National Emergency Telecommunication Plan

Samoa

Office of the Regulator

OFFICE of the REGULATOR

NATIONAL EMERGENCY TELECOMMUNICATION PLAN (NETP) - Samoa

Prepared by the Office of the Regulator

28th October 2009

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Regulator
Private Mail Bag
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1 Foreword

It is my utmost pleasure to introduce our new plan for Samoa's National Emergency Telecommunication Plan. In this exercise, we have combined solutions and how to achieve them given the status of our infrastructure, the capacity of various stakeholders and areas that needs improvement. It is a 5-year plan which propose what is needed for Samoa to response in times of continuous changes to our environment and the vulnerabilities we face with our small islands. While we also have challenges with limited resources the two plans serve to complement each other with the hope that the lives are saved, and people are quickly recovered from disasters and emergencies.

Samoa's Minister for the Office of the Regulator, Afamasaga Rico Tupai and His Excellency Houlin Zhao ITU Secretary-General, ITU. This is His Excellency visit to Samoa 16 July 2019. The mission includes talk on ICT development and how it had contributed to disaster management and risk reduction.

The shared vision that is discuss in this document and was well supported by all the stakeholders during the consultations, also reflect how ICT is now an integral part of these developments as an enabler for disaster management. The OOTR concur with the use of such tools and mechanisms to fast track not only response but also during the recovery phases after disasters. Furthermore, it is hoped that such experiences are shared throughout the world on similar cases and scenarios from the South Pacific. The latest availability of 4G services in Samoa and the arrival of the Tui-Samoa submarine cable are the major resources that the 4 phases of disaster management can use for its use cases. Later this year 2019 will also await the launching of the Digital TV platform which will become additional technologies for improving how we communicate in all phases of disaster management. I am very excited with these new developments because I know Samoa is moving forward.

I hope the 2 documents will be useful for all the stakeholders and great to be part of its progressing work, from its review to the construction of this final document.

Hon Afamasaga Lepuia'i Rico Tupai
MINISTER for OFFICE OF THE REGULATOR

The Regulator, Samoa

Samoa's Regulator, Lefaoali Unutoa Fonoti-Aueluai and Mrs Bogdan-Martin first woman to serve as one of ITU's top elected officials in her role as Director of BDT at the GSR-19, Vanuatu.

The Office of Regulator in Samoa played a leading role in the continuous support and enhancing national communication during emergencies. This is the third review that has been conducted on the National Emergency Telecommunication Plan for Samoa since the first plan in 2008. The most success outcome of these 2 plans is the collaboration effort by national bodies as well as private sector and non-profit organisations who worked tirelessly to promote and assist during disasters for our people. These plans would not have been possible if it wasn't for their invaluable commitment towards their collaborative effort. Furthermore, we would like to acknowledge the continuous support of our development partners such as the International Telecommunications Union on their support to fund and assist this project since its launch in 2008.

This new plan is a second document of a two-plan approach, where one looks at strategic planning within 5 years while the second which is called the National Emergency Telecommunications Operational Plan (NETOP) focuses on what to do and where things are for preparation, during and responses after a disaster. The NETOP is an annual document where it cross referenced the progress of the overall National Emergency Telecommunication Plan (NETP). Especially, having proper solutions and processes in place to enhance the operation of the Communication cluster.

Both the NETP and NETOP aims to maximize the use of all communications capabilities available for emergency responders; voice, video, and data, as well as to ensure the security of data and information. The Tui Samoa Submarine Cable, Samoa National Broadband Highway, 4G upgrade projects and other connectivity projects in the Pacific are some of the investments that this plan would like to capitalise to gain access to international stakeholders and resources on capacity building for our people. Other opportunities include access to crowd source software and mobile app industries.

This is our third attempt to improve the NETP and to that end, I ask each and every one for your continuous cooperation and assistance as we begin the implementation process for the 2019 NETOP. Only by working together will we make progress towards increasing the speed, effectiveness, and efficiency of incident-related information sharing and ultimately help to save lives and protect our Samoa.

Fa'afetai,

Lefaoalii Unutoa Auelua- Fonoti
REGULATOR

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2 Executive Summary

Every village and community around Samoa is exposed to incidents such as cyclones, floods and tsunamis of different scales and magnitudes on a regular basis. The ability of emergency response personnel to warn communities of approaching incidents and respond in real time is essential in reducing the likelihood of harm, establishing command and control at the scene of an emergency or disaster, maintaining event situational awareness, and operating effectively in respect of a broad range of incidents.

Recognising the need for an overarching strategy to help coordinate and guide such efforts, the Office of the Regulator has worked with the International Telecommunications Union (ITU) and all sectors involved in Disaster Management (Government Ministries, Service Providers of Telecommunication Services and private organisations) to develop a National Emergency Telecommunication Plan (NETP) for Samoa. It is a strategic plan to provide recommended initiatives for improving emergency telecommunication capabilities and how they are used.

A separate, operationally focused document, the National Emergency Telecommunications Operational Plan (NETOP), describes how the current telecommunications facilities are used before, during and after an incident to prevent, mitigate and respond to the effects of such incidents.

There is no simple solution for the improvement of communications during times of natural disasters and emergencies - hence the Office of the Regulator's approach to the NETP and NETOP involves making improvements in coordination, planning, training, exercises and the application of technology. This would be done at all levels of government. The NETP will be used to identify and prioritize investments to move Samoa toward this vision. As required by the provisions of the Telecommunications Act 2005, the two plans will be a dynamically evolving documents subject to review by the Office of the Regulator (OOTR) in coordination with the stakeholders at regular intervals.

To ensure that the plans are implemented appropriately, it is proposed that a new National Emergency Telecommunications Coordination Committee (NETCC) is formed which is made up of senior representatives from the Telecommunications, Disaster Management, and relevant sectors.

3 Introduction

The ability of disaster and emergency response personnel to effectively communicate is vital to the safety and security of Samoa. Following the earthquake and tsunami on 29 September 2009, it was apparent that there was a need to improve the communication framework with respect to communications during natural disasters or emergencies. The inability to deliver warning messages to the general public led to criticisms of the approach of the DMO in this particular case. The absence of effective communications also had a great impact on the implementation of the National Disaster Plan.

These events raised awareness of the issue among public policy makers and highlighted the critical role emergency telecommunications plays in incident response. These events also prompted numerous assessments among the public on the state of emergency telecommunications which is in turn has helped the Office of the Regulator to formulate a unified approach for addressing emergency telecommunication services during disasters. Telecommunications, as we know, plays a vital role in every natural disaster. The whole infrastructure of any country and modern society depends on effective telecommunication system to function and most of all to save lives.

As a result of these considerations, a National Emergency Telecommunications Plan (NETP) was put in place in 2009 and this plan was revised in 2010 (twice), 2011 and 2014. In this latest version, which was written with the assistance of the ITU, the document has been split into two parts:

- a NETP – the current document which is a forward-looking document containing recommendations for improving emergency telecommunications facilities and how they are used; and
- a National Emergency Telecommunications Operational Plan (NETOP – a separate document) which describes how the current telecommunications and related facilities are to be used in emergencies.

3.1 Mandates for Change

In the past decade, much has been done to help Samoa to move forward and adapt to natural disasters to mitigate the impact of these disasters. However, there continues to be a need for a coordinated response by the public and private sector with respect to natural disasters. The perception of natural dangers and complex threats facing this country and the region, and the potential consequences they could have on the small Pacific Islands have become more apparent. These risks include a wide range of events from earthquakes to tsunami, floods, fire, cyclones, storms or other disasters (whether natural or resulting from the acts of commission or omissions of humans). Therefore, there is an urgent need for immediate and adequate actions to adapt to these natural disasters and put in place measures to mitigate them. They all carry the potential of severe consequences and must therefore be addressed as a combined national effort. Samoa must prepare for the long-term consequences of climate change and plans and guidelines to mitigate the effects of disasters must

be developed. The Disaster Advisory Committee (DAC), the OOTR and the stakeholders believe that a new concept for disaster management is required. This new concept must be approached through a better and improved awareness, preventative procedures and robust preparedness. This will be improved if the response and recovery aspects for Samoa's telecommunication system are as efficient and as effective as possible. A united national effort is essential, one with a cooperative approach to manage these systems and with the ultimate goal of a significant reduction of Samoa's vulnerability over time.

The challenge to all government ministries, service providers, private sector and development partners is to act as a united front to implement and continue to support the agreements and recommendations of this plan. The belief is for a strong argument to do the following:

- Policy makers at the highest level must determine whether or not new legislation is required to enforce this plan and other existing plans.
- OOTR must continue its partnership with its stakeholders to implement NETP & NETOP
- Government response and recovery agencies must work together and seek input from the public on what needs to be done.
- OOTR and stakeholders must implement these agreements by seeking input from local and international organizations to integrate their needs into solutions, and must work with end users to ensure that resources reach all villages and all communities.
- Promote continuous education for the public on these new way of life, safety for properties are at risk if these agreements are not put into effect.
- Village councils and churches must implement these agreements with neighbouring villages to ensure proper planning and collaboration.
- Government ministries, service providers, private sector and the public must do their part to own these agreements, commit to them and act on them.

3.2 Purpose of NETP

The purpose of the NETP is to improve the ability of mange disaster and for key stakeholders to communicate in the event of natural disasters and other man-made disasters to reduce and eliminate poor impact to the lives of the people of Samoa. The NETP will be an integral part of the National Disaster Management Plan (NDMP).

3.3 Scope of the NETP

This NETP is a strategic document containing recommendations for improving emergency telecommunications facilities and how they are used over the period specified in this document. It is complemented by the NETOP; an operational plan that promotes communication and information sharing about threats, hazards and how to respond to them across all levels of government, within communities, and between public and private organizations in every part of the country in all phases of an emergency, i.e., mitigation, preparedness, response and recovery. The main aim of the NETP and NETOP in conjunction with other plans is to make sure that emergency response agencies/stakeholders have reliable telecommunication systems and procedures both now and in the future to manage emergency response before, during and after emergencies. The 5-year term for the plan is to make sure these solutions are in place with budgetary support for core resources to maintain a full functional solution for preparations, response and recovery.

3.4 Approach to Developing the NETP

In developing the NETP, the involvement of the public and key stakeholders is vital. For that reason, we have used a stakeholder driven approach to develop the NETP, one that includes input from representatives of government ministries, telecommunication providers, NGOs, broadcasters, etc. Many of these representatives are also members of the National Disaster Council (NDC), Disaster Advisory Committee (DAC)[1] and the Disaster Management Office (DMO). This approach is based on the conviction that ownership of the plan is a key and this can only be achieved through players being part of the plan and further by involving maximum number of persons for a more effective and efficient warning, activation and community alerting system.

3.5 Organization of the NETP

The original NETP created a national vision from a collective perception of all stakeholders and entities to provide an effective and efficient emergency telecommunication approach for natural disasters and risk reduction activities. It sets strategic goals, objectives and initiatives to provide the nation with a more robust telecommunication system. The NETP approach is based on the following three steps.

[1] National Disaster Council and National Advisory Committee Structure enclosed as Appendix 6

Step 1	Step 2	Step 3
Define view of the future	Develop appropriate Strategy	Implementation
• Vision • Goals • Capabilities	• Objectives • Initiatives • Milestone	• Coordination • Measurement • Evaluation

In this revised NETP we have taken a different path from that is described above and have separated the operation aspects of the current emergency telecommunications facilities from the future-focussed development of these facilities:

- The NETP describes how telecommunications and related regulatory frameworks could/should be developed to improve the tools and systems available in managing emergency situations; and
- The NETOP (National Emergency Telecommunication Operation Plan) which is second document of this project that describes how the current telecommunications and related facilities are to be utilised in emergencies.

3.6 Other Plans and Relevance to NETP

In developing this plan, the OOTR is well aware of the fact that other plans have already designed and implemented as part of the national effort to improve the whole of government approach to warning and alert system during national disasters. These plans are incorporated in the NETP and are listed below.

3.6.1 National Disaster Management Plan (MNRE)

Pursuant to the requirement under Part III of the Disaster and Emergency Management Act 2007, the Ministry of Natural Resources and Environment through its Disaster Management Office (DMO) has established the National Disaster Management Plan (NDMP) 2017-2020 which was approved by the Disaster Advisory Committee (DAC) and subsequently by the National Disaster Council (NDC) in October 2017. The purpose of the NDMP is to provide a policy framework that promotes a whole-of-country and multi-sectoral approach to disaster risk management at a local, national and regional level. It also provides a framework and mechanism to enable a coordinated national response to threats that have the potential to cause a disaster and recovery from the impacts of disasters.

The NDMP is managed by DAC and includes as stakeholders all ministries and organisations which will assist during periods of natural disasters or emergencies.

3.6.2 National Tsunami Plan

Pursuant to section 6.4.2 of the NDMP and in collaboration with the DAC, MNRE has also developed 'hazard specific' plans to address specific hazards which can affect Samoa. One of these plans is the National Tsunami Plan (NTP) which details the mitigation, preparedness, and response and recovery arrangements for tsunamis that affect Samoa. MNRE is the focal point for tsunami warning for Samoa and in developing the NTP, it is the objective of MNRE to ensure that all communities and response agencies are prepared and ready to respond to a tsunami event, assist in reducing the impact of tsunami hazards and assist in implementing a safe and quick recovery after a tsunami event.

3.6.3 National Tropical Cyclone Plan

Similarly, the National Tropical Cyclone Plan (NTCP) has been established by MNRE to detail the mitigation, preparedness, and response and recovery arrangements for tropical cyclones that affect Samoa. As Samoa is prone to cyclones during the wet season, the NTCP is one method of ensuring that at a national level there is in place a plan to address the impacts of this type of hazard.

3.6.4 Other Disaster Plans

Many of the stakeholders have their own (public or private) plans as to how their own organisation prepares for, and responds to, disasters. Where appropriate, information from these plans has been incorporated into the NETP and NETOP.

4 NETP High Level Objectives

The NETP outlines the future vision of national emergency telecommunications status towards disaster management and risk reduction. In doing so, it established solid goals and objectives by which success can be measured. In addition, the objectives presented will be aimed to implement key activities to improve emergency telecommunications systems. The milestones will provide key checkpoints to monitor the implementation of NETP.

4.1 Vision

The NETP vision is to ensure that ICT tools and telecommunication services are available and continue to be available so that:

- Messages can be delivered to, and information received from, the public at all level of disaster management; and
- More importantly for emergency responders can communicate effectively.

VISION

"ICT tools and Telecommunications services and resources must continue to be developed to ensure that they provide effective and efficient alerting, management, mitigation and relief operations before, during and after all emergencies and disasters"

4.2 Goals

To work toward the above vision, the OOTR and its stakeholders recognised the importance of providing some initial goals:

Goal 1 Institutional Strengthening	Strengthen the working arrangements, planning between those involved in providing, using and supporting emergency telecommunications, ICT and related facilities and establish links to existing structures for collaboration on telecommunications services and resources mitigation, management and operations for all emergencies.
Goal 2 Improve Internal Systems	Use telecommunications, ICT, and other technologies to improve the speed and effectiveness of the mechanisms that support DMO core functions and processes.

Goal 3 Improve Reliability and Resilience	Enhance the reliability and resilience of telecommunications and ICT infrastructure and support systems by keeping abreast with relevant technologies for disaster management.
Goal 4 International Cooperation	Maintain international cooperation with stakeholders to enhance local and regional capacity and networks.

The following strategies have been identified to achieve these goals. Although not comprehensive, they are set as initial targets which can be expanded further through a process which will aim in improving the telecommunication services when natural disasters strike.

4.3 Goal 1 – Institutional Strengthening

4.3.1 National Emergency Telecommunications Committee

Background

During the consultation, it became obvious that there is no forum currently exists for the discussions and resolution of issues that affect the emergency telecommunications area. However, with recently successes and failures on the coordination during Gitta and other recent cyclones have made it clear that there is a need to make sure these systems are well maintained and sustained.

This includes ensuring that:

- Emergency telecommunications facilities are appropriate for the risks that Samoa faces;
- External infrastructure (e.g. power, roads, etc.) that these services rely on are appropriate for the support of these services; and
- A watching brief is kept on new technologies that would assist the DMO in its mission.

Recommendations

It is proposed that a national emergency telecommunication coordinating committee (NETCC), made up of senior representatives from the Telecommunications (e.g. OOTR, MCIT, Carriers Broadcasters, etc.), Disaster Management (e.g. MNRE, DMO, etc.), and related (e.g. Met Office, Police, Electric Power, LTA, NHS, etc.) sectors be established to ensure that:

- The recommendations in the NETP are implemented;
- The NETP is reviewed and updated at least every 5 years;
- Revisit regualgtory framework, planning and policies to promote participation and efficiency,
- The operational plan (NETOP) is reviewed and updated annually;

- Staff are trained in the use of the systems described in the NETOP;
- Regular exercises are carried out to test the processes in the NETOP; and
- The ongoing needs for training and capacity building are identified and provided for.

Timing

As noted above, it is proposed that the NETC be established by 31 November 2019.

Costs

There should be no additional costs associated with this initiative as each organisation will bear the costs of their representative.

4.4 Goal 2 – Improve Internal Systems

4.4.1 Upgrading the Emergency Disaster Network to Trunking

Background

The Emergency Radio Network (ERN) currently consists of 4 digital radio repeater systems providing 8 radio channels. These are currently operated as conventional channels – i.e. there are 8 channels available and each group of users is assigned to one of these channels.

There is a plan to convert this to a trunked system, in which all the channels are put in a pool and made available on a demand basis to users. When a user wants to send a message to another user in their group, a channel (also called a trunk – hence the name) is allocated to this talk group for the duration of the transmission. After the transmission (which may consist of several short messages between these users) is complete the channel is put back into the pool for others to use.

One way to illustrate the differences between these networks is to consider two different types of traffic intersections:

- The first intersection is "conventional" and uses a stoplight system. When a driver (user) comes to the intersection and the light is green (open channel), they are free to proceed. If the light is red (channel in use), they have to wait until the light turns green to move forward.
- The second intersection, the "trunked" system, is a roundabout. When a driver enters this intersection, they simply merge in during the first possible opening in traffic, thus reducing their delay and making their trip more efficient.

Trunked systems have several advantages over conventional systems:

- **Efficiency**: A trunked system (where all the channels are shared on a demand basis) can carry far more radio traffic than a conventional system in which users are allocated dedicated channels – as all the system capacity is available to users.
- **Greater Access**: End users are no longer limited to the one or two channels they would have been allocated in a conventional system; they now have access to all the channels in the system.
- **Reliability**: A pool of channels enables continued communications should a fault occur on one of the channels, decreasing the likelihood of one group losing all communication abilities.
- **Priority**: The system can be set up to give some users a higher priority than others. As an example, when someone is in a life-threatening situation, a low priority routine conversation can be pre-empted or taken over by an emergency call.
- **Security**: Because talk groups move from channel to channel, it is more difficult for an unauthorised user to listen to a conversation.

It is understood that the ERN will be upgraded to a trunked network which will provide increased efficiency and access and will allow additional talk groups to be established. As part of this there is the opportunity for:

- A coordination talk-group – accessible by all ERN users – to be incorporated when the ERN moves to a trunked architecture; and
- The Police to have access to additional talk groups.

Recommendations

It is recommended that:

- A coordination talk-group – accessible by all ERN users – to be incorporated when the ERN moves to a trunked architecture; and
- Police re-evaluate their decision to not use trunking as it would seem to have several advantages for them.
- All related requirements for the DMO operation are provided to the MNRE for incorporating into the new DMO Complex at Tuanaimato.

Timing

As noted above, it is proposed that the ERN is converted to trunked mode, and the coordination talk-group established, by 30 September 2019.

Costs

There should be no additional costs associated with this initiative as the upgrade to trunking is already funded and is part of the current initiatives.

4.4.1 Messaging over Digital Television

Background

Samoa will be moving to digital television using a common multiplex system for all broadcasters. It is understood that there is an opportunity to incorporate a messaging system into the multiplex system that will allow emergency messages from the DMO to be broadcast as sub-titles or sur-titles on all television channels simultaneously.

Recommendations

It is recommended that

- an emergency broadcasting system be included in the Digital Television multiplex system.
- Warnings and updates of still images on Public Screens at Lotemau, Lokostyle and Comptech for Tusami and Earthquake

Timing

Timing will be dependent on the roll-out of the Digital Television system which is expected in 2019

Costs

There should be minimal costs associated with this initiative as it is understood that this facility is already included in the DMO budget.

4.4.2 Coverage of Emergency Disaster Network "Black Spots"

Background

While the ERN provides good coverage of most of Samoa, there are areas (e.g. valleys) that are not covered by the ERN but are covered by the cellular networks, so people have to use their personal cell phones if they wish to communicate.

Systems are available (such as the one used by NZ Police) where a vehicle can be used as a repeater to connect a user to the ERN. The vehicle is parked at a point where it can "see" both the ERN and the people and is equipped with two interconnected radios;

- A VHF radio to provide a link from the vehicle to the ERN; and
- A UHF radio to provide a link from the vehicle to the officer(s) using UHF hand-held radio(s).

Users in the black spot can "talk-through" the vehicle-based radios to the ERN thus removing the need to use personal cell phones. This solution, while not cheap (it requires additional vehicle and handheld radios), generally solves the coverage problem at a lower cost than expanding the "main" network.

Recommendations

It is recommended that the DMO look at trialling a talk-through facility to see if it provides a solution to "Black Spot" problems.

Timing

It will be up to the NETC to determine the timing of this trial and whether to proceed with the solution.

Costs

There will be some relatively low costs associated with the trial but significant costs if the decision is made to proceed with this solution.

4.4.3 Electronic Questionnaires

Background

Before, during and after disasters, there is a need to gather information from the population about the state of preparedness, damage, recovery, etc. This information has traditionally been gathered using paper-based questionnaires, but this method has several disadvantages including:

- **Delay**: The paper questionnaires typically have to be physically returned to a central point for keying into a computer database before the data they contain is available to DMO personnel; and
- **Accuracy**: Because the questionnaires are filled in by hand, there is significant opportunity for errors to creep in – either in the field or in the interpretation the hand-written answers back at the central point.

A number of electronic questionnaire systems (such as ODK, Magpi, Kobo Toolbox, SurveyMonkey, etc) are now available which overcome these disadvantages. These systems allow the information to be gathered using mobile phones or tablets and for it to be sent back to base using either conventional cellphone networks or, where these are not available or have failed, satellite systems.

Recommendations

It is recommended that the DMO look into the use of electronic questionnaire systems for the gathering of data before, during and after disasters.

It is also recommended that the DMO look into using both cellular and satellite links for getting questionnaire data back from the field into the central database. COBOL was discussed as an example of these electronic means to engage the stakeholders and access the data.

Timing

It will be up to the NETC to determine the timing of this initiative

Costs

The cost associated with using electronic questionnaires are relatively low as the software is available at low or no cost and it will run on existing smart phones.

The communications cost is also low if cellular data is used but will be higher if satellite communications is required. It is important to note that there are $100 Samoan tala for 25G worth of data for 30 day period.

4.5 Goal 3 – Improve Reliability and Resilience

4.5.1 Reliable Power for Essential Telecommunications Facilities

Background

It is understood that the Electric Power Corporation (EPC) is, at the request of the Electricity Regulator, moving all retail power customers from post-pay metering to a pre-pay metering system called Cash Power. While this system can have advantages for customers (no bill-shock) and EPC (reduction in bad debts) it can have significant disadvantages for telecommunications operators and broadcasters.

The issue for these organisations is that someone has to visit the site periodically to "top up" the electricity meter. While this is not major issue for sites close to town or during the dry season, it is an issue for remote sites and/or during the rainy season as it can be impossible to visit these sites to carry out the "top-up" – at just the time when the nation is depending on these sites to provide them with telecommunications services for the management of disasters.

It is understood that EPC has offered to provide a (post pay with deposit and discount) solution to these organisations.

Recommendations

It is recommended that the

- Electricity Regulator work with EPC, Broadcasters and Operators to put in place a system that does not require visits to sites to "top up" their power meters.
- Providers to provide the NETCC a list of all the sites that needs to be on post paid.

Timing

As noted above, it is proposed that the NETCC be established by 30 June 2019.

Costs

There should be no additional costs associated with this initiative. However, there will be costs for these prepaid meters to be converted to post-paid meters. How many service providers equipment that needed to be converted.

4.5.2 Upgrading of Emergency Disaster Network Power Supply

Background

Currently, many of the EDN sites have no back-up power supply if the mains power supply fails which reduces the reliability of the EDN – especially when it is most needed.

Recommendations

It is recommended that

- an agreement for the supply of back-up power is negotiated with the owners of the EDN sites. NETC to provide a list of sites to EPC for assistance on how to put them back on normal power or transfer to Smart Meters.
- List of all the sites that have backups and power audit for NETCC to develop strategies for putting in place backup power.

Timing

As noted above, it is proposed that all Emergency Response Network sites have a reliable source of standby power available by 31 December 2019.

Costs

There will be additional costs associated with this initiative but the amount is not known at this time. An audit of all the sites without backup power supplies determine how much it costs and maintenance.

4.5.3 Tsunami Sirens

Background

Mechanical sirens were installed along the southern part of Upolu Island to warn of tsunamis and other events. These sirens are failing due to corrosion from the sea air and it is understood that replacements will be purchased for the individual sirens that have failed.

It is now possible to purchase multi-use electronic sirens that are also public address (PA) capable to allow for direct, event-related messaging to be given as well as the siren sound. (See NZCDEM Tsunami Warning Sirens Technical Standard TS 03/14 for details.)

Recommendation

It is recommended that the DMO look into purchasing multi-use electronic rather mechanical than sirens to replace the current failing sirens.

It is also recommended that the DMO look into the costs and benefits of extending the coverage and uses of the siren system to provide warnings of other disaster situations (e.g. cyclones and floods) and to other geographical areas of the nation.

Timing

It will be up to the NETC to determine the timing of this initiative

Costs

The cost of replacing the tsunami sirens should already be included in the DMO's maintenance budget. The extension of the siren system to provide warnings of other disaster situations (e.g. cyclones and floods) and to other geographical areas of the nation will need to be cost

4.5.4 Roads to Essential Telecommunications Facilities

Background

Currently, the roads to many telecommunications and broadcasting sites are in poor repar or are difficult to use in bad weather. This means that it is difficult for technicians to access the sites to restore service during or following a storm or similar event.

Recommendations

It is recommended that the Land Transport Authority (LTA) work with telecommunications and broadcasting providers to:

- Identify the roads service essential telecommunications facilities;
- Put in place a system to ensure that restoring road access to these sites is priorities following a storm or similar event; and
- As resources are available, improve these roads so that they are usable in bad weather.
- Examples of these access roads include – Mount Fiamoe, Mount Vaea, Mount Tafauolu Upolu, Mount Masamasa, Savaii. These are some of the main sites for towers and while it is hard to access these sites now by vehicle, it is more difficult to access them during and after the disasters.

Timing

As part of preparation phases these needs to be in place and maintained.

Costs

The cost of this initiative should be included in the Land Transport Sector list of activities. For a 3km road it is estimated at SAT $1million.

4.6 Goal 4 – International Cooperation

There is a need for learn and document proper processes to connect with international organisations such as Emergency Telecommunication Cluster (ETC), Common Alerting Protocol and others for effective communication and logistics arrangements before, during and after a disaster.

Recommendations

- Establish contacts and cement official channels for communication

5 Implementation and Measuring of Achievements

The successful implementation of this plan depends on the commitment of each agency whether a government ministry, service provider or an organization from the private sector. Achieving the set goals and objectives requires coordination from all stakeholders. The successful management of this plan will require effective communication and cooperation between telecommunication providers and government.

5.1 Implementation

Spectrum Management and Technical Division (SMTD) within OOTR is designated as the primary agency charged with overseeing the implementation of the National Emergency Telecommunication Plan.

To assist them in this role, a National Emergency Telecommunications Committee (NETCC) will be established with membership consisting of senior representatives from the Telecommunications (OOTR), Disaster Management (DMO) , and related (e.g. Met Office, Electric Power, etc.) sectors. The committee will be responsible for ensuring that:

- The recommendations in the NETP are implemented;
- The NETP is reviewed and updated at least every 5 years
- The NETOP is reviewed and updated annually;
- Staff are trained in the use of the systems
- Regular exercises are carried out to test the NETOP.
- The ongoing needs for training and capacity building are identified and provided for.

The roles and responsibilities of the stakeholders are summarised in the table below.

ENTITIES	ROLES & RESPONSIBILITIES
MNRE	• Emergency planning needs to go through the DMO, in dealing with internal and international organizations. • The telecommunications sector needs to fit in with the wider National Emergency Plan for optimum effectiveness and MNRE can look at this.
MCIT	• Provide support and help on ICT issues and assist in coordination.
POLICE and FIRE SERVICES	• key part of the emergency response • Experience can be shared from these entities in planning trainings and exercises, drills etc.

SERVICE PROVIDERS	• Plan and collect information about the equipment available for the emergency response. • Coordination of service providers before, during and after disaster. • Coordination of Service providers in the activation of the Warning system.
RED CROSS	• Red Cross can arrange for first aid training and provide coordination especially in their field of expertise.
OOTR	• Coordination and facilitating of, service providers' responses. • Make available frequencies and resources on an emergency basis. • Assist with ensuring access to emergency facilities where necessary
NETCC	• Coordinate all parties involved in the provision and use of telecommunications for disaster response. • Ensure that staff are trained in the use of the systems and regular exercises system take place to test the systems and procedures.

6 Role of Telecommunication in Disaster Mitigation

For the effective implementation and management of any national disaster management plan, whether general or specific in nature, there is a need for proper coordination and collaboration between all Ministries, Agencies, Corporations, Non-Government Organisations and Communities charged with the responsibility of responding in times of disaster or emergency. Co-ordination will also almost always involve overseas authorities and organisations engaged whether through government or other means in rendering assistance to the Government of Samoa during times of disaster or emergency. It is therefore vital for effective response to disasters and emergencies that telecommunications services be available during these times. It is the intention of the OOTR, working with all stakeholders and through this plan to ensure the improvement, availability and maintenance of telecommunications services during times of disaster and emergency.

Some of the important roles of telecommunications before, during and after natural disasters are listed below.

BEFORE	• Ensure that any equipment, sites, etc. are as earthquake and natural disaster-proof as reasonably practicable, including where possible avoiding areas prone to natural disasters, flooding, exposed to cyclones, etc. • Use normal telecommunications tools to: o keep DMO staff in Apia and and in the field in touch with each other; o manage the safety of DMO staff in the field; o gather information on disaster preparedness in villages; and o prepare (and test) plans for response to natural disasters; • Develop early warning systems able to notify key officials, villages, etc of impending disasters. Mechanisms may include radio broadcasting, tsunami sirens and text messages. • Identify key services requiring telecommunication services during a disaster such as emergency services and disaster planning and response agencies. • Identify early responders– a team of telecommunications technician/engineers available to be deployed where safe and necessary. • Keep an inventory of spare equipment held by providers which can be used in the event of failure in the networks, • Encourage service providers to put in place measures to manage network capacity to avoid network congestion and failure through overloading during

	disaster conditions and to (e.g. via load shedding) prioritise disaster response traffic. • Encourage Customs and Immigration to put in place arrangements to ensure that people and their equipment invited into Samoa to assist in providing and restoring telecommunications services are not unduly delayed. • Put in place a clear understanding with Government Agencies for cost recovery during a disaster: o no party should either profit from or bear an unreasonable financial burden from providing assistance during a natural disaster. o service providers are not liable for (and are not subject to any claim or proceedings for damages) for any act done or omitted in good faith in compliance with any disaster management plan.
DURING	• Use all facilities available (e.g. cellular text, sirens, broadcasting, village networks, etc.) to warn the population of the pending disaster • Use radio broadcasting to keep people advised of the dangers and to advise when danger has passed. This is key to providing updates on government response, emergency response procedures, passing of information, essential info health and safety messages, and updates on the disaster. This has to be in both Samoan and English. It is also important to restore and maintain communications so as to inform and avoid panic amongst the general public. • Maintain connectivity with overseas, whether by satellite, or via submarine cable. These facilities must be protected to the maximum extent possible in the event that they become endangered as a result of a natural disaster event. If either of these facilities goes down, there must be cooperation between service providers to allow connectivity to overseas to continue to the maximum extent possible. • Services providers implement measures to manage network capacity, avoid network failure through overloading and prioritise disaster response traffic. • Cooperation between the service providers is essential for quick restoration of service.
AFTER	• Identify essential infrastructure and services in badly affected areas, particularly those without access or communications. • Establishing a plan for quick restoration of services in the affected areas. • Activate first responders to provide phones and solar chargers to be distributed, as well as generators to affected areas without electricity.

6.1 Preparedness Arrangements

Preparedness activities and arrangements including procedures and measures to prepare the response agencies, communities, public and private sector in order to respond to disaster events once they occur. But total protection cannot be gained through preventive measures alone but also requires coordinated effort from the response agencies. Preparedness activities are listed but not limited to the ones below.

6.1.1 Radio Spectrum Management

Radio Spectrum Management is one of the most important aspects of government's commitment to improve and provide emergency telecommunication resources to be used during emergency response. At the moment frequencies have been allocated to other agencies for emergency purposes. OOTR has since established a common/standard emergency frequency allocation which can be shared between services providers and also pre-approved specific frequency for service operators dedicated use. These frequencies will be strictly use only during emergency/disaster events. These frequencies are presented in the emergency frequency allocation table shown in the National Emergency Allocation Plan presented in **Appendix 3**.

6.1.2 Emergency Alert System and Activation (EAS)

The purpose of the EAS is to rapidly circulate emergency information via radio and television to the public who may be impacted by a particular event in the community. EAS is part of the preparedness efforts to compact disastrous events and it may be activated in response to emergency situations such as severe weather, floods, civil disorders, industrial accidents, or any occurrence that poses a danger to life or the public. The purpose of this initiative is to explain the system and provide procedures for broadcasters, service providers, and emergency personnel in this operational area. It provides for immediate alerting of the public so that they may have an opportunity to protect themselves and time permitting their property where possible before impact or provide post impact recovery information where warnings were not possible.

The EAS will be nationwide and broadcasters, service providers and radio stations should be able to transmit EAS messages on their channels free of charge. Video interruptions and audio alert messages should be allowed to happen on all channels weather public or private when receiving the alert. These messages should be send to these agencies via Encoder/Decoder Units, where these encoder/decoders are capable of transmitting and receiving coded emergency messages either in manual mode, automatic mode or semi-automated mode. Following is an explanation of each mode.

1. **Manual Mode**: The EAS Decoder will only notify the operator on duty at a receiving station of any incoming EAS Alert that it is programmed to receive. The operator must push a button to transmit the Alert on the broadcast station or cable system.

2. **Automatic Mode**: The EAS Decoder will automatically interrupt program audio and/or video with any incoming EAS Alerts the Decoder is programmed to receive. Emergency information will be disseminated even if the station or system is not staffed full time.
3. **Semi-Automatic Mode**: When the EAS Decoder receives an EAS Alert that it is programmed to respond to, it will begin a pre-set countdown to automatically interrupt. If the Alert does not air by the time the countdown expires, the EAS decoder will automatically interrupt the audio and/or video with the incoming message.

Each encoder/decoder is set up to monitor at least two different sources for incoming emergency messages. The encoder should be located at the Metrological Office who will first detect any warning from their overseas bureau partners. The decoders are to be set up at most of the local radio and television stations. The meteorological staff and DMO will assume the responsibilities for the initial EAS unit programming and station installation. When the system is activated and messages are sent from metrological division and DMO, all participating stations programming should be interrupted shortly after the stations local EAS equipment receives and validate the actual incoming EAS messages. Television stations are encouraged to provide a full screen text summary or video crawl summarising the EAS message, including the originator, event, location and valid time period of the message. This system should activate only on the authority of the metrology division and the Disaster Management Officer. The activation of the EAS should be limited to an emergency event or situation which poses an immediate or imminent threat to life or property and has the potential to cause a significant impact on the public or requires immediate public knowledge to seek shelter or take protective actions. Procedures of the Activation is presented in **Appendix 4.**

6.1.3 Early Warning System

In Samoa, there is a wide range of mechanisms used in public alerting including electronic broadcast media, television stations, radio stations both in FM and AM bands. Currently, apart from broadcasters and media, Disaster Management Office (DMO) with collaboration with service providers is using text messages that can be sent to the base warning them of impending disaster. This text is pre-agreed with Government and released on the request of Government. From recent events text message was found to be unreliable due to the congestion of the network. It is appropriate for these systems to be reviewed to ensure that the most appropriate systems are in place and the best use is being made of these systems.

A national siren system has already been launched and is currently used to notify the public in the South of Upolu. The siren warning system is managed by the DMO.

6.1.4 Create and Inventory of Resources

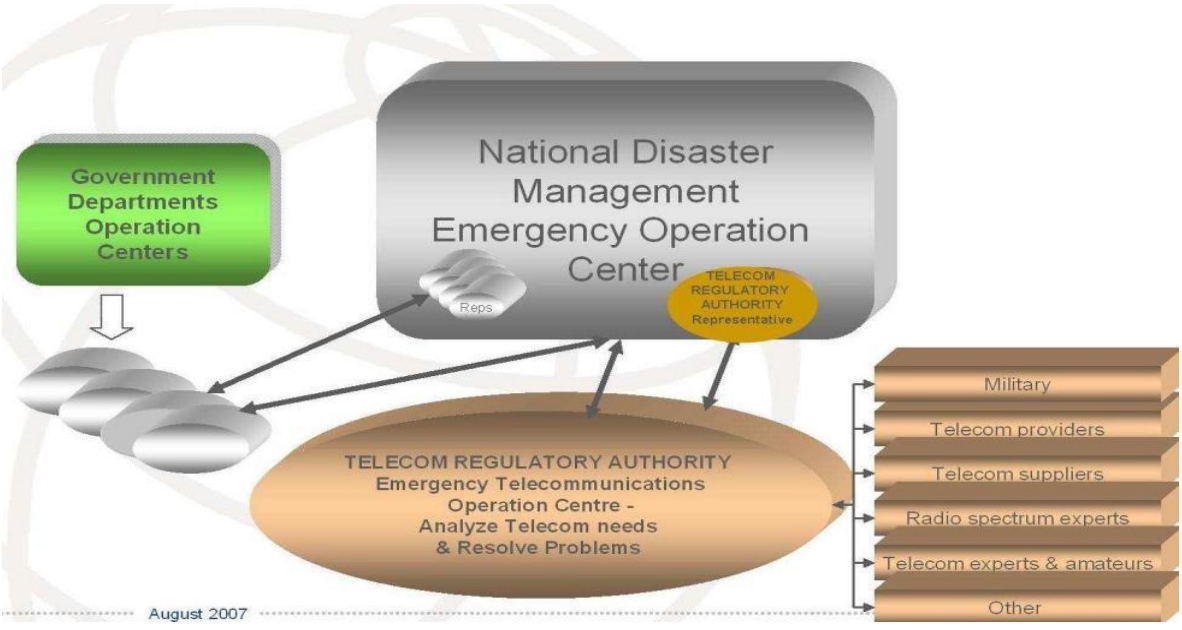
An inventory of spare equipment which can be utilized among the providers for use in the event of failures in the networks needs to be undertaken. Inventory taking is quite important in facilitating the provision of equipment and services in response to immediate needs for operations. The inventory of equipment is listed in the **NETOP**. The list has been developed from the results of the survey carried out during the NETP and NETOP consultation, however it must be updated annually since things moved during the year and some devices may need new batteries.

6.1.5 Exercises and Trainings

The DMO and the Office of the Regulator propose to conduct training and training exercises and will seek financial help to support this program. These funds will help achieve the realization of the goals of coordination and interoperability, as systems are developed, deployed and maintained. The training will provide a better understanding of public protection and disaster relief needs, it will also identify potential problems and recommendations for improvements. Drills and exercises are carried out to be in line with DMO's plans. In addition, regular meetings and national drills would be essential. A management structure is to be designed providing the line of command and this would assist the implementation process.

6.1.6 Telecommunication Emergency Operation Centre.

In order for Emergency to effectively delivered, a Telecommunications Emergency Operating Centre must be identified. The following model[2] is recommended by ITU.



[2] Adopted by ITU Model - best practice emergency telecommunications paper

6.2 Response Arrangements

The National emergency telecommunication disaster response requires full commitment on the part of all agencies involved. This is basically to having a proactive attitude towards the response plan. The response plan will be activated during a disaster and will serve as the medium for communication during emergencies and disasters.

6.2.1 Emergency Declaration

Emergency Declaration procedures should be developed and followed. This declaration request can be in written form and can be requested prior to activation.

An emergency response system should be in place to direct agencies to their specific roles and responsibilities. The following are the core roles and responsibilities.

ENTITIES	ROLES & RESPONSIBILITIES
MNRE/DMO/Meteorology Division	• Declaring that the emergency has terminated. • Notifying agencies of the declaration of the emergency and the termination of the emergency; • Activating the emergency notification system; • Approving, in conjunction with major announcements and media taken.
OOTR	• Ensuring the members of the Telecommunication emergency agencies are advised of the declaration and termination of an emergency and are kept informed of the emergency situation. • Maintain a communication log of all actions taken • Ensuring liaison with the DMO regarding security arrangements for the TEC; • As the Operations Officer, coordinating all operations within the TEC, including the scheduling of regular meetings; • Advising the TEC on policies and procedures, as appropriate; • Providing information and advice on financial matters as they relate to the emergency;
MCIT	• Ensuring liaison with the DMO regarding security arrangements for the TEC; • As the Operations Officer, coordinating all operations within the TEC, including the scheduling of regular meetings; • Advising the TEC on policies and procedures, as appropriate; • Providing information and advice on financial matters as they relate to the emergency;

MOP	• Establishing an ongoing communications link with the senior police official at the scene of the emergency; • Providing radio traffic control staff to facilitate the movement of emergency vehicles; • Should be alerting people endangered by the emergency • Ensuring liaison with others like churches and community leaders regarding their responsibilities in relaying the message during emergencies. • Maintain a radio log of all actions taken.
FESA	• Providing information and advice on firefighting and rescue matters; • Establishing an ongoing communications link with the senior fire official at the scene of the emergency; • Conducting all operations connected with the fighting of fires; • Informing the Fire Coordinators and/or initiating mutual aid arrangements for the provision of additional firefighters and equipment for efficient communication if needed; • Determining if additional infrastructure or special equipment is needed and recommending possible sources of supply, e.g. radios, satellite phones, land mobiles etc • Providing assistance to other community departments and agencies and being prepared to take charge of or contribute to non-firefighting operations if necessary, e.g. rescue, first aid, casualty collection, evacuation. • Maintain a radio log of all actions taken.
SERVICE PROVIDERS	• Activating and arranging the Telecommunication Emergency Centre; • Ensuring that all agencies have necessary plans, resources, supplies, maps and equipment; • Providing advice and clarification about the implementation details of the Emergency Response Plan; • Addressing any action items that may result from the activation of the Emergency Response • Plan and keeping the Agencies informed of implementation needs; and • Maintaining records and logs for the purpose of debriefings and post-emergency reporting that will be prepared. • Maintain a radio log of all actions taken.

6.2.2 Emergency Telecommunication & ICT Activation.

Telecommunications is vital for all emergency responders during before, during and after disasters. An emergency response plan managed from a national telecommunication emergency operation centre puts into operation the emergency telecommunications plan which include but not limited to the following:

- Provision of advice and the setting of strategic direction mitigating and in responding to the disruptive effects of emergencies on telecommunications services and networks. These are all listed in the National Disaster Plan under the DMO;

- Facilitation of international and inter-governmental relations and telecommunications

- Facilitation in the provision of appropriate telecommunications equipment and/or services to ensure the availability of telecommunications to meet emergency requirements, especially for the PPDR organizations and the telecommunication industry.

- Receipt and analysis of requests for additional radio frequencies, for the use of satellite earth stations or resolve unexpected radio interference problems. Urgent requests made in time of emergency should be attended to without delay.

- Warning systems – The technical responsibility for the development and activation may be given to the emergency telecommunications ministry, but the decision to activate and transmit a message is mainly the responsibility of service providers.

6.3 Recovery Arrangements

Immediately after disaster a recovery plan needs to be activated. This recovery process should involve all agencies and partners to ensure the return to normal operations. Service providers may be asked to assess the damages to telecommunications/ICT networks and their rehabilitation. The following procedures are recommended to the recovery team.

- Establish a command centre for the team.

- All agencies to coordinate and make decisions

- Service providers to lead technical efforts to restore telecommunication systems to fully operate and rehabilitate damaged critical telecommunications infrastructure.

- Ensure coordination with providers of telecommunications infrastructure and services in order to attain synergy.

- Provide expert advice to government with respect to telecommunications infrastructure and other related projects during reconstruction phase.

7 Conclusion

This NETP is an integral part of the National Disaster management plan. The goals and objectives of NETP cannot be achieved without the support and the coordination of all stakeholders and the response team. NETP enables stakeholders to share a common strategy to compact challenges as a result of disasters and natural events. By taking the actions recommended in this plan will achieve a unified vision through a collective effort to allow emergency responders to communicate as needed on demand before, during and after natural disasters.

8 References

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10. US FEMA Emergency Management Institute ISP (http://training.fema.gov/IS/crslist.asp download relevant courses of interest

11. US FCC Public Safety & Homeland Security Bureau (http://www.fcc.gov/pshs/)

12. US DHS Safe com (http://www.safecomprogram.gov/SAFECOM/)

13. US Education Resources Information Center (ERIC) http://www.eric.ed.gov/ ; search for

    a. “emergency communications”

14. US NTIA Emergency Planning and Public Safety Division http://www.ntia.doc.gov/osmhome/pubsafe/index.html

Appendix 1 – AGENCIES CONTACT ADDRESSES

1. Head Disaster Management Officer Ministry of Natural Resources & Environment Private Bag Apia, Samoa Email : lameko.simanu@mnre.gov.ws	2. CEO Ministry of Natural Resources & Environment Private Bag Apia, Samoa Phone (685) 67200 Email : bismarck.crawley@mnre.gov.ws
3. CEO Ministry of Communication & Information Technology Level 6, TATTE Building Private Bag, Apia Samoa Phone (685) 26117 Email : t.matau@mcit.gov.ws	4. CEO Digicel Samoa Private Bag, Apia Samoa Phone (685)8428003 Email: Farid.Mohammed@digicelgroup.com
5. CEO Bluesky Samoa Ltd Private Bag, Apia Samoa Phone (685) 8428003 Email : afaiai@blueskypacificgroup.com	6. CEO Samoa Airport Authority Private Bag, Apia Samoa Phone (685) 23201 Email : jsolomona@saa.ws
7. CEO or nominated representative TV1 Private Bag, Apia Samoa Phone (685) 24790 Email : ceo@sbc.ws	8. CEO or nominated representative TV3 Private Bag, Apia Samoa Phone (685) 33330 Fax (685) 22810 Email : corey@fmradioo.ws
9. CEO or nominated representative CSL Private Bag, Apia Samoa Phone (685) 20926 Email : rita@csl.ws	10. CEO or nominated representative Ministry of Foreign Affairs Private Bag, Apia Samoa Phone (685) 21171 Email: noumea@mfat.gov.ws
11.Commissioner or nominated representative Samoa Police & Fire Services Private Bag, Apia Samoa Phone (685) 22222 Email: commissioner.sec@police.gov.ws	12. CEO or nominated representative Red Cross of Samoa Private Bag, Apia Samoa Phone (685) 23686 Fax (685) 22676 Email : samoaredcross@samoa.ws
13. Lefaoali'i Unutoa Auelua-Fonoti Regulator, Office of the Regulator Phone (685) 30282 Fax (685) 30281 Email: unutoa.fonoti@regulator.gov.ws	

Appendix 2 – ACRONYMS

Abbreviation	Full Text
CEO	Chief Executive Officer
DAC	Disaster Advisory Committee
DMO	Disaster Management Office
ETC	Emergency Telecommunication Committee
OOTR	Office of the Regulator
ITU	International Telecommunication Union
MNRE	Ministry of Natural Resources and Environment
MCIT	Ministry of Communications and Information Technology
NETP	National Emergency Telecommunication Plan
NETOP	National Emergency Telecommunication Operational Plan
NGO	Non-Government Organisation
NTCP	National Tropical Cyclone Plan
NDMP	National Disaster Management Plan
NTP	National Tsunami Plan
ICT	Information Communications Technology
TEOC	Telecommunication Emergency Operation Centre
SMTD	Spectrum Management and Technical Division

Appendix 3 – EMERGENCY FREQUENCY ALLOCATION

Introduction

The Office of the Regulator will allocate and reserve frequencies to improve the ability of DMO communications with relevant organizations and function safely. The Frequencies included in this table are aligned with ITU Radio regulations and ITU World Radio Conference Resolution 646 (WRC-03) on Public Protection and Disaster Relief (PPDR)

The implementation of this plan coincides with the government goal to improve communication for the fast relaying of messages and alerting the community in times of emergencies.

National Emergency Frequency Allocation Table

FREQUENCY	ALLOCATION
1 800-2 000 KHz	AMATEUR FIXED MOBILE except aeronautical mobile
3 500-3 900 KHz	AMATEUR FIXED MOBILE
3 950-4 000 KHz	FIXED
4 438-4 650 KHz	FIXED MOBILE except aeronautical mobile
4 750-4 850 KHz	FIXED Land mobile
5 450-5 480 KHz	FIXED LAND MOBILE
5 730-5 900 KHz	FIXED Mobile except aeronautical mobile (R)
6 765-7 000 KHz	FIXED Land mobile
47-50 MHz	FIXED MOBILE
50-54 MHz	AMATEUR
68-74.8 MHz	FIXED ,MOBILE
FREQUENCY	**ALLOCATION**
75.4-87 MHz	FIXED, MOBILE
137-138 MHz	Fixed Mobile except aeronautical mobile (R)
146-148 MHz	AMATEUR FIXED, MOBILE
150.05-174 MHz	FIXED, MOBILE
174-223 MHz	TV Band III

223-230 MHz	TV Band III
406.1-430 MHz	FIXED, MOBILE except aeronautical mobile
433-435 MHz	AMATEUR
438-440 MHz	AMATEUR
440-450 MHz	FIXED, MOBILE except aeronautical mobile
450-470 MHz	FIXED, MOBILE
698-806 MHz	FIXED, MOBILE, BROADCASTING
806-824/851-869 MHz	FIXED, MOBILE
4940-4990 MHZ	FIXED, MOBILE
5727-5850 MHz	FIXED, MOBILE

The frequency allocation tables of most countries closely follow the international table of allocations. There are exceptions and it is necessary to be aware of, and adhere to, national radio regulations concerning frequencies and their use.

Assignment of specific radio frequencies to radio stations is made by the Office of the Regulator. This is the case for the fixed and mobile services. Amateur stations do not normally have frequency assignments and are free to select a specific operating frequency dynamically within an allocated band.

In some cases, administrations may assign frequencies to services not allocated to those services in the international table of allocations on a non-interference basis. This is provided for in the ITU Radio Regulations **S4.4 and S4.9.**

INMARSAT vs. VSAT

Common telephone and data services are available from land-based satellite terminal systems using the portable International Maritime Satellite (INMARSAT) or the semi-fixed Very Small Aperture Terminal (VSAT) satellite network. These services include voice, facsimile and electronic mail communications.

Any device that works with a common telephone device may be used with these satellite systems. In addition to the above-mentioned services, some satellite terminals offer transfer of digital photographs or live video conferencing.

Frequencies

Radio frequencies should be selected according to propagation requirements, allocation to the service for which they are used and in accordance with licensing regulations.

Emergency Broadcasts over Radio, Television and Cable networks

Radio, television, and local cable systems are primary means to alert the public in cases of potentially dangerous conditions such as heavy rain, hurricanes, tornadoes, floods and other disasters that can be anticipated at least shortly before their impact. Once a disaster has occurred, the same means are, if they remain operational, invaluable tools to inform the affected population about measures being or to be taken.

Broadcasting Frequencies

FREQUENCY	**ALLOCATION**
535 -1 606.5 kHz	AM Audio Broadcasting
88-108 MHz	FM Audio Broadcasting

Appendix 4 – ACTIVATION PROCEDURES

For activation procedures, please refer to the latest versions of the following Meteorological Office Documents:

- Samoa Meteorological Services Tropical Cyclone Warning Plan (English)
- Ofisa Ole Vaai-Tau A Samoa Fa'asologa O Lapataiga O Afa (Faa-Samoa)
- Local Tsunami Standard Operating Procedures
- Regional Tsunami Standard Operating Procedures

Appendix 5 – Members of NDC & NAC

National Disaster Council

Organisation	Representative
Ministry of Prime Minister & Cabinet	Prime Minister, Chairperson
Ministry of Natural Resources &Environment	DPM/Minister, Deputy Chairperson
Minister of Trade	Member
Minister of Fire Service& Tourism	Member
Minister of Finance	Member
Minster of Women, Community and Social Development	Member
Minster of Works, Transport and Infrastructure	Member
Minister of Health	Member
Minister of Education, Sports and Culture	Member
Minister of Agriculture and Fisheries	Member
Minister of Revenue	Member
Minister of Justice and Court Administration Minister of Public Enterprises	Member Member

National Advisory Committee

Core members (Response Agencies as listed in Act)	Representative
Blue Sky	CEO (or nominated representative)
Oceania Gas	General Manager (or nominated representative)
Digicel Samoa Ltd.	General Manager (or nominated representative)
Electric Power Corporation	CEO (or nominated representative)
Fire and Emergency Services Authority	Commissioner (or nominated representative)
Land Transport Authority	CEO (or nominated representative)
Ministry of Agriculture & Fisheries	CEO (or nominated representative)
Ministry of Commerce, Industry and Labour	CEO(or nominated representative)
Ministry of Communication & Information Technology	CEO (or nominated representative)
Ministry of Education, Sports& Culture	CEO (or nominated representative)
Ministry of Finance	CEO (or nominated representative)
Ministry of Foreign Affairs & Trade	CEO (or nominated representative)
Ministry of Health	CEO (or nominated representative)
Ministry of Natural Resources & Environment	CEO (Chairperson of DAC)
Ministry of Police	Police Commissioner (or nominated representative)
Ministry of Prime Minister & Cabinet	CEO (or nominated representative)
Ministry of Public Enterprises	CEO (or nominated representative)
Ministry for Revenue	CEO (or nominated representative)
Ministry of Women, Community & Social Development	CEO (or nominated representative)
Ministry of Works, Transport & Infrastructure	CEO (or nominated representatives) comprising: Maritime Division Infrastructure Assets – Building Infrastructure Assets – Roads

	Civil Aviation Division
National Council of Churches	President (or nominated representative)
Origin Energy Samoa	General Manager (or nominated representative)
Petroleum Products Supplies	General Manager (or nominated representative)
Samoa Airport Authority	General Manager(or nominated representative)
Samoa Bureau of Statistics	CEO (or nominated representative)
Samoa National Health Services	General Manager (or nominated representative)
Samoa Ports Authority	General Manager (or nominated representative)
Samoa Quality Broadcasting Corporation	CEO (or nominated representative)
Samoa Red Cross Society	Secretary General (or nominated representative)
Samoa Shipping Corporation	General Manager (or nominated representative)
Samoa Tourism Authority	CEO (or nominated representative)
Samoa Water Authority	General Manager (or nominated representative)
Associate Members	Representative
Adventist Development and Relief Agency	Country Director (or nominated representative)
Australian High Commission	High Commissioner (or nominated representative)
CARITAS Oceania Samoa/ CCJD	Country Manager (or nominated representative)
Chamber of Commerce	CEO (or nominated representative)
Chinese Embassy	Ambassador (or nominated representative)
Japan International Co-operation Agency	Resident Representative(or nominated representative)
Embassy of the Government of Japan	Ambassador (or nominated representative)
LDS	Head of Office (or nominated representative)
New Zealand High Commission	High Commissioner (or nominated representative)
Office of the Attorney General	Attorney General (or nominated representative)
Office of the Audit Comptroller	Comptroller (or nominated representative)
Office of the Regulator	Regulator (or nominated representative)
National University of Samoa	Vice Chancellor (or nominated representative)
Public Service Commission	CEO (or nominated representative)
Samoa Bankers Association	President (or nominated representative)
Samoa Hotel Association	CEO (or nominated representative)
Secretariat for the Pacific Regional Environment Programme	Director (or nominated representative)
Samoa Umbrella for Non-Government Organisations	CEO (or nominated representative)
UN Agencies	UN Resident Coordinator (or nominated representatives from UN DMT)
United States of America Embassy	Officer de Charge (or nominated representative)
US Peace Corps Samoa	Country Manager (or nominated representative)
World Health Organisation	Resident Representative (or nominated representative)
Civil Society Support Program	Program Manager (or nominated representative)
Nuanua o le Alofa Inc	Officer Manager (or nominated representative)