

Community Integrated Management Plan

Gagaifomauga III - 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.

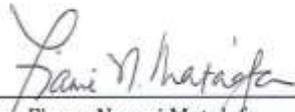
We wish to acknowledge the significant contributions of our District and Village communities and our key government partner stakeholders and implementing agencies, in particular:

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. Fiamē Naomi Mata'afa
 Minister of Natural Resources and Environment

Participants in the Plan:

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

This Plan incorporates the Constituency of Gagaifomauga III (Aopo, Sasina, Letui and Fagae'e)

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

Date of Signing 15 June 2018

Representatives

Signature

Aopo Village

- Pa'o Lilia
- Vaitogi Konelio
- Leoia Tauai
- Samaga Lemi
- Umamoa Lefu

Pa'o Lilia

Vaitogi Konelio

Leoia Tauai

SAMAGA LEMI

Umamoa Lefu

Sasina Village

- Leasi Sau
- Fetoa Alapati
- Ata Lealofi

Leasi Sau

FETOA - ALAPATI

Ata

Letui Village

- Afitu Arona
- Muai Alatimu
- Sufia Fiti
- Sufia Sa

Afitu Arona

Muai Alatimu

Sufia Fiti

S. Sa

Fagae'e Village

- Tenisia Ioane Taua
- Pepe Sene
- Lepule Maselino
- Aunai Uelese
- Faatoatoa Faoso

Tenisia I Sane

Pepe Sene

Lepule M.

Aunai Uelese

Faatoatoa Faoso

The Government of Samoa adopts the Community Integrated Management Plan for the Alii and Faipule of Gagaifomauga III (Aopo, Sasina, Letui and Fagae'e) as a Management Plan for the Implementation of the Community Integrated Management Strategy (CIMS)

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



Ulu Bismarck Crawley
CHIEF EXECUTIVE OFFICER, MNRE

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Acronyms:

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

Glossary

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

the CIM Plan the term susceptibility is equivalent to the term vulnerability as the Samoan phrase for both susceptibility and vulnerability is the same.

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

1. Introduction to the CIM Plan

1.1 The Strategic Vision

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

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

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

1.2 The Aim of the CIM Plan

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

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

1. Enhance awareness of hazard risks from the ridge to reef;
2. Improve climate resilience planning and development
3. Better adapt, respond and recover from natural disasters and other extreme events

1.3 The Structure of the Plan

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

- **Plan Development**, which describes the process undertaken to prepare the CIM Plan in conjunction with representatives of the Communities involved, the Government and other stakeholders with interests in the Plan area.
- **Implementation Guidelines**, which describes the Plans and Actions recommended as outcomes of the process, together with the partner responsible for implementing these outcomes.

2. Implementation Guidelines

2.1 Purpose of the Implementation Guidelines (IG)

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

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

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

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

2.2 Funding options to support CIM Plan Implementation:

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

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

2.3 Duration of the Plan:

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

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

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

2. Once implemented, the solutions will be monitored on a bi-annual basis for progress and updated every five years in accordance with the Strategy for the Development of Samoa;
3. Detailed implementation of the solution will determine the monitoring requirements and Key Performance Indicators (KPI).

3. Description of Gagaifomauga III District Environment

3.1 Physical and Natural Resource Setting

Gagaifomauga III is made up of the four villages Sasina, Letui Fagae'e and Aopo located along the northern end of Savaii Islands.

The coastline for Gagaifomauga III is made up of over 180km of rocky lava coastline from Sasina village to Asau village on the west and a relatively large bay from Lefagaoalii Samauga to Sasina on the east. The rocky coastline has small fishing breaks in Aveavai (for Aopo) and Anini (for Letui) which are both inland villages. The Sasina and Fagae'e reef is part of the wider fringing reef within the bay. The inner lagoon consists of lava rocks and sand while the mid to outer lagoon has very high coral coverage (60-80%) for Fagae'e and 50%-60%) for Sasina. The coral coverage is dominated by a diversity of species such *Acropora*, *Porites*, *Pocillopora* *Montipora* and *Favites*. The reef is also very unusual with large freshwater springs that open underwater through the reef surface. Creating lively coral and deeper hallows. The reef appears to have had a good regrowth since the damage from the strong Cyclone Ofa and Val waves of the early 1990's.

Despite the high coral coverage, the area is absent of large fish and other edible fisheries, except small fish and crown of thorns. Some coral bleaching was also evident in the area. The Sasina fishery reserve is mainly set up for the clam nursery therefore it is located mostly in the sandy part of the inner reef while the high coral coverage areas are mostly outside the reserve. Extending the reserve closer and possibly including the outer reef would be ideal. The healthy condition of the coral reefs is good for providing added protection for the coastal area from erosion. The coastal vegetation along the two villages of Fagae'e and Sasina is now only coconut trees as most of the previous littoral vegetation had been damaged by the cyclones.

The coastal villages, all on the eastern edge of the district, are low lying and contain a number of wetland ponds. One pond (approximately 300m in width) separates Sasina and Fagae'e villages. The pond levels rise during high tide and heavy rain. Apart from floods caused by the sea, overflow from the ponds is the main cause of flooding for the villages. There are several rivers in the district, the Vaialia/Sasina River branches off its course and causes flooding for inland houses in Sasina and Fagae'e. This river flows down through an incised gully and crosses the main road at a ford in Sasina. The district has 2 main sources of water supply, inland villages Letui and A'opo are fed from a bore and pump in Letui; and Fagae'e and Sasina are serviced by a bore and pump from Matavai, a neighbouring village.

Sasina, the heart of the district contains Tuugaleituulemaana, a historically significant district pool, which is protected by a deteriorating sea wall. The other two freshwater spring pools in the district are located in Fagae'e, one along the old coastline (30m from the existing coast). Fagae'e's second village pool is south behind the LMS church and houses. The 7m deep pool is spring fed and located in a cave. The pool's water often contains sediment from storm water. Coastal planting is sparse and generally consists of grassed verges/footpaths and coconut trees.

The Gagaifomauga III district has one of the largest land holdings in Samoa, includes a variety of vegetation types such as *Montane forest*, *lowland rainforest*, *volcanic succession*, and *coastal marshland*. The extensive lowland rainforest rich in timber trees such as ifilele and tava led to the area being once the main location of the native logging operations of the 1970's -1990s. Now, most of the lowland forests up to around 500m elevation have been logged. Although much of the lowland forest has been logged, the present mixed forest is dominated by ifilele *Instia bijuga* tava *Pometia Pinata*, mamalava *Planchonella samoenses*, magau *Caruga Pacifica*, asi *Syzigium innophyloides*, along with secondary forest trees such as tavai *Rhus Taitensis* and invasive species such as tamaligi *Falcataria moluccana*, pulu vao *Funtumia elastica*; pulu mamoe *Castilla elastic*. The fue lautetele *Merremia sp* dominates most of the open forest areas.

The cleared forest and access roads have taro and coconut plantations growing together with mixed disturbed and lowland forest species. Aopo's logged forest between 300-600m elevations has tamaligi trees dominating it with vines. Sasina's access road is a mixture of non-native trees such as *Acacia* spp, mangoes, and tamaligi, ulu trees and community forest. The upland and montane forest is still intact with the only possible impacts coming from cyclone damage and the recent cleared access road to Mauga Mu which is bringing invasive species as well.

The Gagaifomauga III district is rich in biodiversity with previous ecological surveys of Samoa recording most of the native birds present in the area. Manumea (tooth billed-pigeon) were also heard during the CIM Plan field site assessment within the Letui access road. The invasive myna and red vented bulbul birds were found in large

numbers close to human settlements. Inland Aopo has the only track to Mt Silisili; the highest peak in Samoa as well as Mauga Mu, which is a volcanic eruption in the early 1900's. The ash plain has unique vegetation surrounding the crater.

The volcanic succession vegetation is located mostly on the coastal side of the main road is a mixture of shrubs, vines and forest trees. The Sasina coastal marshland is now dominated by vaoutuutu *Eleiocharis dulchis* which covers over 70% of the wetland. The vao utu'utu has taken over the wetland since the natural drainage to the sea was blocked when the main road was upgraded.

Conserving this very extensive forests of Gagaifomauga III which includes the volcanic succession, lowland forest and montane forests is important as a carbon sink for global climate resilience efforts.

The invasive trees and shrubs are present along the logging access roads throughout the district. Within the Aopo logged forest that reaches up to around 600m, tamaligi, *Falcataria moluccana* trees have taken over the forest cover, while Sasina access road is dominated by different species at different portions of the road. Closer to the village is dominated by *Acacia spp*, while further inland, sections are dominated by mango trees, ulu trees, and sporadic tamaligi trees *Falcataria moluccana* along the previously logged areas and along the streambed.

Noted along the access roads for Aopo are the vines and shrubs that must have been brought into the area during the road construction are now spreading. These can turn into invasive species in specific areas, thus will need to be eliminated before they pose threat to the native vegetation.

Myna birds and red-vented bulbuls were found in abundance along the whole northern Savaii especially closer to settlements.

3.2 Social and Economic Setting

The Gagaifomauga III District had a population of 1,445 persons in 2016, 200 from Fagae'e, 568 from Sasina, 294 from Letui and 383 from A'opo. Development is mostly concentrated in a linear manner on the southern side of the main coast road in Fagae'e and Sasina and clustered in villages A'opo and Letui on either side of the road.

Domestic family plantations can be found mostly around family homes, or lining the access roads but not more than 2-300m from the road. Further back from the access roads is still covered by forest. Away from the coast, Letui and A'opo settlements, and plantations dominate the area. These are located on both sides of the main road. The road climbs inland with a number of work roads branching off it. Letui has vehicle access to the coast however it's not used regularly by vehicles and the track is overgrown. A'opo only has pedestrian access to the coast. Further inland on the steeper land some taro plantations are affecting land stability. Land-use practices, such as deforestation, particularly in Letui, and agriculture, are increasing both the rate of erosion and the supply of sediment to the coast. A substantial amount of trees in and around Letui have been cut and logged at the local timber mill. These practices affect coastal processes including the incidence and degree of flooding in coastal areas, the rates of sediment accretion along the coast and the impact on the health of the wetland and reef systems as fine sediments suffocate coral systems.

A small portion of land on the boundary of Sasina and Fagae'e has been reclaimed and is proposed to be used for tourist accommodation. Similarly reclamation has also occurred on the edge of the main pond. Approximately 70% of Sasina houses and buildings are located within the Coastal Flood Hazard Zone (CFHZ) compared to 85% of Fagae'e.

The road is considered an important part of the district's infrastructure. The main road is sealed and is approximately 7 - 8m wide, it is in good repair and doesn't contain pot holes. Most of the districts infrastructure including water, power and telephone runs along the main road. The road provides easy access to primary services such as local schools and shops as well as adjacent districts. South of the road, houses are set back approximately 20 - 30m from the road and this area has pockets of wetland pond. The western side of A'opo along the main road does not have water supply and relies on water tanks.

From the main road, access roads to the village plantations extend inland. They are generally unsealed and there are no power or telephone services along the work roads except to the school or houses immediately behind a village. After storms they become flooded. Sasina Primary school is located 200m inland on a sealed access road.

The majority of residents are largely involved in plantation work and fishing. The District supports a primary school in each village, a number of churches and local shops.

3.3 Climate Risk and Resilience

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

The 2007 CIM Plan for Gagaifomauga III, mapped out all vulnerable areas along the coast and the lowland coastal areas identifying them as hazard zones given the exposure to natural disasters, climate change and extreme events causing flooding and erosion. The basal boulder and gravel/sand barrier coastal area has a High Coastal Sensitivity Index, and has receded by approximately 45m over the last three decades. Inland there is much changes in the catchment area and land use hence the severe flooding downstream is caused by the concentrated flows from up-catchment areas. As such the update of the CIM Plan considers a broader landscape hazards, climate risks and likely responses.

Coastal Hazards and Risks: Coastal erosion is a major issue between Sasina and Fagaae, and evidence of sand mining only make the problem worse. It is important for the villages that are closer to the coast to continue with coastal replanting to help reduce erosion in the area. Land use changes in the upland catchment area as well as undersized culverts on the road side, are some of the contributing factors to heavy flooding in the coastal area during rainy season, exposing communities vulnerability to coastal flood hazard.

Inland Hazards and Risks: Aopo and Letui villages are inland villages with no surface water resources and people relied on rainwater and groundwater. Land use changes in the upland area with expansion of agriculture and livestock contributes to contamination and dry up of groundwater (Fepuleai, 2017). Land rises to steeper country slope from the villages and large stream channels with dry waterways are evidence of heavy flows during medium to extreme events. With climate change rainfall events will become more intense, less predictable and variable, as such this can exacerbate local level flooding in all the Gagaifomauga III villages. Bushfire is one of the biggest inland hazard in this district during prolonged drought periods. Disaster preparedness programs by DMO including ways to address bushfire helps to provide training for communities in their reactive response in the event of a bushfire hazard.

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



Sasina Village main road - has no road side drainage and prone to flooding.



Aopo Medical Clinic house with CSSP water tank supplied under PPCR-ECR project

4. Gagaifomauga III District Interventions

CIM Plan Solutions

Infrastructure	Best Solutions	Benefits	Guidelines to assist with Implementation	Relevant Sector Plans
Main Road and side drainages require maintenance, upgrade and enlargement of culverts as it exacerbates flooding	Regular maintenance of roadside drainage and enlarge existing drains and culverts to clear flood waters quickly - installed culverts and drainage ditches to facilitate the flow from wetlands and reduce flooding at Sasina and Fagaae Implement box culvert at main road crossing Letui village: Length 8 m Pipe size 900mm dia. each Estimated cost: ST\$475,000.00 Benefits Cost ratio: 7.4 Responsibility: LTA	Improved rate of recovery Improved coastal protection Reduced potential for flooding in coastal areas Improved lifeline access Safer village houses and roads Improved safety and resilience	Design for culverts and roadside drainage on the main road should apply the following guidelines: Environmental and Social Safeguard policy Samoa Code of Environmental Practice (2007) Review of National Road Standards in Samoa (2016) Vulnerability Assessment of the Samoa Road Network (2017) Programme drainage in budget and work programme Prepare assessment of road drainage systems	Community Integrated Management Strategy, August 2015 Transport Sector Plan 2014-2019 National Infrastructure Strategic Plan (NISP) 2011
Road ford between Letui/Sasina impacted by flooding	Replace existing concrete ford with a bridge in the long term Armouring river walls to reduce damage to the road ford and flooding of adjacent properties Responsibility: LTA /MWTI			
Water Supply to reach all families in the district	Expand the capacity of the reservoir and extend the water supply to inland access roads at the villages of Letui and Aopo Assess possibility of sourcing water from Letui and installing a water pump at Sasina to increase pressure supplying families inland Responsibility: SWA		Implementation of the SWA (2016)10 year investment plan to improve water supply network to support all inland families without access to drinking water Environmental & Social safeguard policies apply	Water and Sanitation Sector Plan 2016-2020 Community Development Plan 2016-2021
Rain-water harvesting system	Implement the installation of rain-water harvesting system: - All families in the village to have access to clean affordable	Improve community adaptation actions Increase basic sanitation and hygiene	MNRE to provide guidance to community on opportunities available for small village project: Conduct assessment to identify vulnerable	Water and Sanitation Sector Plan 2016-2020 Community Development Plan 2016-2021

	water. Responsibility: Village / CSSP / NGO		families in village suitable for rainwater harvesting priority	
Electricity supply to all residents in the district	Implement the installation of power supply for residents inland and streetlights along the main road for safety Responsible: EPC	Safeguard electricity lines during time of storms- natural disasters. Reduce vulnerability and avoid accidents due to fallen electricity posts.	EPC to installed electricity lines to reach families residing inland and streetlights Coordinate distribution networks to avoid overloading poles and contributing to line failures Consider energy efficiency developments for communities using renewable energy guided by existing framework - Development of a Renewable Energy and Energy Efficiency Framework, 2016	Samoa Energy Sector Plan 2017-2022
Evacuation Shelter	Conduct assessment to identify a school building, women's committee house or church located away from hazard zone as emergency house for the village. Implement retrofitting school buildings that are suitable for emergency shelters Request building an Evacuation Shelter house further inland to be managed by the Women's Committee away from the hazard zone and use during times of natural disasters and emergency. Responsibility: MNRE-DMO / MWCSO / Village	Improve public facility used by communities for safety during times of natural disasters Improve survivors during natural disasters Improve adaptive capacity and resilience of community to respond to natural disasters	Emergency house or shelters priority are given to existing buildings within the village that suits the criteria for an Evacuation Shelter (provided by DMO) and are retrofit for this purpose, and most targeted are school buildings.	National Disaster Management Plan 2017-2021
Natural Resources & Environment	Best Solution	Benefits	Guidelines to assist Implementation	Relevant Sector Plan
Central Savaii Upland Forest and volcanic succession	Established a National Conservation or Protected Area park for Central Savaii upland (Mt Silisili) Integrate Central Savaii upland area as part of	Improve ecological resilience of montane/cloud forest Increase survival of native tree species Decrease impact of	MNRE to work with district in developing Central Savaii upland to be Protected Area or Conservation Site. Develop a management plan for the protection of	National Environment Sector Plan (NESP) 2017-2021 Community Development Plan 2016-2021

	<p>the national invasive species program to eradicate invasive tamaligi trees and other invasive shrubs and vines along the Mt. Silisili trail.</p> <p>Stop road construction on the Mt Silisili trail but only use it as a trekking trail to stop further invasive species infestation</p> <p>Develop eco-tourism activities utilising the Mt. Silisili trail and volcanic succession shrub land with the rich biodiversity</p> <p>Established a field monitoring station to monitor long term changes to the montane forest biodiversity and vegetation cover due to impact from climate change</p> <p>Strengthen enforcement of Forest Management Act 2011</p> <p>Responsibility: MNRE / District & villages</p>	<p>invasive species due to eradication program</p> <p>Increase biodiversity of fauna and flora in the upland forest</p>	<p>upland Central Savaii Forestry Division enforce logging permits and implement fines for illegal logging without permits</p> <p>Private Sector and individuals agreements on replanting for every area being logged.</p> <p>Establishment of the protected area or conservation site should be guided by MNRE legal and institutional framework in place:</p> <p>NBSAP 2015-2020</p> <p>Forestry Restoration Operational Plan 2016-2020</p> <p>Environmental Management Bill 2013</p> <p>National Parks and Reserves Act 1974</p> <p>Protection of Wildlife Regulation 2004</p> <p>National Invasive Species Strategy and Action Plan 2008-2011</p> <p>2 Million Tree Planting Strategy 2015-2020</p> <p>Forest Management Act 2011</p>	
Marine Reserves	<p>Expand fishery reserves in Sasina to include areas of high coral densities closer to the outer reef</p> <p>Reintroduce the Fagae'e fishery reserve</p> <p>Eradication crown of thorns and monitor coral bleaching along the coral reef area</p> <p>Enforce Fisheries By-Laws</p> <p>Responsibility: MAF-Fisheries/ Villages</p>	<p>Increase marine species diversity including fish species and coral reef ecosystem</p> <p>Improve coral communities and increase chances of less or no coral bleaching</p>	<p>Community Based Fisheries management Plan (CBFMP)</p> <p>Village Plans and By-laws</p> <p>NBSAP 2015 - 2020</p>	<p>Agriculture Sector Plan 2016-2020</p> <p>NESP 2017 - 2021</p>
Sand mining for commercial and domestic use affecting the marine and coastal environment	<p>Assess and identify sustainable sources of sand for domestic and commercial use</p> <p>Village, government and the private sector to collaborate on designated areas for sand mining</p> <p>Strengthen sand mining monitoring and enforcement</p>	<p>Improve the sustainable management of sand as a natural resource</p> <p>Minimize impacts of coastal inundation and erosion</p> <p>Reduce impact to natural coastal protection mechanism via control of scale and</p>	<p>Secure relevant permits before any sand mining occurs</p> <p>Incorporate environmental and social safeguards concerns including consultations with any affected community</p> <p>For access to sites, obtain written consents from Alii Faipule and landowners.</p>	<p>National Environment Sector Plan 2017 - 2021</p>

	<p>Mass media awareness on sustainable sand mining practices</p> <p>Develop sand mining regulation</p> <p>Responsibility: MNRE / Village</p>	<p>site of extraction</p>	<p>Alii Faipule and landowner provide consent</p> <p>Develop sand mining regulation</p> <p>Follow existing MNRE guidelines for sand mining or extracting such as:</p> <p>PUMA Act 2004</p> <p>Lands and Survey Environment Act 1989 (draft) Sand Mining Policy 2001</p> <p>Draft Soil Resource Management Bill, 2018</p> <p>NAP Sustainable Land Management Plan 2015-2019</p>	
Wetland Area	<p>Implement conservation programs to protect the wetland area in Sasina</p> <p>Reopen the blocked drainage from the wetland into the sea</p> <p>Village councils of Fagae'e and Sasina to ban rubbish dumping in the wetlands.</p> <p>Implement coastal restoration programs including natural regeneration of coastal vegetation plants</p> <p>Responsibility: MNRE / villages</p>	<p>Improve ecological resilience of wetland ecosystem</p> <p>Improve species diversity</p> <p>Reduce impact from flooding</p> <p>Improve hygiene</p>	<p>Declare the wetland as a conservation site for Sasina</p> <p>Develop a management plan for the wetland</p> <p>Establishment of the wetland conservation site should be guided by legal and institutional framework on biodiversity</p> <p>NBSAP 2015-2020</p> <p>Environmental Management Bill 2013</p> <p>National Parks and Reserves Act 1974</p> <p>Waste Management Act 2011</p> <p>Protection of Wildlife Regulation 2004</p>	NESP 2017-2021
Invasive Species	<p>Implement eradication and control programme to remove all invasive shrubs and trees :From areas that were previously used for logging and plantations;</p> <p>Control and manage the spread of invasive plants from moving upland to areas with good intact forest.</p> <p>Responsibility: MNRE / MAF</p>	<p>Improve resilience of native forest and biodiversity</p> <p>Reduce the spread of invasive species</p>	<p>MNRE-DEC , Water Resource Division and Forestry Division to use existing guidelines and action plans to implement effective ways to remove invasive plants from watershed and native forest area:</p> <p>NBSAP 2015-2020</p> <p>National Invasive Species Action Plan 2008</p> <p>Forestry Restoration Operational Plan 2016-2020</p>	NESP 2017-2021

Livelihood & Food Security	Best Solution	Other Benefits	Guidelines to assist with implementation	Relevant Sector Plans
Disturbed forests and plantation areas	<p>Restore and utilize fallow lands closer to the village with plantations rather than clearing inland and upland forests :</p> <p>Promote and facilitate planting of root-crops (i.e yams, sweet potato which are more resilient to cyclones, droughts and floods.</p> <p>Promote agro-forestry and mixed planting including fruit trees species to reduce crop vulnerability to pests and diseases.</p> <p>Diversify into other climate resilient species cash crops and fruit trees i.e cocoa, coconut, lemon and plant in suitable areas outside hazard zones</p> <p>Implement Sustainable Land management practices</p> <p>Implement integrated pest management programmes</p> <p>Responsibility: MAF/ CSSP/WIBDI/Farmers Association/ METI/ SBEC / UNDP-GEF-SGP/MNRE / villages</p>	<p>Improve food security and healthy living and increase community resilience and adaptive response to climate change</p>	<p>MAF CROP Division to support farmers through guidance and trainings from Agricultural experts and awareness programs on crop diversification to suit the prolonged periods of drought or rainy season</p> <p>Provide tools and planting materials to improve crop diversification and resilience – address pest issues etc. This will lead to improve food security</p> <p>Strengthen partnership with farming NGO’s such as the: Samoa Farmers Association; Samoa Federated Farmers Incorporated ; Women in Business Inc. and private sector to support rural farmers through training opportunities and marketing productivity</p> <p>Implementation of solutions are guided by the following:</p> <p>Draft Soil Resource Management Bill 2018</p> <p>Samoa National Action Programme to combat Land Degradation and to mitigate effects of drought 2015-2020</p>	<p>Agriculture Sector Plan 2016-2020</p>

Village Governance	Solutions/ Issues	Guidelines to assist with implementation	Relevant Sector Plan
District /Village By-laws	<p>Implement district / village by-laws for community to follow and include protection of natural resources both marine and terrestrial</p> <p>Enforce law on illegal logging, illegal sand mining</p> <p>Responsibility: Village / MWCSD/MAF/MNRE /MJCA/MOP</p>	<p>MWCSD to provide assistance to district /village in developing by-laws</p>	<p>Community Development 2016-2021</p>
Enforce law on illegal logging	<p>Reinforce the no indigenous forest logging legislation or provide appropriate requirements for</p>	<p>MNRE- Forestry to enforce logging regulation upon logging companies</p>	

	<p>sustainable portable sawmills operating in the village.</p> <p>Responsibility: <i>MNRE/village/MAF/MNRE/MJCA/MOP</i></p>	<p>Monitor logging companies or individual portable sawmills</p> <p>2016-2020 National Forest Plan</p>	
<p>Enforce village drainage clean-up</p>	<p>Implement district/village drainage/culvert clean-up and awareness program Conduct village site inspection of culverts and drainage clearance to avoid clogging from debris and rubbish</p> <p>Responsibility: <i>Village / MWCS</i></p>	<p>Prepare a local education programme on need for keeping drainage systems clean</p> <p>Women's committee hygiene and clean-up program</p> <p>Village beautification committee to monitor clean-up program for drainage and culverts</p>	<p>Community Development Plan 2016-2021</p>

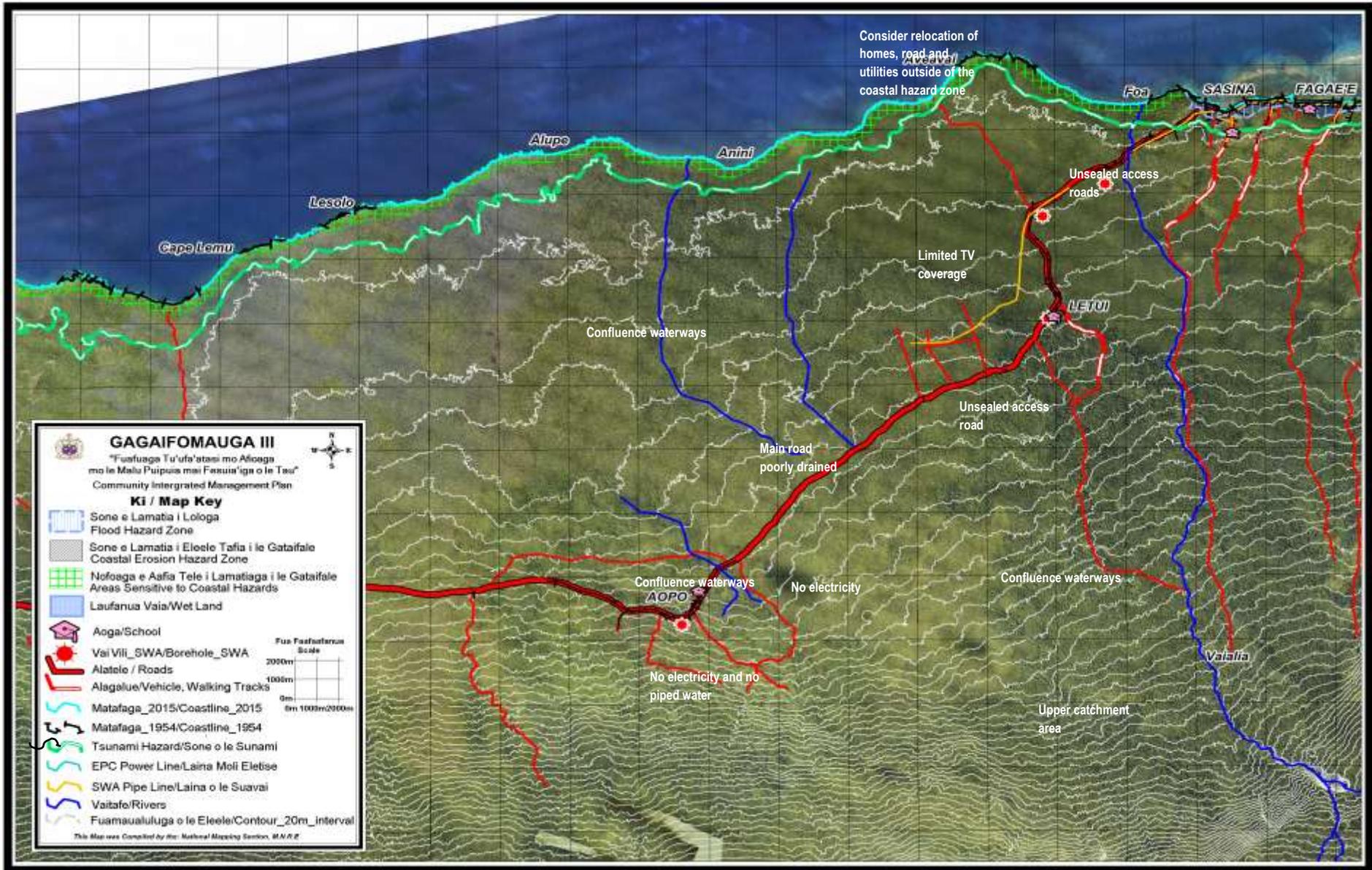
Other CIM Plan issues identified and solutions

Other issues	Solutions	Comment
District Hospital	<p>Upgrade District Hospital within Aopo village and request a female or male doctor to work in the hospital.</p> <p>Responsibility: <i>MoH / District</i></p>	<p>From the CIM Plan consultation community expressed the need for the district hospital to be upgraded and to have a doctor present to service the hospital. The concern was mainly to do with the distance of the district/villages from the next District Hospital that was working.</p>
Road safety	<p>Implement road safety program</p> <p>Responsibility: <i>LTA / village</i></p>	<p>Programme road safety activities into budget and work programme</p>



Gagaifomauga III district CIM Plan consultation at Stevenson Manase Resort

Gagaifomauga III District Map



4.1 Fagae'e Village Interventions

CIM Plan Solutions

Infrastructure	Best Solution	Other Benefits	Guidelines to assist with implementation	Relevant Sector Plans
Village infrastructure in hazard zones include: Households Schools Churches Businesses, Women's Committee House	Relocate outside hazard zones Investments within the hazard zone adopt appropriate mitigation measures Raise building foundations at a level that takes into account the CFHZ in the vicinity Responsibility: Village/Families / MWTI/MWCSD	Reduce cost in ongoing maintenance mitigate potential damage from coastal erosion and flooding accommodating the hazard.	Application of National Building Code and permit compliance 2016 PUMA Act 2004	CIM Strategy (2015)
Maintenance of Drainage to reduce impact from flooding	-Maintenance of road side drains and regular inspection of drainage system; Responsibility: MWTI and LTA	Improved rate of recovery Reduce potential for flooding in village areas Safer village houses and roads Improved safety community and resilience	Programme drainage in budget and work programme Prepare assessment of road drainage systems Implementation of maintenance for national roadside drainage should be guided by the following: Environmental and Social Safeguard policy Samoa Code of Environmental Practice (2007) Review of National Road Standards in Samoa (2016)	Community Integrated Management Strategy, August 2015 Transport Sector Plan 2014-2019 National Infrastructure Strategic Plan (NISP) 2011
Rain water harvesting	Implement the installation of rain-water harvesting system: - All families in the village to have access to clean affordable water.	Improve community adaptation actions Increase basic sanitation and hygiene	MNRE to provide guidance to community on opportunities available for small village project: Conduct assessment to identify vulnerable families in village suitable	Water and Sanitation Sector Plan 2016-2020 Community Development Plan 2016-2021

	Responsibility: Village /UNDP-GEF SGP/ CSSP / NGO		for rainwater harvesting priority	
Vaiana Community Pool	<p>Implement minimal structural improvement to the Vaiana pool to strengthen surrounding wall.</p> <p>Test water quality in the pool for eutrophication</p> <p>Remove all waste that are around the pool and nearby to improve condition</p> <p>Ceased concerting work to raise the level of pool</p> <p>Assess the impact of ground cove and soil conditions around the pool to test water quality</p> <p>Plant trees around the pool perimeter to provide shade and shadowing effect on the pool to reduce growth of bad algae</p> <p>Responsibility: village /CSSP / UNDP-GEF SGP/MNRE</p>	<p>Improve water quality and alternative source of water supply during time of drought period</p> <p>Reduce sanitation problems and improve hygiene and healthy living</p> <p>Reduce potential for contamination</p>	<p>MNRE to ensure that proper guidelines are followed by community for improving Vai Ana pool:</p> <p>Environmental and Social Safeguard Policy Samoa Code of Environmental Practice (2007)</p> <p>PUMA Act 2004</p> <p>2016-2020 National Forestry Plan</p> <p>Community Engagement Plan 2016</p>	<p>Water and Sanitation Sector Plan 2016-2020</p> <p>Community Development Plan 2016-2021</p> <p>National Environment Sector Plan 2017 - 2021</p>
Electricity	<p>Install streetlights along the main road and inland roads</p> <p>Responsible: EPC</p>	<p>Safeguard electricity lines during time of storms and extreme events – natural disasters.</p> <p>Reduce vulnerability and avoid accidents due to fallen electricity posts.</p>	<p>EPC to provide electricity lines and streetlights for main road – pedestrian safety on the road</p> <p>Coordinate distribution networks to avoid overloading poles and contributing to line failures</p>	<p>Samoa Energy Sector Plan 2017-2022</p> <p>Development of a Renewable Energy and Energy Efficiency Framework, 2016</p>
Extend the existing access road in Fagae	<p>Extension of village access road inland to 1000m</p> <p>Estimated cost: SAT \$333,000.00 identified from LTA list</p>	<p>Facilitate the movement of community inland away from coastal hazard area</p>	<p>Implementation of road extension should be guided by the following:</p> <p>Environmental and Social Safeguard policy</p> <p>Samoa Code of</p>	<p>Transport Sector Plan 2014-2019</p>

	Responsibility: LTA / village		Environmental Practice 2007 National Infrastructure Strategic Plan (NISP 2011) Review of National Road Standards in Samoa (2016)	
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Natural Resources and Environment	Best Solution	Other Benefits	Guidelines to assist with implementation	Relevant Sector Plans
Sand mining for commercial and domestic use affecting the marine and coastal environment as well as terrestrial resources	<p>Assess and identify sustainable sources of sand for domestic and commercial use</p> <p>Village, government and the private sector to collaborate on designated areas for sand mining</p> <p>Extractive industries (mining) monitored and corrected in the riverbank and coastal fringe</p> <p>Strengthen sand mining monitoring and enforcement</p> <p>Mass media awareness on sustainable sand mining practices</p> <p>Develop sand mining regulation</p> <p>Responsibility: MNRE / District & Village</p>	<p>Village gains benefit from sand mining activities</p> <p>Reduce impact to natural coastal protection mechanism via control of scale and site of extraction</p> <p>Improve village resource management and sustainable development</p> <p>Minimize impacts of coastal inundation and erosion</p> <p>Improve the sustainable management of sand as a natural resource</p>	<p>Follow existing MNRE guidelines for sand mining or extracting such as:</p> <p>MNRE monitoring of sand extraction operations</p> <p>Secure relevant permits before any sand mining occurs</p> <p>Incorporate environmental and social safeguards concerns including consultations with any affected community</p> <p>Village environmental management plans established including annual monitoring systems</p> <p>For access to sites, obtain written consents from Alii Faipule and landowners.</p> <p>Lands and Survey Environment Act 1989</p> <p>Consideration of EIA assessment of impact prior to any extraction</p> <p>PUMA Act 2004</p> <p>NAP – Sustainable Land Management Plan 2015-2019</p>	National Environment Sector Plan 2017 - 2021

			(draft) Sand Mining Policy 2001 Draft Soil Resource Management Bill 2018	
Marine Environment needs protection and management	<p>Re-established the marine reserve for: protection of coastal and inshore marine area, improve coral reef biodiversity ecosystem;</p> <p>Remove crown of thorns from inshore area and monitor coral bleaching</p> <p>Responsibility: MNRE / MAF / Village/ UNDP GEFP - SGP / CSSP</p>	<p>Mitigate beach coastal erosion</p> <p>Reduce coral bleaching</p> <p>Managed marine areas creates awareness that will provide biological abundance with spill-over effect beyond the protected area boundaries.</p> <p>Benefits are sustainable livelihoods, improved food security.</p>	<p>Maintenance of marine reserve and protected area requires community consent and government approval along with biological surveys.</p> <p>Fisheries Division to advice villages on the Community-based Fisheries Management Program (CBFMP) – Develop Village Fisheries Management Plans</p> <p>NBSAP 2015-2020</p>	<p>National Environment Sector Plan 2017 - 2021</p> <p>Agriculture Sector Plan 2016-2020</p>

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

	<p>outside hazard zones</p> <p>Implement Sustainable Land management practices</p> <p>Implement integrated pest management programs</p> <p>Responsibility: MAF / CSSP/WIBDI/Farmers Association/ METI/ SBEC / UNDP-GEF-SGP/MNRE / villages</p>		<p>Implementation of solutions are guided by the following:</p> <p>Draft Soil Resource Management Bill 2018</p> <p>Samoa National Action Programme to combat Land Degradation and to mitigate effects of drought 2015-2020</p> <p>National Invasive Species Strategy and Action Plan 2008-2011</p> <p>2 Million Tree Planting Strategy 2015-2020</p>	
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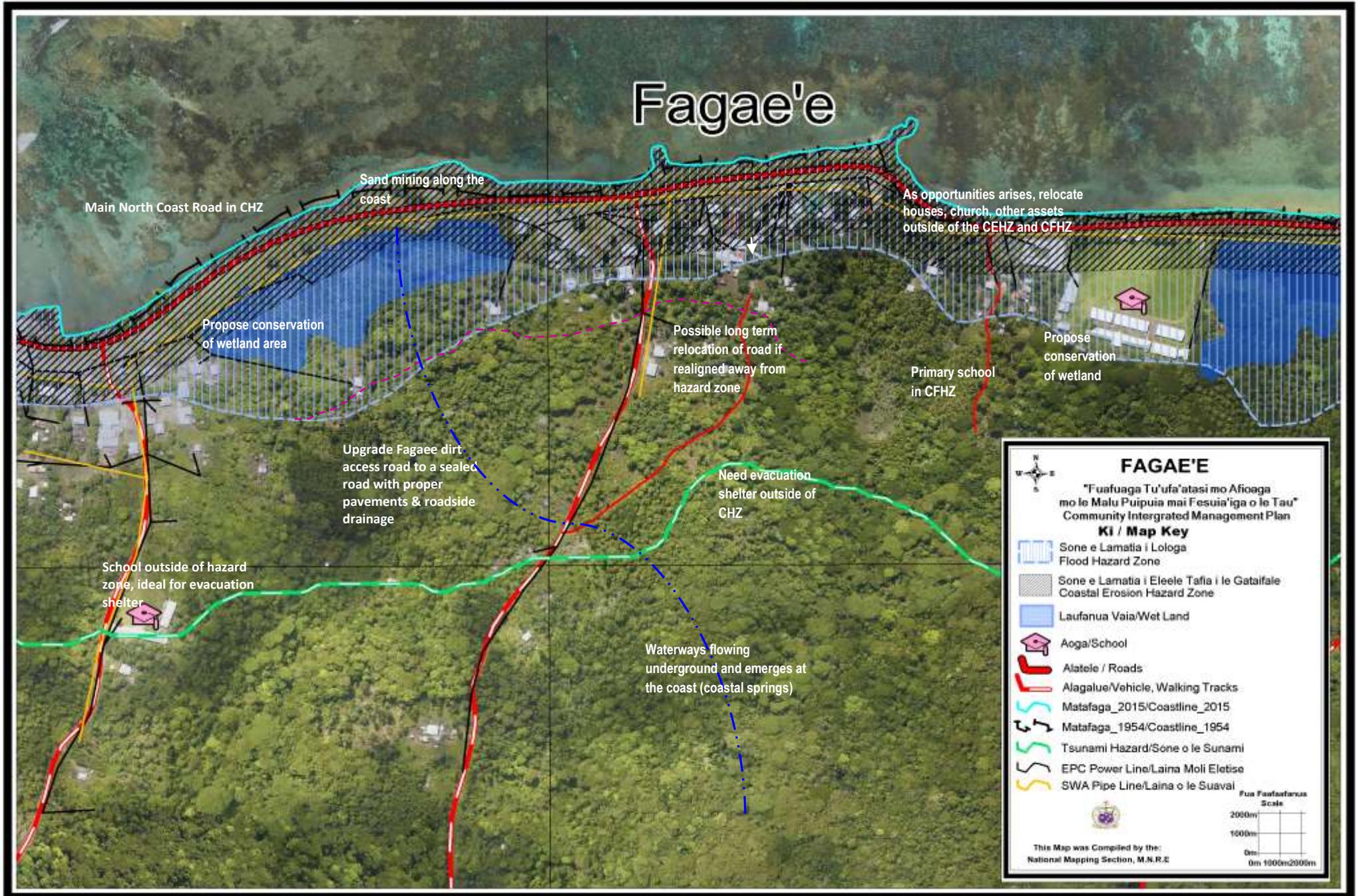
Village Governance	Best Solution	Other Benefits	Guidelines to assist with implementation	Relevant Sector Plans
Disaster Management (bushfire)	<p>Provide awareness and education programs on reactive response to extreme events like bushfire</p> <p>Conduct readiness and preparedness program or response to extreme climatic events – tropical cyclones, heavy rainfall, bushfire etc.</p> <p>Responsibility: MNRE-DMO/FESA/SRCS/village</p>	<p>Improve rate of recovery</p> <p>More lives saved during natural disasters because of people proactive response.</p>	<p>MNRE-DMO to work with Civil Society Groups – NGOs, CBOs and communities in continuing emergency training for disaster preparedness</p> <p>Implement the Community Disaster and Climate Risk Management program for community Toolkit</p>	<p>National Disaster Management Plan 2017-2021</p> <p>National Environment Sector Plan 2017 - 2021</p>
Strengthen Village By-laws	<p>Strengthen and implement existing village by-laws that govern social, environmental and economic issues in the community.</p> <p>Responsibility: Village / MWCS D/ MNRE / UNDP - GEF - SGP</p>	<p>Reduce social issues</p> <p>Improve compliance with village laws</p>	<p>MWCS D to provide assistance to district /village in developing by-laws</p> <p>Support the development of village by-laws that can guide governing structure of village and the implementation of government and non-government programs including CIM Plans.</p>	Community Development Sector Plan 2016-2021
Village Drainage Clean up	<p>Undertake village inspection of culverts along inland / main roads;</p> <p>Implement</p>	<p>Improved rate of recovery</p> <p>Reduce potential for flooding in village areas</p>	<p>Prepare a local education programme on need for keeping drainage systems clean</p> <p>Women’s committee</p>	Community Development Plan 2016-2021

	<p>district/village drainage/ culvert clean-up and awareness program</p> <p>Conduct village site inspection of culverts and drainage clearance to avoid clogging from debris and rubbish</p> <p>Responsibility: Village / MWCS</p>	<p>Safer village houses and roads</p> <p>Improved safety community and resilience</p>	<p>monitor hygiene and clean- up program</p> <p>Village beautification committee to monitor clean-up program for drainage and culverts</p>	
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Vai Aga Cave pool behind the EFKS church Fagaae - strong possibility of water contamination from nearby households

Fagae'e Village Map



4.2 Sasina Village Interventions

CIM Plan Solutions

Infrastructure	Best Solution	Other Benefits	Guidelines to assist with implementation	Relevant Sector Plans
Village infrastructure in hazard zones include: Households Schools Churches Businesses, Women's Committee House	Relocate outside hazard zones Investments within the hazard zone adopt appropriate mitigation measures Raise building foundations at a level that takes into account the CFHZ in the vicinity Responsibility: Village/Families / MWTI/MWCSD	Reduce cost in ongoing maintenance mitigate potential damage from coastal erosion and flooding accommodating the hazard.	Application of National Building Code and permit compliance 2016 PUMA Act 2004	CIM Strategy (2015)
National road – upgrade ford between Sasina and Letui Sealed Access dirt road inland Box culvert in poor condition	Upgrade existing ford (causeway) between Sasina and Letui to a bridge; Extend sealing of access road inland, Estimated at \$618k, Restoration of box culvert, Estimated cost \$75k Responsibility: LTA / village	Improved rate of Recovery Improved coastal Protection Reduced potential for flooding in coastal areas	Programme road construction in budget and work programme Implementation of road upgrade and culverts improvements should be guided by: Environmental and Social Safeguard policy Samoa Code of Environmental Practice (2007) Review of National Road Standards in Samoa (2016)	Community Integrated Management Strategy, August 2015
Maintenance of Drainage to reduce impact from flooding	-Maintenance of road side drains and regular inspection of drainage system; Responsibility: MWTI and LTA	Improved lifeline Access Safer village houses and roads	Programme drainage in budget and work programme Prepare assessment of road drainage systems Implementation of maintenance for national roadside drainage should be guided by the following: Environmental and Social Safeguard policy Samoa Code of Environmental Practice	Transport Sector Plan 2014-2019

			(2007) Review of National Road Standards in Samoa (2016) National Infrastructure Strategic Plan (NISP) 2011	
Rain water harvesting	Implement the installation of rain-water harvesting system: - All families in the village to have access to clean affordable water. Responsibility: Village /UNDP-GEF SGP/ CSSP / NGO	Improve community adaptation actions Increase basic sanitation and hygiene	MNRE to provide guidance to community on opportunities available for small village project: Conduct assessment to identify vulnerable families in village suitable for rainwater harvesting priority	Water and Sanitation Sector Plan 2016-2020 Community Development Plan 2016-2021
Coastal Spring / pool deteriorating walls 2 nd pool Vaifoa is filled with sedimentation and a poor investment that will not achieve climate resilience	Upgrade structural work on the pool to repair parts of the protective wall deteriorating Re-route storm-water runoff away from the pool vicinity Continue coastal replanting and clean-up around the pool Estimated Cost upgrade: SAT\$ 35,000.00 BCA: 1.2 Responsibility: Village / CSSP / NGO/UNDP-GEF SGP / MWCSO/MNRE	Improve quality of drinking water Backup source of alternative water supply for community during time of emergency (drought or natural disasters – cyclones)	MNRE to ensure that proper guidelines are followed by community for improving coastal pool: Environmental and Social Safeguard Policy Samoa Code of Environmental Practice (2007) PUMA Act 2004 2016-2020 National Forestry Plan	Water and Sanitation Sector Plan 2016-2020 Community Development Plan 2016-2021 National Environment Sector Plan 2017 - 2021

Natural Resources & Environment	Best Solution	Other Benefits	Guidelines to assist with implementation	Relevant Sector Plans
Sand mining for commercial and domestic use affecting the marine and coastal environment as well as terrestrial resources	Assess and identify sustainable sources of sand for domestic and commercial use	Village gains benefit from sand mining activities Reduce impact to natural coastal protection mechanism via control of scale	Follow existing MNRE guidelines for sand mining or extracting such as: MNRE monitoring of sand extraction operations	National Environment Sector Plan 2017 - 2021

	<p>Village, government and the private sector to collaborate on designated areas for sand mining</p> <p>Extractive industries (mining) monitored and corrected in the riverbank and coastal fringe</p> <p>Strengthen sand mining monitoring and enforcement</p> <p>Mass media awareness on sustainable sand mining practices</p> <p>Develop sand mining regulation</p> <p>Responsibility: MNRE / Village</p>	<p>and site of extraction</p> <p>Improve village resource management and sustainable development</p> <p>Minimize impacts of coastal inundation and erosion</p> <p>Improve the sustainable management of sand as a natural resource</p>	<p>Secure relevant permits before any sand mining occurs</p> <p>Incorporate environmental and social safeguards concerns including consultations with any affected community</p> <p>Village environmental management plans established including annual monitoring systems</p> <p>For access to sites, obtain written consents from Alii Faipule and landowners.</p> <p>Lands and Survey Environment Act 1989</p> <p>Consideration of EIA assessment of impact prior to any extraction</p> <p>PUMA Act 2004</p> <p>NAP – Sustainable Land Management Plan 2015-2019</p> <p>(draft) Sand Mining Policy 2001</p> <p>Draft Soil Resource Management Bill 2018</p>	
<p>Marine Environment needs protection and management</p>	<p>Strengthen monitoring the fishery reserve and expand the protection of coastal and inshore marine area,</p> <p>Remove crown of thorns from inshore area and monitor coral bleaching</p> <p>Replicate Fishery reserve to nearby villages</p>	<p>Mitigate beach coastal erosion</p> <p>Reduce coral bleaching</p> <p>Managed marine areas creates awareness that will provide biological abundance with spill-over effect beyond the protected area boundaries.</p> <p>Benefits are sustainable livelihoods, improved food</p>	<p>Maintenance of marine reserve and protected area requires community consent and government approval along with biological surveys.</p> <p>Fisheries Division to advice villages on the Community-based Fisheries Management Program (CBFMP) – Develop Village Fisheries Management Plans</p>	<p>National Environment Sector Plan 2017 - 2021</p> <p>Agriculture Sector Plan 2016-2020</p>

		security.	NBSAP 2015-2020	
	Responsibility: MNRE / MAF / Village			
Wetland	<p>Establish the area as a protected area</p> <p>Implement coastal restoration programs including natural regrowth or regeneration of coastal vegetation plants</p> <p>Develop a Management Plan for the Wetland Ecosystem and declare it as a RAMSAR site</p> <p>Reopen the blocked drainage from wetland into the sea to circulate water movement</p> <p>Conduct a rapid assessment of biodiversity within and around the wetland area</p> <p>Responsibility: MNRE / village</p>	<p>Improved ecological resilience of coastal ecosystem</p> <p>Increase species diversity</p> <p>Reduce impact of flooding on the village</p> <p>Reduces rate of coastal erosion</p> <p>Reduces impact from storm surges</p> <p>Discourages sand mining</p>	<p>Implementation of works in the wetland to be guided by existing action plans:</p> <p>Faipule and landowner provide consent</p> <p>PUMA Act 2004</p> <p>NAP – Sustainable Land Management Plan 2015-2019</p> <p>NBSAP 2015-2020</p>	National Environment Sector Plan 2017-2021
Water Catchment area rehabilitation	<p>Replanting of native forest species for upland forest to restore the resilience and ecological functions of catchment area</p> <p>Implement mapping of watershed area for Sasina River and identify hazard areas inland as well as good farming areas</p> <p>Block off new tributary that currently floods the</p>	<p>Restoration of native forests species increases the resilience against climate change impacts by improving the biodiversity, reducing the risk of forest fires, providing land stabilization, reducing erosion, reducing land slips and maintaining water quality</p> <p>Flood management</p> <p>Contribute to the 2 million tree planting</p>	<p>MNRE-DEC, WRD and Forestry Division to provide advice such as:</p> <p>Awareness and government support in supply of nursery trees, technology and infrastructure to have a sustainable mechanism for replanting</p> <p>Community to request through Forestry Division MNRE seedlings under their 2million tree replanting project</p>	National Environment Sector Plan 2017-2021 Water and Sanitation Sector Plan 2016-2020

	<p>village</p> <p>Conduct consultation and awareness program on the proposed watershed area</p> <p>Implement water quality testing</p> <p>Responsibility: MNRE / MoH /MWCSO-IWS /village</p>		<p>NBSAP 2015-2020</p> <p>Forestry Restoration Operational Plan 2016-2020</p> <p>Two Million Tree Planting Strategy 2015-2020</p> <p>Forestry Management Act 2011</p> <p>National Water Resources Management Strategy 2007-2017</p>	
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Livelihood and Food Security	Best Solution	Other Benefits	Guidelines to assist with implementation	Relevant Sector Plans
Disturbed forests and plantation areas	<p>Restore and utilize fallow lands closer to the village with plantations rather than clearing inland and upland forests :</p> <p>Promote and facilitate planting of root-crops (i.e yams, sweet potato which are more resilient to cyclones, droughts and floods.</p> <p>Promote agro-forestry and mixed planting including fruit trees species to reduce crop vulnerability to pests and diseases.</p> <p>Diversify into other climate resilient species cash crops and fruit trees i.e cocoa, coconut, lemon and plant in suitable areas outside hazard zones</p> <p>Implement Sustainable Land management practices</p> <p>Implement integrated pest management programmes</p>	<p>Improve food security and healthy living and increase community resilience and adaptive response to climate change</p>	<p>MAF CROP Division to support farmers through guidance and trainings from Agricultural experts and awareness programs on crop diversification to suit the prolonged periods of drought or rainy season</p> <p>Provide tools and planting materials to improve crop diversification and resilience – address pest issues etc. This will lead to improve food security</p> <p>Strengthen partnership with farming NGO’s such as the: Samoa Farmers Association; Samoa Federated Farmers Incorporated ; Women in Business Inc. and private sector to support rural farmers through training opportunities and marketing</p>	<p>Agriculture Sector Plan 2016-2020</p>

	<p>Responsibility: MAF / CSSP/WIBDI/Farmers Association/ METI/ SBEC / UNDP-GEF-SGP/MNRE / villages</p>		<p>productivity</p> <p>Implementation of solutions are guided by the following:</p> <p>Draft Soil Resource Management Bill 2018</p> <p>Samoa National Action Programme to combat Land Degradation and to mitigate effects of drought 2015-2020</p> <p>National Invasive Species Strategy and Action Plan 2008-2011</p> <p>2 Million Tree Planting Strategy 2015-2020</p>	
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Village Governance	Best Solution	Other Benefits	Guidelines to assist with implementation	Relevant Sector Plans
Disaster Management (bushfire)	<p>Provide awareness and education programs on reactive response to extreme events like bushfire</p> <p>Conduct readiness and preparedness program or response to extreme climatic events – tropical cyclones, heavy rainfall, bushfire etc.</p> <p>Responsibility: MNRE-DMO/FESA/SRCS/village</p>	<p>Improve rate of recovery</p> <p>More lives saved during natural disasters because of people proactive response.</p>	<p>MNRE-DMO to work with Civil Society Groups – NGOs, CBOs and communities in continuing emergency training for disaster preparedness</p> <p>Implement the Community Disaster and Climate Risk Management program for community Toolkit</p>	<p>National Disaster Management Plan 2017-2021</p> <p>Community Development Sector Plan 2016-2021</p>
Strengthen Village By-laws	<p>Strengthen and implement existing village by-laws that govern social, environmental and economic issues in the community.</p> <p>Responsibility: Village / MWCS D/ MNRE / UND GEF - SGP</p>	<p>Reduce social issues</p> <p>Improve compliance with village laws</p>	<p>MWCS D to provide assistance to district /village in developing by-laws</p> <p>Support the development of village by-laws that can guide governing structure of village and the implementation of</p>	<p>Community Development Sector Plan 2016-2021</p>

			government and non-government programs including CIM Plans.
Village Drainage Clean up	<p>Undertake village inspection of culverts along inland / main roads;</p> <p>Implement district/village drainage/ culvert clean-up and awareness program</p> <p>Conduct village site inspection of culverts and drainage clearance to avoid clogging from debris and rubbish</p> <p>Responsibility: Village / MWCS D</p>	<p>Improved rate of recovery</p> <p>Reduce potential for flooding in village areas</p> <p>Safer village houses and roads</p> <p>Improved safety community and resilience</p>	<p>Prepare a local education programme on need for keeping drainage systems clean</p> <p>Women’s committee monitor hygiene and clean-up program</p> <p>Village beautification committee to monitor clean-up program for drainage and culverts</p>

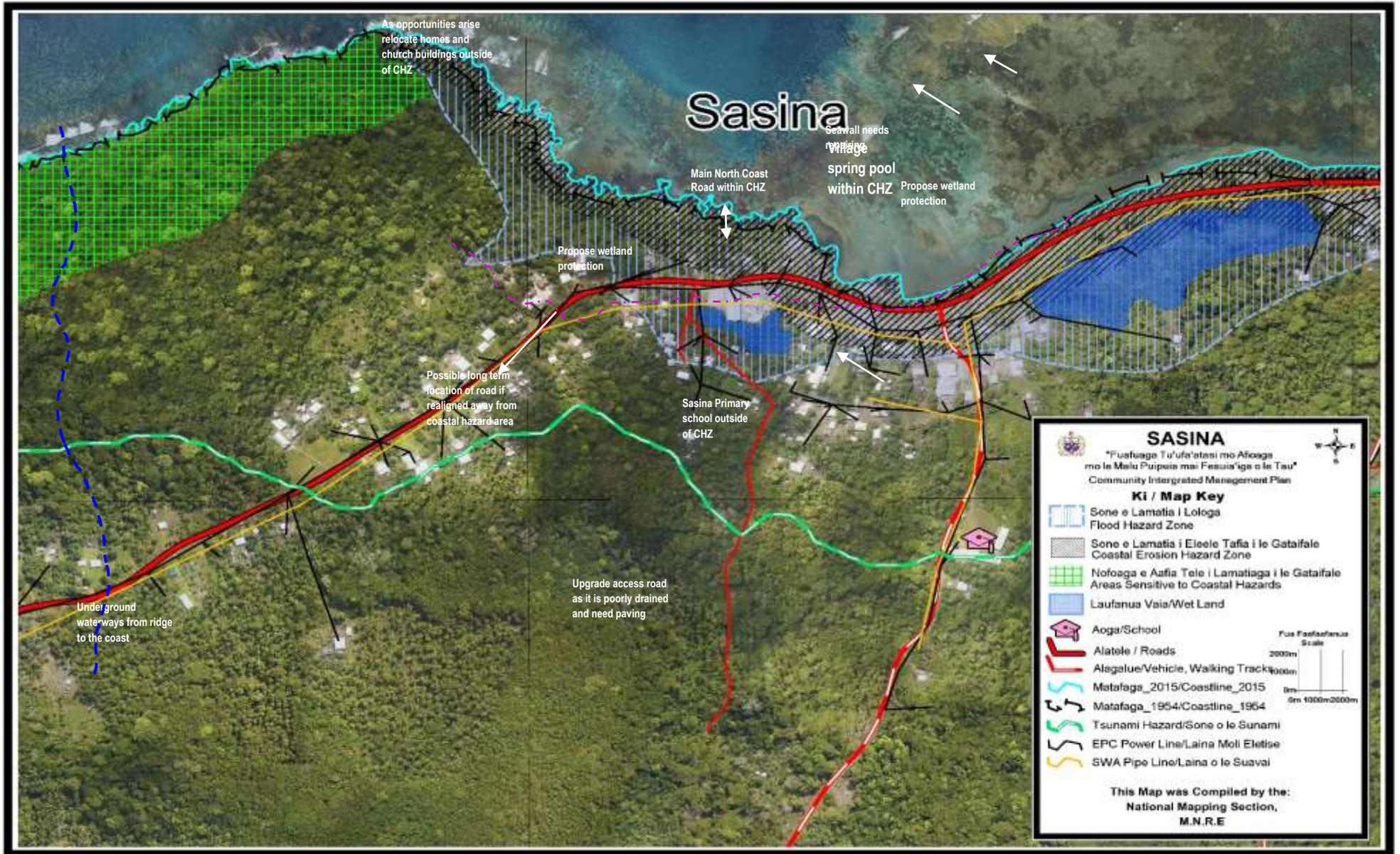


Sasina wetland recommended as a conservation site and need to reopen blocked drainage from the wetland to sea to flush out water



Sasina ford (between Sasina and Letui) high risk during rainy season prone to flash flood

Sasina Village Map



4.3 Letui Village Interventions

Infrastructure	Best Solutions	Benefits	Guidelines to assist with Implementation	Relevant Sector Plans
Main Road and side drainages require maintenance, upgrade and enlargement of culverts as it exacerbates flooding	<p>Regular maintenance of road side drains and regular inspection of drainage system – Eg. road drainage in front of Masoe Amani residence;</p> <p>Fix culvert crossing on roadside to direct storm water flows spill onto road.</p> <p>Proper reinforcement required to ensure correct sizing that can accommodate flow volumes and runoffs</p> <p>Estimated cost: SAT\$475k BCA: 7.4</p> <p>Responsibility: MWCSD / District / Village / LTA</p>	<p>Improved rate of recovery</p> <p>Reduce potential for flooding in village areas</p> <p>Safer village houses and roads</p> <p>Improved coastal protection</p> <p>Improved lifeline access</p>	<p>Design for culverts and roadside drainage on the main road should apply the following guidelines:</p> <p>Environmental and Social Safeguard policy</p> <p>Samoa Code of Environmental Practice (2007)</p> <p>Review of National Road Standards in Samoa (2016)</p> <p>National Infrastructure Strategic Plan (NISP) 2011</p> <p>Vulnerability Assessment of the Samoa Road Network (2017)</p> <p>Programme drainage in budget and work programme</p> <p>Prepare assessment of road drainage systems</p>	<p>Community Integrated Management Strategy, August 2015</p> <p>Transport Sector Plan 2014-2019</p>
Access road to Aveavai (towards ocean)	<p>Sealed Aveavai access road going to the ocean about 4km which leads to coastline freshwater pool</p> <p>Responsibility: LTA</p>	<p>Improve access to coastal area for fishing</p>	<p>Design of sealing access road should follow existing guideline:</p> <p>Environmental and Social Safeguard policy</p> <p>Samoa Code of Environmental Practice (2007)</p> <p>Review of National Road Standards in Samoa (2016)</p> <p>National Infrastructure Strategic Plan (NISP) 2011</p> <p>Vulnerability Assessment of the Samoa Road Network (2017)</p> <p>Programme access road in</p>	

			budget and work programme	
Rain-water harvesting system	<p>Implement the installation of rain-water harvesting system:</p> <ul style="list-style-type: none"> - All families in the village to have access to clean affordable water. <p>Responsibility: Village / CSSP / NGO</p>	<p>Improve community adaptation actions</p> <p>Increase basic sanitation and hygiene</p>	<p>MNRE to provide guidance to community on opportunities available for small village project:</p> <p>Conduct assessment to identify vulnerable families in village suitable for rainwater harvesting priority</p>	<p>Water and Sanitation Sector Plan 2016-2020</p> <p>Community Development Plan 2016-2021</p>
Electricity supply to all residents in the district	<p>Implement the installation of power supply for residents inland and streetlights along the main road for safety</p> <p>Responsible: EPC</p>	<p>Safeguard electricity lines during time of storms- natural disasters.</p> <p>Reduce vulnerability and avoid accidents due to fallen electricity posts.</p>	<p>EPC to installed electricity lines to reach families residing inland and streetlights</p> <p>Coordinate distribution networks to avoid overloading poles and contributing to line failures</p> <p>Consider energy efficiency developments for communities using renewable energy guided by existing framework - Development of a Renewable Energy and Energy Efficiency Framework, 2016</p>	<p>Samoa Energy Sector Plan 2017-2022</p>

Natural Resources & Environment	Best Solutions	Benefits	Guidelines to assist with Implementation	Relevant Sector Plans
Forest conservation	<p>Protect the remaining native upland forest – declaring it as part of the Upland Savaii Conservation Park</p> <p>Monitor logging activities and limit to lowland forest area</p> <p>Implement replanting of native forestry species</p> <p>Re-enforce the indigenous logging legislation or provide appropriate requirements for individual portable sawmills</p>	<p>Restore resilience and ecological function of upland forest</p> <p>Increase resilience against climate change impacts by improved biodiversity</p> <p>Reducing risk of forest fire and providing land stabilization</p> <p>Reduce erosion, reduce landslips and maintaining</p>	<p>MNRE to work with district in developing Central Savaii upland to be Protected Area or Conservation Site.</p> <p>Develop a management plan for the protection of upland Central Savaii</p> <p>Reinforce the no indigenous forest logging legislation or provide appropriate requirements for portable sawmills operating in the district.</p> <p>Establishment of the protected area or conservation site should be guided by MNRE legal and</p>	<p>National Environment Sector Plan (NATIONAL ENVIRONMENT SECTOR PLAN) 2017-2021</p> <p>Community Development Plan 2016-2021</p>

	<p>Responsibility: MNRE/village/UNDP-GEF SGP / CSSP</p>	<p>water quality</p> <p>Contribute to Samoa 2million tree planting for carbon offset</p>	<p>institutional framework in place:</p> <p>NBSAP 2015-2020</p> <p>Forestry Restoration Operational Plan 2016-2020</p> <p>Environmental Management Bill 2013</p> <p>National Parks and Reserves Act 1974</p> <p>Protection of Wildlife Regulation 2004</p> <p>National Invasive Species Strategy and Action Plan 2008-2011</p> <p>2 Million Tree Planting Strategy 2015-2020</p> <p>Forest Management Act 2011</p>	
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Livelihood and Food Security	Best Solutions	Benefits	Guidelines to assist with Implementation	Relevant Sector Plans
Disturbed forests and plantation areas	<p>Restore and utilize fallow lands closer to the village with plantations rather than clearing inland and upland forests :</p> <p>Promote and facilitate planting of root-crops (i.e yams, sweet potato which are more resilient to cyclones, droughts and floods.</p> <p>Promote agro-forestry and mixed planting including fruit trees species to reduce crop vulnerability to pests and diseases.</p> <p>Diversify into other climate resilient species cash crops and fruit trees i.e cocoa, coconut, lemon and plant in suitable areas outside hazard zones</p> <p>Implement Sustainable Land management practices</p> <p>Implement integrated pest</p>	<p>Improve food security and healthy living and increase community resilience and adaptive response to climate change</p>	<p>MAF CROP Division to support farmers through guidance and trainings from Agricultural experts and awareness programs on crop diversification to suit the prolonged periods of drought or rainy season</p> <p>Provide tools and planting materials to improve crop diversification and resilience – address pest issues etc. This will lead to improve food security</p> <p>Strengthen partnership with farming NGO’s such as the: Samoa Farmers Association; Samoa Federated Farmers Incorporated ; Women in Business Inc. and private sector to support rural farmers through training opportunities and</p>	<p>Agriculture Sector Plan 2016-2020</p>

	<p>management programmes</p> <p>Responsibility: MAF / CSSP/WIBDI/Farmers Association/ METI/ SBEC / UNDP-GEF-SGP/MNRE / villages</p>		<p>marketing productivity</p> <p>Implementation of solutions are guided by the following:</p> <p>Draft Soil Resource Management Bill 2018</p> <p>Samoa National Action Programme to combat Land Degradation and to mitigate effects of drought 2015-2020</p> <p>National Invasive Species Strategy and Action Plan 2008-2011</p> <p>2 Million Tree Planting Strategy 2015-2020</p>	
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Village Governance	Best Solution	Other Benefits	Guidelines to assist with implementation	Relevant Sector Plans
Disaster Management (bushfire)	<p>Provide awareness and education programs on reactive response to extreme events like bushfire</p> <p>Conduct readiness and preparedness program or response to extreme climatic events – tropical cyclones, heavy rainfall, bushfire etc.</p> <p>Responsibility: MNRE-DMO/FESA/SRCS/village</p>	<p>Improve rate of recovery</p> <p>More lives saved during natural disasters because of people proactive response.</p>	<p>MNRE-DMO to work with Civil Society Groups – NGOs, CBOs and communities in continuing emergency training for disaster preparedness</p> <p>Implement the Community Disaster and Climate Risk Management program for community Toolkit</p>	<p>National Disaster Management Plan 2017-2021</p> <p>Community Development Sector Plan 2016-2021</p>
Strengthen Village By-laws	<p>Strengthen and implement existing village by-laws that govern social, environmental and economic issues in the community.</p> <p>Responsibility: Village / MWCSO/ MNRE / UND GEF - SGP</p>	<p>Reduce social issues</p> <p>Improve compliance with village laws</p>	<p>MWCSO to provide assistance to district /village in developing by-laws</p> <p>Support the development of village by-laws that can guide governing structure of village and the implementation of government and non-government programs including CIM Plans.</p>	
Village Drainage	<p>Undertake village inspection of culverts</p>	<p>Improved rate of recovery</p>	<p>Prepare a local education programme on need for</p>	

<p>Clean up</p>	<p>along inland / main roads;</p> <p>Implement district/village drainage/culvert clean-up and awareness program</p> <p>Conduct village site inspection of culverts and drainage clearance to avoid clogging from debris and rubbish</p> <p>Responsibility: Village / MWCS</p>	<p>Reduce potential for flooding in village areas</p> <p>Safer village houses and roads</p> <p>Improved safety community and resilience</p>	<p>keeping drainage systems clean</p> <p>Women's committee monitor hygiene and clean-up program</p> <p>Village beautification committee to monitor clean-up program for drainage and culverts</p>	
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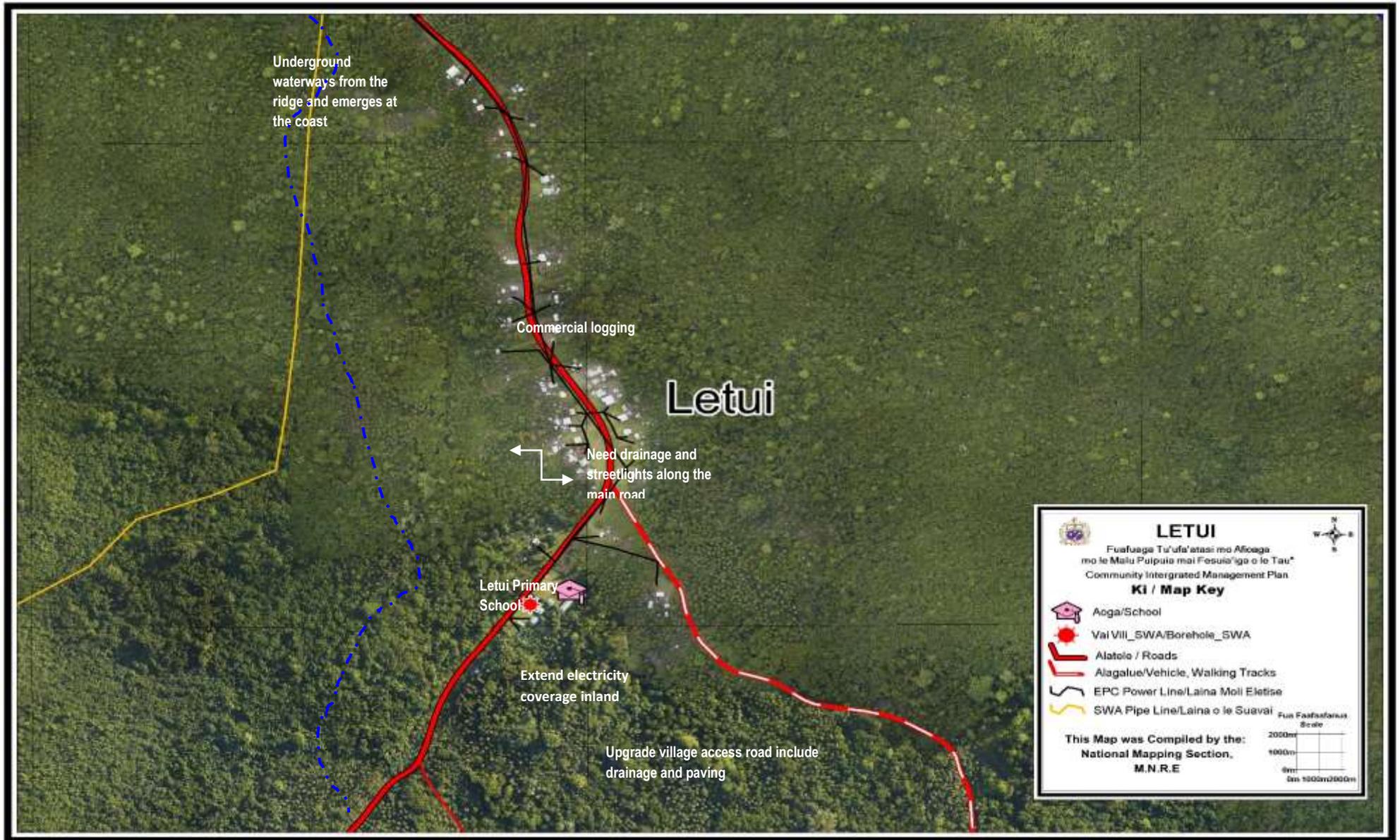


Letui Samoa Water Authority Pump Station pumps water to Aopo village –



Letui roadside drainage on one side of the main road.

Letui Village Map



4.4. Aopo Village Interventions

Infrastructure	Best Solutions Proposed	Other Benefits	Guidelines to assist with implementation	Prioritization immediate actions
<p>Access road (Mt Silisili) and road cross culvert</p> <p>Sealed access road to Fa'atafaga road towards ocean side</p>	<p>Tar sealed access road inland, i.e further pavement from existing paved road</p> <p>Length: 1km Estimated Cost: SAT\$1,007,700k BCA: 2.0</p> <p>Upgrade drainage and main cross culverts on main road towards end of Aopo that are extremely vulnerable to damage during heavy rainfall</p> <p>Request to tar sealed Fa'atafaga road from western end of Aopo from main road to the sea or coastline</p> <p>Responsibility: LTA / village</p>	<p>Improved rate of recovery</p> <p>Reduce potential for flooding in village areas</p> <p>Safer village houses and roads</p> <p>Improved safety community and resilience</p>	<p>LTA should take into account following guidelines if road is implemented:</p> <p>Environmental and Social Safeguard policy</p> <p>Samoa Code of Environmental Practice (2007)</p> <p>National Infrastructure Strategic Plan (NISP) 2011</p> <p>Review of National Road Standards in Samoa (2016)</p> <p>Vulnerability Assessment of the Samoa Road Network (2017)</p>	<p>Community Integrated Management Strategy, August 2015</p> <p>Transport Sector Plan 2014-2019</p>
<p>Electricity supply to all residents in the district</p>	<p>Implement the installation of power supply for residents inland and streetlights along the main road for safety</p> <p>Responsibility: EPC</p>	<p>Safeguard electricity lines during time of storms- natural disasters.</p> <p>Reduce vulnerability and avoid accidents due to fallen electricity posts.</p>	<p>EPC to installed electricity lines to reach families residing inland and streetlights</p> <p>Coordinate distribution networks to avoid overloading poles and contributing to line failures</p> <p>Consider energy efficiency developments for communities using renewable energy guided by existing framework - Development of a Renewable Energy and Energy Efficiency Framework, 2016</p>	<p>Samoa Energy Sector Plan 2017-2022</p>

Rain-water harvesting system	<p>Implement the installation of rain-water harvesting system:</p> <ul style="list-style-type: none"> - All families in the village to have access to clean affordable water. <p>Responsibility: Village / CSSP / NGO</p>	<p>Improve community adaptation actions</p> <p>Increase basic sanitation and hygiene</p>	<p>MNRE to provide guidance to community on opportunities available for small village project:</p> <p>Conduct assessment to identify vulnerable families in village suitable for rainwater harvesting priority</p>	<p>Water and Sanitation Sector Plan 2016-2020</p> <p>Community Development Plan 2016-2021</p>
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Other CIM Plan issues identified and solutions

Other issues	Solutions/ Issues	Comment
Health Clinic	<p>Need to upgrade and refurbished / repair existing house and installed water tanks.</p> <p>Provide a doctor and nurse to service community</p> <p>Responsibility: MoH / village & district</p>	<p>Community expressed the need to upgrade their health clinic. This does not a CIM priority however it is an important community service for the village and district in the long term.</p>
Eco-tourism	<p>Develop nature based tourism or eco-tourism to support the establishment of the Upland Savaii National Park</p> <p>Responsibility: STA / MNRE / village</p>	<p>There is big potential for eco-tourism once the Upland Savaii National Park is established. This could be an income generating activity for the village.</p>

Natural Resources & Environment	Best Solutions	Benefits	Guidelines to assist with Implementation	Relevant Sector Plans
Forest conservation	<p>Protect the remaining native upland forest – declaring it as part of the Upland Savaii Conservation Park</p> <p>Monitor logging activities and limit to lowland forest area</p> <p>Implement replanting of native forestry species</p> <p>Re-enforce the indigenous logging legislation or provide appropriate requirements for individual portable</p>	<p>Restore resilience and ecological function of upland forest</p> <p>Increase resilience against climate change impacts by improved biodiversity</p> <p>Reducing risk of forest fire and providing land stabilization</p> <p>Reduce erosion, reduce landslips and maintaining water quality</p>	<p>MNRE to work with district in developing Central Savaii upland to be Protected Area or Conservation Site.</p> <p>Develop a management plan for the protection of upland Central Savaii</p> <p>Reinforce the no indigenous forest logging legislation or provide appropriate requirements for portable sawmills operating in the district.</p> <p>Establishment of the protected area or conservation site should be guided by MNRE legal and institutional framework in</p>	<p>National Environment Sector Plan (NATIONAL ENVIRONMENT SECTOR PLAN) 2017-2021</p> <p>Community Development Plan 2016-2021</p>

	<p>sawmills</p> <p>Responsibility: MNRE/village/UNDP-GEF SGP / CSSP</p>	<p>Contribute to Samoa 2million tree planting for carbon offset</p>	<p>place:</p> <p>NBSAP 2015-2020</p> <p>Forestry Restoration Operational Plan 2016-2020</p> <p>Environmental Management Bill 2013</p> <p>National Parks and Reserves Act 1974</p> <p>Protection of Wildlife Regulation 2004</p> <p>National Invasive Species Strategy and Action Plan 2008-2011</p> <p>2 Million Tree Planting Strategy 2015-2020</p> <p>Forest Management Act 2011</p>	
<p>Invasive species spread to upland montane forest and watershed area</p>	<p>Implement bio-control and eradication programme to remove all invasive flora and fauna species:</p> <p>Control and manage the spread of invasive plants from moving upland to areas with good intact forest and watershed</p> <p>Responsibility: MNRE / villages</p>	<p>Improve resilience of native forest and biodiversity</p> <p>Reduce the spread of invasive species</p>	<p>MNRE-DEC to provide guidance on effective ways to remove invasive plants from upland montane intact forest and watershed area:</p> <p>NBSAP 2015-2020</p> <p>National Invasive Species Action Plan 2008</p>	<p>National Environment Sector Plan 2017-2021</p>

Livelihood and Food Security	Best Solutions	Benefits	Guidelines to assist with Implementation	Relevant Sector Plans
<p>Disturbed forests and plantation areas</p>	<p>Restore and utilize fallow lands closer to the village with plantations rather than clearing inland and upland forests :</p> <p>Promote and facilitate planting of root-crops (i.e yams, sweet potato which are more resilient to cyclones,</p>	<p>Improve food security and healthy living and increase community resilience and adaptive response to climate change</p>	<p>MAF CROP Division to support farmers through guidance and trainings from Agricultural experts and awareness programs on crop diversification to suit the prolonged periods of drought or rainy season</p> <p>Provide tools and planting materials to improve crop</p>	<p>Agriculture Sector Plan 2016-2020</p>

	<p>droughts and floods.</p> <p>Promote agro-forestry and mixed planting including fruit trees species to reduce crop vulnerability to pests and diseases.</p> <p>Diversify into other climate resilient species cash crops and fruit trees i.e cocoa, coconut, lemon and plant in suitable areas outside hazard zones</p> <p>Implement Sustainable Land management practices</p> <p>Implement integrated pest management programmes</p> <p>Responsibility: MAF / CSSP/WIBDI/Farmers Association/ METI/ SBEC / UNDP-GEF-SGP/MNRE / villages</p>		<p>diversification and resilience – address pest issues etc. This will lead to improve food security</p> <p>Strengthen partnership with farming NGO’s such as the: Samoa Farmers Association; Samoa Federated Farmers Incorporated ; Women in Business Inc. and private sector to support rural farmers through training opportunities and marketing productivity</p> <p>Implementation of solutions are guided by the following:</p> <p>Draft Soil Resource Management Bill 2018</p> <p>Samoa National Action Programme to combat Land Degradation and to mitigate effects of drought 2015-2020</p> <p>National Invasive Species Strategy and Action Plan 2008-2011</p> <p>2 Million Tree Planting Strategy 2015-2020</p>	
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Village Governance	Best Solution	Other Benefits	Guidelines to assist with implementation	Relevant Sector Plans
Disaster Management (bushfire)	<p>Provide awareness and education programs on reactive response to extreme events like bushfire</p> <p>Conduct readiness and preparedness program or response to extreme climatic events – tropical cyclones, heavy rainfall, bushfire etc.</p> <p>Responsibility: MNRE-DMO/FESA/SRCS/village</p>	<p>Improve rate of recovery</p> <p>More lives saved during natural disasters because of people proactive response.</p>	<p>MNRE-DMO to work with Civil Society Groups – NGOs, CBOs and communities in continuing emergency training for disaster preparedness</p> <p>Implement the Community Disaster and Climate Risk Management program for community Toolkit</p>	<p>National Disaster Management Plan 2017-2021</p> <p>Community Development Sector Plan 2016-2021</p>
Strengthen Village By-	Strengthen and implement existing	Reduce social issues	MWCSD to provide assistance to district	

laws	<p>village by-laws that govern social, environmental and economic issues in the community.</p> <p>Responsibility: Village / MWCSO / MNRE / UND GEF - SGP</p>	<p>Improve compliance with village laws</p>	<p>/village in developing by-laws</p> <p>Support the development of village by-laws that can guide governing structure of village and the implementation of government and non-government programs including CIM Plans.</p>	
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Aopo Village CSSP small sub-project rainwater harvesting (water tanks) funded by PPCR-ECR project



Aopo village damaged cross-culverts on main road

Aopo Village Map

