committee is in charge of project with Project Manager/Consultant managing the entire project. Project Management/Consultant technical team include Environmental/Civil Engineer and other expertise needed from time to time. Curricular and Terms of References of Project Manager/Consultant and Environmental/Civil Engineer are given in Appendices 3, 4, 5 and 6. Committee provides direct communication with funding agencies; UNDP counterpart. Consultants reports to PSC for all activities.

### 5.6.2 Relationship and Responsibilities of Proponent and Project Partners

Proponent is the Project Steering Committee acting on behalf of the entire community. Committee is the core management body of the project.

**Partners include:** Financing agencies (UNDP & Australian Government Aid Program), MNRE, PUMA, MWTI, Samoa Tourism Authority, Ministries of Education, Schools, Church denominations, Ministries of Public Health, and Fasitootai community at large. Community include different sectors of the village from council of chiefs, women committee, youth, young women (aualuma), untitled men (aumaga) and churches.

Responsibilities:

- UNDP, which is the main resource and financing partner, provides project support as needed by the proponents
- PUMA, provides development review and environment assessment to provide consent for any infrastructure improvements on shoreline, in ocean or on land. During implementation and construction phase, PUMA will also provide inspections to make sure requirements are followed to minimize environment impacts.
- MNRE (Marine and Wildlife) act as a resource to proponent for the project to provide technical advice on protection of mangroves, coral reef, and eco system, fish and other marine life. Project plans to explore the developing of coral and mangrove nurseries for replanting purposes and audit of birds using the area as habitat and coastline forest and vegetation require scientific and technical know how of MNRE to support proponents. Fasitootai has an existing agreement with Marine department of MNRE to create a marine reserve in Fasitootai waters. Proponent will discuss the agreement with Marine Department for any changes in order to reinforce this agreement to restore fish population and other marine life in the lagoon of Fasitootai.
- STA provides assistance in development of a separate eco tourism plan for the area of project to include developing of mangroves for sightseeing in canoes, set aside beach area, beach fales, bathroom facilities, documenting and developing of John Williams old home and ship sites, clean up of area, and development of advertisement brochures or in STA website.

- Ministries of Education to assist with incorporating in school courses on study of activities that will be generated in the project such as mangroves, coral, replanting, fish farm, etc. This will provide awareness opportunities to children at their very early age.
- MWTI provides requirements and technical information related to drainage designs to minimize direct discharge into project area, and shoreline protection designs.
- Public Health Department to provide assistance with testing of pool water for safety for bathing and drinking. Also to test for any contamination in beach from discharge from land.
- Community of Fasitootai to provide in kind assistance to project.

Partners act as resources to assist proponent successfully implement project in a sustainable manner. With set objectives, outcomes and outputs, progress will be closely monitored by UNDP and other partners like government ministries.

### 5.7 Monitoring and Evaluation Plan

Monitoring of Plan will help determine progress of improvements on ecosystem protection and resilience. This will allow any fine adjustments to the plan if results as expected are not realized. And because continue external funding of the project is contingent on the reporting of successful improvements, it is very important that these indicators are accurately measured and quantified.

We identified below the indicators which will be used to monitor progress of adaptation resilient of mitigations undertaken. These indicators are easy to be measured and quantified. The indicators are divided between:

- The VRA (adaptive capacity),
- The IAS (global environmental benefits)

Reporting period is every 6 months. At reporting period, measurements of the identified indicators are taken and reported. Report includes:

- Measured level of adaptation
- Reasons for any or lack of changes, and
- Corrective actions.

Taking Measurements and Reporting of VRA and IAS are taken every six (6) at the months stated as follows. This is included in the Project Schedule in Figure 4.

No.	Reporting	VRA	IAS
1	Baseline 0	August 2009	August 2009
2	Reporting 1	February 2010	February 2010
3	Reporting 2	August 2010	August 2010
4	Reporting 3	February 2011	February 2011

Continued funding under the CBA program is contingent on the achievements as reported in the M&E report.

**VRA:** Indicate when VRA meetings will be held over the course of the project, and how they will relate to plans for attainment of specific project outcomes. For example, are meetings planned after the completion of certain project activities listed in the tables above?

**IAS:** Indicate which Impact Assessment System (IAS) indicators will be measured by the project – one or more indicators in one or more Global Environmental Benefit focal areas and

one or more each of the livelihood and empowerment indicators. Furthermore, indicate how the chosen indicators will be measured, and include a target value – what the project plans to achieve – for each indicator measured.

Keep in mind that all projects will be required to submit progress reports to access subsequent disbursements of project funds, and these reports will require measurement of IAS AND VRA indicators. Indicate when these measurements will take place.

## **5.8 Vulnerability Risk Assessment**

Consultant conducted a survey of a selected sample representative group of the Fasitootai Community to assess their feed back on their real experiences during tropical cyclones that hit Samoa.

The group were asked three (3) groups of questions; which are:

### **Question 1:**

What happened during the cyclone?

What major impacts did the cyclone had on you, your family, and village during the cyclone?

### **Question 2:**

What would happen to you, your family, and village if there are more frequent cyclones?

How bad is the effect of more frequent cyclones, have on you, your family and village?

### **Question 3:**

What problems or hurdles did you face as you tried to protect your family and villages from these major cyclones?

What preparations did you, family and village did you do to reduce the impact and effects of these cyclones?

Tables 1, 2 and 3 below present the results of Vulnerability Assessment as experienced by each of the representative group of the Community during the major tropical cyclones which hit Samoa:

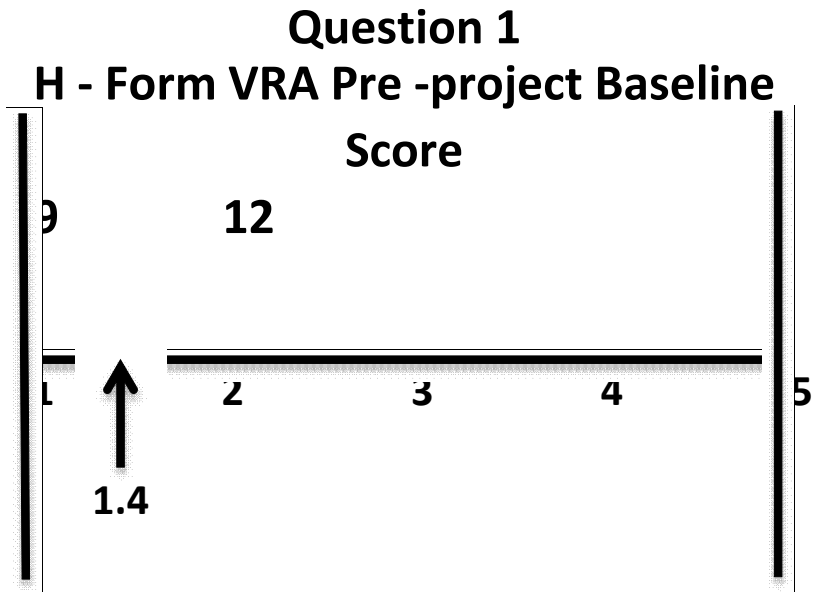


**Table 5:** Vulnerability Assessment during major cyclones

**QUESTION NO. 1 - What happens during a Cyclone? What major impacts on you, family, and village during a major cyclone?**

No.	Name	Very bad	Bad	Moderate	Good	Very Good
1	Leitu Teo		2			
2	Cherisma Melea		2			
3	Elama E. S.	1				
4	Sasue Siou	1				
5	Vitolia Esekia	1				
6	Committee Member 1		2			
7	Committee Member 2	1				
8	Committee Member 3	1				
9	Committee Member 4	1				
10	Committee Member 5	1				
11	Committee Member 6	1				
12	Committee Member 7	1				
13	Afamasaga Lino		2			
14	Ligaliga Esekia		2			
15	Afamasaga Perelini		2			
	<b>Total</b>	<b>9</b>	<b>12</b>			

The score weighted average is 1.4



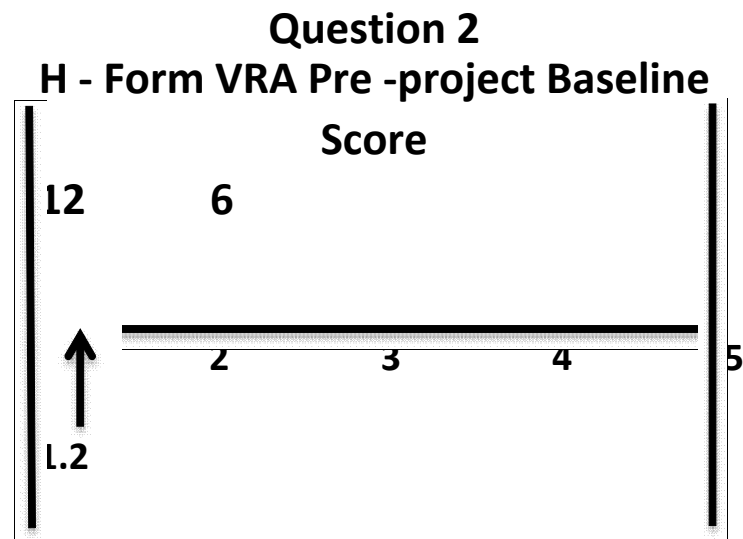
**Table 6:** Survey of Impact on Community from frequent Cyclones

**QUESTION NO. 2 - What would happen to you, your family and community if there is more frequency cyclones?**

**How bad is effect of frequency cyclones have on you, your family and community?**

No.	Name	Very bad	Bad	Moderate	Good	Very Good
1	Leitu Teo		2			
2	Cherisma Melea		2			
3	Elama E. S.	1				
4	Sasue Siou	1				
5	Vitolia Esekia	1				
6	Committee Member 1	1				
7	Committee Member 2	1				
8	Committee Member 3	1				
9	Committee Member 4	1				
10	Committee Member 5	1				
11	Committee Member 6		2			
12	Committee Member 7	1				
13	Afamasaga Lino	1				
14	Ligaliga Esekia	1				
15	Afamasaga Perelini	1				
	<b>Total</b>	<b>12</b>	<b>6</b>			

The score weighted average is 1.2; this is used as baseline.



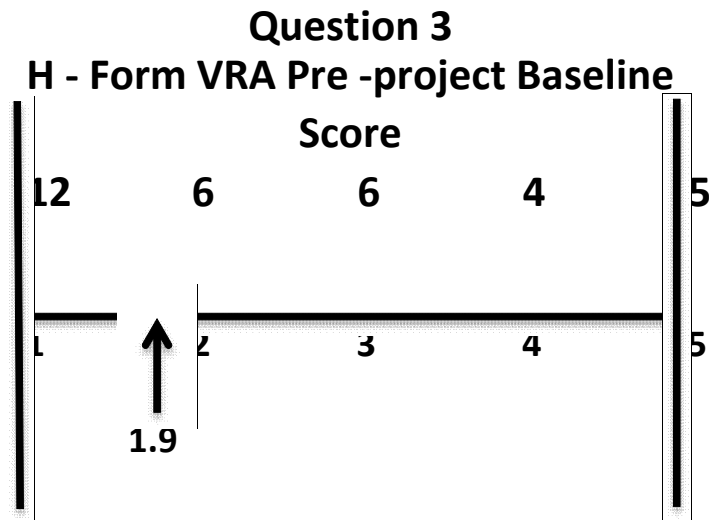
**Table 7:** Survey Results of Problems & Hurdles while seeking Protection

**QUESTION NO. 3- What problems or hurdles did you face as you try to protect your family and village from these major cyclones?**

**What preparation did you, your family and village did to mitigate the impact and effect of frequent cyclones?**

No.	Name	Very bad	Bad	Moderate	Good	Very Good
1	Leitu Teo			3		
2	Cherisma Melea			3		
3	Elama E. S.	1				
4	Sasue Siou		2			
5	Vitolia Esekia				4	
6	Committee Member 1		2			
7	Committee Member 2	1				
8	Committee Member 3	1				
9	Committee Member 4	1				
10	Committee Member 5					5
11	Committee Member 6	1				
12	Committee Member 7	1				
13	Afamasaga Lino	1				
14	Ligaliga Esekia	1				
15	Afamasaga Perelini		2			
	<b>Total</b>	<b>8</b>	<b>6</b>	<b>6</b>	<b>4</b>	<b>5</b>

The points weighted average is 1.9.



**Table 8: Vulnerability Risk Assessment Indicators**

	VRA Questions	Answers
1	Rate recent impact of storm and storm surges & coastal erosion on your livelihood?	Extremely bad.
2	Rate the impact to your livelihood if recent storms surges and coastal erosion led to another 400 square meters of land being lost?	Very bad because it affected mangroves, eco-systems, and coral reef, which has direct impact on fish spawning and population and other marine life that would normally be available for community food supply and commercial sale. For settling, community relocated away from coastline to more safer grounds.
3	What stands in the way of reducing storm surges & coastal erosion risks?  How successful will these activities be in reducing these risks?	Lack of awareness of seriousness and promote effort to find solution; lack of understanding of the nature and cause of problem; unorganized in setting up committee to plan and implement changes; no plans of solution; no funding to implement shoreline protections, replanting of mangroves program; and make area as a special management area. Lack of enforcement of management plans and conservation of waterfront beach sand and stop sand mining.  Will be very successful. But promote community taking ownership on project and make it sustainable. Promote awareness & interest right to school children.
4	Will these activities continue to reduce risks from storm surges, & coastal erosion after project period (and project funding) has concluded? Why or why not?	Yes, properly engineered and constructed shoreline protection infrastructure & coupled with a replanting program and enforced conservation of mangroves, eco-systems and coral reef, will continue to protect and reduce risks even after the 2 years project period.

### 5.9 Impact Assessment System (IAS)

IAS is a Global Environment Facility (GEF) requirement for securing Global Environmental Benefits (GEBs). The two focal areas that will be monitored in this project to measure improvements in Environmental Impacts compared to baseline data are: Biodiversity and Land degradation

**Table 9: Biodiversity & Land Degradation**

#### a. Biodiversity

No.	Indicators	Baseline June 2009	Targeted June 2011	Achieved
1	Number of globally significant bird species protected by project.	0	10	
2	Hectares of protected mangrove areas in the project area	0	2	
3	Percentage (%) of protected coral reef	0	75	
4	Number of the project management plans adopted	0	3	

5	Percentage (%) of the protected fish & marine life reserve	0	50	
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*b. Land Degradation*

No.	Indicators	Baseline June 2009	Targeted June 2011	Achieved
1	Hectares of eroded or degraded land restored.	0	0.5	
2	Hectares of land sustainable under the project.	0	4	

## 6.0 PROJECT COSTS AND FUNDING SOURCES

### 6.1 Total Project Cost and Amount Requested

		Budget Item Description	Amount of CBA	Amount Aust Aid	Amount from Fasiotootai Community		Amt of Other Sources (EU, WB, NZ)	Total
					In Cash	In Kind		
			In Cash	In cash	In Cash	In Kind	In cash	Equal sum of lines to left
Outcome 1 <sup>3</sup>	Output 1.1	Coastal Natural Resource Management	250	250		1,000		1,500
	Output 1.2	Coastal Infrastructure Management Plan	250	250		1,000		1,500
	Output 1.3	Memorandum of Understanding to set up Special Management Area	250	250		1,000		1,500
Outcome 2	Output 2.1	Training, Education & Awareness on Climate Change	2,500 <sup>4</sup>	0		1,000	5,000 <sup>5</sup>	8,500
	Output 2.2	Anti-litre & Waste Management	0	1,000 <sup>6</sup>		2,000	5,000 <sup>7</sup>	8,000
	Output 2.3	Protection against human driven actions	0	1,000 <sup>8</sup>		1,000	2,000 <sup>9</sup>	4,000
Outcome 3	Output 3.1	Infrastructure Reinforcement <sup>10</sup>	25,000	25,000		20,000 <sup>11</sup>	20,000 <sup>12</sup>	90,000

<sup>3</sup> Budgets for Outputs 1.1, 1.2, and 1.3 will cover expenses related consultations with all stakeholders to prepare three (3) management plans listed. Community provides in-kind contribution towards these activities such as meeting venues.

<sup>4</sup> This will be for creating activities for the children, which would be implemented through the public schools as well as the Sunday schools. Would liaise with the Ministry of Education and MNRE Meteorology Division for educational materials.

<sup>5</sup> This additional amount of funding would be larger dissemination and reproduction of successfully produced education and training materials.

<sup>6</sup> This covers expenses related to promoting anti-litter campaign and a village wide cleanup including sorting of materials such as cans, plastics, and scrap metals.

<sup>7</sup> This additional funds would be used to relocate the dump area

<sup>8</sup> Audit of the contaminated area

<sup>9</sup> Help remove contaminated materials from around the mangrove

<sup>10</sup> The budget allocated for Outputs 3.1 and 3.2 is \$104,750. This is derived from an estimate of US\$500/meter of seawall. The estimated length of seawall is 210 meters. This is 100 meters on the east side of the mouth, 60 meters on the west side of the mouth and 50 meters as wave barriers across the front. This totals US\$105,000.

<sup>11</sup> This will include materials such as rocks and local labour. To be determined as the implementation commences. It is noted that the community is dedicated to making this project a success and will contribute in any way possible.

<sup>12</sup> Rest of funding is not solidified or secured but the community is committed to making this project work so will find funds and/or contribute this as in-kind if necessary.

	Output 3.2	Stream Mouth Realignment	7,750	7,750				15,500
	Output 3.3	Mangrove Planting	1,000	1,000		1,000		3,000
	Output 3.4	Special Management Area	2,000	1,000		1,000	15,000 <sup>13</sup>	19,000
	Output 3.5	Refurbish (3) Pools	1,000	2,500 <sup>14</sup>		1,000	4,000 <sup>15</sup>	8,500
Outcome 4	Output 4.1	Climate Change resilient Eco-Tourism Plan	1,500	1,500		5,000	40,000 <sup>16</sup>	48,000
	Output 4.2	Fish Farm	3,500 <sup>17</sup>	3,500 <sup>18</sup>		5,000	40,000 <sup>19</sup>	52,000
	Output 4.3	Historical Sites	0	0		2,000	30,000	32,000
	Output 4.4	Wetland	0	0		1,000		1,000
Project Management	Project Manager		5,000	5,000				10,000
	Civil/Structural Engineer							
	Environmental Specialist							
	TOTAL		\$ 50,000	\$ 50,000		\$ 43,000	\$ 161,000	\$ 304,000 <sup>20</sup>

## 6.2 Fund Disbursement

<sup>13</sup> The initial amount is to set up a basic MPA. The additional money would be used for a biodiversity investigation, surveying, signs, publicity and awareness programme, documentation and publishing. Making it much like a climate change ecosystem park.

<sup>14</sup> Improving of Vaiavii and Vainui on the eastern side of the project site. Each pool will cost approximately US\$4,000. This will protect the pools from the infiltration of salt water and mud from high tides. There will also need to be a digging out the mud inside and put rounded river rocks in the base. We will also liaise with SWA to sample the water and partition Vainui pool for drinking.

<sup>15</sup> This money is allocated for the Vaitoa pool, which has already had some improvement recently by the village.

<sup>16</sup> This part is the monies needed for implementation of the climate change resilient ecotourism plan

<sup>17</sup> This covers a scoping study on how to use the fish farm to protect against climate change and at the same time produce economic benefits.

<sup>18</sup> This will help in building the first stage of the fish farm

<sup>19</sup> This will be used to actually build the fish farm.

<sup>20</sup> Total project cost is USD\$304,000. If UNDP/Australian Aid grant is approved, remaining USD\$161,000 will be sought from other programs. Committee plans to use this same proposal to seek rest of funding from other programs such as EU Community program, New Zealand Community Aid, or raise by community through other means.

The proposed payment process for the CBA portion of the project is as follows (The AusAID will co-finance this payment schedule 1:1 at the same intervals):

UNOPS shall provide funds to the **Local CBO** in an amount of **USD\$50,000, fifty thousand US dollars** according to the schedule set out below, subject to the **Local CBO's** submission of timely and accurate expense reports:

**USD\$15,000, fifteen thousand US dollars (30%)**, upon signature of this Agreement by both parties if the following points are met:

- Submission of the CVs for all personnel that will be engaged in this project including but not limited to the Project Advisor and Engineers.

**USD\$15,000, fifteen thousand US dollars (30%)**, October 2009 if the following are met

- Submission of 1<sup>st</sup> Progress Report, including IAS baseline indicators recorded
- Provision of an initial engineering assessment report including detail design, wind direction analysis and coastal current dynamics
- Submission of the Development Consent (DC) and supporting documents approved from MNRE PUMA
- Awareness raising programme plan complete and submitted;

**USD\$15,000, fifteen thousand US dollars (30%)**, January 2010 if the following are met

- Submission of 2<sup>nd</sup> Progress Report, including IAS and VRA indicators recorded

**USD\$5,000, five thousand US dollars (10%)**, January 2011 if the following are met  
Submission of 3<sup>rd</sup> Progress Report, including IAS and VRA indicators recorded

## **7.0 APPENDICES & EXHIBITS**

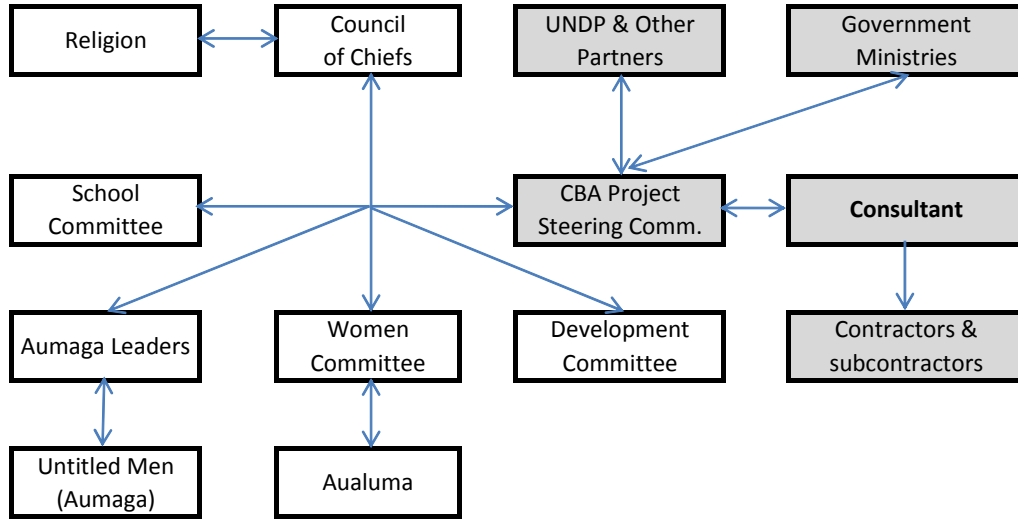


**APPENDIX 1**  
**Project Steering Committee**

<b>No.</b>	<b>Committee Members</b>	<b>Titles</b>
1	Ligaliga Esekia Sione	Chairman
2	Leitu Faulalo	Secretary
3	Leala-i-Salanoa Setefano	Treasurer
4	Vitolia Sione	Women Representative
5	Mama Paulo	Women Representative
6	Olomafu Fanoalii Toleafoa	Youth Representative
7	Lio Paulo	Pulenuu
8	Tauai Mika	Committee Member
9	Anamaitu Pasitale	Committee Member
10	Afamasaga Perelini S. Perelini	Consultant & Committee Member
11	Rev. Iale Ieremia	Minister of CCCS Church & Committee Member

**APPENDIX 2**

### Project Communication Chart



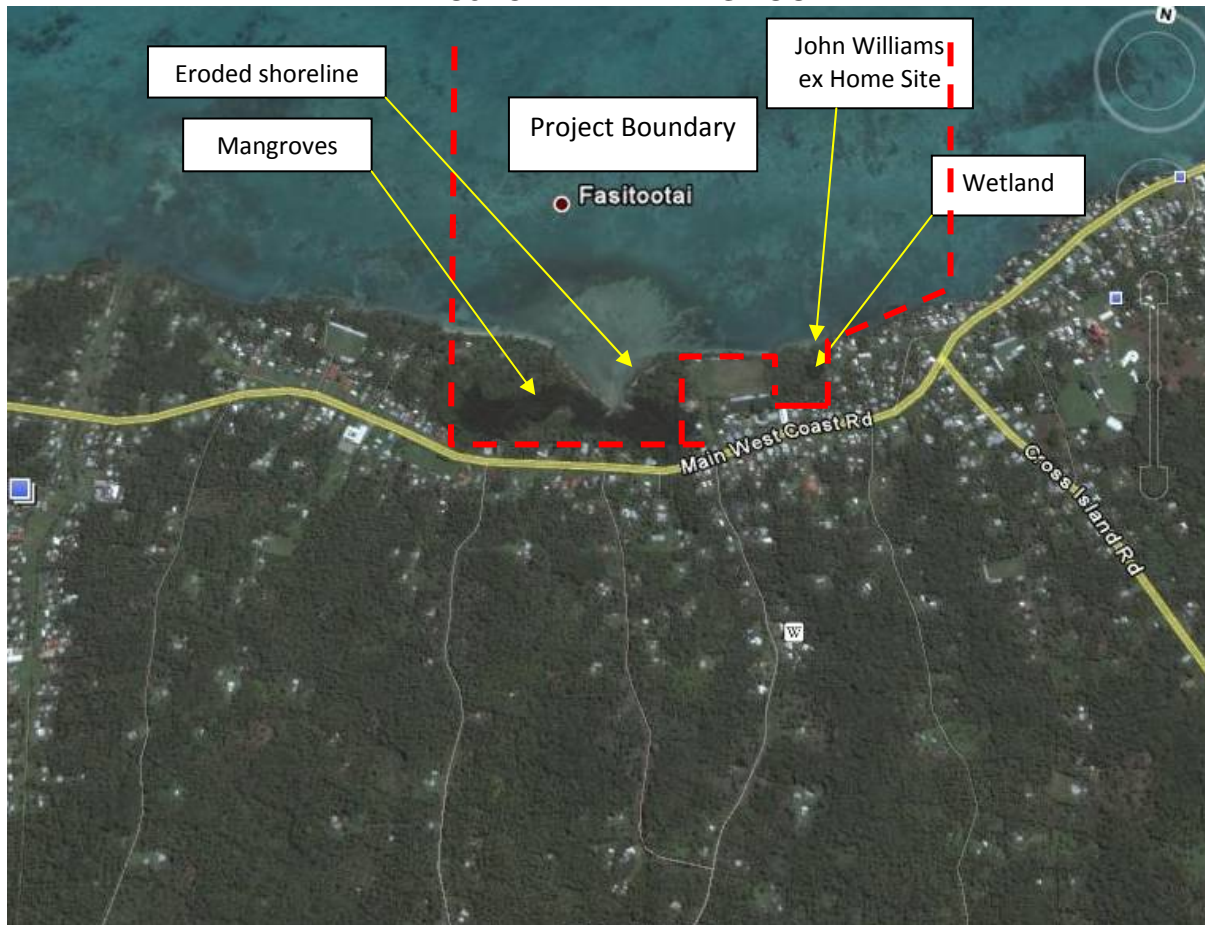
## **APPENDIX 6**

### **Terms of References**

#### **Project Manager/Consultant, Civil/Structure Engineer & Environmental Specialist**

- (A) Project Manager/Consultant – *Afamasaga Perelini S. Perelini*
- Coordinate project with Project Steering Committee and Funding agencies.
  - Provide technical reports to stakeholders of projects.
  - Conduct technical meetings.
  - Coordinate and facilitate consultations with all interested stakeholders and keep minutes for circulations of all meetings.
- (B) Civil/Structure Engineer – *Perelini Tominiko Perelini*
- Prepare design and construction drawings of shoreline protection
  - Prepare specification and sketches of dredging to deepen entrance to mangroves and reclaiming of land that was eroded.
  - Carry out inspection of works.
  - Select materials to use for each of works.
  - Provide quality control tests and inspection.
- © Environmental Specialist – *Sale Faletolu*
- Prepare IEE & EMMP for project
  - Prepare application to PUMA for Development Consent Permit.
  - Monitor works for compliance with EMMP.

**EXHIBIT 1  
PROJECT AREA IN FASITOOTAI**



**Notes:**

1. Project area is mangrove area in middle of village.
2. Length of shoreline of Fasitootai from Leulumoega to Vailuutai is 0.75 km long. Corresponding reef area is 0.75 km long as well.
3. Mangrove area is protected as noted in map. There are very little settlement of people adjacent to mangroves.

**EXHIBIT 2  
SHORELINE PROTECTION, BARRIERS & RECLAIMED AREA  
AT MANGROVE & STREAM MOUTH**



**Notes:**

1. Submerged surged barriers at mouth of mangrove stream, openings between barriers will allow current to flow through but barriers will act a submerged reef to protect shoreline from hurricane generated waves and surges.
2. Deepen area inside barrier line and shoreline protection on either side of mouth to develop a fish farm reserve.
3. Eroded area between shoreline protection and land on east bank of stream mouth is reclaimed with sand dug out from mouth.
4. Darker areas are mangrove covered.
5. Pools

**EXHIBIT 3**  
**PHOTOS OF DIFFERENT SECTIONS OF PROJECT AREA**



Fig. 5 Canoe building in forest reserve



Fig. 6. Drain discharge into mangroves



Fig. 7 Erosion at stream entrance to sea



Fig. 8 Erosion on coastline



Fig. 9 Erosion & undermine of trees



Fig. 10 Erosion of coastline



Fig. 11 Rocks of original coastline now Submerged in water



Fig. 12 Mangroves & mouth of stream



Fig. 13 Stream mouth & view of west side



Fig. 14 Mangroves mouth entrance



Fig. 15 Fauna, Floral, & Medicine Plants



Fig. 16 Kid fishing for crabs in mangroves



Fig. 17 Note depth of water in mouth of stream at half low tide



Fig. 18 Home encroaching mangroves



Fig. 19 Kids swimming in Vaiavi'i Pool



Fig. 20 Vainui Pool



Fig. 21 Vaito'a Pool in Vailuutai



Fig. 22 Sandmining: a problem





Fig. 23 Site of Rev. John William's House Rest partly submerged due to sea level rise



Fig. 24 Kindergarten within Project Site



Fig. 25 Village primary school within Project Site



Fig. 26 Typical Close Up View of Mangroves



Fig. 27 Typical shoreline protection required mangrove area



Fig. 28 Shoreline protection on ocean side at



Fig. 29 Widen mouth of lagoon



Fig. 30 A dying mangrove tree



Fig 31: Kids in Vaiavii Pool

**EXHIBIT 4**  
**Minutes of Meetings & H-forms of VRA Undertaken**

**FONOTAGA A LE KOMITI FA'AFOE O LE POLOKETI I FASITO'OTAI**  
**ASO LULU, ME 6, 2009**  
**POLOKETI – “CLIMATE CHANGE ADAPTATION” (CBA)**  
**Malo Aafaatasi (UNDP) i lalo o le “GLOBAL ENVIRONMENT FACILITY”,**  
**isi malo, fa'apea sao o le NUU.**

**MATAUPU E TALANOAINA**

1. UPU TOMUA A LE TAITAIFONO OLE KOMITI

2. OTOOTOGA OLE POLOKETI

- Faaititia o le a'afia o le SIOSIOMAGA, GATAIFALE, FANUA, ma TAGATA NUU mai i suiga o le tau.
- FESILI – OA SUIGA O LE TAU I SAMOA NEI? (i) tau leai se timu, (ii) faateleina le tele o taimi e tetele ai timuga tupu ai ma lologa, (iii) faateleina le vevela; (iv) alu i luga le maualuga o le sami; (v) tupu soo afa matautia.
- O ai e aafia ai? Vaega eseese ole malosole nuu – FONOA MATAI, KOMITI A TINA, AUMAGA, FAAFEAFAGA MA EKALEZIA, ASOSI, MA LE FANAU.
- Puipuia o togatogo, amu o le sami, fanua ma i le tafieseaa, ma ola o tagata o le nuu.
- Puipuia mai i lea? – SUIGA OLE TAU ma TAGATA.
- 2 nuu ua iai le polokalame: Fasitootai ma Vaovai i Falealili.

3. AUILIILIINA OLE POLOKETI I FASITOOTAI

- i. Puipui ma toe faaolaola togatogo ma amu i le aloalo ma le aau.
- ii. O nofoaga ia o lo'o fai ma ofaga o l'a ma figota eseese.
- iii. Faateleina i'a ole sami ma figota aua le fofoga taumafa ole nuu.
- iv. Sueina ma Puipui manu felelei pe fetolofi o loo fai ma ofaga fanua o o loo soso'o ma le togatogo.
- v. Fausia taligalu i matafaga ua aia.
- vi. Sua mai le oneone e toe tanu ai fanua ua aia.
- vii. Fa'aloloto gataifale ina ia lolofia pea e le sami i taimi uma e oo ile taimi o le pe ole tai aua le faaolaina pea o ia ma figota.
- viii. Toe toto togo fou i gatai.
- ix. Fai se ofaga (nursery) o amu laiti e faaolaola ai na toe toto lea ile aloalo.
- x. Fausia se atinae i'a (FISH FARM) fa'asao e avea ma fa'alauiloa (public awareness) atoa ma le a'oa'oina o fanau ae maise foi le fofoga taumafa ole nuu i aso fa'apitoa.

- xi. Fai se maliliega tuitusia ma sainigalima (Memorandum of Agreement) a le nuu aemaise aiga o loo iai io latou fanua le togatogo aua le puipuia o le toatogo.
- xii. Faasa le toe ta i lalo ole togatogo.
- xiii. Faamama ma toe faalelei vaitaele e 3 o loo tafe tonu I togatogo.
- xiv. Galulue ma pisinisi e iai fale fai taavale o loo sosoo ma le togatogo aua le puipuia o: (a) ole masaa o le suauu leaga ile sami ma togatogo; (e) aveese vali ma atigi taavale mai ile matafaga ona ole oona (lead in metal and paint) o iai e aafia ai i'a ma figota o le sami ma aafia ai tagata e tausasami ai.
- xv. Isi ATINAE aua le manuia o le nuu.
- xvi. Protect Historical Sites - Puipuia ma toe atinae nofoaga fa'apitoa mai I aso ua mavae e iai le fale o le Misionare o loane Viliamu, lona vaa, ma isi mea.

#### 4. OA SAO O LE NUU ILE POLOKETI?

#### 5 TAPENAGA OLE TALOSAGA

- Faatalanoaga ma le komiti, nuu, ma le ofisa a le UNDP.
- Faagata le talosaga ia Me 18, 2009.

#### 6 MATAUPU E FIA IAI SE FINAGALO OLE KOMITI

- i. Vailuutai
- ii. Feagaiga tuitusia mo le puipuia o togatogo.
- iii. Faasao a le nuu mo le gataifale.

#### 7. VULNERABILITY REDUCTION ASSESSMENT (VRA) POO “SUESUEGA O LE FAAITIITIA O LE A’AFIAGA” ...”H FORM”

Aafiaga aupito matautia na afaina ai le tele ole atunuu: o AFA MA GALU MALOLOSII.

Tali le fesili - 1 e oo atu I le 5, o le 5 ua matua afaina ao le 1 e le matua afaina.

#### 3 FESILI

(i) O lea le mea e tupu pea agi se afa tele? O lea ni afaina tetele na oo ia te oe ma lou aiga poo le nuu i lena taimi?

Matua leaga	leaga	feololo	lelei	matua lelei
1	2	3	4	5

(ii) Olea le mea e tupu ia te oe ma lou aiga ma le nuu pea faalau sosoo ona agi ni afa ma galuga tetele? Olea le afaina o le a oo ia te oe ma lou aiga ma le nuu?

Matua leaga	leaga	feololo	lelei	matua lelei
1	2	3	4	5

(iii) O a ni faafitauli ia te oe ao e taumafai e puipuia mai oe ma lou aiga ma le nuu mai i nei afa tetele fa'alausosoo? O iai ni tapenaga a oe ma lou aiga ma lou nuu e faaititia ai le afaina ona ole tupu faalausosoo o afa tetele?

Matua leaga	leaga	feololo	lelei	matua lelei
1	2	3	4	5

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8. FA'AMAE'A LE FONOTAGA ELE TAITAIFONO.

**TABLE A**  
**CLIMATE CHANGE - FREQUENT CYCLONES**  
**VULNERABILITY ASSESSMENT DURING MAJOR CYLONE(S)**

**QUESTION NO. 1 - What happens during a Cyclone? What major impacts on you, family, and village during a major cyclone?**

No.	Name	Very bad	Bad	Moderate	Good	Very Good
1	Leitu Teo		2			
2	Cherisma Melea		2			
3	Elama E. S.	1				
4	Sasue Siou	1				
5	Vitolia Esekia	1				
6	Committee Member 1		2			
7	Committee Member 2	1				
8	Committee Member 3	1				
9	Committee Member 4	1				
10	Committee Member 5	1				
11	Committee Member 6	1				
12	Committee Member 7	1				
13	Afamasaga Lino		2			
14	Ligaliga Esekia		2			
15	Afamasaga Perelini		2			
	<b>Total</b>	<b>9</b>	<b>12</b>			

**TABLE B**  
**CLIMATE CHANGE - FREQUENT CYCLONES**  
**VULNERABILITY ASSESSMENT DURING MAJOR CYLONE(S)**

**QUESTION NO. 2 - What would happen to you, your family and community if there is more frequency cyclones?**

**How bad is effect of frequently cyclones have on you, your family and community?**

No.	Name	Very bad	Bad	Moderate	Good	Very Good
1	Leitu Teo		2			
2	Cherisma Melea		2			
3	Elama E. S.	1				
4	Sasue Siou	1				
5	Vitolia Esekia	1				
6	Committee Member 1	1				
7	Committee Member 2	1				
8	Committee Member 3	1				
9	Committee Member 4	1				
10	Committee Member 5	1				
11	Committee Member 6		2			
12	Committee Member 7	1				
13	Afamasaga Lino	1				
14	Ligaliga Esekia	1				
15	Afamasaga Perelini	1				
	<b>Total</b>	<b>12</b>	<b>6</b>			

**TABLE C**  
**CLIMATE CHANGE - FREQUENT CYCLONES**  
**VULNERABILITY ASSESSMENT DURING MAJOR CYLONE(S)**

**QUESTION NO. 3- What problems or hurdles did you face as you try to protect your family and village from these major cyclones?**

**What preparation did you, your family & village did to mitigate impacts & effect of frequent cyclones?**

No.	Name	Very bad	Bad	Moderate	Good	Very Good
1	Leitu Teo			3		
2	Cherisma Melea			3		
3	Elama E. S.	1				
4	Sasue Siou		2			
5	Vitolia Esekia				4	
6	Committee Member 1		2			
7	Committee Member 2	1				
8	Committee Member 3	1				
9	Committee Member 4	1				
10	Committee Member 5					5
11	Committee Member 6	1				
12	Committee Member 7	1				
13	Afamasaga Lino	1				
14	Ligaliga Esekia	1				
15	Afamasaga Perelini		2			
	<b>Total</b>	<b>8</b>	<b>6</b>	<b>6</b>	<b>4</b>	<b>5</b>