

Community Integrated Management Plan

A'ana Alofi II - Upolu



Implementation Guidelines 2018

Foreword

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

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

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

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

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

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

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

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

Thank you



Hon. 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 Biological Resources; Livelihood and Food security; and Governance. Both partners have responsibilities for issues and solutions and the Plan gives an integrated approach to the provision of services and improvement of resilience now and in the future.

This Plan incorporates the Constituency of A'ana Alofi II (Leulumoega and Nofolii Villages)

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

Date of Signing: 22 June 2018

Representatives:	Signature
Leulumoega Village	
• Lefe'e Aano	
• Fagafua Penehuro	
• Moira Laheulo	
• Koreti Tupuola	
• Sulueti Ieremia	
Nofolii Village	
• Otemai Liu Ausage	
• Timo Sione	
• Aii Mariner	
• Fau Faaiua	
• Timu Omeka	

The Government of Samoa adopts the Community Integrated Management Plan for the Alii and Faipule of A'ana Alofi II (Nofoalii and Leulumoega Villages) as a Management Plan for the Implementation of the Community Integrated Management Strategy (CIMS)

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



Ulu Bismarck Crawley
CHIEF EXECUTIVE OFFICER, MNRE

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Acronyms

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

	Programme
VCDMP	Village Climate Disaster Management Plan
WB	World Bank
WCR	West Coast Road
WMP	Watershed Management Plan
WSSP	Water Sanitation Sector Plan

Glossary

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

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

1. Introduction to the CIM Plan

1.1 The Strategic Vision

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

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

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

1.2 The Aim of the CIM Plan

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

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

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

1.3 The Structure of the Plan

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

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

2. Implementation Guidelines (IG)

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 District Environment

3.1 Physical and Natural Resource Setting

The A'ana Alofi II District is located on the north western side of the island of Upolu east of Faleolo International Airport. The district is characterized by a gentle coastal plain with an exposed rocky shoreline gradually rising in elevation inland towards a mountainous backdrop.

The two villages of A'ana Alofi II are Nofalo'i and Leulumoega.

The coastline itself is largely exposed rock with minimal sand cover. The outer reef some 1.5 to 2.2 kms out from the coastline does not form a consistent barrier here. While there is no one defined reef break the fractured form of the outer reef does create open areas for tidal flows and extreme event wave action to impact directly on the coastal areas. This area between the villages of Nofalo'i and Leulumoega influences tidal flows and sediment transport within this lagoon. The reef system ranges from 1 km to more than 2 km offshore. There are some sporadic coral outcrops within the lagoon, but much is covered with sand. The SOE Report (2013) indicates that the coral reef cover and reef richness rates as low to medium, despite anecdotal signals that fish species diversity is high.

The reef lagoons of A'ana Alofi have historically had a distinct cloudiness. This is likely from influence of the hydro-geology of the terrestrial substrate with massive infiltration of surface water to the sub-surface flows (lava tubes or fractured substrate) in the mid to higher catchment with numerous springs evident about the coastal flat plains, wetlands and community pools. There is a high prospect of freshwater springs within the reef lagoons themselves. Under certain circumstances such hydro-geological processes can result in mineral rich waters surfacing as springs. These waters could be the cause of the 'cloudiness' of the lagoons. Local residents have advised that the historical cloudiness has not affected fish abundance.

There are at least five freshwater springs along the coast located in both villages. There is a wetland area behind the village of Nofalo'i which adds to the biodiversity of the area. The wetlands perform an important function as key drainage points for the inland surface water, the surface exposure of subsurface water flows (i.e. lava flows and subsurface hyporheic flows) while also functioning as ecological spawning areas (plant and animals) and providing environmental services through the filtering of water before flowing into the sea. Often these and other smaller wet areas have been directly affected by past anthropogenic activities and infrastructure provision. Natural open flowing natural drainage points from the mangroves to the sea have often been formalized with use of drain culverts, earthen ditches and/or pipes. Where these once continued the link between the wetlands and the sea many are now blocked through upstream pollution, sedimentation and irregular cleaning of the culverts and pipes.

The terrestrial biodiversity of the districts is dominated by the secondary forests inland while along the coast it is categorized as mostly settlements vegetation with ornamentals and small gardens. There are no native or primary forest left in the district as the inland forests part of the coconut plantations from the late 1800's. The districts are not within a Key Biodiversity Area according to the study conducted on Priority Sites for Conservation in Samoa: KBAs (2010) because both terrestrial and marine environment are highly exposed and impacted by anthropogenic activities that has shaped the current outlook of the district. Further inland from the coast settlements, plantations and small and medium scale cattle farms now dominate. There are many remnant cocoa and coffee plantations in this district, some of which have been revitalized since both markets faltered in the early 2000s - as shortages and price increases have stimulated interest. There is evidence too that vegetation cover has been reduced over the last decade as a result of the increase in cattle farming, specialized cash crops and more intensive use of plantations.

There are no permanent natural flowing rivers in the district of A'ana Alofi II, but there are many ephemeral waterways that increase the incidence of local and catchment flooding along the flatter coastal plains and about the centre areas of the villages coinciding with the main coastal roads. While this can be seen as a barrier to resilience building it does present opportunities too for strategic placement of integrated water management measures up-catchment (addressing hazards at the source). This could be in the form of small offline water dams (co-benefits for agriculture development) or the re-forestation of the upper catchment – all designed to reduce peak flood flows (quantity and velocity) reducing the level of risk downstream.

3.2 Social and Economic Setting

Development in the A'ana Alofi II District is mostly scattered along the main coastal road. This is the focus of new development and intensification of land use. However there is evidence of people moving inland as public utilities have been extended inland and utility services have become more accessible to residents living inland. The infrastructure service extensions that have assisted with resettlement include tar sealed roads, piped water, mobile phone reception and electricity supply.

The main road is considered an important part of the district's infrastructure and lifeline. The main road provides primary access to and from Apia, to the Faleolo International Airport, the Mulifanua wharf to Savai'i as well as district facilities and services including the district hospital, schools, churches and shops. It is in good condition, but it is located within the flooding and erosion hazard zones and, in parts, is only meters from the high water mark. Often there are too few road drainage infrastructure with only spasmodic use of under road culverts to stem the pooling of flood waters inland from the main coastal road. For instance there is only one culvert in front of a church in Leulumoega. Run off from the inland plantation roads drains directly downhill which increases the local flooding of the main coastal road and village common areas. Limited use of central village and road drainage reserves and culverts to drain the water toward the sea – extends the impact of local flooding and inundation.

Elsewhere culverts have been used to link wetlands to the sea, as seen in the village of Nofolii. However often the culverts are poorly managed with sediments and rubbish blocking them intensifying inland flooding in the wetlands and beyond, especially during and after heavy excessive rainfall.

From the main road, access roads to the village plantations and schools extend inland. There are five access roads within the district that vary in condition. Roads accessing the primary school and College in Nofolii are sealed up to 200 metres inland, and have access to services as far as the end of the seal. Access roads in Leulumoega are sealed for similar distances; however water supply along these roads is intermittent. Electricity is supplied however there are no streetlights along access roads and bulbs need to be regularly replaced along the main roads. The nature of roads going straight up to steeper lands means that many of these work roads generate a lot of runoff even during small rainfall events. The high volume of water and velocity of runoff down the hill is such that much damage is caused to the roads themselves, the infrastructure and essential services provided along their routes, as well as local flooding of property.

The population of A'ana Alofi II is about 3,202 people (2016 - Census Preliminary Count). Nofolii slightly increased its population as compared to 2011 with 2018 people, and Leulumoega with 1,184 people. The majority of households in both villages of Leulumoega and Nofolii are supplied with metered water from the Samoa Water Authority with a small number of families reliant on rain water harvesting system.

Employment in the District is dominated by traditional work. In both villages, the majority of residents are largely sustained by plantation work and fishing. In addition, there are a number of small shops and home occupations throughout the area. A large number of local residents are also employed in Apia. The District supports three primary schools and two colleges. There are also a number of churches and a District hospital. The hospital is in good condition but requires seawall protection on the northern side. However, the hospital is under resourced and unable to plan for this resilience building protection work.

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 A'ana Alofi II, mapped out all vulnerable areas along the coast and most of the lowland

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

coastal areas identifying them as hazard zones given the exposure to natural disasters, climate change and extreme events causing flooding and erosion. It is the coastal area where most of the population for in terms of commuting to town, wharf and airport, for the CIM Plan updates we need to consider the broader landscape hazards, climate risks and responses to increase resilience. A 'ridge to reef' approach is used to ensure all hazards, risks and potential responses are canvassed in an integrated manner.

Coastal Hazards and Risks: The Coastal Hazard Mapping by BECA in 2000 showed that A'ana Alofi II District coastal area has a High Nofoali'i and Leulumoega reside, and where many of the government infrastructure, village developments and family businesses are located. While the coastal areas and infrastructure are the lifeline of the district Coastal Sensitivity Index, and has changed noticeably over the last several decades. The coastline has receded by 5 to 10metres from its 1954 location.

While the erosive forces continue along the coast, some of this coastline has been reclaimed for residential and business development exposing them to the coastal erosion hazard zones. Such reclamations also change the current circulation and sand balance along the shore and near-shore areas. This in turn places greater erosion or flooding pressure elsewhere along the coastline, and can lead to near-shore waters not being adequately flushed by tidal variations and wave actions. There are also the direct pollution impacts from reclamations themselves, or effluent, polluted run-off or other wastes coming directly from the developments.

The government asset such as the existing west coast road is located within the hazard zones – either within cyclone, flood or tsunami risk areas. The existing water supply and electricity lines are also located in these hazards zones, some of which are nominated as of high risk category. All families within the hazard zones have property inland which they used for plantations. Some families have moved inland since the tsunami and Cyclone Evan.

Hazards and Risks Inland: Consistent with the 'ridge to reef' (R2R) approach the new LiDAR mapping data was used to determine likely inland hazards and risks from terrestrial flooding, waterway erosion and sedimentation. The characterization of the landscape was also used for inputs to livelihood and food security issues. The influence of the hydro-geology can be recognized with streams disappearing into lava tubes, fractured geology or 'sink holes'. Most of these waterways are ephemeral streams: only flowing during rainfall events. Inland fluvial and geomorphological features were considered in the first ever mapping of all flowing and ephemeral streams and waterways. Land slope classes, with elevation, landscape and landform features were used to identify prospect hazard areas.

During the community consultations, it was evident that many coastal hazard issues, like severe waterway flooding, lowland inundation, uncontrolled runoff, bridge and culvert wash-outs and troublesome sedimentation – mostly had their origins in excessive inland clearance of forests, catchment land use changes, poor drainage along roads and poor sustainable land management practices. Such changes to the landscape in an uncontrolled manner severely affects the natural waterway systems, the run-off from nearby land and the groundwater flows. Pollutants and sediments can be transported to the coastal environs, then through to the lagoons and reefs. In the medium to long term the decline in the health of the lagoons and reefs reduces the efficiency of these natural barriers to climate change and natural disasters. Additionally, a better understanding of the hydro-geological and water resources of the catchment and how they interact with landcover and land use practices, enables the identification of options to address water security issues.

4. Aana Alofi II District Interventions

CIM Plan Solutions

Infrastructure	Best Solutions	Benefits	Guidelines to assist with implementation	Relevant Sector Plans
Main Road West Coast Road (WCR)	<p>The WCR project will rehabilitate: - main road from Vaitele tai to Faleolo International Airport, includes- widening lanes, footpaths, culverts/drainage and shoulders</p> <p>Responsibility: LTA / MWTI</p>	<p>Improves resilience of infrastructure to natural hazards and disasters</p> <p>Improves the rate of response and recovery to natural hazards and disasters.</p> <p>*Maintains lifeline access for all of Savaii</p> <p>*Improves coastal Protection</p> <p>*Minimises the impacts of flooding on the community and businesses</p> <p>*Improves the rate of surface water discharge.</p>	<p>Use existing information for guidance but not limited to:</p> <p>Environmental Social Safeguard Policy</p> <p>“Vulnerability Assessment of the Samoa Road Network (2017)”;</p> <p>“Review of National Road Standards in Samoa (2016)”;</p> <p>“Samoa Code of Environmental Practice (2007)”</p> <p>*National Infrastructure Strategic Plan 2011</p> <p>*Use updated Hazard Maps to inform designs</p> <p>*Undertake a Cost Benefit Analysis to weigh options for funding</p> <p>*Incorporate environmental and social safeguards concerns in the design and undertake consultations with affected communities.</p> <p>*Apply for necessary permits as required by law</p>	<p>*Community Integrated Management Strategy 2015</p> <p>*Transport Sector Plan 2014-2019</p>
Drainages Require Maintenance and Upgrade	<p>Implement routine maintenance of the road and side drains and clear any debris blocking the free flow of surface water runoff</p> <p>Responsibility: LTA/MWCSD/ Villages / MWTI</p>	<p>Reduce impacts of communities from flooding</p> <p>Improves the rate of surface water discharge</p>	<p>Identify funding/budget requirements and implementation programme for construction and development</p> <p>Samoa CODE of Environmental Practice (PUMA - 2007) COEP 11 – Drainage</p>	

			Work with the communities to keep the drainages clear of any debris	
Electricity Supply	<p>Install and connect power supply for residents inland.</p> <p>Install streetlights along the access roads where needed for community safety</p> <p>Relocate overhead lines to a more resilient location when being replaced</p> <p>Provide underground electricity lines in the long term</p> <p>Install and connect to solar power supply if made available</p> <p>Responsibility: EPC/MWTI/Villages</p>	<p>Maintain electricity supply at all times including during natural disasters</p> <p>Avoid accidents due to fallen electricity posts.</p>	<p>Monitor distribution networks to avoid overloading poles and contributing to line failures</p> <p>Development of a Renewable Energy and Energy Efficiency Framework, 2016</p>	Samoa Energy Sector Plan 2017-2020
Seawall extension for coastal protection	<p>- Extend seawall about 50m before the hospital to protect main road from coastal erosion</p> <p>*Assess and design reinforcement measures to strengthen and complete the existing seawall as it is contributing to the rapid erosion of the coastal protection.</p> <p>Extend seawall to protect the northern side of the village pool / spring from wave damage.</p> <p>Responsibility: MWTI /LTA / MNRE- DMO/ District</p>	Encourages the relocation of the district hospital	<p>There is a need to:</p> <ul style="list-style-type: none"> - investigate feasibility of this option - need for a seawall where government assets are to be protected - provide a short term option for residents along the coast and in the long term relocate to higher grounds <p>Conduct further investigation to identify the need for repairs to ensure water security and efficient use of resource by the village/community</p> <p>Environmental and Social Safeguard Policy Review of National Road Standards in Samoa (2016) MWTI</p> <p>National Infrastructure Strategic Plan (NISP) 2011</p>	<p>Transport Sector Plan 2014-2019</p> <p>National Environment Sector Plan 2017-2021</p>

			<p>Samoa CODE of Environmental Practice (PUMA - 2007) COEP 11 - Drainage</p> <p>Vulnerability Assessment of the Samoa Road Network (2017)</p> <p>Review of National Road Standards in Samoa (2016) MWTI</p> <p>National Infrastructure Strategic Plan (NISP) 2011</p> <p>PUMA Act 2004</p>	
Emergency Management	<p>Conduct evacuation centre assessment scheduled mid 2017/2018</p> <p>Prepare Village Climate Disaster Management Plan (VCDMP)</p> <p>Implement CDCRM program and include installation of evacuation signs</p> <p>Emergency Radio Network (ERN) covered by Tafua Upolu</p> <p>Responsibility: MNRE-DMO</p>	Improve preparedness and readiness response to natural disasters	Develop VCDMP guided by the Community Disaster Risk Management Plan and training	National Disaster Management Plan 2017-2021
Rainwater harvesting	<p>Rainwater harvesting immediate action, supported by the installation of water tanks for families residing inland without access to water</p> <p>For consumption and domestic use and to provide alternative water source for families receiving saline water.</p> <p>Responsibility: CSSP / NGOs / UNDP-GEF SGP / MWCSO / village</p>	Improve community adaptive capacity to respond to climate change impacts	<p>Conduct assessment of vulnerable families inland without access to water prior to approving rainwater harvesting system.</p> <p>National Water Resources Management Strategy 2007-2017</p>	<p>Community Engagement Plan (2015)</p> <p>Community Development Plan 2016-2021</p> <p>Water and Sanitation Sector Plan 2016-2020</p>

<p>Main water distribution network / Piped water to families living inland</p>	<p>Improve water supply system to connect all families without access to water: Implement SWA service on pressure management and leak detection work as part of Non-Revenue Water (NRW) reduction program for Rural areas</p> <p>Chlorination of water supply</p> <p>WCR project will also upgrade coastal water piped network</p> <p>Responsibility: SWA / LTA/Villages/MOH/MWCSD</p>	<p>Improve access to clean quality water for inland families;</p> <p>Enhance resilience of water distribution network infrastructure due to the upgrade CRWCR project</p>	<p>Environmental & Social safeguard policies apply-SWA piped water network from Alafa'alava to A'ana Alofi II is co-financed by PPCR-ECR project</p> <p>Implementation plan to address leak detection and pressure management works as part of the NRW (Non-Revenue Water) reduction program</p> <p>Implementation of the SWA (2016)10 year investment plan to improve water supply network to support all inland families without access to drinking water.</p>	<p>Community Integrated Management Strategy, August 2015)</p> <p>Water and Sanitation Sector Plan 2016-2020</p>
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Other CIM Plan Issues Identified	Comment
<p>District Hospital at Leulumoega within CHZ</p> <p>Responsibility: MoH / MWTI / District</p>	<p>This is not a CIM Plan priority but upgrading the hospital facilities will include medicine and equipment to treat patients. As well in the long term if the hospital building is to be renewed to consider relocating the hospital further inland away from the hazard zone.</p>
<p>Paul IV College - investigate improving the sports field at Paul IV College</p> <p>Responsibility Catholic Church / MESC / MWTI</p>	<p>While the Colleges are outside the coastal hazard zones further investigation can be undertaken to improve their operation. Upgrading the Paul IV College playing field to a district standard in order to host district games, youth rallies etc.</p>

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

<p>Emergency Response and disaster preparedness</p>	<p>Develop a village climate and disaster emergency plan Need to installed emergency evacuation signs Responsibility: MNRE-DMO / MWCSO / District</p>	<p>Implement the National Disaster Management Plan 2017-2021</p>	<p>District has completed its CDCRM training and they requested that they want to expand to have emergency signs installed along the road for emergency response preparation towards a disaster.</p>
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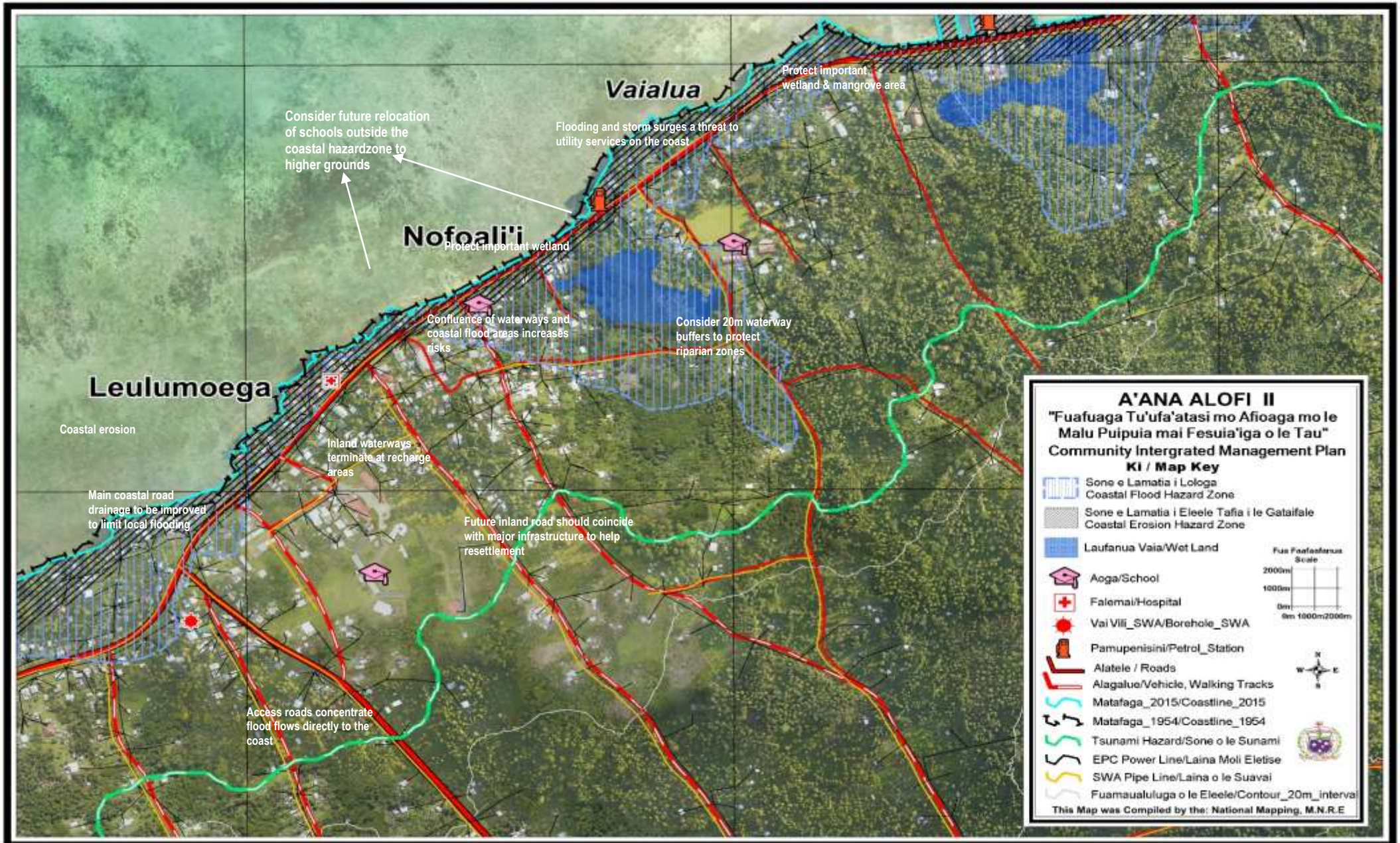


Village pool is inundated with sea water during storm surges – village request



Coastal Erosion

Aana Alofi II District Map



4.1 Nofoali'i Village Interventions

Infrastructure	Best Solutions	Benefits	Guidelines to assist with implementation	Relevant Sector Plans
Village infrastructure located in high risk hazard zones such as: Houses, Schools Churches Businesses, Committee House	<p>*Relocate outside hazard zones when infrastructure requires replacement</p> <p>*Investments within the hazard zones to adopt appropriate mitigation measures</p> <p>*Design infrastructure appropriately to take into account the immediate hazard zones; for example, raise floor levels in flood prone areas.</p> <p>Responsibility: MWTI MNRE/Village</p>	<p>*Mitigate potential damage caused by hazards such as coastal erosion, flooding and landslips</p> <p>*Reduce costs and on-ongoing maintenance of infrastructure</p> <p>*Safer villages, houses and roads</p>	<p>Relocation to be guided by existing strategies and policies:</p> <p>Application of the National Building Code (Draft Sept 2016) and permit compliance</p> <p>*Refer to National Building Codes of Samoa</p> <p>*Use updated Hazard Maps to inform designs</p> <p>National Infrastructure Strategic Plan 2011</p> <p>PUMA Act 2004</p>	CIM Strategy (2015)
Upgrade access road to improve accessibility inland and to evacuation shelter	<p>*Assess, reconstruct and seal village access road to provide for safe access inland and to evacuation shelter (Nuuausala College)</p> <p>Maintenance under LTA program</p> <p>Responsibility: LTA/MWTI/MNRE-DMO</p>	Improve resilience of public infrastructure	<p>Construction of access roads should be guided by:</p> <p>Relevant Environmental and Social Safeguard Policy</p> <p>Samoa CODE of Environmental Practice (PUMA - 2007)</p> <p>Review of National Road Standard in Samoa (2016)</p> <p>National Infrastructure Strategic Plan (2011)</p> <p>Vulnerability Assessment of the Samoa Road Network (2017)</p>	Land Transport Sector Plan 2016-2020
Water (SWA)	<p>Implement the proposed 500m submain from the coast towards Nuuausala College</p> <p>Investigate reliable water source to feed Nofoalii inland resident is without water</p>	Improve piped water access to all sub-villages with limited water supply	<p>Samoa Water Authority Pipeline Work Program for FY16/17 and FY17/18</p> <p>Environmental and Social Safeguard Policies apply - MoH Water Quality Standards</p>	<p>Community Integrated Management Strategy, August 2015)</p> <p>Water and Sanitation Sector Plan 2012-2016,</p>

	Responsibility: SWA / village		SWA 10 Year Investment Plan (2016) to improve water supply network	
Coastal Spring	<p>Upgrade coastal spring with improved wall structure to prevent water runoff from main road and storm surges</p> <p>Clean village pools used for bathing on a regular basis</p> <p>Responsibility: Village/ MNRE / CSSP/NGO</p>	Enhance community resilience action - backup water supply for domestic use	<p>Environmental and Social Safeguard Policies apply</p> <p>Community Engagement Plan (2015)</p> <p>Assess the need for a Development Consent from PUMA</p>	Community Development Plan 2016-2021

Natural Resources and Environment	Best Solutions	Benefits	Guidelines to assist with implementation	Relevant Sector Plans
Replanting /coastal restoration	<p>Replant vegetation / littoral plants in coastal areas</p> <p>Encourage natural regeneration of coastal plants</p> <p>Responsibility: MNRE /MAF/ MWCSO/Village/</p>	<p>Protects coastline against normal wave action</p> <p>Maintains natural ecosystem connectivity</p> <p>Increase sand build up minimizing erosion</p>	<p>Provide technical advice to communities using NBSAP 2015-2020.</p> <p>National Invasive Species Plan – 2008-2011</p>	National Environment Sector Plan 2017-2021
Sand mining for commercial and domestic use affecting the marine and coastal environment	<p>Assess and identify sustainable sources of river sand for domestic and commercial use</p> <p>Village, government and the private sector to collaborate on designated areas for river sand mining</p> <p>Strengthen sand mining monitoring and enforcement</p> <p>Mass media awareness on sustainable sand mining practices</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 site of extraction</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. Alii Faipule and landowner provide consent</p> <p>Develop sand mining regulation</p>	<p>National Environment Sector Plan 2017-2021</p> <p>Water and Sanitation Sector Plan 2016-2020</p>

	<p>Develop sand mining regulation</p> <p>Responsibility: <i>MNRE / Village</i></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</p> <p>(draft) Sand Mining Policy 2001</p> <p>Draft Soil Resource Management Bill, 2018</p> <p>NAP Sustainable Land Management Plan 2015-2019</p>	
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Livelihood and Food Security	Best Solution	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</p>	Improve food security and healthy living and increase community resilience and adaptive response to climate change	<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</p>	Agriculture Sector Plan 2016-2020

	<p>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>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: 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>	
Marine Restocking	<p>Restock reefs and lagoons with marine species such as clams, trochus, seaweeds and others for domestic consumption.</p> <p>Responsibility: MAF /MNRE/ village</p>	<p>Increase diversity of marine species and coral reef ecosystem</p> <p>Reduce coral bleaching</p>	<p>Improve existing marine reserve and encourage expanding to other nearby sub-villages</p> <p>Community-Based Fisheries Management Plan</p>	Agriculture Sector Plan 2016-2020

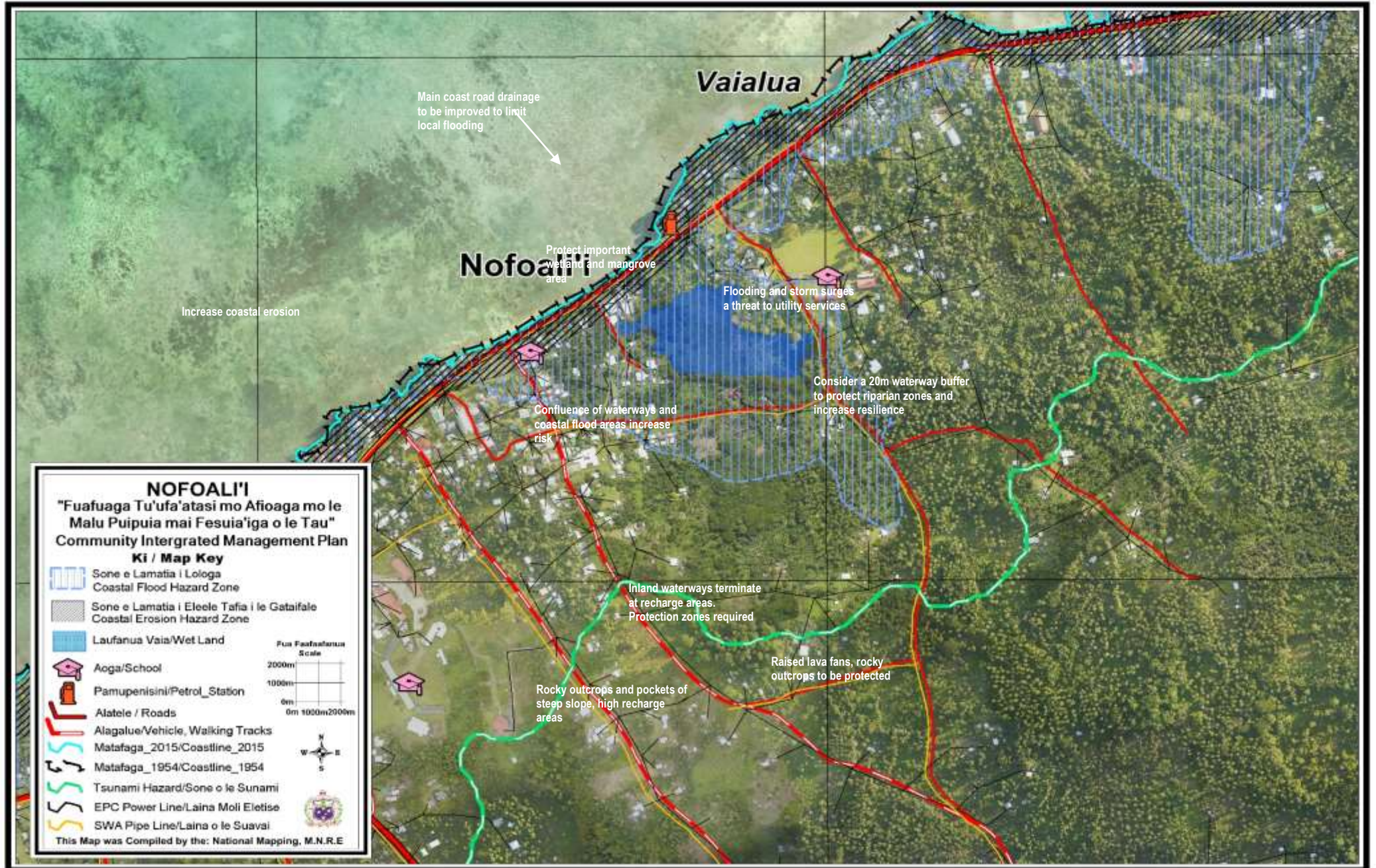
Governance	Best Solutions	Guidelines to assist with implementation	Comments
Village By-laws needed to support the protection of natural resources	Develop and implement Village By Laws for community to follow and include protection of natural resources both marine and terrestrial	Village Fono Amendment Bill 2016, allows the villages to have their own faiga faavae “refer Clause 5 Amendment”.	The Amendment allows for the village to establish their own governing constitution and have it registered with MWCSO and in this way village by-laws to manage community and public asset

	Responsibility: MWCSD / MAF / MNRE / Villages	Fisheries Village By-Laws	as well as natural resource management can be part of the village constitution.
Institutions	<p>Encourage participation of youth and women in village decision making: Consultation framework that promotes representation of women and youth Process that informs the village on all projects either by government or NGO</p> <p>Responsibility: MWCSD / Villages</p>	<p>SDS 2016/17 - 2019/20</p> <p>Community Development Plan 2016-2021</p>	<p>CIM Plan consultation witnessed the strong and active participation from both women and youth.</p>



Nofaalii New Access Road completed in 2014 by LTA.

Nofoalii Village Map



4.2 Leulumoega Village Interventions

Infrastructure	Best Solutions	Benefits	Guidelines to assist with implementation	Relevant Sector Plans
<p>Village infrastructure located in the high risk hazard zones such as:</p> <p>Houses, Schools Churches Business Committee House</p>	<p>*Relocate outside hazard zones when infrastructure requires replacement</p> <p>*Investments within the hazard zones to adopt appropriate mitigation measures</p> <p>*Design infrastructure appropriately to take into account the immediate hazard zones; for example, raise floor levels in flood prone areas.</p> <p>Responsibility: / MWTI/MNRE/ Village</p>	<p>*Mitigate potential damage caused by hazards such as coastal erosion, flooding and landslips</p> <p>Reduce cost in ongoing maintenance of infrastructure</p> <p>*Safer villages, houses and roads</p>	<p>Relocation to be guided by existing strategies and policies:</p> <p>Application of the National Building Code (Draft Sept 2016) and permit compliance</p> <p>Refer to National Building Codes of Samoa</p> <p>*Use updated Hazard Maps to inform designs</p> <p>National Infrastructure Strategic Plan (2011)</p>	<p>CIM Strategy (2015)</p>
<p>Drainage system to be improved</p>	<p>Implement road drainage system:</p> <ul style="list-style-type: none"> - regular drainage inspection programme for maintenance, - clear storm water drainage to reduce surface runoff, and clear rubbish from the mouth of culverts to allow free outflow of water <p>Install larger sized culverts where needed</p> <p>Responsibility: LTA/MWTI/MWCSD/ Village</p>	<p>Improve drainage system will reduce flooding impacts on communities</p> <p>Improve the rate of surface water discharge</p>	<p>WCR consider drainage on main road</p> <p>Identify funding/budget requirements and implementation programme for construction and development</p> <p>Samoa CODE of Environmental Practice (PUMA - 2007) COEP 11 – Drainage</p> <p>Draft Vulnerability Assessment of the Samoa Road Network (May 2016);</p> <p>West Coast Road - Environmental Code of Practice (2012)</p>	<p>Transport Sector Plan 2014-2019</p>

			National Infrastructure Strategic Plan 2011 National Infrastructure Strategic Plan 2011	
Water (SWA)	<p>Improve water supply system to connect all families without access to water; Implement SWA service on pressure management and leak detection work as part of Non-Revenue Water (NRW) reduction program for Rural areas</p> <p>Chlorination of water supply</p> <p>WCR project will upgrade coastal distribution network</p> <p>Proposed investigation of reliable water source to feed Leulumoega inland residents without access to piped water.</p> <p>Responsibility: SWA / village/ MOH</p>	Improve piped water access to all sub-villages with limited water supply	<p>Environmental and Social Safeguard Policies apply –</p> <p>MoH Water Quality Standards</p> <p>SWA 10 Year Investment Plan (2016) to improve water supply network</p>	<p>Community Integrated Management Strategy, August 2015)</p> <p>Water and Sanitation Sector Plan 2016-2020</p>
Coastal Spring	<p>Implement structural measures to: upgrade coastal spring along main road and inland</p> <p>Need to test quality of the drinking water spring.</p> <p>Responsibility: CSSP/NGOs/UNDP-GEF SGP/MOH/villages</p>	Increase adaptation option during drought period - for domestic use	<p>WCR project to consider protecting coastal spring when widening road and upgrade current structure</p> <p>Environmental and Social Safeguard Policies apply -</p> <p>Community Engagement Plan (2015)</p> <p>West Coast Road - Environmental Code of Practice (2012)</p>	<p>Water and Sanitation Sector Plan 2012-2016,</p> <p>Community Development Plan 2016-2021</p>
Electricity Supply	<p>Install and connect power supply for residents inland.</p> <p>Install streetlights</p>	<p>Maintain electricity supply at all times including during natural disasters</p> <p>Avoid accidents due</p>	<p>Monitor distribution networks to avoid overloading poles and contributing to line failures</p>	<p>Samoa Energy Sector Plan 2017-2020</p>

	<p>along the access roads where needed for community safety</p> <p>Relocate overhead lines to a more resilient location when being replaced</p> <p>Provide underground electricity lines in the long term</p> <p>Install and connect to solar power supply if made available</p> <p>Responsibility: EPC/MWTI/Villages</p>	<p>to fallen electricity posts.</p>	<p>Development of a Renewable Energy and Energy Efficiency Framework, 2016</p>	
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Natural Resources and Environment	Best Solutions	Benefits	Guidelines to assist with implementation	Relevant Sector Plans
Replanting /coastal restoration	<p>Replant vegetation / littoral plants in coastal areas</p> <p>Encourage natural regeneration of coastal plants</p> <p>Responsibility: MNRE /MAF/ MWCS D/Village/</p>	<p>Protects coastline against normal wave action</p> <p>Maintains natural ecosystem connectivity</p> <p>Increase sand build up minimizing erosion</p>	<p>Provide technical advice to communities using NBSAP 2015-2020.</p> <p>National Invasive Species Plan – 2008-2011</p>	<p>National Environment Sector Plan 2017-2021</p>
Sand mining for commercial and domestic use affecting the marine and coastal environment	<p>Assess and identify sustainable sources of river sand for domestic and commercial use</p> <p>Village, government and the private sector to collaborate on designated areas for river sand mining</p> <p>Strengthen sand mining monitoring and enforcement</p> <p>Mass media awareness on sustainable sand mining practices</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 site of extraction</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. Alii Faipule and landowner provide consent</p>	<p>National Environment Sector Plan 2017-2021</p> <p>Water and Sanitation Sector Plan 2016-2020</p>

	<p>Develop sand mining regulation</p> <p>Responsibility: MNRE / Village</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</p> <p>(draft) Sand Mining Policy 2001</p> <p>Draft Soil Resource Management Bill, 2018</p> <p>NAP Sustainable Land Management Plan 2015-2019</p>	
Fisheries Reserves	<p>Strengthen monitoring and evaluation of fisheries reserves</p> <p>Maintain existing reserves and if possible, include additional fishery reserves for the other sub-villages</p> <p>Responsibility: MAF / MNRE / village</p>	<p>Increase marine species diversity including fish species and coral reef ecosystem</p> <p>Improve coral communities 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>Agriculture Sector Plan 2016-2020</p> <p>National Environment Sector Plan 2017-2021</p>
Waste Management	<p>Adopt and enforce Village by-laws on waste management and village beautification</p> <p>Implement awareness program on village cleanliness and waste management</p> <p>Responsibility: Village / MWCSO / MNRE/MOH</p>	<p>Improve hygiene and village cleanliness</p>	<p>Village By-laws</p> <p>National Beautification Program</p> <p>Waste Management Act 2010</p>	<p>National Environment Sector Plan 2017-2021</p> <p>Village Fono Act</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, 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 and integrated pest management programmes</p> <p>Responsibility: MAF / CSSP/WIBDI/Farmers Association/ METI/ SBEC / UNDP-GEF-SGP/MNRE / villages</p>	<p>Improves 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: Draft Soil Resource Management Bill 2018</p>	<p>Agriculture Sector Plan 2016-2020</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>	
Marine restocking	<p>Restock reefs with edible marine species such as clams, trochus, seaweeds and others for domestic consumption.</p> <p>Responsibility: MAF /MNRE/ village</p>		<p>Improve existing marine reserve and encourage expanding to other nearby sub-villages</p> <p>Community-Based Fisheries Management Plan</p>	Agriculture Sector Plan 2016-2020
Pest Management	<p>Implement a program to control and eradicate pests (African snail, myna bird)</p> <p>Integrated pest management on crops</p> <p>Consult with MAF observed "patches" on oranges and citrus fruits</p> <p>Look at improved planting materials that are resilient to Climate Change</p> <p>Responsibility: MAF /MNRE/ village</p>	Reduce impact of AIS on land use practices	<p>Seek guidance from experts on trainings for farmers on pests' management particularly affecting fruit trees and crops.</p>	Agriculture Sector Plan 2016-2020

Governance	Best Solutions	Guidelines to assist with implementation	Comments
<p>Village By-laws needed to support the protection of natural resources</p>	<p>Develop and implement Village By Laws for community to follow and include protection of natural resources both marine and terrestrial</p> <p>Responsibility: MWCS D / MAF / MNRE and Villages</p>	<p>Village Fono Amendment Bill 2016, allows the villages to have their own faiga faavae “refer Clause 5 Amendment”.</p>	<p>The Amendment allows for the village to establish their own governing constitution and have it registered with MWCS D and in this way village by-law to manage community and public asset as well as natural resource management can be part of the village constitution.</p>
<p>Institutions</p>	<p>Encourage participation of youth and women in village decision making: Consultation framework that promotes representation of women and youth Process that informs the village on all projects either by government or NGO</p> <p>Responsibility: MWCS D / Villages</p>	<p>SDS 2016/17 - 2019/20 Community Development Plan 2016-2021</p>	<p>CIM Plan consultation witnessed the strong and active participation from both women and youth.</p>



Mataiva Spring Pool



Punaolo Spring pool alternative water for domestic use during drought



Leulumoega Primary School an alternative Evacuation Shelter for the village

Leulumoega Village Map

