

Vermali and Vermaul Area Councils

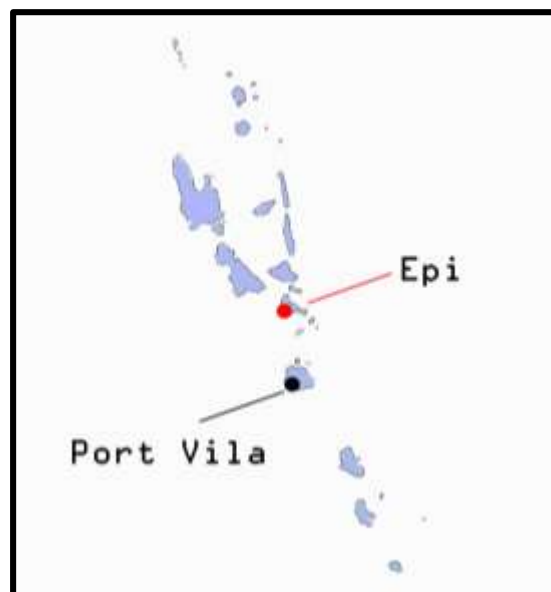
Epi Island, Shefa Province

1 Project context and background

Shefa Province is one of the six provinces of Vanuatu, located in the lower centre of the country and it includes the islands of Epi, Efate and the Shepherds Group. It has a total population of 79,212 people based on latest estimate by Vanuatu Statistics Office and an area of 1,455 km². Its capital is Port Vila, which is also the capital of the nation.

Epi Island is located in the northeast corner of the province. The Epi Sub-District Office, an integral part of the Shefa Provincial Government Council is located at Rovo Bay, in the Vermali Area Council.

At the time of the 2009 Census, the total population of Epi Island was 5,647 people, which includes the population of offshore Lamén Island. There are four Area Councils on Epi: Vermaul, Vermali, Varsu and Yarsu, collectively containing over 25 villages.



Epi receives an abundance of precipitation, ranging from 2.9m annually in the centre of the island to 2.2m annually on the northwest coast. The temperature on the island varies during hot and cool seasons, but averages approximately 24.9°C at the coast and is a few degrees cooler in the centre of the island.

Epi is seasonal and is warmer from November until April. Like the rest of Vanuatu, the island's weather is strongly influenced by the El Niño Southern Oscillation (ENSO) cycles. During the El Niño (warm phase) the country is subject to long dry spells. During the La Niña (cool phase) Vanuatu has prolonged wet conditions. Climate change predictions suggest that the intensification of the ENSO cycle will result in more intense wet and dry seasons. While the island has been affected by cyclones in the past, cyclones rarely hit the island. The last cyclone in Epi was in 1994. Cyclone frequency is not expected to increase with climate change.

Epi is located on active geological faults. While there is no active volcano currently on Epi, nearby Lopevi to the east has been active since 1960, and there are other active volcanoes on Ambrym. As a result, the islands are at risk of tsunamis and earthquakes.

Epi Island is composed of two peaks, one in the centre of the island (Mount Pomare, 833m high) and one in the southeast of the island (Mount Renvi, 684m high). The land from the ridges to the coastal zone associated within the project area has steep slopes and is largely used for agricultural purposes. The interior of the island is densely populated with native forest, with abundant ferns and hardwood trees.

Villages and roads in Epi are located along the coast. The land immediately adjoining the coast is fairly flat, with some exceptions. It is primarily vegetated with grasses, some bushes, and some trees. The coasts of the project area are composed of sandy beaches, with intermittent rocky areas. The beaches vary, some being composed of black sand, with pebble clasts, and some being a mix of white and brown sand with calcified coral and shells.

There is a District Administrative Officer who overlooks the 4 Area Secretaries working on Epi and also promotes development works within the island, based out of Rovo Bay. Shefa Province also employs a plumber, currently based out of Rovo Bay, to construct, repair and maintain the island's many water supply systems.

1.1 Conveyance Infrastructure

There is limited road access throughout Epi. The longest road stretches along the western coast from Moriu Village in Varsu to Votlo Village in Vermaul. This road is increasingly inaccessible due the impact of inclement weather, land erosion, flooded creek beds and decaying infrastructure including collapsed bridges.



Figure 1: The collapsed bridge in the Epi Project site.

The expansion, improvement and relocation of various segments of this road are currently taking place through the PACC project, which is targeting the northern part of the Varsu Area

Council, from Nuvi Village to Vaimali. PACC funds may be used to improve road infrastructure from the northern villages down to Rovo Bay as well.

In South Epi, there is a much smaller road from Port Kuime to Filakara along the western coast, with no linkage to existing road structures in the north. An effort has been made at the village level to create feeder roads in South Epi with hand-held tools and the government has performed scoping missions to analyse the possible support to these efforts.



(Road works completed with hand-held tools in South Epi- 2013)

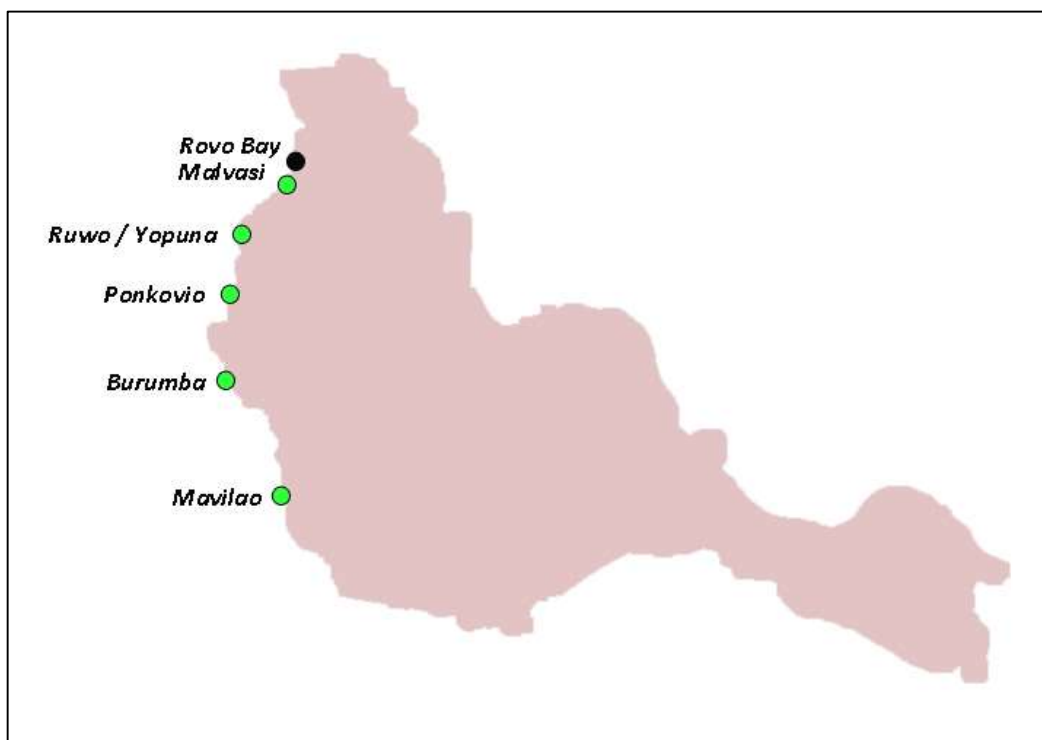
Regular commercial and passenger shipping services access many coastal communities throughout Epi. Lamén Bay is the most frequented port on Epi. The passenger ship “Big Sista” operates a weekly service to Epi, connecting with Luganville, Santo & Port Vila, Efate. It regularly stops in Lamén Bay and Rovo Bay, Epi. There are no permanent wharf structures used on the western side of the island, often cargo is loaded on ships by small boats that carry goods back and forth from the shore. Some cargo ships are able to directly land upon the beaches at ports such as Lamén Bay. Cargo ship operators in Vanuatu often do not follow fixed schedules but rather make trips to islands when there are significant amounts of produce or livestock to collect. An outside investor who operates a copra mill on the eastern side of the island owns a ship called “Epi Dream”. This ship makes regular trips to Port Vila, carrying local produce as well copra from the mill to sell in Port Vila.

There are two airports on Epi Island serviced by Air Vanuatu, one located at Lamén Bay at the northwest end of the island and one at Valesdir, along the central section western coast. An additional airport has been proposed for South Epi and local villages have attempted to clear the proposed site, but Air Vanuatu does not currently operate from this location. The Shefa Provincial Government Council does not endorse the creation of a third airport on Epi Island, but rather is strongly advocating the creation and repair of roads to improve access to the two existing airports.

2 Proposed project site and resources

2.1 Proposed site

The proposed project site covers 2 Area Councils and a number of villages as outlined in the map and table below:



Province	Island	Village	AC	Direct Beneficiaries	Additional Beneficiaries	Total
Shefa	Epi	Malvasi +(Rovo Bay)	Vermali	177	0	177
Shefa	Epi	Ruwo / Yopuna	Vermali	153	0	153
Shefa	Epi	Ponkovio (+Paen, Komerana, Foreland, Jusmasumi, Kudut)	Vermaul	400	0	400
Shefa	Epi	Burumba (+Masou, Burumarmar)	Vermaul	271	0	271
Shefa	Epi	Mavilao (Nambatri, Kalakala, Anduan, Lempeto)	Vermaul	323	0	323
Shefa	Epi	Remaining population of Epi	Yarsu, Varsu, Vermali, Vermaul	0	3883	3883
Shefa	Lamen		Vermali	0	440	440
			TOTAL	1,324	4,323	5,647

The total beneficiaries of V-CAP at this site include 5,647 people.

Additional Beneficiaries Explanation:

- Improved infrastructure installed within Epi's target V-CAP site will have positive impacts for the remaining population of Epi and Lamén islands through enhancing accessibility of the general population to services such as the National Bank of Vanuatu, the Vanuatu Police Force, judicial services, schools, health centres, markets, airports, shipping hubs, sports leagues conducted in Rovo Bay, and a proposed Agro-Forestry nursery and an aquaculture farm for Rovo Bay as well.
- The population of Epi and Lamén in the 4 Area Councils will have more reliable access to these services with the climate proofing of roads, bridges and pedestrian crossings.
- V-CAP component 1.1.1 will also be inclusive of Yarsu and Varsu Area Councils with its Area Council development plan initiative. Resources will be allocated to provincial workers and government department field officers, which will allow them to work and provide assistance to portions of the population not located within the immediate V-CAP working site. The proposed Agro-Forestry nursery and Climate Change youth club & demonstration sites will benefit those outside of the immediate V-CAP site as well.

2.2 Planning and local governance

2.2.1 Traditional System

The traditional Ni-Vanuatu chiefly system is the prominent governance system in Western Epi. The traditional chiefly systems in the target area suffer from a lack of unity due to Epi's tumultuous history. The chiefly system today is influenced heavily by the historic influx of Ni-Vanuatu arriving from other islands to perform manual labour during "Black-birding" era and the forced removal of some local populations from their coastal lands by white settlers who created plantations.

As a result of the forced exodus of the original coastal inhabitants of Epi to the highlands and their recent return to the coast (1960's – 1980's), there are many communities with internal chiefly and land related disputes as the traditional systems and boundaries in place were disrupted by settlers. Locals have attempted to resolve a majority of these land disputes peacefully, first through the Epi Island Council of Chiefs and also through the Vanuatu Lands Tribunal.

The villages in the target area should each have a single Paramount Chief, which is a hereditary title that is normally passed through the male bloodline. Although now several communities in the target area have disputing parties each claiming the title of Paramount chief. A Paramount chief is typically supported by 3 to 5 Assistant Chiefs depending on the size of the village, who lead their tribal family groups. A Chairman, either of a village Development Committee or of the Chiefly Council is often elected by the chief or the communities on merit in order to help organize the community to work.

An island Council of Chiefs, consisting of the major chiefs from the entire island of Epi, has annual governance meetings and has a rotating Chairman who is chosen every few years. Many locals consulted felt that this council is not extremely active in governance matters on Epi.

2.2.2 The Two Area Councils

The Shefa Provincial Government is in the process of establishing 2 Area Councils in the target area, named Vermali and Vermaul. The Area Councils are a representative body formed by villagers within the target area with chiefly representatives, women representatives, youth representatives, disabled persons representatives, church representatives and business house representatives.

There are 2 Area Secretaries employed as field-based provincial officers by the Shefa Provincial Government, living and working within Vermali and Vermaul Area Councils. Their basic duties include the following services: tax collection, voter registration, government awareness duties, Statistics enumeration duties and assisting development projects within their respective Area Councils.

2.3 Brief profile

2.3.1 Marine and coastal areas

Epi Island is lined with a coral reef, which is critical for coastal fisheries. Crown of Thorns Sea stars threaten the reef as well as sediment deposits from upland agricultural production. Despite these factors the reefs still host an abundance of fish, turtles and coral; which are critical to the ecosystem and local food security. In term of large fauna, the waters are home to dugongs, dolphins, sharks and whales.

Fishing is important at a subsistence level for all households within the project site. A number of customary or “tabu” marine managed areas have been established by communities along the coast. These are managed through traditional management systems with decisions made by chiefly councils, customary landowners or selected representatives. There is a range of management systems in place for these sites, often allowing a fishery to recover its harvestable populations.

The active ground disputes in the area threaten the sustainability of traditional or customary “tabu” marine managed areas as disputing parties may disagree over the potential use of the coastal areas for fisheries related activities.

The project site contains two Marine Protected Areas (MPA's). The landowners with the aid of the NGO, Wan Smol Bag and its Marine Monitoring Network set supported the communities to establish these MPA's. The MPA's protect a portion of the reef by outlawing any fishing or harvesting within the area.

Network Monitors actively monitor the coastal marine environment, tag turtles and report their findings at the annual Monitoring Network Meeting.

2.3.2 Terrestrial

Upland agriculture

The target communities generate the majority of their income through agricultural activity. Kava, copra and cacao are the main cash crops that are either sold to agents for export or directly to buyers in Port Vila for domestic use. Historically, copra was a focus in this area but due to fluctuating market prices the local population has been trending away from this commodity over the past decade. The planting and sale of fresh kava to supply the production of “ready-made” kava bars in Port Vila has increased to become the primary source of income generation for many in the area. Peanuts, while a main cash crop for the people of Epi, do not

grow well in this area as the villagers complain that an abundance of rats consistently ruin the harvest here. Cacao is sold to agents who then export the dry seeds overseas.

Common agricultural practices such as slash and burn farming combined with livestock grazing on slopes produces high amounts of sediment. This is primarily due to land surface destabilization as a result of management and farming practices. In some cases, areas with high amounts of sediment generation were observed immediately up-slope from the villages.



(View of a portion of Epi coastline within V-CAP target area)

The sale of local produce such as root crops and fresh fruit contributes significantly to household income as the project area is located close to the Rovo Bay Market which operates bi-weekly on Fridays, on government paydays when locals travel to the Shefa Provincial Sub-district Headquarters to access the bank and take part in sports leagues. A Shefa / UN Women project to support this market began in 2013. There is a small market that operates on Wednesdays in Burumba Village as well.

Little to no value-added production of agricultural products takes place on Epi. Small scale value-added such as the use of solar food dryers to preserve fruits and nuts for future sales has enormous potential on Epi. Cocoa driers are a target priority for the Dept of Agriculture (refer to *Shefa Province Sector Priorities by Area Councils, 2013*) and there has been much discussion of creating both a chocolate factory and peanut semi-processing factory in the area (refer to *Shefa Province Sector Analysis Report and Strategic Development Plan, 2013*).

The sale of livestock also generates significant income for these target communities. The 5 communities in this site indicate that on average they own between 100-200 cattle, over 50 pigs and approximately 100-200 chickens. Livestock is typically sold domestically on the island however some locals ship their cattle to other islands such as Santo and Port Vila for sale.

The sewing of hand-woven mats and baskets also generates a modest amount of income for local women on the island. Tourism does not currently produce revenue for locals within the target area. However, many years ago locals from the area were involved in a community

tourism project in Lamén Bay, where visiting cruise ships would anchor and tourists would spend half a day touring Epi. Disputes involving the management of the tourism committee and ownership of ground eventually forced the tourism project to dissolve.

Water supply

Each village has a variety of means of water supply. These range from:

- **Gravity feed systems** - from "water sources" typically small springs where the water has been contained and then is piped – often over a number of kilometres to the village where there are typically shared taps to provide water to a number of households
- **Tank supply from metal roofs** – very limited metal roofing available in the area, except at schools- which should be equipped with tanks
- **Groundwater** – pumps and wells – very common in the surveyed villages. Some communities reported collecting water from open water pools / springs along the coast.

The provision of a clean and secure water supply year round was a high priority for many of the target communities.

2.4 Other socio-economic information

Health

Within the target area on Epi, there is a 1 Health Dispensary and 3 Aid Posts. The Health Dispensary is located in Burumba Village is staffed by a Registered Nurse and a Village Health Worker. The Health Dispensary provides minor medical care but is also capable of performing more technical medical services such as delivering babies and extracting teeth. The three Aid Posts in the target area are located in Malvasi, Ponkovio & Mavilao. They provide very basic medical care such as providing dressings for sores and basic medicines. They are operated by Village Health Workers who have undergone a training program facilitated by Save the Children. These Village Health Workers receive a small allowance by the Shefa Provincial Government Council as compensation for their work. More intensive medical care requires arranging land transport to Vermali Health Centre in North Epi, where referrals to Port Vila Central Hospital can be made.

Finance

There is only one bank located in Rovo Bay, Epi which is open twice a week.

Security

A police officer was recently stationed on Epi Island in early 2013. Currently a police station and holding cell is planned for construction for 2014 to 2015. The police officer is stationed in Rovo Bay and often does not have access to more remote areas on the island.

Government Extension Workers

A field officer from the Vanuatu Agriculture Department makes site visits throughout Epi and assists the local population with basic agriculture work in the field. He is based close by the target communities and has access to a small motorized scooter for transport.

Schools and education

There are four schools located within the target area:

School Name	Language	Classes	Students
Yevali	English	1 - 6	86
Ecole Public Ponkovio	French	1 - 8	107
Burumba	French	1 - 10	124
Mavilao	English	1 - 6	54

Pre-school classes are attached to most of these schools but many locals in the target area do not enrol their children in pre-school due to inadequate finances and/or their access to the service.

2.5 Other development projects

- The PACC project targets the north and eastern coast of Epi for a Climate Change based infrastructure project relocating and improving a large stretch of road from Nivu to Lamén Bay. Community risk mapping activities involving locals from the entire island of Epi have taken place and actual road works are scheduled to begin towards the end of 2013. An aquaculture (tilapia fish farm) project component of PACC is also planned for Rovo Bay.
- UN Women & Shefa Province have recently begun to implement the Millennium Markets Program, which will support market initiatives in Lamén Bay, Rovo Bay and Varsu, Epi. The project has funded a Markets Officer to attach with the provincial government; however, this position is based out of Port Vila so there will not be an on-the-ground presence.
- Wan Smol Bag, a Vanuatu NGO, has targeted several communities on Epi, with their Turtle Monitor program, which promotes marine community-based conservation efforts.
- There is a small presence of United States Peace Corps Volunteers working on Epi (3 in 2013), focusing mainly on English literacy, computer skills and assisting Aid Posts and Health Centres with WASH initiatives.
- Save the Children supports a network of Village Health Workers operating Aid Posts on the islands through supplies for Aid Posts, medicines and trainings.

3 Overview of key climate change vulnerabilities, threats and priorities for action

The PPG team held 13 community meetings, conducted thorough village inspections and upland and coastal explorations. The stakeholders consulted are outlined in Annex 1.

A wide-range of development and climate related development issues were highlighted at each community consultation. The analysis of outcomes arising from these consultations and site inspections, combined with information gathered from government sources (including

national, provincial and area council initiatives and plans), NGO and development partner projects (current and upcoming) has resulted in the identification of a number of integrated development and climate change related challenges that need to be addressed – with the immediate priority of building long-term resilience to climate change. These vulnerabilities are outlined in Table 1.).

The *Shefa Sector Analysis Report & Strategic Development Plan- 2013*, which was endorsed by the Shefa Technical Advisory Commission and the Council of Ministers (COM) in 2013, identifies key priorities relating to Epi Island. The plan specifies a series of activities relating to building climate change resilience that the V-CAP project could address including, the creation of an Agro-Forestry Nursery in Rovo Bay featuring climate resilient species and repairing Epi river crossings such as the Emiyu bridge and the Nelson Bay River Crossing.

3.1 Vulnerable Groups

During discussions with women, youth, elderly and disabled persons at community level, and with provincial sub-district staff and committees, the primary development concerns they expressed included:

- An increase in the number of cases of malaria, scabies, flue, diarrhoea, food allergies and asthma. Women are especially concerned about the severity of flues and prolonged respiratory illnesses affecting children and elderly persons. During focus group meetings, women also raised concern about eye infections and sight problems which seem to be worse for young children and mothers, which some believe are related to overexposure to cooking fires. Women also indicated that it was difficult for them to access family planning information and supplies given distance to aid post issues. V-CAP interventions in Epi will address health issues specifically related to water, sanitation and environmental issues through a series of training and demonstration programs coordinated through the Rovo Market Climate Change Initiative.
- Women are concerned about erosion of their gardens and reported that “local crops are making people sick now”. In particular they mentioned cassava and taro and the white residue that began appearing on plant leaves about 8 years ago. They are also concerned about fungus on soft fruit and vegetables and their need to learn more about food preservation and handling. They are also worried about fisheries stocks and the fact that some species are dying and don't taste good anymore. Further, women believe that illnesses are increasing because they eat more packaged foods now and that these foods are often past their expiry date by the time they arrive in Epi.
- Youth informants expressed significant concern about a wide range of social, health, economic, environmental and culture issues. Young people consistently mentioned the erosion of traditional family and cultural values which has led to an increase in teenage pregnancy, STIs and increasing use of kava, alcohol and marijuana. Youth expressed concern about the number of young people who do not complete school and lack of educational and training problems available for them in Epi. They said that more and more young people do not respect family and community rules, including marine tabu sites. The youth consulted stressed that young people need opportunities for meaningful engagement in community initiatives, including income generation activities and

expressed their keen interest in learning more about environmental issues facing their communities.

- Like the youth, women described their concern over the breakdown in family and community values, which is resulting in children of all ages not respecting their parents, teachers or community leaders. Mothers say they are worried and frustrated and don't know what to do to make their children listen. It was suggested that parents be given opportunities to learn more about managing their children and finding opportunities for young people to help with community work.
- Women talked about the critical importance of the Rovo Bay and other local markets, including the Lamén Bay market and also a small market located in Burumba village, as the primary source of income to support their families. However, funds derived from market sales is currently restricted due to the high cost of road and sea transport from gardens to market outlets, particularly for villages located furthest from markets and where feeder roads from village to gardens are longest and/or in poor repair. Women also noted that the market building in Rovo Bay is over-crowded and that there are no cooking facilities available. As such, they are unable to meet the growing demand for cooked foods, which provides the highest profit. They reported that monies earned from market sales are given to husbands and are not always used for children and household needs. Women expressed strong interest in learning more about household and financial management and other sources of income. These concerns are addressed through the V-CAP Rovo Bay Market Development and Climate Change Training and Resource Centre Project Initiative (see Activity Sheet below).



(Mother and child in Rovo Bay, Epi)

BASELINE: Current potential threats and vulnerabilities – Epi Island from Community Assessment

	Observation / threat	Causes	Risks – without intervention	Potential impacts	Level of threat	Potential adaption activities
Community governance and planning related issues	Climate related disaster impacting on communities	<ul style="list-style-type: none"> - Weather related, i.e. cyclones, storms and unseasonal rain - Lack of disaster management plan at community and area council level 	<ul style="list-style-type: none"> - Communities will continue to be heavily impacted by natural disasters made worse by climate change 	<ul style="list-style-type: none"> - Severe impacts on livelihoods at household, community and Area Council level 	HIGH	<ul style="list-style-type: none"> - Development of Community Climate Change Adaptation Plan - Establishment of Community Disaster Committee - Development and implementation of Community DRR - Link into National Early Warning System - Link to Decentralisation Act Amendment 2014
	Lack of integrated community level planning process to address village development planning and associated systems	<ul style="list-style-type: none"> - Processes not yet established 	<ul style="list-style-type: none"> - Lack of cohesive planning processes impacting on ability to respond to internal and external challenges, e.g. enhancing resilience to climate change 	<ul style="list-style-type: none"> - Severe impacts on livelihoods at household, community and Area Council level 	HIGH	<ul style="list-style-type: none"> - Development of Community Climate Change Adaptation Plan - Establishment of Community Disaster Committee - Development and implementation of Community DRR - Link into National Early Warning System - Link to Decentralisation Act Amendment 2014
Issue: Marine ecosystem/ resource degradation	Coral Reef degradation due to Crown of Thorns Seastars (COTs)	<ul style="list-style-type: none"> - Degraded ecosystems - Removal of COTS predators - Increasing nutrients (?) 	<ul style="list-style-type: none"> - Increasing threat from COTs due to increased larval dispersion 	<ul style="list-style-type: none"> - Continued degradation of coastal ecosystems 	HIGH – VERY HIGH	<ul style="list-style-type: none"> - Implementation of regime to enhance ecosystem health - Monitoring COTS status to understand populations - Active removal of COTs
	Mangrove cutting and	<ul style="list-style-type: none"> - Mangroves used as source of fuel and timber - Lack of appropriate coastal 	<ul style="list-style-type: none"> - Reduction in ability to provide ecosystem services (i.e. coastal 	<ul style="list-style-type: none"> - Severe events will inundate villages / coastal communities 	LOW	<ul style="list-style-type: none"> - Not large areas of mangroves in Epi site

Observation / threat	Causes	Risks – without intervention	Potential impacts	Level of threat	Potential adaption activities	
removal	management regimes	protection, nursery grounds) - Increased coastal erosion	-			
Sediment and nutrient being deposited on nearshore coral reefs	- Poor upland agricultural activities - Logging - Erosion - Landslides	- Continued deposition on reefs, seagrass and mangroves systems - Smothering of coral reefs near creeks and river mouths -	- Diminishing quality of coral reef, seagrass and mangroves to provide ecosystem services - Reduction in ecosystem services including fish and other livelihood support	HIGH – VERY HIGH	- Upland erosion control measures	
Coastal fisheries decreasing	- Overfishing - Tabu areas not effective management systems - Lack of planning of marine resource management - Lack of enforcement of laws -	- Continued overfishing and loss of breeding stock and biodiversity	- Reduced ability of coast to meet food security needs of local communities with increasing population	HIGH – VERY HIGH	- Development and implementation of Integrated - Coastal Zone Management Plan	
Coastal issues	Coastal inundation from King Tides and related events	- Increased construction in coastal margins combined with erosion and	- High with increasing certainty	- Water table will become increasingly salinized - Coastal infrastructure will be flooded and degraded	MEDIUM	- Ensuring vegetation of shoreline - Securing alternative water supplies - CC Adaption Planning ensuring re-location of infrastructure assets away from coast
	Areas of coastline eroding endangering coastal infrastructure	- Loss of coastal vegetation - Sand mining from beaches - Inappropriate planning of infrastructure - Lack of maintenance of infrastructure	- Increasing danger – particularly in extreme weather events		MEDIUM	- Ensuring vegetation of shoreline - Securing alternative water supplies - CC Adaption Planning ensuring re-location of infrastructure assets away from coast

Observation / threat	Causes	Risks – without intervention	Potential impacts	Level of threat	Potential adaption activities		
					- Consider options for communities in case of community decision to relocate		
Changes in seasonal weather eroding the coast related to el-nino and la-nina	- Coastal erosion is occurring in unpredictable manner due to season (long-term weather patterns)	- Continued	- Change in wave regimes may potentially impact on the coastal process enhancing erosion in some areas	MEDIUM	- Ensuring vegetation of shoreline - CC Adaption Planning ensuring re-location of infrastructure assets away from coast -		
Land-based issues	-	-					
- Water quality and supply	Water sources for communities polluted	- Livestock in the water sources (pigs, etc.) - Sediment entering water sources from poor upland management	- Continue and become worse under cc scenarios		- Community health impacts, particularly on women, elderly and children	HIGH	- Development and implementation of community agreed plan on upland areas – including water catchments and source - Provision of WASH Training
	Lack of potable water (seasonal)	- Not enough capacity to catch rainwater - Increasing salinization of groundwater - Increasing variability in rainfall - Increasing populations	- Continued water shortages – seasonal - Schools are running out of potable water		- Impacts on human health - Battles between communities over access to water - Continued provision of emergency water supplies	MEDIUM – HIGH	- Installation of additional water storage at schools and in selected villages
	Damage to the water distribution system post natural disaster	- Physical damage to system - No emergency back-up system	- Continued in ability to manage post-disaster - Risk to human health		Not enough water, an increase in health problems following a major storm	HIGH	- Development of DRR Plan and Area Council and Village Level - Climate proof current water systems
- Upland management	Deforestation	- Need for timber and related income	- Cutting continues without replanting		- Forests are currently experiencing deforestation	HIGH	- Development and implementation of upland

	Observation / threat	Causes	Risks – without intervention	Potential impacts	Level of threat	Potential adaption activities
- Erosion and soil management		- Lack of alternative timber	- Erosion gets worse	in the area. Intense storms will further damage forests, resulting in soil instability and increased erosion		- management plan - Nursery to support production of tree saplings for reforestation programs
	Increasing upland erosion issues	- Poor upland management - Agricultural activities - Logging - Erosion of riverbank - Landslides	- Continued erosion - Loss of top-soil - Impacts on marine and coastal ecosystems	- Loss of top soil - Continued impacts on coastal and marine environment - Need to	HIGH	- Development and implementation of upland management plan - Nursery to support production of tree saplings for reforestation programs - Agricultural extension
	Farming Practice caused erosion	- Lack of understanding of alternative practices - Lack of access to different crop varieties	- Continued erosion - Loss of top-soil - Impacts on marine and coastal ecosystems	Several farming practices, such as slash and burn farming, causes less soil stability and an increase in sediment generation and top soil loss	HIGH	Education outreach and distribution of erosion preventing species for erosion control
Agriculture and Horticulture	Changes/difficulties in growing seasons and crop management	- Change in season timing / fruiting - Possible link to climate change reported	- Impact on crop yield - Impact on seasonality	- Potential impact on food security through timing of food production at household level	MEDIUM	- Education outreach - Extension on agricultural species - Identification of climate change resilient crops
	Diseases and pests in agricultural produce	Uncertain, but maybe related to: - Changes in agricultural practices - Introduced diseases - Lack of alternative agricultural crop seedlings	- The problem will continue to get worse with a reported loss of crops of up to 40%	- High impact on food security through food wastage	HIGH	- Education outreach and distribution of climate change resilient crops
	Droughts	- Part of a natural cycle - Increasingly may be linked to climate change	- Occasional crop failure - Food shortages - Starvation	- Not enough water, an increase in health problems	MEDIUM	- Increase system capacity
	Horticulture erosion and	Existing issues that will enhance the impacts of climate		Pigs, cows, goats and chickens are left to graze in	This is a problem at all of	Education outreach and distribution of materials for

Observation / threat	Causes	Risks – without intervention	Potential impacts	Level of threat	Potential adaption activities	
sanitation issues	change		various locations. Often their grazing locations cause problems of soil erosion and sanitary conditions.	the project locations	animal management (fencing)	
Public conveyance infrastructure	Transport – vehicle and walking tracks become useable and dangerous during wet season	Rain and weather affecting roads, water tracks and river crossings - Weathering of road, and related erosion Lack of maintenance	- Roads and infrastructure will continue to degrade without intervention - Road and related infrastructure will be unusable	Lack of access to markets, education,, health and other government facilities Human injury and deaths	HIGH	- Invest in climate proofing roads and related infrastructure - Regular maintenance program - Involvement of island based contractor in maintenance
	Increased Erosion of road sidings	Increased rainfall will increase erosion in steep hillsides	- Roads and infrastructure will continue to deteriorate without intervention - Road and related infrastructure will be unusable	Lack of access to markets, education,, health and other government facilities Human injury and deaths	HIGH	- Revegetation of road sidings
	Damaged river crossings / concrete pavement	Increased rainfall and extreme events will enhance erosion and breakdown of infrastructure	- Roads and infrastructure will continue to deteriorate without intervention - Road and related infrastructure will be unusable	Lack of access to markets, education,, health and other government facilities Human injury and deaths	HIGH	- Rehabilitation of river crossings, bridges, etc
	River crossings present risk to pedestrian traffic (Secondary paths)	Increased rainfall and extreme events made river crossing hazardous to pedestrian traffic	- Disruption to lives of rural communities - Lack of access to education, etc. - Death of children	Lack of access to markets, education,, health and other government facilities Human injury and deaths	MEDIUM	- Build / rehabilitate public walking tracks /
	Ensure road are constructed	Increased rainfall and extreme events damage	- Roads and infrastructure will continue to deteriorate		HIGH	- Ensure appropriate design to ensure “climate proofing”

	Observation / threat	Causes	Risks – without intervention	Potential impacts	Level of threat	Potential adaption activities
	to specifications in line with climate projections	public conveyance infrastructure	without intervention - Road and related infrastructure will be unusable			

4 Proposed interventions

Situations change, project supporter's move on and projects get delayed in starting. Based on this experience, it is recommended that the design of the following recommended projects are carefully reviewed by the NAB and relevant provincial authorities prior to implementation at community level. Given the gap in time between the project design phase and implementation, all proposed interventions also need to be fully reviewed and discussed with local stakeholders during Project Inception.. Expectations, confusion, and requests for additional information can then be addressed by project staff, and the project design adjusted to fit new realities as needed. This initial dialogue with stakeholders and beneficiaries is essential in building support and ownership for future V-CAP activities, which is a necessary condition for sustainability.

Table 1 provides insight into the various adaptation options identified through the community consultations. The following sections provide a framework for the V-CAP response to observed community profiles, baseline surveys, rapid vulnerability assessments and field visits.

In addressing these issues, V-CAP responses will be delivered through:

- Component 1: Integrated community approaches to climate change adaptation
 - 1.1. Integrated CC-Adaptation plans mainstreamed in the coastal zone
 - 1.2 Improved climate resilience of coastal areas through integrated approaches
 - 1.2.1: Increased resilience of coastal ecosystem to climate change, Epi Island, Shefa Province.
 - 1.2.2: Enhanced resilience of terrestrial areas
 - 1.2.3: Climate proofing of infrastructure
 - 1.2.4: Rovo Bay Market Development and CC Training and Resource Centre Project, which is a targeted GESI component of V-CAP.

The proposed activities, baselines, interventions and targets are outlined in Tables 2, 3 and 4 below. The proposed activities are based on an intensive field visit during the PPG mission and follow-up dialogue at the Area Council, Provincial and National Levels. However, a comprehensive Inception phase followed by a targeted information gathering and planning period will ensure the development of a comprehensive program that meets the needs of all stakeholders.

Component 1.1.1: Epi - Area & Village Climate Change Adaptation Planning – Strengthening Village and Community Approaches, Shefa Province, Epi Island -

1.	Thematic area	<i>Integrated CC-A plans mainstreamed in the coastal zone</i> <i>Cross-cutting</i> <ul style="list-style-type: none"> • <i>Gender / special needs groups</i>
2.	Site description	All villages in targeted selected sites in Epi as described in site profile. The focus will be: <ul style="list-style-type: none"> • Epi District Office • 2 Area Councils • Communities within the target site.
3.	Description	Local governance institutions and structures are strengthened to allow for Climate Change Adaptation Strategy to be created and effectively delivered on village, Area Council and District levels.
4.	Rationale – addressing what climate change issue	Problem Identification <ul style="list-style-type: none"> • There are no CC vulnerability assessments / CC Adaption Plans at the village and district levels • Lack of awareness and capacity to integrate CC Adaptation into district level planning • Lack of formal institutional structure to address CC adaption planning processes and implement adaptation measures • Monitoring and evaluation capacity of provincial government is limited. Report writing capacity is limited.
5.	Impact	<ul style="list-style-type: none"> • 5 coastal communities more resilient to CC through implementation of integrated CC-A plans in the coastal zone
6.	Base line	1 of 4 Epi Area Councils in District established (Varsu only) <ul style="list-style-type: none"> • 0 of 4 Area Council 5 Year Development Plans created • 0 of 5 Village Climate Change Adaptation Plans made for target communities • 0 of 5 Community Disaster Committees created in target communities • 0 of 2 Area Councils in target areas have CCA / DRR centers which will also serve as Area Council Office
7.	Activity Output	<ul style="list-style-type: none"> • 5 Community Climate Change Adaptation Plans • 1 District and 2 Area Councils have created 5 year development plans incorporating CC Adaptation & coastal zone management • 5 Community Disaster and Preparedness and Response Plans finalized
8.	Proposed Specific Activities	Planning Phase Local governance institutions and structures are strengthened to allow for Climate Change Adaptation plans to be created and effectively delivered on village, Area Council and district level. Village level Community Disaster Committees to be created in 5 target communities and will be comprised of at least a chiefly representative, woman’s representative(s) so that gender components are considered, village water committee representative, village health committee representative along with

		<p>representation from other development groups / committees in the village so that the CDC may be multi-purpose and can effectively steer the implementation of the various technical components of V-CAP on the village level as well as those of other future projects.</p> <ul style="list-style-type: none"> • Undertake vulnerability assessments at the community level and develop coastal CC Adaptation Plans including coastal zone management plans, • Involve representatives from VMGD and NDMO in undertaking these assessments of disaster and CCA risks, providing any necessary technical input to these CDC's while they create their plans • 5 CDC's from target communities create development plans considering CCA, DRR and ICZM. <p>District level Epi Project Implementation Committee comprised of a representative, most likely the Chairman, from each of the 5 target communities' Community Disaster Committees (CDC's), the 2 Area Secretaries from the project site and the District Administrative Officer along with locally based (Epi Island) government department officers such as the Agriculture Field Officer, Forestry officer, Markets officer, etc. To meet regularly on a quarterly basis.</p> <ul style="list-style-type: none"> • Identify capacity needs of Vermaul & Vermali Area Councils and Community Disaster Committees and develop an institutional development action plan (planning, writing and evaluation) considering inputs from the individual CCA plans created by the 5 Community Disaster Committees • By end of planning phase develop comprehensive project workplan with agreed targets for remainder of project. • Development of a Area Council CC Adaption Plan for Vermaul & Vermauli & cohesive District CC plan for all of Epi Island. <p>Implementation phase</p> <ul style="list-style-type: none"> • Regular meeting of Epi Project Implementation Committee to evaluate the progress of the project implementation against agreed targets • Regular meetings of Vermaul and Vermauli Area Councils to evaluate progress of Area Council Development Plans during implementation phase • Implementation of the institutional development plan for project area on Epi island • Implementation of the CDC Plans at the village level • Village small grant scheme providing support to villages to implement the CC Adaptation and CDC Plans • Maintain an oversight of implementation of CC Adaption Plans and DRM Plans in conjunction with other project components (link to 1.2.1, 1.2.2, 1.2.3) • Monitoring and evaluation of implementation of plans against agreed targets and indicators.
9.	Other Projects	<p>Links with other activities/projects/donors:</p> <ul style="list-style-type: none"> • The PACC project has physically mapped and identified key vulnerabilities throughout the target site. Implementation of some PACC works such as road improvements and soft measures including planting of vegetation will occur within the V-CAP project site as well. Monitoring and evaluation of PACC work to be completed by V-CAP CDC's and Epi Project Implementation Committee. • The Shefa Provincial Government /UNDP Millennium Market project and the established road market committees on Epi Island will also help to ensure outreach to and input from local women. • Reference to Rovo Bay Market Development and Training Centre Project
10.	Implementing	Implementing Agency / reporting requirements and coordination arrangements.

		<p>Coordination and Dissemination</p> <ul style="list-style-type: none"> This component to be coordinated by the Ministry of Internal Affairs through the Department of Local Authorities with delegated responsibilities given to the Shefa Provincial Government Council, NGO's, and VMGD,
11.	Indicators	<ul style="list-style-type: none"> District Level- 4 Area Council Development Plans created for full district of Epi, one each for Vermali, Vermaul, Varsu & Yarsu containing CCA and DRR components (DLA, NGO's, VMGD & Shefa Province) 5 Village Climate Change Adaptation Plans created for 5 target communities by CDC's (VMGD, NGO's & Shefa Province) 5 Community Disaster Committees created in the 5 target communities which are responsible for the implementation, monitoring & evaluation of Village Climate Change Adaptation Plans (MoIA – DLA / NDMO / NGO's) to collect data 2 CCA / DRR centres which will also serve as Area Council offices either constructed or improved within Vermali and Vermaul, Epi.
12.	Benefits	Supporting the local governance institutions to plan for CC Adaptation at district, area council and village level will considerably mitigate the possible adverse effects sustained through the effects of climate change. It will also allow target communities and local government to take ownership of the V-CAP project, increasing their capacity to manage and implement future development projects as well as to effectively monitor and evaluate the project to ensure maximum efficiency.
13.	Gender	Mandate from the National Government concerning the formation of Area Councils to include representative members for Women, Youth and People with Disabilities. These Area Council representatives will be part of the CCA planning process at local level and will be actively involved in monitoring and evaluation of CDC plans to ensure that they effectively cater to the needs of women, youth and the disabled.
14.	Environment	<p><i>Is there a need for IEE, EIA? Actions proposed / screening needed?</i></p> <ul style="list-style-type: none"> No
15.	Risks and Assumptions	<p>Risks</p> <ul style="list-style-type: none"> The possibility that internal community disputes involving chiefly titles or land ownership may pose challenges or have adverse effects on project implementation and formation or functioning of the Epi Project Implementation Committee and/ or the village level CDC's. <p>Assumptions</p> <ul style="list-style-type: none"> Community representatives will be willing to participate in the Epi Project Implementation Committee, CDC's & Area Councils and are actively engaged development and implementation of proposed initiatives.

Component 1.2.1: Epi - Increased resilience of coastal ecosystem to climate change, Epi Island, Shefa Province.

	Thematic area	<ul style="list-style-type: none"> • Project component 1.2.1 • Cross-cutting - Gender / special needs groups and Youth
2.	Site description	West coast Epi island as described in site profile. The marine areas to include near shore marine systems including coral reef, seagrass beds and associated systems.
3.	Description	<p>The focus of these activities will be to build village, community and area level Integrated Coastal Zone Management Adaptation Plans to enhance resilience of coastal ecosystems to climate change.</p> <p>A particular focus will be ecosystem based management, including fisheries management practices, strengthening evidence-based management of Tabu Areas, supporting Community –Conservation Area establishment and undertaking specific activities undertaken to reduce pressure on marine ecosystems (e.g. Crown of Thorn Sea-star (COTs) removal and review of current fishing practices).</p> <p>This project will be achieved through a comprehensive baseline assessment of the marine and coastal environment, dialogues and consultations with key stakeholders including traditional owners, resource users, and representatives from government agencies.</p> <p>A comprehensive International Coastal Zone Management Adaption Plan (ICZMAP) will be developed with clear goals towards monitoring, implementation, and evaluation. The ICZMAP will then be implemented.</p> <p>It is anticipated that elements of this plan will include:</p> <ul style="list-style-type: none"> • Education and outreach to fishers and coastal users, with particular focus on ensuring that women are activity engaged in training programs • Encouraging the participation of youth in the removal of COTs • Development of alternative income activities • Installation of Fish Aggregating Devices (FADs) to enhance offshore fishing.
4.	Rationale – addressing what climate change issue	<p>Problem Identification</p> <p>Evidence shows that a healthy marine ecosystem will be more resilient to climate change. Yet the marine ecosystem on the west coast of Epi Island is degraded due to:</p> <ul style="list-style-type: none"> • Changes in wet season precipitation will result in an increase in the generation of sediment. Sediment is ultimately transported to the coast, where it increases water turbidity and smothers coral reefs and seagrasses thus degrading marine ecosystem health; • Ecosystem degradation and over exploitation has resulted in a reduction in fish catch and size, thus decreasing ecosystem resilience to climate change; • Ecosystem health has also been degraded (this is due to factors such as overfishing, crown of thrones starfish and an rapid growth of white encrusting species overgrowing and smothering coral, thus reducing the resilience to climate change) which will exasperated with additional stressors caused by climate change.

		<ul style="list-style-type: none"> Potential additional changes including ocean acidification and increasing temperature stress will also enhance the pressures on the health of the marine and coastal ecosystem.
5.	Impact of proposed activity	<p>Outcome:</p> <p>Increased resilience to climate change through healthier marine ecosystems supported by an increase in the number and size of Tabu Areas and CCAs proposed and supported by local communities with active management activities to enhance ecosystem resilience.</p>
6.	Base line	<p>Identify baseline and any additional baseline information needs</p> <ul style="list-style-type: none"> There are five coastal Tabu areas and two CCAs within the project site Coastal water is degraded by sediment leading to enhanced turbidity; Reef health is impeded by large sediment deposits The reefs are being degraded by high numbers Crown of Thorn seastar Local communities report an encrusting “white sponge” smothering corals adhering to corals to the reef Fish catch is decreasing, and The quantity and quality of the marine species has decreased due to over fishing.
7.	Proposed specific activities	<p>Break down of specific activities</p> <p>Planning Phase: Issue identification, intervention identification and planning</p> <ul style="list-style-type: none"> Field staff will be appointed to support and facilitate community dialogues, baseline development and outreach training session held to engage the community in the marine monitoring project Baseline surveys will be completed by Department of Fisheries and Technical Specialists Development of Integrated Coastal Zone Management Adaption Plans (ICZMAP),and Identification of suitable locations for expansion of the Tabu system and the creation of additional LMMAs and CCAs. <p>Implementation Phase: Implementation of specific interventions</p> <ul style="list-style-type: none"> ICZMAP will be implemented LMMAs, Tabu areas and CCAs will be refined and management plans will be developed and implemented Field staff will establish a program of marine ecosystem education for the fishers, including women Specific programs and activities will engage the youth in activities such as removal of Crown of Thorns Seastars The Youth Club will seek to create innovative programs to engage and educate the youth, and Field staff will work with current turtle monitors to support community initiatives to manage marine resources. <p>On-going: Monitoring and Evaluation</p> <ul style="list-style-type: none"> Develop, implement and evaluate annual work plans together with local communities Undertake community monitoring of Tabu areas and CCAs Turtle Monitors, include female monitors will partake in the Monitoring Network activities, including One Small Bag’s annual conference, and the sub regional Monitoring activities Trainings/educational programs for the fishers including women and youth will be held at least twice a year as per the annual plan, and A specific focus should be monitoring marine ecosystems following natural

		disasters to assess the resilience;
8.	Activity output	<p>Proposed specific outputs of activities</p> <ul style="list-style-type: none"> • Trainings for male and female fishers on the value and importance of establishing marine and coastal management. Proposed training topics may include: fisheries and conservation areas, marine conservation valuation, endangered/protected species management and invasive species detection; • Identification of suitable Turtle Monitors for the site, including women of all ages • Youth club and women’s group trainings on marine ecosystems, marine management practices, endangered/protected species, and invasive identification • The establishment of at least two more marine CCAs • The refinement of the boundaries of at least five more marine Tabu areas to incorporate resilience • Increase in the number and size of fish populations, and. • Assistance linking Epi Island communities into the national LMMA Network.
9.	Indicators	<p>Baseline and performance indicators to be used to monitor that activity and/or output – indicating source of data and entity responsible for collection and monitoring of that data.</p> <ul style="list-style-type: none"> • Baseline biodiversity, habitat and fisheries surveys based on adapted Reefcheck and other suitable methodologies • Development of 5 Integrated Coastal Zone Adaptation Plans approved by the national, provincial and local governments • Increase the size of CCAs by 100% • Enhanced Tabu Area Management Plans for 5 existing tabu areas • Link at least two of the LMMAs to the national Marine Protected Area (MPA network) • Increase in fish catch and fish size as evidenced by repeated detailed base-line surveys, and • A reduction in the number of Crown of Thorn Seastars.
10.	Other Projects	<p>Links with other activities/projects/donors (current/potential)</p> <ul style="list-style-type: none"> • Links to Turtle Monitoring Network • Link to MACBIO – GIZ/ IUCN
11.	Implementation	<p>Coordination and Dissemination</p> <p>This component of the project will be implemented by a Field Officer appointed by the Project Implementation Unit (PIU) together with the District Officer (DO) who will act as a direct counterpart to the District level administration of Epi Island.</p> <p>International and national specialists on marine ecosystems control will be appointed to lead and assist in the development of the planned interventions. A period of two weeks in Epi will be required to undertake baseline surveys and ICZMA Plans with local stakeholders.</p> <ul style="list-style-type: none"> • In addition, support will be provided to the District Officers of the Department of Fisheries to coordinate delivery of these activities with their agency work plans. • PACC Project

	<ul style="list-style-type: none"> links will be established with relevant nongovernmental organizations, such as Wan Smol Bag, to engage them in education processes. <p>A Field Officer (50% time) will be appointed to coordinate the delivery of this component. Their role will include:</p> <ul style="list-style-type: none"> Initial planning and consultation with local communities Facilitating initial assessments with expert consultant and communities and development of plan Supporting community training for fishers Working with District /Provincial Fisheries Office for planning and deliver training Using GESI strategies to ensure full engagement of women and youth and develop and implement specific activities for these beneficiaries.
12. Outline Terms of Reference	<p>TOR to be developed for national specialists on marine science.</p> <p>One Field Officer will be employed at a half time basis for at least 2 years. The duties of this person will include:</p> <ul style="list-style-type: none"> Planning community training Facilitation for an additional Turtle Network Monitor selection Support a Climate Change Youth Club and organize trainings and programs on marine ecosystems Organize marine education and training for area women Link the LMMAs and the Tabu areas into the LMMA network, Link the LMMAs to the national conservation system through the Department of Fisheries and One Small Bag.
13. Benefits	<p>Expected benefits</p> <p>Enhanced marine ecosystem resilience to CC on Epi Island with additional benefits including:</p> <ul style="list-style-type: none"> Developing more marine conservation areas and Tabu areas, as well as larger marine conservation areas and Tabu areas to: <ul style="list-style-type: none"> Increase biodiversity and ecosystems resilience Increase fish populations through protecting breeding nursery, and feeding grounds Promoting spill over into the non-protected areas, improving the abundance of fish available for harvest Providing opportunities for marine monitoring to assess and identify issues, educational outreach and invasive species mitigation, and Increase the focus for the turtle and dugong conservation and management.
14. Beneficiaries	<p>Description of beneficiaries</p> <p>Through village consultations, the design team were informed that everyone in the area is dependent on the local fisheries. As such, the direct beneficiaries of this project include the entire population of the project area (1,324 people).</p>
15. Gender	<p>Links to Gender Equity and Social Inclusion Strategy</p> <p>This project links to the GESI Strategy by engaging women and youth in customized training sessions. Through hands-on educational programs women will learn about marine resources and sustainable fisheries.</p> <ul style="list-style-type: none"> This project links to the GESI Strategy by engaging women and youth through training programs at the Rovo Bay Training Centre.
16. Environment	<p><i>Is there a need for IEE, EIA? Actions proposed / screening needed?</i></p>

		Not required
17.	Risks and Assumptions	<p>Risks</p> <ul style="list-style-type: none"> • Community members do not engage in training programs and do not adhere to the governance of the LMMAs and Tabu areas • Effects of climate change could kill the reef or severely impede the reef unless action is taken • Lack of desire from communities for LMMA or Tabu area expansion, and • Communities choose not to apply material learned from the training program. <p>Assumptions</p> <ul style="list-style-type: none"> • The success of previous LMMAs and Tabu areas supports the idea that the communities will adhere to the rules and management procedures of additional LMMAs and Tabu areas. • Based on consultations conducted in this project area the design team assumes that the communities being targeted by this project will engage in training and apply the new knowledge offered and will support the development of additional LMMAs and Tabu areas. • Success of previous training projects around Vanuatu and community interests suggests that the trainings will be influential and beneficial in marine ecosystem sustainability.
18.	Prepared by	Virginia Smith

Component 1.2.2: Epi Island - Enhanced resilience of terrestrial areas managed to minimize erosion, provide clean water resources to both communities and ecosystems enhancing livelihoods, Epi Island, Shefa Province.

1	Thematic area	Cross-cutting - Gender / special needs groups and youth
1	Site description	West coast Epi island as described in site profile. The project area focuses on all terrestrial areas bordering on the coastal zone from ridge to the coast
2.	Description	<p>Technical description of the activity/investment</p> <p>The focus of the these activities will be to build village level, community level and Area Council level approaches to enhancing resilience of terrestrial areas managed to minimize erosion, provide clean water resources to both communities and ecosystems, support sustainable agriculture through a planning integrated planning process.</p> <p>These activities will operate at a number of different levels. These include:</p> <ul style="list-style-type: none"> • Village level • Community level (communities may contain a number of villages) • Area Council Level – the two Area Councils <p>This component will address the key challenges identified during PPG field consultations, in particular those issues considered as sensitive and high risk based on the likely impacts of climate change and the urgent priority to build resilience in this area. In particular, this project will focus on the following:</p> <p>Minimizing and upland soil erosion and maximizing coastal protection through</p> <ul style="list-style-type: none"> • Active planting / revegetation of catchments and coasts • Establishing and operating nurseries for breeding suitable species • Development of coastal and upland vegetation programs • Focus planting in sensitive areas(i.e, steep slopes, roads, rivers, coasts and water catchments), and • Establishing erosion management measures around and upland of villages. <p>Supporting provision of secure clean water through:</p> <ul style="list-style-type: none"> • Enhancing dry season water storage through tank provision • Soft measures including catchment management, and erosion control • Hard measures to reduce pollution in catchment through fencing, etc • Securing the water source through appropriate infrastructure, and • Providing emergency and disaster water supply backup. <p>Enhancing catchment management through:</p> <ul style="list-style-type: none"> • Enhancing a planned approach to upland and coastal management • Providing support for plant species to reduce erosion • Providing alternative timber species and sources • Managing cattle and livestock grazing, and • Identifying opportunities for establishment of community conservation and protected areas.

		<p>Enhancing climate resilient agriculture through:</p> <ul style="list-style-type: none"> • Providing agricultural extensions services • Planting of climate resilient species that can withstand heat, drought and disease • Providing climate change resilient species, and • Improving access to markets. <p>An integrated approach to addressing these issues will be achieved through the development of Integrated Upland and Catchment Management Plans (IUCMP). These plans will incorporate specific land management plans.</p> <p>A particular element of this component will support agricultural and forestry education outreach to farmers, including women and youth, through the CC Training and Resource Centre facility established in the District Office Compound in Rovo Bay.</p>
3.	Rationale – addressing what climate change issue	<p>Problem Identification:</p> <p>Changed rainfall patterns</p> <ul style="list-style-type: none"> • Increases in precipitation due to climate change, particularly during the rainy seasons, will result in increased erosion on the hill slopes, resulting in the generation of more sediment • Increases in the intensity of the wet and dry seasons as a result of climate change may increase the risk of major bedload transport events, such as landslides • Current agricultural practices, such as slash and burn farming and allowing cattle grazing on steep slopes, create unstable soil conditions • Increases in upland erosion results in a loss of valuable top soil, and • Sediment being transported to the coast where it increases coastal water turbidity and deposits sediment on the coral reefs. <p>Higher temperatures</p> <ul style="list-style-type: none"> • Wet and dry season dynamics due to climate change will require more climate resilient crops to insure food security, and • Crop diseases are predicted to become more pervasive.
4.	Impact of proposed activity	<p>Outcome:</p> <p>The expected outcome of this component in the 2 Areas Councils on Epi Island will be enhanced resilience of terrestrial upland and coastal areas to minimize erosion, provide clean water resources, establish sustainable agriculture practises by communities and improved ecosystem health all of which is required for food security.</p>
5.	Base line	<p>Evidence has shown that a healthy upland and costal terrestrial ecosystem will be more resilient to climate change, which necessitates improvements to the terrestrial ecosystem on the west coast of Epi Island which is currently degraded due to:</p> <ul style="list-style-type: none"> • Erosion in upland and coastal areas generating substantial amounts of sediment that is washed into coastal waters • Ecosystem degradation and perhaps climate change is severely impacting on agricultural production with up to 50% of crops currently being wasted • Poor water quality is causing disease risks in some villages • Logging, land encroachment, agricultural expansion, etc. thus reducing resilience

		<p>to climate change, which will be made worse with additional stressors from climate change, and</p> <ul style="list-style-type: none"> • Sediment covering large areas of coral reef.
6.	<p>Proposed specific activities</p>	<p>Break down of specific activities</p> <ul style="list-style-type: none"> • Baseline: Develop baselines of issues and threats of terrestrial upland and coastal ecosystems with a particular focus on impacts of climate change on agriculture, water supply, forestry and protected area management and related resources at all six V-CAP sites; <ul style="list-style-type: none"> • Identification of highly erosive sites and factors associated with erosion causation • Field Coordinator appointed to coordinate baseline, facilitate community planning and support implementation • Planning: In conjunction with project partners identify suitable approaches to enhance catchment and upland management <ul style="list-style-type: none"> • Develop Integrated Upland and Catchment Management Plans (IUCMP) through the use of participatory approaches that integrate forestry, agriculture, water resources and traditional management regimes at village, community and areas council level that identify time-bound actions for long-term management including tabu and community conservation areas. • Survey of area to identify focus areas for erosion conservation, and. • Develop plans for the demonstration garden and nursery linked to the Rovo Bay Climate Change Training and Resource Centre. • Implementation of Integrated Upland and Catchment <i>Management</i> Plans including nurseries, agricultural training and extension, provision of climate-resilient crops, though development of time bound annual work plans. <ul style="list-style-type: none"> • As part of the implementation of IUCMP develop specific cooperative programs with forestry, agriculture and water resources agencies to deliver an agreed series of comprehensive work plans with time bound outputs to be delivered in conjunction with Field Officers, Area Council and appropriate provincial officials. • Establishment of the demonstration Training Garden and Nursery at Rovo Bay District Office. The Training Garden will grow grasses for slope stabilization, saplings for re-forestation and climate change resistant crops to be disseminated to the communities for their individual farms. • Farmer, women, and youth (via the youth club) outreach training and education Trainings will include topics, such as: <ul style="list-style-type: none"> ▪ Sustainable land management in the uplands ▪ Sustainable land management in the lowlands ▪ Climate change resistant crops and farming practices • Develop and disseminate erosion control materials; such as, stabilizing grasses and tree saplings. • On-going- Monitoring and evaluation: <ul style="list-style-type: none"> • Monitoring, evaluation and work planning will be based on the IUCMP prepared in Year one, and annual participatory reviews will identify progress and lessons learnt to be incorporated into the workplans for the following year • Survey the forest villages to assess the amount of forested are (initial period and month 40) • Survey the villages to see if there are shifts in farming practices (annual review / scorecard) • Assessments of the size of the sediment deposits at the reef and coastal water turbidity (Marine Network Monitors)

		<ul style="list-style-type: none"> • Monitor implementation of the plan, and will seek to expand the areas, and. • Monitor the occurrences of landslides.
	Activity output	<p>Proposed specific outputs of activities :</p> <ul style="list-style-type: none"> • Trainings for community farmers, including women on better farming practices to reduce erosion and conserve top soil • Distribution of resources to community farmers to facilitate top soil conservation practices • Establishment of a Training Garden and Nursery to house saplings, stabilizing grasses and climate change resistant crops • Youth club trainings on better farming practices to conserve top soil • Women’s trainings on better farming practices to conserve top soil • Reduction in the farming practices resulting in upland farming practices to reduce sediment transport. • Halting the building of sediment deposits at the reefs and the increase water turbidity.
12.	Indicators	<p>Baseline and performance indicators</p> <ul style="list-style-type: none"> • Baseline biodiversity, habitat and agriculture and forestry surveys based on adapted suitable methodologies • Development and implementation of <i>Integrated Upland and Catchment Management Plans (IUCMP)</i> • Annual IUCMP workplans developed, implemented and reviewed • Establishment of one terrestrial CCA • Enhanced management plan for 1 terrestrial tabu areas • Reduction in erosion and runoff as indicated by decrease in coastal water turbidity • Number of farmers adopting measures to actively reducing sediment run-off • Number of erosion areas along road-sides with reduced erosive potential • Area of upland planted with slope stabilizing species to reduce soil runoff • Amount of forested land in the upland area, and • Number of landslides occurring in areas of highlands.
13.	Other Projects	<p>Links with other activities/projects/donors (current/potential)</p> <ul style="list-style-type: none"> • PACC • Related agriculture sector projects • Related forestry sector projects
14.	Implementation	<p>This component of the project will be implemented by a Field Officer appointed by the Project Implementation Unit (PIU) together with the District Officer (DO) who will act as a direct counterpart to the District level administration of Epi Island.</p> <p>The FO will report to the PIU and act as a direct counterpart to the District level administration of Epi Island. The PO will also establish links with Forestry and Agriculture Officers for Shefa Province and the National level. In addition, the PO will support the establishment of a Regional Training Centre (RTC).</p> <p>International and national specialists on forestry and erosion control will be appointed to lead and assist in the development of the planned interventions. A period of two weeks in Epi will be required to undertake these surveys and develop plans in consultation with local communities. Additionally, they will develop plans for the nursery and training garden.</p>

		<ul style="list-style-type: none"> In addition, support will be provided to the District Officers of the Departments of Agriculture and Forestry to coordinate delivery of these activities with their agency work plans. In addition, links will be established with relevant institutions including Santo Agricultural Research Centre and Farmers Support Association. <p>A Field Officer (50% time) will coordinate the delivery of this component. Their role will include:</p> <ul style="list-style-type: none"> Undertaking initial planning and consultation with local communities Facilitating initial assessments with expert consultant and communities and development of plans Supporting community training for farmers and ensuring women are actively engaged Working with District /Provincial Forestry and Agriculture Office to establish nursery and training gardens for climate resilient crops and erosion prevention plants Developing and implementing specific activities under the auspices of the CC Youth Club to support erosion reduction initiatives, and Supporting establishment of Rovo Bay CC Training and Resource Center facility .
15.	Benefits	<p>Expected benefits</p> <ul style="list-style-type: none"> The project will reduce the amount of erosion from the upland slopes of the site resulting in the following benefits: <ul style="list-style-type: none"> Increase topsoil conservation A healthier coastal marine ecosystems <ul style="list-style-type: none"> Less sediment deposited at the reef Less turbid coastal waters. The project education and outreach will provide male and female farmers with the technical and physical resources to improve their farming practices and promote climate change resilient farming; The project will enhance food security through insuring improved farming practices and promoting climate resilient crops, and The project will enhance household livelihoods through improved quality and quantity of market produce available for sale.
16.	Beneficiaries	<p>Description of beneficiaries</p> <p>Given that all `community members are dependent on the local farms for household consumption and livelihoods, 100% of the population in this target area (1324 people) will directly benefit from this initiative.</p>
17.	Gender	<p>Links to Gender Equity and Social Inclusion Strategy</p> <ul style="list-style-type: none"> This project links to the GESI Strategy by engaging women through training sessions. Through hands-on and locally relevant educational women will learn new farming techniques for sustainable farming. This project links to the Gender GESI Strategy by engaging youth in training sessions and involvement in the training garden and nursery to be located at the Rovo Bay CC Training and Resource Centre. Through a range of e training activities, youth will learn new farming techniques necessary for a sustainable future.
18.	Environment	<p><i>Is there a need for IEE, EIA? Actions proposed / screening needed?</i></p>

		<ul style="list-style-type: none"> • Not required
19.	Risks and Assumptions	<p>Risks</p> <ul style="list-style-type: none"> • Communities are unable or unwilling to engage in planned trainings or outreach. • Communities engage in training programs but do not apply new knowledge and change current farming practices. <p>Assumptions</p> <ul style="list-style-type: none"> • Communities are interested in this type of training, as expressed during project design consultations. • That when individuals within targeted communities are trained to use erosion reducing materials and have access to them, they will utilize these approaches on their farms, and encourage others to do the same. • That the project will be able to demonstrate locally applicable models, and • That erosion reducing measures promoted by this project actually reduce current erosion problems.
20.	Prepared by	Virginia Smith

DRAFT


Proposed V-CAP activity

Component 1.2.3: Epi Island

Improved resilience through climate proofing of selected public conveyance infrastructure (i.e. pedestrian crossings, bridge rehabilitation and road pavement sections) in the coastal zone in at least 9 priority “hot spots” along the PWD planned road rehabilitation project.

No	Category	Details	Map of Epi Island
.	<p>Summary title name</p>		
2.	<p>Thematic area</p>		<p>Climate proofing of river/tributary crossings and public access ways.</p>
3.	<p>Province</p>		<p>Shefa</p>
4.	<p>Site description</p>		<p>High mountainous terrain covered by thick secondary forests and vegetation. Rain water accumulates within catchments and flows through basaltic rock tributary channels- discharging down steep slopes across public roads into the coastal zone below. The bridge pictured below was built during colonial days and has collapsed due to age, wave action, sea level rise and frequent flooding which undermines the foundation and has resulted in structural failure. Road sections with highly eroded side slopes makes it almost unusable..</p>



		 <p>2 road sections will be upgraded by construction of concrete pavement to meet climate proofing standards. 6 concrete pavement crossings will be built across the flooded creek beds to provide easier and safe access during periods of heavy rain. Currently, these river crossing cannot be used by anyone during periods of heavy rain and flooding. The rehabilitation of collapsed bridges will provide safe, year-round access.</p>
5.	Target communities	Mavilao, Burumba, Ponkovia, Malpasi, Rovo Bay, Lamén Bay, Yopuna, Ruwo and Kmerana communities.
6.	Description	Improve the resilience of selected public conveyance infrastructure (i.e., access ways, bridges) in the coastal zone in at least 9 priority river crossing areas along the PWD planned road rehabilitation project. .
7.	Rationale – addressing what climate change issue	<p>People in this area uses the road to travel between villages and public facilities to meet their everyday needs. This includes traveling to and from health, education and employment facilities and village farms. The roads are also used for transport for goods and services to local markets which provide an essential source of family income and facilitate improved market access.</p> <p>The project aims to maintain public network conveyance systems by reducing flood risks associated with climate change that build a more resilience transport sector network while also ensuring safety and access to essential services. This is essentially important women and children and those with restricted mobility.</p>
8.	Impact of proposed activity	Climate impacts such as increased precipitation increase floods which destroy and increases risk to public conveyance systems and impede the flow of both mobile and pedestrian traffic along formed roads. Impassable roads and unusable bridges also impact the flow of goods and services between village nodes and restrict livelihood activities.
9.	Base line	<ul style="list-style-type: none"> The existing constructed western coastal public conveyance system

		<ul style="list-style-type: none"> • The road transports goods and services between villages • Sections of roads has deteriorated due to lack of maintenance • Road constructed of in-situ materials • Road crosses rivers and creek tributaries • Flooded river crossing have in the past endangered public safety particularly children when traversing dangerous river crossings, and • Will compliment and add climate proofing value to the planned PWD road upgrading program which commences in 2015.
10	Activity Output	<p>Improved resilience through climate proofing of selected public conveyance infrastructure (i.e., access ways, roads and bridges). implemented by the Public Works Department) in this coastal zone in at least 9 priority river crossing areas along the PWD planned road rehabilitation project.</p>
11	Proposed specific activities	<ol style="list-style-type: none"> 1. Alak – 105m eroded road section to be upgraded with 4m wide reinforced concrete pavement with safety guard rails Cost = 11,760,000 Vatu 2. Walavia -22m long x 3m wide reinforced concrete pavement river crossing. Cost = 4,400,000 vatu 3. Rovo Bay - 22m long x 3m wide reinforced concrete pavement river crossing. Cost = 4,400,000 Vatu 4. Malpasi - 40m long x 3m wide reinforced concrete pavement river crossing Cost = 8,000,000 Vatu 5. Brisbane - 18m long x 3m wide reinforced concrete pavement river crossing and river bank stabilization with gabion baskets. Cost = 6,100,000 Vatu 6. Brisbane – 25.6m long x 3m wide reinforced concrete and steel bridge rehabilitation. Cost = 19,000,000 Vatu 7. Brisbane - 30m long x 4m wide reinforced concrete pavement river crossing. Cost = 6,000,000 Vatu 8. Pollan - 215m eroded road section to be upgraded with 3m wide reinforced concrete pavement with safety guard rails Cost = 24,080,000 Vatu

		<p>9. Mavilao-40m long x 4m wide reinforced concrete pavement river crossing. Cost = 8,000,000 Vatu</p>
12	Cost of the project activities at Epi	<p>The cost of the Project Activities are as follow</p> <ul style="list-style-type: none"> • 5 No. conc. Pavement river crossing, 1 bridge rehabilitation and 2 road sections upgrading = 91,740,000 Vatu
13	Component Link	<p>This component will link with other project outputs (i.e. 1.1, 1.2.1. and 1.2.2) and support implementation of the V-CAP Gender Equity and Social Inclusion Strategy. It will also work closely with local communities on the implementation of planned activities thereby creating ownership for maintenance and enhancing skills of villagers, especially young people who will be engaged to assist in infrastructure development work.</p>
14	Other Projects	<p>PWD Planned Road rehabilitation project</p>
15	Implementation	<p>Implemented by Public Works using community base contracts.</p>
16	Outline Terms of Reference	<p>Identified Sites: 5 concrete pavement river crossings, 1 bridge rehabilitation and 2 road section upgrading.</p> <ul style="list-style-type: none"> • Conduct site survey/investigation and consult with local communities to ensure they understand and support the proposed developments and address any potential land issues; • Consultation to be done with VTSSP in regard to coordination and facilitating the construction of the project by using IBC or Public Works resources; • Design the appropriate type of crossing in accordance with best engineering practice, standards and codes to address the climate threat and its impacts; • Identify strategies to engage local people in infrastructure developments and maintenance • Implement the designed activity.
17	Contract Packages	<p>To be determined in consultation with, Shefa Provincial Council and PWD.</p>
18	Indicators	<p>5 concrete pavement river crossings, 1 bridge rehabilitation and 2 road sections upgrading works constructed.</p>
19	Benefits	<p>Travel along these public conveyance systems will be safer and the public will be protected from climate related flooding. The project will provide for more efficient movement and flow of traffic along the road with improved connections to private and public facilities and allowing for all-weather, year-</p>

		round access between villages and essential services.
20	Use of Models	<ul style="list-style-type: none"> • Vulnerability Assessment Tools, including specific GESI techniques, appropriate to the given environment were used to determine the impacts and vulnerability of the public conveyance systems to climate change including determining adaptation options of those climate change threats. • Best engineering practice were used to design and recommend appropriate adaptation options to climate change threats. • Case studies and lessons learned from similar island environments in the Pacific were used to determine adaptation options.
21	Beneficiaries	<ul style="list-style-type: none"> • The entire population of the western side of Epi including the communities of Ponkovoio, Burumba, Lamén Bay, Yopuna, Rovo Bay, Malpasi, Ruwo and Komerana.
22	Gender Equity and Social Inclusion	<ul style="list-style-type: none"> • Women could set up local stalls to sell food for the workers at each site during construction; • Women will participate in public/community awareness of the risks associated with climate change threats and risk • Women and children will benefit through improved and safer access to essential services • Youth will be involved in construction activities thereby increasing their knowledge and skills in climate proofing essential infrastructure, including on-going maintenance requirements • Increased access to markets will encourage more women to participate in community businesses in their respective areas and increase sale of market goods.
23	Environmental screening	<ul style="list-style-type: none"> • This project will require environmental approval by the Physical planning of the Shefa Provincial Government. • As the works are rehabilitation of existing infrastructure and EIA will not be required. • Approval will be sought from the Director, Department of Environment prior to the initiation of works.
24	Risks and Assumptions	<ul style="list-style-type: none"> • Flooding of surrounding area • Damage to road infrastructure • Road transport impeded • Public access between public nodes is compromised; • Environmental destruction of surrounding properties, and • Isolation and separation of communities from services and emergency assistance.
25	Lessons learned	<ul style="list-style-type: none"> • The lack of maintenance of the road, river crossings and bridges has impeded the flow of traffic between villages and public nodes • Emergency and safety of the communities has been compromised and has caused fatalities at these river crossings; depends on these road infrastructure • The flow of goods and services have been affected and disrupted; • Unusable roads limits trade between villages and central market places.
26	Total Cost (VT)	91,740,000

27	Prepared by	Nathaniel Bue and Isikuki Punivalu
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Proposed V-CAP Intervention

No.	Category	Gender Equity and Social Inclusion (GESI Component)
16.	Project Title	Rovo Bay Market Development and Climate Change Training and Resource Center Project
17.	Thematic Area	<ul style="list-style-type: none"> • NAPA Adaptation Strategies 6 and 7 • Project component 1.2.2 • V-CAP Project Outcome 1.3: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas. <p>Cross-cutting</p> <ul style="list-style-type: none"> • Gender / special needs groups • Youth
18.	Province	Shefa Province
19.	Site Description	<p>The project site is located within the Vermali Area Council on 11.5 acres of government owned land at the Rovo Bay Sub-District on the western side of Epi Island. This site currently houses a number of buildings including offices for provincial workers, a covered market venue, a courthouse, the Epi Island branch of the National Bank of Vanuatu, two large covered meeting halls and a field sports area.</p> <p>The Rovo Bay Sub-District hosted the Council of Ministers Meeting (COM) in 2013 which led to upgrading of meeting houses in preparation for this event.</p> <p>The Rovo Market currently operates on a fortnightly basis, which coincides with government payday and youth sports day.</p>
20.	Target Communities	This project will target women and youth from 9 villages within the Vermauli and Vermaul Area Councils (including Malvasi, Ruwo/Yapuna, Ponkovio, Burumba and Mavilao communities) who sell agricultural goods and prepared food at the Rovo Bay market.
21.	Project Description	<p>This initiative involves two primary components:</p> <p>i) Climate proofing of the market building at Rovo Bay to address drainage issues, enable catchment of rainwater, prevent erosion of the concrete pad and rain proofing. The project will also</p>

		<p>increase the size of the market to address current overcrowding of vendors (a particular problem during rain events) and allow for the establishment of a new cooking area for the farmer-vendors of the market. This expansion will increase market sales and enable demonstration of smokeless stoves for greater environmental efficiency and improved health (i.e., reduced incidents of respiratory and eye infections in women and children).</p> <p>ii) Provision of training to support women and youth in adapting to climate change through customized, “hands-on” educational programs designed to improve food security, livelihoods, water and sanitation management and ridge to reef land management. These programs will link with and compliment training initiatives described in the Ridge to Reef Land Management Project (and the Local Marine Managed Areas Project In conjunction with the Ridge to Reef Land Management t Project, this project site will also host the Community Training Garden and Nursery.</p>
22.	<p>Rationale – addressing what climate change issue</p>	<p>Problem Identification:</p> <ul style="list-style-type: none"> • One of the objectives of the V-CAP is to climate-proof important public infrastructure in project sites to withstand extreme weather events and resulting spill-over effects to the local economy. The Rovo Market is the primary source of income for women living in the V-CAP Epi Island site and is the established meeting area for youth, sporting events and for the delivery of government, NGO and banking services. Rovo Bay is expected to expand over the coming years to meet the Government’s commitment to locate additional services at the district headquarters at Rovo Bay. • It is anticipated that climate change impacts will intensify, posing a significant threat to market infrastructure and impeding its’ use. The Rovo Market building does not have rain guttering which leads to standing water building up around the periphery of the building which attracts mosquitoes and is eroding the concrete pad. The market also does not any rain protection which limits its use during periods of high precipitation and adds to current overcrowding as perimeter areas are not useable during rainy weather. • Climate change is also affecting the crops grown and sold within the project area, which is forcing an economic loss for market vendors, who are village women. Market vendors can no longer produce the same amount of traditional agriculture product as before due to damage caused by invasive pests, over-cultivation and soil erosion caused by heavy rains, poor farming practises and deforestation. As such, people in Epi require training and support to produce climate resistant crops for household consumption and for cash income. For almost all women in this site area, selling at the Rovo Bay Market is their only source of revenue generation. • The majority of the population has little knowledge about climate change and its predicted impacts. Lack of knowledge and training constitutes a major barrier to climate resilience. The NAPA emphasizes that awareness raising and education are core issues that should be an integral part of any proposed CC

		<p>adaptation project. The lack of human, financial, and technical resources constrains information sharing, education, and knowledge generation on climate change. The Government of Vanuatu recently committed to “push the gender agenda” with respect to improving inclusion of women in climate change resilience efforts (2013 Submission to the UNFCCC).</p> <ul style="list-style-type: none"> • A major factor hindering enhanced CCA knowledge is the lack of agricultural extension services and a central training facility. Currently, there is no premise allocated to host community trainings within the project site, although the District Administrator believes this is a high priority and is prepared to convert an unused building for this purpose. Trainings for climate change resiliency are being organized through the Upland Erosion Project and the Local Marine Managed Areas Project however, they require a central training venue and a dedicated area for demonstration planting and cultivation. • The youth consulted reported a high degree of concern about current and future impacts of climate change and many expressed a high degree of frustration over their inability to be meaningfully involved in community activities due to socio-cultural factors. Young people requested opportunities for training and income generation - the challenge is to find ways to capitalize on youth interest in climate change adaptation while also providing young people with opportunities to learn new skills, be meaningfully engaged in local planning processes and contribute to the development of their communities. Given that income will be a significant motivating factor for most young people, the project will need to find creative ways to provide incentives such as employing youth to remove destructive invasive species, assisting with climate proofing of infrastructure, preparing demonstration gardens and nurseries, teaching school children about climate change etc. • The newly released <i>Shefa Corporate Plan 2014-2018</i> identifies many of these same problems and outlines numerous activities to address CCA impacts and build resilience across the district. V-CAP has been included as a partner, along with other agencies including the UNDP Market Project in the implementation of this Corporate Plan. Of relevance to this initiative are the following: <ul style="list-style-type: none"> ➢ 1.13 Conduct awareness on farming techniques in relation to climate change and distribution of planting materials ➢ 1.15 Conduct awareness and promotion on forming Farmers Cooperatives by developing associations ➢ 1.8 Establish Agricultural nurseries specializing in climate change resilient species with nursery trial species available to distribute to local farmers ➢ 3.3 Conduct training on Agro-Forestry and establish Agro-Forestry Nurseries to improve domestic markets and products
23.	Impact of proposed	<p>Outcomes:</p> <ul style="list-style-type: none"> • Climate proofing of the market infrastructure will create a weather resilient facility to better support income generation for

	<p>activity</p>	<p>female vendors and their families.</p> <ul style="list-style-type: none"> • Water supply to the market place will be improved thereby improving sanitary conditions. The market place will also be expanded to house cooking facilities and the installation of smokeless stoves. This appropriate technology will provide vendors with the option to sell prepared food at the market place (which is in high demand) thereby increasing family income. Smokeless stoves require less fuel and will help to address current respiratory and eye problems in women and children (related to cooking on fires in poorly ventilated, confined areas) if this technology is adopted by households following market demonstration. • Food security will be improved through crop diversification and improved quality of staple foods. By encouraging the use of new crops through trainings, demonstration gardens, market cooking instruction and equipment the project will increase the use and sale of CC resistance crops. The Training Center will distribute grasses and saplings for household and community use to mitigate erosion problems (see the Ridge to Reef Land Management Activity Sheet). • Area-wide CCA knowledge and social capital will be enhanced through training and other activities that bring people together for improved resilience. The Rovo Bay Training Center buildings will be used for several purposes: (i) as a meeting place for the Climate Change Youth Club supported by the Project (ii) as a training venue for villagers (with priority focus on women) to learn about a wide range of climate change related topics including food security, terrestrial and marine conservation, water and sanitation (WASH), reproductive health (due to the high birth rate and the impacts this has on sustainable natural resource management) and small business development skills – including crop diversification and sales strategies so women are not all selling the same produce at the same time (iii) as a meeting place for area council and community representatives when working on V-CAP supported Community Climate Change Adaptation Plans (CCCAPs) and (iv) for CCA education programs for children in collaboration with local schools. • Youth will have increased knowledge and skills in climate proofing of community infrastructure (which is also important for maintenance); they will earn income from construction work; and be involved in improving an important meeting centre for area residents. • The Rovo Bay Market Committee (currently 11 members, 6 men and 5 women) will have improved knowledge of CCA issues and greater capacity to manage market activities for the benefit of vulnerable groups.
<p>24.</p>	<p>Base line</p>	<ul style="list-style-type: none"> • The current Rovo Bay market place infrastructure is not climate proofed. • There are currently no facilities for cooking at the Rovo Bay market. • There is currently no training venue in the area but the buildings

		<p>at Rovo Bay District Headquarters are standing idle most of the time.</p> <ul style="list-style-type: none"> • There is a limited supply of water during the dry season at the market place.
25.	Proposed specific activities	<p>Planning Phase: Issue identification, intervention identification and planning</p> <ul style="list-style-type: none"> • Market Committee and Rovo Bay District Administration Consultation: The Project Coordinator will meet with key Rovo Bay stakeholders to confirm plans for the market upgrade and training center development including facility maintenance and management arrangements. It will also be important to consult with current and potential vendors regarding their views on proposed market upgrades prior to commissioning the works. • Market climate proofing and expansion design by an engineer working in collaboration with the Rovo Bay Administration and the Market Committee. • In consultation with the Rovo Bay District Office, establish a representative Rovo Bay Training Center Committee comprised of representatives from the Market Committee, women and youth representatives (drawn from existing networks across the area), church, school and health representatives etc. <ul style="list-style-type: none"> ▪ In collaboration with Rovo Bay District Office, the Rovo Bay Training Center Committee and Rovo Bay CC Youth Club representatives develop a plan for the use of the Rovo Bay Training Center including education programs for CC resiliency, CC Resource Center requirements and use, training garden and nursery development etc.
26.	Activity Outputs	<p>Proposed specific outputs of activities</p> <ul style="list-style-type: none"> • Climate proofing of the Rovo Bay Market • Extension to Rovo Bay Market and the addition of 9 cook stoves, an oven and a water tank • Conversion of an under-used Rovo Bay building to a training center for CCA education programs for women, youth, children and community/area council CCCAP processes. This center will also have a resource library with CCA materials which can be used by schools, churches, community leaders and community climate change committees; this will support V-CAP Component 4: enhance knowledge and capacity for CCA. • Establishment of a demonstration garden and nursery.
27.	Indicators	<ul style="list-style-type: none"> • The market is climate proofed • The market is extended and enhanced with cooking facilities (9 cook stoves and an oven) and water tank • Local youth engaged with infrastructure upgrade work • Market facilities are well maintained • Existing Rovo Bay meeting building is converted to a training and resource center • Number of trainings conducted in the training center • Schools and community groups use of resource center materials • Level of participation of women and youth throughout the area • Number of market vendors increases

		<ul style="list-style-type: none"> • Sale of raw and cooked foods increases • Rovo Bay Market Committee and Rovo Bay Training and Resource Center Committee “are active and effective” in their management roles as determined by pre-agreed criteria • Changes in upland and water management in villages apparent as a result of training and women and youth are more engaged with the management.
28.	Links with Other initiatives	<ul style="list-style-type: none"> • The Ministry of Agriculture and the Ministry of Forestry currently have ongoing outreach projects that promote best farming practices. This project will link into the efforts that are already being made by these Ministries. • There are several NGOs with village outreach programs that correspond with the education goals of this project, specifically Live and Learn and One Small Bag. The project will have funds to bring in organizations that can aid in CCA education/training. • This project will also collaborate with the UNDP/Shefa Province Market Project by sharing lessons learned and exploring opportunities for replication and expansion. • Within the scope of the V-CAP this project will link to the Marine Conservation Activity, the Ridge to Reef Land Management Activity, and the WASH Activity. This project will enable use of the Training and Resource Centre to implement these activities.
29.	Implementation	<p>The Rovo Bay Market has an established and effective Market Committee that is well positioned to guide and support the infrastructure development component of the program. The training center component will require the establishment of a new Rovo Bay Training Center Committee comprised of the District Manager, representatives from the Market Committee, women and youth representatives (drawn from existing networks across the area), church, school and health representatives.</p> <p>Implementation Phase: Implementation of specific interventions</p> <ul style="list-style-type: none"> i) Climate proofing of the market <ul style="list-style-type: none"> ▪ Addition of rain gutters ▪ Fix erosive spots at the base of the market infrastructure ▪ Install rain tarps ii) Extension and enhancement of the market <ul style="list-style-type: none"> ▪ Market expansion (3mx 10m concrete pad and roof) ▪ Addition of 9 fuel efficient cook stoves ▪ Addition of 9 ventilating fans (1 for each stove) ▪ Addition of the community oven ▪ Addition of the water tanks and purging tube iii) Conversion of a Rovo Bay District Office building to a Training Center, including purchase of training equipment and supplies iv) Development and delivery of customized training programs designed to address the specific interests and needs of women in adapting to climate change impacts on food security, water and sanitation and livelihoods. Training programs will be

		<p>delivered by Project Officers, government extension workers and/or NGOs</p> <p>v) Development of the demonstration garden and nursery in collaboration with the agricultural extension worker</p> <p>vi) In collaboration with the V-CAP initiative to develop the Rovo Bay CC Youth Club, establish an organizing committee comprised of youth representatives (male and female) from each village in the site area to develop a youth engagement strategy and assist in formulating the Training Center educational program.</p> <p>vii) Provide capacity building support to the Rovo Bay Market Committee and the Rovo Bay Training Center Committee for improved planning and management skills required for effective CC resilience responses.</p> <p>Monitoring and evaluation: Ongoing</p> <p>i) In collaboration with the Market Committee and District Administrator, routinely assess the impact of project interventions on:</p> <ul style="list-style-type: none"> ▪ The planning and management capacity of the Rovo Bay Market Committee and the Rovo Bay Training Center Committee ▪ The ability of the improved infrastructure to assuage the impacts of climate change ▪ The use and maintenance of the cook stoves, oven and water tank additions ▪ The number of market vendors (% increase) and market sales (% increase) ▪ Sale of cooked foods (% increase) ▪ Use of new climate change resistant crops ▪ Engagement of youth in climate proofing market infrastructure ▪ Number of trainings conducted at the training venue and participation rates of women and other vulnerable groups from all villages in the V-CAP site ▪ Use of the resource centre and outcomes arising from this use <p>Effectiveness of trainings with respect to crop diversification, adoption of new species, improved upland and water management practices etc.</p>
30.	Outline Terms of Reference	<p>TOR to be developed for a Market Development and Training Center Coordinator on a half time basis for 4 years to manage this initiative. The duties of this Officer would include the following:</p> <ul style="list-style-type: none"> • Work with the Rovo Bay Market Committee, District Office management and V-CAP Field Officer in scoping and commissioning climate proofing of the market place, addition of cooking area, acquisition and installation of smokeless stoves, budget preparation and supervision of infrastructure

		<p>development works.</p> <ul style="list-style-type: none"> • Collaborate with the District Agricultural Office and V-CAP Field Officer in establishing the demonstration garden and nursery. • Establish the CC Resource Centre, acquire and distribute materials to villages, schools, women and youth networks etc. • Establish the Climate Change Youth Club, organize trainings and programs on sustainable terrestrial and marine ecosystems and engage young people in income-earning opportunities related to CC resilience efforts such as removal of invasive species, development of demonstration garden and nursery, assisting in market CC infrastructure development. • Organize land and marine management s trainings for female and male farmers with specific focus on food security and WASH. • Ensure linkages with other CC projects, initiatives and V-CAP activities in the district are developed and maintained for optimal efficiency and effectiveness. • Carry out capacity development activities with the Rovo Bay Market Committee to ensure sustainability of market place improvements and the new CC Training and Resource Center. • Work closely with the V-CAP Project GESI/M&E Officer to ensure that all project activities will promote gender equity and social inclusion and that a robust M&E system is established and implemented to capture changes in CC knowledge, practice and attitudes and documentation of lessons learned.
31.	Benefits	<p>Expected benefits</p> <ul style="list-style-type: none"> • Improved crop quality and diversity • Improved market sales and livelihoods • Market infrastructure climate proofed • Use of the Rovo Bay meeting buildings for CC trainings • Use of the Rovo Bay land as a training garden and nursery • Improvements in land and marine management practices as a result of the training • Improvements in water management and WASH practices as a result of the training • Active engagement of youth in local climate change resilience efforts • Greater capacity of local committees and District Officers to plan, manage and monitor climate change impacts and interventions. • Women are more knowledgeable and empowered to deal with the impacts of climate change on their families and households.
32.	Beneficiaries	<p>Through the village consultations we were informed that the majority</p>

		<p>in the villages use the facilities or services of Rovo Bay in some capacity. In that case the beneficiaries of this project include the entire population of the project area (1324 people). Specifically, the beneficiaries are as follows:</p> <ul style="list-style-type: none"> • Farmers and fishers will benefit through hands-on training programs that enable them to successfully use climate proofing techniques for better land and marine management resulting in improved food security and water management • Women and children will benefit from increased good quality local food and income derived from the increased sale of market produce • Youth will benefit by gaining knowledge and skills required for sustainable farming and fishing needed to manage their natural resources for future security; through income generation activities related to CC resilience efforts; and by greater engagement in community development efforts. • Market venders will benefit from a climate proofed market facility; increased space; provision of cooking facilities; use of energy efficient cook stoves; improved water supply and knowledge of good WASH practices. • Local Development Committees will benefit through enhanced management capacity.
33.	Gender	<p>Links to Gender Equity and Social Inclusion Strategy</p> <ul style="list-style-type: none"> • This project directly responds to the priority needs identified by women, youth and other vulnerable groups on Epi Island during project preparation. It is an important component of the V-CAP Gender Equity and Social Inclusion Strategy as it provides a range of targeted, inter-related activities to enhance climate change resilience using a district station (the natural meeting point for the area) as the focus. • The project will provide customized training for women on new farming techniques and sustainable upland management practices required for the production of high quality food crops needed for household consumption and livelihoods. Market sales is generally the only source of income for women in this area and is essential for paying school fees and supplies, purchasing staple food supplies not grown locally, transport to health centers and markets etc. Training will also address water, sanitation and hygiene issues, business establishment skills and other areas of concern to women such as reproductive health, violence against women, leadership skills, business development etc. • This project will also benefit youth through their active engagement in training programs, CC Youth Clubs and income generation opportunities designed to build local resilience.
34.	Environment	<ul style="list-style-type: none"> • This will be completed and submitted to the Department of Environment as is required by the Environment and Conservation Act (2006).
35.	Risks and	Risks

	<p>assumptions</p>	<ul style="list-style-type: none"> • Rovo Bay meeting buildings are not used to support climate change resilience trainings • The Market Committee does not maintain climate proofing solutions • The Market Committee does not maintain the market enhancement infrastructure. <p>Assumptions</p> <ul style="list-style-type: none"> • The projects for Local Marine Managed Areas and Ridge to Reef Land Management entail plans to use the Rovo Bay meeting buildings for trainings. If these projects are successful then the buildings will be used for area trainings. • From our consultations we assume that the Rovo Bay leadership and the Market Committee involved in this project will engage in the management and maintenance of the new and improved infrastructure. • The number of female market vendors will increase along with the sale of high quality cash crops.
<p>36.</p>	<p>Prepared by</p>	<p>Colleen Peacock-Taylor, V-CAP PPG International Gender Advisor and Virginia Smith, International Coastal Zone Management Specialist</p>

Annex 1: Summary of PPG activities related to Epi Island and the sites

4.1 Community Consultations

The field mission to Epi Island was from the 5th-10th of September 2013. All consultants joined the mission. In addition, Senior Government Officials from Ministry of Climate Change, Department of Local Authorities and Public Works Department joined the mission.

Community meetings were held as outlined below. In addition as part of these meetings there focus groups on (i) gender, women and youth - to encourage women, young people and people with disabilities to express their views openly and (ii) a focus group on fisheries, coasts and the environment. .

Date	Consultation	Men	Women	Total
Sept 5	Rovo Bay, Epi- District Administrative Officer, Louie Kora	1	4	5
Sept 6	Yopuna Community Consultation- Vermauli, Epi	5	2	7
Sept 6	Ruwo (Niu Ples) Community Consultation- Vermaul, Epi	25	14	39
Sept 6	Komerana 1 (Brisbane) Community Consultation- Vermauli, Epi	4	3	7
Sept 7	Lamen Bay Consultation	15	18	33
Sept 8	Ponkovic Community Consultation (with sub-communities Komerana 2, Paen, Jumesmar, Foreland)	42	18	60
Sept 8	Ponkovic Women & Youth Focus Group	8	39	47
Sept 8	Ponkovic Environmental/Infrastructure Focus Group	15	0	15
Sept 9	Burumba Community Consultation	38	19	57
Sept 9	Burumba Women & Youth Focus Group	12	22	34
Sept 9	Burumba Environmental/Infrastructure Focus Group	17	0	17
Sept 9	Ponkovic Ecole Public Headmaster – Mr. Mermer Leo	1	0	1
Sept 9	Yervali School Headmistress – Ruth Roberts	0	1	1
Sept 10	Rovo Bay Women's Market Committee	6	5	11

In addition, the field mission undertook:

- Village surveys – guided walks through the village to identify and document key issues
- Surveys of water sources where specialist joined local communities to review water supply and sanitation

- Observation of farming and livestock management practices
- Observations of coast line noting beach erosion, beach aggradation, and species of interest and points of environmental concern.
- Underwater observation surveys – shallow water surveys – less than 10 metres
- Confirmation and explanation of issues of concern raised by villagers, e.g. plant diseases (i.e. Lap lap Leaf disease) or invasive species (i.e. American Rope).
- Inspection of infrastructure, including roads river crossings, walking paths, bridges, etc.