Community Integrated Management Plan

Falealili East - Upolu

Implementation Guidelines 2018

Foreword

It is with great pleasure that I present the new Community Integrated Management (CIM) Plans, formerly known as Coastal Infrastructure Management (CIM) Plans. The revised CIM Plans recognizes the change in approach since the first set of fifteen CIM Plans were developed from 2002-2003 under the World Bank funded Infrastructure Asset Management Project (IAMP) , and from 2004-2007 for the remaining 26 districts, under the Samoa Infrastructure Asset Management (SIAM) Project.

With a broader geographic scope well beyond the coastal environment, the revised CIM Plans now cover all areas from the ridge-to-reef, and includes the thematic areas of not only infrastructure, but also the environment and biological resources, as well as livelihood sources and governance.

The CIM Strategy, from which the CIM Plans were derived from, was revised in August 2015 to reflect the new expanded approach and it emphasizes the whole of government approach for planning and implementation, taking into consideration an integrated ecosystem based adaptation approach and the ridge to reef concept. The timeframe for implementation and review has also expanded from five years to ten years as most of the solutions proposed in the CIM Plan may take several years to realize.

The CIM Plans is envisaged as the blueprint for climate change interventions across all development sectors – reflecting the programmatic approach to climate resilience adaptation taken by the Government of Samoa. The proposed interventions outlined in the CIM Plans are also linked to the Strategy for the Development of Samoa 2016/17 – 2019/20 and the relevant ministry sector plans.

We wish to acknowledge the significant contributions of our District and Village communities and our key government partner stakeholders and implementing agencies, in particular:

Ministry of Women Community and Social Development (MWCSD)
Ministry of Works Transportation and Infrastructure (MWTI)
Ministry of Natural Resources and Environment (MNRE)
Ministry of Agriculture and Fisheries (MAF)
Electric Power Corporation (EPC)
Land Transport Authority (LTA)
Samoa Water Authority (SWA)
Ministry of Health (MOH)
Ministry of Finance (MOF)

We acknowledge also our key international donor partners: the World Bank, the Pilot Program for Climate Resilience and Adaptation Fund, Adaptation Fund Project, through the UNDP, for the financial support that enabled the review and update of the CIM Plans.

Finally, I commend these CIM Plans to all relevant stakeholders from government ministries to districts and village communities and development partners to implement with the utmost urgency. It is assured that the implementation of the CIM Plans further enhance the resilience of Samoa to the impacts of climate change.

Thank you

Hon. Fiame Naomi Mata'afa
Minister of Natural Resources and Environment

Participants in the Plan

The Community Integrated Management (CIM) Plan is a Partnership between the Government of Samoa and the villages within the plan. The Plan area starts from the ridge extending to the reef broadly covering four thematic areas; Infrastructure; Environment and Biological Resources; Livelihood and Food security; and Governance. Both partners have responsibilities for issues and solutions and the Plan gives an integrated approach to the provision of services and improvement of resilience now and in the future.

This Plan incorporates the Constituency of Falealili East (Salesatele, Salani, Siuniu, Sapoe and Utulaeale villages) District

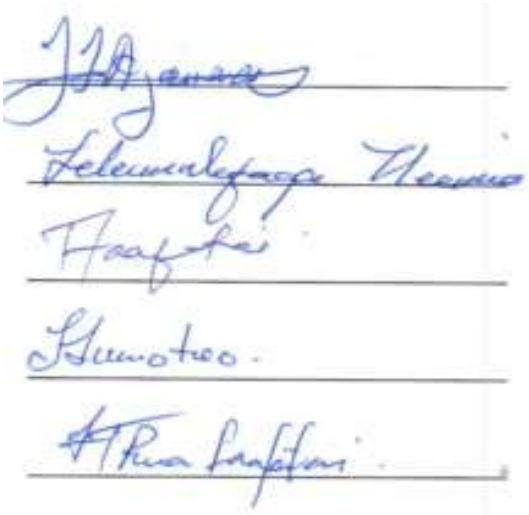
The village representatives participated in the preparation of this CIM Plan in partnership with the Government of Samoa.

Date of Signing: 22 June 2018

Representatives: Signature:

Salesatele Village

- Fonoti tai Agavaa
- Leleimalefaga Neemia
- Tagitagiapua Fa'afetai
- Lalau Timoteo
- Fa'aetetete Tagitagiapua

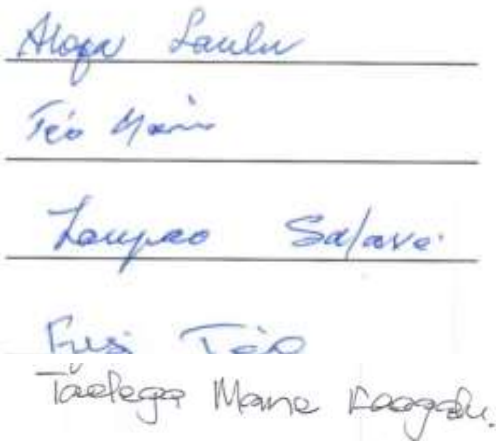


Salani Village

- Leuta Atapana Fuimaono
- Fuimaono Ta'ala Nuulua
- Auafa Sefulu Tulia
- Fuimaono Atanoa Povalu
- Falenaipupu Asora Lotomau

Siuniu Village

- Alofa La'ulu
- Te'o Uaine
- Lauvao Salave
- Fusi Te'o
- Taelega Faagalu

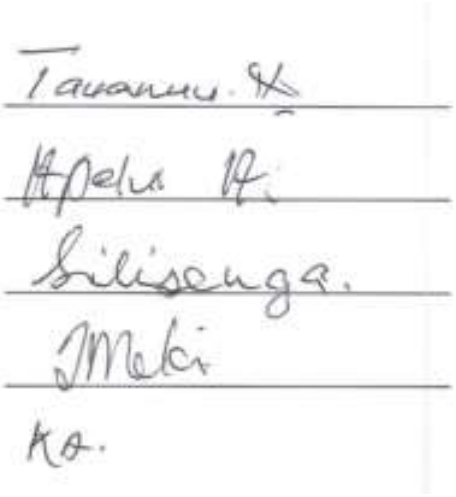


Sapoe Village

- Palapu Tupu
- Litia Kaisa
- Malio Savea
- Nuu Asotolu Tavita
- Letoga Lima Esene

Utulaelae Village

- Tauanuu Neemia Atia'e
- Tauanuu Apelu Palapu
- Sili Seuga Moemalo Ulu
- Tia Meki
- Fautanu Kaisa



The Government of Samoa adopts the Community Integrated Management Plan for the Alii and Faipule of Falealili East (Salesatele, Salani, Siuniu, Sapoe and Utulaelae villages) District as a Management Plan for the Implementation of the Community Integrated Management Strategy (CIMS).

The Ministry of Natural Resources and Environment, as lead organization of Government, on behalf of the participating Government Ministries and Corporations, confirms the participation of the Government of Samoa in the preparation of this Community Integrated Management Plan and its adoption as a Management Plan for the implementation of the Community Integrated Management Strategy 2015.

Ulu Bismarck Crawley
Chief Executive Officer, MNRE

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Acronyms

ASCH	Areas Sensitive to Coastal Hazards
BCA	Benefit Cost Analysis
CBFMP	Community Based Fisheries Management Plan
CDCRM	Community Disaster & Climate Risk Management
CEP	Community Engagement Plan
CHZ	Coastal Hazard Zone
CEHZ	Coastal Erosion Hazard Zone
CFHZ	Coastal Flooding Hazard Zone
CIM	Community Integrated Management (Plan) or (Strategy)
CLHZ	Coastal Landslip Hazard Zone
COEP	Code of Environmental Practice
CSO	Civil Society Organization
CSSP	Civil Society Support Programme
DSP	District Sub Project
EbA	Ecosystem based Adaptation
ECCCR	Enhancing Coastal Community Climate Resilience
ECR	Enhancing Climate Resilience
EMP	Environmental Management Plan
EPC	Electric Power Corporation
ERN	Emergency Radio Network
HCSI	High Coastal Sensitive Index
IAS	Invasive Alien Species
KBA	Key Biodiversity Area
KPI	Key Performance Indicator
LTA	Land Transport Authority
LTO	Long Term Output
MAF	Ministry of Agriculture and Fisheries
MET Office	Meteorological Office
MoH	Ministry of Health
MNRE	Ministry of Natural Resources and Environment
MWCSD	Ministry of Women Community and Social Development
MWTI	Ministry of Work Transport and Infrastructure
NAP	National Action Programme
NBSAP	National Biodiversity Action Plan
NDMP	National Disaster Management Plan
NESP	National Environment Sector Plan
NISP	National Infrastructure Strategic Plan
NGO	Non- Governmental Organization
NRW	Non Revenue Water
PA - KO	Priority Area - Key Outcome
PUMA	Planning Urban Management Agency
PPCR	Pilot Programme Climate Resilience
R2R	Ridge to Reef
SIAM	Samoa Infrastructure Asset Management
SOE	State of Environment
SWA	Samoa Water Authority
UNDP-GEF SGP	United Nations Development Programme Global Environment Facility Small Grants Programme
WB	World Bank

WCR	West Coast Road
WMP	Watershed Management Plan
WSSP	Water Sanitation Sector Plan

Glossary

Coastal Hazard Zones	Defined areas landward of the coast which are or are considered likely to be subject to the effects of hazards over a defined assessment period. In this study, reference is made to four coastal hazard zones: ASCHs (areas sensitive to coastal hazards); CEHZs (coastal erosion hazard zones); CFHZs (coastal flood hazard zones) and CLHZs (coastal landslip hazard zones).
"Do Minimum"option	A Management option that involves continuing with the present maintenance and upgrading programme on and when required basis.
Emergency Management	To provide communities with skills, facilities and materials so that they may adapt, respond and recover more quickly in the event of emergencies.
Hazard	A source of potential harm or a situation with a potential to cause loss.
Infrastructure	Built structures and networks which support the national, regional or local community.
Lifeline infrastructure	Infrastructure that contributes directly to the survival of the community and its ability to respond and recover at the time of extreme events.
Secondary infrastructure	Infrastructure that contributes to the every-day development of the community.
Implementation Guidelines	A document to guide land use and resource practices to achieve specified goals, objectives and policies and provide a framework for the implementation of defenses and works.
Issue	A specific concern regarding both cause and effect.
Land and Resource Use	The use of land and resources by the community for social, economic or other benefit (e.g. land use includes areas used for villages or crops, resource use includes activities such as sand mining, gravel extraction or fishing).
Monitoring	Process of measuring the effectiveness or impacts of projects and works against predicted standards, levels or outcomes.
Resilience	The ability to be adaptive, responsive and quick to recover.
Community Resilience	The ability for the community to be adaptive, responsive and quick to recover from the adverse effects of hazard.
Natural Resilience	The ability of natural systems to be adaptive, responsive and quick to recover from natural processes or hazards.
Risk	The chance of something happening that will have an impact on objectives. It is measured in terms of consequence and likelihood. In the Community Integrated Management Plan context it is the likelihood that infrastructure, environment and biological resources and agricultural and marine resources (food security) will be subject to inland and coastal hazards and the potential for loss of property, life or land due to natural processes.
Stakeholders	Those people and organizations who may affect, be affected by, or perceive themselves to be affected by, a decision or activity. The term stakeholder may also

	include interested parties.
Strategy	Direction or course of action to achieve a define division.
Susceptibility	The degree to which infrastructure at risk is likely to be damaged by coastal hazards and how easy/difficult, expensive/cheap it is to replace. In the context of the CIM Plan the term susceptibility is equivalent to the term vulnerability as the Samoan phrase for both susceptibility and vulnerability is the same.
Vision	A desired destiny.
Livelihood	A livelihood is a means of making a living. It encompasses people's capabilities, assets, income and activities required to secure the necessities of life Food availability: The availability of sufficient quantities of food of appropriate quality, supplied through domestic production or imports (including food aid).
Food access	Access by individuals to adequate resources (entitlements) for acquiring appropriate foods for a nutritious diet. Entitlements are defined as the set of all commodity bundles over which a person can establish command given the legal, political, economic and social arrangements of the community in which they live (including traditional rights such as access to common resources).
Utilization	Utilization of food through adequate diet, clean water, sanitation and health care to reach a state of nutritional well-being where all physiological needs are met. This brings out the importance of non-food inputs in food security.
Stability	To be food secure, a population, household or individual must have access to adequate food at all times. They should not risk losing access to food as a consequence of sudden shocks (e.g. an economic or climatic crisis) or cyclical events (e.g. seasonal food insecurity). The concept of stability can therefore refer to both the availability and access dimensions of food security.

1. Introduction to the CIM Plan

1.1 The Strategic Vision

The District CIM Plan for Falealili East has been prepared under the Government of Samoa's Pilot Programme for Climate Resilience (PPCR) - Enhancing Climate Resilience for Coastal Resources and Communities Project. The CIM Plans is the primary means of implementing the CIM Strategy, which was formally approved by the Government of Samoa in February, 2001, and revised in August 2015, to provide Strategic direction for the management of government and community resources within the districts and villages.

The Strategy has as its central vision "Resilience – Communities and their resources are Resilient to Natural Hazards". The CIM Plan takes this vision and provides the practical tools with which the communities and the government, in partnership, can implement the Strategy.

To be resilient is to be adaptive, responsive and quick to recover so that communities are environmentally, socially and economically sustainable.
(CIM Strategy, August 2015)

1.2 The Aim of the CIM Plan

The aim of the CIM Plan is to help communities and government improve climate resilience by identifying actions and solutions for sustainable development.

The CIM Plan will enable communities and government service providers to:

1. Enhance awareness of hazard risks from the ridge to reef;

2. Improve climate resilience planning and development

3. Better adapt, respond and recover from natural disasters and other extreme events

1.3 The Structure of the Plan

The CIM Plan consists of two parts each serving a separate and distinct purpose.

- ***Plan Development,*** which describes the process undertaken to prepare the CIM Plan in conjunction with representatives of the Communities involved, the Government and other stakeholders with interests in the Plan area.

- ***Implementation Guidelines,*** which describes the Plans and Actions recommended as outcomes of the process, together with the partner responsible for implementing these outcomes.

2. Implementation Guidelines

2.1 Purpose of the Implementation Guidelines (IG)

The Implementation Guidelines describe the solutions proposed to increase the resilience of communities as identified in the CIM Plan consultation and site assessments. The solutions are presented under four broad themes; Infrastructure; Environment and Biological Resources; Livelihood and Food Security; and Governance Institution in the District/village. Implementation of solutions is considered to be the joint responsibility for both the villages and the government in partnership as follows.

The CIM Plan Solution Matrix, shows five columns each correlates to the solution identified:

- Column 1: Indicates the issues or problem identified during the CIM Plan consultation and site assessments
- Column 2: Solutions – these are the interventions/ solutions identified by the CIM Plan team and village community representatives. The government agency or village as indicated in Column-2 under each action will be the lead agency or village responsible for implementing the said solution;
- Column 3: "Other benefits", where one solution indicated in Column 2, will provide benefits to other items;
- Column 4: Provides guidance on how the solution is to be implemented and noting the relevant government action plan, policy, code of ethics, regulation or act to follow by the responsible government agency or district/village during implementation of the solution;
- Column 5: Provides an overall summary of how the solution being implemented supports or achieve the objectives or goals set-forth in the relevant government sector plans and linking them up to the Strategy for the Development of Samoa.

It is therefore worth noting that climate change adaptation and mitigation actions or interventions identified in the CIM Plan solution demonstrates the national commitment to enhancing Samoa's climate resilience portfolio.

2.2 Funding options to support CIM Plan Implementation

Implementation of solutions that were identified from the CIM Plan consultations with each district communities will not be possible without the availability of funds. Like the previous CIM Plans infrastructural related solutions to protect government assets located in the coastal area are executed by the government through bi-lateral or multi-lateral donor funded projects. For example the NAPA (National Adaptation Programme of Action) project that supported the implementation of rock revetment or seawalls in most of the coastal villages, which is an outcome from the generation-1 CIM Plans were funded under multi-lateral donor. At the village level some villages were successful in sourcing small grants from existing mechanisms in country.

Similarly it is expected that funding support for the implementation of the updated revised CIM Plans during its 10 year lifespan, will be sourced from different development partners including the government of Samoa. All solutions and activities in the CIM Plans that have identified a government agency as the responsible agency for that particular action as outlined in the "CIM Plan Solution Matrix" will take up the responsibility for these activities as part of their on-going workplan and priorities for each districts/villages. Funding of these activities will be sourced either from their local budget or multi-lateral donors such as UNDP, FAO, World Bank, ADB, and GEF to name a few, as well as bi-lateral donors like New Zealand, Australia, Japan, USA and China. Implementation of activities that are under the responsibilities of village communities will source support from small grants opportunities available from the following programs and agencies: CSSP, the UNDP-GEF SGP, Global Green Grant and Discretionary Funds from different Diplomatic Mission in country like New Zealand High Commission, Australia, Japan and China.

2.3 Duration of the Plan

The CIM Plan is reviewed every ten years. During the Plan period, the solutions implemented are monitored to ensure that they are effective in improving resilience. Some solutions are likely to take longer than the original five years for implementation.

The review of the Implementation Guidelines and the solutions proposed the following:

1. The CIM Plan full review will be undertaken every 10 years or decade;

2. Once implemented, the solutions will be monitored on a bi-annual basis for progress and updated every five years in accordance with the Strategy for the Development of Samoa;

3. Detailed implementation of the solution will determine the monitoring requirements and Key Performance Indicators (KPI).

3. Description of Falealili East District Environment

3.1 Physical and Natural Resource Setting

Falealii district is located on the south of Upolu Island and it's divided into two electoral constituencies of Falealili East and Falealili East. Falealili East is made up of 5 villages, namely Salesatele, Salani, Siuniu, Utulaelae, and Sapo'e, while Falealili West is made up of 11 villages, namely Togitogiga, Iliili, Saleilua, Poutasi, Vaovai, Matautu, Tafatafa, Matavai, Malaemalu, Piu, Sapunaoa, and Satalo. This CIM Plan provides an overview of the whole district with specific focus on the Falealili East villages in the matrix of solutions.

The Falealili landscape rises from a lower coastal plateau that has scattered wetlands and mangrove areas, with defined waterways, some of which traverse through a gorge country. The mid slopes and high elevated plateaus have good pasture type grasses and fertile soils. Mid slopes have a patchwork of cattle farms and high value vegetable crops?

The marine environment comprises of a wide windward barrier reef. The large and widely extensive lagoon with deep blue holes and reef slopes extends from Saleilua village on the west to Lotofaga district on the east. With the coast being located on the south, it is fed by well oxygenated oceanic waters from the south-pole, thus the area produces usually very good coral growth in the lagoons, reef crests and seaward slopes. This is evident with very rich and excellent coral growth in the existing fishery reserves from Saleilua, Poutasi, Vaovai and Matautu on the west. As one moves eastward, the impacts of the 2009 tsunami and the numerous estuaries and coastal herbaceous swamps along the coast seem to have affected the coral growth in areas from Sapunaoa to Sapoe. Nevertheless, the wide and extensive lagoon ensures coral growth within the lagoon, the blue holes and the outer reef are recovering well, and assisted by the fishery reserves established by almost all villages in the district.

The higher than national average rainfall for the Falealili district lends itself to the many watershed areas, rivers and numerous wetlands along the coast of the district. Amongst the wetland are the extensive Vaovai mangrove forest, and Saleilua mangrove forest on the west and coastal herbaceous marshlands in Malaemalu, Satalo, Sapunaoa, and Salani on the east. All these wetlands have been affected by climate change and the 2009 tsunami. The mangrove forests have not only been damaged by natural events, where the size have reduced, while some of the old walking and canoeing routes do not exist anymore. For the marshlands, longshore drift and the tsunami have resulted in the build-up of sand along the mouth of the estuaries which have blocked the natural flow of freshwater into the sea. This has affected the existence of the wetlands as well as flooding inland along the streams. Additionally, the extensive land clearing and plantations inland has meant land-based pollution washed into the sea and settled in the inner lagoon has resulted in eutrophication seen by the prevalence of algae along the south coast.

Falealili being a high rainfall area of the country and with rich fertile soils, has over many years been a hub for commercial farming, extending from the old coconut plantations during the colonial era of the late 1800s, to the heydays of the taro export boom in the 1980's. This has resulted in the majority of the native vegetation in the lowland areas being stripped to what is now predominantly classified as mixed vegetation made up of coconut plantations, taro plantations, cattle farms, and fallow lands from previous plantations use. Almost all the villages in the district have access road that reach up above 400m, where forests continue to be cleared as families move further upland in search of fertile unused soil for plantations. The only area in the district where lowland rainforest vegetation is present is between Matautu and Tafatafa villages which is on crown and freehold land, and along Saleilua village from the National Park to Poutasi village. The O le Pupu-Pu'e National Park extends from ridge to reef protection is an important refugia and natural regeneration for the neighbouring areas

The upland forests above 500m is still classified although they were damaged by the cyclones of the 1990's where the vegetation is now mixed in with some exotic species such as tamaligi, pulu and faapasi which has seedlings that came to the area through wind dispesal.

As most of the district have moved inland and away from the beachfront area, coastal vegetation and littoral forest are commonly seen, and is likely to continue as more people move inland.

The invasive trees and shrubs are present around the village settlements as well as along the access roads throughout the district. **Faapasi** *Spathodea campanulate* (African tulip), Tamaligi trees *Albizia chinesis*, *Falcateria moluccana, Merremia peltata,* **pulu vao** *Funtumia elastica*; and **pulu mamoe** *Castilla elastica* are the common one's present. Myna birds and red-vented bulbuls were found in abundance in the district.

3.2 Social and Economic Setting

The 2016 Census, recorded the total population for Falealili at 4,695 people, whereby Falealili West had a population of 3,348 people and the remaining 1347 covers Falealili East villages. The village of Poutasi is where all the main public services are located such as the district hospital, police station and secondary school. The nearest post office is in Malaemalu village. Most villages have a pre-school and primary school, as well as metered water with the exception of a few who have water under the Independent Water Scheme, such as part of Saleilua village. All villages have cash power electricity and communications are mostly from the mobile services such as Digicel and Bluesky.

Village developments are very much subsistence with a few families who own large plantations. Almost all families in each of the 16 villages own a plantation – includes common crops of taro, giant taro (taamu) bananas, coconut and cocoa. There are also families with cattle farms, poultry farms and everyone family has a piggery farms or own a couple of pig sty, since pigs are used a lot in faalavelave or family feast etc. Fishing is also the main livelihood for families that own fishing boats (alia). Salani has a surf resort development for tourism. The district of Falealili is home to the first National Park in Samoa, the Le Pupue National Park and Togitogiga waterfalls. Transportation to Apia is either bus or private vehicles for those people in the district who work in town.

3.3 Climate Risk and Resilience

There is an urgent need for communities to understand the changes in Samoa's climate and future projection. A study has been completed in 20111 which summarizes changes in Samoa's climate at present and in the future, from 1990 -2030 up to 2090. The assessment showed that: Samoa's temperature will increase with very hot days; more extreme rainfall days expected; there would be a decrease in number of tropical cyclone but increase in intensity; sea level rise will continue and ocean acidification is increasing in Samoa's water threatening coral reef ecosystems and marine biodiversity.

The 2002 Falealili District CIM Plan mapped out all vulnerable areas along the coast and the lowland coastal areas identifying them as hazard zones given the exposure to natural disasters, climate change and extreme events causing flooding and erosion. There are changes in the catchment areas and land use hence the severe flooding downstream is caused by the concentrated flows from upland-catchment areas. As such the update of the CIM Plan considers a broader landscape hazards, climate risks and likely responses.

Coastal Hazards and Risks: The O Le Pupue headlands to the west of Saleilua village together with Nuusafee Island both acts as groins (dykes) with respect to long-shore littoral drift process, and together with the southeasterly trade winds all contribute to the accumulation of thick sand deposits along the coastal zone of Falealili. The coastal zone also is where much of the debris or terrestrial materials from the many rivers and streams that runs from upland catchment area of Falealili down to the coast and fed into the sea. Some of these old river or stream channel have deeply dissected at the coast, as seen in a series of broken reefs (Fig 1). A potential hazard now and in the future the collapse in part of the seafloor to the south of Falealili due to high energy wave activity brought to the surface. As well, continuous sand mining between Saleilua and Tafatafa/Matavai could result

[1] Pacific-Australia Climate Change and Adaptation Planning Program Partners (2015) Current and Future Climate of Samoa, Government Australia and Government Samoa.

in the worst case scenario of coastal erosion for communities on the eastern part towards Utulaelae, and strong impact on coastal infrastructure or assets.
The southern part of Upolu island including Falealili district is vulnerable to tsunami now and the in the future. This is because the southern part of Upolu is opposite and close (up to 40km) to the Northern Terminus Zone, where the seafloor at this part of the Kermadec Tonga Trench can collapse at any time causing a tsunami (Fepuleai, 2017).

Inland Hazards and Risks: Rapid development inland of the Falealili district could speed up erosion and may generate landslide from high elevation areas that are heavily weathered with the jointed and fractured Salani rock formation. The main road infrastructures along the Falealili district in some areas that are exposed are threatened with landslide and rockfall activities in the future.

Overall, it is highly recommended that sand mining in the Falealili district should concentrate at river delta, like those at Matavaifagaloa River, Salani. As well, a removal of terrestrial materials along river deltas would reduce a high sedimentation rate. Replanting along the coast is important to help sustain marine habitats and mitigate coastal erosion and extend reef respectively. Reef extension would contribute to a natural breakwater and thus reduce high energy wave activity entering the coast. It is critical that continuous seismic monitoring of the Fagaloa-Falealili fault will provide valuable information about potential landslide and dormant volcanic activity.

Figure 1 Evidence of terrestrial thick deposits along the coast and remnants of old river channels that goes right into the seafloor. **Photo credit –** Aleni Fepuleai, 2017

4. Falealili East District Interventions

CIM Plan Solutions

Infrastructure	Best Solutions	Other Benefits	Guideline to assist Implementation	Relevant Sector Plans
South Coast Road including fords, bridges and the upgraded Salani bridge	Improved maintenance program to clear sedimentation and debris from upstream locations and culverts: Provide drainage and enlarge undersized culverts underneath bridges in areas where the road is blocking the natural overland flow path, for example at Poutasi where the District Hospital and Secondary School located Maintenance and management of upgrade fords and bridges ***Responsibility: LTA / MWTI / DIstrict***	*Improved rate of recovery *Improved coastal protection *Reduced potential for flooding in coastal areas *Improved lifeline access *Safer village houses and roads *Improved sustainability of natural resources *Improved safety and resilience of residents in the coastal hazard zones	LTA and MWTI should provide the design and close monitoring of road infrastructure development following the guidelines below: Programme drainage in budget and work programme Prepare assessment of road drainage systems Prepare a local education programme on need for keeping drainage systems clean Environmental and Social Safeguard policy Samoa Code of Environmental Practice (2007) Review of National Road Standards in Samoa (2016) National Infrastructure Strategic Plan (NISP) 2011 Vulnerability Assessment of the Samoa Road Network (2017) Programme road safety activities into budget and work programme	Community Integrated Management Strategy, August 2015 Transport Sector Plan 2014-2019
District / village infrastructure in hazard zones include: Households Schools Churches	Relocate outside hazard zones Investments within the hazard zone adopt appropriate	Reduce cost in ongoing maintenance mitigate potential damage from coastal erosion and flooding	Application of the National Building Code (Draft Sept 2016) and permit compliance PUMA Act 2004	CIM Strategy (2015)

Businesses, Women's Committee House	mitigation measures such as Secondary School in Poutasi and District Hospital Raise building foundations at a level that takes into account the CFHZ in the vicinity ***Responsibility: Village/Families / MWTI/ MWCSD***	accommodating the hazard.		
Water (Existing water from SWA has strong chlorine smell / taste)	Assess and monitor the piped water network for Falealili: MoH to test the level of chlorine being put into the water whether it is good for consumption Conduct water quality testing for compliance ***Responsibility: SWA/MoH/village***	Improve sanitation and hygiene Reduce number of sick people from poor drinking water Improve community resilience to proactively adapt	Samoa Water Authority Pipeline Work Program for FY17/18 Environmental and Social Safeguard Policies apply - MoH Water Quality Standards SWA 10 Year Investment Plan (2016) to improve water supply network	Community Integrated Management Strategy, August 2015) Water and Sanitation Sector Plan 2016-2020
Environment & Natural Resources	**Best Solution**	**Other Benefits**	**Guidelines to assist Implementation**	**Relevant Sector Plans**
Marine Environment needs protection and management	Established a marine protected area that includes fish reserves, and mangrove, wetland rehabilitation: Implement an integrated coastal resource management program for the district covering all coastal communities Conduct community education and	Improve sustainable livelihood and food security Natural barriers and protection from storm surges Increase biodiversity Improve ecological resilience of marine ecosystems Reduce impact of land-based pollution	Maintenance of marine reserve and protected area requires community consent and government approval along with biological surveys. Fisheries Division to advice villages on the Community-based Fisheries Management Program (CBFMP) – Develop Village Fisheries Management Plans NBSAP 2015-2020	Agriculture Sector Plan 2016-2020 National Environment Sector Plan 2017-2021

	awareness program on the importance of marine ecosystems (coral reef, wetlands and mangroves) Strengthen existing village marine management plan with an over-arching district marine protected area management plan ***Responsibility: MAF / MNRE / District & Villages***	Reduce impact of coral bleaching Improve resilience of coral reef ecosystem to combat climate change Reduce loss of marine habitats	Develop Management Plans for Marine Protected Area	
Livelihood & Food Security	**Best Solution**	**Other Benefits**	**Guideline to assist Implementation**	**Relevant Sector Plans**
Disturbed forests and plantation areas	Restore and utilize fallow lands closer to the village with plantations rather than clearing inland and upland forests Promote and facilitate planting of root-crops (i.e yams, sweet potato) which are more resilient to cyclones, droughts and floods. Promote agro-forestry and mixed planting including fruit trees species to reduce crop vulnerability to pests and diseases. Diversify into other climate resilient species cash crops and fruit trees i.e cocoa, coconut,	Improve food security and healthy living and increase community resilience and adaptive response to climate change	MAF CROP Division to support farmers through guidance and trainings from Agricultural experts and awareness programs on crop diversification to suit the prolonged periods of drought or rainy season Provide tools and planting materials to improve crop diversification and resilience – address pest issues etc. This will lead to improve food security Strengthen partnership with farming NGO's such as the: Samoa Farmers Association; Samoa Federated Farmers Incorporated ; Women in Business Inc. and private sector to support rural farmers through training opportunities and marketing productivity	Agriculture Sector Plan 2016-2020

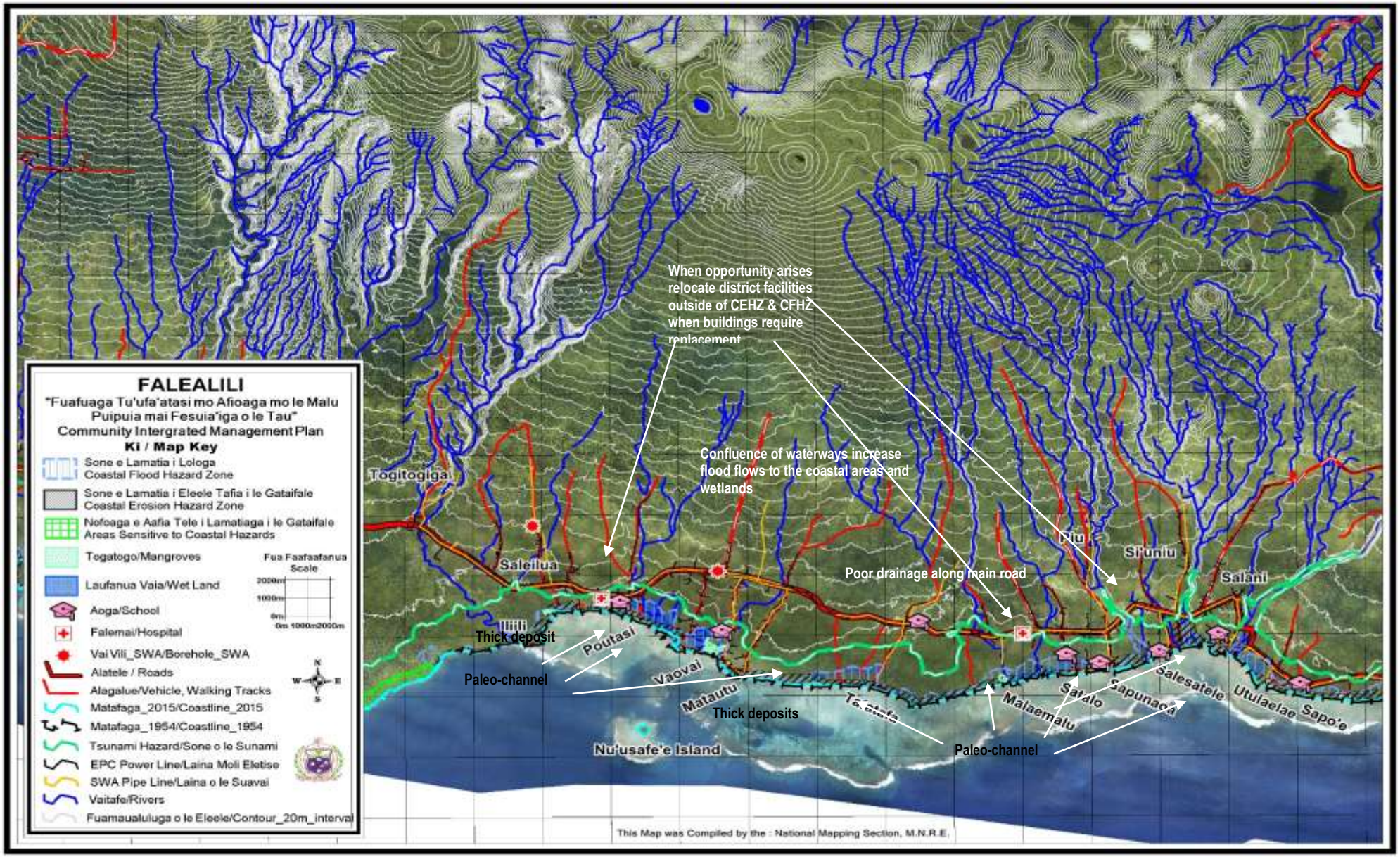
	lemon and plant in suitable areas outside hazard zones Implement Sustainable Land management practices Implement integrated pest management programmes ***Responsibility: MAF /CSSP/WIBDI/Farmers Association/ METI/ SBEC / UNDP-GEF-SGP/MNRE / villages***		Implementation of solutions are guided by the following: Draft Soil Resource Management Bill 2018 Samoa National Action Programme to combat Land Degradation and to mitigate effects of drought 2015-2020 National Invasive Species Strategy and Action Plan 2008-2011 2 Million Tree Planting Strategy 2015-2020	

Governance	**Solutions/ Issues**	**Implementation Guidelines**	**Comment**
District /Village By-laws	Implement district / village by-laws for community to follow and include protection of natural resources both marine and terrestrial ***Responsibility: Village / MWCSD***	MWCSD to provide assistance to district /village in developing by-laws Community Development 2016-2021	Support the development of district / village by-laws that can guide governing structure of village and the implementation of government and non-government programs including CIM Plans.

Other CIM Plan Issues Identified	**Comment**
Access Road – identified by LTA pipeline for Falealili District the reconstruction of Village Access / Plantation Road ➢ Saleilua/Togitogiga; Length 600m Estimated Cost: SAT$216,000.00 ➢ Vaovai (Vaivaisa); Length 240m Estimated Cost: SAT$86,000.00 ➢ Matautu; Length 680m Estimated Cost:SAT$ 244,800.00 ➢ Malaemalu; Length 580m Estimated Cost: SAT$ 208,800.00 ➢ Satalo; Length 700m Estimated Cost: SAT$ 252,000.00 ➢ Sapunao & Piu; Length 400m Estimated Cost: SAT$	During the CIM Plan consultation, the implementing agencies including LTA were requested to provide the CIM Team with their list of pipeline work in the PPCR-ECR districts. LTA submitted their list of pipeline work for the district of Falealili which included 9 pipeline access / plantation roads for the villages within Falealili West. Most of the village access roads listed by LTA were also part of the CIM Plan site assessments because they were requested by the communities.

144,000.00 ➢ Tafatafa & Matavai; Length 1146m Estimated Cost SAT$412,560.00 ➢ Tafatafa-uta; Length 615m Estimated Cost; SAT$ 221,400.00 ➢ Utulaelae; Length 630m Estimated Cost: SAT$ 226,800.00 ➢ Siuniu: Length 1530m Estimated Cost: SAT$ 550,800.00 ➢ Salesatele; Length: 860m Estimated Cost SAT$ 348,634.00 ***Responsibility: LTA / MWTI / District & Villages***	
Seawall – some villages made specific request for seawall Saleilua/Iliili – seawall need to protect village from coastal erosion Matautu – village request a seawall on the oceanfront where the community pool is located to protect village from storm surges and strong waves. Estimated length is 400m and 3m height. Vaovai seawall extension from existing boundary with Poutasi (approximately 150m length) and reason for request to complete the seawall is the increase level of coastal erosion. ***Responsibility: LTA / MWTI / villages***	The PPCR-ECR project does not prioritize solutions suggesting seawall unless it is a critical case whereby improved resilience of the coastal ecosystem is dependent on the seawall. Noted from the Civil Engineering assessment that the request for seawalls from the communities would be relevant more to LTA in terms of providing cost. Saleilua village asked for seawall because of the increase level of coastal erosion along the beachfront from Ili'ili to Saleilua and much of these erosion is not due to climate change but human induced activities like sand mining. Also everyone has moved inland after the tsunami 2009 and therefore not a priority to build a seawall but maybe strong emphasis on coastal restoration and limiting sand mining activities. As well, based on site observation the Matautu seawall is very costly and careful consideration prior to a decision to build one given the impact on the natural environment and community pool. Similarly the Vaovai request for the seawall is not a high priority based on site assessment there are no residents along this area that would need protection from sea level rise as well it important to factor in adverse impacts of building a seawall on the mangrove ecosystem.

Falealii District Map



4.1 Salesatele Village Interventions

Infrastructure	Best Solutions Proposed	Other Benefits	Guidelines to assist Implementation	Relevant to Sector Plans
Village infrastructure in hazard zones include: Households Schools Churches Businesses, Women's Committee House Salesatele Primary school located in hazard zone	Relocate outside hazard zones Investments within the hazard zone adopt appropriate mitigation measures such as: Raise building foundations at a level that takes into account the CFHZ in the vicinity ***Responsibility: Village/Families / MWTI/MWCSD***	Reduce cost in ongoing maintenance mitigate potential damage from coastal erosion and flooding accommodating the hazard.	Application of the National Building Code (Draft Sept 2016) and permit compliance PUMA Act 2004	CIM Strategy (2015)
Access road 1. Access road to plantation 2) Access road from beachfront to main road	Reconstruction and sealing of village access/plantation road and to families residing along this road: Costing was in LTA list of pipeline roads for Falealili 1) Length: 860m Estimated Cost: SAT$ 348,634.00 Civil Engineer for PPCR estimated access road to be 200m that needs sealing 2) Village request to tar sealed access road to use as escape route for school children and family during extreme from the coast to inland ***Responsibility: LTA / MWTI / village***	Improve rate of recovery Increase number of families relocate to higher grounds	Construction of access roads should be guided by the following: Environmental and Social Safeguard policy Samoa Code of Environmental Practice (2007) Review of National Road Standards in Samoa (2016) Vulnerability Assessment of the Samoa Road Network (2017) National Infrastructure Strategic Plan (NISP) 2011 Programme road safety activities into budget and work	Community Integrated Management Strategy, August 2015 Transport Sector Plan 2014-2019

			program	
Drainage system clean-up	Maintenance of road side drains and regular inspection of drainage system; ***Responsibility: MWCSD / District / Village / MWTI and LTA***	Improved rate of recovery Reduce potential for flooding in village areas Safer village houses and roads Improved safety community and resilience	Implementing drainage works should follow the guidelines listed: Environmental and Social Safeguard policy Samoa Code of Environmental Practice (2007) Review of National Road Standards in Samoa (2016) National Infrastructure Strategic Plan (NISP) 2011 Programme road safety activities into budget and work programme Programme drainage in budget and work programme Prepare assessment of road drainage systems Prepare a local education programme on need for keeping drainage systems clean	Community Integrated Management Strategy, August 2015 Transport Sector Plan 2014-2019
Community pool next to the wetland (Vai Ulata)	Upgrade structural work on the pool to repair parts of the protective wall deteriorating clean-up around the pool ***Responsibility: Village / CSSP / NGO***	Improve quality of drinking water Backup source of alternative water supply for community during time of emergency (drought or natural disasters – cyclones)	MNRE to ensure that proper guidelines are followed by community for improving coastal pool: Environmental and Social Safeguard Policy Samoa Code of Environmental Practice (2007) PUMA Act 2004	Water and Sanitation Sector Plan 2016-2020 Community Development Plan 2016-2021 National Environment Sector Plan 2016-2021 2016-2020 National Forestry Plan

Other Solutions Considered or Further Issues Raised

Infrastructure	Solutions/ Issues	Comment
Seawall	Village to build a seawall at the beachfront to protect residential area from storm surges ***Responsibility: MWTI/ village***	The site assessment during the CIM Plan consultation concluded that the landscape does not warrant the need for a seawall. The village is better to consider enhancing coastal vegetation and shelter belt planting between the main access track that runs along the coast and the shoreline.
Culvert	Salesatele culvert ***Responsibility: LTA***	More likely to be at risk from corrosion and inadequate maintenance (25 years to the Richardson Road Armco culverts) than climate change

Environment & Natural Resources	Best Solutions Proposed	Other Benefits	Guidelines to assist Implementation	Relevant to Sector Plans
Marine Environment needs protection and management	Expand existing fishery reserves Implement coral gardening Conduct training on village based monitoring programs for marine areas Implement all activities under the village Fisheries Management Plan Implement program to remove crown of thorns from inshore area ***Responsibility: MAF / MNRE / Village***	Reduce impact of land-based pollution Reduce impact of coral bleaching Improve resilience of coral reef ecosystem to combat climate change Reduce loss of marine habitats	Maintenance of marine reserve and protected area requires community consent and government approval along with biological surveys. Fisheries Division to advice villages on the Community-based Fisheries Management Program (CBFMP) – Develop Village Fisheries Management Plans NBSAP 2015-2020	Agriculture Sector Plan 2016-2020 National Environment Sector Plan 2017-2021
Coastal Processes	Enlarge the estuary river mouth through implementation of a clean-up program to remove terrestrial debris washed down from upstream Controlled sand mining to allow village to extract sand that has been	Allows faster flow of water into the sea – reduce impact of flooding Provides incentives for families not to mine areas that are highly eroded	Implementation of work plan for managing coastal processes to follow the guidelines below: Environmental Social Safeguard policy Code of Environmental Practice 2007	National Environment Sector Plan 2017-2021

	deposited at mouth of the river to ensure river normal flow into the sea Develop mining regulation to control and monitor extraction activities ***Responsibility: MNRE / Village***		PUMA Act 2004 NBSAP 2015-2020 Water Resources Management Act 2008 NAP – Sustainable Land Management Plan 2015-2019	
Invasive species	Implement control or eradication programs to remove or managed invasive weeds and plants commonly found in open fallow land such as: Cordia tree species, peanut weed (vao pinati), African tulip (faapisi) and merremmia peltata (fue lautetele) Conduct awareness and education community programs on the adverse impact of invasive alien species (terrestrial or marine environment) and the use of pesticides on farms. ***Responsibility: MNRE / village***	Reduce impact of invasive species on forest Increase number of native trees reforestation Improve soil stability	Implementation of invasive species program should be guided by: NBSAP 2015-2020 National Invasive Species Plan 2008-2011 Restoration Operational Plan 2016-2020	National Environment Sector Plan 2017-2021

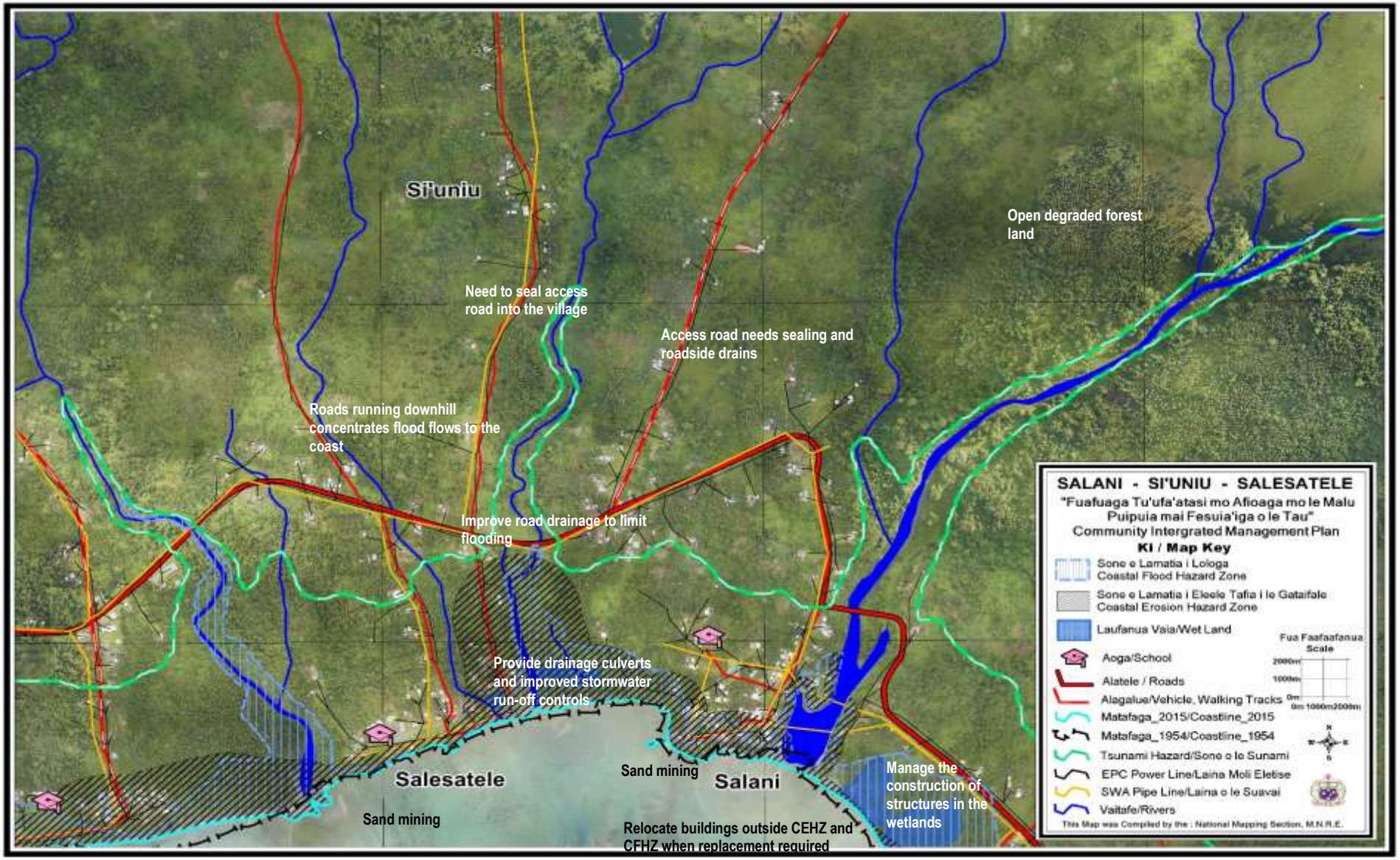
Livelihood and Food Security	**Best Solutions**	**Other Benefits**	**Guideline to assist Implementation**	**Relevant to Sector Plans**
Disturbed forests and plantation areas	Restore and utilize fallow lands closer to the village with plantations rather than clearing inland and upland forests : Promote and facilitate planting of root-crops (i.e yams, sweet potato)	Improve food security and healthy living and increase community resilience and adaptive response to climate change	MAF CROP Division to support farmers through guidance and trainings from Agricultural experts and awareness programs on crop diversification to suit the prolonged periods of drought	Agriculture Sector Plan 2016-2020

	which are more resilient to cyclones, droughts and floods. Promote agro-forestry and mixed planting including fruit trees species to reduce crop vulnerability to pests and diseases. Diversify into other climate resilient species cash crops and fruit trees i.e cocoa, coconut, lemon and plant in suitable areas outside hazard zones Implement Sustainable Land management practices Implement integrated pest management programmes ***Responsibility: MAF /CSSP/WIBDI/Farmers Association/ METI/ SBEC / UNDP-GEF-SGP/MNRE / villages***		or rainy season Provide tools and planting materials to improve crop diversification and resilience – address pest issues etc. This will lead to improve food security Strengthen partnership with farming NGO's such as the: Samoa Farmers Association; Samoa Federated Farmers Incorporated ; Women in Business Inc. and private sector to support rural farmers through training opportunities and marketing productivity Implementation of solutions are guided by the following: Draft Soil Resource Management Bill 2018 Samoa National Action Programme to combat Land Degradation and to mitigate effects of drought 2015-2020 National Invasive Species Strategy and Action Plan 2008-2011 2 Million Tree Planting Strategy 2015-2020	

Village Governance	Best Solutions	Guideline to assist Implementation	Comments
District /Village By-laws	Implement district / village by-laws for community to follow and include protection of natural resources both marine and terrestrial ***Responsibility: Village / MWCSD***	MWCSD to provide assistance to district /village in developing by-laws Community Development 2016-2021	Support the development of district / village by-laws that can guide governing structure of village and the implementation of government and non-government programs including CIM Plans.
Village Drainage Maintenance	Undertake village inspection of culverts along inland / main roads; - Implement district/village drainage/ culvert clean-up and awareness program ***Responsibility: Village / MWTI***	Village council and women's committee monitor clean-up of drainage and culverts removing rubbish etc.	Community encourage village clean-up of drainage and culverts.

Estuary / mouth of river channel in Salesatele village with thick sand deposit and debris from upstream blocking and slowing the flow of water - can cause flooding in the coastal lowland.

Salesatele Village Map



4.2 Salani Village Interventions

Infrastructure	Best Solutions Proposed	Other Benefits	Guidelines to assist Implementation	Relevant to Sector Plans
Village infrastructure in hazard zones include: Households Schools Churches Businesses, Women's Committee House	Relocate outside hazard zones Investments within the hazard zone adopt appropriate mitigation measures such as: Raise building foundations at a level that takes into account the CFHZ in the vicinity ***Responsibility: Village/Families / MWTI***	Reduce cost in ongoing maintenance mitigate potential damage from coastal erosion and flooding accommodating the hazard.	Application of the National Building Code (Draft Sept 2016) and permit compliance PUMA Act 2004	CIM Strategy (2015)
Access Road	Recommend tar sealing of both inland road to 1km (i.e. one road links to neighboring villages Sapoe/Utulaelae is an emergency escape route (specify access roads) ***Responsibility: LTA /village***	Improve rate of recovery Increase number of families relocate to higher grounds	Construction of access roads should be guided by the following: Environmental and Social Safeguard policy Samoa Code of Environmental Practice (2007) Review of National Road Standards in Samoa (2016) Vulnerability Assessment of the Samoa Road Network (2017) National Infrastructure Strategic Plan (NISP) 2011 Programme road safety activities into budget and work programme	Community Integrated Management Strategy, August 2015 Transport Sector Plan 2014-2019

Electricity Supply	Install and connect power supply for inland residents Install streetlights along the roads where needed for community safety. Relocate overhead lines to a more resilient location when being replaced ***Responsibility: EPC / MWTI / Villages***	Maintain electricity supply at all times including during natural disasters. Avoid accidents from fallen electricity posts.	Monitor distribution networks to avoid overloading poles and contributing to line failures EPC to installed electricity lines to reach families residing inland and streetlights Consider energy efficiency developments for communities using renewable energy guided by existing framework – Development of a Renewable Energy and Energy Efficiency Framework, 2016	Samoa Energy Sector Plan 2017-2022
Water (Existing water from SWA has strong chlorine smell / taste)	Assess and monitor the piped water network for families receiving SWA water: Extend network pipeline Salani inland road intersecting Lotofaga (recommend for district large project) MoH to test the level of chlorine being put into the water whether it is good for consumption Conduct water quality testing for compliance ***Responsibility: SWA/MoH/village***	Improve sanitation and hygiene Reduce number of sick people from poor drinking water Improve community resilience to proactively adapt	Samoa Water Authority Pipeline Work Program for FY17/18 Environmental and Social Safeguard Policies apply - MoH Water Quality Standards SWA 10 Year Investment Plan (2016) to improve water supply network	Community Integrated Management Strategy, August 2015) Water and Sanitation Sector Plan 2016-2020
Rainwater harvesting systems(families with no water inland road of Salani)	Implement the installation of rain-water harvesting system: - All families in the village to have access to clean affordable water. - Installed water	Improve community adaptation actions Increase basic sanitation and hygiene	MNRE to provide guidance to community on opportunities available for small village project: Conduct assessment to identify	Water and Sanitation Sector Plan 2016-2020 Community Development Plan 2016-2021

	tanks for the eight families residing inland without water ***Responsibility: Village / CSSP / MNRE***		vulnerable families in village suitable for rainwater harvesting priority	
Community pool next to the wetland (Puna Lafa)	Upgrade structural work on the pool to repair parts of the protective wall deteriorating clean-up around the pool Request water quality testing for drinking water ***Responsibility: Village / CSSP / NGO /MoH***	Improve quality of drinking water Backup source of alternative water supply for community during time of emergency (drought or natural disasters – cyclones)	MNRE to ensure that proper guidelines are followed by community for improving coastal pool Environmental and Social Safeguard Policy NBSAP 2015-2020 Samoa Code of Environmental Practice (2007) PUMA Act 2004 Forestry Restoration Operational Plan 2016-2020	Water and Sanitation Sector Plan 2016-2020 Community Development Plan 2016-2021 National Environment Sector Plan 2017-2021

Environment & Natural Resources	**Best Solutions**	**Other Benefits**	**Guidelines to assist Implementation**	**Relevant to Sector Plans**
Marine / Fisheries Reserve	Expand existing fishery reserves Implement coral gardening Conduct training on village based monitoring programs for marine areas Implement all activities under the village Fisheries Management Plan Implement program to remove crown of thorns from inshore	Reduce impact of land-based pollution Reduce impact of coral bleaching Improve resilience of coral reef ecosystem to combat climate change Reduce loss of marine habitats	MAF-Fisheries division to provide advice following existing guidelines: Community-based Management Fishery Plan NBSAP 2015-2020 Update village Fisheries Management Plan	Agriculture Sector Plan 2016-2020 National Environment Sector Plan 2017-2021

	area ***Responsibility: MAF / MNRE / Village***			
Invasive species	Implement control or eradication programs to remove or managed invasive weeds and plants commonly found in open fallow land such as: Cordia tree species, peanut weed (vao pinati), African tulip (faapisi) and merremmia peltata (fue lautetele) Conduct awareness and education community programs on the adverse impact of invasive alien species (terrestrial or marine environment) ***Responsibility: MNRE / village***	Reduce impact of invasive species on forest Increase number of native trees reforestation Improve soil stability	Implementation of invasive species program should be guided by: NBSAP 2015-2020 National Invasive Species Plan 2008-2011	National Environment Sector Plan 2017-2021
Sand mining for commercial and domestic use affecting the marine and coastal environment as well as terrestrial resources	Assess and identify sustainable sources of sand for domestic and commercial use Village, government and the private sector to collaborate on designated areas for sand mining Extractive industries (mining) monitored and corrected in the riverbank and coastal fringe Strengthen sand mining monitoring and enforcement Mass media awareness on sustainable sand mining practices	Village gains benefit from sand mining activities Reduce impact to natural coastal protection mechanism via control of scale and site of extraction Improve village resource management and sustainable development Minimize impacts of coastal inundation and erosion Improve the sustainable management of sand as a natural resource	Follow existing MNRE guidelines for sand mining or extracting such as: MNRE monitoring of sand extraction operations Secure relevant permits before any sand mining occurs Incorporate environmental and social safeguards concerns including consultations with any affected community Village environmental management plans established including annual monitoring systems	National Environment Sector Plan 2017 - 2021

	Develop sand mining regulation ***Responsibility: MNRE / District & Village***		For access to sites, obtain written consents from Alii Faipule and landowners. Lands and Survey Environment Act 1989 Consideration of EIA assessment of impact prior to any extraction PUMA Act 2004 NAP – Sustainable Land Management Plan 2015-2019 (draft) |Sand Mining Policy 2001 Draft Soil Resource Management Bill 2018	

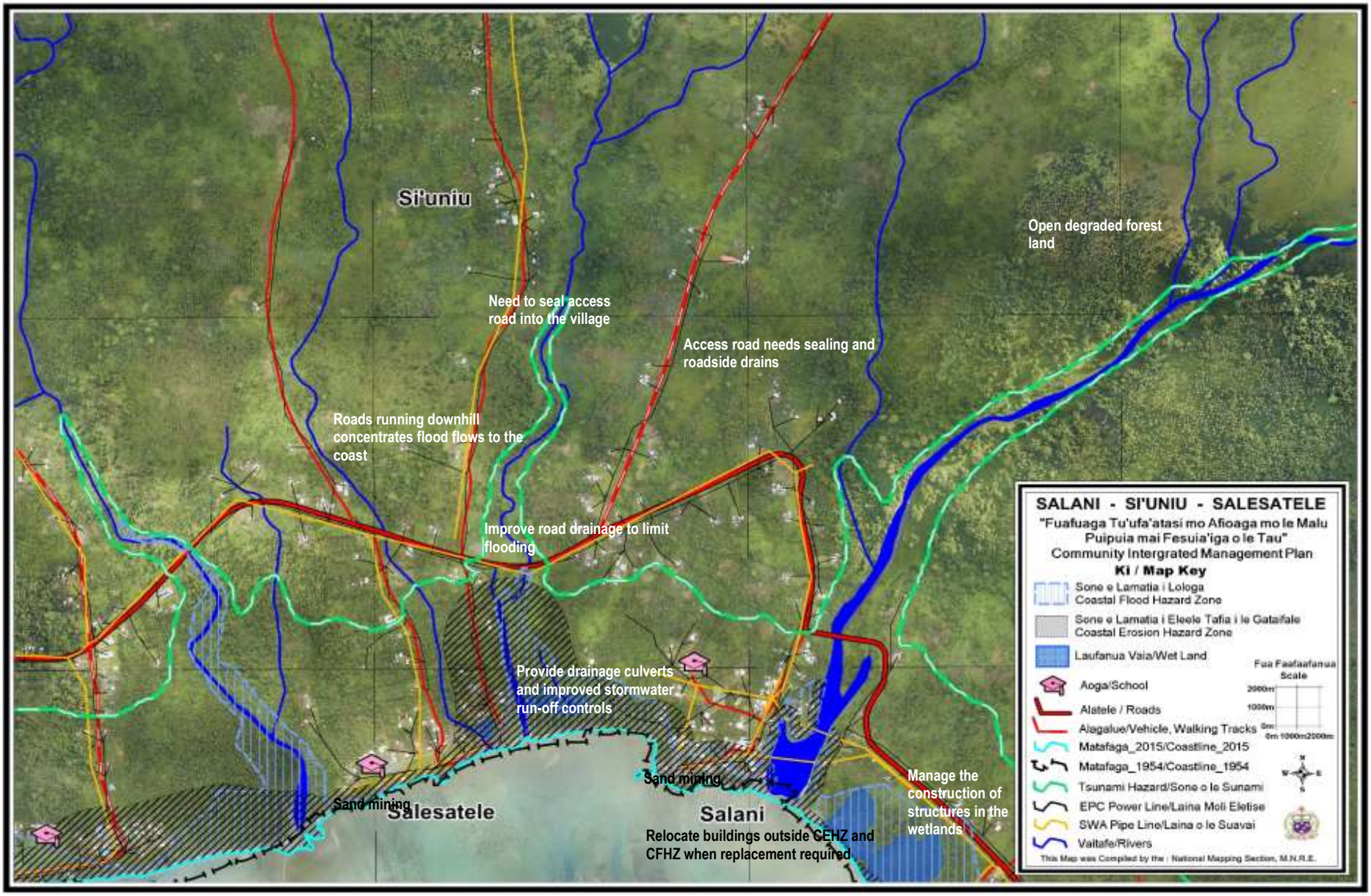
Livelihood and Food Security	**Best Solutions**	**Other Benefits**	**Guideline to assist Implementation**	**Relevant to Sector Plans**
Disturbed forests and plantation areas / invasive pests	Restore and utilize fallow lands closer to the village with plantations rather than clearing inland and upland forests Promote and facilitate planting of root crops (i.e yams, sweet potato) which are more resilient to cyclones, droughts and floods. Implement sustainable land management practices. Implement integrated pest	Improve food security and healthy living and increase community resilience and adaptive response to climate change	MAF CROP Division to support farmers through guidance and trainings from Agricultural experts and awareness programs on crop diversification to suit the prolonged periods of drought or rainy season Provide tools and planting materials to improve crop diversification and resilience – address pest issues etc. This will lead to improve food security	Agriculture Sector Plan 2016-2020

	management programme Promote agro-forestry and mixed planting including fruit trees species to reduce crop vulnerability to pests and diseases. Diversify into other cash crops and fruit trees i.e cocoa, coconut, lemon and plant in suitable areas outside hazard zones Implement a control program to manage invasive pests both flora and fauna impacting on plantations – crops. ***Responsibility: MAF MNRE /villages***		Strengthen partnership with farming NGO's such as the: Samoa Farmers Association; Samoa Federated Farmers Incorporated ; Women in Business Inc. and private sector to support rural farmers through training opportunities and marketing productivity Implementation of solutions are guided by the following: Draft Soil Resource Management Bill 2018 Samoa National Action Programme to combat Land Degradation and to mitigate effects of drought 2015-2020 National Invasive Species Strategy and Action Plan 2008-2011 2 Million Tree Planting Strategy 2015-2020	
Aquaculture tilapia farm	Implement climate smart aquaculture tilapia farm Conduct consultation and awareness on impact of tilapia farm on the environment Need to conduct Health Impact	Increase food security	MAF-Fisheries to provide guidance to the community on developing a tilapia farm: Environmental Social Safeguard policy Community-based Fisheries	Agriculture Sector Plan 2016-2020

	Assessment ***Responsibility: MAF / MNRE / MoH***		Management Plan	

Coastal spring (Puna Lafa) next to wetland in Salani - potential contamination from nearby households with latrines located above the pool.

Salani Village Map



4.3 Siuniu Village Interventions

Infrastructure	Best Solutions	Other Benefits	Guidelines to assist Implementation	Relevant to Sector Plans
Access road	Reconstruction and sealing of village access/plantation road and to families residing along this road: Costing was in LTA list of pipeline roads for Falealili; Siuniu Length: 1.53km Estimated Cost: SAT$ 550,800.00 ***Responsibility: LTA / MWTI / village***	Improve rate of recovery Increase number of families relocate to higher grounds	Construction of access roads should be guided by the following: Environmental and Social Safeguard policy Samoa Code of Environmental Practice (2007) Review of National Road Standards in Samoa (2016) Vulnerability Assessment of the Samoa Road Network (2017) National Infrastructure Strategic Plan (NISP) 2011 Programme road safety activities into budget and work programme	Community Integrated Management Strategy, August 2015 Transport Sector Plan 2014-2019
Electricity Supply	Install and connect power supply for inland residents Install streetlights along the roads where needed for community safety. Relocate overhead lines to a more resilient location when being replaced ***Responsibility: EPC / MWTI / Villages***	Maintain electricity supply at all times including during natural disasters. Avoid accidents from fallen electricity posts.	Monitor distribution networks to avoid overloading poles and contributing to line failures EPC to installed electricity lines to reach families residing inland and streetlights Consider energy efficiency developments for communities using renewable energy	Samoa Energy Sector Plan 2017-2022

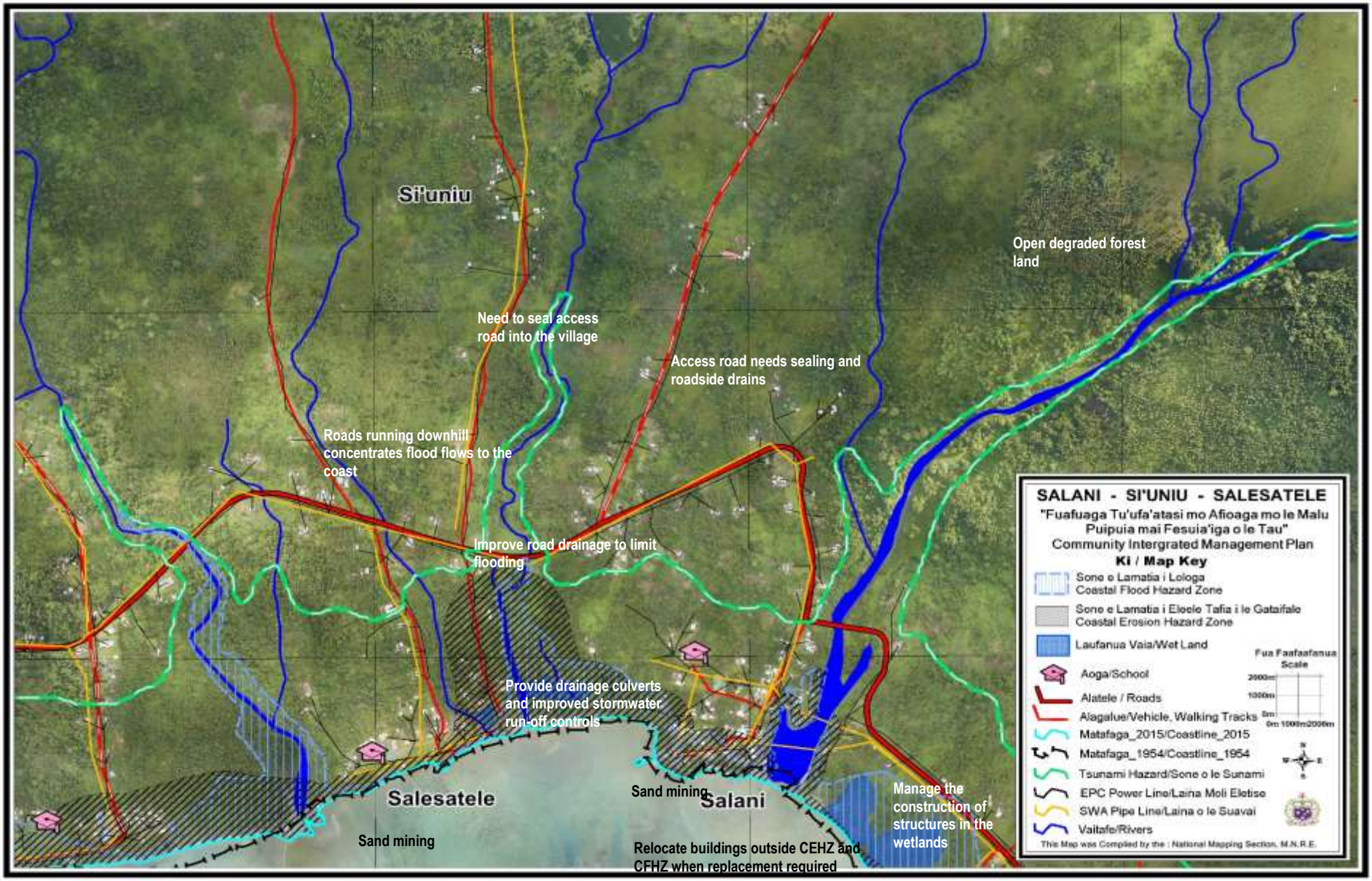
			guided by existing framework – Development of a Renewable Energy and Energy Efficiency Framework, 2016	

Livelihood and Food Security	Best Solutions	Other Benefits	Guidelines to assist Implementation	Relevant to Sector Plans
Invasive pests	Implement control or eradication programs to remove or managed invasive weeds and pests, causing damages to taro and banana plantations: merremmia peltata (fue lautetele), insects, African snail Conduct awareness and education community programs on the adverse impact of invasive alien pests on plantations Apply the Integrated Pest Management Program ***Responsibility: MNRE / MAF / village***	Reduce impact of invasive species on forest Increase number of native trees reforestation Improve soil stability	Implementation of invasive species program should be guided by: NBSAP 2015-2020 National Invasive Species Plan 2008-2011 Restoration Operational Plan 2016 - 2020	National Environment Sector Plans 2017-2021 Agriculture Sector Plan 2016 - 2020

Village Governance	Best Solutions	Implementation Guidelines	Comments
Village By-laws	Implement village by-laws for community to follow and include protection of natural resources both marine and terrestrial ***Responsibility: Village / MWCSD***	MWCSD to provide assistance to district /village in developing by-laws Community Development 2016-2021	Support the development of village by-laws that can guide governing structure of village and the implementation of government and non-government programs including CIM Plans.

Dirt access road inland to Siuniu Village requesting to tar sealed

Siuniu Village Map



4.4 Sapo'e Village and Utulaelae Village Interventions

Infrastructure	Best Solutions	Other Benefits	Guideline to assist Implementation	Relevant to Sector Plans
Drainage	- Maintenance of road side drains and regular inspection of drainage system; ***Responsibility: MWTI and LTA***	Improved rate of recovery Reduce potential for flooding in village areas Safer village houses and roads Improved safety community and resilience	Implementing drainage works should follow the guidelines listed: Environmental and Social Safeguard policy Samoa Code of Environmental Practice (2007) Review of National Road Standards in Samoa (2016) National Infrastructure Strategic Plan (NISP) 2011 Programme road safety activities into budget and work programme Programme drainage in budget and work programme Prepare assessment of road drainage systems Prepare a local education programme on need for keeping drainage systems clean	Community Integrated Management Strategy, August 2015 Transport Sector Plan 2014-2019
Access road	Reconstruction and sealing of village access/plantation road and to families residing along this road: Costing was in LTA list of pipeline roads	Improve rate of recovery Increase number of families relocate to higher grounds	Construction of access roads should be guided by the following: Environmental and Social Safeguard policy	Community Integrated Management Strategy, August 2015

	for Falealili: Utulaelae Length: 630m Estimated Cost: SAT$ 226,800.00 Second inland is in Sapoe estimated at 1km ***Responsibility: LTA / MWTI / village***		Samoa Code of Environmental Practice (2007) National Infrastructure Strategic Plan (NISP) 2011 Review of National Road Standards in Samoa (2016) Vulnerability Assessment of the Samoa Road Network (2017) Programme road safety activities into budget and work programme	Transport Sector Plan 2014-2019
Water network	Request SWA to extend piped water network to families residing inland for both Sapoe and Utulaelae villages ***Responsibility: SWA/ village***	Improve sanitation and hygiene. Improve community resilience to proactively adapt .	Samoa Water Authority Pipeline Work Program for FY17/18 Environmental and Social Safeguard Policies apply - MoH Water Quality Standards SWA 10 Year Investment Plan (2016) to improve water supply network	Community Integrated Management Strategy, August 2015) Water and Sanitation Sector Plan 2016-2020
Rainwater harvesting (water tanks)	Rainwater harvesting immediate action, supported by the installation of a water tank at the Utulaelae Primary back-up water supply for school children when SWA water is limited ***Responsibility: CSSP / MWCSD / village***	Improve community adaptive capacity to respond to climate change impacts	Conduct assessment of vulnerable families inland without access to water prior to approving rainwater harvesting system. National Water Resources Management Strategy 2007-2017	Water and Sanitation Sector Plan 2016-2020 National Environment Sector Plans 2017-2021

Electricity Supply	Install and connect power supply for inland residents Install streetlights along the roads where needed for community safety. Relocate overhead lines to a more resilient location when being replaced ***Responsibility: EPC / MWTI / Villages***	Maintain electricity supply at all times including during natural disasters. Avoid accidents from fallen electricity posts.	Monitor distribution networks to avoid overloading poles and contributing to line failures EPC to installed electricity lines to reach families residing inland and streetlights Consider energy efficiency developments for communities using renewable energy guided by existing framework – Development of a Renewable Energy and Energy Efficiency Framework, 2016	Samoa Energy Sector Plan 2017-2022

Environment & Natural Resources	**Best Solutions**	**Other Benefits**	**Guidelines to assist Implementation**	**Relevant to Sector Plans**
Marine / Fisheries Reserve	Expand existing fishery reserves Implement coral gardening Conduct training on village based monitoring programs for marine areas Implement all activities under the village Fisheries Management Plan Implement program to remove crown of thorns from inshore area Training on understanding the importance of	Reduce impact of land-based pollution Reduce impact of coral bleaching Improve resilience of coral reef ecosystem to combat climate change Reduce loss of marine habitats	MAF-Fisheries division to provide advice following existing guidelines: Community-based Management Fishery Plan NBSAP 2015-2020 Update village Fisheries Management Plan	Agriculture Sector Plan 2016-2020 National Environment Sector Plan 2017-2021

	seaweed to coral reef ecosystems and for fish species ***Responsibility: MAF / MNRE / Village***			
Wetland (Waste being dumped into wetland area)	Implement a rapid biodiversity assessment of the wetland area in Utulaelae to consider its current condition and rehabilitation program Conduct village clean-up of the wetland area ***Responsibility: MNRE / village***	Improve ecological resilience of wetland ecosystem	Develop a management plan for the Wetland to be guided by: NBSAP 2015-2020	National Environment Sector Plan 2016 - 2021

Livelihood and Food Security	**Best Solutions**	**Other Benefits**	**Guidelines to assist Implementation**	**Relevant to Sector Plans**
Disturbed forests and plantation areas	Restore and utilize fallow lands closer to the village with plantations rather than clearing inland and upland forests Promote and facilitate planting of root-crops (i.e yams, sweet potato) which are more resilient to cyclones, droughts and floods. Promote agro-forestry and mixed planting including fruit trees species to reduce crop vulnerability to pests and diseases. Diversify into other climate resilient species cash crops and fruit trees i.e cocoa, coconut, lemon and	Improve food security and healthy living and increase community resilience and adaptive response to climate change	MAF CROP Division to support farmers through guidance and trainings from Agricultural experts and awareness programs on crop diversification to suit the prolonged periods of drought or rainy season Provide tools and planting materials to improve crop diversification and resilience – address pest issues etc. This will lead to improve food security Strengthen partnership with farming NGO's such as the: Samoa Farmers Association; Samoa	Agriculture Sector Plan 2016-2020

	plant in suitable areas outside hazard zones Implement Sustainable Land management practices Implement integrated pest management programmes ***Responsibility: MAF / CSSP/WIBDI/Farmers Association/ METI/ SBEC / UNDP-GEF-SGP/MNRE / villages***		Federated Farmers Incorporated ; Women in Business Inc. and private sector to support rural farmers through training opportunities and marketing productivity Implementation of solutions are guided by the following: Draft Soil Resource Management Bill 2018 Samoa National Action Programme to combat Land Degradation and to mitigate effects of drought 2015-2020 National Invasive Species Strategy and Action Plan 2008-2011 2 Million Tree Planting Strategy 2015-2020	
Invasive pests	Implement control or eradication programs to remove or managed invasive weeds and pests, causing damages to taro and banana plantations: Merremmia peltata (fue lautetele), insects, African snail, myna birds. Conduct awareness and education community programs on the adverse impact of invasive alien pests on plantations	Reduce impact of invasive species on forest Increase number of native trees reforestation Improve soil stability	Implementation of invasive species program should be guided by: NBSAP 2015-2020 National Invasive Species Plan 2008-2011 Restoration Operational Plan 2016 - 2020	National Environment Sector Plan 2017-2021 Agriculture Sector Plan 2016-2020

	Implementation of the integrated pest management program ***Responsibility: MNRE / MAF / village***			
Marine Restocking	Expand existing marine reserve to include: Restock reefs and lagoons with marine species such as clams, trochus, seaweeds and others for domestic consumption. Enforce fisheries by-laws. ***Responsibility: MAF / village***	Improve food security and healthy living and increase community resilience and adaptive response to climate change Increase diversity of marine species and coral reef ecosystem Reduce coral bleaching	Improve existing marine reserve and encourage expanding to other nearby sub-villages Community-Based Fisheries Management Plan	Agriculture Sector Plan 2016-2020

Village Governance	**Best Solutions Proposed**	**Guidelines to assist Implementation**	**Comments**
District /Village bi-laws and institutional setting	Develop and enforce related by-laws to support implementation of CIM Plans ***Responsibility: MWCSD / Village*s**	Village Fono Amendment Bill 2016 allows the villages to have their own faiga faavae "refer Clause 5 Amendment". Fisheries Village By-Laws for Matautu	The Amendment allows for the village to establish their own governing constitution and have it registered with MWCSD and in this way village by-laws to manage community and public asset as well as natural resource management can be part of the village constitution.
Village Drainage Maintenance	Undertake village inspection of culverts along inland / main roads; - Implement district/village drainage/ culvert clean-up and awareness program ***Responsibility*: *MWCSD / Villages***	Village council and women's committee enforce monitoring of clean-up for drainage	Community expressed concern about poor drainage and community initiatives to clean-up drainage and culverts.

Access road inland Sapoe requesting to tar sealed and church ideal Evacuation Shelter location.

Strong waves and storm surges causes much of the coastal erosion in Utulaelae village impacting on coastal vegetation.

Sapo’e and Utulaelae Village map