

Community Integrated Management Plan

Va'a o Fonoti District - 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.

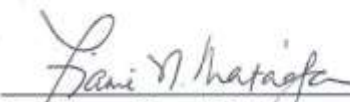
We wish to acknowledge the significant contributions of our District and Village communities and our key government partner stakeholders and implementing agencies, in particular:

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 CIM Plan is a Partnership between the Government of Samoa and the villages within the Plan area. The Plan area starts from the ridge extending to the reef broadly covering 4 sectors; Infrastructure; Natural Environment and Resources; Livelihood and Food security; and Village 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 Faipule District of Va'a o Fonoti (Faleapuna, Lona, Ma'asina, Saletele, Sauano, Salimu/Musumus, Samamea, Taelefaga and Uafato villages).

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

Date of Signing 22 June 2018

Representative:

Signature:

Faleapuna Village

- Lemalu Sau Lemalu
- Pa Isaia
- Limutau Kirisimasi
- Lenuu Faamoana
- Fonoti Menefata

Handwritten signatures for Faleapuna Village representatives on lines. From top to bottom: a signature, a signature, a signature, the name 'Lenuu' written in cursive, and the name '(Fonoti)' written in cursive.

Lona Village

- Logo Vaelua Lavasii
- Magele Some
- Iosefa Brown
- Puna Oeti
- Kalolo Mika

Handwritten signatures for Lona Village representatives on lines. From top to bottom: a signature, the name 'Magele Some' written in cursive, the name 'Iosefa Brown' written in cursive, the name 'Puna Oeti' written in a simple font, and a signature.

Ma'asina Village

- Togia Ieremia
- Peati Ieremia
- Felagonai Lava
- Alofaaga Key
- Eli Konelio

Togia Ieremia

Peati Ieremia

Felagonai Lava

Alofaaga Key

Eli Konelio

Saletele Village

- Faleola Tavaseu
- Taputapu Taito
- Taito Pafelio

Faleola Tavaseu

Taputapu Taito

Taito Pafelio

Sauano Village

- Tiavatia Konelio
- Saegaese Fuauli
- Fausia Sinei Tama
- Utaimalie Leuluaialii
- Tolua Limutau

Tiavatia Konelio

Saegaese Fuauli

Fausia Sinei Tama

Utaimalie Leuluaialii

Tolua Limutau

Salimu/Musumus Village

- Ifopo Lio
- Siatuolo Peni
- Fea
- Tauiliili
- Lagi

Ifopo Lio

Siatuolo Peni

Fea

Tauiliili

Lagi

Samamea Village

- Fofoga Fiafia

Fofoga Fiafia

- Anna Tafaoialii

Anna Tafaoialii

- Leiataua Pulemaituaaiga

Leiataua Pulemaituaaiga

- Peter Peterson

Peter Peterson

- Tofiau Puepuemai

Tofiau Puepuemai

Taelefaga Village

- Leuta Siala Valeaga

Leuta Siala Valeaga

- Anovale Masani

Anovale Masani

- Sialafau Leuta

Sialafau Leuta

- Pisi Atiifale

Pisi Atiifale

- Samuelu Fasi

Samuelu Fasi

Uafato Village

- Talalelei Tuimalatu

Talalelei Tuimalatu

- Leau Onosai

Leau Onosai

- Alaifue Iupeli

Alaifue Iupeli

- Tiaseu Viliata

Tiaseu Viliata

- Alaifue Roni

Alaifue Roni

The Government of Samoa adopts the Community Integrated Management Plan for the Faipule District of Vaa o Fonoti 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 Departments 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.



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
CC	Climate Change
CCA	Climate Change Adaptation
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
IG	Implementation Guideline
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
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
SOER	State of Environment Report
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

“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.
Food Security	Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life
<i>Food access:</i>	Access by individuals to adequate resources (entitlements) for acquiring appropriate foods for a nutritious diet. Entitlements are defined as these to fall 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)
<i>Food availability:</i>	The availability of sufficient quantities of food of appropriate quality, supplied through domestic production or imports (including food aid)
<i>Stability:</i>	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 in security). The concept of stability can therefore refer to both the availability and access dimensions of food security
<i>Utilization:</i>	Utilization of food through adequate diet, clean water, sanitation and healthcare 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
Hazard	A source of potential harm or a situation with a potential to cause loss.
Hazard Zones	<p>Defined areas 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 six hazard zones:</p> <p><i>ASCHs</i> (areas sensitive to coastal hazards);</p> <p><i>CEHZs</i> (coastal erosion hazard zones);</p> <p><i>CFHZs</i> (coastal flood hazard zones) and</p> <p><i>CLHZs</i> (coastal landslip hazard zones)</p> <p><i>CIHZ</i> (coastal inundation hazard zones)</p> <ul style="list-style-type: none"> - Coastal Inundation 0 to 15mASL – immediate coastal inundation hazard zone - Coastal Inundation 15 to 20mASL – 5-metre uncertainty buffer on the immediate coastal inundation hazard zone (due to potential LiDAR inaccuracies) - Coastal Inundation 20 to 50mASL – additional hazard zone for the purpose of assessing/planning the location of tsunami protection infrastructure beyond the 0-20mASL contour. Please note tsunami risk includes 0-20mASL, so tsunami hazard zones need to include the 0-15mASL and 15-20mASL polygons as well as the 20-50mASL polygon - Coastal Inundation 50 to 55mASL – 5-metre uncertainty buffer on the tsunami infrastructure hazard zone (due to potential LiDAR inaccuracies) <p><i>IFHZ</i> (immediate fluvial hazard zone) within the steep banks of the river gorges</p> <ul style="list-style-type: none"> - River bank encroachment control – 5m buffer on either side of river banks - Watershed management riparian zone – 20m buffer on either side of the river banks

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 Guideline	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).
Livelihood	Livelihood refers to a person or group's "means of securing the necessities -food, water, shelter and clothing- of life".
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 defined 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

1. Introduction to the CIM Plan

1.1 The Strategic Vision

The District Community Integrated Management (CIM) Plan for Va'a o Fonoti District has been prepared as part of the Government of Samoa's Adaptation Fund - *Enhancing Resilience of Coastal Communities of Samoa to Climate Change Project*. The CIM Plan is one of the primary means of implementing the CIM Strategy, which was formally approved by the Government of Samoa in February, 2001 and updated in 2015 as providing the Strategic direction for enhancing the resilience of community livelihoods, infrastructure, environment and natural resources using a holistic and integrated ridge-to-reef approach. The Strategy has as its central vision:

Resilience – Community Livelihoods, Infrastructure, Environment and Natural Resources
to Climate Change and Natural Disasters

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, 2015).***

1.2 The Aim of the CIM Plan

The aim of the CIM Plan is to help communities and government improve resilience by identifying actions and solutions considered as best approach to issues identified. Not all the solutions may be actioned immediately but the plan will ensure that issues and options are identified for the long-term improvement in resilience of community livelihoods, infrastructure, and environment and resource systems.

The CIM Plan will:

1. Improve the community's awareness of all hazard risks from the ridge to the reef;
2. Enable the community as well as providers of services and physical, financial, and technical support in all climate prone sectors, to reduce inland and coastal hazard risks in villages;
3. Enable the community and government service providers of infrastructure services, livelihoods, environment and natural resources to better adapt, respond and recover from cyclones.

1.3 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 in preparing 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. The participants of the CIM Plan preparation process are acknowledged in the Implementation Guidelines.

2. Implementation Guidelines

2.1 Purpose of the Implementation Guidelines

The Implementation Guidelines describe the solutions proposed that will increase the resilience of the villages in the Plan area and the ways these solutions can be implemented. The solutions are presented for various livelihoods, infrastructure, environment and natural resources items that have moderate to low resilience. Where one solution will provide benefits to other items of livelihoods, infrastructure, environment and natural resources these “Other Benefits” are also noted. Implementation is considered to be the joint responsibility of both the villages and the government in partnership. The government is responsible for the provision of national and district “Public”, infrastructure and public goods and benefits derive from environmental services and natural resources, while villages are responsible for local and community infrastructure and livelihoods related actions. The responsibility for implementing the proposed actions is also defined. Solutions for both District and Village level issues related to livelihoods, infrastructure, environment and natural resources respectively, and the responsibility of both partners, should be considered together as they combine to provide for the integrated management of all community development initiatives.

The solutions for village level interventions related to livelihoods, infrastructure, environment and natural resources will usually be the responsibility of the Village Council and Families in the village to implement. Advice and resources may be available from the Government to assist the village in implementing these solutions. In most situations these solutions will also provide benefits to both village and district infrastructure and resources and environmental goods that are shared between villages. These solutions should be considered an integral part of strengthening community resilience at both levels.

2.2 Duration of the Plan

The CIM Plan is **reviewed** every 10 years but during the Plan period, the solutions implemented will be **monitored** on a five (5) yearly basis to ensure the proposed solutions are effective and are actually improving resilience. The 5 yearly monitoring of the new CIM Plan is aligned with the 5 year review of **the key national planning and programming** strategy for Samoa: the *Strategy for the Development of Samoa* (SDS). The new CIM Plan recognizes some solutions are likely to take longer than 5 years, whilst others may take up to 10 years to implement due to the complexity of planning process, funding and budgeting programming required to implement these solutions.

Detailed implementation of the solution will determine the monitoring requirements and Key Performance Indicators.

2.3 Financing of the Plan

Implementation of best solutions is the collective effort of all identified responsible agencies, civil society organizations, donor partners **and** district and village communities themselves. Funding will be sourced through several mechanisms recognizing the Government of Samoa’s programmatic approach to tackling climate change impacts on its development progress. While every effort has been made to identify priority actions needed to build the resilience of Samoa and its communities, the Government also recognizes that not all actions identified can be financed at once. Implementation of best solutions will be undertaken strategically and over time in line with available funding and, **if** determined a priority CCA activity that will actually build the resilience of communities and Samoa as a whole. Criteria of determining priority CCA best solutions for financing are:

- proposed development is in general accordance with the objectives of the CIM Strategy 2015;
- development is specifically recommended in the CIM Plan
- number of people that will benefit from the development, i.e. population benefit
- development will provide *life sustaining* support for communities
- minimum or neutral environmental effects
- development will improve resilience
- development will achieve speedy recovery
- development will reduce risk
- also identified as a priority in other Sector Plans or National Strategies

During the development of the new CIM Plans, the World Bank funded Pilot Programme for Climate Resilience Enhancing Climate Resilience for Coastal Resources and Communities (PPCR ECR) prepared two (2) key documents:

- **Community Engagement Plan (CEP)**-the guidelines provided in the CEP is an excellent capacity building tool that can be used by CSO's and village communities themselves to aid development of small grant proposals to existing small grant funding mechanisms like CSSP and the UNDP-GEFSGP
- **District Sub Project (DSP)** – the guidelines provided in the DSP targets single districts or multi-district projects with a large number of beneficiaries.

Noting Samoa's programmatic approach to CC and CCA, these key documents are fundamental in guiding development partners, implementing agencies and other stakeholders on the most effective way of resourcing and supporting climate change adaptation projects at the village and district levels. These village and district level CCA projects actually achieve the majority of key indicators in various Sector Plans, subsequently achieving key national indicators contained in the *Strategy for the Development of Samoa* (SDS).

3. Description of Va'a o Fonoti District

3.3 Physical and Natural Resource Setting

The Vaa o Fonoti district and Saletele and Sauano in the District of Anoama'a East, are located on the northern eastern side of Upolu. It includes the villages of Uafato, Samamea, Ma'asina, Lona, Taelefaga, Salimu, Musumusu, Saletele, Sauano and Faleapuna. The District of Vaa o Fonoti and the villages of Saletele and Sauano comprise two main landscape types. The larger part of the district, to the east, is mountainous and geographically isolated, whereas that associated with the village of Faleapuna is predominately gently sloping coastal plain. Faleapuna is surrounded by the district of Anoamaa East and has more in common with that district, than the remainder of the Vaa o Fonoti District.

The larger part of the District is characterised by a series of bays backdropped by steep hills, the highest of which is Mt Fao which rises to 754metres within a kilometre of the coast. The remaining hills rise to over 500m, also within a kilometre of the coast. The largest bay, Fagaloa Bay, is bounded by Utuloa Point and East Point, and contains the settlements of Musumusu (a sub-village of Salimu), Salimu, Taelefaga, Maasina, Lona and Samamea. The smaller bay of Sauano contains Sauano and Salatele, whereas further east, the bay of Uafato contains Uafato village. Each of the bays is separated by clearly defined headlands and points, which limit the movement of tidal currents, and consequently sand, between each of the bays. A number of rivers and their tributaries pass down the hillsides into the bays. Many of the rivers contain waterfalls in their upper catchments on account of the steep topography. Towards the coast the rivers are contained by incised river valleys and drainage ditches, however heavy rainfall often results in flash flooding. The steep topography of the district is a key contributing factor to the conservation of the ecosystems and biodiversity of the district to date although the lower parts of these mountains are now under threat from land clearing activities (Reti, 2017). The narrow flat coastal plateau has small areas of houses positioned close to the coast main road and short set back from the coastline. Mainly wet climate includes small areas with moderate dry season near the coast (Dews, 2017)

Va'a o Fonoti is a relatively isolated district with a significant amount of customary land, rugged landform and difficult access. While some protection to sea level rise/storm waves is offered by offshore reefs, further erosion of the coastline and inundation by sea level rise is to be expected as climate change progresses (Townsend, 2017). Its topographic features limit opportunities for development. Landslips are frequent in this part of the district, and are particularly hazardous in the vicinity of the Fagaloa Bay Road.

The rainforest in the upper catchments to the east and west of Uafato are designated as Uafato Conservation Area mainly for the conservation of the ifilele (*Intsia bijuga*) tree species believed to have disappeared from other parts of Upolu. The steep nature of the topography provides much needed protection for the upland forest vegetation from human activity but leaves the areas vulnerable to strong winds. Wetland areas along the coast at Faleapuna and Taelefaga are susceptible to a variety of hazards including erosion, reclamation and contamination from adjacent land-use activities. These wetlands provide a buffer between the land and coastal environment and serve to protect community assets. They also contribute to the maintenance of the natural ecosystems along the coast and the maintenance of biodiversity in the area. The wetland at Taelefaga is important although its quality has been adversely affected by the construction of a ford in the late 1960's. This ford is blocking tidal flow, and disrupting the health of the wetland. Likewise the wetlands at Faleapuna are under threat from commercial sand mining limiting the transfer of sediment to and from these areas. Although commercial sand mining was banned by the village in 2001, there still remains pressure to sell sand for commercial as well as domestic supply (Reti, 2017).

The Vaipu swamp forest (within the Afulilo hydro power project area)¹ is a globally recognised critical ecological site but could be seriously threatened by any future plans to expand the Afulilo dam. Wetland areas along the coast at Faleapuna² and Taelefaga are susceptible to a variety of hazards including erosion, reclamation and contamination from adjacent land-use activities. These wetlands provide a buffer between the land and coastal environment and serve to protect community assets. They also contribute to the maintenance of the natural ecosystems along the coast and the maintenance of biodiversity in the area. The wetland at Taelefaga is important although its quality has been adversely affected by the construction of a ford in the late 1960's. This ford is blocking tidal flow, and disrupting the health of the wetland. Likewise the wetlands at Faleapuna these wetlands are under threat from commercial sand mining limiting the transfer of sediment to and from these areas. Although

¹ Note: Although the Afulilo dam is physically located in the Aleipata district, any major break in the dam will have a life-threatening effect on the communities of the Vaa-o-fonoti district

² Note: Although Faleapuna village is located within the Anoamaa east district and has common features with that district, it is in fact part of the Faipule district of Vaa-o-fonoti.

commercial sand mining was banned by the village in 2001, there still remains pressure to sell sand for commercial as well as domestic supply.

The coast-line is variously hard rocky outcrops interspersed with short stretches of soft, sandy beach. The longest length of beach, at Uafato, Fagaloa and Sauano Bays are approximately 150m. Where a reef has formed, it is reasonably close to the coast, ranging from 500m at Ma'asina to less than 100m at Uafato. Further west at Faleapuna, the coastline is markedly different and is instead characterised by a broad plain sloping gently down to the coast. The majority of Faleapuna has now relocated inland with the introduction of access roads enabling the movement of residents. The beachfront is formed from a combination of Falefa River deposits and coastal sand. The plain behind Faleapuna forms part of the Falefa River catchment, before the river enters the sea further east at Falefa. This plain also contains the settlements of Falefa, Lufilufi and Saluafata in Anoamaa East District. As a consequence activities in adjacent villages also impact on the coastal environment of Faleapuna.

Invasive species is a lesser problem for the ecosystems of Va'a o Fonoti as compared to its neighbouring districts of Anoama'a East and Aleipata. This is due largely to the isolated location of the district from other settlement areas and away from the main invasive pathways/vectors (Reti, 2017).

3.2 Social and Economic Setting

The Va'a o Fonoti district currently has a population of 1,636. Total male 850, female 786³. The villages vary in size. The largest village is Faleapuna with a recorded population of 600. There are five primary schools⁴ in the district.

Economic circumstances of each village are also influenced by physical and social isolation. The district is dominated by fishing and areas of plantation crops including 'ava and mixed cropping on the hill sides. The three livelihood zones that occur in Va'a o Fonoti District are (i) coral reef and lagoon system that supports fisheries including mangroves (ii) small household farming plots close to the houses along the narrow coastal areas and (iii) upland forest area used for plantations including 'ava and selective timber products mainly for carving or artifacts. A recent survey⁵ of 25 districts in Upolu and Savaii showed only 4.1% of the population of Va'a o Fonoti earn income from taro plantations which means the majority of plantations are for subsistence living. Va'a o Fonoti was recorded as the highest of all 25 districts surveyed earning income from other types of plantations ('ava plantations). The other major source of income for Va'a o Fonoti came from remittances. Although considered isolated, Va'a o Fonoti was actually the lowest of all 25 districts surveyed on access to water. The district recorded only 4.5% of households with no, or poor access to water.

A number of small stores are also located throughout the District in each of the villages. The village of Faleapuna is less isolated being located on the Main East Coast Road. Development in this village is spread across the coastal plain, with much of the settlement being located inland on work roads or other access roads. The provision of good vehicle access results in large numbers of people being employed in Apia, and commuting daily to Faleapuna. This increases the extent of social interaction between the city and village. Economic activities in Faleapuna are dominated by cash incomes provided by those employed in Apia. Plantation work and fishing also contribute significantly to the local economy.

With the exception of Faleapuna, Sauano and Saletete, the larger part of the district is isolated as a result of its location and low standard of vehicle access. Infrastructure is also less developed than other areas. There are only two 'major' roads into the bays; Fagaloa Road which connects from the East Coast Road and runs through Sauano and Saletete and the Fagaloa Bay Road which links from the Lemafa Pass, linking up with the Fagaloa Road at Taelefaga and then meanders through the coastal villages of Lano, Ma'asina, Samamea all the way to Uafato. Both Fagaloa Road and Fagaloa Bay Road are in the Samoa Road Network. District development in this area is ribbon-like along the Coastal Road, with almost no development being more than a few minutes walk from this road. Most of the villages in this area are experiencing net migration loss, as villagers move to areas where infrastructure, including television coverage, is more reliable.

The EPC Taelefaga Power Station provides electricity for the larger part of the district, and is served by Afuilo Dam in the headwaters of the district catchment. The dam is connected to Taelefaga Power Station by a 3.5km pipe which passes down the hillside behind Taelefaga. Telephone lines connect the larger part of the district as far as Samamea, with a break in the line between Samamea and Uafato restricting coverage to Uafato. The telephone lines follow the

³ SBS 2016 Village profile: census preliminary count 2016

⁴ Faleapuna Primary, Sauano Primary, Taelefaga Primary, Lona Primary and Uafato Primary schools

⁵ Community Disaster and Climate Risk Management Household Survey - Final Report 2017

coastal road which makes it susceptible to extreme events. However, the majority of the district now rely on cellular phones with good coverage provided by BlueSky mobile network. The villages of Sauano and Saletele, although physically isolated, can be accessed via a sealed coastal road (Fagaloa Road), which reduces vehicle travelling times to the Main East Coast Road and Apia considerably. Consequently these communities are not under the same pressures as the villages in Fagaloa and Uafato Bays and the basic level of infrastructure is higher, primarily as a result of improved access to the villages. Telephone lines, power and water supply all follow the coastal road. Television coverage is also better in this area.

3.3 Climate Risk and Resilience

The use of LiDar mapping data, hydrologist and geomorphologist data and findings for this district has helped determine inland and coastal hazard zones and high risk areas for Va'a o Fonoti.

The district has about 3,168 hectare in area. There are **285 buildings** in the district that are both in the Coastal Flood Hazard Zone and Coastal Erosion Hazard Zone. Saletele has 35 buildings located in the tsunami shore exclusive zone which makes this village particularly vulnerable. 103 buildings in the district sit in the watershed management riparian zone. The maps show approximately 21 rivers and streams running through Sauano, Saletele, Fagaloa Bay and Uafato Bay which makes this part of the district particularly vulnerable to inland flooding and storm water runoff. For Faleapuna, 86 buildings lie in the tsunami shore exclusive zone. This 86 includes the Faleapuna Primary school. There is rapid erosion in the coastal area and relocation of these houses and buildings is highly recommended. If the buildings are to remain in this high risk hazard zone with a combination of CFHZ, CEHZ, IFHZ and red zone, then floors must be elevated, anchored and protected against flooding (Tokalauvere, 2018).

Landslides and landslips are frequent in the Vaa-o-fonoti district, and are particularly hazardous in the vicinity of the Fagaloa Bay Road especially during heavy downpour (Reti, 2017). Discoloration of the coastal waters at Taelefaga could mean that the marine environment is under considerable pressure from land based activities, in particular the EPC Hydropower Scheme. Current predictions of higher frequency and intensity of cyclones do not bode well for ecosystem conservation in this region. This is of great concern as some of Samoa's critically endangered native bird species (e.g. tooth-billed pigeon and mao) are believed to be found in the Uafato forest area. Opening up of previously inaccessible interior lands especially for access roads is an open invitation to the degradation of important ecosystems which is critical to community resilience.

The district of Vaa o Fonoti has a variety of adaptation challenges due to the steep terrain and narrow coastal plateau. Resilience is achieved by maximizing crop and livestock production while not impacting on the natural ecosystem and the environmental services derived from the ecosystem. The utilization of a variety of crops allows for diversification and reduces the risk of community's livelihoods and food security being compromised from hazards and climate change impacts (Dews, 2017).

4. Va'a o Fonoti District Interventions

Infrastructure	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant Sector Plans, National Strategies & Policies
Coastline protection: upgrade and extend seawalls at most high risk hazard zones	<p>Assess, strengthen and extend seawalls in most high risk areas of Fagaloa and Uafato Bay to reduce vulnerability of road and other critical village assets in accordance with <i>Vulnerability Assessment of the Samoa Road Network</i> recommendations</p> <p>Clear debris from existing culverts near seawalls to enable free outflow of storm water and streams</p> <p>Research the impacts of sand mining</p> <p>Village consultation on sand mining policy and regulation</p> <p>Enforce environmental social safeguards where reclamations, sand mining, extraction or other major coastal works are proposed. Government and village to manage processes by requiring villagers to get the appropriate permits and consent</p> <p>Responsibility: LTA/Village /MNRE/MWTI</p>	<p>Improve infrastructure resilience and rate of recovery</p> <p>Reduce impact from coastal erosion</p> <p>Safer villages, houses and roads</p> <p>Minimise expenditure on damaged properties & personal assets</p>	<p>Conduct a full catchment management, drainage analysis and geotechnical engineering survey and use its recommendations to inform location and design</p> <p>Undertake a Cost Benefit Analysis to weigh options for funding</p> <p>Incorporate environmental and social safeguards concerns in the design and undertake consultations with affected communities</p> <p>Apply for necessary permits as required by law</p> <p>Utilise hazard maps and Geomorphologist Infrastructure Drainage Database to inform designs</p> <p>Develop and register District/Village bylaws to include maintenance of drainages and illegal rubbish dumping into waterways</p>	<p>CIM Strategy 2015</p> <p>TSP2014-2019 Goal 2 KO 1</p> <p>Draft Soil Resource Management Bill</p>
Part of Fagaloa Road serving Sauano, Salimu/ Musumusu, Taelefaga and Fagaloa Bay Road exposed to extremely high risk ⁶ hazard	<p>Investigate relocating road inland in most vulnerable parts of coastline</p> <p>Continue to upgrade roads, upsize ocean outfalls and improve drainage systems to</p>	<p>Improve infrastructure resilience and rate of recovery</p> <p>Improve preparedness and readiness response to natural disasters</p>	<p>Conduct a full catchment management, drainage analysis and geotechnical engineering survey and use its recommendations to inform location and designs</p> <p>Undertake a Cost Benefit</p>	<p>CIM Strategy 2015</p> <p>TSP 2014-2019 Goal 2 KO 1</p> <p>Vulnerability Assessment of the Samoa Road Network (2016)</p>

⁶ Extremely high risk is where there is a combination of 4 hazard zones. High risk areas is where there is a combination of 2 or 3

<p>zones</p>	<p>increase regulation of water flow and reduce flooding onto roads in extremely high risk hazard zones in accordance with <i>Vulnerability Assessment of the Samoa Road Network</i> recommendations</p> <p>Enforce environmental safeguards where reclamations are proposed. Government and district to manage processes by requiring villagers to get the appropriate permits and consent</p> <p>Responsibility: LTA/ MWTI/ MNRE/ District/ Village /Families</p>	<p>Reduce impact from coastal erosion and natural disasters</p> <p>Maintains lifeline access for all of Upolu</p> <p>Safer villages, houses and roads</p> <p>Minimise national disaster recovery expenditure on damaged properties and public assets</p>	<p>Analysis to weigh options for funding</p> <p>Implement Va'a o Fonoti Integrated Catchment Strategy and Flood Management Plan in conjunction with hazard Maps and Geomorphologist Drainage Infrastructure Database findings</p> <p>Utilise environmental and social safeguards including EIAs in screening and designing infrastructure facilities</p> <p>Develop an integrated land management plan with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>Include in budget programming CBA, design and construction.</p> <p>Designation of the IFHZ as an "at risk" zone with appropriate landuse planning controls and restrictions</p>	<p>and Road Network Adaptation Strategy, LTA</p>
<p>Flood protection measures for fords and bridges</p>	<p>Upgrade waterways</p> <p>Upgrade all crossings</p> <p>Upgrade or repair riverine embankment protection work</p> <p>Ensure river channel upstream is cleared and maintained regularly</p> <p>Construct levees to reduce flooding along estuaries and coastal streams</p> <p>Install advisory edge markers and depth markers to warn vehicle and pedestrians at all crossings</p> <p>Government and</p>	<p>Minimise expenditure on damaged properties & personal assets</p> <p>Mitigate potential damage from inland flooding</p> <p>Reduce flooding of built up areas</p> <p>Maintains lifeline access for all of Upolu</p> <p>Safer villages, houses and roads</p>	<p>Conduct a full catchment management, drainage analysis and geotechnical engineering survey and use its recommendations to inform location and designs</p> <p>Implement Va'a o Fonoti Integrated Catchment Strategy and Flood Management Plan in conjunction with hazard Maps and Geomorphologist Drainage Infrastructure Database findings</p> <p>Utilise environmental and social safeguards including EIAs in screening and designing infrastructure facilities</p> <p>Develop an integrated land management plan with the aim of reducing any unnecessary actions that may adversely affect the natural</p>	<p>CIM Strategy 2015</p> <p>TSP 2014-2019 Goal 2 KO 1</p> <p>Vulnerability Assessment of the Samoa Road Network (2016) and Road Network Adaptation Strategy, LTA</p>

	<p>Villages to liaise and collaborate on processes needed to protect riverbanks from land clearing and developments</p> <p>Responsibility: MWTI/ LTA/MNRE/ District/ Village</p>		<p>habitats and ecosystems of the area</p> <p>Include in budget programming CBA, design and construction.</p> <p>Designation of the IFHZ as an “at risk” zone with appropriate landuse planning controls and restrictions</p>	
<p>Drainage systems require maintenance and upgrade in high risk areas of main East Coast Road, Fagaloa Road and Fagaloa Bay Road</p>	<p>Assess and upgrade culverts and cross drainage of roads sitting within combined hazard zones– in accordance with <i>Vulnerability Assessment of the Samoa Road Network</i> recommendations</p> <p>Introduce new and widen existing culverts in wetland areas to improve tidal flow and fish passage in the wetland area</p> <p>Implement national standards for culverts and drains to facilitate the overland flow of storm water and reduce flooding</p> <p>Implement regular drainage inspection and maintenance</p> <p>District to regulate developments near and around waterways and drainage connecting to main East Coast Road</p> <p>Responsibility: LTA /MWTI/MWCSD/ District/Village/ Families</p>	<p>Improves infrastructure resilience and rate of response and recovery to natural hazards and disasters</p> <p>Encourages coastal families to relocate inland</p> <p>Maintains lifeline access for all of Upolu</p> <p>Minimises national disaster recovery expenditure on damaged properties, public and private assets</p>	<p>Use existing information for guidance but not limited to: “<i>Vulnerability Assessment of the Samoa Road Network (2017)</i>”; “<i>Review of National Road Standards in Samoa (2016)</i>”; “<i>Samoa Code of Environmental Practice (2007)</i>”</p> <p>Undertake a Cost Benefit Analysis to weigh options for funding</p> <p>Incorporate environmental and social safeguards concerns in the design and undertake consultations with affected communities</p> <p>Apply for necessary permits as required by law</p> <p>Utilise hazard maps and Geomorphologist Infrastructure Drainage Database to inform designs</p> <p>Develop Integrated Catchment Strategy and Flood Management Plan for Va’a o Fonoti District</p> <p>Develop and register District/Village bylaws to include maintenance of drainages and illegal rubbish dumping into waterways</p>	<p>CIM Strategy 2015</p> <p>TSP2014-2019 Goal 2 KO 1</p> <p>Community Sector Plan</p>
<p>Village houses, schools, churches and government assets in extremely high risk hazard zones</p>	<p>Relocate assets outside of high risk hazard zones when re-building</p> <p>Develop landuse planning and development controls to restrict developments within</p>	<p>Minimise expenditure on damaged properties and personal assets</p> <p>Safer villages, houses and roads</p> <p>Increases awareness for insurance</p>	<p>Planning provisions to be guided by the Planning and Urban Management Act 2004</p> <p>Enforcement of National Building Code 2017</p> <p>Encourage insurance of significant investments and assets within hazard zones</p>	<p>CIM Strategy 2015</p> <p>National Building Code</p>

	<p>high risk hazard zones such as CEHZ and CFHZ</p> <p>Conduct awareness raising campaign on flood resilient building practices and designs for at risk communities living in and near high risk hazard zones</p> <p>Design infrastructure to take into account the immediate hazard zones; for example, raise floor levels of houses in flood prone areas</p> <p>Families and village to limit building and developing on natural overland flow paths exacerbating inland flooding and storm water surges</p> <p>Responsibility: Village / Families /MWTI/ MNRE/ MWCSO</p>		<p>Utilise hazard maps and Geomorphologist Drainage Infrastructure Database to determine safe areas for relocation purposes</p> <p>Designation of the IFHZ, CEHZ and CFHZ as an “at risk” zone with appropriate landuse planning controls and restrictions</p>	
<p>Reticulated water supply, quality and network to be improved</p>	<p>Procure rainwater harvesting systems for vulnerable families as a short term solution</p> <p>District and village to support SWA water rationing programmes during times of drought</p> <p>District to support SWA efforts at exploratory boreholes in district</p> <p>District and villages to support SWA efforts at protecting and conserving boreholes, intakes and catchment areas</p>	<p>Increase adaptation during drought periods</p> <p>Improve infrastructure resilience and rate of recovery</p> <p>Improve health and sanitation</p> <p>Reduce contamination of water supply</p> <p>Reduce impact from inland flooding</p>	<p>Develop and register District/Village bylaws to include regulating developments around catchment areas and boreholes</p> <p>Implement SWA (2016)10 year investment plan to improve water supply network to support all inland families without access to drinking water</p> <p>Include in budget programming design, and extension costs of water supply and procurement of rainwater harvesting systems</p> <p>Utilise hazard maps and Geomorphologist findings to inform location and designs</p>	<p>CIM Strategy 2015</p> <p>Water and Sanitation Sector Plan</p> <p>SWA 10 Year Investment Plan (2016)</p> <p>Community Engagement Plan</p>

	Responsibility: SWA/ MWCSA/ MNRE / District/ Village/ CSSP			
Alternative connectivity and lifeline access to Fagaloa and Uafato Bay during extreme events	Investigate improving access to Fagaloa and Uafato Bay via Fagaloa Road coastal path which passes through Sauano and Saletele Bay Responsibility: LTA/ MWTI/ District/ Villages	Improve infrastructure resilience and rate of recovery Improve preparedness and readiness response to natural disasters Reduce impact from coastal erosion and natural disasters Maintains lifeline access for Fagaloa and Uafato Bay Safer villages, houses and roads Minimise national disaster recovery expenditure on damaged properties and public assets	Conduct a full catchment management, drainage analysis and geotechnical engineering survey and use its recommendations to inform location and designs Implement Va'a o Fonoti Integrated Catchment Strategy and Flood Management Plan in conjunction with hazard Maps and Geomorphologist Drainage Infrastructure Database findings Utilise environmental and social safeguards including EIAs in screening and designing infrastructure facilities Develop an integrated land management plan with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area Include in budget programming CBA, design and construction. Designation of the IFHZ as an "at risk" zone with appropriate landuse planning controls and restrictions	CIM Strategy 2015 TSP 2014-2019 Goal 2 KO 1 Vulnerability Assessment of the Samoa Road Network (2016) and Road Network Adaptation Strategy, LTA
Access/work roads require maintenance and upgrade as it exacerbates flooding onto main East Coast Road	Construct roadside drainage ditches where needed Implement routine maintenance of the roads and clear any debris obstructing the free flow of surface water runoff Village to regulate developments near and around road shoulders of all access roads Enforce environmental safeguards where reclamations are	Improve infrastructure resilience and rate of recovery Improve preparedness and readiness response to natural disasters Safer villages, houses and roads Minimise national disaster recovery expenditure on damaged properties and public assets	Utilise hazard maps and Geomorphologist Drainage Infrastructure Database to inform location and designs Develop an integrated land management plan with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area Designation of the IFHZ, CEHZ and CFHZ as an "at risk" zone with appropriate landuse planning controls and restrictions	National Disaster Management Plan 2017-2021 CIM Strategy 2015 NISP 2011 KESO 5 TSP 2014-2019 Goal 2 KO 1 Community Sector Plan

	<p>proposed. Government and district to manage processes by requiring villagers to get the appropriate permits and consent</p> <p>Responsibility: LTA/ MWTI/ MNRE/ Villages/Families</p>		<p>Utilise environmental and social safeguards including EIAs in screening and designing built environment infrastructure projects for district</p>	
Electricity supply	<p>Provide underground lines in the long term where feasible</p> <p>Install and connect power supply for inland residents</p> <p>Relocate overhead lines to a more resilient location when being replaced</p> <p>Install streetlights along the roads where needed for community safety</p> <p>Install and connect to solar power supply if made available</p> <p>Families to limit building and developments near electricity posts</p> <p>Responsibility: EPC/ MWTI/ Village/Families</p>	<p>Maintain electricity supply at all times including natural disasters</p> <p>Avoid accidents from fallen electricity posts</p>	<p>Monitor distribution networks to avoid overloading poles and contributing to line failures</p>	EPC Strategic Plan
Natural Resources and Environment	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant Sector Plans, National Strategies & Policies
Restoration and conservation of upland forest	<p>Protect ridge-top habitats and forests from indiscriminate cultivate and other developments</p> <p>Enforce Watershed Management Riparian Zone and Riverbank Encroachment Control and regulate developments around the upland area</p> <p>District/village to help promote the development of the agroforestry sector by</p>	<p>Sustains ecosystem services and functions</p> <p>Reduced risk of slips and erosion</p> <p>Reduce contamination of water supply</p> <p>Reduce impact from inland flooding</p> <p>Improve preparedness and readiness response to natural disasters</p> <p>Safer villages, houses and roads</p>	<p>Develop Integrated Watershed/Catchment Strategy and Flood Management Plan for Va'a o Fonoti District</p> <p>MNRE Forestry to advice on appropriate species, depth and density of planting and provide seedlings for different vegetation types suitable to the habitats and planting materials for village</p> <p>Develop and register District/Village bylaws to include penalizing illegal deforestation in district lands</p>	<p>Community Engagement Plan</p> <p>Two Million Tree Planting Strategy 2015-2020</p> <p>Restoration Operational Plan 2016-2020</p>

	<p>encouraging relevant land use practice and where possible resolve any associated land disputes</p> <p>Responsibility: MNRE/ /MWCSO/ District /Village/CSSP</p>		<p>Utilise Sui o Nu'u monthly meetings to monitor progress of district/village forestry programmes</p>	
<p>Protection of catchment areas</p>	<p>Promote and support agroforestry and other cropping systems that combine trees and crops, especially in catchments, and erosion-prone and sensitive areas</p> <p>Limit land clearance and agricultural development around catchment areas, SWA intake and boreholes in district</p> <p>Enforce Watershed Management Riparian Zone and Riverbank Encroachment Control and regulate developments around the upland area</p> <p>Replant catchment areas with local species such as tava, and poumuli</p> <p>Responsibility: MNRE/ /SWA/District/Village/ /CSSP/GEF-SGP</p>	<p>Reduced risk of slips and erosion</p> <p>Improve resilience of catchments</p> <p>Improve preparedness and readiness response to natural disasters</p> <p>Reduce contamination of water supply</p>	<p>Develop Integrated Watershed/Catchment Strategy and Flood Management Plan for Va'a o Fonoti District</p> <p>Develop and register District/Village bylaws to include penalizing illegal deforestation and developments in upper catchment areas</p>	<p>Water Sector Plan</p> <p>Community Engagement Plan</p> <p>Restoration Operational Plan 2016-2020</p>
<p>Soft coastal protection measures needed for most vulnerable areas</p>	<p>Plant native species along coastal areas to strengthen existing seawall and to reduce coastal erosion and landslips; Talie, Fetau, Toa, Togatogo are known to have greater resilience to natural disasters and changing climate conditions</p>	<p>Soft coastal protection measures will support and strengthen existing and new infrastructure along the coast</p> <p>Reduce impact from coastal erosion and natural disasters</p> <p>Implements an Ecosystem Based</p>	<p>Develop an integrated land management plan for Va'a o Fonoti district with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>MAF to assist in establishment of pilot sites to trial climate resilient plant varieties</p> <p>MNRE Forestry, DEC and MAF</p>	<p>NESP 2017-2021</p> <p>Two Million Tree Planting Strategy 2015-2020</p> <p>Restoration Operational Plan 2016-2020</p>

	<p>To act as an effective wave barrier, a minimum distance of 200m of vegetation is needed</p> <p>Responsibility: MNRE/MAF/Villages</p>	<p>Approach</p>	<p>to collaborate on supply of climate resilient crops</p>	
<p>Flood protection measures (soft solution to support flood protection measures for infrastructure)</p>	<p>Conduct riparian replanting along river channels and watercourses</p> <p>Encourage planting of indigenous species in conjunction with engineered water land drainage action plans</p> <p>Promote and support village and district afforestation in the upper and mid-catchment areas to reduce riverbank failures especially in flood prone areas</p> <p>Responsibility: MNRE/Villages</p>	<p>Mitigate potential damage from inland flooding</p> <p>Reduce flooding of built up areas</p> <p>Safer villages, houses and roads</p>	<p>Implement Integrated Watershed/Catchment Strategy and Flood Management Plan in conjunction with hazard Maps and Geomorphologist Drainage Infrastructure Database to inform location and designs</p> <p>MNRE to zone hazard areas along major watercourses based on flood risk to provide suitable areas for riparian revegetation</p>	<p>Two Million Tree Strategy 2015-2020</p> <p>Restoration Operational Plan 2016-2020</p>
<p>Wetland and mangrove area conservation</p>	<p>Undertake an assessment of tidal flow necessary to maintain a healthy natural environment</p> <p>Limit land clearance and developments adjacent to wetland areas</p> <p>Continue to plant native species along coastal areas to reduce erosion and landslips. To act as an effective wave barrier, a minimum distance of 200m of vegetation is needed</p> <p>Village to fence off domestic animals</p> <p>Responsibility: MNRE / Village /CSSP/ UNDP-GEF SGP/ MWTI</p>	<p>Protects and enhance local species diversity</p> <p>Sustains ecosystem services and functions</p> <p>Reduce contamination of water supply</p> <p>Reduce impact from inland flooding</p>	<p>Develop an integrated land management plan for Va'a o Fonoti district with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>Implement wetland and mangrove protection programme</p> <p>Identify funding /budget requirements and implementation programme for establishment of protected areas in district</p>	<p>Draft NESP 2017-2021</p> <p>Community Engagement Plan</p>
<p>Illegal rubbish dumping in wetlands, coastal</p>	<p>Produce posters and village signs for public awareness</p>	<p>Improve health and sanitation</p>	<p>Develop an integrated land management plan with the aim of reducing any</p>	<p>National Waste Management Strategy</p>

<p>areas, riverbanks and roadsides within fluvial hazard zones</p>	<p>Introduce ban on illegal rubbish dumping in district especially around fluvial hazard zones</p> <p>Conduct campaign for public awareness of district ban and establish a “neighbourhood watch” agreement with district to monitor and report on illegal dumping activities</p> <p>Government, district and villages to monitor, report and apply penalty on offenders</p> <p>Responsibility: MNRE/ District/Village/CSSP</p>	<p>Reduce leachate into environment and water supply</p> <p>Reduce contaminant from overland flooding entering sea</p>	<p>unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>Utilise Waste Management Act/Legislation to guide process of effecting the ‘polluter pays’ principle</p> <p>Develop and register District/Village bylaws to include penalizing illegal rubbish dumping in district lands</p> <p>Utilise Sui o Nu’u monthly meetings to monitor progress of village programmes on waste management</p>	<p>National Waste Management Policy</p> <p>Draft NESP 2017-2021</p> <p>Community Engagement Plan</p>
<p>Sand mining</p>	<p>Identify alternative sustainable sources of sand for domestic use</p> <p>Research the impacts of sand mining</p> <p>Village consultation on sand mining policy and regulation</p> <p>Village and government to collaborate closely on designated areas for sand/rock mining</p> <p>Raise awareness and support of sustainable land use practices</p> <p>Responsibility: MNRE/ Village/Families</p>	<p>Mitigate potential damage from coastal erosion and flooding accommodating the hazard</p> <p>Safer villages, houses and roads</p> <p>Reduce impact from coastal erosion</p> <p>Economic benefit for village from sustainable sand mining activities</p>	<p>MNRE to continue to identify specific sites for inshore/ inland sustainable sand/rock mining to meet demand without compromising riverbanks</p> <p>Undertake assessments of identified sites</p> <p>Undertake consultation with villages affected by proposed sand/rock mining</p> <p>Develop and register District bylaws to include managing and monitoring domestic sand/rock mining of rivers</p> <p>Utilise Sui o Nu’u monthly meetings to monitor progress of CIM Plan activities</p>	<p>Draft Soil Resource Management Bill</p>
<p>Effluent and wastewater management systems</p>	<p>Conduct a thorough assessment of effects of discharge from Afulilo Dam on marine life</p> <p>Introduce ban on latrines established in and around fluvial hazard zones</p> <p>Families in fluvial hazard zones to install</p>	<p>Improve health and sanitation</p> <p>Reduce contamination of water supply</p>	<p>Review wastewater strategy/ legislation to include role of Village/District bylaws</p> <p>Develop/Update and register District/Village bylaws to include regulating developments and latrines in IFHZ and areas susceptible to flooding</p> <p>Utilise Hazard maps and</p>	<p>National Waste Management Strategy</p> <p>Draft NESP 2017-2021</p>

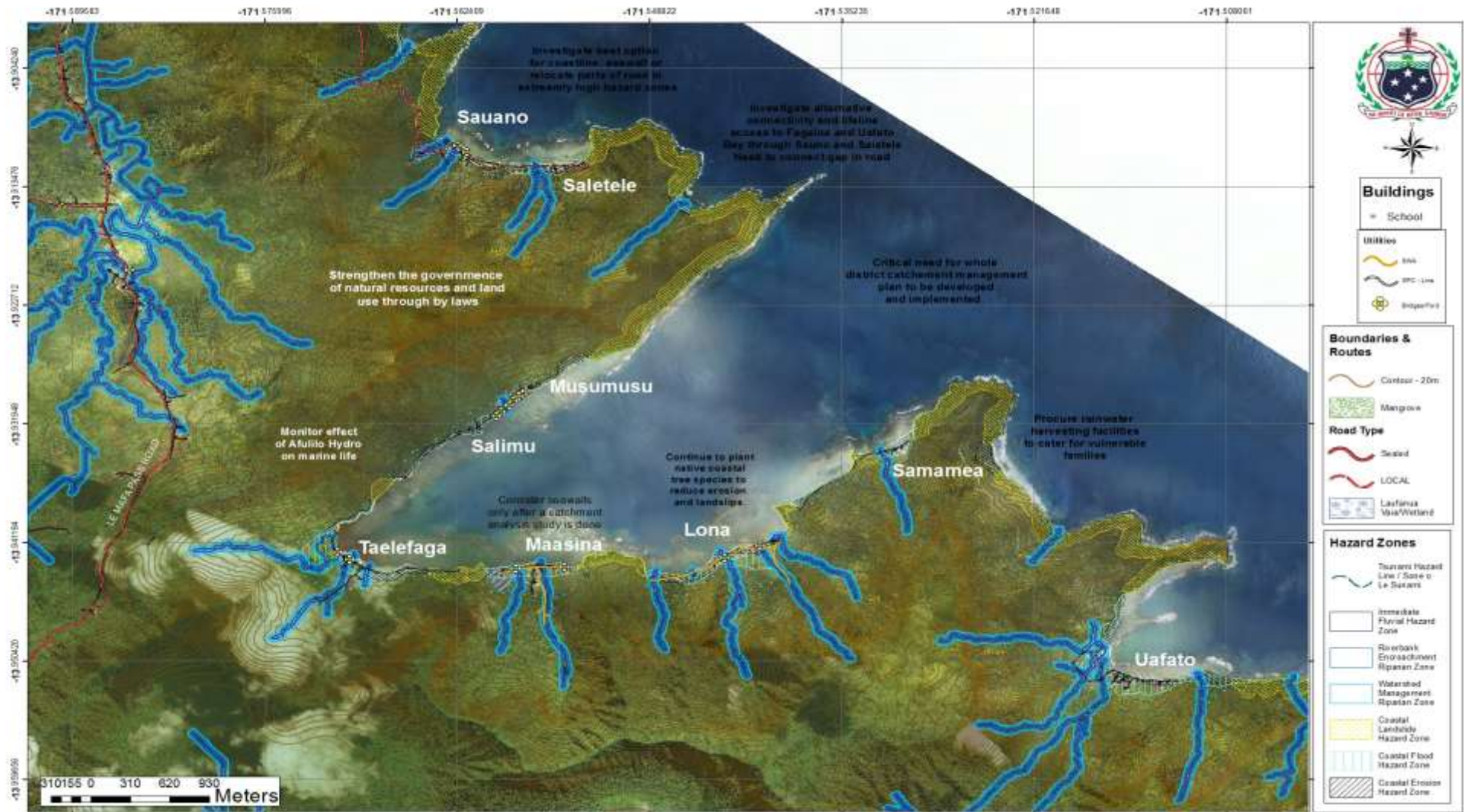
	<p>proper septic waste disposal systems</p> <p>Implement district/ village drainage cleanup and awareness programme</p> <p>Produce posters and village signs for public awareness</p> <p>Responsibility: MNRE/ MWCS/ District/ Village</p>		<p>Geomorphologist findings to inform location</p> <p>Utilise Sui o Nu'u monthly meetings to monitor progress of village programmes on waste management</p>	
Livelihood and Food Security	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant Sector Plans National Strategies & Policies
Plantations, crops and plants threatened by changes in climate, inland flooding and inadequate soil for planting	<p>Promote and facilitate planting of rootcrops (i.e yams, sweet potato) which are more resilient to cyclones, droughts and floods</p> <p>Promote agroforestry and mixed planting including fruit trees species to promote ecological stability, soil protection and reduce crop vulnerability to pests and diseases</p> <p>Implement the Integrated Pest Management Programme</p> <p>Implement Sustainable Land Management (SLM) practices</p> <p>Conduct pilot site trials for climate ready plant varieties</p> <p>Responsibility: MAF/ MNRE/village</p>	<p>Improve health through access to clean water and waste management</p> <p>Improve recovery to create more resilient villages</p> <p>Improve preparedness and readiness response to natural disasters</p>	<p>Agriculture sector to provide best practice management guidelines for the management of water that allows for levels of contamination to be kept to minimum</p> <p>MNRE Forestry, DEC and MAF to collaborate on supply of climate resilient crops and plants</p> <p>MAF to provide trainings, awareness raising on crop diversification to suit prolonged impacts of climate change and support in supply of nursery trees, technology and infrastructure to have a sustainable mechanism for replanting</p> <p>MAF to assist in establishment of pilot sites to trial climate ready plant varieties and provide advice, seedlings and planting material for village/families as a trial</p> <p>Develop an integrated land management plan with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>MNRE Forestry to advice on appropriate species, depth and density of planting and provide seedlings for different vegetation types</p>	<p>Agriculture Sector Plan 2016-2021</p> <p>Two Million Tree Strategy 2015-2020</p> <p>Restoration Operational Plan 2016-2020</p>

			suitable to the habitats and planting materials for village	
Pest management; invasive plants and animals	<p>Implement an eradication programme to eradicate, contain or exclude invasive species</p> <p>Implement an inventory of invasive species and include information on their past, present and potential future distribution, as well as impacts and possible actions that can be taken</p> <p>Conduct education and awareness programmes on the impacts of invasive species</p> <p>Implement the Integrated Pest Management Programme</p> <p>Implement Sustainable Land Management (SLM) practices</p> <p>Build the capacity of farmers to manage stray animals (pigs, cattle) that are contaminating water sources</p> <p>District to fence domestic animals</p> <p>Responsibility: Villages/District/MNRE/MAF/SROS</p>	<p>Maintains natural ecosystem</p> <p>Builds resilience of community livelihood and food security</p>	<p>Develop an integrated land management plan for Va'a o Fonoti district with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>MAF to raise awareness of farmers on impacts to water flows from poor livestock management</p> <p>MNRE, MAF and SROS to implement aggressive, nationwide invasive species eradication programme based on inventory of invasive species and conduct campaign on public awareness accordingly</p> <p>Training for farmers on pests management particularly affecting fruit trees and crops</p>	<p>Agriculture Sector Plan 2016-2021</p> <p>Samoa's National Invasive Species Action Plan (NISAP)</p>
Governance	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant Sector Plans, National Strategies & Policies
Strengthen the governance of natural resources and land use through Bylaws	Update and/or develop bylaws to manage the use of natural resources, and to control land use impacts; such as drainage maintenance, rubbish dumping, sand mining, stray animals and unregulated	<p>Strengthen implementation of all national sector plans</p> <p>Strengthen monitoring of all National Acts, Regulation, Strategies, Plans and Policies</p> <p>Improve ability of</p>	<p>Develop and register district/village bylaw to protect all district/ village and government assets, environment, livelihood and food security especially activities affecting water catchment areas and coastline</p> <p>Utilise Sui o Nu'u monthly</p>	<p>Village Fono Act (Amendment Bill 2016)</p> <p>Community Sector Plan</p> <p>Community Development Plan 2016-2021</p>

	<p>developments in water catchment areas and near boreholes.</p> <p>Collaborate with Sui o Nuu to monitor the use of and impact on natural resources</p> <p>Facilitate continuous awareness raising programs with the villages</p> <p>Obtain necessary permits required by law before developments take place</p> <p>Responsibility: MWCSD /MNRE /Village</p>	<p>communities to adapt, respond and recover quickly in the long term</p> <p>Improve accountability and enabling environment of communities</p>	<p>meetings to monitor progress of district/village bylaws</p>	
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Non-CR issues raised during consultations	Proposed Solution	Comments
<p>Reopen Health clinics</p> <p>Responsibility: Village /NGOs</p>	<p>Village to seek assistance from MOH</p>	<p>Not a CR issue</p>

VAA O FONOTI DISTRICT



Coordinate System: GCS WGS 1984
 Datum: WGS 1984
 Units: Degree

Data Source: Ministry of Natural Resource and Environment, Samoa
 Map Production: Spatial & DRM Specialist, Adaptation Fund - Enhancing Resilience of Coastal Communities of Samoa to Climate Change Project

4.1 Faleapuna Village Interventions

CIM Plan Solutions

Infrastructure	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant Sector Plans, National Strategies & Policies
Drainage systems to be improved in high risk areas especially at junctions of East Coast road and access roads/tracks	<p>Continue to assess and upgrade culverts on main and access roads in district to facilitate the overland flow of storm water and reduce flooding - in accordance with <i>Vulnerability Assessment of the Samoa Road Network</i> recommendations</p> <p>Introduce culverts in wetland areas to improve tidal flow and fish passage in the wetland area</p> <p>Implement regular drainage inspection and maintenance</p> <p>Village to conduct regular drainage and waterway clearance behind homes</p> <p>Government to regulate developments and illegal rubbish dumping near and around waterways and drainage connecting to East Coast Road</p> <p>Responsibility: LTA/MWTI/MNRE/MWCSD/Village/Families</p>	<p>Improves climate resilience of infrastructure resilience and rate of response and recovery to natural hazards and disasters</p> <p>Encourages coastal families to relocate inland</p> <p>Maintains lifeline access for all of Upolu</p> <p>Minimises national disaster recovery expenditure on damaged properties, public and private assets</p>	<p>Utilise hazard maps and Geomorphologist Drainage Infrastructure Database to inform design</p> <p>Use existing information for guidance but not limited to: <i>"Vulnerability Assessment of the Samoa Road Network (2017)"</i>; <i>"Review of National Road Standards in Samoa (2016)"</i>; <i>"Samoa Code of Environmental Practice (2007)"</i></p> <p>Develop Integrated Catchment Strategy and Flood Management Plan for Va'a o Fonoti District</p> <p>Undertake a Cost Benefit Analysis to weigh options for funding</p> <p>Utilise environmental and social safeguards including EIAs in screening and designing built environment infrastructure projects for Va'a o Fonoti district</p> <p>Develop and register District/Village bylaws to include maintenance of drainages and illegal rubbish dumping into waterways</p>	<p>CIM Strategy 2015</p> <p>NISP 2011 KESO 5</p> <p>TSP 2014-2019 Goal 2 KO 1</p> <p>Community Sector Plan</p>
Village houses, School, church and other village assets in extremely high risk hazard zones	<p>Relocate assets outside of high risk hazard zones when re-building</p> <p>Develop landuse planning and development controls to restrict developments within high risk hazard zones such as CEHZ and CFHZ</p> <p>Conduct awareness raising campaign on flood resilient building practices and designs for at risk communities living in and near high risk hazard zones</p>	<p>Minimise expenditure on damaged properties and personal assets</p> <p>Safer villages, houses and roads</p> <p>Increases awareness for insurance</p>	<p>Planning provisions to be guided by the Planning and Urban Management Act 2004</p> <p>Enforcement of National Building Code 2017</p> <p>Encourage insurance of significant investments and assets within hazard zones</p> <p>Utilise hazard maps and Geomorphologist Drainage Infrastructure Database to determine safe areas for relocation purposes</p> <p>Designation of the IFHZ, CEHZ</p>	<p>CIM Strategy 2015</p> <p>National Building Code</p>

	<p>Design infrastructure to take into account the immediate hazard zones; for example, raise floor levels of houses in flood prone areas</p> <p>Families and village to limit building and developing on natural overland flow paths exacerbating inland flooding and storm water surges</p> <p>Responsibility: Village / Families /MWTI/ MNRE/ MWCS D</p>		<p>and CFHZ as an “at risk” zone with appropriate landuse planning controls and restrictions</p>	
<p>Upgrade Loop Road /Faleapuna access road inland to facilitate relocation and to act as escape route</p>	<p>Upgrade to include adequate sized culverts to facilitate the overland flow of storm water and to reduce flooding onto main roads and village lands</p> <p>Implement routine maintenance of the roads and clear any debris obstructing the free flow of surface water runoff</p> <p>Village to regulate developments near and around road shoulders of all access roads</p> <p>Enforce environmental safeguards where reclamations are proposed. Government and district to manage processes by requiring villagers to get the appropriate permits and consent</p> <p>Responsibility: LTA/ MWTI/ MNRE/ Villages/Families</p>	<p>Improve infrastructure resilience and rate of recovery</p> <p>Improve preparedness and readiness response to natural disasters</p> <p>Safer villages, houses and roads</p> <p>Minimise national disaster recovery expenditure on damaged properties and public assets</p>	<p>Utilise hazard maps and Geomorphologist Drainage Infrastructure Database to inform location and designs</p> <p>Develop an Integrated Flood Management Plan for Va’a o Fonoti District. MNRE to develop zonation strategy for safe areas</p> <p>Develop an integrated land management plan with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>Include in budget programming CBA, design and construction</p> <p>Designation of the IFHZ, CEHZ and CFHZ as an “at risk” zone with appropriate landuse planning controls and restrictions</p> <p>Develop and register Village bylaws to include maintenance of drainages and illegal rubbish dumping into waterways</p>	<p>CIM Strategy 2015</p> <p>TSP2014-2019 Goal 2 KO 1</p> <p>NESP 2017-2021</p>
<p>Reticulated water supply, quality and network to be improved</p>	<p>Extend the water supply to families inland with no access to water</p> <p>Procure rainwater harvesting systems for vulnerable families as a short term solution</p> <p>District and village to</p>	<p>Increase adaptation during drought periods</p> <p>Improve infrastructure resilience and rate of recovery</p> <p>Improve health</p>	<p>Develop and register District/Village bylaws to include regulating developments around catchment areas and boreholes</p> <p>Implement SWA (2016)10 year investment plan to improve water supply network to support all inland</p>	<p>CIM Strategy 2015</p> <p>Water and Sanitation Sector Plan</p> <p>SWA 10 Year Investment Plan (2016)</p>

	<p>support SWA water rationing programmes during times of drought</p> <p>District to support SWA efforts at exploratory boreholes in district</p> <p>District and villages to support SWA efforts at protecting and conserving boreholes, intakes and catchment areas</p> <p>Responsibility: SWA/ MWCS D/ MNRE / District/ Village/ CSSP</p>	<p>and sanitation</p> <p>Reduce contamination of water supply</p> <p>Reduce impact from inland flooding</p>	<p>families without access to drinking water</p> <p>Include in budget programming design, and extension costs of water supply and procurement of rainwater harvesting systems</p> <p>Utilise hazard maps and Geomorphologist findings to inform location and designs</p>	<p>Community Engagement Plan</p>
<p>Evacuation Shelter and a connected escape route needed for emergency preparedness and response</p>	<p>Assess and/or select location for either an existing or new evacuation shelter, including safe access routes to the shelter</p> <p>Conduct evacuation shelter assessment and mark on CIM Plan hazard maps</p> <p>Develop a Village Climate Disaster Management Plan (VCDMP)</p> <p>Conduct trainings for People With Disabilities (PWDs) on emergency and disaster response strategies</p> <p>Implement CDCRM program</p> <p>Install relevant signs to guide the community on emergency response procedures and to locations of evacuation shelters</p> <p>Where no suitable houses exist, build emergency shelter(s) outside the hazard zones</p> <p>Retrofit identified and approved schools or churches outside hazard zones and designate as evacuation shelter</p> <p>Responsibility: MNRE /DMO/ MWTI/Village /CSSP/Council of Churches/MWCS D</p>	<p>Improve resilience of public infrastructure</p> <p>Improve preparedness and readiness response to natural disasters</p>	<p>Enforcement of National Building Code 2017</p> <p>Utilise hazard maps and Geomorphologist findings to inform location and designs</p>	<p>National Disaster Management Plan 2017-2021</p> <p>National Building Code</p> <p>National Policy for People with Disabilities</p> <p>NISP 2011 KESO 5</p>

<p>Electricity supply</p>	<p>Provide underground lines in the long term</p> <p>Install and connect power supply for inland residents</p> <p>Relocate overhead lines to a more resilient location when being replaced</p> <p>Install streetlights along the roads where needed for community safety</p> <p>Install and connect to solar power supply if made available</p> <p>Families to limit building and developments near electricity posts</p> <p>Responsibility: EPC/ MWTI/ Village/Families</p>	<p>Maintain electricity supply at all times including natural disasters</p> <p>Avoid accidents from fallen electricity posts</p>	<p>Monitor distribution networks to avoid overloading poles and contributing to line failures</p>	<p>EPC Strategic Plan</p>
<p>Coastline protection: seawall upgrade and beach replenishment</p>	<p>Village to seek assistance to strengthen and upgrade seawall</p> <p>MNRE to research whether beach replenishment is feasible in this area</p> <p>Clear debris from existing culverts near seawalls and waterways to enable free outflow of storm water and streams into sea</p> <p>Where reclamations, sand mining, extraction or other major coastal works are proposed, Government and village to manage processes by requiring villagers to get the appropriate permits and consent</p> <p>Responsibility: MNRE/ Village /Families/ CSSP</p>	<p>Improve infrastructure resilience and rate of recovery</p> <p>Reduce impact from coastal erosion</p> <p>Safer villages, houses and roads</p> <p>Minimise expenditure on damaged properties & personal assets</p>	<p>Utilise environmental and social safeguards including EIAs in screening and designing built environment infrastructure projects for Va'a o Fonoti district</p> <p>Develop an integrated land management plan with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>Develop and register Village bylaws to include banning of sand mining and illegal rubbish dumping in waterways and drains</p> <p>Utilise Sui o Nu'u monthly meetings to monitor progress of village replanting and clean up programmes</p>	<p>CIM Strategy 2015</p> <p>TSP 2014-2019 Goal 2 KO 1</p> <p>Community Sector Plan</p>
<p>Natural Resources and Environment</p>	<p>Best Solutions</p>	<p>Benefits</p>	<p>Guideline to assist with the Implementation</p>	<p>Relevant Sector Plan, National Strategies & Policies</p>
<p>Wetland area conservation</p>	<p>Undertake an assessment of tidal flow necessary to maintain a healthy natural environment</p> <p>Limit land clearance and developments adjacent to</p>	<p>Protects and enhance local species diversity</p> <p>Sustains ecosystem services and functions</p>	<p>MNRE DEC to provide technical assistance and backstopping in the development of a Wetland Management Plan for Va'a o Fonoti District</p> <p>Identify funding /budget</p>	<p>Draft NESP 2017-2021</p> <p>Community Engagement Plan</p>

	<p>wetland areas</p> <p>Continue to plant native species along coastal areas to reduce erosion and landslips. To act as an effective wave barrier, a minimum distance of 200m of vegetation is needed</p> <p>Village to fence off domestic animals foraging in wetland areas</p> <p>Responsibility: MNRE / Village /CSSP/ UNDP-GEF SGP/ MWTI</p>	<p>Reduce contamination of water supply</p> <p>Reduce impact from inland flooding</p>	<p>requirements and implementation programme to continue protection of mangrove/wetland areas in district</p>	
Sand mining	<p>Identify alternative sustainable sources of sand for domestic use</p> <p>Research the impacts of sand mining</p> <p>Village consultation on sand mining policy and regulation</p> <p>Village and government to collaborate closely on designated areas for sand/rock mining</p> <p>Raise awareness and support of sustainable land use practices</p> <p>Responsibility: MNRE/ Village/Families</p>	<p>Mitigate potential damage from coastal erosion and flooding accommodating the hazard</p> <p>Safer villages, houses and roads</p> <p>Reduce impact from coastal erosion</p> <p>Economic benefit for village from sustainable sand mining activities</p>	<p>MNRE to continue to identify specific sites for inshore/ inland sustainable sand/rock mining to meet demand without compromising riverbanks</p> <p>Undertake assessments of identified sites</p> <p>Undertake consultation with villages affected by proposed sand mining</p> <p>Develop and register District bylaws to include managing and monitoring domestic sand mining and rock extraction from rivers</p> <p>Utilise Sui o Nu'u monthly meetings to monitor progress of CIM Plan activities</p>	<p>Draft Soil Resource Management Bill</p>
Soft coastal protection measures needed for most vulnerable areas	<p>Plant native species along coastal areas to strengthen existing seawall and to reduce coastal erosion and landslips; Talie, Fetau, Toa, Togatogo are known to have greater resilience to natural disasters and changing climate conditions</p> <p>To act as an effective wave barrier, a minimum distance of 200m of vegetation is needed</p>	<p>Soft coastal protection measures will support and strengthen existing and new infrastructure along the coast</p> <p>Reduce impact from coastal erosion and natural disasters</p> <p>Implements an Ecosystem Based</p>	<p>Develop an integrated land management plan for Va'a o Fonoti district with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>MAF to assist in establishment of pilot sites to trial climate ready plant varieties</p> <p>MNRE Forestry, DEC and MAF to collaborate on supply of climate resilient crops</p>	<p>NESP 2017-2021</p> <p>Two Million Tree Planting Strategy 2015-2020</p> <p>Restoration Operational Plan 2016-2020</p>

	<i>Responsibility: MNRE/ MAF/Villages</i>	Approach	Utilise PD3 to inform location for planting/replanting	
Livelihood and Food Security	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant Sector Plans, National Strategies & Policies
Pest management; invasive plants and animals affecting taro plantations and newly planted coconut plantations	<p>Research disease(s) affecting coconut farms in Faleapuna</p> <p>Implement an eradication programme to eradicate, contain or exclude invasive species</p> <p>Implement an inventory of invasive species and include information on their past, present and potential future distribution, as well as impacts and possible actions that can be taken</p> <p>Conduct education and awareness programmes on the impacts of invasive species</p> <p>Implement the Integrated Pest Management Programme</p> <p>Implement Sustainable Land Management (SLM) practices</p> <p>Build the capacity of farmers to manage stray animals (pigs, cattle) that are contaminating water sources</p> <p><i>Responsibility: Villages/District/ MNRE/MAF/ SROS</i></p>	<p>Maintains natural ecosystem</p> <p>Builds resilience of community livelihood and food security</p>	<p>Develop an integrated land management plan for Va'a o Fonoti district with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>MAF to raise awareness of farmers on impacts to water flows from poor livestock management</p> <p>MNRE, MAF and SROS to implement aggressive, nationwide invasive species eradication programme based on inventory of invasive species and conduct campaign on public awareness accordingly</p> <p>Training for farmers on pests management particularly affecting fruit trees and crops</p>	<p>Agriculture Sector Plan 2016-2021</p> <p>Samoa's National Invasive Species Action Plan (NISAP)</p>
Livelihood and Food Security	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant Sector Plans, National Strategies & Policies
Plantations, crops and plants threatened by changes in climate, inland flooding and inadequate soil for planting	<p>Promote and facilitate planting of rootcrops (i.e yams, sweet potato) which are more resilient to cyclones, droughts and floods</p> <p>Promote agroforestry and mixed planting including fruit trees species to promote ecological stability,</p>	<p>Improve health through access to clean water and waste management</p> <p>Improve recovery to create more resilient villages</p> <p>Improve preparedness and</p>	<p>Agriculture sector to provide best practice management guidelines for the management of water that allows for levels of contamination to be kept to minimum</p> <p>MNRE Forestry, DEC and MAF to collaborate on supply of climate resilient crops and plants</p>	<p>Agriculture Sector Plan 2016-2021</p> <p>Two Million Tree Strategy 2015-2020</p> <p>Restoration Operational Plan 2016-2020</p>

	<p>soil protection and reduce crop vulnerability to pests and diseases</p> <p>Implement the Integrated Pest Management Programme</p> <p>Implement Sustainable Land Management (SLM) practices</p> <p>Conduct pilot site trials for climate ready plant varieties</p> <p>Responsibility: MAF/ MNRE/village</p>	<p>readiness response to natural disasters</p>	<p>MAF to provide trainings, awareness raising on crop diversification to suit prolonged impacts of climate change and support in supply of nursery trees, technology and infrastructure to have a sustainable mechanism for replanting</p> <p>MAF to assist in establishment of pilot sites to trial climate ready plant varieties and provide advice, seedlings and planting material for village/families as a trial</p> <p>Develop an integrated land management plan with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>MNRE Forestry to advice on appropriate species, depth and density of planting and provide seedlings for different vegetation types suitable to the habitats and planting materials for village</p>	
Governance	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant Sector Plans, National Strategies & Policies
<p>Strengthen the governance of natural resources and land use through Bylaws</p>	<p>Update and/or develop bylaws to manage the use of natural resources, and to control land use impacts; such as drainage maintenance, rubbish dumping, sand mining, stray animals and unregulated developments in water catchment areas and near boreholes.</p> <p>Collaborate with Sui o Nuu to monitor the use of and impact on natural resources</p> <p>Facilitate continuous awareness raising programs with the villages</p> <p>Obtain necessary permits required by law before developments take place</p>	<p>Strengthen implementation of all national sector plans</p> <p>Strengthen monitoring of all National Acts, Regulation, Strategies, Plans and Policies</p> <p>Improve ability of communities to adapt, respond and recover quickly in the long term</p> <p>Improve accountability and enabling environment of communities</p>	<p>Develop and register district/village bylaw to protect all district/ village and government assets, environment, livelihood and food security especially activities affecting water catchment areas and coastline</p> <p>Utilise Sui o Nu'u monthly meetings to monitor progress of district/village bylaws</p>	<p>Village Fono Act (Amendment Bill 2016)</p> <p>Community Sector Plan</p> <p>Community Development Plan 2016-2021</p>

	Responsibility: MWCSO /MNRE /Village			
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Non-CR issues raised during consultations	Proposed Solution	Comments
Diseases found in domestic animals (chickens & dogs) Responsibility: Village /NGOs	Village to seek assistance of veterinarian	Not a CR issue

Faleapuna Village Map

FALEAPUNA VILLAGE



Coordinate System: GCS WGS 1984
 Datum: WGS 1984
 Units: Degree

Data Source: Ministry of Natural Resource and Environment, Samoa
 Map Production: Spatial & DRM Specialist, Adaptation Fund - Enhancing Resilience of Coastal Communities of Samoa to Climate Change Project

4.2 Lona Village Interventions

CIM Plan Solutions

Infrastructure	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant National, Sector Plans and Strategies
<p>Village houses, school, churches and government assets in extremely high risk hazard zones</p>	<p>Relocate assets outside of high risk hazard zones when re-building</p> <p>Develop landuse planning and development controls to restrict developments within high risk hazard zones such as CEHZ and CFHZ</p> <p>Conduct awareness raising campaign on flood resilient building practices and designs for at risk communities living in and near high risk hazard zones</p> <p>Design infrastructure to take into account the immediate hazard zones; for example, raise floor levels of houses in flood prone areas</p> <p>Families and village to limit building and developing on natural overland flow paths exacerbating inland flooding and storm water surges</p> <p>Responsibility: Village / Families /MWTI/ MNRE/ MWCS D</p>	<p>Minimise expenditure on damaged properties and personal assets</p> <p>Safer villages, houses and roads</p> <p>Increases awareness for insurance</p>	<p>Planning provisions to be guided by the Planning and Urban Management Act 2004</p> <p>Enforcement of National Building Code 2017</p> <p>Encourage insurance of significant investments and assets within hazard zones</p> <p>Utilise hazard maps and Geomorphologist Drainage Infrastructure Database to determine safe areas for relocation purposes</p> <p>Designation of the IFHZ, CEHZ and CFHZ as an “at risk” zone with appropriate landuse planning controls and restrictions</p>	<p>CIM Strategy 2015</p> <p>National Building Code</p>
<p>Evacuation Shelter and a connected escape route needed for emergency preparedness and response</p>	<p>Assess and/or select location for either an existing or new evacuation shelter, including safe access routes to the shelter</p> <p>Conduct evacuation shelter assessment and mark on CIM Plan hazard maps</p> <p>Develop a Village Climate Disaster Management Plan (VCDMP)</p> <p>Conduct trainings for People With Disabilities (PWDs) on emergency and</p>	<p>Improve resilience of public infrastructure</p> <p>Improve preparedness and readiness response to natural disasters</p>	<p>Enforcement of National Building Code 2017</p> <p>Utilise hazard maps and Geomorphologist findings to inform location and designs</p>	<p>National Disaster Management Plan 2017-2021</p> <p>National Building Code</p> <p>National Policy for People with Disabilities</p> <p>NISP 2011 KESO 5</p>

	<p>disaster response strategies</p> <p>Implement CDCRM program</p> <p>Install relevant signs to guide the community on emergency response procedures and to locations of evacuation shelters</p> <p>Where no suitable houses exist, build emergency shelter(s) outside the hazard zones</p> <p>Retrofit identified and approved schools or churches outside hazard zones and designate as evacuation shelter</p> <p>Responsibility: MNRE /DMO/ MWTI/Village /CSSP/Council of Churches/MWCSD</p>			
<p>Drainage systems require maintenance and upgrade to reduce storm water and inland flooding onto Fagaloa Bay Road</p>	<p>Assess and upgrade culverts especially at junction of Fagaloa Bay road and causeway near Lona Primary School</p> <p>Implement national standards for culverts and drains to facilitate the overland flow of storm water and reduce flooding</p> <p>Implement regular drainage inspection and maintenance</p> <p>District to regulate developments near and around waterways and drainage connecting to main East Coast Road</p> <p>Responsibility: LTA /MWTI/MWCSD/ District/Village/ Families</p>	<p>Improves infrastructure resilience and rate of response and recovery to natural hazards and disasters</p> <p>Encourages coastal families to relocate inland</p> <p>Maintains lifeline access for all of Upolu</p> <p>Minimises national disaster recovery expenditure on damaged properties, public and private assets</p>	<p>Conduct a full catchment management, drainage analysis and geotechnical engineering survey and use its recommendations to inform location and designs</p> <p>Use existing information for guidance but not limited to: <i>"Vulnerability Assessment of the Samoa Road Network (2017)"</i>; <i>"Review of National Road Standards in Samoa (2016)"</i>; <i>"Samoa Code of Environmental Practice (2007)"</i></p> <p>Undertake a Cost Benefit Analysis to weigh options for funding</p> <p>Incorporate environmental and social safeguards concerns in the design and undertake consultations with affected communities</p> <p>Apply for necessary permits as required by law</p> <p>Utilise hazard maps and Geomorphologist Infrastructure Drainage Database to inform designs</p> <p>Develop Integrated Catchment</p>	<p>CIM Strategy 2015</p> <p>TSP2014-2019 Goal 2 KO 1</p> <p>Community Sector Plan</p>

			<p>Strategy and Flood Management Plan for Vaa o Fonoti District</p> <p>Develop and register District/Village bylaws to include maintenance of drainages and illegal rubbish dumping into waterways</p>	
Flood protection measures for fords and bridges	<p>Upgrade waterways</p> <p>Upgrade all crossings</p> <p>Upgrade or repair riverine embankment protection work upstream of Lona</p> <p>Ensure river channel upstream is cleared and maintained regularly</p> <p>Construct levees to reduce flooding along estuaries and coastal streams</p> <p>Install advisory edge markers and depth markers to warn vehicle and pedestrians at all crossings</p> <p>Government and Villages to liaise and collaborate on processes needed to protect riverbanks from land clearing and developments</p> <p>Responsibility: MWTI/ LTA/MNRE/ District/ Village</p>	<p>Minimise expenditure on damaged properties & personal assets</p> <p>Mitigate potential damage from inland flooding</p> <p>Reduce flooding of built up areas</p> <p>Maintains lifeline access for all of Upolu</p> <p>Safer villages, houses and roads</p>	<p>Conduct a full catchment management, drainage analysis and geotechnical engineering survey and use its recommendations to inform location and designs</p> <p>Implement Va'a o Fonotit Integrated Catchment Strategy and Flood Management Plan in conjunction with hazard Maps and Geomorphologist Drainage Infrastructure Database findings</p> <p>Utilise environmental and social safeguards including EIAs in screening and designing infrastructure facilities</p> <p>Develop an integrated land management plan with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>Include in budget programming CBA, design and construction.</p> <p>Designation of the IFHZ as an "at risk" zone with appropriate landuse planning controls and restrictions</p>	<p>CIM Strategy 2015</p> <p>TSP 2014-2019 Goal 2 KO 1</p> <p>Vulnerability Assessment of the Samoa Road Network (2016) and Road Network Adaptation Strategy, LTA</p>
Coastline protection: seawall	<p>Government to weigh option of upgrading seawall or relocating houses in vulnerable areas</p> <p>Clear debris from existing culverts near seawalls and waterways to enable free outflow of storm water and streams into sea</p> <p>Where reclamations, sand mining, extraction or other major coastal works are proposed, Government and village to manage processes</p>	<p>Improve infrastructure resilience and rate of recovery</p> <p>Reduce impact from coastal erosion</p> <p>Safer villages, houses and roads</p> <p>Minimise expenditure on damaged properties & personal assets</p>	<p>Undertake a Cost Benefit Analysis to weigh options for funding</p> <p>Incorporate environmental and social safeguards concerns in the design and undertake consultations with affected communities</p> <p>Apply for necessary permits as required by law</p> <p>Utilise hazard maps and Geomorphologist Infrastructure Drainage Database to inform designs</p>	<p>CIM Strategy 2015</p> <p>TSP 2014-2019 Goal 2 KO 1</p> <p>Community Sector Plan</p>

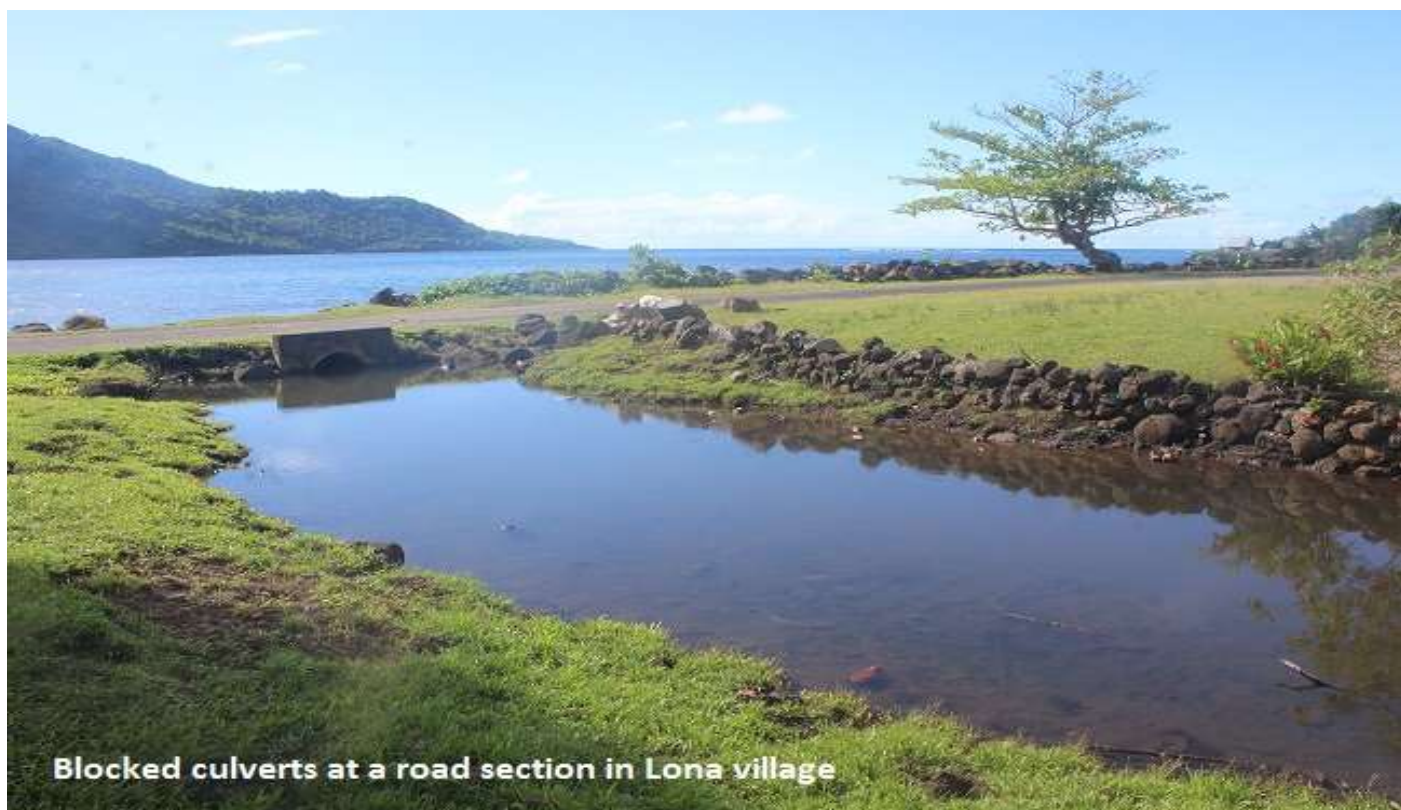
	<p>by requiring villagers to get the appropriate permits and consent</p> <p>Responsibility: MNRE/ Village /Families/ CSSP</p>		<p>Develop an integrated land management plan with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>Develop and register Village bylaws to include banning of sand mining and illegal rubbish dumping in waterways and drains</p>	
Silt blocking village (IWS) reservoir	<p>Village to clean out debris on a regular basis</p> <p>Village to procure filter for reservoir, upgrade and maintain as the need arises</p> <p>Procure rainwater harvesting systems for vulnerable families as a short term solution</p> <p>Responsibility: Village/ CSSP</p>	<p>Increase adaptation during drought periods</p> <p>Improve health and sanitation</p> <p>Reduce impact from inland flooding</p>	<p>Develop and register District/Village bylaws to include regulating developments around catchment areas and boreholes</p>	<p>CIM Strategy 2015</p> <p>Community Sector Plan</p> <p>Community Engagement Plan</p>
Natural Resources and Environment	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant Sector Plans, National Strategies & Policies
Sand mining	<p>Identify alternative sustainable sources of sand for domestic use</p> <p>Research the impacts of sand mining</p> <p>Village consultation on sand mining policy and regulation</p> <p>Village and government to collaborate closely on designated areas for sand/rock mining</p> <p>Raise awareness and support of sustainable land use practices</p> <p>Responsibility: MNRE/ Village/Families</p>	<p>Mitigate potential damage from coastal erosion and flooding accommodating the hazard</p> <p>Safer villages, houses and roads</p> <p>Reduce impact from coastal erosion</p> <p>Economic benefit for village from sustainable sand mining activities</p>	<p>MNRE to continue to identify specific sites for inshore/ inland sustainable sand/rock mining to meet demand without compromising riverbanks</p> <p>Undertake assessments of identified sites</p> <p>Undertake consultation with villages affected by proposed sand/rock mining</p> <p>Develop and register District bylaws to include managing and monitoring domestic sand/rock mining of rivers</p> <p>Utilise Sui o Nu'u monthly meetings to monitor progress of CIM Plan activities</p>	<p>Draft Soil Resource Management Bill</p>

<p>Flood protection measures (soft solution to support flood protection measures for infrastructure)</p>	<p>Conduct riparian replanting along river channels and watercourses</p> <p>Encourage planting of indigenous species in conjunction with engineered water land drainage action plans</p> <p>Promote and support village and district afforestation in the upper and mid-catchment areas to reduce riverbank failures especially in flood prone areas</p> <p>Responsibility: MNRE/Villages</p>	<p>Mitigate potential damage from inland flooding</p> <p>Reduce flooding of built up areas</p> <p>Safer villages, houses and roads</p>	<p>Implement Vaa o Fonoti Integrated Catchment Strategy and Flood Management Plan in conjunction with hazard Maps and Geomorphologist Drainage Infrastructure Database to inform location and designs</p> <p>MNRE to zone hazard areas along major watercourses based on flood risk to provide suitable areas for riparian revegetation</p>	<p>Two Million Tree Strategy 2015-2020</p> <p>Restoration Operational Plan 2016-2020</p>
<p>Soft coastal protection measures needed for most vulnerable areas</p>	<p>Plant native species along coastal areas to strengthen existing seawall and to reduce coastal erosion and landslips; Talie, Fetau, Toa, Togatogo are known to have greater resilience to natural disasters and changing climate conditions</p> <p>To act as an effective wave barrier, a minimum distance of 200m of vegetation is needed</p> <p>Responsibility: MNRE/MAF/Villages</p>	<p>Soft coastal protection measures will support and strengthen existing and new infrastructure along the coast</p> <p>Reduce impact from coastal erosion and natural disasters</p> <p>Implements an Ecosystem Based Approach</p>	<p>Develop an integrated land management plan for Vaa o Fonoti district with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>MAF to assist in establishment of pilot sites to trial climate ready plant varieties</p> <p>MNRE Forestry, DEC and MAF to collaborate on supply of climate resilient crops</p>	<p>NESP 2017-2021</p> <p>Two Million Tree Planting Strategy 2015-2020</p> <p>Restoration Operational Plan 2016-2020</p>
<p>Livelihood and Food Security</p>	<p>Best Solutions</p>	<p>Benefits</p>	<p>Guideline to assist with the Implementation</p>	<p>Relevant Sector Plans, National Strategies & Policies</p>
<p>Establish tilapia farm as alternative food source and as income based activity</p>	<p>Village to seek assistance from MAF</p> <p>Village to set aside dedicated land for tilapia farm</p> <p>Responsibility: Village/MAF</p>	<p>Improve preparedness and readiness response to natural disasters</p> <p>Economic benefit for village</p>	<p>MAF to assist in establishment of pilot sites, provide advice and initial stocking of tilapia farm as a trial</p> <p>Develop an integrated land management plan with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p>	<p>Agriculture Sector Plan 2016-2021</p>
<p>Pest management; invasive plants and animals</p>	<p>Implement an eradication programme to eradicate, contain or exclude invasive species</p> <p>Implement an inventory of</p>	<p>Maintains natural ecosystem</p> <p>Builds resilience of</p>	<p>Develop an integrated land management plan for Vaa o Fonoti district with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems</p>	<p>Agriculture Sector Plan 2016-2021</p> <p>Samoa's National Invasive Species Action Plan</p>

	<p>invasive species and include information on their past, present and potential future distribution, as well as impacts and possible actions that can be taken</p> <p>Conduct education and awareness programmes on the impacts of invasive species</p> <p>Implement the Integrated Pest Management Programme</p> <p>Implement Sustainable Land Management (SLM) practices</p> <p>Build the capacity of farmers to manage stray animals (pigs, cattle) that are contaminating water sources</p> <p>District to fence domestic animals</p> <p>Responsibility: Villages/District/ MNRE/MAF/ SROS</p>	<p>community livelihood and food security</p>	<p>of the area</p> <p>MAF to raise awareness of farmers on impacts to water flows from poor livestock management</p> <p>MNRE, MAF and SROS to implement aggressive, nationwide invasive species eradication programme based on inventory of invasive species and conduct campaign on public awareness accordingly</p> <p>Training for farmers on pests management particularly affecting fruit trees and crops</p>	<p>(NISAP)</p>
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Governance	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant Sector Plans, National Strategies & Policies
<p>Strengthen the governance of natural resources and land use through Bylaws</p>	<p>Update and/or develop bylaws to manage the use of natural resources, and to control land use impacts; such as drainage maintenance, rubbish dumping, sand mining, stray animals and unregulated developments in water catchment areas and near boreholes.</p> <p>Collaborate with Sui o Nuu to monitor the use of and impact on natural resources</p> <p>Facilitate continuous awareness raising programs with the villages</p> <p>Obtain necessary permits required by law before developments take place</p> <p>Responsibility: MWCSO /MNRE /Village</p>	<p>Strengthen implementation of all national sector plans</p> <p>Strengthen monitoring of all National Acts, Regulation, Strategies, Plans and Policies</p> <p>Improve ability of communities to adapt, respond and recover quickly in the long term</p> <p>Improve accountability and enabling environment of communities</p>	<p>Develop and register district/village bylaw to protect all district/ village and government assets, environment, livelihood and food security especially activities affecting water catchment areas and coastline</p> <p>Utilise Sui o Nu'u monthly meetings to monitor progress of district/village bylaws</p>	<p>Village Fono Act (Amendment Bill 2016)</p> <p>Community Sector Plan</p> <p>Community Development Plan 2016-2021</p>

Non-CR issues raised during consultations	Proposed Solution	Comments
<p>Funding to procure fencing for cattle Responsibility: Village /NGOs</p>	<p>Village to seek financial assistance from other sources</p>	<p>Not a CR issue. Potential for MAF financing if fencing is related to agricultural initiatives</p>



Blocked culverts at a road section in Lona village



Cattle farm on natural water streams from the mountain

Lona Village Map

LONA VILLAGE



Coordinate System: GCS WGS 1984
Datum: WGS 1984
Units: Degree

Data Source: Ministry of Natural Resource and Environment, Samoa
Map Production: Spatial & DRM Specialist, Adaptation Fund - Enhancing Resilience of Coastal Communities of Samoa to Climate Change Project

4.3 Ma'asina Village Interventions

CIM Plan Solutions

Infrastructure	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant National, Sector Plans and Strategies
<p>Village houses, churches and government assets in high risk hazard zones</p>	<p>Relocate assets outside of high risk hazard zones when re-building</p> <p>Develop landuse planning and development controls to restrict developments within high risk hazard zones such as CEHZ and CFHZ</p> <p>Conduct awareness raising campaign on flood resilient building practices and designs for at risk communities living in and near high risk hazard zones</p> <p>Design infrastructure to take into account the immediate hazard zones; for example, raise floor levels of houses in flood prone areas</p> <p>Families and village to limit building and developing on natural overland flow paths exacerbating inland flooding and storm water surges</p> <p>Responsibility: Village / Families /MWTI/ MNRE/ MWCS D</p>	<p>Minimise expenditure on damaged properties and personal assets</p> <p>Safer villages, houses and roads</p> <p>Increases awareness for insurance</p>	<p>Planning provisions to be guided by the Planning and Urban Management Act 2004</p> <p>Enforcement of National Building Code 2017</p> <p>Encourage insurance of significant investments and assets within hazard zones</p> <p>Utilise hazard maps and Geomorphologist Drainage Infrastructure Database to determine safe areas for relocation purposes</p> <p>Designation of the IFHZ, CEHZ and CFHZ as an “at risk” zone with appropriate landuse planning controls and restrictions</p>	<p>CIM Strategy 2015</p> <p>National Building Code</p>
<p>Access/work roads require maintenance and upgrade as it exacerbates flooding onto Fagaloa Bay Road</p>	<p>Assess and upgrade access/work roads where it connects to the main Fagaloa Bay Road</p> <p>Construct roadside drainage ditches where needed</p> <p>Implement routine maintenance of the roads and clear any debris obstructing the free flow of surface water runoff</p> <p>Village to regulate developments near and around road shoulders of all</p>	<p>Improve infrastructure resilience and rate of recovery</p> <p>Improve preparedness and readiness response to natural disasters</p> <p>Safer villages, houses and roads</p> <p>Minimise national disaster recovery expenditure on</p>	<p>Undertake a Cost Benefit Analysis to weigh options for funding</p> <p>Utilise hazard maps and Geomorphologist Drainage Infrastructure Database to inform location and designs</p> <p>Develop an integrated land management plan with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>Designation of the IFHZ,</p>	<p>National Disaster Management Plan 2017-2021</p> <p>CIM Strategy 2015</p> <p>TSP 2014-2019 Goal 2 KO 1</p> <p>Community Sector Plan</p>

	<p>access roads</p> <p>Enforce environmental safeguards where reclamations are proposed. Government and district to manage processes by requiring villagers to get the appropriate permits and consent</p> <p>Responsibility: LTA/ MWTI/ MNRE/ Villages /Families</p>	<p>damaged properties and public assets</p>	<p>CEHZ and CFHZ as an “at risk” zone with appropriate landuse planning controls and restrictions</p> <p>Utilise environmental and social safeguards including EIAs in screening and designing built environment infrastructure projects for Vaa o Fonoti district</p>	
<p>Coastline protection: upgrade seawalls at most high risk hazard zones</p>	<p>Assess feasibility of installing seawalls in most high risk hazard zones</p> <p>Research the impacts of sand mining</p> <p>Village consultation on sand mining policy and regulation</p> <p>Enforce environmental social safeguards where reclamations, sand mining, extraction or other major coastal works are proposed. Government and village to manage processes by requiring villagers to get the appropriate permits and consent</p> <p>Responsibility: MNRE/ Village /Families/MWTI</p>	<p>Improve infrastructure resilience and rate of recovery</p> <p>Maintains natural ecosystem connectivity</p> <p>Reduce impact from coastal erosion</p> <p>Safer villages, houses and roads</p> <p>Minimise expenditure on damaged properties & personal assets</p>	<p>Undertake a Cost Benefit Analysis to weigh options for funding</p> <p>Incorporate environmental and social safeguards concerns in the design and undertake consultations with affected communities</p> <p>Utilise hazard maps and Geomorphologist Infrastructure Drainage Database to inform designs</p>	<p>CIM Strategy 2015</p> <p>TSP 2014-2019 Goal 2 KO 1</p> <p>Draft Soil Resource Management Bill</p>
<p>Evacuation Shelter and a connected escape route needed for emergency preparedness and response</p>	<p>Assess and/or select location for either an existing or new evacuation shelter, including safe access routes to the shelter</p> <p>Conduct evacuation shelter assessment and mark on CIM Plan hazard maps</p> <p>Develop a Village Climate Disaster Management Plan (VCDMP)</p> <p>Conduct trainings for People With Disabilities (PWDs) on emergency and disaster response strategies</p> <p>Implement CDCRM program</p>	<p>Improve resilience of public infrastructure</p> <p>Improve preparedness and readiness response to natural disasters</p>	<p>Enforcement of National Building Code 2017</p> <p>Utilise hazard maps and Geomorphologist findings to inform location and designs</p>	<p>National Disaster Management Plan 2017-2021</p> <p>National Building Code</p> <p>National Policy for People with Disabilities</p> <p>NISP 2011 KESO 5</p>

	<p>Install relevant signs to guide the community on emergency response procedures and to locations of evacuation shelters</p> <p>Where no suitable houses exist, build emergency shelter(s) outside the hazard zones</p> <p>Retrofit identified and approved schools or churches outside hazard zones and designate as evacuation shelter</p> <p>Responsibility: MNRE /DMO/ MWTI/Village /CSSP/Council of Churches/MWCSD</p>			
Silt blocking village (IWS) reservoir	<p>Village to clean out debris on a regular basis</p> <p>Village to procure filter for reservoir, upgrade and maintain as the need arises</p> <p>Procure rainwater harvesting systems for vulnerable families as a short term solution</p> <p>Responsibility: Village/ CSSP</p>	<p>Increase adaptation during drought periods</p> <p>Improve health and sanitation</p> <p>Reduce impact from inland flooding</p>	<p>Develop and register District/Village bylaws to include regulating developments around catchment areas and boreholes</p>	<p>CIM Strategy 2015</p> <p>Community Sector Plan</p> <p>Community Engagement Plan</p>
Natural Resources and Environment	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant Sector Plans, National Strategies & Policies
Inshore marine resources	<p>Research new type of vegetation found in seas of Ma'asina</p> <p>Implement an eradication programme to eradicate, contain or exclude invasive species affecting taro plantations</p> <p>Conduct education and awareness programmes on the impacts of invasive species</p> <p>Implement the Integrated Pest Management Programme</p> <p>Implement Sustainable Land Management (SLM)</p>	<p>Maintains natural ecosystem</p> <p>Builds resilience of community livelihood and food security</p>	<p>Develop an integrated land management plan for Vaa o Fonoti district with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>MNRE, MAF and SROS to implement aggressive, nationwide invasive species eradication programme based on inventory of invasive species and conduct campaign on public awareness accordingly</p>	<p>Agriculture Sector Plan 2016-2021</p> <p>Samoa's National Invasive Species Action Plan (NISAP)</p>

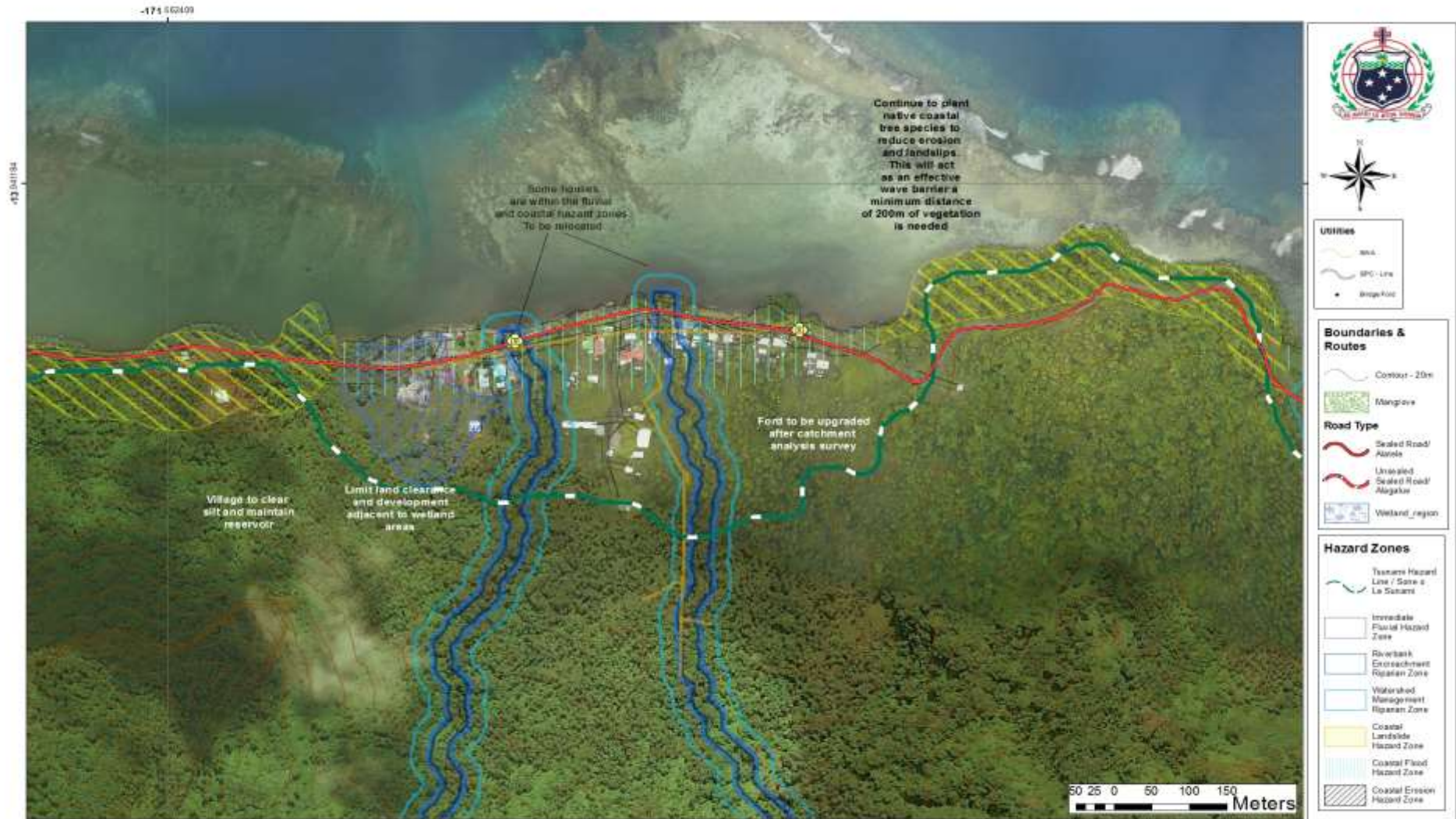
	practices Responsibility: Villages/District/MNRE/MAF/SROS			
Wetland area conservation	<p>Undertake an assessment of tidal flow necessary to maintain a healthy natural environment</p> <p>Limit land clearance and developments adjacent to wetland areas</p> <p>Continue to plant native species along coastal areas to reduce erosion and landslips. To act as an effective wave barrier, a minimum distance of 200m of vegetation is needed</p> <p>Village to fence off domestic animals foraging in wetland areas</p> <p>Responsibility: MNRE / Village /CSSP/ UNDP-GEF SGP/ MWTI</p>	<p>Protects and enhance local species diversity</p> <p>Sustains ecosystem services and functions</p> <p>Reduce contamination of water supply</p> <p>Reduce impact from inland flooding</p>	<p>MNRE DEC to provide technical assistance and backstopping in the development of a Wetland Management Plan for Va'a o Fonoti District</p> <p>Identify funding /budget requirements and implementation programme to continue protection of mangrove/wetland areas in district</p>	<p>Draft NESP 2017-2021</p> <p>Community Engagement Plan</p>
Soft coastal protection measures needed for most vulnerable areas	<p>Plant native species along coastal areas to strengthen existing seawall and to reduce coastal erosion and landslips; Talie, Fetau, Toa, Togatogo are known to have greater resilience to natural disasters and changing climate conditions</p> <p>To act as an effective wave barrier, a minimum distance of 200m of vegetation is needed</p> <p>Responsibility: MNRE/MAF/Villages</p>	<p>Soft coastal protection measures will support and strengthen existing and new infrastructure along the coast</p> <p>Reduce impact from coastal erosion and natural disasters</p> <p>Implements an Ecosystem Based Approach</p>	<p>Develop an integrated land management plan for Vaa o Fonoti district with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>MAF to assist in establishment of pilot sites to trial climate ready plant varieties</p> <p>MNRE Forestry, DEC and MAF to collaborate on supply of climate resilient crops</p>	<p>NESP 2017-2021</p> <p>Two Million Tree Planting Strategy 2015-2020</p> <p>Restoration Operational Plan 2016-2020</p>

Governance	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant Sector Plans, National Strategies & Policies
<p>Strengthen the governance of natural resources and land use through Bylaws</p>	<p>Update and/or develop bylaws to manage the use of natural resources, and to control land use impacts; such as drainage maintenance, rubbish dumping, sand mining, stray animals and unregulated developments in water catchment areas and near boreholes.</p> <p>Collaborate with Sui o Nuu to monitor the use of and impact on natural resources</p> <p>Facilitate continuous awareness raising programs with the villages</p> <p>Responsibility: MWCSO /Village</p>	<p>Strengthen implementation of all national sector plans</p> <p>Strengthen monitoring of all National Acts, Regulation, Strategies, Plans and Policies</p> <p>Improve ability of communities to adapt, respond and recover quickly in the long term</p> <p>Improve accountability and enabling environment of communities</p>	<p>Develop and register district/village bylaw to protect all district/ village and government assets, environment, livelihood and food security especially activities affecting water catchment areas and coastline</p> <p>Utilise Sui o Nu'u monthly meetings to monitor progress of district/village bylaws</p>	<p>Village Fono Act (Amendment Bill 2016)</p> <p>Community Sector Plan</p> <p>Community Development Plan 2016-2021</p>



Ma'asina Village Map

MAASINA VILLAGE



4.4 Saletele Village Interventions

CIM Plan Solutions

Infrastructure	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant National, Sector Plans and Strategies
Village houses, churches and government assets in extremely high risk hazard zones	<p>Relocate assets outside of high risk hazard zones when re-building</p> <p>Develop landuse planning and development controls to restrict developments within high risk hazard zones such as CEHZ and CFHZ</p> <p>Conduct awareness raising campaign on flood resilient building practices and designs for at risk communities living in and near high risk hazard zones</p> <p>Design infrastructure to take into account the immediate hazard zones; for example, raise floor levels of houses in flood prone areas</p> <p>Families and village to limit building and developing on natural overland flow paths exacerbating inland flooding and storm water surges</p> <p>Responsibility: Village / Families /MWTI/ MNRE/ MWCS D</p>	<p>Minimise expenditure on damaged properties and personal assets</p> <p>Safer villages, houses and roads</p> <p>Increases awareness for insurance</p>	<p>Planning provisions to be guided by the Planning and Urban Management Act 2004</p> <p>Enforcement of National Building Code 2017</p> <p>Encourage insurance of significant investments and assets within hazard zones</p> <p>Utilise hazard maps and Geomorphologist Drainage Infrastructure Database to determine safe areas for relocation purposes</p> <p>Designation of the IFHZ, CEHZ and CFHZ as an “at risk” zone with appropriate landuse planning controls and restrictions</p>	<p>CIM Strategy 2015</p> <p>National Building Code</p>
Coastline protection: upgrade seawalls at most high risk hazard zones	<p>Upgrade seawalls in most vulnerable areas</p> <p>Research the impacts of sand mining</p> <p>Village consultation on sand mining policy and regulation</p> <p>Enforce environmental social safeguards where reclamations, sand mining, extraction or other major coastal works are proposed. Government and village to manage processes by requiring villagers to get the</p>	<p>Improve infrastructure resilience and rate of recovery</p> <p>Maintains natural ecosystem connectivity</p> <p>Reduce impact from coastal erosion</p> <p>Safer villages, houses and roads</p> <p>Minimise</p>	<p>Undertake a Cost Benefit Analysis to weigh options for funding</p> <p>Incorporate environmental and social safeguards concerns in the design and undertake consultations with affected communities</p> <p>Utilise hazard maps and Geomorphologist Infrastructure Drainage Database to inform designs</p>	<p>CIM Strategy 2015</p> <p>TSP 2014-2019 Goal 2 KO 1</p> <p>Draft Soil Resource Management Bill</p>

	appropriate permits and consent Responsibility: MNRE/ Village /Families/MWTI	expenditure on damaged properties & personal assets		
Alternative connectivity and lifeline access to Fagaloa and Uafato Bay during extreme events	Investigate improving access to Fagaloa and Uafato Bay via Fagaloa Road coastal path which passes through Sauano and Saletele Bay Responsibility: LTA/ MWTI/ District/ Villages	<p>Improve infrastructure resilience and rate of recovery</p> <p>Improve preparedness and readiness response to natural disasters</p> <p>Reduce impact from coastal erosion and natural disasters</p> <p>Maintains lifeline access for Fagaloa and Uafato Bay</p> <p>Safer villages, houses and roads</p> <p>Minimise national disaster recovery expenditure on damaged properties and public assets</p>	<p>Conduct a full catchment management, drainage analysis and geotechnical engineering survey and use its recommendations to inform location and designs</p> <p>Implement Va'a o Fonoti Integrated Catchment Strategy and Flood Management Plan in conjunction with hazard Maps and Geomorphologist Drainage Infrastructure Database findings</p> <p>Utilise environmental and social safeguards including EIAs in screening and designing infrastructure facilities</p> <p>Develop an integrated land management plan with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>Include in budget programming CBA, design and construction.</p> <p>Designation of the IFHZ as an "at risk" zone with appropriate landuse planning controls and restrictions</p>	<p>CIM Strategy 2015</p> <p>TSP 2014-2019 Goal 2 KO 1</p> <p>Vulnerability Assessment of the Samoa Road Network (2016) and Road Network Adaptation Strategy, LTA</p>
Evacuation Shelter and a connected escape route needed for emergency preparedness and response	<p>Assess and/or select location for either an existing or new evacuation shelter, including safe access routes to the shelter</p> <p>Conduct evacuation shelter assessment and mark on CIM Plan hazard maps</p> <p>Develop a Village Climate Disaster Management Plan (VCDMP)</p> <p>Conduct trainings for People With Disabilities (PWDs) on emergency and</p>	<p>Improve resilience of public infrastructure</p> <p>Improve preparedness and readiness response to natural disasters</p>	<p>Enforcement of National Building Code 2017</p> <p>Utilise hazard maps and Geomorphologist findings to inform location and designs</p>	<p>National Disaster Management Plan 2017-2021</p> <p>National Building Code</p> <p>National Policy for People with Disabilities</p>

	<p>disaster response strategies</p> <p>Implement CDCRM program</p> <p>Install relevant signs to guide the community on emergency response procedures and to locations of evacuation shelters</p> <p>Where no suitable houses exist, build emergency shelter(s) outside the hazard zones</p> <p>Retrofit identified and approved schools or churches outside hazard zones and designate as evacuation shelter</p> <p>Responsibility: MNRE /DMO/ MWTI/Village /CSSP/Council of Churches/MWCSD</p>			
Village reservoir (IWS) upgrade	<p>Upgrade reservoir and install filter</p> <p>Procure rainwater harvesting systems for vulnerable families as a short term solution</p> <p>District and villages to support SWA efforts at protecting and conserving boreholes, intakes and catchment areas</p> <p>Responsibility: SWA/ MWCSD/ MNRE / District/ Village/ CSSP</p>	<p>Increase adaptation during drought periods</p> <p>Improve infrastructure resilience and rate of recovery</p> <p>Improve health and sanitation</p> <p>Reduce contamination of water supply</p> <p>Reduce impact from inland flooding</p>	<p>Develop and register District/Village bylaws to include regulating developments around catchment areas and boreholes</p> <p>Implement SWA (2016)10 year investment plan to improve water supply network to support all inland families without access to drinking water</p> <p>Include in budget programming design, and extension costs of water supply and procurement of rainwater harvesting systems</p> <p>Utilise hazard maps and Geomorphologist findings to inform location and designs</p>	<p>CIM Strategy 2015</p> <p>Water and Sanitation Sector Plan</p> <p>SWA 10 Year Investment Plan (2016)</p> <p>Community Engagement Plan</p>
Flood protection measures for fords and bridges	<p>Upgrade waterways</p> <p>Upgrade all crossings</p> <p>Upgrade or repair riverine embankment protection work upstream of Falefa, Saletele and Sauano</p> <p>Ensure river channel upstream is cleared and</p>	<p>Minimise expenditure on damaged properties & personal assets</p> <p>Mitigate potential damage from inland flooding</p> <p>Reduce flooding</p>	<p>Conduct a full catchment management, drainage analysis and geotechnical engineering survey and use its recommendations to inform location and designs</p> <p>Implement Vaa o Fonoti Integrated Catchment Strategy and Flood Management Plan in conjunction with hazard</p>	<p>CIM Strategy 2015</p> <p>TSP 2014-2019 Goal 2 KO 1</p> <p>Vulnerability Assessment of the Samoa Road Network (2016) and Road Network Adaptation Strategy, LTA</p>

	<p>maintained regularly</p> <p>Construct levees to reduce flooding along estuaries and coastal streams</p> <p>Install advisory edge markers and depth markers to warn vehicle and pedestrians at all crossings</p> <p>Government and Villages to liaise and collaborate on processes needed to protect riverbanks from land clearing and developments</p> <p>Responsibility: MWTI/ LTA/MNRE/ District/ Village</p>	<p>of built up areas</p> <p>Maintains lifeline access for all of Upolu</p> <p>Safer villages, houses and roads</p>	<p>Maps and Geomorphologist Drainage Infrastructure Database findings</p> <p>Utilise environmental and social safeguards including EIAs in screening and designing infrastructure facilities</p> <p>Develop an integrated land management plan with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>Include in budget programming CBA, design and construction.</p> <p>Designation of the IFHZ as an “at risk” zone with appropriate landuse planning controls and restrictions</p>	
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Natural resources and Environment	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant Sector Plans, National Strategies and Policies
Protection of catchment areas	<p>Promote and support agroforestry and other cropping systems that combine trees and crops, especially in catchments, and erosion-prone and sensitive areas</p> <p>Limit land clearance and agricultural development around catchment areas, SWA intake and boreholes in district</p> <p>Enforce Watershed Management Riparian Zone and Riverbank Encroachment Control and regulate developments around the upland area</p> <p>Replant catchment areas with local species such as tava, and poumuli</p> <p>Responsibility: MNRE/ /SWA/District/Village/ CSSP/GEF-SGP</p>	<p>Reduced risk of slips and erosion</p> <p>Improve resilience of catchments</p> <p>Improve preparedness and readiness response to natural disasters</p> <p>Reduce contamination of water supply</p>	<p>Develop Integrated Watershed/Catchment Strategy and Flood Management Plan for Vaa o Fonoti District</p> <p>Develop and register District/Village bylaws to include penalizing illegal deforestation and developments in upper catchment areas</p> <p>MNRE Forestry, DEC and MAF to collaborate on supply of climate resilient trees</p> <p>MAF to assist in establishment of pilot sites to trial climate ready plant varieties</p>	<p>Water Sector Plan</p> <p>Community Engagement Plan</p> <p>Restoration Operational Plan 2016-2020</p>
Soft coastal protection measures needed for most vulnerable areas	<p>Re-stock existing nursery</p> <p>Plant native species along coastal areas to strengthen existing seawall and to reduce coastal erosion and landslips; Talie, Fetau, Toa, Togatogo are known to have greater resilience to natural disasters and changing climate conditions</p> <p>To act as an effective wave barrier, a minimum distance of 200m of vegetation is needed</p> <p>Responsibility: MNRE/ MAF/Villages</p>	<p>Soft coastal protection measures will support and strengthen existing and new infrastructure along the coast</p> <p>Reduce impact from coastal erosion and natural disasters</p> <p>Implements an Ecosystem Based Approach</p>	<p>Develop an integrated land management plan for Vaa o Fonoti district with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>MAF to assist in establishment of pilot sites to trial climate ready plant varieties</p> <p>MNRE Forestry, DEC and MAF to collaborate on supply of climate resilient plants</p> <p>Utilise PD3 to inform location for planting/ re-planting</p>	<p>NESP 2017-2021</p> <p>Two Million Tree Planting Strategy 2015-2020</p> <p>Restoration Operational Plan 2016-2020</p>

<p>Flood protection measures (soft solution to support flood protection measures for infrastructure)</p>	<p>Conduct riparian replanting along river channels and watercourses</p> <p>Encourage planting of indigenous species in conjunction with engineered water land drainage action plans</p> <p>Promote and support village and district afforestation in the upper and mid-catchment areas to reduce riverbank failures especially in flood prone areas</p> <p>Responsibility: MNRE/ Villages</p>	<p>Mitigate potential damage from inland flooding</p> <p>Reduce flooding of built up areas</p> <p>Safer villages, houses and roads</p>	<p>Implement Integrated Watershed/Catchment Strategy and Flood Management Plan in conjunction with hazard Maps and Geomorphologist Drainage Infrastructure Database to inform location and designs</p> <p>MNRE to zone hazard areas along major watercourses based on flood risk to provide suitable areas for riparian revegetation</p>	<p>Two Million Tree Strategy 2015-2020</p> <p>Restoration Operational Plan 2016-2020</p>
<p>Livelihood and Food Security</p>	<p>Best Solutions</p>	<p>Benefits</p>	<p>Guideline to assist with the Implementation</p>	<p>Relevant Sector Plans, National Strategies & Policies</p>
<p>Vegetable gardens as alternative income generating activity</p>	<p>Village to procure seeds and seedlings to plant</p> <p>Village to allocate lands for plots</p> <p>Responsibility: Village/ MAF/CSSP/GEF-SGP</p>	<p>Improve recovery to create more resilient villages</p> <p>Economic benefit</p>	<p>MAF to assist in establishment of pilot sites</p> <p>MAF to collaborate with village on supply of seedlings and types of vegetables best suited to the habitats</p>	<p>Agriculture Sector Plan 2016-2021</p>
<p>Plantations, crops and plants threatened by changes in climate, inland flooding and inadequate soil for planting</p>	<p>Promote and facilitate planting of rootcrops (i.e yams, sweet potato) which are more resilient to cyclones, droughts and floods</p> <p>Promote agroforestry and mixed planting including fruit trees species to promote ecological stability, soil protection and reduce crop vulnerability to pests and diseases</p> <p>Implement the Integrated Pest Management Programme</p> <p>Implement Sustainable Land Management (SLM) practices</p> <p>Conduct pilot site trials for climate ready plant varieties</p>	<p>Improve recovery to create more resilient villages</p> <p>Improve preparedness and readiness response to natural disasters</p>	<p>Utilise Hazard Maps and Geomorphologist findings to inform location and design</p> <p>MNRE Forestry, DEC and MAF to collaborate on supply of climate resilient crops and plants</p> <p>MAF to provide trainings, awareness raising on crop diversification to suit prolonged impacts of climate change and support in supply of nursery trees, technology and infrastructure to have a sustainable mechanism for replanting</p> <p>MAF to assist in establishment of pilot sites to trial climate ready plant varieties and provide advice, seedlings and planting material for village/families</p>	<p>Agriculture Sector Plan 2016-2021</p>

	Responsibility: MAF/ MNRE/village		as a trial Develop an integrated land management plan with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area	
Governance	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant Sector Plans, National Strategies & Policies
Strengthen the governance of natural resources and land use through Bylaws	<p>Update and/or develop bylaws to manage the use of natural resources, and to control land use impacts; such as drainage maintenance, rubbish dumping, sand mining, stray animals and unregulated developments in water catchment areas and near boreholes.</p> <p>Collaborate with Sui o Nuu to monitor the use of and impact on natural resources</p> <p>Facilitate continuous awareness raising programs with the villages</p> <p>Responsibility: MWCS D /Village</p>	<p>Strengthen implementation of all national sector plans</p> <p>Strengthen monitoring of all National Acts, Regulation, Strategies, Plans and Policies</p> <p>Improve ability of communities to adapt, respond and recover quickly in the long term</p> <p>Improve accountability and enabling environment of communities</p>	<p>Develop and register district/village bylaw to protect all district/ village and government assets, environment, livelihood and food security especially activities affecting water catchment areas and coastline</p> <p>Utilise Sui o Nu'u monthly meetings to monitor progress of district/village bylaws</p>	<p>Village Fono Act (Amendment Bill 2016)</p> <p>Community Sector Plan</p> <p>Community Development Plan 2016-2021</p>

Saletele Village Map

SALETELE VILLAGE



4.5 Sauano Village Interventions

CIM Plan Solutions

Infrastructure	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant National, Sector Plans and Strategies
Alternative connectivity and lifeline access to Fagaloa and Uafato Bay during extreme events	<p>Investigate improving access to Fagaloa and Uafato Bay via Fagaloa Road coastal path which passes through Sauano and Saletele Bay as escape route when Fagaloa Road and East Coast Road is impassable during extreme events</p> <p>Responsibility: LTA/ MWTI/ District/ Villages</p>	<p>Improve infrastructure resilience and rate of recovery</p> <p>Improve preparedness and readiness response to natural disasters</p> <p>Reduce impact from coastal erosion and natural disasters</p> <p>Maintains lifeline access for Fagaloa and Uafato Bay</p> <p>Safer villages, houses and roads</p>	<p>Conduct a full catchment management, drainage analysis and geotechnical engineering survey and use its recommendations to inform location and designs</p> <p>Implement Va'a o Fonoti Integrated Catchment Strategy and Flood Management Plan in conjunction with hazard Maps and Geomorphologist Drainage Infrastructure Database findings</p> <p>Utilise environmental and social safeguards including EIAs in screening and designing infrastructure facilities</p> <p>Develop an integrated land management plan with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>Include in budget programming CBA, design and construction.</p> <p>Designation of the IFHZ as an "at risk" zone with appropriate landuse planning controls and restrictions</p>	<p>CIM Strategy 2015</p> <p>TSP 2014-2019 Goal 2 KO 1</p> <p>Vulnerability Assessment of the Samoa Road Network (2016) and Road Network Adaptation Strategy, LTA</p>
Village houses and other assets in extremely high risk hazard zones	<p>Relocate assets outside of high risk hazard zones when re-building</p> <p>Develop landuse planning and development controls to restrict developments within high risk hazard zones such as CEHZ and CFHZ</p> <p>Conduct awareness raising campaign on flood resilient building practices and designs for at risk communities living in and near high risk hazard zones</p>	<p>Minimise expenditure on damaged properties and personal assets</p> <p>Safer villages, houses and roads</p> <p>Increases awareness for insurance</p>	<p>Planning provisions to be guided by the Planning and Urban Management Act 2004</p> <p>Enforcement of National Building Code 2017</p> <p>Encourage insurance of significant investments and assets within hazard zones</p> <p>Utilise hazard maps and Geomorphologist Drainage Infrastructure Database to determine safe areas for relocation purposes</p> <p>Designation of the IFHZ, CEHZ</p>	<p>CIM Strategy 2015</p> <p>National Building Code</p> <p>Sauano Village Relocation Plan</p>

	<p>Design infrastructure to take into account the immediate hazard zones; for example, raise floor levels of houses in flood prone areas</p> <p>Families and village to limit building and developing on natural overland flow paths exacerbating inland flooding and storm water surges</p> <p>Responsibility: Village / Families /MWTI/ MNRE/ MWCS D</p>		<p>and CFHZ as an “at risk” zone with appropriate landuse planning controls and restrictions</p>	
<p>Coastline protection: seawall upgrade and maintenance</p>	<p>Assess and strengthen part of seawall in relevant area only to reduce vulnerability of Fagaloa Road and other critical assets in accordance with <i>Vulnerability Assessment of the Samoa Road Network</i> recommendations</p> <p>Clear debris from existing culverts near seawalls and waterways to enable free outflow of storm water and streams into sea</p> <p>Where reclamations, sand mining, extraction or other major coastal works are proposed, Government and village to manage processes by requiring villagers to get the appropriate permits and consent</p> <p>Responsibility: MNRE/ Village /Families/ CSSP/ MWTI/LTA</p>	<p>Improve infrastructure resilience and rate of recovery</p> <p>Reduce impact from coastal erosion</p> <p>Safer villages, houses and roads</p> <p>Minimise expenditure on damaged properties & public assets</p>	<p>Conduct a full catchment management, drainage analysis and geotechnical engineering survey and use its recommendations to inform location and designs</p> <p>Undertake a Cost Benefit Analysis to weigh options for funding</p> <p>Utilise environmental and social safeguards including EIAs in screening and designing built environment infrastructure projects for Vaa o Fonoti district</p> <p>Develop and register Village bylaws to include banning of sand mining and illegal rubbish dumping in waterways and drains</p>	<p>CIM Strategy 2015</p> <p>TSP 2014-2019 Goal 2 KO 1</p> <p>Community Sector Plan</p>
<p>Sauano causeway, East Coast Road and junction of Fagaloa Road impassable during extreme events from inland flooding at Falefa Bridge</p>	<p>Upgrade waterways at Falefa Bridge causing inland flooding and storm water runoff onto Sauano</p> <p>Upgrade causeway at Sauano to retain lifeline connectivity</p> <p>Upgrade or repair riverine embankment protection work upstream of Falefa</p>	<p>Minimise expenditure on damaged properties & personal assets</p> <p>Mitigate potential damage from inland flooding</p> <p>Reduce flooding of built up areas</p>	<p>Conduct a full catchment management, drainage analysis and geotechnical engineering survey and use its recommendations to inform location and designs</p> <p>Implement Vaa o Fonoti Integrated Catchment Strategy and Flood Management Plan in conjunction with hazard Maps and Geomorphologist Drainage Infrastructure Database findings</p>	<p>CIM Strategy 2015</p> <p>National Disaster Management Plan 2017-2021</p> <p>TSP 2014-2019 Goal 2 KO 1</p> <p>Vulnerability Assessment of the Samoa Road</p>

	<p>Ensure river channel upstream is cleared and maintained regularly</p> <p>Construct levees to reduce flooding along estuaries and coastal streams</p> <p>Install advisory edge markers and depth markers to warn vehicle and pedestrians at all crossings</p> <p>Government and Villages to liaise and collaborate on processes needed to protect riverbanks from land clearing and developments</p> <p>Responsibility: MWTI/ LTA/MNRE-DMO/ District/ Village</p>	<p>Maintains lifeline access for all of Upolu</p> <p>Safer villages, houses and roads</p>	<p>Utilise environmental and social safeguards including EIAs in screening and designing infrastructure facilities</p> <p>Develop an integrated land management plan with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>Include in budget programming CBA, design and construction.</p> <p>Designation of the IFHZ as an “at risk” zone with appropriate landuse planning controls and restrictions</p>	<p>Network (2016) and Road Network Adaptation Strategy, LTA</p>
<p>Coastline protection: upgrade seawalls at most high risk hazard zones</p>	<p>Research feasibility of extending seawall to protect Fagaloa Road at most vulnerable areas</p> <p>Research the impacts of sand mining</p> <p>Village consultation on sand mining policy and regulation</p> <p>Enforce environmental social safeguards where reclamations, sand mining, extraction or other major coastal works are proposed. Government and village to manage processes by requiring villagers to get the appropriate permits and consent</p> <p>Responsibility: MNRE/ LTA/ Village /MWTI</p>	<p>Improve infrastructure resilience and rate of recovery</p> <p>Maintain connectivity and lifeline access</p> <p>Reduce impact from coastal erosion</p> <p>Safer villages, houses and roads</p> <p>Minimise expenditure on damaged properties & public assets</p>	<p>Undertake a Cost Benefit Analysis to weigh options for funding</p> <p>Incorporate environmental and social safeguards concerns in the design and undertake consultations with affected communities</p> <p>Utilise hazard maps and Geomorphologist Infrastructure Drainage Database to inform designs</p>	<p>CIM Strategy 2015</p> <p>TSP 2014-2019 Goal 2 KO 1</p> <p>Draft Soil Resource Management Bill</p> <p>Sauano Village Relocation Plan</p>
<p>Evacuation Shelter and a connected escape route needed for emergency preparedness and response</p>	<p>Assess and/or select location for either an existing or new evacuation shelter, including safe access routes to the shelter</p> <p>Conduct evacuation shelter assessment and mark on CIM Plan hazard maps</p> <p>Develop a Village Climate</p>	<p>Improve resilience of public infrastructure</p> <p>Improve preparedness and readiness response to natural disasters</p>	<p>Enforcement of National Building Code 2017</p> <p>Utilise hazard maps and Geomorphologist findings to inform location and designs</p>	<p>National Disaster Management Plan 2017-2021</p> <p>National Building Code</p> <p>National Policy for People with Disabilities</p> <p>NISP 2011 KESO 5</p>

	<p>Disaster Management Plan (VCDMP)</p> <p>Conduct trainings for People With Disabilities (PWDs) on emergency and disaster response strategies</p> <p>Implement CDCRM program</p> <p>Install relevant signs to guide the community on emergency response procedures and to locations of evacuation shelters</p> <p>Where no suitable houses exist, build emergency shelter(s) outside the hazard zones</p> <p>Retrofit identified and approved schools or churches outside hazard zones and designate as evacuation shelter</p> <p>Responsibility: MNRE /DMO/ MWTI/Village /CSSP/Council of Churches/MWCSD</p>			
Natural Resources and Environment	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant Sector Plans, National Strategies & Policies
Flood protection measures (soft solution to support flood protection measures for infrastructure)	<p>Conduct riparian replanting along river channels and watercourses</p> <p>Encourage planting of indigenous species in conjunction with engineered water land drainage action plans</p> <p>Promote and support village and district afforestation in the upper and mid-catchment areas to reduce riverbank failures especially in flood prone areas</p> <p>Responsibility: MNRE/Villages</p>	<p>Mitigate potential damage from inland flooding</p> <p>Reduce flooding of built up areas</p> <p>Safer villages, houses and roads</p>	<p>Implement Vaa o Fonoti Integrated Catchment Strategy and Flood Management Plan in conjunction with hazard Maps and Geomorphologist Drainage Infrastructure Database to inform location and designs</p> <p>MNRE to zone hazard areas along major watercourses based on flood risk to provide suitable areas for riparian revegetation</p>	<p>Two Million Tree Strategy 2015-2020</p> <p>Restoration Operational Plan 2016-2020</p>

<p>Soft coastal protection measures needed for most vulnerable areas</p>	<p>Plant native species along coastal areas to strengthen existing seawall and to reduce coastal erosion and landslips; Talie, Fetau, Toa, Togatogo are known to have greater resilience to natural disasters and changing climate conditions</p> <p>To act as an effective wave barrier, a minimum distance of 200m of vegetation is needed</p> <p>Responsibility: MNRE/MAF/Villages</p>	<p>Soft coastal protection measures will support and strengthen existing and new infrastructure along the coast</p> <p>Reduce impact from coastal erosion and natural disasters</p> <p>Implements an Ecosystem Based Approach</p>	<p>Develop an integrated land management plan for Vaa o Fonoti district with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>MAF to assist in establishment of pilot sites to trial climate ready plant varieties</p> <p>MNRE Forestry, DEC and MAF to collaborate on supply of climate resilient plants</p>	<p>NESP 2017-2021</p> <p>Two Million Tree Planting Strategy 2015-2020</p> <p>Restoration Operational Plan 2016-2020</p>
<p>Restoration of native upland forest (ifilele) of Sauano</p>	<p>Continue programme by Forestry on replanting native forestry species of the upland forest</p> <p>Promote agroforestry and mixed planting including fruit trees species to promote ecological stability, soil protection and reduce crop vulnerability to pests and diseases</p> <p>Implement the Integrated Pest Management Programme</p> <p>Implement Sustainable Land Management (SLM) practices</p> <p>Responsibility: MNRE-WRD & Forestry/ District /Village/CSSP</p>	<p>Protects and enhance local species diversity</p> <p>Reduced risk of slips and erosion</p> <p>Reduce impact from inland flooding</p>	<p>MNRE Forestry, DEC and MAF to collaborate on supply of climate resilient crops and plants</p> <p>Develop an integrated land management plan with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>MNRE Forestry to advice on appropriate species, depth and density of planting and provide seedlings for different vegetation types suitable to the habitats and planting materials for village</p>	<p>Community Engagement Plan</p> <p>Two Million Tree Planting Strategy 2015-2020</p> <p>Restoration Operational Plan 2016-2020</p>
<p>Livelihood and Food Security</p>	<p>Best Solutions</p>	<p>Benefits</p>	<p>Guideline to assist with the Implementation</p>	<p>Relevant Sector Plans, National Strategies & Policies</p>
<p>'Ava farms replanting: affected by pests and inadequate soil</p>	<p>Village to replant outside fluvial hazard zones</p> <p>MNRE and village to implement rat eradication programme</p> <p>Implement the Integrated Pest Management Programme</p> <p>Implement Sustainable Land Management (SLM) practices</p> <p>Responsibility: MNRE-WRD & Forestry/ District /Village/CSSP /NGOs</p>	<p>Builds resilience of community livelihood and food security</p> <p>Improve preparedness and readiness response to natural disasters</p>	<p>MNRE Forestry, DEC and MAF to collaborate on supply of climate resilient crops and plants</p> <p>Develop an integrated land management plan with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>MNRE Forestry to advice on appropriate species, depth and density of planting and provide seedlings for different vegetation types suitable to the habitats and planting materials for village</p>	<p>Agriculture Sector Plan 2016-2021</p> <p>Two Million Tree Strategy 2015-2020</p> <p>Restoration Operational Plan 2016-2020</p>

Governance	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant Sector Plans, National Strategies & Policies
Strengthen the governance of natural resources and land use through Bylaws	<p>Update and/or develop bylaws to manage the use of natural resources, and to control land use impacts; such as drainage maintenance, rubbish dumping, sand mining, stray animals and unregulated developments in water catchment areas and near boreholes.</p> <p>Collaborate with Sui o Nuu to monitor the use of and impact on natural resources</p> <p>Facilitate continuous awareness raising programs with the villages</p> <p>Responsibility: MWCSO /Village</p>	<p>Strengthen implementation of all national sector plans</p> <p>Strengthen monitoring of all National Acts, Regulation, Strategies, Plans and Policies</p> <p>Improve ability of communities to adapt, respond and recover quickly in the long term</p> <p>Improve accountability and enabling environment of communities</p>	<p>Develop and register district/village bylaw to protect all district/ village and government assets, environment, livelihood and food security especially activities affecting water catchment areas and coastline</p> <p>Utilise Sui o Nu'u monthly meetings to monitor progress of district/village bylaws</p>	<p>Village Fono Act (Amendment Bill 2016)</p> <p>Community Sector Plan</p> <p>Community Development Plan 2016-2021</p>


Non-CR issues raised during consultations	Proposed Solution	Comments
<p>Cattle to raise and fencing for cattle farms</p> <p>Responsibility: Village /MAF</p>	Village to seek assistance through MAF and other NGOs	Not a CR issue


Sauano Village Map

SAUANO VILLAGE

-171.52049







Buildings

- School

Utilities

- Water
- EPIC Line
- Biogas Plant

Boundaries & Routes

- Contour - 20m
- Mangrove
- Sealed Road Apatele
- Unsealed Sealed Road Apatele
- Wetland Region

Hazard Zones

- Tsunami Hazard Line / Zone o Le Samoa
- Immediate Flood Hazard Zone
- Riverbank Encroachment Riparian Zone
- Watershed Management Riparian Zone
- Coastal Landslide Hazard Zone
- Coastal Flood Hazard Zone
- Coastal Erosion Hazard Zone

Coordinate System: GCS WGS 1984
 Datum: WGS 1984
 Units: Degree

Data Source: Ministry of Natural Resource and Environment, Samoa
 Map Production: Spatial & DRM Specialist, Adaptation Fund - Enhancing Resilience of Coastal Communities of Samoa to Climate Change Project

4.6 Salimu/Musumus Village Interventions

CIM Plan Solutions

Infrastructure	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant National, Sector Plans and Strategies
Parts of main Fagaloa Road running through Salimu/ Musumus and Taelefaga exposed to extremely high risk ⁷ hazard zones	<p>Continue to upgrade roads, upsize ocean outfalls and improve drainage systems to increase regulation of water flow and reduce flooding onto roads in extremely high risk hazard zones in accordance with <i>Vulnerability Assessment of the Samoa Road Network</i> recommendations</p> <p>Enforce environmental safeguards where reclamations are proposed. Government and district to manage processes by requiring villagers to get the appropriate permits and consent</p> <p>Responsibility: LTA/ MWTI/ MNRE/ District/ Village /Families</p>	<p>Improve infrastructure resilience and rate of recovery</p> <p>Improve preparedness and readiness response to natural disasters</p> <p>Reduce impact from coastal erosion and natural disasters</p> <p>Maintains lifeline access</p> <p>Safer villages, houses and roads</p> <p>Minimise national disaster recovery expenditure on damaged properties and public assets</p>	<p>Utilise hazard maps and Geomorphologist Drainage Infrastructure Database to inform location and designs</p> <p>Utilise environmental and social safeguards including EIAs in screening and designing built environment infrastructure projects for Vaa o Fonoti district</p> <p>Designation of the IFHZ, CEHZ and CFHZ as an “at risk” zone with appropriate landuse planning controls and restrictions</p>	<p>CIM Strategy 2015</p> <p>TSP 2014-2019 Goal 2 KO 1</p>

⁷ Extremely high risk is where there is a combination of 4 hazard zones. High risk areas is where there is a combination of 2 or 3 hazard zones

<p>Village houses, schools, churches and government assets in extremely high risk hazard zones</p>	<p>Relocate assets outside of high risk hazard zones when re-building</p> <p>Village to seek lands to migrate to due to IFHZ and expanding CEFZ and CFHZ</p> <p>Develop landuse planning and development controls to restrict developments within high risk hazard zones such as CEHZ and CFHZ</p> <p>Conduct awareness raising campaign on flood resilient building practices and designs for at risk communities living in and near high risk hazard zones</p> <p>Design infrastructure to take into account the immediate hazard zones; for example, raise floor levels of houses in flood prone areas</p> <p>Families and village to limit building and developing on natural overland flow paths exacerbating inland flooding and storm water surges</p> <p>Responsibility: Village / Families /MWTI/ MNRE/ MWCS D</p>	<p>Minimise expenditure on damaged properties and personal assets</p> <p>Safer villages, houses and roads</p> <p>Increases awareness for insurance</p>	<p>Planning provisions to be guided by the Planning and Urban Management Act 2004</p> <p>Enforcement of National Building Code 2017</p> <p>Encourage insurance of significant investments and assets within hazard zones</p> <p>Utilise hazard maps and Geomorphologist Drainage Infrastructure Database to determine safe areas for relocation purposes</p> <p>Designation of the IFHZ, CEHZ and CFHZ as an “at risk” zone with appropriate landuse planning controls and restrictions</p>	<p>CIM Strategy 2015</p> <p>National Building Code</p> <p>Salimu/Musumusu Village Relocation Plan</p>
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<p>Flood protection measures for fords and bridges</p>	<p>Upgrade waterways</p> <p>Upgrade all crossings</p> <p>Upgrade or repair riverine embankment protection work</p> <p>Ensure river channel upstream is cleared and maintained regularly</p> <p>Construct levees to reduce flooding along estuaries and coastal streams</p> <p>Install advisory edge markers and depth markers to warn vehicle and pedestrians at all crossings</p> <p>Government and Villages to liaise and collaborate on processes needed to protect riverbanks from land clearing and developments</p> <p>Responsibility: MWTI/ LTA/MNRE/ District/ Village</p>	<p>Minimise expenditure on damaged properties & personal assets</p> <p>Mitigate potential damage from inland flooding</p> <p>Reduce flooding of built up areas</p> <p>Maintains lifeline access for all of Upolu</p> <p>Safer villages, houses and roads</p>	<p>Conduct a full catchment management, drainage analysis and geotechnical engineering survey and use its recommendations to inform location and designs</p> <p>Implement Va'a o Fonoti Integrated Catchment Strategy and Flood Management Plan in conjunction with hazard Maps and Geomorphologist Drainage Infrastructure Database findings</p> <p>Utilise environmental and social safeguards including EIAs in screening and designing infrastructure facilities</p> <p>Develop an integrated land management plan with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>Include in budget programming CBA, design and construction.</p> <p>Designation of the IFHZ as an "at risk" zone with appropriate landuse planning controls and restrictions</p>	<p>CIM Strategy 2015</p> <p>TSP 2014-2019 Goal 2 KO 1</p> <p>Vulnerability Assessment of the Samoa Road Network (2016) and Road Network Adaptation Strategy, LTA</p>
<p>Coastline protection: upgrade seawalls at most high risk hazard zones</p>	<p>Upgrade and maintain seawall to protect and reduce vulnerability of road and maintain lifeline access for Va'a o Fonoti in accordance with <i>Vulnerability Assessment of the Samoa Road Network</i> recommendations</p> <p>Enforce environmental social safeguards where reclamations, sand mining, extraction or other major coastal works are proposed. Government and village to manage processes by</p>	<p>Improve infrastructure resilience and rate of recovery</p> <p>Maintains natural ecosystem connectivity</p> <p>Reduce impact from coastal erosion</p> <p>Safer villages, houses and roads</p>	<p>Planning provisions to be guided by the Planning and Urban Management Act 2004</p> <p>Incorporate environmental and social safeguards concerns in the design and undertake consultations with affected communities</p>	<p>CIM Strategy 2015</p> <p>TSP2014-2019 Goal 2 KO 1</p>

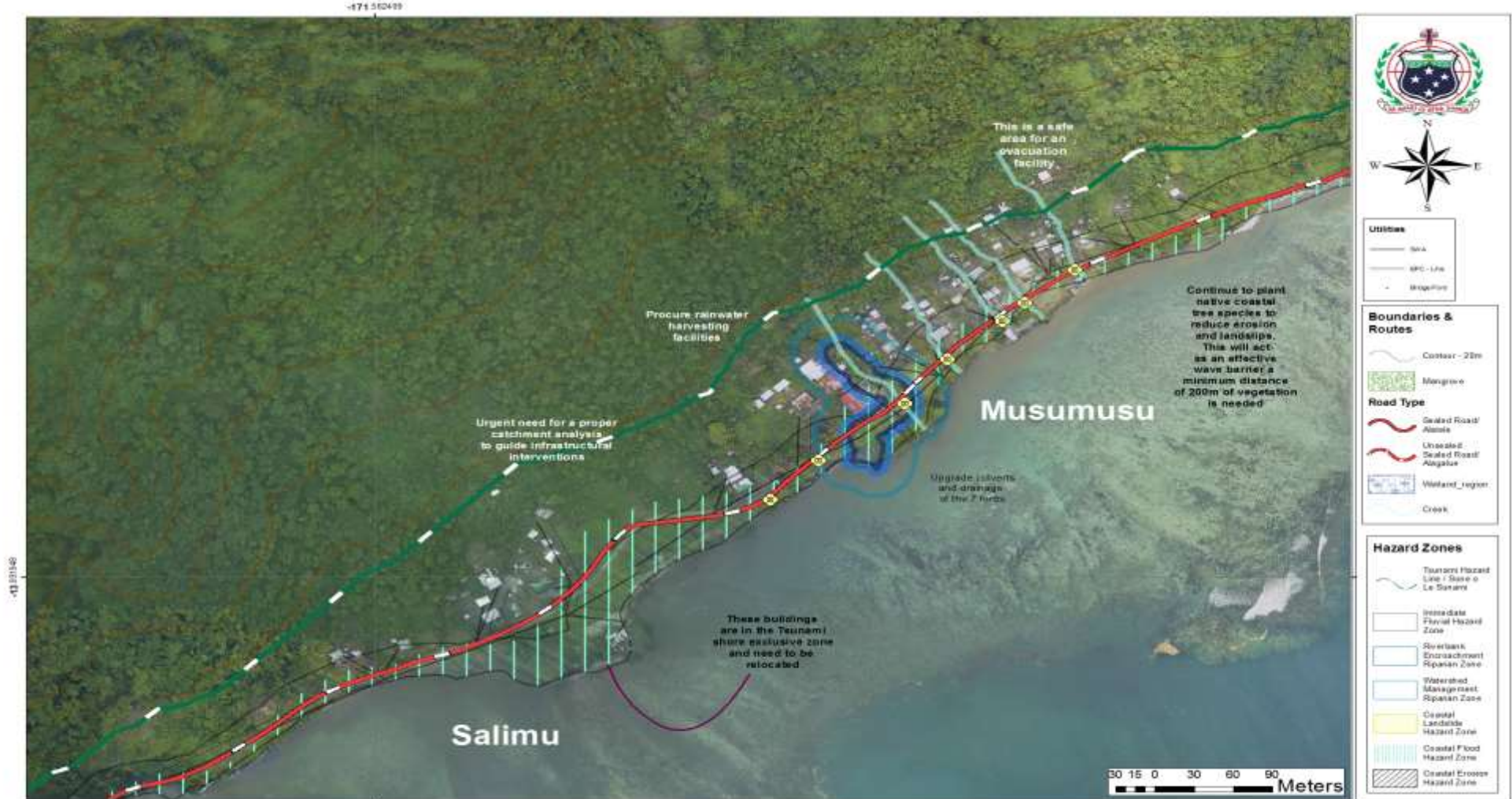
	requiring villagers to get the appropriate permits and consent Responsibility: LTA/Village /MNRE/MWTI	Minimise expenditure on damaged properties & public assets		
Natural Resources and Environment	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant Sector Plans, National Strategies & Policies
Flood protection measures (soft solution to support flood protection measures for infrastructure)	<p>Conduct riparian replanting along river channels and watercourses</p> <p>Encourage planting of indigenous species in conjunction with engineered water land drainage action plans</p> <p>Promote and support village and district afforestation in the upper and mid-catchment areas to reduce riverbank failures especially in flood prone areas</p> <p>Responsibility: MNRE/Villages</p>	<p>Mitigate potential damage from inland flooding</p> <p>Reduce flooding of built up areas</p> <p>Safer villages, houses and roads</p>	<p>Implement Integrated Watershed/Catchment Strategy and Flood Management Plan in conjunction with hazard Maps and Geomorphologist Drainage Infrastructure Database to inform location and designs</p> <p>MNRE to zone hazard areas along major watercourses based on flood risk to provide suitable areas for riparian revegetation</p>	<p>Two Million Tree Strategy 2015-2020</p> <p>Restoration Operational Plan 2016-2020</p>
Soft coastal protection measures needed for most vulnerable areas	<p>Plant native species along coastal areas to strengthen existing seawall and to reduce coastal erosion and landslips; Talie, Fetau, Toa, Togatogo are known to have greater resilience to natural disasters and changing climate conditions</p> <p>To act as an effective wave barrier, a minimum distance of 200m of vegetation is needed</p> <p>Responsibility: MNRE/MAF/Villages</p>	<p>Soft coastal protection measures will support and strengthen existing and new infrastructure along the coast</p> <p>Reduce impact from coastal erosion and natural disasters</p> <p>Implements an Ecosystem Based Approach</p>	<p>Develop an integrated land management plan for Vaa o Fonoti district with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>MAF to assist in establishment of pilot sites to trial climate ready plant varieties</p> <p>MNRE Forestry, DEC and MAF to collaborate on supply of climate resilient plants</p>	<p>NESP 2017-2021</p> <p>Two Million Tree Planting Strategy 2015-2020</p> <p>Restoration Operational Plan 2016-2020</p>
Livelihood and Food Security	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant Sector Plans, National Strategies & Policies
'Ava farms replanting: affected by pests and inadequate soil	<p>Village to replant outside fluvial hazard zones</p> <p>MNRE and village to implement rat eradication programme</p> <p>Implement the Integrated Pest Management Programme</p>	<p>Builds resilience of community livelihood and food security</p> <p>Improve preparedness and readiness response to natural disasters</p>	<p>MNRE Forestry, DEC and MAF to collaborate on supply of climate resilient crops and plants</p> <p>Develop an integrated land management plan with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and</p>	<p>Agriculture Sector Plan 2016-2021</p> <p>Two Million Tree Strategy 2015-2020</p> <p>Restoration Operational Plan 2016-2020</p>

	<p>Implement Sustainable Land Management (SLM) practices</p> <p>Responsibility: MNRE-WRD & Forestry/ District /Village/CSSP /NGOs</p>		<p>ecosystems of the area</p> <p>MNRE Forestry to advice on appropriate species, depth and density of planting and provide seedlings for different vegetation types suitable to the habitats and planting materials for village</p>	
Governance	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant Sector Plans, National Strategies & Policies
Strengthen the governance of natural resources and land use through Bylaws	<p>Update and/or develop bylaws to manage the use of natural resources, and to control land use impacts; such as drainage maintenance, rubbish dumping, dynamiting and chemical used in fishing grounds, sand mining, stray animals and unregulated developments in water catchment areas and near boreholes.</p> <p>Collaborate with Sui o Nuu to monitor the use of and impact on natural resources</p> <p>Facilitate continuous awareness raising programs with the villages</p> <p>Responsibility: MWCS D /Village</p>	<p>Strengthen implementation of all national sector plans</p> <p>Strengthen monitoring of all National Acts, Regulation, Strategies, Plans and Policies</p> <p>Improve ability of communities to adapt, respond and recover quickly in the long term</p> <p>Improve accountability and enabling environment of communities</p>	<p>Develop and register district/village bylaw to protect all district/ village and government assets, environment, livelihood and food security especially activities affecting water catchment areas and coastline</p> <p>Utilise Sui o Nu'u monthly meetings to monitor progress of district/village bylaws</p>	<p>Village Fono Act (Amendment Bill 2016)</p> <p>Community Sector Plan</p> <p>Community Development Plan 2016-2021</p>



Salimu/Musumus Village Map

SALIMU AND MUSUMUSU VILLAGE



Coordinate System: GCS WGS 1984
 Datum: WGS 1984
 Units: Degree

Data Source: Ministry of Natural Resource and Environment, Samoa
 Map Production: Spatial & DRM Specialist, Adaptation Fund - Enhancing Resilience of Coastal Communities of Samoa to Climate Change Project

4.7 Samamea Village Interventions

CIM Plan Solutions

Infrastructure	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant National, Sector Plans and Strategies
Village houses and other assets in extremely high risk hazard zones	<p>Relocate assets outside of high risk hazard zones when re-building</p> <p>Develop landuse planning and development controls to restrict developments within high risk hazard zones such as CEHZ and CFHZ</p> <p>Conduct awareness raising campaign on flood resilient building practices and designs for at risk communities living in and near high risk hazard zones</p> <p>Design infrastructure to take into account the immediate hazard zones; for example, raise floor levels of houses in flood prone areas</p> <p>Families and village to limit building and developing on natural overland flow paths exacerbating inland flooding and storm water surges</p> <p>Responsibility: Village / Families /MWTI/ MNRE/ MWCS D</p>	<p>Minimise expenditure on damaged properties and personal assets</p> <p>Safer villages, houses and roads</p> <p>Increases awareness for insurance</p>	<p>Planning provisions to be guided by the Planning and Urban Management Act 2004</p> <p>Enforcement of National Building Code 2017</p> <p>Encourage insurance of significant investments and assets within hazard zones</p> <p>Utilise hazard maps and Geomorphologist Drainage Infrastructure Database to determine safe areas for relocation purposes</p> <p>Designation of the IFHZ, CEHZ and CFHZ as an “at risk” zone with appropriate landuse planning controls and restrictions</p>	<p>CIM Strategy 2015</p> <p>National Building Code</p>
Parts of Fagaloa Bay Road exposed to extremely high risk ⁸ hazard zones	<p>Research relocating parts of road sitting in IFHZ, CEHZ and CFHZ</p> <p>Continue to upgrade roads, upsize ocean outfalls and improve drainage systems to increase regulation of water flow and reduce flooding onto roads in extremely high risk hazard zones in accordance with <i>Vulnerability Assessment of the Samoa Road Network</i> recommendations</p>	<p>Improve infrastructure resilience and rate of recovery</p> <p>Improve preparedness and readiness response to natural disasters</p> <p>Reduce impact from coastal erosion and natural disasters</p>	<p>Utilise hazard maps and Geomorphologist Drainage Infrastructure Database to inform location and designs</p> <p>Utilise environmental and social safeguards including EIAs in screening and designing built environment infrastructure projects for Vaa o Fonoti district</p> <p>Designation of the IFHZ, CEHZ and CFHZ as an “at risk” zone with appropriate</p>	<p>CIM Strategy 2015</p> <p>TSP 2014-2019 Goal 2 KO 1</p>

⁸ Extremely high risk is where there is a combination of 4 hazard zones. High risk areas is where there is a combination of 2 or 3 hazard zones

	<p>Enforce environmental safeguards where reclamations are proposed. Government and district to manage processes by requiring villagers to get the appropriate permits and consent</p> <p>Responsibility: LTA/ MWTI/ MNRE/ District/ Village /Families</p>	<p>Maintains lifeline access</p> <p>Safer villages, houses and roads</p> <p>Minimise national disaster recovery expenditure on damaged properties and public assets</p>	<p>landuse planning controls and restrictions</p>	
<p>Flood protection measures for fords and bridges</p>	<p>Upgrade waterways</p> <p>Upgrade all crossings</p> <p>Upgrade or repair riverine embankment protection work upstream of Samamea causeway</p> <p>Ensure river channel upstream is cleared and maintained regularly</p> <p>Construct levees to reduce flooding along estuaries and coastal streams</p> <p>Install advisory edge markers and depth markers to warn vehicle and pedestrians at all crossings</p> <p>Government and Villages to liaise and collaborate on processes needed to protect riverbanks from land clearing and developments</p> <p>Responsibility: MWTI/ LTA/MNRE/ District/ Village</p>	<p>Minimise expenditure on damaged properties & personal assets</p> <p>Mitigate potential damage from inland flooding</p> <p>Reduce flooding of built up areas</p> <p>Maintains lifeline access for all of Upolu</p> <p>Safer villages, houses and roads</p>	<p>Conduct a full catchment management, drainage analysis and geotechnical engineering survey and use its recommendations to inform location and designs</p> <p>Implement Va'a o Fonoti Integrated Catchment Strategy and Flood Management Plan in conjunction with hazard Maps and Geomorphologist Drainage Infrastructure Database findings</p> <p>Utilise environmental and social safeguards including EIAs in screening and designing infrastructure facilities</p> <p>Develop an integrated land management plan with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>Include in budget programming CBA, design and construction.</p> <p>Designation of the IFHZ as an "at risk" zone with appropriate landuse planning controls and restrictions</p>	<p>CIM Strategy 2015</p> <p>TSP 2014-2019 Goal 2 KO 1</p> <p>Vulnerability Assessment of the Samoa Road Network (2016) and Road Network Adaptation Strategy, LTA</p>

<p>Evacuation Shelter and a connected escape route needed for emergency preparedness and response</p>	<p>Assess and/or select location for either an existing or new evacuation shelter, including safe access routes to the shelter</p> <p>Conduct evacuation shelter assessment and mark on CIM Plan hazard maps</p> <p>Develop a Village Climate Disaster Management Plan (VCDMP)</p> <p>Conduct trainings for People With Disabilities (PWDs) on emergency and disaster response strategies</p> <p>Implement CDCRM program</p> <p>Install relevant signs to guide the community on emergency response procedures and to locations of evacuation shelters</p> <p>Where no suitable houses exist, build emergency shelter(s) outside the hazard zones</p> <p>Retrofit identified and approved schools or churches outside hazard zones and designate as evacuation shelter</p> <p>Responsibility: MNRE /DMO/ MWTI/Village /CSSP/Council of Churches/MWCSD</p>	<p>Improve resilience of public infrastructure</p> <p>Improve preparedness and readiness response to natural disasters</p>	<p>Enforcement of National Building Code 2017</p> <p>Utilise hazard maps and Geomorphologist findings to inform location and designs</p>	<p>National Disaster Management Plan 2017-2021</p> <p>National Building Code</p> <p>National Policy for People with Disabilities</p> <p>NISP 2011 KESO 5</p>
<p>Upgrade village pool</p>	<p>Install pool fence to protect from inland flooding and storm water runoff</p> <p>Test the quality of the water source before any investment on the pool is undertaken (eg: fence/repair works)</p> <p>Responsibility: CSSP/ NGOs/ MNRE/Village</p>	<p>Increase adaptation during drought periods</p> <p>Improve health and sanitation</p> <p>Reduce contamination of water supply</p>	<p>Utilise Hazard Maps and Geomorphologist findings to inform location and design</p> <p>MNRE Water & Sanitation to conduct water testing and analysis of village pool prior to any intervention</p>	<p>CIM Strategy 2015</p> <p>Water and Sanitation Sector Plan</p> <p>Community Engagement Plan</p>

Natural Resources and Environment	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant Sector Plans, National Strategies & Policies
Flood protection measures (soft solution to support flood protection measures for infrastructure)	<p>Conduct riparian replanting along river channels and watercourses</p> <p>Encourage planting of indigenous species in conjunction with engineered water land drainage action plans</p> <p>Promote and support village and district afforestation in the upper and mid-catchment areas to reduce riverbank failures especially in flood prone areas</p> <p>Responsibility: MNRE/Villages</p>	<p>Mitigate potential damage from inland flooding</p> <p>Reduce flooding of built up areas</p> <p>Safer villages, houses and roads</p>	<p>Implement Vaa o Fonoti Integrated Catchment Strategy and Flood Management Plan in conjunction with hazard Maps and Geomorphologist Drainage Infrastructure Database to inform location and designs</p> <p>MNRE to zone hazard areas along major watercourses based on flood risk to provide suitable areas for riparian revegetation</p>	<p>Two Million Tree Strategy 2015-2020</p> <p>Restoration Operational Plan 2016-2020</p>
Soft coastal protection measures needed for most vulnerable areas	<p>Re-stock existing nursery</p> <p>Plant native species along coastal areas to strengthen existing seawall and to reduce coastal erosion and landslips; Talie, Fetau, Toa, Togatogo are known to have greater resilience to natural disasters and changing climate conditions</p> <p>To act as an effective wave barrier, a minimum distance of 200m of vegetation is needed</p> <p>Responsibility: MNRE/MAF/Villages</p>	<p>Soft coastal protection measures will support and strengthen existing and new infrastructure along the coast</p> <p>Reduce impact from coastal erosion and natural disasters</p> <p>Implements an Ecosystem Based Approach</p>	<p>Develop an integrated land management plan for Vaa o Fonoti district with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>MAF to assist in establishment of pilot sites to trial climate ready plant varieties</p> <p>MNRE Forestry, DEC and MAF to collaborate on supply of climate resilient plants</p>	<p>NESP 2017-2021</p> <p>Two Million Tree Planting Strategy 2015-2020</p> <p>Restoration Operational Plan 2016-2020</p>
Sand mining	<p>Identify alternative sustainable sources of sand for domestic use</p> <p>Research the impacts of sand mining</p> <p>Village consultation on sand mining policy and regulation</p> <p>Village and government to collaborate closely on designated areas for sand/rock mining</p> <p>Raise awareness and support of sustainable land</p>	<p>Mitigate potential damage from coastal erosion and flooding accommodating the hazard</p> <p>Safer villages, houses and roads</p> <p>Reduce impact from coastal erosion</p> <p>Economic benefit for village from sustainable sand mining activities</p>	<p>MNRE to continue to identify specific sites for inshore/inland sustainable sand/rock mining to meet demand without compromising riverbanks</p> <p>Undertake assessments of identified sites</p> <p>Undertake consultation with villages affected by proposed sand/rock mining</p> <p>Develop and register District bylaws to include managing and monitoring domestic sand/rock mining of rivers</p>	<p>Draft Soil Resource Management Bill</p>

	use practices Responsibility: MNRE/ Village/Families		Utilise Sui o Nu'u monthly meetings to monitor progress of CIM Plan activities	
Livelihood and Food Security	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant Sector Plans, National Strategies & Policies
'Ava farms replanting: affected by pests and inadequate soil	Village to replant outside fluvial hazard zones MNRE and village to implement rat eradication programme Implement the Integrated Pest Management Programme Implement Sustainable Land Management (SLM) practices Responsibility: MNRE- WRD & Forestry/ District /Village/CSSP /NGOs	Builds resilience of community livelihood and food security Improve preparedness and readiness response to natural disasters	MNRE Forestry, DEC and MAF to collaborate on supply of climate resilient crops and plants Develop an integrated land management plan with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area MNRE Forestry to advice on appropriate species, depth and density of planting and provide seedlings for different vegetation types suitable to the habitats and planting materials for village	Agriculture Sector Plan 2016-2021 Two Million Tree Strategy 2015-2020 Restoration Operational Plan 2016-2020

Governance	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant Sector Plans, National Strategies & Policies
Strengthen the governance of natural resources and land use through Bylaws	<p>Update and/or develop bylaws to manage the use of natural resources, and to control land use impacts; such as drainage maintenance, rubbish dumping, sand mining, stray animals and unregulated developments in water catchment areas and near boreholes.</p> <p>Collaborate with Sui o Nuu to monitor the use of and impact on natural resources</p> <p>Facilitate continuous awareness raising programs with the villages</p> <p>Responsibility: MWCSO /Village</p>	<p>Strengthen implementation of all national sector plans</p> <p>Strengthen monitoring of all National Acts, Regulation, Strategies, Plans and Policies</p> <p>Improve ability of communities to adapt, respond and recover quickly in the long term</p> <p>Improve accountability and enabling environment of communities</p>	<p>Develop and register district/village bylaw to protect all district/ village and government assets, environment, livelihood and food security especially activities affecting water catchment areas and coastline</p> <p>Utilise Sui o Nu'u monthly meetings to monitor progress of district/village bylaws</p>	<p>Village Fono Act (Amendment Bill 2016)</p> <p>Community Sector Plan</p> <p>Community Development Plan 2016-2021</p>

Non-CR issues raised during consultations	Proposed Solution	Comments
<p>Assistance with RSE programme for youth employment opportunities</p> <p>Responsibility: Village</p>	Village to seek assistance from other sources	Not a CR issue



Strengthen coastal protection for village lifeline access



Individual initiatives: Tourism development

SAMAMEA VILLAGE



Coordinate System: GCS WGS 1984
 Datum: WGS 1984
 Units: Degree

Data Source: Ministry of Natural Resource and Environment, Samoa
 Map Production: Spatial & DRM Specialist, Adaptation Fund - Enhancing Resilience of Coastal Communities of Samoa to Climate Change Project

4.8 Taelefaga Village Interventions

CIM Plan Solutions

Infrastructure	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant National, Sector Plans and Strategies
Village houses, church and other assets in extremely high risk hazard zones	<p>Relocate assets outside of high risk hazard zones when re-building</p> <p>Develop landuse planning and development controls to restrict developments within high risk hazard zones such as CEHZ and CFHZ</p> <p>Conduct awareness raising campaign on flood resilient building practices and designs for at risk communities living in and near high risk hazard zones</p> <p>Design infrastructure to take into account the immediate hazard zones; for example, raise floor levels of houses in flood prone areas</p> <p>Families and village to limit building and developing on natural overland flow paths exacerbating inland flooding and storm water surges</p> <p>Responsibility: Village / Families /MWTI/ MNRE/ MWCS</p>	<p>Minimise expenditure on damaged properties and personal assets</p> <p>Safer villages, houses and roads</p> <p>Increases awareness for insurance</p>	<p>Planning provisions to be guided by the Planning and Urban Management Act 2004</p> <p>Enforcement of National Building Code 2017</p> <p>Encourage insurance of significant investments and assets within hazard zones</p> <p>Utilise hazard maps and Geomorphologist Drainage Infrastructure Database to determine safe areas for relocation purposes</p> <p>Designation of the IFHZ, CEHZ and CFHZ as an “at risk” zone with appropriate landuse planning controls and restrictions</p>	<p>CIM Strategy 2015</p> <p>National Building Code</p>
Parts of Fagaloa Bay Road exposed to extremely high risk ⁹ hazard zones	<p>Research relocating parts of road sitting in IFHZ, CEHZ and CFHZ</p> <p>Continue to upgrade roads, upsize ocean outfalls and improve drainage systems to increase regulation of water flow and reduce flooding onto roads in extremely high risk hazard zones in accordance with <i>Vulnerability Assessment of the Samoa Road Network</i> recommendations</p>	<p>Improve infrastructure resilience and rate of recovery</p> <p>Improve preparedness and readiness response to natural disasters</p> <p>Reduce impact from coastal erosion and natural disasters</p>	<p>Utilise hazard maps and Geomorphologist Drainage Infrastructure Database to inform location and designs</p> <p>Utilise environmental and social safeguards including EIAs in screening and designing built environment infrastructure projects for Vaa o Fonoti district</p> <p>Designation of the IFHZ, CEHZ and CFHZ as an “at risk” zone with appropriate</p>	<p>CIM Strategy 2015</p> <p>TSP 2014-2019 Goal 2 KO 1</p>

⁹ Extremely high risk is where there is a combination of 4 hazard zones. High risk areas is where there is a combination of 2 or 3 hazard zones

	<p>Enforce environmental safeguards where reclamations are proposed. Government and district to manage processes by requiring villagers to get the appropriate permits and consent</p> <p>Responsibility: LTA/ MWTI/ MNRE/ District/ Village /Families</p>	<p>Maintains lifeline access</p> <p>Safer villages, houses and roads</p> <p>Minimise national disaster recovery expenditure on damaged properties and public assets</p>	<p>landuse planning controls and restrictions</p>	
<p>Coastline protection at most high risk hazard zones</p>	<p>Assess feasibility of constructing seawalls in most high risk areas of Fagaloa Bay Road to reduce vulnerability of road in accordance with <i>Vulnerability Assessment of the Samoa Road Network</i> recommendations</p> <p>Research the impacts of sand mining</p> <p>Village consultation on sand mining policy and regulation</p> <p>Enforce environmental social safeguards where reclamations, sand mining, extraction or other major coastal works are proposed. Government and village to manage processes by requiring villagers to get the appropriate permits and consent</p> <p>Responsibility: LTA/ Village /MNRE/MWTI</p>	<p>Improve infrastructure resilience and rate of recovery</p> <p>Reduce impact from coastal erosion</p> <p>Safer villages, houses and roads</p> <p>Minimise expenditure on damaged properties & personal assets</p>	<p>Conduct a full catchment management, drainage analysis and geotechnical engineering survey and use its recommendations to inform location and design</p> <p>Undertake a Cost Benefit Analysis to weigh options for funding</p> <p>Incorporate environmental and social safeguards concerns in the design and undertake consultations with affected communities</p> <p>Apply for necessary permits as required by law</p> <p>Utilise hazard maps and Geomorphologist Infrastructure Drainage Database to inform designs</p> <p>Develop and register District/Village bylaws to include maintenance of drainages and illegal rubbish dumping into waterways</p>	<p>CIM Strategy 2015</p> <p>TSP2014-2019 Goal 2 KO 1</p> <p>Draft Soil Resource Management Bill</p>

<p>Flood protection measures for fords and bridges</p>	<p>Upgrade waterways</p> <p>Upgrade all crossings</p> <p>Upgrade or repair riverine embankment protection work upstream of Afulilo Dam and Taelefaga causeways</p> <p>Ensure river channel upstream is cleared and maintained regularly</p> <p>Construct levees to reduce flooding along estuaries and coastal streams</p> <p>Install advisory edge markers and depth markers to warn vehicle and pedestrians at all crossings</p> <p>Government and Villages to liaise and collaborate on processes needed to protect riverbanks from land clearing and developments</p> <p>Responsibility: MWTI/ LTA/MNRE/ District/ Village</p>	<p>Minimise expenditure on damaged properties & personal assets</p> <p>Mitigate potential damage from inland flooding</p> <p>Reduce flooding of built up areas</p> <p>Maintains lifeline access for all of Upolu</p> <p>Safer villages, houses and roads</p>	<p>Conduct a full catchment management, drainage analysis and geotechnical engineering survey and use its recommendations to inform location and designs</p> <p>Implement Va'a o Fonoti Integrated Catchment Strategy and Flood Management Plan in conjunction with hazard Maps and Geomorphologist Drainage Infrastructure Database findings</p> <p>Utilise environmental and social safeguards including EIAs in screening and designing infrastructure facilities</p> <p>Develop an integrated land management plan with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>Include in budget programming CBA, design and construction.</p> <p>Designation of the IFHZ as an "at risk" zone with appropriate landuse planning controls and restrictions</p>	<p>CIM Strategy 2015</p> <p>TSP 2014-2019 Goal 2 KO 1</p> <p>Vulnerability Assessment of the Samoa Road Network (2016) and Road Network Adaptation Strategy, LTA</p>
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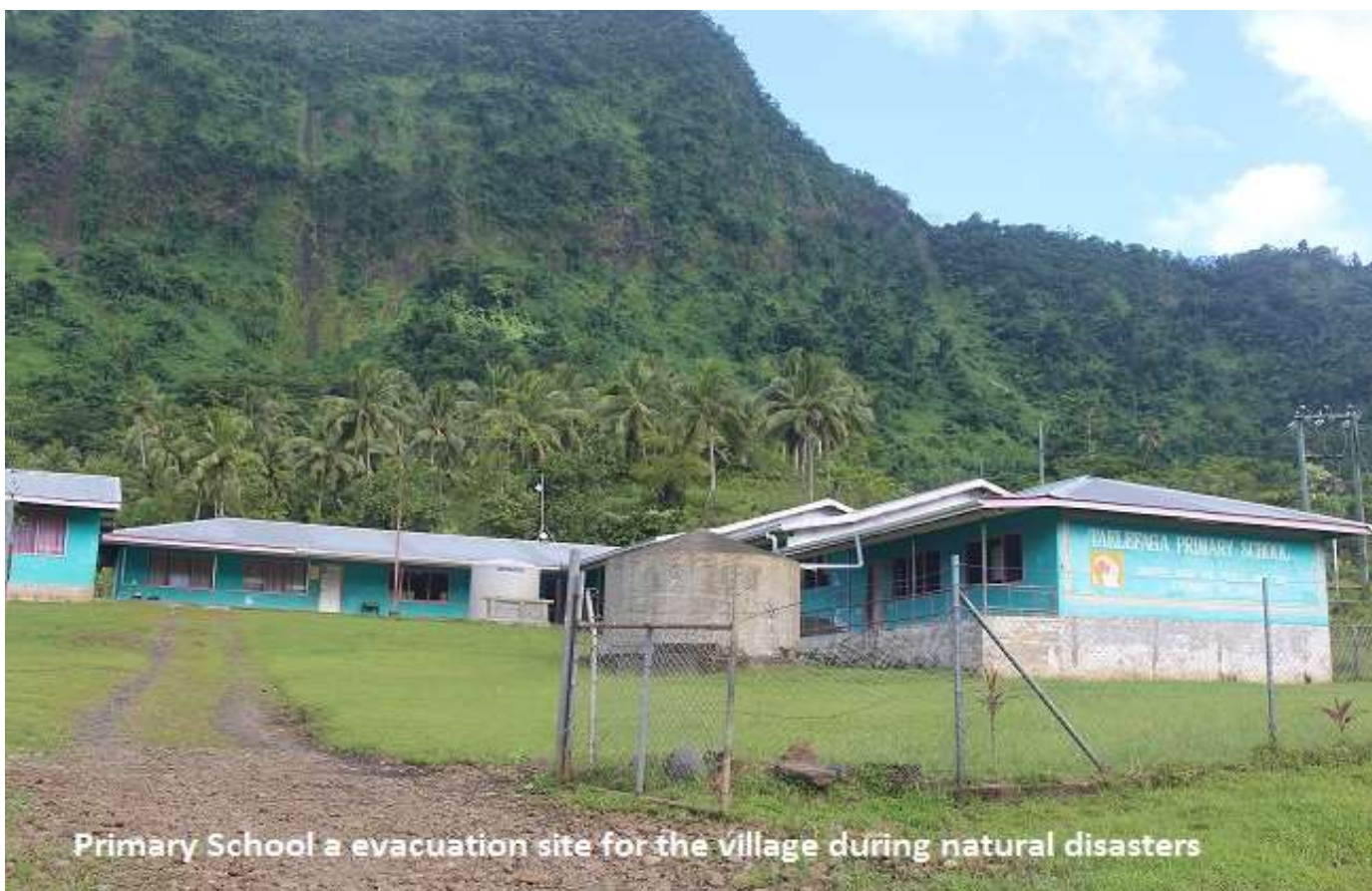
<p>Drainage systems require maintenance and upgrade in high risk areas especially at junction of LeMafa Pass and Fagaloa Bay Road causing flooding downstream into Taelefaga village</p>	<p>Assess and upgrade culverts and cross drainage of roads sitting within combined hazard zones– in accordance with <i>Vulnerability Assessment of the Samoa Road Network</i> recommendations</p> <p>Introduce new and widen existing culverts in wetland areas to improve tidal flow and fish passage in the wetland area</p> <p>Implement national standards for culverts and drains to facilitate the overland flow of storm water and reduce flooding</p> <p>Implement regular drainage inspection and maintenance</p> <p>District to regulate developments near and around waterways and drainage connecting to main East Coast Road</p> <p>Responsibility: LTA /MWTI/MWCSD/ District/Village/ Families</p>	<p>Improves infrastructure resilience and rate of response and recovery to natural hazards and disasters</p> <p>Encourages coastal families to relocate inland</p> <p>Maintains lifeline access for all of Upolu</p> <p>Minimises national disaster recovery expenditure on damaged properties, public and private assets</p>	<p>Use existing information for guidance but not limited to: <i>“Vulnerability Assessment of the Samoa Road Network (2017)”</i>; <i>“Review of National Road Standards in Samoa (2016)”</i>; <i>“Samoa Code of Environmental Practice (2007)”</i></p> <p>Undertake a Cost Benefit Analysis to weigh options for funding</p> <p>Incorporate environmental and social safeguards concerns in the design and undertake consultations with affected communities</p> <p>Apply for necessary permits as required by law</p> <p>Utilise hazard maps and Geomorphologist Infrastructure Drainage Database to inform designs</p> <p>Develop Integrated Catchment Strategy and Flood Management Plan for Va’a o Fonoti District</p>	<p>CIM Strategy 2015</p> <p>TSP2014-2019 Goal 2 KO 1</p> <p>Community Sector Plan</p>
<p>Reticulated water supply, quality and network to be improved</p>	<p>Extend the water supply to Taelefaga</p> <p>Procure rainwater harvesting systems for vulnerable families as a short term solution</p> <p>District to support SWA efforts at exploratory boreholes in district</p> <p>District and villages to support SWA efforts at protecting and conserving boreholes, intakes and catchment areas</p> <p>Responsibility: SWA/ MWCSD/ MNRE / District/ Village/ CSSP</p>	<p>Increase adaptation during drought periods</p> <p>Improve infrastructure resilience and rate of recovery</p> <p>Improve health and sanitation</p> <p>Reduce contamination of water supply</p> <p>Reduce impact from inland flooding</p>	<p>Develop and register District/Village bylaws to include regulating developments around catchment areas and boreholes</p> <p>Implement SWA (2016) 10 year investment plan to improve water supply network to support all inland families without access to drinking water</p> <p>Include in budget programming design, and extension costs of water supply and procurement of rainwater harvesting systems</p> <p>Utilise hazard maps and Geomorphologist findings to inform location and designs</p>	<p>CIM Strategy 2015</p> <p>Water and Sanitation Sector Plan</p> <p>SWA 10 Year Investment Plan (2016)</p> <p>Community Engagement Plan</p>

Natural Resources and Environment	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant Sector Plans, National Strategies & Policies
Wetland and mangrove area conservation	<p>Undertake an assessment of tidal flow necessary to maintain a healthy natural environment</p> <p>Introduce new and widen existing culverts in wetland areas to improve tidal flow and fish passage in the wetland area</p> <p>Limit land clearance and developments adjacent to wetland areas</p> <p>Continue to plant native species along coastal areas to reduce erosion and landslips. To act as an effective wave barrier, a minimum distance of 200m of vegetation is needed</p> <p>Village to fence off domestic animals</p> <p>Responsibility: MNRE / Village /CSSP/ UNDP-GEF SGP/ MWTI</p>	<p>Protects and enhance local species diversity</p> <p>Sustains ecosystem services and functions</p> <p>Reduce contamination of water supply</p> <p>Reduce impact from inland flooding</p>	<p>Develop an integrated land management plan for Va'a o Fonoti district with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>Implement wetland and mangrove protection programme</p> <p>Identify funding /budget requirements and implementation programme for establishment of protected areas in district</p>	<p>Draft NESP 2017-2021</p> <p>Community Engagement Plan</p>
Flood protection measures (soft solution to support flood protection measures for infrastructure)	<p>Conduct riparian replanting along river channels and watercourses</p> <p>Encourage planting of indigenous species in conjunction with engineered water land drainage action plans</p> <p>Promote and support village and district afforestation in the upper and mid-catchment areas to reduce riverbank failures especially in flood prone areas</p> <p>Responsibility: MNRE/ Villages</p>	<p>Mitigate potential damage from inland flooding</p> <p>Reduce flooding of built up areas</p> <p>Safer villages, houses and roads</p>	<p>Implement Vaa o Fonoti Integrated Catchment Strategy and Flood Management Plan in conjunction with hazard Maps and Geomorphologist Drainage Infrastructure Database to inform location and designs</p> <p>MNRE to zone hazard areas along major watercourses based on flood risk to provide suitable areas for riparian revegetation</p>	<p>Two Million Tree Strategy 2015-2020</p> <p>Restoration Operational Plan 2016-2020</p>
Soft coastal protection measures needed for most vulnerable areas	<p>Re-stock existing nursery</p> <p>Plant native species along coastal areas to strengthen existing seawall and to reduce coastal erosion and landslips; Talie, Fetau, Toa, Togatogo are known to have</p>	<p>Soft coastal protection measures will support and strengthen existing and new infrastructure along the coast</p>	<p>Develop an integrated land management plan for Vaa o Fonoti district with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p>	<p>NESP 2017-2021</p> <p>Two Million Tree Planting Strategy 2015-2020</p> <p>Restoration Operational Plan</p>

	<p>greater resilience to natural disasters and changing climate conditions</p> <p>To act as an effective wave barrier, a minimum distance of 200m of vegetation is needed</p> <p>Responsibility: MNRE/MAF/Villages</p>	<p>Reduce impact from coastal erosion and natural disasters</p> <p>Implements an Ecosystem Based Approach</p>	<p>MAF to assist in establishment of pilot sites to trial climate ready plant varieties</p> <p>MNRE Forestry, DEC and MAF to collaborate on supply of climate resilient plants</p>	2016-2020
Livelihood and Food Security	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant Sector Plans, National Strategies & Policies
<p>Pest management; invasive plants and animals affecting taro plantations and vegetable gardens</p>	<p>Implement an eradication programme to eradicate, contain or exclude invasive species</p> <p>Implement an inventory of invasive species and include information on their past, present and potential future distribution, as well as impacts and possible actions that can be taken</p> <p>Conduct education and awareness programmes on the impacts of invasive species</p> <p>Implement the Integrated Pest Management Programme</p> <p>Implement Sustainable Land Management (SLM) practices</p> <p>Build the capacity of farmers to manage stray animals (pigs, cattle) that are contaminating water sources</p> <p>Responsibility: Villages /District/ MNRE/MAF/ SROS</p>	<p>Maintains natural ecosystem</p> <p>Builds resilience of community livelihood and food security</p>	<p>Develop an integrated land management plan for Vaa o Fonoti district with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>MAF to raise awareness of farmers on impacts to water flows from poor livestock management</p> <p>MNRE, MAF and SROS to implement aggressive, nationwide invasive species eradication programme based on inventory of invasive species and conduct campaign on public awareness accordingly</p> <p>Training for farmers on pests management particularly affecting fruit trees and crops</p>	<p>Agriculture Sector Plan 2016-2021</p> <p>Samoa's National Invasive Species Action Plan (NISAP)</p>

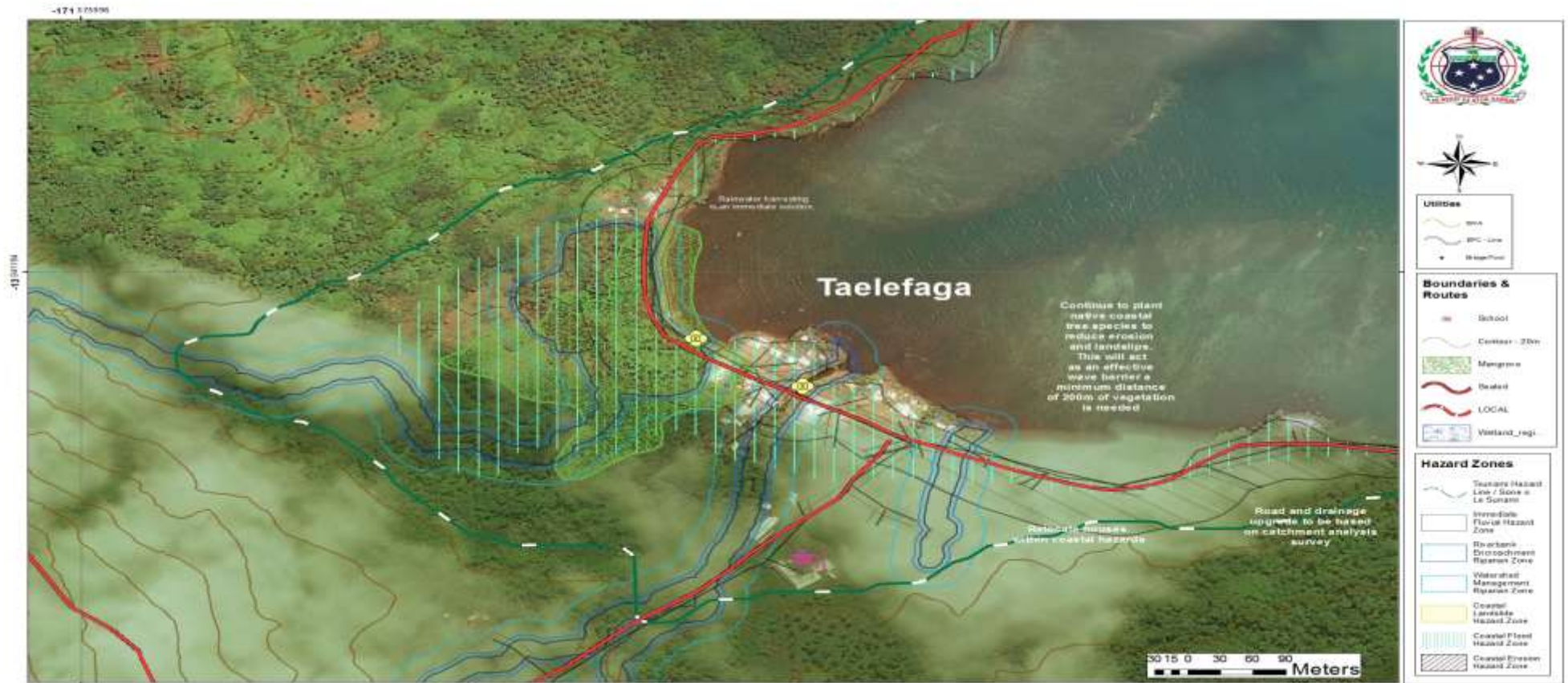
Governance	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant Sector Plans, National Strategies & Policies
Strengthen the governance of natural resources and land use through Bylaws	<p>Update and/or develop bylaws to manage the use of natural resources, and to control land use impacts; such as drainage maintenance, rubbish dumping, sand mining, stray animals and unregulated developments in water catchment areas and near boreholes.</p> <p>Collaborate with Sui o Nuu to monitor the use of and impact on natural resources</p> <p>Facilitate continuous awareness raising programs with the villages</p> <p>Responsibility: MWCSO /Village</p>	<p>Strengthen implementation of all national sector plans</p> <p>Strengthen monitoring of all National Acts, Regulation, Strategies, Plans and Policies</p> <p>Improve ability of communities to adapt, respond and recover quickly in the long term</p> <p>Improve accountability and enabling environment of communities</p>	<p>Develop and register district/village bylaw to protect all district/ village and government assets, environment, livelihood and food security especially activities affecting water catchment areas and coastline</p> <p>Utilise Sui o Nu'u monthly meetings to monitor progress of district/village bylaws</p>	<p>Village Fono Act (Amendment Bill 2016)</p> <p>Community Sector Plan</p> <p>Community Development Plan 2016-2021</p>

Non-CR issues raised during consultations	Proposed Solution	Comments
<p>Management of EPC pipes to Afulilo</p> <p>Responsibility: Village/EPC</p>	Village and EPC to liaise on best solution	Not a CR issue



Taelefaga Village Map

TAELEFAGA VILLAGE



Coordinate System: GCS WGS 1984
 Datum: WGS 1984
 Units: Degree

Data Source: Ministry of Natural Resource and Environment, Samoa
 Map Production: Spatial & DRM Specialist, Adaptation Fund - Enhancing Resilience of Coastal Communities of Samoa to Climate Change Project

4.9 Uafato Village Interventions

CIM Plan Solutions

Infrastructure	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant National, Sector Plans and Strategies
<p>Village houses, school and other assets in extremely high risk hazard zones</p>	<p>Relocate assets outside of high risk hazard zones when re-building</p> <p>Develop landuse planning and development controls to restrict developments within high risk hazard zones such as CEHZ and CFHZ</p> <p>Conduct awareness raising campaign on flood resilient building practices and designs for at risk communities living in and near high risk hazard zones</p> <p>Design infrastructure to take into account the immediate hazard zones; for example, raise floor levels of houses in flood prone areas</p> <p>Families and village to limit building and developing on natural overland flow paths exacerbating inland flooding and storm water surges</p> <p>Responsibility: Village / Families /MWTI/ MNRE/ MWCS</p>	<p>Minimise expenditure on damaged properties and personal assets</p> <p>Safer villages, houses and roads</p> <p>Increases awareness for insurance</p>	<p>Planning provisions to be guided by the Planning and Urban Management Act 2004</p> <p>Enforcement of National Building Code 2017</p> <p>Encourage insurance of significant investments and assets within hazard zones</p> <p>Utilise hazard maps and Geomorphologist Drainage Infrastructure Database to determine safe areas for relocation purposes</p> <p>Designation of the IFHZ, CEHZ and CFHZ as an “at risk” zone with appropriate landuse planning controls and restrictions</p>	<p>CIM Strategy 2015</p> <p>National Building Code</p>
<p>Evacuation Shelter and a connected escape route needed for emergency preparedness and response</p>	<p>Assess and/or select location for either an existing or new evacuation shelter, including safe access routes to the shelter</p> <p>Conduct evacuation shelter assessment and mark on CIM Plan hazard maps</p> <p>Develop a Village Climate Disaster Management Plan (VCDMP)</p> <p>Conduct trainings for People With Disabilities (PWDs) on emergency and disaster response strategies</p>	<p>Improve resilience of public infrastructure</p> <p>Improve preparedness and readiness response to natural disasters</p>	<p>Enforcement of National Building Code 2017</p> <p>Utilise hazard maps and Geomorphologist findings to inform location and designs</p>	<p>National Disaster Management Plan 2017-2021</p> <p>National Building Code</p> <p>National Policy for People with Disabilities</p> <p>NISP 2011 KESO 5</p>

	<p>Implement CDCRM program</p> <p>Install relevant signs to guide the community on emergency response procedures and to locations of evacuation shelters</p> <p>Where no suitable houses exist, build emergency shelter(s) outside the hazard zones</p> <p>Retrofit identified and approved schools or churches outside hazard zones and designate as evacuation shelter</p> <p>Responsibility: MNRE /DMO/ MWTI/Village /CSSP/Council of Churches/MWCSD</p>			
<p>Fagaloa Bay Road upgrade and maintenance needed to maintain lifeline access of Uafato residents</p>	<p>Construct roadside drainage ditches where needed especially in high risk hazard zones such as the IFHZ and CFHZ</p> <p>Implement routine maintenance of the roads and clear any debris obstructing the free flow of surface water runoff</p> <p>Village to regulate developments near and around road shoulders of all access roads</p> <p>Enforce environmental safeguards where reclamations are proposed. Government and district to manage processes by requiring villagers to get the appropriate permits and consent</p> <p>Responsibility: LTA/ MWTI/ MNRE/ Villages /Families</p>	<p>Improve infrastructure resilience and rate of recovery</p> <p>Improve preparedness and readiness response to natural disasters</p> <p>Safer villages, houses and roads</p> <p>Minimise national disaster recovery expenditure on damaged properties and public assets</p>	<p>Undertake a Cost Benefit Analysis to weigh options for funding</p> <p>Incorporate environmental and social safeguards concerns in the design and undertake consultations with affected communities</p> <p>Apply for necessary permits as required by law</p> <p>Utilise hazard maps and Geomorphologist Drainage Infrastructure Database to inform location and designs</p> <p>Develop an integrated land management plan with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>Develop Integrated Catchment Strategy and Flood Management Plan for Va'a o Fonoti District</p> <p>Designation of the IFHZ, CEHZ and CFHZ as an "at risk" zone with appropriate landuse planning controls</p>	<p>National Disaster Management Plan 2017-2021</p> <p>CIM Strategy 2015</p> <p>NISP 2011 KESO 5</p> <p>TSP 2014-2019 Goal 2 KO 1</p> <p>Community Sector Plan</p>

			and restrictions Utilise environmental and social safeguards including EIAs in screening and designing built environment infrastructure projects for Vaa o Fonoti district	
Reticulated water supply, quality and network to be improved	Procure rainwater harvesting systems for vulnerable families as a short term solution District to support SWA efforts at exploratory boreholes in district District and villages to support SWA efforts at protecting and conserving boreholes, intakes and catchment areas Responsibility: SWA/ MWCS D/ MNRE / District/ Village/ CSSP	Increase adaptation during drought periods Improve infrastructure resilience and rate of recovery Improve health and sanitation Reduce contamination of water supply Reduce impact from inland flooding	Develop and register District/Village bylaws to include regulating developments around catchment areas and boreholes Implement SWA (2016) 10 year investment plan to improve water supply network to support all inland families without access to drinking water Include in budget programming design, and extension costs of water supply and procurement of rainwater harvesting systems Utilise hazard maps and Geomorphologist findings to inform location and designs	CIM Strategy 2015 Water and Sanitation Sector Plan SWA 10 Year Investment Plan (2016) Community Engagement Plan
Natural Resources and Environment	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant Sector Plans, National Strategies & Policies
Protection of catchment areas	Promote and support agroforestry and other cropping systems that combine trees and crops, especially in catchments, and erosion-prone and sensitive areas Limit land clearance and agricultural development around catchment areas, SWA intake and boreholes in district Enforce Watershed Management Riparian Zone and Riverbank Encroachment Control and regulate developments around the upland area	Reduced risk of slips and erosion Improve resilience of catchments Improve preparedness and readiness response to natural disasters Reduce contamination of water supply	Develop Integrated Watershed/Catchment Strategy and Flood Management Plan for Vaa o Fonoti District Develop and register District/Village bylaws to include penalizing illegal deforestation and developments in upper catchment areas MNRE Forestry, DEC and MAF to collaborate on supply of climate resilient trees MAF to assist in establishment of pilot sites to trial climate ready plant varieties	Water Sector Plan Community Engagement Plan Restoration Operational Plan 2016-2020

	<p>Replant catchment areas with local species such as tava, and poumuli</p> <p>Responsibility: MNRE/ /SWA/District/Village/ CSSP/GEF-SGP</p>			
<p>Restoration and protection of Uafato Conservation Area to protect Uafato from landslips</p>	<p>Village to support programme by Forestry on replanting native forestry species of the upland forest</p> <p>Government to liaise with village to include Uafato Conservation Programme under the Government's Protected Area network</p> <p>Promote agroforestry and mixed planting including fruit trees species to promote ecological stability, soil protection and reduce crop vulnerability to pests and diseases</p> <p>Implement the Integrated Pest Management Programme</p> <p>Implement Sustainable Land Management (SLM) practices</p> <p>Responsibility: MNRE- WRD & Forestry/ District /Village/CSSP</p>	<p>Protects and enhance local species diversity</p> <p>Reduced risk of slips and erosion</p> <p>Reduce impact from inland flooding</p>	<p>MNRE Forestry, DEC and MAF to collaborate on supply of climate resilient crops and plants</p> <p>Develop an integrated land management plan with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>MNRE Forestry to advice on appropriate species, depth and density of planting and provide seedlings for different vegetation types suitable to the habitats and planting materials for village</p>	<p>Community Engagement Plan</p> <p>Two Million Tree Planting Strategy 2015-2020</p> <p>Restoration Operational Plan 2016-2020</p>
<p>Soft coastal protection measures needed for most vulnerable areas</p>	<p>Re-stock existing nursery</p> <p>Plant native species along coastal areas to strengthen existing seawall and to reduce coastal erosion and landslips; Talie, Fetau, Toa, Togatogo are known to have greater resilience to natural disasters and changing climate conditions</p> <p>To act as an effective wave barrier, a minimum distance of 200m of vegetation is needed</p> <p>Responsibility: MNRE/ MAF/Villages</p>	<p>Soft coastal protection measures will support and strengthen existing and new infrastructure along the coast</p> <p>Reduce impact from coastal erosion and natural disasters</p> <p>Implements an Ecosystem Based Approach</p>	<p>Develop an integrated land management plan for Vaa o Fonoti district with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>MAF to assist in establishment of pilot sites to trial climate ready plant varieties</p> <p>MNRE Forestry, DEC and MAF to collaborate on supply of climate resilient plants</p>	<p>NESP 2017-2021</p> <p>Two Million Tree Planting Strategy 2015-2020</p> <p>Restoration Operational Plan 2016-2020</p>

Livelihood and Food Security	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant Sector Plans, National Strategies & Policies
<p>Pest management; invasive plants and animals affecting taro plantations and vegetable gardens</p>	<p>Implement an eradication programme to eradicate, contain or exclude invasive species</p> <p>Implement an inventory of invasive species and include information on their past, present and potential future distribution, as well as impacts and possible actions that can be taken</p> <p>Conduct education and awareness programmes on the impacts of invasive species</p> <p>Implement the Integrated Pest Management Programme</p> <p>Implement Sustainable Land Management (SLM) practices</p> <p>Build the capacity of farmers to manage stray animals (pigs, cattle) that are contaminating water sources</p> <p>Responsibility: Villages /District/ MNRE/MAF/ SROS</p>	<p>Maintains natural ecosystem</p> <p>Builds resilience of community livelihood and food security</p>	<p>Develop an integrated land management plan for Vaa o Fonoti district with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area</p> <p>MAF to raise awareness of farmers on impacts to water flows from poor livestock management</p> <p>MNRE, MAF and SROS to implement aggressive, nationwide invasive species eradication programme based on inventory of invasive species and conduct campaign on public awareness accordingly</p> <p>Training for farmers on pests management particularly affecting fruit trees and crops</p>	<p>Agriculture Sector Plan 2016-2021</p> <p>Samoa's National Invasive Species Action Plan (NISAP)</p>

Governance	Best Solutions	Benefits	Guideline to assist with the Implementation	Relevant Sector Plans, National Strategies & Policies
<p>Strengthen the governance of natural resources and land use through Bylaws</p>	<p>Update and/or develop bylaws to manage the use of natural resources, and to control land use impacts; such as drainage maintenance, rubbish dumping, sand mining, stray animals and unregulated developments in water catchment areas and near boreholes.</p> <p>Collaborate with Sui o Nuu to monitor the use of and impact on natural resources</p> <p>Facilitate continuous awareness raising programs with the villages</p> <p>Responsibility: MWCSO /Village</p>	<p>Strengthen implementation of all national sector plans</p> <p>Strengthen monitoring of all National Acts, Regulation, Strategies, Plans and Policies</p> <p>Improve ability of communities to adapt, respond and recover quickly in the long term</p> <p>Improve accountability and enabling environment of communities</p>	<p>Develop and register district/village bylaw to protect all district/ village and government assets, environment, livelihood and food security especially activities affecting water catchment areas and coastline</p> <p>Utilise Sui o Nu'u monthly meetings to monitor progress of district/village bylaws</p>	<p>Village Fono Act (Amendment Bill 2016)</p> <p>Community Sector Plan</p> <p>Community Development Plan 2016-2021</p>



Maintain or upgrade ford to a bridge to improve accessibility during natural hazards



Need regular drainage cleaning

UAFATO VILLAGE

-171 103051



Coordinate System: GCS WGS 1984
 Datum: WGS 1984
 Units: Degree

Data Source: Ministry of Natural Resource and Environment, Samoa
 Map Production: Spatial & DRM Specialist, Adaptation Fund - Enhancing Resilience of Coastal Communities of Samoa to Climate Change Project

Upolu AF Districts Overview Map of Coastal Inundation Zones

