Community Integrated Management Plan

Gagaifomauga 2 District - Savaii

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 Gagaifomauga 2 (Paia, Samauga, Lefagaoalii, Matavai, Faletagaloa and Fatuvalu villages)

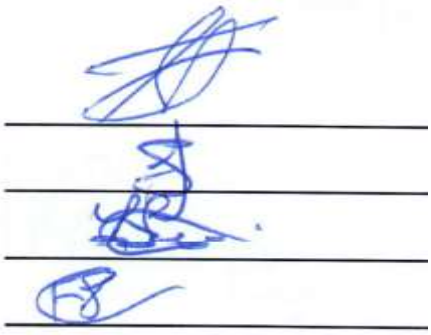
The village representatives participated in the preparation of this CIM Plan in partnership with the Government of Samoa.

Date of Signing : 15th June 2018

Representatives: Signatures:

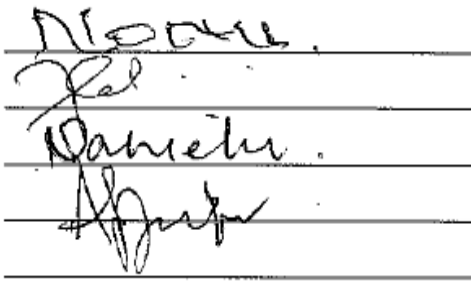
Samauga Village

- So'oalo Siliga
- So'oalo Timo
- Latui Simoli
- Fereita. S



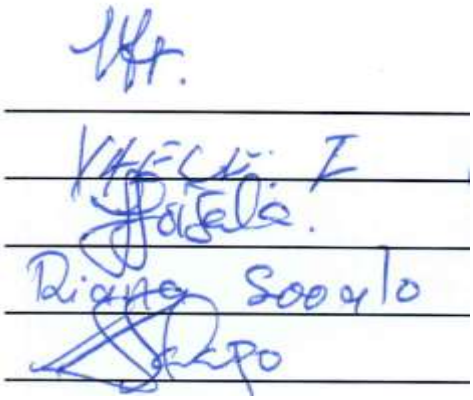
Paia Village

- Nonu Luapi
- Fasia Valeni
- Nuuletau Tanielu
- Mauai TiafauIosefa



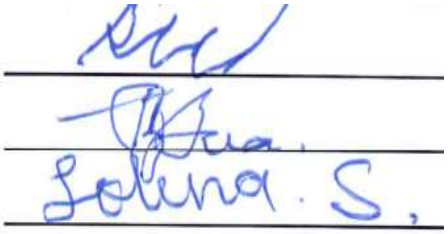
Lefagaoalii Village

- Vaiouga Fereni
- Vaele I
- Feagai Foisala
- Diana So'oalo
- Silive Salapo



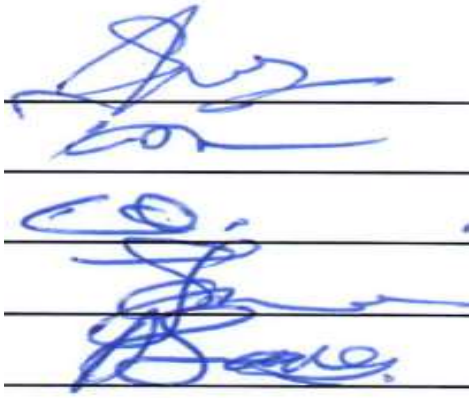
Matavai o Safune Village

- Paia'ana
- Peseta P. Su'a
- Lolina P. Saunia



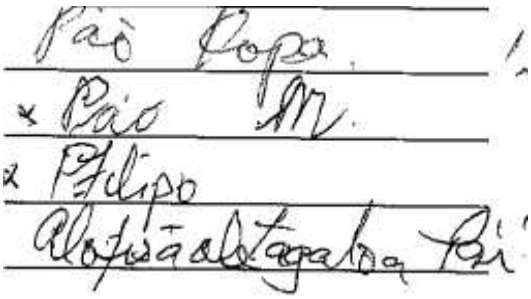
Faletagaloa Village

- TuliatuIosua
- LauluIefata
- Fa'alafi Pea
- SaveaPatolo
- Simasi Savea P



Fatuvalu Village

- PaoKopa
- Leaupao Poe
- Leaupao Filipo
- Alofisaoletagaloa Pa'i



The Government of Samoa adopts the Community Integrated Management Plan for the Faipule District of Gagaifomauga 2 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
CCCS	Congregation Christian Church Samoa
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
IG	Implementation Guideline
IAS	Invasive Alien Species
KBA	Key Biodiversity Area
KPI	Key Performance Indicator
LTA	Land Transport Authority
LTO	Long Term Output
MAF	Ministry of Agriculture and Fisheries
MET Office	Meteorological Office
MoH	Ministry of Health
MNRE	Ministry of Natural Resources and Environment
MWCSD	Ministry of Women Community and Social Development
MWTI	Ministry of Work Transport and Infrastructure
NAP	National Action Programme
NBSAP	National Biodiversity Action Plan
NDMP	National Disaster Management Plan
NESP	National Environment Sector Plan
NGO	Non-Government Organization
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
SOE	State of Environment
SWA	Samoa Water Authority
UNDP-GEF SGP	United Nations Development Programme Global Environment Facility Small Grants Programme
VCDMP	Village Climate Disaster Management Plan
WB	World Bank

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

Glossary

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

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

1. Introduction to the CIM Plan

1.1 The Strategic Vision

The District Community Integrated Management (CIM) Plan for Gagaifomauga 2 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

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 communityresilience at both levels.

2.1 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 theproposed 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.

2.2 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;
- 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 neutralenvironmental 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 Gagaifomauga 2 District

3.1 Physical and Natural Resource Setting

The District of Gagaifomauga2 is located on the northern side of the island of Savaii west of the tourist precinct of Manase. The district is characterised by rocky coastal shores and estuaries as well as steep coastal cliffs on the east side which makes it susceptible to erosion and landslip, whilst gentle slopes define the southern and western part. The inland area is steep and mountainous, covered by plantations and forest and a small number of village houses. The reefs of Gagaifomauga2 district are some distance from shore and are believed to be in good, healthy conditions. Some villages have established Marine Protected Areas but have requested greater support from Fisheries officials in their proper management (Reti, 2016).

The villages of Gagaifomauga2 include, Paia, Samauga, Lefagaoali'i, Matavai, Faletagaloa and Fatuvalu. All villages except Paia and part of Lefagaoali'i are located on the coast. Paia is a small village approximately 1.5 km inland, while three quarters of Lefagaoali'i is located inland away from the coast. Indigenous species include fau, talie, tavai, tamaligi, tinamoni and mango trees. A large wetland area at Matavai is dominated by saato and some mangrove trees which, according to villagers are showing signs of dying-off from salt water intrusion. This wetland has not been officially declared a conservation area but the village has recognised its important environment and economic values and has accorded it conservation management status (Reti, 2016).

The lowland forest of Gagaifomauga2 is comprised mainly of disturbed secondary vegetation typical of those found on recent lava fields such as in Saleaula and neighbouring districts. The inland village of Paia breaks the natural flow of forest cover with village plantations extending to little pockets of fertile upland areas spared by the lava flows. There have been some efforts to plant exotic timber trees (especially of mahogany) in family plots but this appear to have come to a complete stop in recent years. Any effort to reactivate such a planting programme will be of economic and environmental benefit to the communities. (Reti, 2016).The village of Paia is the custodian for the Dwarves Caves, a tourist attraction and mythical heritage site for the village and district. The caves are located at the end of an unsealed access road with poor drainage.

Plantation development has significantly changed the landscape in the upland areas of the district. Cattle grazing in particular is slowly encroaching into the remaining forested areas and is believed to be largely responsible for the introduction of a number of invasive harmful species such as mint weed, losafiti or losahonolulu*(Clerodendrumchinensis)* , and vaofefepalagi (*Mimosa invisa*). The common tree species found in the coastal areas of the district are cultivated food crops including breadfruit, banana, coconut trees and taro patches. While some large individual trees are still standing, these are not representative of the native tree species that were found in these high areas in the past. Albizziaspp have occupied abandoned farm land and opportunistic species such as laupata (*Macarangaharveyana),*tavai (*Rhustaitensis),* and nonu*(Morindacitrifolia)* are slowly creeping in (Reti, 2016).

There are three reef breaks in the district, North West of Fatuvalu, north of Lefagaoali'i and at Samauga (which is partially closing over), that influence tidal flows and sediment transport along the coast. The reef system ranges from 200 metres to more than six hundred metres offshore.The waters of Lefagaoalii bay are muddy and some village houses are located right at the edge of the waters. Rubbish from these families is being dumped into the mangrove area for building up extra land and causing pollution to the bay area (Reti, 2016). There is a considerable amount of siltation occurring within water sheltered by the spit.

The villages of Matavai and Faletagaloa (Safune) share a spit of land that extends in an east west direction from the shore connected to the mainland near Lafagaoalii. The Government reclaimed 20 metres of land at Faletagaloa to connect the spit through to Lefagaoali'i, and built a bridge over the small channel. The bridge has since disappeared. A number of buildings are located on the spit including three churches and corresponding pastors' houses. These buildings are within the Coastal Erosion and Flooding Hazard Zones and are very susceptible to storms and flooding from both the sea and the lagoon.

The majority of buildings within the district are located within the coastal hazard zones, with the exception of inland settlements of part Lefagaoali'i and Paia. Paia however sits within the immediate fluvial hazard zone and is prone to inland flooding during heavy rains. As the 1954 coastline data is unavailable, the only measure of coastal change is anecdotal; however, there is evidence of coastal erosion in Lefagaoali'i where remnants of theold coast road can be seen on the spit. There is also a 500m (approximately) long revetment along the coastal frontage of the spit at Lefagoali'i as well as along the coast line from Faletagaloa to Fatuvalu. Although the revetment is consistent along the coast, it has been poorly constructed and has been damaged by cyclones. It does however provide some protection to several existing houses, village pools, churches and the main road.

3.2 Social and Economic Setting

The Gagaifomauga2 District currently has a population of 2,061. This figure includes the population of Leagiagi (*pp* 203) which is not included in the CIM Plan. Of the total 2,061, total male is 1,081, female 980[1]. Development is mostly scattered along or near the coast. The main road is an important part of the district's infrastructure. It follows the coastline throughout the district however deviates inland slightly at Utuimo Point between the villages of Safe'e (neighbouring district) and Samauga. The main road is in good condition, although where it is close to the coast it lacks appropriate drainage. There is a safety barrier along the main road between Samauga and Lefagaoali'i. The main road provides easy access to other work roads, schools, churches and village buildings, including the neighbouring district hospital at Safotu. The main North Coast Road is considered a lifeline access as it part of the national road network connecting the East (from Salelologa Wharf) to the West and back around to the South.

Primary services such as water, power and telephone generally follow the main road and extend along the spit at Lefagaoali'i. The villages of Paia and Matavai both have water reservoirs that supply the district while a number of springs and communal Rainwater Harvesting System provide alternative sources of water. There are also SWA boreholes located further inland of Matavai and Faletagaloa. Telephone services are provided by both Bluesky and Digicel, while EPC provides electricity to all of the settlements along the coast. The district however has requested the assistance of EPC to install streetlights at access roads especially in areas where there is a vast distance between houses. From the main road six work roads (Paia Road, Lefagaoalii Road, Matavai Road, Faletagaloa Access Road, Faletagaloa Loop Road and Fatuvalu Road) extend both inland to village plantations and toward the coast. The condition of these roads varies between villages.

The cash economy of the District is dominated by traditional work. Out of 12 districts surveyed in Savaii[2], Gagaifomauga2 was ranked as the lowest district with income earnings through salaries (11.8%), but recorded as the highest on the income source ratio (0.39)[3]. The majority of residents are largely sustained by plantation work, cattle farms and fishing, but Gagaifomauga2 district has diversified sources of income being host to two very popular tourist/ historical attraction sites; the Dwarves Caves in Paia and Mata o le alelo Pool in Matavai. The District supports two primary schools at Samauga, and Faletagaloa and a secondary school at Fatuvalu, as well as multiple churches per village. The primary school at Faletagaloa was relocated from its old inland location to its current location in the coast, which is within the coastal hazard zones. This was due to inflooding reasons and accessibility however its new location is adjacent to a swamp and is highly susceptible to coastal surges and overflow from the swamp. There are a number of small shops throughout the 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 Gagaifomauga 2. The immediate risks for some areas of Satupa'itea are from coastal inundation, storm surges and fluvial hazards. Some areas are located within the tsunami red zone.The villages of Faletagaloa, Lefagaoali'i, Samauga and Fatuvalu have varied Coastal Sensitivity Indices. Lefagaoalii, Faletagaloa and Matavai are all ranked as high in the landslide hazard index, while Faletagaloa and Fatuvalu are ranked as high in the coastal hazard index[4].

The district of Gagaifomauga2 has a total area of 7,266hectares. The area covering the 0-15m Coastal inundation Zone is 16.01hectares, which is 0.2% of the total area of the district. Of the 535 buildings in the district, 245 buildings are located within 0-15m inundation zone. **Therefore about 46% of the total number of buildings in the district is located in the immediate inundation zone**. The Tsunami hazard zone is 53hectares in district area which is about 0.7 % of the total area of the district. About **185 buildings** are located in the **Tsunami hazard** zone of 15-50m which includes Samauga Primary School (Tokalauvere, 2017).

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The majority of the buildings in Fatuvalu, Faletagaloa and Matavai villages are located in the 0-15m immediate inundation zone. There are 78 buildings that are in a very high risk location for it is in the 0-15m inundation zone **and** the Fluvial Hazard Zone, this includes **Alofi o Taoa Secondary School**. There are 13 buildings within the Fluvial hazard Zone and the 15-50m Tsunami Hazard Zone. Options of relocation can be considered since about 73% of the district is in the "safe" (Tokalauvere, 2017).

[1]SBS Village Directory Census 2016 preliminary count
[2]GEF/UND/MNRE. 2017. Community Disaster Climate Risk Management household survey: survey final report
[3]*ibid*
[4]LTA/SMEC. 2016. Vulnerability assessment of the Samoa road network

Some areas of the North Central Road labeled in the high physical hazards index (i.e. coastal hazard, landslip hazard) lie within this district. Faletagaloa is listed as where major landslide hazard and major coastal hazards coexist (LTA/SMEC, 2016). During extreme weather events and king tides, some parts of the road are impassable.

The district has one river that passes through the village of Paia and reaches the sea north of Safotu. This stream causes flooding to the access road within Paia and also floods the village during periods of heavy rain. The Vailolo River supplies Paia with its water supply via a small reservoir in the mountains, the water is then piped to the village for use. The reservoir is uncovered and does not currently have a filter. The fluvial hazard zone covers part of **Paia Village** so any new construction works (buildings) **should be restricted** in this area.

Of the 6 access roads in this district, two (Faletagaloa Loop Road and Faletagaloa Access Road) has its entrance in the coastal inundation zone and parts of the road in the immediate fluvial hazard zone.

Food security risks are also compounded from climatic changes to rainfall and temperature. The incidence of alien invasive species (IAS) is also a determinant of soil nutrient deficiencies (from natural causes or poor sustainable land management practices) and affects regeneration of indigenous species which may change the entire biodiversity of the district (Reti, 2016).

The economic benefits provided by the tourism industry means there is a fine line between an economically viable district but with many environmentally associated problems. Due to most of the agriculture being away from the coast the impacts from storms and sea level rise is low for this district. Impact from extended periods of dry conditions will impact household crops. Impacts from change in climatic conditions will result in an increase in forest fires being more likely. Varied rainfall will create conditions that will require farmers to diversify crops and management of pests (Dews, 2016).

4. Gagaifomauga 2 District Interventions

CIM Plan Solutions

Infrastructure	Best Solutions	Benefits	Guideline to assist with the implementation	Relevant National, Sector Plans and Strategies
Main north central coast road: exposure to coastal hazard zones	Implement seawall at most vulnerable coastal hazard area (Fatuvalu, Faletagaloa) also identified in *Assessment of the Samoa Road Network and Road Network Adaptation Strategy* Implement slope stabilization at most vulnerable landslide area (Lefagaoalii, Matavai and Faletagaloa) also identified in *Assessment of the Samoa Road Network and Road Network Adaptation Strategy* Promote and support village and district tree planting on coastal areas around existing seawalls to strengthen seawalls and reduce erosion using native species such as talie, fetau, toaetc that are known to have greater resilience to natural disasters and changing climate conditions Depth and density of planting needs to be increased and a minimum vegetative distance of 200m as an effective wave barrier distance ***Responsibility:LTA/MWTI/ MNRE/ Villages***	Improve preparednessand readiness responsetonatural disasters Maintain lifeline access for all of Savaii Minimise national disaster recovery expenditure on damaged properties, public and private assets	Include in budget programming design, construction costs Utilize the environmental and social safeguards including EIAs in screening and designing infrastructure facilities Prepare EIA and detailed surveys: topographical, geotechnical and soils Designation of the CEHZ and CFHZ as an “at risk” zone with appropriate landuse planning controls and restrictions	CIM Strategy 2015 NISP 2011 KESO 5 TSP2014-2019 Goal 2 KO 1 Community Sector Plan Vulnerability Assessment of the Samoa Road Network (2016) and Road Network Adaptation Strategy, LTA

Drainage systems to be improved in high risk areas where Vailolo River crosses junctions of main coast road and Lefagaoalii Rd, Matavai Rd, Faletagaloa Rd and Fatuvalu Rd	Assess and upgrade culverts on most vulnerable parts of the – in accordance with *Vulnerability Assessment of the Samoa Road Network* recommendations Implement national standards for culverts and drains to facilitate the overland flow of storm water and reduce flooding Implement regular drainage inspection and maintenance ***Responsibility: LTA/ MWTI/MWCSD /Village / Families***	Improves climate resilience of infrastructure resilience and rate of response and recovery to natural hazards and disasters Encourages coastal families to relocate inland Maintains lifeline access for all of Upolu Minimise national disaster recovery expenditure on damaged properties, public and private assets	Use existing information for guidance but not limited to: *"Vulnerability Assessment of the Samoa Road Network (2017)"; "Review of National Road Standards in Samoa (2016)"; "Samoa Code of Environmental Practice (2007)"* Undertake a Cost Benefit Analysis to weigh options for funding Incorporate environmental and social safeguards concerns in the design and undertake consultations with affected communities Apply for necessary permits as required by law Utilise hazard maps and Geomorphologist Infrastructure Drainage Database to inform designs Develop Integrated Catchment Strategy and Flood Management Plan for Gagaifomauga East District Develop and register District/Village bylaws to include maintenance of drainages and illegal rubbish dumping into waterways	CIM Strategy 2015 NISP2011 KESO 5 TSP2014-2019 Goal 2 KO 1 Community Sector Plan
Electricity supply	Provide undergroundlinesinthelongterm Install and connect power supply for inland residents Relocateoverheadlinestoamoreresilientlocationwhen being replaced Install streetlights along the roads where needed for community safety Install and connect to solar power supply if made available Families to limit building and developments near	Maintain electricity supply at all times including natural disasters Avoid accidents from fallen electricity posts.	Monitor distribution networks to avoid overloading poles and contributing to line failures	EPC Strategic Plan NISP2011 KESO 5

	electricity posts ***Responsibility:EPC/ MWTI/ Village /Families***			
Reticulated water supply, quality and network to be improved	Extendthewatersupplyto familiesinlandwithnoaccesstowater Procure rainwater harvesting systems for vulnerable families as a short term solution Procure rainwater harvesting systems for identified evacuation shelter(s) District and village to support SWA water rationing programmes during times of drought 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/ MWCSP/ MNRE / District/ Village/ CSSP***	Increase adaptation during drought periods Improveinfrastructureresilience 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 ImplementSWA(2016)10year investmentplantoimprovewater supplynetwork to support allinlandfamilieswithout access todrinkingwater Include in budget programming design, andextension costs of water supply and procurement of rainwater harvesting systems Utilise hazard maps and Geomorphologist findings to inform designs Utilise Sui o Nu'u monthly meetings to monitor progress of village programmes and responsibilities	CIM Strategy 2015 WaterandSanitationSectorPlan SWA 10 Year Investment Plan(2016) Community Engagement Plan Health Sector Plan Community Sector Plan

Gagaifomauga 2 District Map

5. Paia Village Interventions

CIM Plan Solutions

Infrastructure	Best Solutions	Benefits	Guideline to assist with the implementation	Relevant National, Sector Plans and Strategies
Village houses, church, school and other assets in high risk hazard zones	Relocate outside of high risk hazard zones when building/infrastructure requires replacement Investments within the hazard zones to adopt appropriate mitigation measures Conduct awareness raising campaign on flood resilient building practices and designs for at risk communities living in and near high risk hazard zones Design infrastructure to take into account the immediate hazard zones; for example, raise floor levels of houses in flood prone areas Develop landuse planning and development controls to restrict developments within high risk hazard zones such as CEHZ and CFHZ Families and village to limit building and developing on natural overland flow paths exacerbating inland flooding and storm water surges ***Responsibility:Village / Families /MWTI/ MNRE/ MWCSD***	Minimise expenditure on damaged properties and personal assets Safer villages, houses and roads Increases awareness for insurance	Planning provisions to be guided by the Planning and Urban Management Act 2004 Enforcement of National Building Code 2017 Encourage insurance of significant investments and assets within hazard zones Utilise hazard maps and Geomorphologist Drainage Infrastructure Database to determine safe areas for relocation purposes Designation of the IFHZ, CEHZ and CFHZ as an “at risk” zone with appropriate landuse planning controls and restrictions	CIM Strategy 2015 [Draft] Samoa Relocation Strategy 2016

IWS/Paia village reservoir: protection from contamination & improvement of water quality	Install a filter for the reservoir Procure and install cover/ roofingoverthereservoir Upgrade and construct additional reservoirs to hold more water Regular maintenance to ensure that the reservoir is clean at all times Conserve trees and upper catchment areas Extend the water supply to families inland with no access to water Procure rainwater harvesting system for vulnerable families as a short term solution Regulate developments around the reservoir and boreholes Village to manage pig/cattle population (compounds, in particular around water supplies) ***Responsibility:IWS/SWA/MOH/ District/Village/ CSSP / NGOs***	Increase adaptation during drought periods Improve health and sanitation Reduce contamination of water supply Reduce impact from inland flooding	Develop and register Village bylaws to include regulating developments around reservoir and catchment areas ImplementSWA(2016)10year investmentplantoimprovewatersupplynetworkto support allinlandfamilieswithout access todrinkingwater Include in budget programming design, andextensioncosts of water supply and procurement of rainwater harvesting system Utilise Hazard Map and Geomorphologist findings to inform location Utilise Sui o Nu'u monthly meetings to monitor progress of village programmes and responsibilities	CIM Strategy 2015 WaterandSanitationSectorPlan2012-2016 SWA 10 Year Investment Plan(2016) Community Engagement Plan Village Fono Act (Amendment Bill 2016)
Drainage systems to be improved in high risk areas of Safotu and Paia Roads	Continue to assess and upgrade culverts on main and 'access' roads in district and widen culverts in accordance with *Vulnerability Assessment of the Samoa Road Network* recommendations Implement national standards for culverts and drains to facilitate	Improves climate resilience of infrastructure resilience and rate of response and recovery to natural hazards and disasters Encourages coastal families to relocate inland	Utilise hazard maps and Geomorphologist Drainage Infrastructure Database to inform design Use existing information for guidance but not limited to: *"Vulnerability Assessment of the Samoa Road Network (2017)"; "Review of National Road Standards in Samoa (2016)"; "Samoa*	CIM Strategy 2015 NISP2011 KESO 5 TSP2014-2019 Goal 2 KO 1 Community Sector Plan

	the overland flow of storm water and reduce flooding Introduce culverts in wetland areas to improve tidal flow and fish passage in the wetland area Implement regular drainage inspection and maintenance Government to regulate developments and illegal rubbish dumping near and around waterways and drainage ***Responsibility:LTA/ MWTI/MNRE/MWCSD /Village/ Families***	Maintains lifeline access for all of Upolu Minimises national disaster recovery expenditure on damaged properties, public and private assets	*Code of Environmental Practice (2007)"* Undertake a Cost Benefit Analysis to weigh options for funding Utilise environmental and social safeguards including EIAs in screening and designing built environment infrastructure projects for Gagaifomauga district Include in budget programming CBA, design and construction Develop and register District/Village bylaws to include maintenance of drainages and illegal rubbish dumping into waterways	

Livelihood and Food Security	Best Solutions	Benefits	Guideline to assist with the implementation	Relevant Sector Plans, National Strategies &Policies
Food security: threatened by changes in climate and inadequate soil for planting	Promote agro-forestry and mixed planting including fruit trees species to reduce crop vulnerability to pests and diseases Implement the Integrated Pest Management Programme Implement Sustainable Land Management (SLM) practices Replanting of native forestry species of the upland forests to restore resilience and ecological function Conduct pilot site trials for climate ready plant varieties ***Responsibility: MAF/ MNRE/villages/CSSP***	Maintains natural ecosystem Builds resilience of community livelihood and food security Improve preparedness and readiness response to natural disasters	MAFtoprovidetrainings, awareness raising and support in supply of nursery trees, technology and infrastructure MAF to provide trainings and awareness oncropdiversificationto suit theprolongedimpactsof climatechange suchas droughtor rainyseasons MAF to assist in establishment of pilot sites to trial climate ready plant varieties 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	AgricultureSectorPlan2 016-2021 Community Engagement Plan Two Million Tree Strategy 2015-2020 Restoration Operational Plan 2016-2020

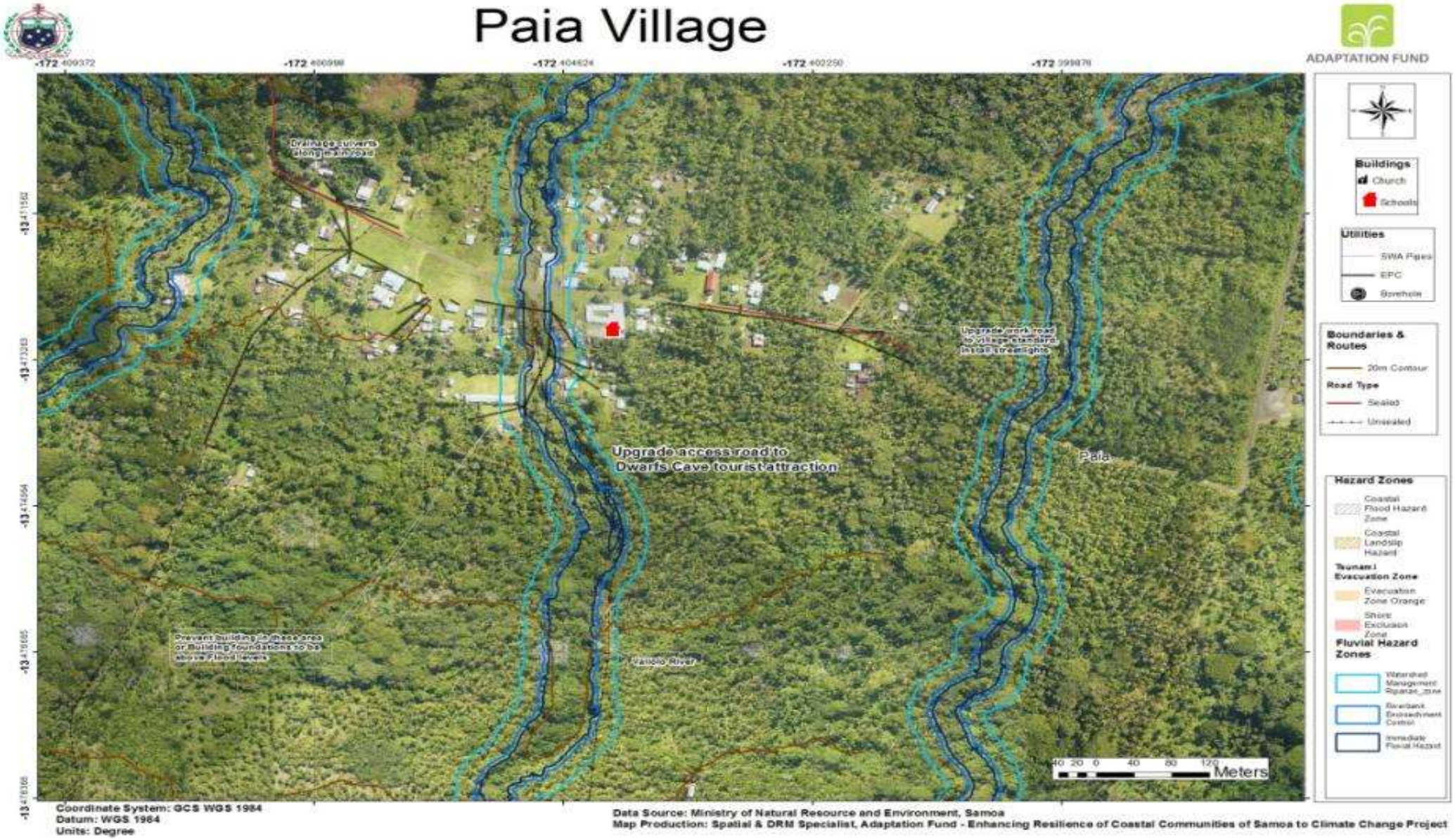
Governance	Best Solutions	Benefits	Guideline to assist with the implementation	Relevant Sector Plans, National Strategies & Policies
Strengthen the governance of natural resources and land use through bylaws	Update and/or develop bylaws to manage the use of natural resources, and to control land use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

Non-CR issues raised during consultations	Proposed Solution	Comments
Signage for tourism site (Dwarves Cave) ***Responsibility:Village/STA***	Village to seek other sources of funding	Not a CR issue. Relevant under STA programme
Streetlights for works road to Dwarves Cave ***Responsibility: Village Mayor/EPC***	Village mayor to request assistance from EPC	Not a CR issue. Relevant for consideration under EPC Community Service funding
Upgrade works road to Dwarves Cave ***Responsibility:Village/Families***	Upgrade works road to encourage more tourists and visitors to tourism/ historical site	Not a CR issue. Relevant under STA programmes


Exposed reservoir to debri and farming chemicals


Exposed reservoir and main waterlines

Paia Village Map



6. Samauga Village Interventions

CIM Plan Solutions

Infrastructure	Best Solutions	Benefits	Guideline to assist with the implementation	Relevant National, Sector Plans and Strategies
Village houses, churches, school and other village assets located in IFHZ	Relocate outside of high risk hazard zones when building/infrastructure requires replacement Investments within the hazard zones to adopt appropriate mitigation measures Conduct awareness raising campaign on flood resilient building practices and designs for at risk communities living in and near high risk hazard zones Design infrastructure to take into account the immediate hazard zones; for example, raise floor levels of houses in flood prone areas Develop landuse planning and development controls to restrict developments within high risk hazard zones such as CEHZ and CFHZ Families and village to limit building and developing on natural overland flow paths exacerbating	Minimise expenditure on damaged properties & personal assets Mitigate potential damage from coastal erosion and flooding accommodating the hazard Improve recovery to create more resilient villages Improve preparedness and readiness response to natural disasters Safer villages, houses and roads	Utilise hazard maps and Geomorphologist Drainage Infrastructure Database to inform designs Enforcement of National Building Code 2017 Encourage insurance of significant investments and assets within hazard zones Designation of the IFHZ, CEHZ and CFHZ as an “at risk” zone with appropriate landuse planning controls and restrictions	National Building Code CIM Strategy 2015

	inland flooding and storm water surges Where reclamations are proposed, Government and district to manage processes by requiring villagers to get the appropriate permits and consent ***Responsibility: Village / Families /MWTI/ MNRE***			
Upgrade inland access/ work roads to facilitate relocation of houses away from hazard zones	Assess and upgrade access roads as potential escape route and to encourage relocation away from hazard zones Upgrade to include adequate sized culverts to facilitate the overland flow of storm water exacerbating river overruns, and to reduce flooding onto main roads and village lands Implement regular drainage inspection and maintenance Village to restrict rubbish dumping into waterways and conduct regular clearance of rubbish behind homes Village to regulate developments near and around road shoulders of all access roads	Improve infrastructure resilience and rate of recovery Improve preparedness and readiness response to natural disasters Reduce impact from coastal erosion and 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 Include in budget programming CBA, design and construction Designation of the IFHZ, CEHZ and CFHZ as an "at risk" zone with appropriate landuse planning controls and restrictions Develop and register Village bylaws to include maintenance of drainages and illegal rubbish dumping into waterways Utilise Sui o Nu'u monthly meetings to monitor progress of village cleanup and awareness programmes	CIM Strategy 2015 NISP2011 KESO 5 TSP2014-2019 Goal 2 KO 1 Community Sector Plan Village Fono Act (Amendment Bill 2016)

	Enforce environmental safeguards where reclamations are proposed. Government and district to manage processes by requiring villagers to get the appropriate permits and consent ***Responsibility: LTA/ MWTI/ MNRE/ District/ Village /Families/CSSP***			
Landslips on North Coast Rd	Implement slope stabilization at most vulnerable landslide area (identified in *Assessment of the Samoa Road Network and Road Network Adaptation Strategy* Promote and support village and district tree planting on coastal areas around existing seawalls to strengthen seawalls and reduce erosion using native species such as talie, fetau, toaetc that are known to have greater resilience to natural disasters and changing climate conditions Depth and density of planting needs to be increased and a minimum vegetative distance of 200m as an effective wave barrier	Improve preparedness and readiness response to natural disasters Maintain lifeline access for all of Savaii Minimise national disaster recovery expenditure on damaged properties, public and private assets	Include in budget programming design, construction costs Utilize the environmental and social safeguards including EIAs in screening and designing infrastructure facilities Prepare EIA and detailed surveys: topographical, geotechnical and soils Designation of the CEHZ and CFHZ as an "at risk" zone with appropriate landuse planning controls and restrictions	CIM Strategy 2015 NISP2011 KESO 5 TSP2014-2019 Goal 2 KO 1 Community Sector Plan Vulnerability Assessment of the Samoa Road Network (2016) and Road Network Adaptation Strategy, LTA

	distance Where reclamations, sand mining or other major coastal works are proposed Government and village to manage processes by requiring villagers to get the appropriate permits and consent ***Responsibility: LTA/ MWTI/ MNRE/ Villages***			
Evacuation shelter (Samauga Primary School)	Relocate school away from CEHZ, CFHZ and tsunami red zone Retrofit school to DMO standards if approved as aevacuation shelter Develop Village Climate Disaster Management Plan in line with CDCRM findings ***Responsibility :MESC/ DMO/Village/ CSSP /MWTI***	Improve resilience of public infrastructure Improve preparedness and readiness responseto natural disasters Minimise expenditure on damaged properties & personal assets	Enforcement of National Building Code Utilise Hazard Maps and Geomorphologist findings to inform location and design	National DisasterManagementPlan2017-2021 NationalBuildingCode
Village pool (Vaiaisa) located in high risk hazard zones (coastal erosion and flooding from fluvial inundation, wave impacts and storm surges)	Village pool is currently in a poor state with an assessment needed for options to either rejuvenate or find a new site depending on the location of springs. Test the quality of the water source before any further investment on the pool is undertaken (eg: fence/repair works)	Increase adaptation during drought periods Improve health and sanitation Reduce contamination of water supply	Utilise Hazard Maps and Geomorphologist findings for planning purposes MNRE Water & Sanitation to conduct water testing and analysis of village pool prior to any intervention Update Village bylaws to include managing and maintaining village natural resources Utilise Sui o Nu'u monthly meetings to monitor progress of village programmes and responsibilities	CIM Strategy 2015 Water and Sanitation Sector Plan Community Engagement Plan Village Fono Act (Amendment Bill 2016)

	Responsibility: CSSP/ NGOs/MNRE/Villages			
Livelihood and Food Security	**Best Solutions**	**Benefits**	**Guideline to assist with the implementation**	**Relevant Sector Plans, National Strategies & Policies**
Access to fishing grounds	Review the condition to improve fishers access to sustainably use the lagoon/fishing grounds Continue to enforce village ban on use of dynamites, herbal poisons (avaniukini) and other unsustainable fishing methods ***Responsibility: MNRE, MAF /Village***	Increase adaptation during drought periods Improve health	MNRE DEC to provide technical advice to guide village planning and avoid environmental impacts of village suggested best solution (i.e. dynamite reef to open channel to fishing grounds)	NESP 2017-2021
Coral reefs, lagoons and inshore fishery	Collect and dispose of crown-of-thorns (alamea) on a regular basis to prevent major outbreaks Ban the use of dynamites, herbal poisons (avaniukini), chemicals and other unsustainable fishing methods. ***Responsibility: Village, fishing households, MAF-Fisheries / MNRE***	Protect coral reefs and inshore fisheries Protect marine biodiversity	MAF Fisheries to support implementation and provide technical backstopping and monitoring	Agriculture Sector Plan 2016-2021

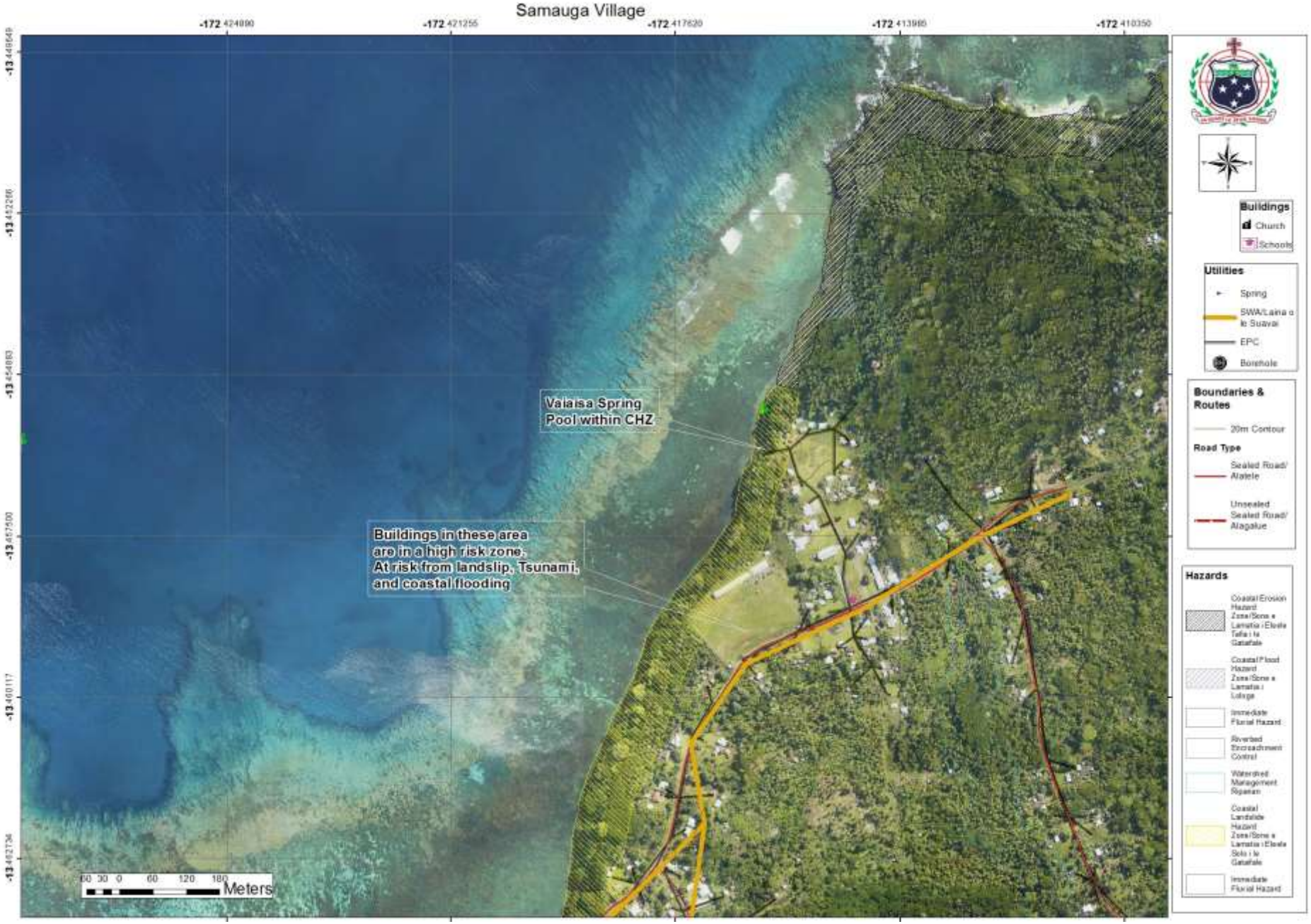
Governance	Best Solutions	Benefits	Guideline to assist with the implementation	Relevant Sector Plans, National Strategies & Policies
Strengthen the governance of natural resources and land use through Bylaws	Update and/or develop bylaws to manage the use of natural resources, and to control land use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


Village Pool 'Vai 'aisa


Newly installed waterlines


egg plant season

Samauga Village Map



7. Lefagaoalii Village Interventions

CIM Plan Solutions

Infrastructure	Best Solutions	Benefits	Guideline to assist with the implementation	Relevant National, Sector Plans and Strategies
Village houses, school, church and other village assets in immediate fluvial hazard zone	Relocate outside of high risk hazard zones when building/infrastructure requires replacement Investments within the hazard zones to adopt appropriate mitigation measures Develop landuse planning and development controls to restrict developments within high risk hazard zones such as CEHZ and CFHZ Design infrastructure appropriately to take into account the immediate hazard zones; for example, raise floor levels of houses in flood prone areas Conduct awareness raising campaign on flood resilient building practices and designs for at risk communities living in and near high risk hazard zones Families and village to limit building and developing on natural overland flow paths exacerbating inland flooding and storm	Minimise expenditure on damaged properties and personal assets Mitigatepotentialdamage fromcoastalerosion and floodingaccommodatingthehazard Safer villages, houses and roads	Planning provisions to be guided by the PUMA Act 2004 Enforcement of National Building Code 2017 Encourage insurance of significant investments and assets within hazard zones Utilise updated hazard maps and Geomorphologist Drainage Infrastructure Database to inform policy development and possible relocation of assets Designation of the IFHZ, CEHZ and CFHZ as an "at risk" zone with appropriate landuse planning controls and restrictions	CIM Strategy 2015 Draft NESP 2017-2021 NISP2011 KESO 5 TSP2014-2019 Goal 2 KO 1

	water surges Government and Village to liaise and collaborate on processes needed to protect riverbanks and coastline from land clearing and developments ***Responsibility:Village/ Families/MWTI/ MNRE/ MWCSD***			
Landslips on North Coast Rd affecting village pools (Vaga)	Implement slope stabilization at most vulnerable landslide area (identified in *Assessment of the Samoa Road Network and Road Network Adaptation Strategy* Promote and support village and district tree planting on coastal areas around existing seawalls to strengthen seawalls and reduce erosion using native species such as talie, fetau, toaetc that are known to have greater resilience to natural disasters and changing climate conditions Depth and density of planting needs to be increased and a minimum vegetative distance of 200m as an effective wave barrier distance Where reclamations, sand mining or other major coastal works are proposed Government and village to manage processes by requiring villagers	Improve preparedness and readiness response to natural disasters Maintain lifeline access for all of Savaii Minimise national disaster recovery expenditure on damaged properties, public and private assets	Include in budget programming design, construction costs Utilize the environmental and social safeguards including EIAs in screening and designing infrastructure facilities Prepare EIA and detailed surveys: topographical, geotechnical and soils Designation of the CEHZ and CFHZ as an "at risk" zone with appropriate landuse planning controls and restrictions	CIM Strategy 2015 NISP2011 KESO 5 TSP2014-2019 Goal 2 KO 1 Community Sector Plan Vulnerability Assessment of the Samoa Road Network (2016) and Road Network Adaptation Strategy, LTA

	to get the appropriate permits and consent ***Responsibility: LTA/ MWTI/ MNRE/ Villages***			
Reticulated water supply, quality and network to be improved	Extendthewatersupplytofamiliesinlandwithnoaccesstowater Procure rainwater harvesting systems for vulnerable families as a short term solution Procure rainwater harvesting systems for identified evacuation shelter(s) District and village to support SWA water rationing programmes during times of	Increase adaptation during drought periods Improveinfrastructureresilience 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 ImplementSWA(2016) 10year investmentplantoimprovewater supplynetwork to support allinlandfamilieswithout access todrinkingwater Include in budget programming design, andextension costs of water supply and procurement of rainwater harvesting systems Utilise hazard maps and Geomorphologist findings to inform designs	CIM Strategy 2015 WaterandSanitationSectorPlan SWA 10 Year Investment Plan(2016) Community Engagement Plan Health Sector Plan Community Sector Plan

	drought 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/ IWS/MWCSD/ MNRE / District/ Village/ CSSP***		Utilise Sui o Nu'u monthly meetings to monitor progress of village programmes and responsibilities	
Livelihood and Food Security	**Best Solutions**	**Benefits**	**Guideline to assist with the implementation**	**Relevant Sector Plans, National Strategies & Policies**
Access to fishing grounds	Improve conditions for fishers to use the lagoon and increase access to fishing grounds Continue to enforce village ban on use of dynamites, herbal poisons (avaniukini) and other unsustainable fishing methods ***Responsibility: MNRE, Village***	Increase adaptation during drought periods Improve health	MNRE DEC to provide technical advice to guide village planning and avoid environmental impacts of village suggested best solution (i.e. dynamite reef to open channel to fishing grounds)	NESP 2017-2021
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	Strengthen implementation of all national sector plans Strengthen	Develop and register district/village bylaw to protect all district/ village and government assets, environment, livelihood and food	Village Fono Act (Amendment Bill 2016) Community

	drainage maintenance, rubbish dumping, sand mining, stray animals and unregulated developments in water catchment areas and near boreholes. Collaborate with Sui o Nuu to monitor the use of and impact on natural resources Facilitate continuous awareness raising programs with the villages ***Responsibility: MWCSD /Village***	monitoring of all National Acts, Regulation, Strategies, Plans and Policies Improve ability of communities to adapt, respond and recover quickly in the long term Improve accountability and enabling environment of communities	security especially activities affecting water catchment areas and coastline Utilise Sui o Nu'u monthly meetings to monitor progress of district/village bylaws	Sector Plan Community Development Plan 2016-2021

Non-CR issues raised during consultations	**Proposed Solution**	**Comments**
Secondary School for Lefagaoalii ***Responsibility:Village/MESC***	Investigate possibility of village having their own secondary school	Not a CR issue. Relevant under MESC programme

Merremia vine: invasive species threatening upland ecosystems of district

Lefagaoalii Village Map

8. Matavaia Safune Village Interventions

CIM Plan Solutions

Infrastructure	Best Solutions	Benefits	Guideline to assist with the implementation	Relevant National, Sector Plans and Strategies
Village houses, Churches, School and private residences located in high risk hazard zones	Relocate outside of high risk hazard zones when building/ infrastructure requires replacement Investments within the hazard zones to adopt appropriate mitigation measures Conduct awareness raising campaign on flood resilient building practices and designs for at risk communities living in and near high risk hazard zones Design infrastructure to take into account the immediate hazard zones; for example, raise floor levels of houses in flood prone areas Develop landuse planning and development controls to restrict developments within high risk hazard zones such as CEHZ and CFHZ Families and village to limit building and developing on natural overland flow paths exacerbating inland flooding and storm water surges ***Responsibility:Village / Families /MWTI/ MNRE/ MWCSD***	Minimise expenditure on damaged properties and personal assets Safer villages, houses and roads Increases awareness for insurance	Planning provisions to be guided by the Planning and Urban Management Act 2004 Enforcement of National Building Code 2017 Encourage insurance of significant investments and assets within hazard zones Utilise hazard maps and Geomorphologist Drainage Infrastructure Database to determine safe areas for relocation purposes Designation of the IFHZ, CEHZ and CFHZ as an "at risk" zone with appropriate landuse planning controls and restrictions	CIM Strategy 2015 [Draft] Samoa Relocation Strategy 2016
Drainage systems to be	Continue to assess and upgrade culverts	Improves climate resilience of	Utilise hazard maps and Geomorphologist	Draft NESP2017-2021

improved in high risk areas	on main and 'access' roads in district and widen culverts in accordance with *Vulnerability Assessment of the Samoa Road Network* recommendations Implement national standards for culverts and drains to facilitate the overland flow of storm water and reduce flooding Introduceculverts in wetland areas toimprovetidalflowandfishpassageinthewetlandarea Implement regular drainage inspection and maintenance Government to regulate developments and illegal rubbish dumping near and around waterways and drainage ***Responsibility:LTA/ MWTI/MNRE/MWCSD /Village/ Families***	infrastructure resilience and rate of response and recovery to natural hazards and disasters Encourages coastal families to relocate inland Maintains lifeline access for all of Upolu Minimises national disaster recovery expenditure on damaged properties, public and private assets	Drainage Infrastructure Database to inform design Use existing information for guidance but not limited to: *"Vulnerability Assessment of the Samoa Road Network (2017)"; "Review of National Road Standards in Samoa (2016)"; "Samoa Code of Environmental Practice (2007)"* Undertake a Cost Benefit Analysis to weigh options for funding Utilise environmental and social safeguards including EIAs in screening and designing built environment infrastructure projects for Gagaifomauga 2 district Include in budget programming CBA, design and construction Develop and register District/Village bylaws to include maintenance of drainages and illegal rubbish dumping into waterways	CIM Strategy 2015 NISP2011 KESO 5 TSP2014-2019 Goal 2 KO 1 Community Sector Plan
Reticulated water supply, quality and network to be improved	Extendthewatersupplytofamiliesinlandwithnoaccesstowater Procure rainwater harvesting systems for vulnerable families as a short term solution Procure rainwater harvesting systems for identified evacuation shelter(s)	Increase adaptation during drought periods Improveinfrastructureresilience 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 ImplementSWA(2016)10 year investmentplantoimprovewater supplynetwork to support allinlandfamilieswithout access todrinkingwater Include in budget programming design, andextension costs of water supply and procurement of rainwater	CIM Strategy 2015 WaterandSanitationSectorPlan SWA 10 Year Investment Plan(2016) Community Engagement Plan Health Sector Plan Community Sector Plan

	District and village to support SWA water rationing programmes during times of drought 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 / MWCSP/ MNRE / District/ Village/ CSSP***		harvesting systems Utilise hazard maps and Geomorphologist findings to inform designs Utilise Sui o Nu'u monthly meetings to monitor progress of village programmes and responsibilities	
Seawall to protect Mata o le Alelo village pool from saltwater intrusion	Construct protective seawall around village pool ***Responsibility: MNRE, Village /CSSP/ MWTI***	Increase adaptation during drought periods Improve health and sanitation	PrepareEIAtoassess viability of seawall to protect pool Utilise Hazard Maps and Geomorphologist findings to inform location	WaterandSanitationSectorPlan2012-2016 Community Engagement Plan
Natural Resources and Environment	**Best Solutions**	**Benefits**	**Guideline to assist with the implementation**	**Relevant Sector Plans, National Strategies & Policies**
Management and Conservation of terrestrial and marine habitats-	Protect ridge-top habitats and forests from indiscriminate cultivate and other developments Improve road/track to Matavanu site and install sign boards for village pool with cultural significance Plant native species along coastal areas to strengthen existing seawall and to reduce coastal erosion and landslips; Talie, Fetau,	Protects and enhance local species diversity Sustains ecosystem services and functions Reduce contamination of water supply Reduce impact from inland flooding	MNRE DEC to continue to provide technical assistance and backstopping for wetland and mangrove conservation programmes MAF to continue to support community-based fisheries reserve	Draft NESP 2017-2021 Community Engagement Plan Agriculture Sector Plan 2016-2021

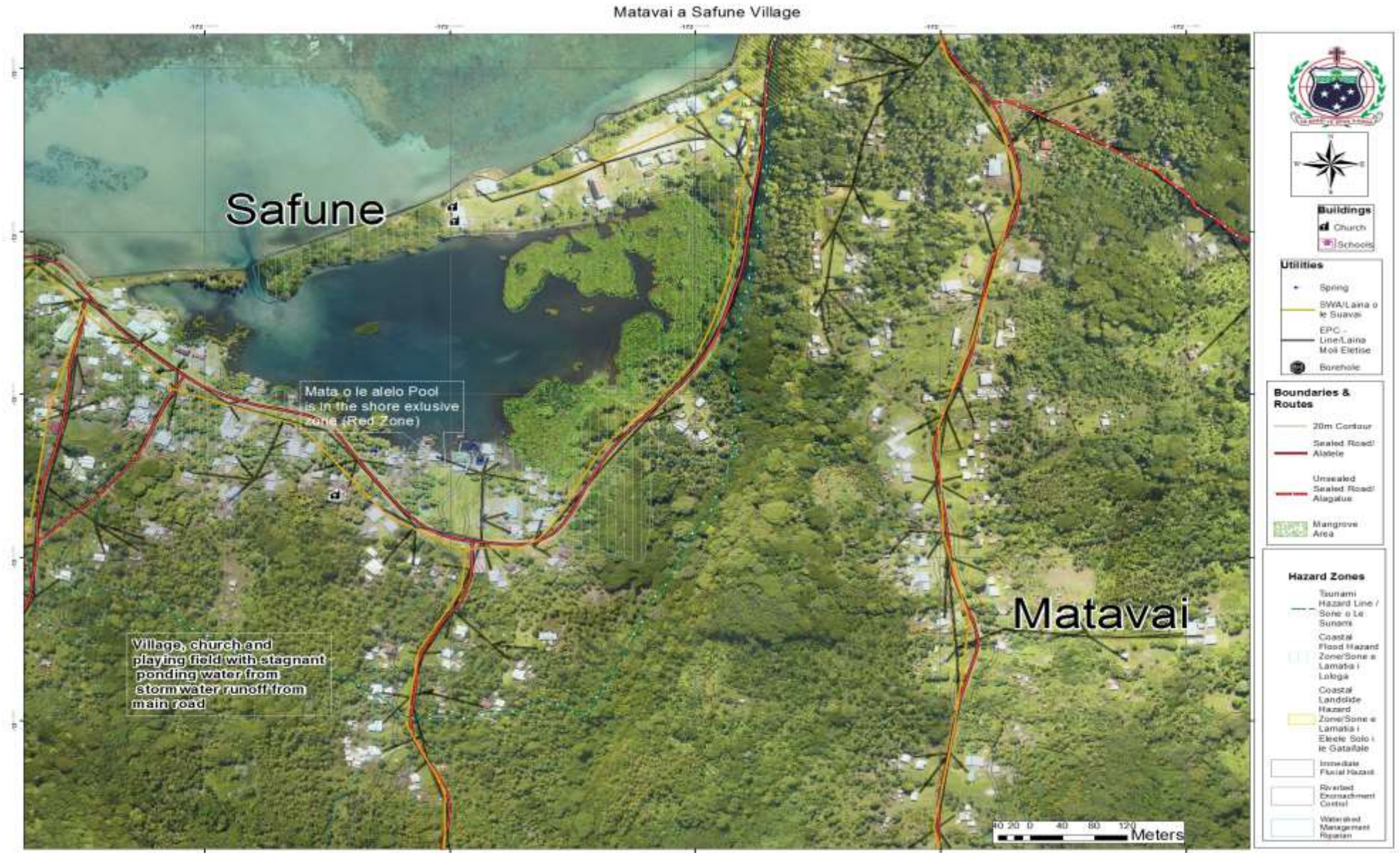
	Toa, Togatogo are known to have greater resilience to natural disasters and changing climate conditions Depth and density of planting to be increased and a minimum vegetative distance of 200m Discourage large scale agricultural ventures and other developments that threaten catchment areas, upland native forests and sensitive habitats Village to providefencingfordomesticanimals ***Responsibility: MNRE /MAF/ Village /CSSP/ UNDP-GEF SGP***			
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 developments in water catchment areas and near boreholes. Collaborate with Sui o Nuu to monitor the use of and impact on natural resources Facilitate continuous awareness raising programs with the villages	Strengthen implementation of all national sector plans Strengthen monitoring of all National Acts, Regulation, Strategies, Plans and Policies Improve ability of communities to adapt, respond and recover quickly in the long term Improve accountability and enabling environment of communities	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 Utilise Sui o Nu'u monthly meetings to monitor progress of district/village bylaws	Village Fono Act (Amendment Bill 2016) Community Sector Plan Community Development Plan 2016-2021

	Responsibility: MWCSD /Village			


Village Wetland


Exposed waterlines vulnerable to coastal hazards and roaming pigs

Matavai Village Map



9.Faletagaloa Village Interventions

CIM Plan Solutions

Infrastructure	Best Solutions	Benefits	Guideline to assist with the implementation	Relevant National, Sector Plans and Strategies
Village houses, school and other village assets located in IFHZ	Relocate outside of high risk hazard zones when building/infrastructure requires replacement Investments within the hazard zones to adopt appropriate mitigation measures Conduct awareness raising campaign on flood resilient building practices and designs for at risk communities living in and near high risk hazard zones Design infrastructure to take into account the immediate hazard zones; for example, raise floor levels of houses in flood prone areas Develop landuse planning and development controls to restrict developments within high risk hazard zones such as CEHZ and CFHZ Families and village to limit building and developing on natural overland flow paths exacerbating inland flooding and storm water surges Where reclamations are proposed, Government and district to manage processes by requiring villagers to get the	Minimise expenditure on damaged properties & personal assets Mitigate potential damage from coastal erosion and flooding accommodating the hazard Improve recovery to create more resilient villages Improve preparedness and readiness response to natural disasters Safer villages, houses and roads	Utilise hazard maps and Geomorphologist Drainage Infrastructure Database to inform designs Enforcement of National Building Code 2017 Encourage insurance of significant investments and assets within hazard zones Designation of the IFHZ, CEHZ and CFHZ as an “at risk” zone with appropriate landuse planning controls and restrictions	National Building Code CIM Strategy 2015

	appropriate permits and consent ***Responsibility: Village / Families /MWTI/ MNRE***			
Drainage systems to be improved in high risk areas Of the North Coast Road exacerbating inland flooding	Continue to assess and upgrade culverts on main and 'access' roads in district and widen culverts in accordance with *Vulnerability Assessment of the Samoa Road Network* recommendations Implement national standards for culverts and drains to facilitate the overland flow of storm water and reduce flooding Introduceculverts in wetland areas toimprovetidalflowandfishpassageinthewetlandarea Implement regular drainage inspection and maintenance Government to regulate developments and illegal rubbish dumping near and around waterways and drainage ***Responsibility:LTA/ MWTI/MNRE/MWCSD /Village/ Families***	Improves climate resilience of infrastructure resilience and rate of response and recovery to natural hazards and disasters Encourages coastal families to relocate inland Maintains lifeline access for all of Upolu Minimises national disaster recovery expenditure on damaged properties, public and private assets	Utilise hazard maps and Geomorphologist Drainage Infrastructure Database to inform design Use existing information for guidance but not limited to: *"Vulnerability Assessment of the Samoa Road Network (2017)"; "Review of National Road Standards in Samoa (2016)"; "Samoa Code of Environmental Practice (2007)"* Undertake a Cost Benefit Analysis to weigh options for funding Utilise environmental and social safeguards including EIAs in screening and designing built environment infrastructure projects Include in budget programming CBA, design and construction Develop and register District/Village bylaws to include maintenance of drainages and illegal rubbish dumping into waterways	CIM Strategy 2015 NISP2011 KESO 5 TSP2014-2019 Goal 2 KO 1 Community Sector Plan

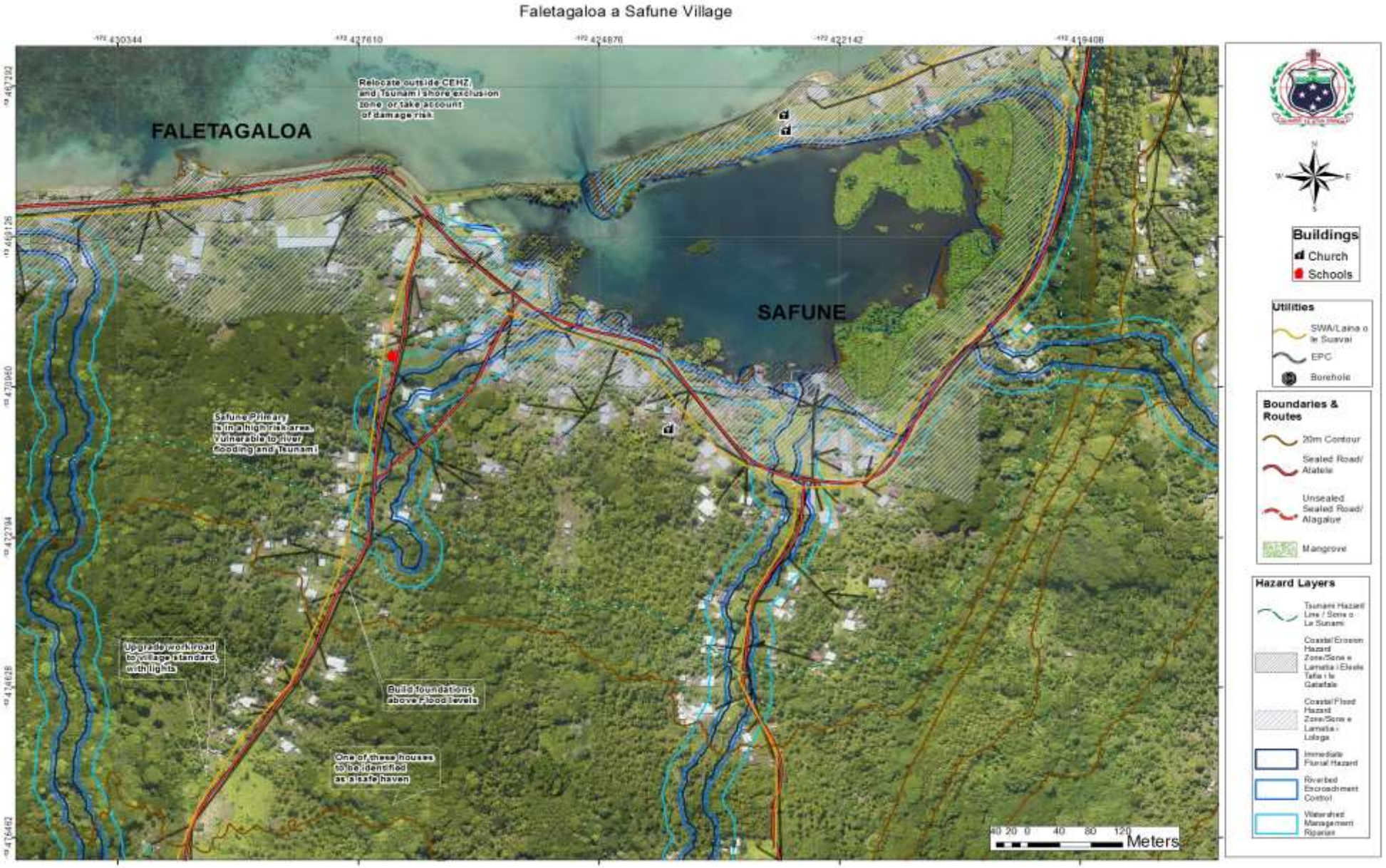
Reticulated water supply, quality and network to be improved	Extendthewatersupplytofamiliesinlandwithnoaccesstowater Procure rainwater harvesting systems for vulnerable families as a short term solution Procure rainwater harvesting systems for identified evacuation shelter(s) District and village to support SWA water rationing programmes during times of drought 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 / MWCSP/ MNRE / District/ Village/ CSSP***	Increase adaptation during drought periods Improveinfrastructureresilience 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 ImplementSWA(2016)10yearinvestmentplantoimprovewater supplynetwork to support allinlandfamilieswithout access todrinkingwater Include in budget programming design, andextension costs of water supply and procurement of rainwater harvesting systems Utilise hazard maps and Geomorphologist findings to inform designs Utilise Sui o Nu'u monthly meetings to monitor progress of village programmes and responsibilities	CIM Strategy 2015 WaterandSanitationSectorPlan SWA 10 Year Investment Plan(2016) Community Engagement Plan Health Sector Plan Community Sector Plan
Natural Resources and Environment	**Best Solutions**	**Benefits**	**Guideline to assist with the implementation**	**Relevant Sector Plans, National Strategies & Policies**
Soft coastal protection measures needed for most vulnerable areas	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	Soft coastal protection measures will support and strengthen existing and new infrastructure along the coast	Develop an integrated land management plan for Safata district with the aim of reducing any unnecessary actions that may adversely affect the natural habitats and ecosystems of the area	NESP 2017-2021 Two Million Tree Planting Strategy 2015-2020

	resilience to natural disasters and changing climate conditions To act as an effective wave barrier, a minimum distance of 200m of vegetation is needed ***Responsibility: MNRE Villages***	Reduce impact from coastal erosion and natural disasters Implements an Ecosystem Based Approach	MAF to assist in establishment of pilot sites to trial climate ready plant varieties MNRE Forestry, DEC and MAF to collaborate on supply of climate resilient crops	Restoration Operational Plan 2016-2020 Forestry Management Act 2011
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 developments in water catchment areas and near boreholes. Collaborate with Sui o Nuu to monitor the use of and impact on natural resources Facilitate continuous awareness raising programs with the villages Obtain necessary permits required by law before developments take place ***Responsibility: MWCSD /MNRE /Village***	Strengthen implementation of all national sector plans Strengthen monitoring of all National Acts, Regulation, Strategies, Plans and Policies Improve ability of communities to adapt, respond and recover quickly in the long term Improve accountability and enabling environment of communities	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 Utilise Sui o Nu'u monthly meetings to monitor progress of district/village bylaws	Village Fono Act (Amendment Bill 2016) Community Sector Plan Community Development Plan 2016-2021


Faletagaloa Primary school building susceptible to flooding


Blocked drain (main road cross culverts)

Faletagaloa Village Map



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

10. Fatuvalu Village Interventions

CIM Plan Solutions

Infrastructure	Best Solutions	Benefits	Guideline to assist with the implementation	Relevant National, Sector Plans and Strategies
Village houses, Churches, School and private residences located in high risk hazard zones	Relocate outside of high risk hazard zones when building/infrastructure requires replacement Investments within the hazard zones to adopt appropriate mitigation measures Conduct awareness raising campaign on flood resilient building practices and designs for at risk communities living in and near high risk hazard zones Design infrastructure to take into account the immediate hazard zones; for example, raise floor levels of houses in flood prone areas Develop landuse planning and development controls to restrict developments within high risk hazard zones such as CEHZ and CFHZ Families and village to limit building and developing on natural overland flow paths exacerbating inland flooding and storm water surges ***Responsibility:Village / Families /MWTI/ MNRE/ MWCSD***	Minimise expenditure on damaged properties and personal assets Safer villages, houses and roads Increases awareness for insurance	Planning provisions to be guided by the Planning and Urban Management Act 2004 Enforcement of National Building Code 2017 Encourage insurance of significant investments and assets within hazard zones Utilise hazard maps and Geomorphologist Drainage Infrastructure Database to determine safe areas for relocation purposes Designation of the IFHZ, CEHZ and CFHZ as an “at risk” zone with appropriate landuse planning controls and restrictions	CIM Strategy 2015 Draft NESP 2017-2021 NISP2011 KESO 5 TSP2014-2019 Goal 2 KO 1 [Draft] Samoa Relocation Strategy 2016

Reticulated water supply, quality and network to be improved	Extendthewatersupplytofamiliesinlandwithnoaccesstowater Procure rainwater harvesting systems for vulnerable families as a short term solution Village to support SWA water rationing programmes during times of drought Villagers to support SWA efforts at protection and conservation of boreholes in district ***Responsibility:SWA/ MNRE / District/ Village/ CSSP***	Increase adaptation during drought periods Improveinfrastructureresilience 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 ImplementSWA(2016)10yearinvestmentplantoimprovewater supplynetwork to support allinlandfamilieswithout access todrinkingwater Include in budget programming design, andextension costs of water supply and procurement of rainwater harvesting systems Utilise hazard maps and Geomorphologist findings for planning purposes Utilise Sui o Nu'u monthly meetings to monitor progress of village programmes and responsibilities	CIM Strategy 2015 WaterandSanitationSectorPlan SWA 10 Year Investment Plan(2016) Community Engagement Plan Health Sector Plan Village Fono Act(Amendment Bill 2016)
Evacuation Shelter and a connected escape route needed for emergency preparedness and response	Assess and/or select location for either an existing or new evacuation shelter, including safe access routes to the shelter Conduct evacuationshelterassessment and mark on CIM Plan hazard maps Develop aVillageClimateDisasterManagementPlan(VCDMP) Conduct trainings for People With Disabilities (PWDs) on emergency and disaster response strategies Implement CDCRMprogram Install relevant signs to	Improve resilience of public infrastructure Improve preparedness and readiness response to natural disasters	Enforcement of National Building Code 2017 Utilise hazard maps and Geomorphologist findings to inform location and designs	National DisasterManagement Plan2017-2021 NationalBuildingCode National Policy for People with Disabilities NISP2011 KESO 5

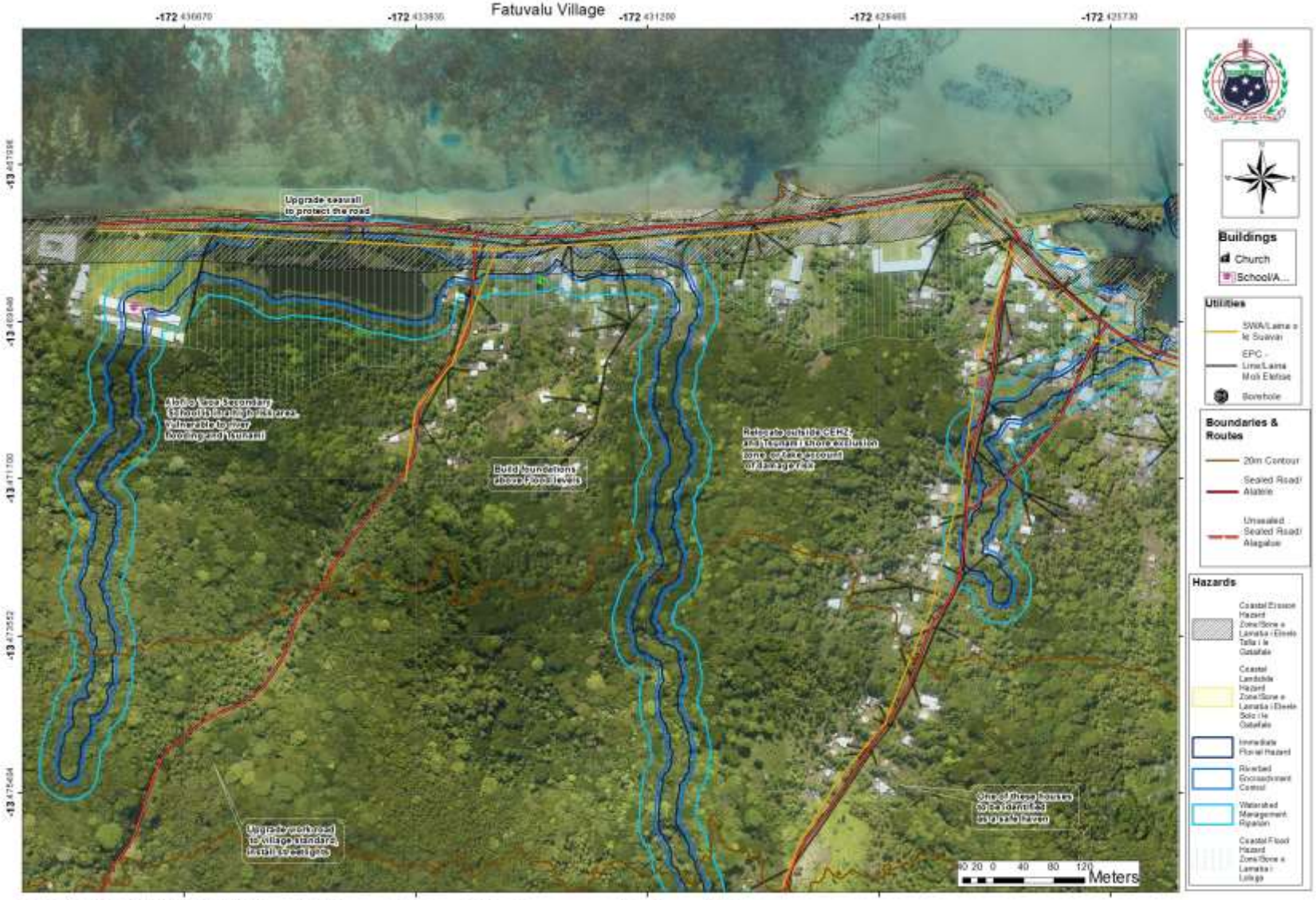
	guide the community on emergency response procedures and to locations of evacuation shelters Where no suitable houses exist, build emergency shelter(s) outside the hazard zones Retrofit identified and approved schools or churches outside hazard zones and designate as evacuation shelter ***Responsibility: MNRE /DMO/ MWTI/Village /CSSP/Council of Churches/MWCSD***			
Natural Resources and Environment	**Best Solutions**	**Benefits**	**Guideline to assist with the implementation**	**Relevant Sector Plans, National Strategies & Policies**
Village pool (Ana) located in high risk hazard zones (coastal erosion and flooding from fluvial inundation, wave impacts and storm surges)	Village pool is currently in a poor state with an assessment needed for options to either rejuvenate or find a new site depending on the location of springs. Test the quality of the water source before any further investment on the pool is undertaken (eg: fence/repair works) ***Responsibility: CSSP/ NGOs/MNRE/Villages***	Increase adaptation during drought periods Improve health and sanitation Reduce contamination of water supply	Utilise Hazard Maps and Geomorphologist findings for planning purposes MNRE Water & Sanitation to conduct water testing and analysis of village pool prior to any intervention Update Village bylaws to include managing and maintaining village natural resources Utilise Sui o Nu'u monthly meetings to monitor progress of village programmes and responsibilities	CIM Strategy 2015 Water and Sanitation Sector Plan Community Engagement Plan Village Fono Act (Amendment Bill 2016)
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	Strengthen implementation of all national sector plans	Develop and register district/village bylaw to protect all district/ village and government assets, environment, livelihood and	Village Fono Act (Amendment Bill 2016)

	impacts; such as drainage maintenance, rubbish dumping, sand mining, stray animals and unregulated developments in water catchment areas and near boreholes. Collaborate with Sui o Nuu to monitor the use of and impact on natural resources Facilitate continuous awareness raising programs with the villages ***Responsibility: MWCSD /Village***	Strengthen monitoring of all National Acts, Regulation, Strategies, Plans and Policies Improve ability of communities to adapt, respond and recover quickly in the long term Improve accountability and enabling environment of communities	food security especially activities affecting water catchment areas and coastline Utilise Sui o Nu'u monthly meetings to monitor progress of district/village bylaws	Community Sector Plan Community Development Plan 2016-2021


Village Pool filled with algae


Village Committee House in the Coastal Flood Hazard Zone

Fatuvalu Village Map



Coordinate System: GCS WGS 1984
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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

Savaii AF Districts Overview Map of Coastal Inundation Zones