SAMOAN

Environment Forum

Proceedings of the 2004 National Environment Forum **2005 No. 6**

Published by:
Ministry of Natural Resources, Environment & Meteorology
Beach Road
PO Private Bag, Apia Samoa,
Email: info@mnre.gov.ws
Website: www.mnre.gov.ws

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Cover
Manumea, tooth-billed pigeon (*Didunculus strigirostris*) - a native bird of Samoa that is under extreme threat of extinction (Source: MNREM Poster)

Su'esu'eina o aafiaga o le siosiomaga i Samoa e le Faamasinoga o Fanua ma Suafa*

Tu'u'u Ieti Taule'alo†

Faatomuaga
E tusa ma le valu sefulu pasesne o fanua uma i Samoa e pulea faale-aganuu, e sefulu lua pasene o fanua o le Malo ae na o le fa pasene e pulea umia saoloto. O le faafoeina o mataupu uma e aafia ai fanua Samoa, e gafa ma le Faamasinoga o Fanua ma Suafa. Ona o fanua faale-aganuu e pulea e matai, ua faapena foi ona gafa le Faamasinoga ma mataupu uma e aafia ai suafa matai Samoa.

I lalo o le Tulafono o Fanua ma Suafa 1981, Fuaiupu 34 (2) ua tuuina ai i le Faamasinoga le puleaga faa-faamasinoga faapitoa -
(i) i mataupu uma e faasino i igoa ma suafa tau Samoa;
(ii) e faia ai poloaiga poo tautinoga e faatatau i igoa ma ni suafa tau Samoa e pei ona ua ono tatau ai ina ia puipuia ai po o e faamaninoina ai ia lava mea, poo aia tatau po o avega tauave o loo faapipii i ia igoa ma suafa e tusa ai ma aganuu ma agaifanua a tagata Samoa ma tulafono uma o loo faamamaluina i totonu o Samoa i Sisifo e faasino i tu ma aganuu;
(iii) i talosaga ma finauga uma i le va o tagata Samoa e faasino i fanua faale-aganuu ma le aia tatau ma le soloa'i atu i mea totino o loo umia e tusa ai ma aganuu ma agaifanua a tagata Samoa.

O le sini o lenei pepa e fia sailia pe iai se sao o le Faamasinoga i lalo o le tulafono na te soalaupule ai aafiaga o le siosiomaga i mataupu tau fanua ma suafa. E faaaogaina ni tala o mea na tutupu e faapupula ai ni mataupu se lua sa fofogaina e le Faamasinoga – tasi e faasino i fanua ao le isi e aafia ai fanua ma suafa. O loo tau faamalamalama po o a tonu vaega o le siosiomaga o loo aafia ai, ae aisea foi e tāua ai ma manaomia tele i le tausia faaauau o measina tau fanua ma suafa le faatino e le Faamasinoga o ni faaiuga talafeagai mo le puipuia o le siosiomaga.

Tala i le fanua o Legaoā i Tuana'i
O le tala o mea na tutupu muamua sa aafia ai le aiga o le tusitala i le afioaga i Tuana'i, na te umia ai le suafa Luafatasaga, ma o se finauga i le va o Luafatasaga ma le matai Leauvaa o Faatoafe. Mo le silafia o le afioaga o Leauvaa na sosola mai Savaii ina ua sasao le mauga mu i le 1905 na aafia ai le latou nuu ma eleele, ona o mai lea ave iai e le Malo le fanua e valu selau ma le fa eka e nonofo ai e tu i le i le va o Tuana'i ma Levī.

E pulea le fanua o Legaoā e le suafa Luafatasaga, ua leva tausaga talu ona faavae mai ae lē i taunuu mai tagata Leauvaa i Upolu. O lenei fanua e tū i gauta o Tuana'i i le tua'oi ma eleele na ave mo Leauvaa, pe tusa ma le lua kilomita mai tai i le aai. I lona amataga mai o le fanua atoa e tusa lona tele ma le luasefulu lima eka, tele pe ititi. Ona o le utiuti o fanua o Leauvaa o lea na ave ai e Luafatasaga i le tausaga e 1935 se vaega i sisifo o lona fanua e tua'oi ma Leauvaa, e galulue ai le aiga o Faatoafe i le itū i tai a'o le aiga o Pauga i le pito i uta.

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* Assessment of environmental impacts in Samoa by the Lands and Titles Court
† Dr. Taule'alo o le Pulesili o le Matagaluega o Puanaoa Faanatura & Siosiomaga.

Ao le tulaga ua molimauina, ua matuā faaleagaina le tele o vaega o le fanua o Legaoā sa ave e faaaoga e aiga Leauvaa. Poo le tausaga e 1980 na eli pū ai le vaega na tuu i le aiga o Pauga ae la'u e tanu ai le fanua o Tofamamao o le Ekalesia Katoliko. O le vaega o le fanua sa aafia e tusa ma le 20,000 sikuea mita, tele pe ititi, sa eli i le loloto e tusa ua to'a tumau ai le vai ma e le toe mafai ona toe faaaoga.

Ao le amataga o le tausaga e 2004 na faataga ai e Faatoafe le isi matai faipisinisi o Leauvaa o Salā na te sua ma 'eli le vaega o Legaoā e sosoo ma le pito fanua na ave e galulue ai le aiga o Faatoafe. A fua i le tulaga ua iai vaega ua faaleaga e lē toe ola ni meatotō aua ua la'u uma palapala a luga ma maamaa ua tau i lalo i le papa. E ui ia sa tuuina mai e le Resitara o le Faamasinoga o Fanua ma Suafa se Poloa'iga lē tumau e taofia ai le faaleagainga o le fanua ae sa faatino pea le galuega a Faatoafe ma Salā e toe taofi ane ina ua faaulu le talosaga a Luafatasaga ae pe tusa ma le 15,000 sikuea mita, tele pe ititi, o le fanua ua faatama'ia. I le taimi o le suesuega i luma o le Faamasinoga na molimauina e Faatoafe o lona talitonuga e pule Alii ma Faipule o le afioaga i Afega i le fanua, ma sa faatagaina e Alii ma Faipule le eliina o le fanua.

Sa talosagaina e Luafatasaga se finagalo o le Faamasinoga e faamaonia ai le:

(a) pulea e Luafatasaga o le fanua o Legaoā;
(e) tua'oi o Luafatasaga ma Faatoafe;
(i) taofia o le Faatoafe ma Salā mai lo la toe sopo'ia, la'u o palapala ma maa pe faaleaga le fanua o Luafatasaga; ma le
(o) poloaina o Faatoafe ma Salā e faalelei ma faatumu i palapala-a-luga vaega uma o le fanua ua ia eli, la'u ma faaleaga e toe faafo'i ai le fanua i le tulaga sa iai muamua; o lenei galuega toe faalelei ia faataunuu ma faamae'a i totonu o le taimi e tolu (3) masina, ma ia malie atoatoa iai le Luafatasaga i lona faatinoga.

I le faaiuga a le Faamasinoga i lenei mataupu na faamaonia ai vaega (a), (e) ma le (i) o le talosaga a Luafatasaga ae teena le vaega (o). E ui ina sa faamaonia e le Faamasinoga ua tele le afaina o le fanua ae o lona finagalo faaalia i le mafuaaga na teena ai le vaega (o) o le talosaga a Luafatasaga, ona e leai sana puleaga faa-faamasinoga i lalo o le tulafono e mafai ai ona poloaina Faatoafe ma Salā e toe faaleleia vaega o le fanua na la faaleaga.

Peitai e talitonu le tusitala o loo iai i le Faamasinoga le malosiaga i lalo o le Tulafono na te faia ai se poloaiga e toe faalelei le fanua aua ua tuuina iai le puleaga faapitoa i mataupu uma e aafia ai fanua ma suafa Samoa. I le faaliliuga o tulafono a Samoa e faaaoga le faa-Peretania pe a faitau 'ese'ese - o le faaupuga faa-Peretania o le fuaiupu 34 (2) o le 'exclusive jurisdiction', e faaliliu faa-Samoa o le 'puleaga faito'atasi'. Peitai o le faaliliuga o loo tusia i le Tulafono o le 'puleaga faapitoa' e faaliliu o le 'special jurisdiction' ma e lē o ato'atoa ai le agaga o le Tulafono. O lona uiga tonu o le Tulafono e na o le Faamasinoga o Fanua ma Suafa o loo iai le puleaga na te soalaupuleina ai soo se matatupu e faasino i, pe aafia ai fanua faale-aganuu.

E tatau i le Faamasinoga ona amanaia ma faatino lana puleaga i lalo o le Tulafono na te faia ai faaiuga i soo se mataupu tau fanua faale-aganuu, e le gata i le pule o fanua ae aofia ai ma le faaaogaina talafeagai o fanua, aua e leai se isi Faamasinoga e mafai ona silasila iai. Ae foliga mai ua tele se faaletonu o le faaiuga i lenei mataupu pe a fua i le Tulafono. O lona uiga e mafai i le lumana'i ona faaleaga e se tasi se fanua faale-aganuu o se isi e aunoa ma se mea e faia iai. Ua faigata foi ia Luafatasaga ona faatino lana pule i se vaega o lona fanua o Legaoā e

pei ona faamaonia aua o lea ua faatāma'ia ma faaleaga e Faatoafe ma Salā i le pule sesē a Alii ma Faipule o Afega, ma e lē mafai ona toe faaaoga i se atina'e i le lumana'i.

Tala i le fanua o Malaesaili i Saanapu

E faasino le tala i mea na tutupu lona lua i le fanua o Malaesaili, o le Laoa faavae o le suafa Lesā i le afioaga o Saanapu, ma na aafia le tusitala i lenei mataupu ona o lona piitaga i le suafa Lesā. O le fanua o Malaesaili e tu i Saanapu-tai, ma ina ua toe foi ifo le aiga o Lesā i tai i le amataga o le tausaga e 2002, na iloa ai ua sopoia le tua'oi i sisifo o lona fanua e fale o le aiga o Tuigamala. Amata mai ai fefinauaiga i le va o Lesā ma Tuigamala ma tuuina atu ai le mataupu i luma o le Faamasinoga i le tausaga e 2005. E ui la o lenei mataupu e patino i le tuaoi i sisifo o Malaesaili sa finau ai, peitai e aafia tele ai ma faavae o Saanapu na soifua mai ai i ona suafa amata ae maise ona Maota ma Laoa tumau.

O faavae na soifua mai ai ulua'i suafa ma o latou Maota ma Laoa i Saanapu, o faavae ua uma ona tofi mai anamuā. E amata mai i le itu i sasa'e i le Maota i Logopese o le suafa Mati, sosoo mai ai le Maota i Tuugamau o le suafa Mulitalo, faasolo mai ai i le Laoa i Si'ua'i o le Igoāmatua ia Tuigaleava, sosoo ma le Laoa o Lesā i Malaesaili, sosoo ma le Maota i Poutalie o le suafa Tuiafelolo, sosoo ma le Maota i Falefuē o le suafa Leaanā; ae pito i sisifo le Maota i Pousigano o le suafa Anapu. Peitai o le suafa Tuigamala e leai sona Maota faavae i Saanapu aua e le o se matai faavae o Saanapu, ao le matai faavae o le afioaga o Fasitootai e iai lona faalupega o le Ma'opu o le Tuiaana. Sa faaalia i molimau o le faamasinoga, faatoā taunuu mai le suafa Tuigamala i Saanapu i le tausaga e 1900 ao pulea Samoa e le Malo Siamani, o lona uiga e oo mai ua leva ona soifua Maota ma Laoa faavae o Saanapu.

Ma o le mafuaaga lea o le talosaga ma le molimau maumaututū a Lesā, e tua'oi lona fanua o Malaesaili i le itu i sisifo ma le Maota o Poutalie o Tuiafelolo. Sa lagolagoina malosi e Tuiafelolo le tua'oi Poutalie ma Malaesaili ma molumauina lona faataga o Tuigamala na te nofoia se vaega o lona fanua i le tua'oi ma Malaesaili ina ua taunuu mai i Saanapu. E o gatusa lea finagalo pe a fua i le fasi fanua sa nofoia e le auaiga o Tuigamala - e lē pei o isi Maota ma Laoa faavae o Saanapu e iai o latou lumā, tafā ma tuā fanua, ae faalāumiumi mai tai i uta, e toeititi tu le umukuka o le isi aiga i luma o le fale o le isi. Peitai sa tuuina mai e Tuigamala i luma o le Faamasinoga e iai lona Maota e igoa o Lotomua e tu i le va o Malaesaili ma Poutalie.

O le faaiuga a le Faamasinoga i lenei mataupu na faamaonia ai e iai le fanua o Lotomua o le suafa Tuigamala, e tu i le va o Malaesaili ma Poutalie. O lona uiga ua suia ai i lenei faaiuga le faavae na soifua ma ai le afioaga aua e leai se Maota faavae o le suafa Tuigamala i le nofoaga o le aai tuai i Saanapu-tai. Sa manino i le taimi o le suesuega le finagalo o le Faamasinoga e faia se faaiuga e tau fai malilie uma iai itu ae maise ai le faasao o fale o le aiga o Tuigamala; a'o fale ia sa molimauina e Lesā ua sopo'ia mai lona fanua. Ae foliga mai o lea tulaga ua lē tusa ma aganuu ma agaifanua a Samoa e pei ona faatonuina i lalo o le Tulafono aua e faalagolago tua'oi o fanua faavae i faiga ma talafaasolopito na foafoa ma soifua mai ai ae le fuaina i le taufai faamalieina o itu faamasinoga.

E ui la o le autū o lenei suesuega o le tua'oi i sisifo o le fanua o Malaesaili peitai o lenei mataupu e aofia ai faavae ma le talafaasolopito o le nuu o Saanapu aua o lea ua lāga faavae o fanua tumau o le afioaga e pei o le Laoa i Malaesaili ma le Maota i Poutalie, ua faapena foi ona lāga ai ma faavae o suafa Lesā ma Tuiafelolo e ana fanua o loo finau ai. Ma e tatau foi ona suesue mae'ae'a le faavae o le suafa Tuigamala aua o lea ua faatu mai e iai lona Maota e igoa o Lotomua i Saanapu – pe na tupuga mai Tuigamala i Fasitootai, ao anafea foi na oo mai

ai i Saanapu? Ae lē talafeagai ona te'i ua vaevae se fanua faavae e pei o le Laoa i Malaesaili i ni faiga e faamalie ai itu faamasinoga, ae tatau ona sa'ili'ili lelei se faaiuga talafegai e o gatusa ma aganuu ma agaifanua na soifua mai ai nei fanua ae maise suafa o loo aafia ai.

Manatu faaalia
Ua faamatala i luga ni tala i ni mea na tutupu e tau faamalamalama ai pe mafai e le Faamasinoga o Fanua ma suafa ona suesueina aafiaga o le siosiomaga, a'o a foi mataupu e aofia ai. Muamua o loo manino i le Tulafono e iai i le Faamasinoga le puleaga faitoatasi na te su'esu'eina ai ma faia faaiuga i soo se mataupu e aafia ai suafa ma fanua tau Samoa. O lona uiga e le gata i vaega masani e pei o le pule ma le faaaogaina o suafa ma fanua, ae aofia ai foi ma isi tulaga e pei o aafiaga o le siosiomaga

I lalo o le Fuaiupu 34(2) o le Tulafono, ua tuuina ai i le Faamasinoga le puleaga faito'atasi faa-faamasinoga mo suafa ma fanua faale-aganuu. Ua tolaulau ai ma nisi o mataupu e aofia i lea puleaga a le Faamasinoga e pei o le puipuia, faamaninoina, aia tatau ma avega tauave e faatatau i suafa; a'o aia tatau e soloa'i atu ai i fanua. O loo manaomia foi le Faamasinoaga ina ia faatino lana puleaga e tusa ai ma aganuu ma agaifanua a Samoa.

Ua faatāua i Samoa le puipuia o ana measina e pei o tu ma agaifanua ma le olaga faa-Samoa, ma o Samoa o se tasi o sui auai o le Feagaiga faava o Malo mo le Puipuia Measina i le Lalologi. A silasila i nisi o manaoga o le Tulafono ua tā'ua i luga e o gatasi lelei ma le agaga tonu o le "atina'e gafataulimaina" o measina. Ua faatāua mataupu mo le pulea lelei ma le faaaoga faaauau e pei o puipuiga ma aia tatau. O loo malamalama lelei foi le siosiomaga e tatau ona faatino ai nei manaoga o le Tulafono - ia tusa ma aganuu ma agaifanua a Samoa.

Ae faigata tele ona ausia nei matafaioi pe a faia e le Faamasinoga ni faaiuga e afaina ai pe faafaigata ona faatino manaoga o le Tulafono. A silasila i le Tala i le fanua o Legaoā, e lē mafai ona fia pulea e se tasi pe soloa'i faasolo atu i se fanua ua ta'eli ma la'u'ese maamaa ma palapala a luga ua lē toe aoga i se atina'e. Ao le Tala i le fanua i Malaesaili e lē ona tuu eseese le faavae o le suafa Lesa, Tuiafelolo poo Tuigamala ma nofoaga faavae o nei suafa. Ma e le tatau ona vaevaeina Maota ma Laoa e faamalie ai se tasi aua o fanua ua uma ona tofi, e tatau ona sailiili lelei i le moni e tusa ai ma tu ma aganuu mamalu a Samoa.

Upu faai'u
E talitonu le tusitala e mafai e le Faamasinoga o Fanua ma Suafa ona ia faia suesuega ma faaiuga e uiga i aafiaga o le siosiomaga aua ua iai i le Faamasinoga le puleaga faapitoa ma le faito'atasi mo fanua ma suafa tau Samoa. O lona uiga e tele le sao o le Faamasinoga i le atina'e gafataulimaina o fanua ma suafa, e lagolagoina ai le pulea lelei ma le faaaogaina talafeagai o nei measina a le atunuu mo tupulaga nei ma taeao.

Who is responsible for Samoa's treasured island paradise?

Hemi Faaeafaleupolu*

Introduction

What stands out to you as you commute, or explore our beautiful peaceful Samoan island paradise which to many Europeans in years gone by meant Utopia? No, I am not referring to the hundreds of churches, some mock Baroque, and Gothic inspired, found throughout the isles. Instead, I have seen how tidy our people have become over the last decade or so. In this regard I salute and applaud them, well, especially those villages and urban communities which have embraced our Government's 'Keep Samoa Clean' awareness campaign.

But, the question needs to be asked, 'Are they showing responsibility because they love their environment or are they just doing it because of the obvious material and monetary gains, and the government recognition for their efforts?'

Still, we can see the fruits of the labours and vision shared by the Ministry of Natural Resources & Environment and the Samoa Tourism Authority who are responsible for the National Beautification Programme. The village mayors and village councils have seen the light … yes there was an incentive…or shall I say a *taui* (reward) - a handsome dividend - a paycheque…together with a beautifully laminated certificate at the end of that tunnel of light. Sadly, some people chose to ignore the light, e.g. motor mechanics; and ignorant people who use their premises, or land not owned by them, including nearby riverbeds, or dried up streams to dump rusty old car wrecks / machinery, and all manner of junk / pollution.

Definition of 'responsible'

According to my Oxford Dictionary, the word responsible is an adjective; I will list the various meanings and definitions: 1) being the cause of something; deserving blame or credit for it; 2) reliable, fulfilling duties conscientiously; and 3) (of a job etc.) involving important duties - responsible for,: having control or care over.

God's creation

God created a wonderful universe, which includes the earth and all that is in it. His Creation gives testimony to His Greatness. God did not need to create the universe, He chose to create it. Why? God is love, and love is best expressed towards something or someone else - so God created the world and people as an expression of His love. We, all Samoans, our fellow human beings, should avoid reducing God's creation to merely scientific terms. God created the universe because He loves us.

What does the holy bible says about man's dominion/rule over creation?

Genesis 1:28 reads 'God blessed them and said to them, Be fruitful and increase in number; fill the earth and subdue it. Rule over the fish of the sea and the birds of the air and over every living creature that moves on the ground'. To 'rule over' something is to have absolute authority and control over it. God has ultimate rule over the earth, and He exercises His authority with loving care. When God delegated some of His authority to the human race, He

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expected us to take responsibility for the environment, our natural resources and the other creatures that share our planet. Therefore, we must not be careless and wasteful as we fulfil this charge. God was careful how He made this earth. We must not be careless about how we take care of it. We must be good stewards of His Creation. Everything God created was good. We and our environment are part of His Wonderful Creation.

Psalms 8:6 reads "You made him ruler over the works of your hands; you put everything under his feet." God gave human beings tremendous authority - to be in charge of the whole earth. But with great authority comes great responsibility. For instance, if we own a pet (fagafao) e.g. a pig, a horse, a dog, a cat, we have the legal authority to do with it as we wish, but we also have the responsibility to feed and care for it. The question is, for you and I, "How we treat God's Creation?". So, whether we are Christians, Seventh-Day Adventists, Mormons, Jehovah's Witnesses, Bahais, Muslims, Hindhis, atheists or non-religious persons for that matter, regardless of our religious background my fellow Samoans, we must all do our part to take care of our blessed environment and all that lives therein.

We must use our God given resources wisely because our Sovereign Lord holds us all accountable as stewards of His Creation.

The Samoan attitude to the environment

I am only speaking from my own point of view here, and what I have seen in some places I have visited over the last five years I have lived in Samoa. Firstly I would like to raise awareness, or substantiate the fact that there are some people, families or villages in Samoa who are not being responsible in conserving our natural resources like water. There are a lot of selfish and ignorant people here who do not heed the call for the conservation of our water supplies.

To that end, I have provided photographs of water wastage near the *auala galue* in Salani, Falealili. I saw some people filling their buckets, and large empty oil barrels, loaded them on the back of a Dyna truck and left without turning off the tap. I thought that they would turn it off, or the people who were with them whose family property was just down the road. I drove further along and noticed that none had bothered to turn it off, and so I stopped at another family's home and informed them of the dilemma, and asked them to contact the Samoa Water Authority as I had no tools to stop it myself, nor did I know where the water main was located; and that I did not have my cellular phone with me so I could contact the Samoa Water Authority myself.

I believe, this large tap was allowed to gush out water for several weeks because I travelled back there to visit some relatives in Satalo and found that it was still running freely. I contacted the Samoa Water Authority and explained the situation to them. There have been many other instances similar to this, but even though the Samoa Water Authority was aware of them, to the best of my knowledge, they were not acted upon immediately. An example of this is the main water pipe from Saleapaga to Lepa villages which had burst. The villagers, said that this pipe had burst the day before and the Samoa Water Authority had been contacted, but sadly, a whole day later, after possibly thousands of gallons of water had been wasted; as was the case in Satalo; there had been no one from the Samoa Water Authority to stop this horrible wastage of water.

The question remains to be asked; Who is responsible for this? Why did people ignore these situations, whether they were local villagers, or the Samoa Water Authority? Why

Government Departments, or agencies, or organisations like the Samoa Water Authority are unable to train and employ local villagers to fix these problems, and thereby effectively letting them take ownership. This is a possibility, if they, the Samoa Water Authority are not able to send personnel to these villages due to demands on their staff resources. In cases and situations like this, government departments must show initiative and come up with the appropriate solutions, instead of allowing thousands of gallons/ several tonnes of water to be wasted.

The responsibility rests squarely on their shoulders, as well as that of the local village or community concerned. No one likes to see a precious, natural resource like water being wasted. How can we waste water, a gift from God to Samoa, when there are tens of millions of sick, starving, malnutritioned, under-nourished, thirsty, fellow human beings suffering and dying around the world in places like Africa, South America, India ?

Where is our love? Have we forgotten how blessed we are to have all these wonderful God bestowed blessings like coconuts, breadfruits falling from trees, mangoes, vi, banana, taro and cocoa plantations providing us with an abundance of food. We are a country blessed with a beautiful environment which includes our using the once abundant fish stocks in lagoons, and the ocean. Are fishermen using the correct fishing methods when fishing? Are they following the appropriate laws as set by central and local government? Are they catching too many undersized fish or are they using illegal methods which could harm our marine life.

Like most nations, we have over-exploited our fish supplies, polluted the rivers, streams and seas. Some ignorant people have thoughtlessly thrown metal scraps, car wrecks in near by river beds, e.g. Samusu near a church youth mechanics shop. So, who is responsible? Is it the youth leader? Does it rest with the local pastor, the village mayor or the village council?

No, we are all to blame, even the Ministry of Natural Resources & Environment! Where were their Environmental Officers? Do they make regular visits throughout the villages on a weekly/fortnightly/monthly basis to inspect and speak with village mayors on a district level to make their job easier? Are these Environmental Officers accessible to the public? We must become more accountable for our actions. Again I posit, 'Have we been good stewards of God's Creation?'

Are our people being educated to care for, respect and revere God's creation? It is my stated opinion that we Samoans are not showing our love, respect (fa'aaloalo/migao) to God if we continue to victimize the environment. We human beings and Samoans must listen to the environment crying out for help; to stop the injustice! We are a country founded on God, yet we continue to be ignorant and disrespectful of the environment. This in effect means we do not truly love God, who gave us human beings, us Samoans, a nation which is pre-dominantly Christian, a beautiful island paradise to live and raise our children in relative peace and harmony. We should be very grateful we live in such wonderful surroundings away from all the wars, diseases and famines.

Furthermore, it seems to me that there are some villages selling their souls, their God given inheritance for a few thousand tāla when agreeing to cut and sell whole or part of their forests to the local timber companies. Are they being fairly and adequately compensated for this? Are their future generations winners or have they been short changed? Is it all worth it in the long run? Obviously, that is none of my business, that is their prerogative, but I only ask these questions as food for thought. Only time will tell if they have made the right choices.

Rubbish disposal trucks

The introduction of rubbish disposal trucks has been a great idea, though sometimes they may be a day or two late, and there is a large amount of rubbish piling up in families' rubbish bins. I was driving through Luatuanuu recently and was saddened at the horrendous sight of rubbish bags and rubbish boxes lying all over the road and dumped on the wooden shelves. Some rubbish, including pampers and were left strewn across the beach. Who is responsible? Nobody likes to clean up such a mess, but if it is in your front or back yard, its common sense just to clean it.

This was just opposite the newly built Church; several villagers saw me taking photographs of this too. They must have thought I was from the Ministry of Natural Resources & Environment, Samoa Tourism Authority or from the Samoana, or Samoa Observer, though I was trying my best to look like a tourist/ visitor from New Zealand. They must have panicked because on my return trip back to Apia, I noticed that the rubbish had been cleaned up and carefully stacked on the wooden shelves rather neatly. It does pay to have a person going around taking photographs of such unhealthy and ignorant practices, thereby expose such lapses or inappropriate attitudes of some Samoan families. Secondly, I would rather see our rubbish put in bins which have been introduced in some villages like Fasitoo-uta, in the Apia township and urban residential areas like Toomatagi.

Conclusion

If all Samoans work together to achieve what the Ministry of Natural Resources & Environment is striving to meet in their annual programmes, then we would have made further progress in fulfilling our God given responsibilities to become more loving and caring citizens of planet Earth, when we look after our own environment right here in our Pacific island paradise which is our home, our heritage, our Samoa.

It all starts with doing the little things right and having a caring attitude towards our environment. The Ministry of Natural Resources & Environment is doing their role by educating the public, starting from our children right through to our adult population. We must adjust our sails so we can sail with the wind. To go against the wind would be detrimental to our well being and health. We must re-learn, re-educate ourselves to become skilful navigators as our ancestors and forefathers once were in centuries gone by. We must sail with the Ministry of Natural Resources & Environment.

Nobody can direct the wind, only God has complete control of such forces of nature. Therefore we, the people of Samoa, the Ministry of Natural Resources & Environment and the various other government departments and agencies, with our friends from foreign diplomatic communities and their aid agencies must sail and journey together with God as we traverse the high seas and torrid ocean currents which will endanger our very existence. Providence will ensure our safe journey.

'Cool runnings', a Jamaican saying, means Peace be the Journey. Let us work together in God's peace and love to ensure our environment is well protected and cared for. That is what I expect any decent and well-meaning human being and Samoan to do.

Improving community skills and knowledge to build, enhance and promote environmental stewardship

Allamanda Amituana'i and Fatima Sauafea[*]

Abstract
American Samoa has undergone major environmental changes over the century as change is inevitable. In fact, these changes have came so rapidly that most of the islands' natural resources have been declined and depleted for many years. The causes of this decline and depletion are due to poor management, overexploitation, natural disasters, and human activities. As these threats increase their effects on the environment and its resources, so does the need to educate and integrate management tools with existing management efforts to improve community support, participation, and collaboration in managing the resources. With the intent of strengthening and empowering the community to take up stewardship roles, several government agencies have utilized resource management tools in designing their programs and activities implemented in the community.

Keywords are - collaborative management; community participation stewardship, and network.

Introduction
The American Samoan people are well acquainted with their environment. Some people still depend on the resources for survival while others live comfortably with the luxury money can buy. We take for granted what we see daily that we do not see the problems that our environment is faced with. The Department of Commerce's Fagatele Bay National Marine Sanctuary and the office of National Marine Fisheries team up to provide means of Improving Community Skills and Knowledge, to Build, Enhance and Promote Environmental Stewardship.

Located south of the equator, American Samoa is the only United States territory that lies in the South Pacific. It is composed of seven islands; five volcanic islands and two atolls. The main island of Tutuila is where most of the American Samoa population resides. A small percentage of the population is spread throughout the islands of Aunuu, Ofu, Olosega and Tau. The land area is 76 square miles and the population is about 65,000. The major industries serving the territory are the two canneries, Samoa Packing and Star Kist.

With the rapid increase of population this has become problematic for the islanders. There is now less land area and pressure has been exerted in addition to threats on the resources of American Samoa. The major problem that the islands are currently faced with is the decline of Coastal and Marine Resources.

Existing management efforts
There are existing management efforts by the government to address the issues but this has very little or no impact on the local people's behaviors towards stewardship. The Coral Reef Advisory Group identified four major threats to Coral Reefs, which are over fishing, Climate

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Change, Overpopulation, and Land-based Sources of Pollution. Other Resource Management Agencies have also designed plans to address these threats. An Ocean Resource Management Plan also exists which addresses the Four Resource Areas of Near shore, Harbor, Watershed, Territorial and High Seas. In addition to that, each agency has its own management plan that helps to manage the mandated resources and focus areas within their scope of work.

Management slows down or sometimes fail to achieve it goals because the community does not support or act upon the efforts to manage their resources. A community in general involves the whole territory, while this target is not manageable the government has systematically broken down specific groups that are identified as target audiences whether it be those who share common functions, religion, occupation, or the few who share values and may consist of groups who are resource users (e.g. fishermen and farmers) etc. By doing this the programs are designed to address issues and concerns of the stakeholders. There is no room for improvement if there is a lack of participation support and collaboration from the community. As a result, the problems will continue to increase, while the resources decline.

Community participation and support

Local people know the causes and remedies to many problems with our resources and environment. They know where to find and use plants with unique properties and they have good systems to prevent damage to crops and seedlings by wild animals. They can offer shelter, labor, food and tools. Local people also offer flexibility to projects, and they allow them to respond to local conditions, thus projects are likely to be more effective and successful. Involving these people in the planning and management of the resources can help build support by investing their interest in the well being of their natural resources, fill in some gaps when government or other resource organizations lack the necessary funds and personnel for effective resource management, and make resource management more responsive to variations and changes in social and environmental conditions. In addition, the management of the resources will be more effective when communities are ensured that the benefits from managing the resources reach the same communities and that the cultural, social and economic needs and concerns of the communities affected by the resources are addressed.

It is important that the local knowledge of the community with natural resources is integrated into resource management. Moreover, providing the community with training and educational opportunities for skills development will enhance their participation in the management effort.

Not only does community participation aid effectiveness, but it is more efficient where the local knowledge helps to minimize wasted time and energy, and can deliver results more rapidly. Community participation has been a process whereby local knowledge, skills and resources can be mobilized and fully used. The participation of the local people provides a degree of assurance that conservation and management initiatives are more likely to be sustainable, since local people should have the most direct interests in the positive outcomes of such initiatives.

Collaborative management is one of the most effective tools to ensure community participation in resource management. It is an essential feature of the emerging face of conservation. More and more planners and authorities are realizing that sharing management rights and responsibilities with various stakeholders – local communities in particular – is the surest way to the long term conservation and management of natural resources. Other

management tools include social communication, information gathering and assessment, planning, conflict management, monitoring and evaluation.

Existing community–based programs

A good example of collaborative management is being practiced in American Samoa through a Community-based Fisheries Management Program under the management of the Department of Marine and Wildlife Resources. The Community-Based Fisheries Management Program was installed to assist villages in managing and conserving their in-shore fishery resources by a voluntary scheme of co-management with the government. Its goal is to enhance ownership and stewardship of the marine resources by the village community. The program aims toward improving fishing and sustainable development of marine resources in the villages. For this, identification of village sites to establish Marine Reserves or Marine Protected Areas is featured. In addition, the restocking of giant clams in the protected areas, as part of the Department's assistance in the program enhances the development of good fishing practices and management approaches.

The Community-Based Fisheries Management Program in American Samoa was adopted from a similar program in Samoa under the Fisheries Office. Although the two Samoas practice the same traditions and culture, the difference in life styles and economies play a difference in the manner which the programs are being implemented. Thus, the program development process is essentially the same with few exceptions to meet the system and regulations organized in American Samoa.

One program that aims at advocating support from the future leaders of American Samoa is the “Save-A-Beach Program” coordinated by the Fagatele Bay National Marine Sanctuary. The program target schools that are of close proximity to beach areas. The schools are encouraged to adopt an area of the beach where they will hold monthly clean-ups, test the water quality, while at the same time are being educated on the effects of our daily activities on our resources. The hands on approach are to challenge the students to experience first hand the problems we are faced with and instill a sense of stewardship within them. The Sanctuary Office coordinates the program with the hope to encourage the teachers and students to take up ownership of the program.

Expectations from community participation and support

The expectations from having the Community or local people participate, support, and collaborate in resource management and related activities include the following:

1. Local knowledge, skills and resources are fully utilized;
2. Increased efficiency and effectiveness;
3. Sharing of problem awareness, resource potential and opportunities;
4. A pool of knowledge and skills;
5. Promotion of local self-reliance.

It is the hope of many resource managers that the effective collaboration and management of the resources by the government and local people will result in more healthy and abundant resources for tomorrow. For future effectiveness and long-term success of managing the resources in American Samoa, there is a need to develop a community network for better collaboration among local communities and community training on ways to improve enforcement and management of the resources.

As one wise fisherman once said, 'With evaluation and assessment of these management efforts and local action strategies to meet social needs, biological significance, economical status, and improving the sustainable development of the resources, American Samoa’s journey to manage and protect its resources will surely be achieved with its sails adjusted to the wind'.

Community consultation – an expense or saving? A comparison between Samoan and Victorian planning systems

Stephanie McCarthy*

Introduction

Community consultation. What do you think when you read these words? Unproductive, a waste of time, or perhaps a budget blower. If you are thinking this then you are right. It can be, but only if you let it. If undertaken properly, community consultation can be the most significant saving to a planning project.

This paper demonstrates the value of community consultation in a planning project by using examples from the Samoan and Australian planning context that provides a contrast of the different methods and extent to which the community can be consulted. But first, in order to appreciate community consultation's role in planning, it is important to understand the purpose of planning.

Purpose of planning

The Planning and Environment Act (1987) (Vic) (PE Act) is the planning legislation administered in the state of Victoria. Section 4 of the Act states that:

'(1) The objectives of planning in Victoria are -

(c) To secure a pleasant, efficient and safe working, living and recreational environment for all Victorians and visitors to Victoria…

(e) To enable the orderly provision and co-ordination of public utilities and other facilities for the benefit of the community;

(f) To balance the present and future interests of all Victorians.'

In 2004, Samoa enacted their first legislative planning framework, The Planning and Urban Management Act 2004 (PUM Act). Below is an extract defining the purpose of planning in Samoa:

'8. Objectives of this Act

(d) To secure a pleasant, efficient and safe working, living and recreational environment for all Samoans and visitors to Samoa;

(e) To protect public utilities and other assets and enable the orderly provision and co-ordination of public utilities and other facilities for the benefit of the community;

(f) To balance the present and future interests of all Samoans.'

There is distinct commonality that planning is to benefit people. Therefore, one would assume that planning projects would benefit from involving people in the initial stages of development. However, this is not always the case as many decision makers avoid community participation because of the complexity of an issue unknown costs, and delays often associated with public involvement.

Changing face of planning

Over the years, the science of planning has changed from a service provider role to a

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community focused discipline. More than ever before, planning is concentrating on community benefits and as Howard (2004:17) observed, "it is now well accepted that building communities is more than shaping the physical form." Planning firms and Government Departments are expanding to include community consultation sectors.

So what are the savings?

Perhaps a more appropriate way to describe community consultation is as an 'investment' – something that earns interest to bring profit. This should not be limited to financial profit, as community consultation brings many intangible benefits that cannot be given monetary value. It is for this reason that these savings are often ignored and unaccounted for in cost benefit analysis.

Good community consultation activities can yield opportunity for communities and planners to:

Identify key environmental, social and economic issues;

- Develop community ownership and support;
- Design suitable responses to identified project issues; and
- Ensure that communities do not become a block to the project timeline.

These attributes contribute to making a realistic, effective and sustainable development.

Planning is unpredictable

It is often difficult to see at the outset of a project, but one thing that is inevitable with any project is that things change as it progresses along. Good community consultation processes form positive relationships with a community, who are then more likely to accept or at least tolerate the inconveniences that a project visits upon them. Therefore, community consultation must be considered within a long-term horizon; it is only then possible to see that the savings do outweigh the costs. As stated by Moreland City Council (2000:4):

> "Consultation may result in slower development of difficult or complex decisions, but in the long run leads to quicker implementation. This is because good consultation leads to community ownership of a decision as a result of the access of the community to the decision making process."

Seeing the Savings - its all in the planning

For community consultation to be effective, it must be constructed to fit into the context of existing planning processes. During consultation activities planners, developers, stakeholders and the community should explore and confirm questions such as:

- Where are we now?
- Where are we going?
- Where do we want to be?
- How do we get there?

These discussion points are crucial in forming mutual understandings about project objectives and related roles and responsibilities. It reinforces the importance of adopting a holistic approach, one that caters for all disciplines and accommodates conflicting needs and goals. Howard (2004:18) describes planning as a profession that is "developing more sophisticated tools for exploring questions and making an important contribution to achieving integrated planning outcomes."

Finally, for the savings of community consultation to be realised, it is imperative to define the timing and duration of the proposed processes. This ensures consultations do not continue for unnecessary time periods, which minimises the risk of project delay. Timing and duration of consultation need to be tailored to each project. As stated by Perrintino "[Community consultation] should be there for a reasonable period, but it shouldn't be open-ended, because with a large project with large amounts of capital involved, obviously has to follow a defined path and a period that is limited rather than open ended(Perrintino 2004:59)."

So what if the community isn't consulted?

More often, planners are finding that if they don't invest time to consult communities during early project development stages, they are more than likely to come face to face with them during a later stage, in a less neighborly and more costly way. As planning legislation confers, the public has the right to be informed about proposed developments that may affect them. If they are void or deprived of this right, they will fight to get it back.

This usually occurs at a time critical stage of development and often turns into being a long and expensive procedure. Not only will the project suffer from time delays and associated costs, but communities often become divided as people either express support or concern about the proposed use or development. This is often caused by lack of initial information sharing which will inevitably lead to additional tensions and delays and in some instances can threaten cultural or environmental significant sites. This is demonstrated later using the case study of the Salelologa Township Development in Samoa. There are a number of factors that lead to community opposition to a project and as Winterbottom (2004:41) noted, the three key ones are:

- Lack of information;
- Failure to be involved; and
- Conflict of goals and objectives.

The take home message is that a lack of consultation creates opposition, which will always lead to 'lose lose' situations.

What are the requirements of community consultation?

Before the Victorian and Samoan case studies are explored, it's useful noting how community consultation is employed within the respective planning systems. The term 'community consultation' is not specifically contained within the Victorian or Samoan planning legislation. Instead, the concept is employed through different ways in the respective Acts. In the Victorian context, Section 4 of the Planning and Environment Act broadly states that:

> "(2) The objectives of the planning framework established by this Act are – …
> (d) to ensure that the effects on the environment are considered and provide for explicit consideration of social and economic effects when decisions are made about the use and development of land."

The PUM Act is based on a combination of Commonwealth Acts, namely Australia and New Zealand. Therefore, it is not surprising that Samoa adopted a similar ambiguous application of community consultation requirements. For example, Section 18 of the PUM Act requires that:

> "(18) The Agency shall consult with all stakeholders where possible and shall provide them with all relevant information on the environment of the planning area…."

Stakeholder is defined in Section 2 as:

> "A person with an interest in land which may be affected by a SMP [Sustainable Management Plan] or draft SMP or development application."

Although it is not implicit, one may assume that this definition is inclusive of the community at large. In summary, these examples highlight that it is the obligation of each Government Authority or proponent to interpret, initiate, and implement community consultation appropriately.

Despite the similarity of community consultation concepts employed at the legislative level of Victoria and Samoa, there are noticeable inconsistencies at a political level. This is largely due to political powers having discretion to the nature and extent of community consultation required.

In the Victorian context, pursuant to Section 185(a) of the PE Act, the Minister for Planning can in certain instances exempt, waiver or amend normal planning procedure, if he or she believes the project's implementation is in the best interest of Victoria.

The PUM Act makes similar concessions as Section 35 enables the planning authority to decide if a proposed development does not need consent (and therefore no community consultation) if it is believed that 'minimal environmental impact' will be caused. Like Victoria's exception to the rule, this decision is made at the discretion of the planning authority. These examples reinforces that the extent of community consultation is interpretive and is employed inconsistently within planning processes in Australia and Samoa.

Case study 1 - Eildon Dam improvement project

Background

The Eildon Dam Improvement Project (EDIP) is a project of state significance and is funded by the Victorian Government and Goulburn Murray Water Authority. The township of Eildon is a small rural Victorian town situated adjacent to the dam and in close proximity to in north-eastern Victoria. The overall purpose of the EDIP is to strengthen the dam walls so that it will withstand large-scale extreme flood and seismic events and provide greater safety by minimising the likelihood of flooding and destruction of downstream communities.

The Eildon reservoir supplies 60% of the water in the Goulburn Murray Irrigation District, the largest irrigated farmland in Australia (Eildon Alliance (a), 2004: 28). It is one of Victoria's premier recreational areas and is used for various water sports, tourism, camping and outdoor activities. Eildon attracts visitors from near and far, all year round.

So then, how does one inform the public that development and construction of the dam will take over two years, Mt Sugarloaf (one of their popular scenic sites) will be used as a rock quarry and that boating and fishing activities will be restricted? The answer is community consultation.

The community involvement plan

During initial design phases, the Eildon Alliance developed a Community Involvement Plan, which detailed their commitment and proposed methodologies for community consultation. The overriding objective of community consultation in EDIP is:

> "To work directly with the community, including Goulburn-Murray Water customers, affected residents, users of Lake Eildon and key stakeholder groups, throughout the planning, design, construction and decision-making process for the Eildon DIP to ensure that public input, issues and concerns are understood and considered." (Eildon Alliance (b), 2004:8).

From the outset, community consultation was a significant expense to the overall project budget, as a diversity of activities was employed in initial stages of project development. One of the most effective strategies employed was 'Issue identification sessions,' consisting of community and stakeholder workshops that focused on identifying and addressing the community's issues and concerns.

Other methods of community consultation included an informal consultation through local network including a Saturday BBQ, a community newsletter and an information brochure which was distributed around town and the neighbouring region. Furthermore, a Community Reference Group which consisted of 20 people from the community, local traders, local Government and EDIP representatives who meet monthly to discuss project progression and issues of concern.

Figure 1: EDIP Community Reference Group on a site visit to view the project's progression (Source: Eildon Alliance, 2004).

The savings?

The implementation of the Community Involvement Plan bought significant savings to the overall project, including:

- Early issue identification;
- Sense of community ownership;
- Improved community relationships (community reference group)
- Management fostered good relationship with community and assisted decision-making;
- Local employment opportunities; and
- Project on time.

In summary, community consultation was and continues to be an expense, however the overall savings, as noted above, far outweigh any monetary costs.

Case Study 2 - Proposed Saleologa township development

Background

In 1998, there was a public notice published in the Savali newspaper setting out the Government's intention to take land for the purpose of developing a new Salelologa township. The purpose of the new township is to provide residents of Savai'i with similar services that Upolu residents receive from Apia including Government services, commercial and industrial districts and education facilities. No objections were registered with the Lands and Titles Court. On October 20, 2000, the Government of Samoa acquired 2872 acres of customary land in Salelologa, Savai'i.

In the Cabinet Directive F.K. (02)31 of 10 September 2002, Cabinet directed that work on the new Township would begin within the 100 acres next to Salelologa East Drive (PUMA , 2004:2).

Potential community effects

The proposed township development would significantly affect the community by:

- Loss of amenity to the area;
- Competition for their existing family enterprises;
- Altering their daily activities (services provided would reduce travel to the main island);
- Offering employment opportunities; and
- Providing educational and other resources.

By 2004, extensive land clearing has occurred, construction of the internal road network has begun, the land has been subdivided and Government Ministries have expressed interest in leasing land.

Community consultation employed

Since the land acquisition and land survey conducted by village people in 2000, there has been no formal community consultation conducted for the proposed Salelologa Township development. However, the community has been made aware of the proposed development from secondary sources including feature articles in local newspapers.

Was there scope to go further?

Yes. Some would argue that the agreement was made, there were no objections registered, so development should commence. This is true and is the strategy the Government of Samoa chose to adopt. After all, it can be a complex process meeting with different village Matai (chief) and village council, who hold different opinions.

However, such situations are the essence of creating a sustainable and realistic development and should not be ignored. It is the time to foster good relationships with key stakeholders, and would require the Government of Samoa to develop a consultation strategy appropriate for the project and considerate of the Samoan cultural and political system. As the Virtual Consulting Group observed "It is well accepted in Samoa that where Government including the *pulenuu* [Village council representative] undertake grass roots consultation and awareness in villages prior to and during a project, the probability of project success is high (the Virtual Consulting Group (2003))." Governments should not work in isolation from the community;

instead they should concentrate on developing strong relations with the community, which will produce holistic and effective strategies that ultimately bring savings.

If good community consultation strategies were adopted, the project may have produced:

- Increased sense of community involvement;
- Knowledge sharing;
- Identification of cultural and environmental significance sites*; and
- Potentially avoiding project delay and related economic costs.

(*During land clearing, road contractors found what they believe is an ancient star mound. Road construction has stopped in this vicinity and the road alignment may need to be realigned to divert around the culturally significant site).

The EDIP in Victoria exemplified how these benefits can foster good relations and ultimately savings to a project.

Summary

Admittedly these are only two examples of planning projects and cannot be entirely representative of the country's commitment of community consultation. The intention is not to show a good and bad example, rather demonstrate the different extent to which community consultation can be employed (or not) in planning processes. The comparison between Samoa and Australia confirms that the extent of community consultation is to a certain degree determined by parliamentary powers. Furthermore, it reinforces that the term 'community consultation' is not explicitly contained within planning legislation and is a responsibility of the planning authority to appropriately interpret, initiate and implement it.

Conclusion

For the savings of community consultation to be realised, it needs to be considered in the initial development stages with a long-term perspective. Planning is an unpredictable process, and if good relations are fostered early on, the project will be more likely to receive community support that is adaptable to unforeseen circumstances.

Planning in Australia has progressed from a service provider role to a community focused discipline. Following the implementation of PUM Act, Samoa is in a unique position where the political powers can adopt Australian methodologies and promote the benefits of good community consultation during the introductory stages of their planning system. There are opportunities to develop community consultation concepts by strengthening relationships between government and existing village and social structures. Furthermore, as learnt by the Virtual Consulting Group "Consensus, negotiation and respect for service to the country, village and family (*tautau*) are important values in Samoan culture."(ibid)

In recent weeks the release of the Draft Strategy for the Development of Samoa 2005-2007 confirmed that Samoa is facing high development pressures, and an increase in foreign investment and tourism (which is emerging as a key sector for Samoa's economic growth) (GOS, 2004:11). For years, tourism has been seen as a threat to the Samoan culture and in response tourism authorities continue to advocate that tourism development must be advanced in a fashion that is consistent with and supportive of the Samoan culture and traditions (GOS, 2002:22).

Planning is the discipline at the forefront of this social and economic tug of war and is the key to ensuring that traditional cultures are not defeated by the influence of foreign investment and tourism. Community consultation should be extensively employed at all Government levels to prevent the potential loss or fragmentation of the Samoan culture. Surely this would be the most significant expense of all, by any measure.

Figure 2: Example of tourism being potential threat to existing Samoan village communities (Source: Author).

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Community participation - becoming environmental stewards

Rosia Tavita*[*]*& Solia Tuaumu

Fagatele Bay National Marine Sanctuary, located on the south shore of Tutuila Island, American Samoa, was designated as a National Marine Sanctuary in 1986. It is one of 13 National Marine Sanctuaries and one ecosystem reserve under the National Oceanic & Atmospheric Administration. It protects a 0.65-sq.-km (0.25-sq.-mi) coral reef formed by the crater of an extinct volcano. There was a tremendous loss of corals by an invasion of crown-of-thorns sea-stars (*Acanthaster planci*) in the late 1970s, and damage to the reefs from coral bleaching and destruction by the hurricanes of 1990 and 1991 (Goldin, 2002). In addition to these natural disasters, the increases in marine debris and illegal methods of fishing have contributed to additional damage and harm to the corals.

The American Samoa Department of Commerce administers the Fagatele Bay National Marine Sanctuary under a cooperative agreement with the National Oceanic & Atmospheric Administration. Under the Resource Management Division of the Department of Commerce the two programs, Fagatele Bay National Marine Sanctuary and the American Samoa Coastal Management Program have joined efforts to promote marine education, ocean issues, and awareness within the territory. Environmental education and outreach programs are two primary management tools that the Sanctuary uses to address issues and threats to coral reefs, not only at Fagatele Bay, but throughout the territory of American Samoa.

The Department of Commerce Resource Management Division in 2003 developed the theme "To Build, Promote, and Enhance Environmental Stewardship", as a guide to direct education and outreach goals and objectives. In order to combat the major threats to the Sanctuary and coastal areas of American Samoa, the need for community participation, that is, for people to become environmental stewards, caretakers of their own environment, is seen as the ultimate goal in protecting, preserving, and improving the Sanctuary and our coastal areas. To gain community participation, the Sanctuary developed projects focusing on community education (schools) and the community at large or general public.

Focusing on the earliest stages of education, one of Fagatele Bay National Marine Sanctuary's projects called Reefweeks targets fourth grade students. The ultimate goal of Reefweeks is to instill appreciation and respect for the coral reefs in young students by teaching them about coral reef ecosystems and how they can be wise stewards of the marine environment. Reefweeks is an annual project held in the month of March in the first week, and the Fagatele Bay National Marine Sanctuary staff conducts coral reef classroom presentations. Reef trips highlight the following week of the project, having the students draw and describe what they observe out on the reefs. In the remaining weeks, students are required to participate in poetry, essay, and art-work competitions relating to coral reefs. At the end of the project, both the teachers and students involved are given an evaluation of the overall project. Results from these evaluations and the work submitted by the students indicate the effectiveness of the project and the increase in these students' knowledge and appreciation' for their marine environment, particularly coral reefs.

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Camp Tifitifi is an education and awareness project spearheaded and coordinated by the Fagatele Bay National Marine Sanctuary, in collaboration with other environmental agencies such as the American Samoa Environmental Protection Agency, the American Samoa Coastal Management Program, the Coral Reef Advisory Group, the Department of Marine & Wildlife Resources, the American Samoa Community College's Land Grant Forestry & Agriculture Extensions, and Sea Grant. These groups combined make up the local environmental educators group called *Le Tausagi*. The annual summer camp targets young people between the ages of 8 and 12. For three days, filled with environmental presentations, ocean activities, games, and field trips, the camp educates these youngsters about the territory's limited natural resources and encourages them to "become environmental stewards"—the theme for the camp in 2004.

Annually, three camp sessions are held, with two on Tutuila island (east & west), and one on Manu'a. Each year, the camp draws in a limit of 30 participants at each session due to budget constraints and manpower. Each of the agencies in *Le Tausagi* contributes some portion of funds and staff time to the successful implementation of the camp. Evaluative questionnaires are given at the end of the camps to determine the participants overall responses to what they had learned. The collaboration and cooperation among the various agencies plays a major role in the successful implementation of Camp Tifitifi.

In 2003, Fagatele Bay National Marine Sanctuary hosted the Ocean Fest, an outreach event for families, the first ever of its kind in American Samoa. The purpose of Ocean Fest is to raise awareness about ocean issues with the general public. Various environmental agencies were invited to set up display booths, with the requirement that they provide hands-on ocean related activities that would engage the public, both young and old, in learning more about ocean resources and the need for their protection and conservation. The program for the day was developed to entertain and instruct, yet would also reflect tradition. For example, a minister was invited to give the invocation, and three youth groups (two church groups and one dance group) to put on quality performances.

An awards presentation was also made for recipients of the Fagatele Bay National Marine Sanctuary college scholarship, to Ms. Bonnie Mc Cuddin, majoring in marine biology at the University of Hawaii-Manoa, and a field experience opportunity that year, to Ms. Alofagia Laolagi and two of her students from South Pacific International Christian Center, who visited the Florida Keys National Marine Sanctuary, which was co-sponsored by the National Marine Sanctuary program and the National Geographic Society. The unveiling of the Ocean Fest poster by well known artist Robert Lyn Nelson was another main attraction and important part of the day's events. A Seafood Cooking Contest, open to the public, featured two categories, oka, and tilapia recipes. Thirteen contestants signed up, and participants were satisfied with the event, as were the judges. The Ocean Fest drew in hundreds of people and was a huge success for a first time event. The local media also did a great job of covering the Ocean Fest (Daschbach, 2003).

The achievement and success in the protection and sustainability of natural resources mainly lies in the support and cooperation from a community and the users of those resources. To gain community participation and support, the community continually needs to be educated and updated about the threats and issues at hand. Fagatele Bay National Marine Sanctuary will continue this mission to promote marine education and awareness within the territory of American Samoa and throughout the Pacific. Collaboration and partnerships add to the overall success and implementation of programs and in achieving goals of increasing

environmental stewardship and community participation. 'The future of American Samoa's only marine sanctuary is directly tied to the health of Tutuila and its people. With awareness comes understanding, with understanding comes protection, something that all Samoans can feel good about as they pass along the islands of American Samoa to their children' (Evans, 2003).

The American Samoa Coastal Management Program (ASCMP) was established in 1980 under a federally funded program created to promote the management and protection of individual states, territories, and commonwealths. The mission of ASCMP is to provide effective resource management by protecting, maintaining, identifying, conserving, restoring, and enhancing the resources of the coastal zone. Our coastal zone is defined as the area within three miles of the coast. In American Samoa this means that the entire territory is managed under ASCMP.

ASCMP is administered by the American Samoa Government's Department of Commerce (DOC). ASCMP's divisions include: Project Notification & Review System (PNRS); Water Quality / Non-Point Source Pollution; Cumulative & Secondary Impacts (C&SI); Wetland Protection; Geographical Information System (GIS); Public Awareness Campaign (PAC) and Ocean Resource Management Program (ORMP).

Public Awareness Program

The Public Awareness Campaign, or PAC, of the American Samoa Coastal Management Program (ASCMP) is an attempt to come up with an eclectic approach to educating American Samoa's island community. The ultimate goal is to engage the public as a whole to take the lead on environmental issues and act responsibly to preserve the Territory's limited resources and becoming environmental stewards.

The PAC helps gain public support of ASCMP. We use several different strategies to get our environmental conservation messages out of the office and into different communities. These Strategies include and are not limited to: (1) outreach visits to schools and village groups, (2) conducting workshops, (3) interactive demonstrations, (4) utilizing media mediums, (5) working with other groups concerned with environmental issues and (6) promoting environmentally sound practices during public events. These strategies are all implemented to accomplish the goal of the Public Awareness Program, to build public understanding of environmental issues affecting the Territory and to recruit our residents to care for our environment or to become environmental stewards.

What educational and awareness activities implemented?

There are a multitude of activities used to educate the public about coastal management and at the same time, building, promoting & enhancing environmental stewardship. Each technique varies depending on the target population and the type of information to be provided. Much of the public outreach visits are done with Le Tausagi, a cooperative, non-profit, interagency, environmental educators group. ASCMP's PAC Program annually celebrates wide success with several community-wide education events throughout the year with events such as the following:

***Wetlands Month*:** This annual May event celebrates the wonderful ways wetlands enrich the environment and people. It is a time to give back to the environment by learning more about

wetlands and participating in the scheduled events such as trivia questions and presentations to various youth groups. Wetland presentations are scheduled across the island to educate, involve and engage the general public to better understand the value of one of earth's most important ecosystems. Communities show their participation by conducting wetland cleanups and enforcing the protection of these areas through village councils or through the Project Notification Review System.

***Coastweeks*:** This annual event is the largest environmental awareness project in the Territory. Usually two weeks in September, the PAC staff schedules activities that cater to all tiers of the island's social structure. Some of these activities include: kayaking excursions, tours to historical sites such as the Tia Seu Lupe by Fatu-o-Aiga; tours to the National Park of American Samoa; tours to the Fagatele Bay National Marine Sanctuary; tours to the Faisua Hatchery; tours to the Aquaculture farm; poetry writings; art work contest; tracking the gecko; radio environmental trivia; media talk shows on coastal related issues; public outreach etc. The possibilities for each year's activities vary from year to year and are endless. Prizes and awards are given out every year for the active participants. This has always been a fun festivity for most students throughout the territory. It has proven that the general public's participation in this event has tremendously increased over the years. It is through this event that most people realize the importance of coastal environments and eventually take action through conducting voluntary coastal cleanups.

Art and Tide Calendar: The Coastal Zone Management Calendar is one of the most popular activities the program sponsors with assistance from other governmental agencies. Students from around the territory compete in an art and poetry competition to have their work selected for the calendar. Community participation portion, more then 100 artwork entries were submitted that portrayed students' perspectives of how important coastal areas are.

Geographical Information System (GIS) Awareness Week: Not too many students know about this vital program. The purpose of this specific event is to showcase and provide the general public with basic information about the GIS. Since the start of this program, a great number of students acquired basic knowledge about the program and utilized the collected information to compile a data that can be of use for outreach or research purposes.

Water Quality Monitoring Program (WQMP): The WQMP is an education outreach program designed to help students and young citizens of the Territory appreciate the importance of water resources and their quality. This program provides hands-on experience in collecting, analyzing, and reporting water quality data. It also teaches students about the causes and effects of human behavior on water quality, thus preparing them to become responsible adults. We have carried out this program to a total of approximately 15 schools and hoping to continue this program in the future. Profoundly, after the school year was over, participants also joined and initiated stream and beach cleanups.

Success: The responsibility of protecting, maintaining, restoring and enhancing the resources of the territory should be a shared responsibility. One great success gained from these multitudes of environmental awareness and outreach activities was community initiation of voluntary cleanups; village cleanups and more students are interested in pursuing environmental careers. There is definite change of behavior towards protecting and restoring the environment. We hope to continue this effort in partnership with school and village communities to "build, promote and enhance environmental stewardship.

Lessons Learned:

- Increase of Community Awareness

- More collaboration between community and government
- Effective collaboration among environmental agencies
- Better understanding and improved skills on managing coastal resources

"One of the principal reasons why managing the coastal resources are insufficiently valued by society is the lack of education about their benefits and their importance in sustaining the world's ecosystems and societies…"

(IUCN 1994)

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Improving Samoa's geographic information services through the upgrade of its national geodetic survey network

Leoo Polutea, Safuta Toelau Iulio & Vitaoa Peleupu Fuatai[*]

Introduction

Geodesy is the science concerned with the exact positioning of points on the surface of the earth. It also involves the study of the variations of the earth's gravity, the application of these variations to exact measurements on the earth and the study of the exact size and shape of the earth. These factors were unimportant to early surveyors and navigators because of the relative inaccuracy of their methods. The precise accuracies of today's navigation systems and the global nature of satellite and other long-range positioning methods demand a more complete understanding of geodesy than has ever before been required.

Several types of surveying methodologies are adopted by various disciplines such as navigation, engineering and cadastral surveying. However two types of surveying methods normally adopted by surveyors to identify land positioning are:

1. Plane Surveying
2. Geodetic Surveying.

For the purpose of this paper geodetic surveying will be the main focus with regards to the upgrade and its applications. The geodetic control is the backbone of any spatial information visualized either in electronic form or printed maps on papers. Therefore this paper will focus on the importance of geodetic control network for land surveying and land information services to the Government of Samoa.

Through the upgrade of the geodetic control network the Survey and Geographic Information will provide Samoa with a survey and geographic information system which supports the management of the environment, national emergencies and sustainable management of land and natural resources.

Background

During the German's Administration of Samoa early in the 20th century, German surveyors started the first ever surveying system in 1914 and used as the basis for all surveys in Samoa. This triangulation system was established and called the Observatory Origin. Between 1921 and 1927 the circuit traverse was carried out for the entire area of Apia based on the Observatory Origin established in 1914.

In 1941 the German Triangulation was recalculated and shifted to the north pier of some meters from the first origin established in 1914 and called it the Lemuta Origin. This shift from the first origin in 1914 to the one established in 1941 formed the now so called Lemuta Datum as the datum used for all cadastral survey within the country up till now. All control traverses based on this datum called Lemuta were completed between 1953 and 1954.

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In 1982, the Australian Government funded one of the newly adopted technologies at the time which called Doppler Satellite Technology and included in the existing triangulation network in 1954 to identify proper Exclusive Economic Zone for Samoa and its neighboring countries. Six Doppler stations established around the entire country and created the next upgrade of the geodetic control which started in 1983.

Following the establishment of the six Doppler stations around the island, the Government of Western Samoa requested the Australian Government for further assistance to strengthen the capacity of the Geodetic Survey Control for its mapping production. This work covered the entire country of Samoa with primary control around the coastal areas and new trig stations on some of the highest mountains of Samoa. The project took approximately six years to complete and most of the expatriates were from Australia. The physical works completed in 1988 with all computations completed in 1989. The resolution from this project established the so called Western Samoa Integrated Grid, based on the World Geodetic Spheroid 1972.

Purpose

The main purposes of having the geodetic control upgrade of Samoa are to:

- Resolve some anomalies with the existing geodetic control.
- Enable the local datum to be consistent with the survey system currently used by the neighbouring countries with the establishment of their maritime boundaries
- Publish national topographical maps and other thematic maps based on the latest survey datum.
- Formulate a standard datum for all Geographic Information System (GIS) and Remote Sensing datasets to be produced and provided for users.

Objectives

The main objectives and goals for the upgrade are to:

- have the Geodetic Survey of Samoa adopt the latest methodologies by using satellites or the renown called Global Positioning System (GPS).
- Minimise the horizontal errors which affected the existing control network established in 1989.
- Enable land surveyors aware and use the GPS equipments to upgrade the control network rather than relying on conventional methods.

Geodetic network upgrade specifications

Horizontal network

The recommended specifications for the different levels of the upgraded geodetic network are based on the US Federal Geodetic Control Committee's document 'Geometric Geodetic Accuracy Standards & Specifications for Using GPS Relative Positioning Techniques'.

The following relative positioning standards apply at the 95% confidence level:

- First Order 10 parts per million
- Second Order 20 parts per million
- Third Order 50 parts per million

The order is verified by an analysis of the minimally constrained least squares adjustment of the network and taking into account the standard of the field techniques employed. Factors to consider are:

- the type of GPS equipments used

- length of observations
- connection to the existing control points of equal or higher order
- the number of independent observations and
- the observation technique.

Spacing and location of control marks

Horizontal control network

The proposed spacing of control points for the upgraded geodetic network is recommended and provided in the Samoan Geodetic Network Initial Review and Options for Upgrade. These recommendations, reconnaissance activities have been conducted to relocate marks from the existing primary network on Upolu and Savaii and for the selection of the new control points to achieve a spacing of approximately 15 kilometers. In addition reconnaissance has been completed for the Secondary Network in the Salelologa area of Savaii.

Primary network:

The recommended spacing for marks in the Primary Network is at approximately 15 kilometers around the coastline of the two main islands of Upolu and Savaii.

It is proposed that the two Continuous GPS stations at Faleolo Airport and old Fagalii Airport be incorporated into the upgraded geodetic network. Coordinates from these two sites will provide International Terrestrial Reference Framework coordinates and the tectonic plate movement vectors to be incorporated into the coordinates of the new Samoan Geodetic Reference System. Data will be required from both sites during the period of the observations.

With the closure of Fagalii airport and suggestions to sell the land it is important that measures are taken to ensure that the Continuous GPS installation is protected from development. The site itself and sufficient land to maintain access and protection for the facility should be retained in government ownership. Of equal importance, if the site is to remain viable and collect worthwhile data, is that any future development surrounding the site should not interfere with satellite visibility or be of such a form that it creates the potential for multi-path.

Multi-path occurs when signals from satellite are reflected from nearby objects onto the antenna. The delay in the arrival of the reflected signal causes inaccuracies in determining the time taken for the signal to reach the antenna and hence the distance to the particular satellite which in turn degrades the precision of the position determination.

Secondary network:

A Second order control shall be provided in areas where tertiary control is to be established. There is no specification requirement for the second order control, but will be provided to facilitate efficient GPS operations in establishing the tertiary control.

Second order points should be provided as close to the particular third order project as possible. They are used as the reference stations to extend the third order control through out the project. The suggested spacing of second order control points is a maximum spacing of 5 kilometers throughout the tertiary network areas. A maximum spacing of 5km enables greater efficiencies in the GPS observations for the tertiary network than if the spacing were to be

increased because shorter observations are possible. The length of observations will be dependent upon the number of satellites available at the time of observation.

The second order control points must be selected in the locations with optimum satellite visibility, any obstructions at these points will seriously affect the quality of the third order observations because fast-static techniques will be used. Using this technique, only short observations are conducted at each tertiary point and it is vitally important that unbroken data is collected by the GPS receiver at the reference stations throughout the observation.

If possible the second order control points should be established over a fairly wide area in one operation so that it can be observed and adjusted as one discrete area, rather than as a number of small individual projects.

It is estimated that about five or six new second order control points will be required in Apia. Data will be required from Fagalii Continuous GPS site during the Apia observations. Therefore for any future tertiary network activities in Salelologa, two second order points are required to supplement the primary control points north of the town. Two existing control points were selected as suitable during the recent reconnaissance activities on Savaii.

Apia Tertiary Network.

Given that the majority of surveys are conducted in Apia, the priority for establishing tertiary control is within Apia. The recommended spacing for marks in the Apia tertiary network is approximately 250m spacing, with the proviso that where appropriate the spacing between marks may be increased. Within the central business districts it may be appropriate to reduce this spacing.

It is estimated that about 450 tertiary network marks will be required throughout the whole of Apia. The aims of the tertiary network are to:

- spatially locate all surveys and the cadastre to support the integration of all land related information; and
- control the position extent and orientation of surveys to prevent the creation of gaps and overlaps.

Any other existing survey marks should be considered for incorporation into the tertiary network. Of particular importance are the deep bench marks from the Seaframe tide gauge bench mark array and any other bench mark as these will assist in the extension of heights throughout the tertiary network.

To ensure that the Apia Tertiary Network can be completed it is imperative that everyone especially the Survey Section of the Ministry of Natural Resources and Environment allocate sufficient resources to the office and field searching activities. Staff must be allocated on a full time basis or there is a serious risk that the searching will not be completed in time for the GPS observations to be made under the guidance of the GPS expert from overseas.

Salelologa tertiary network

The recommended spacing for marks in the Salelologa Tertiary Network is approximately 25om, with proviso that where appropriate the spacing between marks may be increased. The area suggested is the existing developed area of the town and the area that has been subdivided for future development. Procedures will be similar to those described for Apia will be required.

Monument specifications

Monuments are vitally important to the upgrade and good decision of what type or specification shall be adopted to create marks for the geodetic network upgrade. Therefore the new monuments constructed as part of the geodetic network upgrade will be constructed to the following specifications.

Horizontal network.

1. Unless part of the substantial concrete structures, new control points will be concrete monuments, pour on-site with dimensions as follows:
   - First Order — 0.3m x 0.3m cross section at the top;
     0.4m x 0.4m cross section at the base;
     0.7m long;
     Protruding 0.2m above ground level (normally);
   - Second Order — 0.25m x 0.25m cross section at the top;
     0.35m x 0.35m cross section at the base;
     0.5m long;
     Protruding 0.1m above ground level (if set in a footpath, the mark is to be flush with the footpath
   - Third Order — 0.20m x 0.20m cross section at the top;
     0.30m x 0.30m cross section at the base;
     0.40m long;
     Protruding 0.1m above ground level (if set in a footpath, the mark is to be flush with the footpath)
2. If bedrock is reached before the hole is excavated to the required depth, it is permissible to attach the mark to the bedrock provided that the surface of the bedrock is properly keyed and cleaned to ensure that the monument is properly attached to the bedrock.
3. In some situations where above ground marks may be dangerous or a nuisance to local people or vehicles, consideration must be given to constructing the monument flush with the surface.
4. In some situations where the stability of the ground is questionable, a larger monument may be appropriate.
5. To enable a GPS antenna to be set securely over the mark when using a range pole and bipod set-up on fast static surveys, it is essential that the rod, nail, screw, or bolt used to mark the point in punched with a center punch, or has a cross cut in it or some other suitable alternative is provided to prevent the tip of the range pole slipping from the point during the observations.

Estimated quantities of concrete

The recommended estimated volumes of concrete required for the construction of the monuments with dimensions as indicated above are as follows:

- First order — 0.1cubic meters
- Second order — 0.05 cubic meters
- Third Order — 0.025 cubic meters.

Funding of the geodetic network upgrade

Project description

The Government of Samoa is implementing an Infrastructure Asset Management Project Phase 2 under the credit from the International Development Agency. Part of this project

involves the upgrade of the geodetic network under the Component C5.01 – Sustainable Management of Land Administration.

Samoa is characterised by limited land resources, a high percentage of customary land (about 80%) and strong cultural and traditional values. Most families have access to land however the impediments in the present system restrict the full economic use of land resources. Samoa has committed to land related reforms and to economic and public sector change as a firm basis for achieving in the strategic objectives outlined in the Strategies for the Development of Samoa 2002-2004.

Project rationale

There is a concern that the present system of land administration system will not provide stable platform for meeting the development objectives of macroeconomic stability and private sector led growth. The system of land registration has been described as developing in an ad hoc manner since adopting the basic framework from New Zealand. The level of litigation and the relatively high cost of land registry dealings have raised doubt regarding the capacity of the existing deeds based system to provide the foundation for an active and efficient land market. The variance in land valuations for the compensation and general property dealings are causing serious distortions in the land market which can lead to social upheaval. Legislation governing the practice of valuation is urgently needed.

There is growing activity in the development and applications of GIS in various agencies of Samoa. There is concern that these systems are being introduced independently with limited coordination and without appropriate mechanisms for achieving the benefits which flow from a capacity to integrate all geospatial information across the nation.

Project structure

The project consists of two primary components which have been developed into six sub-components to address the requirements of the terms of reference. The structure of the project is as follows:

Component	Sub-component
1. Survey and Geographic Information	1.1 Geodetic Survey 1.2 Land Information Integration 1.3 National Mapping
2. Land Administration Reform	2.1 Land Registration Conversion 2.2 Land Registration Legislation 2.3 Land Valuation.

Geodetic control network implications

National topographic base maps and cadastral maps

Having resolved the anomalies discovered in the existing geodetic control of Samoa through the upgrade, the national base maps of Samoa will directly correct the positions of all features visualized in both electronic and hard copy maps. The cadastral maps which identify the property boundaries and related parcel registered will also be corrected and remain as one of the core data for the users in related field such engineers, planners, environmentalist etc.

Topography and base maps have certain components and geodesy is one of the main one especially when geo-referencing will be carried out for production of any topographical and cadastral maps.

GIS

As previously discussed in other parts of this paper, some concerns with the establishment of GIS by various agencies in the nation involve the accuracy of datasets available in the market. One of the core layers of GIS is the Geodetic Survey Control and therefore it is the foundation data that always remain as the base for any GIS system to be adopted by any user.

The role of the geodetic control network plays a vital part in any of the system that anyone can use.

Maritime boundaries

The existing maritime boundary of Samoa was never negotiated in the past decades. Her Exclusive Economic Zone is the smallest zone in the entire Pacific region and sea locked due to the position of her neighbouring countries such as Wallis & Futuna, American Samoa, Tonga and Tokelau islands.

The National Mapping Section of the Ministry of Natural Resources and Environment is currently working together with the assistance of the Commonwealth Secretary to create charts of different natures to prepare for maritime boundary negotiation. One of the main tasks of this assignment is obtain the base points for measuring the territorial sea, contiguous zone and if possible the 200 nautical mile exclusive economic zone. The success of this negotiation will primarily rely on the accuracy of the geodetic control network currently adopted by Samoa. Therefore the geodetic network upgrade will definitely be appropriate for obtaining the correct datasets for the maritime boundary of Samoa in the future.

Thematic maps

Various thematic maps such as geology, forest type, soil, land capability, land tenure, land use, statistical maps and tourist sites and so forth produced by different agencies will benefit a lot from this upgrade.

Conclusion

The role of the Geodetic Network is not to be ignored as it is the foundation for any spatial information to be visualized either on maps or on the desktop screen for decision makers. Everyone will benefit from this upgrade as when completed all position ties to any country in the world will be easily done and conversions through survey datum will be possible in any place in the world.

Accurate positions of maps and correct map projection form the basis for any surveyor or someone proposing to conduct some planning works for land development and of course the seabed areas. Through the geodetic network upgrade there is always a chance to acquire accurate geographic information for anyone to navigate in land and sea.

Samoa's new geodetic network will use the latest survey datum called the World Geodetic Datum 1984 which is observed by satellite. This datum will be known as the International Terrestrial Reference Framework adopted by Committee of Geodesists in the world.

Recommended reading

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Samoa's national implementation plan for persistent organic pollutants - reaching consensus

Taulealeausumai Laavasa Malua & Bill Cable[*]

Introduction

Last year's National Environment Forum introduced the current 'dirty dozen' of persistent organic pollutants (POPs), and other Persistent Toxic Substances (PTS) of concern to Samoa and other countries for possible addition to the Stockholm Convention (Malua et al., 2004). This paper is divided into four sections - Policies and actions, Assessments and their outcomes, Consultations and Awareness - followed by a Conclusion.

Policies and actions

These include Samoa's participation in the International Negotiating Committee meetings from the 1990s that led to signing the Stockholm Convention for POPs in May 2001. As a Party to the POPs Convention, an application was made for Global Environment Facility funding of a POPs project through the United National Development Programme. The Government of Samoa (GOS) also later ratified the Rotterdam Convention for Prior Informed Consent for certain hazardous chemicals in international trade; which currently includes 8 of the 12 POPs, other than two unintentional ones and two not known to be in trade.

The Ministry of Natural Resources and Environment (MNRE) advertised the position of the Project Coordinator for the project at the end of 2001 and the position was filled taking effect in January 2002. Later a Project Manager and Project Assistant POPs were appointed and the project was implemented under the Planning and Urban Management Agency (PUMA).

The main output of the POPs project is for a National Implementation Plan (NIP), and a National Coordinating Committee under the Activity was called as the National Task Team for POPs for its initial meeting in February 2002 (Figure 1). To launch the project a new National Awareness Day was added to the Ministry's calendar in March for Chemicals following that at the end of January for Waste (Figure 2).

A Memoranda of Agreement was also signed with the Secretariat for the Pacific Regional Environment Programme with Australian Government assistance for the 'POPs in Pacific Island Countries' (POPs in PICs) project using the regional Waigani Convention for wastes to implement the Stockholm Convention, Article 6, for elimination of POPs stockpiles (Figure 3). Under the POPs in PICs surplus POPs were identified, packed and shipped to Australia for disposal

A Cabinet directive for disposal also included other buried pesticides and contaminated sites yet to be included in the POPs in PICs. Additional contaminated sites identified by the project were proposed for remediation to reduce contamination of livestock and humans nearby (GOS/MNRE, 2003; GOS/MNRE/PUMA, 2004b), pending the hoped inclusion in the POPs in PICs.

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Figure 1. POPs National Task Team Meeting. Source: GOS/MNRE, 2004.

Figure 2: Third National Chemicals Awareness Day, Savaii 2004. Source: GOS/MNRE, 2004

Figure 3: Two AMC consultants and Project Coordinator POPs draining PCB-contaminated transformer oil from Savaii. Photo: MNRE.

Figure 4. Participants at NIP Criteria Workshop agencies and corporations Source: GOS/MNRE, 2004.

The draft MNRE Bill 2003 is an activity of the draft NIP for enactment as a matter of priority. A draft Atmosphere Policy also includes POPs, especially unintentional emissions of dioxins and furans which would be the main ones once stockpiles are removed and contaminated sites remediated.

Assessments and their outcomes

This paper follows from one presented at last year's National Environmental Forum on POPs and Persistent Toxic Substances (PTS) in Samoa that was based on the initial consultants inventory of them (GOS/MNRE, 2003; Malua et al., ibid)

The initial inventory was followed up by an independent expert review of it, and by two other assessments of institutional capacity, and a further including criteria for priorities and objectives setting (Figure 4; GOS/MNRE/PUMA, 2004a,b,c).

The institutional capacity assessment was initiated following tendering to a local consultant and completed with the independent expert review on the original consultant beginning further studies.

The summaries of the three assessments for institutional capacity, inventory, and priorities and objectives were combined into the draft NIP, with an added indicative financial plan, and priority projects (GOS/MNRE/PUMA, 2004d).

The National Task Team approved the NIP following further consultative workshops to review and finalise it (Table 1).

Consultation

Even before consultancies, the National Task Team for POPs met approximately monthly for updates and to also guide the later assessments reported above.

Table 1. Dates stakeholder consultations held with number of participants

Date (all 2004)	Organisations	Number
20 August	Samoa Umbrella of Non-Governmental Organisations	20
6 September	Samoa Chamber of Commerce	15
16 September	Government Ministries, Agencies, and Corporations	17
13 October	Savaii Mayors and Farmers	140
14 October	Savaii Women and Youth	166
20 October	Upolu Mayors and Farmers	130
21 October	Upolu Women and Youth	184
		Total = 672*

*Aside from Task Team and sub-committee members facilitating consultations

Consultants held some direct consultations with stakeholders (GOS/MNRE, 2004d:43). The capacity assessment was completed following a special meeting by the consultants for members of the Task Team.

Due to gaps in the unintentional releases of dioxins and furans, the NTT approved a separate workshop for stakeholders including those of the Samoa Association of Manufacturers and Exporters.

The consultants held a further workshop for stakeholders jointly for priorities and objective setting, and to consider the draft strategies and action plans. A brief presentation of the draft NIP was made by PECL at the 3rd National Chemicals Awareness Day.

Final Consultation Workshops were held with: Samoa Umbrella for Non-Government Organisations; Ministries, Corporations, Boards and Authorities (Table 1; Figure 5); Mayors and Farmer Associations, Women and Youth representatives, separately for Savaii and Upolu. A short presentation followed by questions and answers was made to the Samoa Chamber of Commerce and Industry, Inc.

The consultations were held in Samoan, with the exception of that for Ministries et al. following official opening in Samoan was held in English. Following the usual opening by a Clergyman, the CEO or Assistant CEO gave a keynote address, followed by the project's documentary video. A questionnaire on the video and other awareness media was collected for evaluation. Working groups were provided copy of the draft NIP and recorded and presented recommendations on the eight main strategies and action plans.

A further meeting was held with the Samoa Chamber of Commerce and Industry, Inc. with questions following an initial presentation in English. Their recommendations were incorporated and the NIP finalized including photographs. It was prepared for Cabinet endorsement and preparation for the Stockholm Convention 1st Conference of Parties in 2005 following this National Environment Forum for any final inputs.

Figure 5. Consultation Workshop with government agencies and corporations Source: GOS/MNRE, 2004

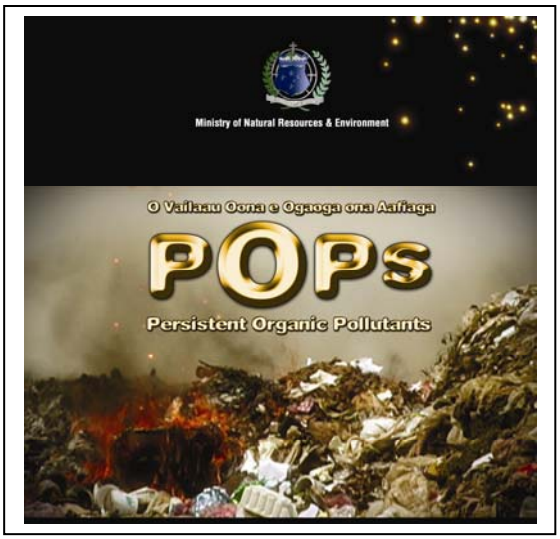

Figure 6. Poster developed to promote the theme of 'Stop burning Waste' for the third National Chemicals Awareness Day, April 2004. Photo: MNRE

Awareness

These studies were also referred to in a press release of the ongoing Samoa's Enabling Activity for POPs. This was drafted also into Samoan and displayed and distributed during a 2002 Awareness Day of the Ministry of Natural Resources and Environment (MNRE). The press release was updated earlier in 2003 for presentations of the Assistant Director (now Assistant CEO) of Planning and Urban Management Agency (PUMA), in whose Sustainable Development section the Enabling Activity was sited, for the 2nd National Chemicals Awareness Day.

Initial awareness was for the Task Team and followed almost immediately by the launch of the project with the first annual National Chemicals Awareness Day. Awareness has continued throughout the project by the usual media in Samoan and English.

The second Chemical Awareness Day focused on unnecessary burning and which was continued in the most recent under the theme 'Please stop burning waste/Taofi le susunu o otaota' and launch of a video on that subject followed by later television broadcasts (Figure

6). As well as in Samoa, presentation was made on this at a Sub-regional workshop in New Zealand.

Awareness also includes that for the 'POPs in PICs' shipment for disposal (MNRE, 2004; Figures 7-10) which was done on 14 December 2004 on Forum Samoa II following consents of Tonga and Fiji for transits for disposal north of Brisbane, Australia. Power point presentations on "POPs in Samoa's Environment" were given by the Project Manager and Coordinator firstly at the University of the South Pacific, Alafua Campus in preparation for the Australian consultants disposal work. Later, at the National University of Samoa the presentation was updated to include report of the packaging and containerization of the POPs and intractable pesticides for disposal.

Figure 7. Agriculture Store Corporation's Taele Saifoloi and colleague inspecting intractable pesticides for disposal. Photo: MNRE

Figure 8. Drained Contaminated Transformers on pallets prepared for disposal. Photo: MNRE

Figure 9. Container loaded with UN drums of intractable pesticides and contaminated oil with transformers. Photo: MNRE.

Figure 10. Locked container being inspected by EPC's Sale Faletolu and PUMA's Sunny Seuseu. Photo: MNRE

Conclusion

The development of the NIP for POPs in Samoa has provided another case study or model for possible application in other similar cases.

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Monitoring of coastal hazards zones in Samoa

Leoo Polutea & Jude Kohlhase*

Samoa islands will continue to be subject to significant adverse effects from coastal hazards and an increase in the frequency and magnitude of tropical cyclones from time to time. Coastal hazards such as landslip, erosion and flooding from the sea mostly occur and affect the coastal areas of Samoa (CMCL, 2001).

There have been significant climatic events that have occurred since the study in 2000 for instance, flooding from heavy storms in April 2002 and cyclone Heta in January 2004. The 'Very High' sensitive areas to coastal hazards identified in the 2000 study noted severe impacts as a result of those events.

The Ministry of Natural Resources and Environment (MNRE) was directed and engaged to revisit and monitor the coastal areas of Samoa to identify changes and significant effects since the last five years. The result and findings from this survey will be reported to the Steering Committee of the World Bank's Second Infrastructure Asset Management Project as part of sub component on Environmental Risk and Resources Management.

Background

In the year 2000, the Coastal Management Consultancy Ltd were engaged by BECA International Consultants Ltd (BICL) to produce Coastal Hazard Zone (CHZ) Maps for the whole of Samoa, inclusive of the islands of Manono and Apolima. One of the major outputs from this project was the development of the Coastal Hazard Database (CHDB) and the Coastal Sensitivity Indices (CSI) now available for the Government of Samoa.

In the CHZ Mapping Final Report (Ibid) one of the recommendations stated that there is a need for a monitoring programme to track the changes on coastal areas from erosion, flooding and landslips.

The first study conducted in the Infrastructure Asset Management Project Phase 1 (IAMP1), there were 276 CHZ stations established for the entire 573 kilometers of the coastline of Samoa. Because of limited resources and constraints for this study, 50 Stations from 'High' to 'Very High' sensitive areas were selected to identify changes on an estimated length of 103 km.

Purpose

The main purpose of this study was to revisit and monitor areas of the coastal hinterland that have relatively high sensitivities and have been subjected to natural coastal hazards over the last four years.

Objectives

The primary objectives of this monitoring study are to:

- identify and quantify effects since the first study conducted under IAMP1 in 2000, and

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- to provide quantitative data to review the Samoa CHZs constructed and established in 2000

Table 1: Summary of the monitoring programme conducted in 2004 in comparison to the previous study in the year 2000

Study	Length of coastline (km)	Islands visited	Number of stations	Village interviews	Staff involved
Year 2000	573	8	276	347	13
Year 2004	103	4	50	24	9

Methodology

The methods adopted for Coastal Hazard Zone Monitoring programme in this study involved 2 main steps:

- Data collection of 50 stations
- CHDB assessment

The CHDB methodology used in this study was primarily developed by Dr Jeremy Gibb of the Coastal Management Consultancy Limited in 2000 (CMCL, 2000a). The CHDB provides the starting point from which the coast at each of the 50 Stations is ranked by CSI according to its sensitivity to coastal hazards. The 2000 Samoa CHZ Stations were then compared against findings of this Coastal Hazard Zone Monitoring Programme 2004. The methods have proved to be appropriate for the coastal environment and provide consistent results, moreover it will be treated as an MNRE model to continue with the implementation and monitoring works of the coastal hazards in Samoa.

In the execution of field data collections involving 24 people interviewed, an opportunity was taken to both accept the observations of reliable observers and raise public awareness in the villages on CHZ issues.

Data collection

With respect to the 276 CHZ Stations identified in the CMCL Report (2001), only 50 CHZ Stations were selected for purposes of this study.

The Stations selected ranged from 'Medium' to 'Very High' sensitivities. This ensured that the monitoring programme acquires broad coverage of areas likely to be affected by climatic events and to provide the Team with a general understanding of the coastlines surveyed. Generally the Stations provide a general and reasonable representation of the coastal areas. The selection of CHZ Stations predominantly focused on 'High' and 'Very High' sites. The selection process included B12 Utualii (Malua, Upolu) despite its 'Medium' CSI value. The justification for this inclusion is based on the concern that road infrastructure at this Station is a vital lifeline for the country and according to reports this segment of coastal infrastructure sustained significant impacts from cyclone Heta. Generally, continued uses such as road and utility infrastructure along the North Western Upolu corridor require special attention.

Table 2: Percentage of CSI classes selected for this study

CSI	Very Low	Low	Low	High	Very High
Totals	0%	0%	0%	36%	62%

Data on 50 Stations were collected in this study from the combination of field surveys, village interviews (anecdotal information) and analysis of survey data. Field data were

collected between 29 July and 3 September 2004 at the 50 Stations, the locations of which are given in Appendix I.

Given this programme is a general monitoring study of the coastal environment the hazards that were given priority was CEHZ and CFHZ. Areas Sensitive to Coastal Hazards (ASCH or multi-hazard (sea cliff retreat, landslip, and storm tide overtopping) areas and CLHZ were considered beyond the scope of this study largely due to resource constraints.

Field observations
The field team comprised 3 to 5 persons at all times and was led by Jude Kohlhase and Leoo Polutea. The MNRE staff involved in this study included Petania Tuala, Nomeneta Saili, Margret Rimoni, Kirisimasi Seumanutafa, Stephanie McCarthy, Seiuli Ueligitone and Malaki Iakopo.

During the 5-week period, 50 selected Stations were surveyed and 24 interviews were conducted at the 18% representative areas of Upolu, Savaii, Manono and Apolima Islands. The field monitoring programme commenced on Thursday 29 July on Upolu Island and was completed on Wednesday 3 September 2004 on Apolima Island.

Field techniques
Elevations were measured at each 50 Stations of the berm crest of the primary beach ridge and where possible, the heights reached by storm tides generated by the tropical cyclone of January 01-05 2004 Heta, the effects of which were clearly recalled by many villagers. A Zeiss Ni2 level, tripod and 5m survey staff were used together for field data collection.

The leveling survey adopted in this survey was based on the previous method used in the study conducted in 2000 where the survey datum used for each station was the intersection of the actual sea level at the time with the coast. Due to the long distances of survey bench marks allocated around the island, most of fixed origins were tied onto a permanent objects such as cemented buildings, telephone and power poles before reducing to mean sea level height.

All levels were reduced based on the Apia Tide Gauge zero of 2.0229 below bench mark 201 as a predicted tidal curves for Samoa for 2004, published by the National Tidal facility at the Flinders University of South Australia and was used to normalize all levels to Chart Datum which is the Lowest Astronomical Tide.

Orthophotomap base
Rectified contour orthophotomaps at 1:5,000 prepared in 1999 by Airesearch Mapping Pty Ltd were used for field work for this study. These rectified orthophotomap series were used as a backdrop to all the coastal hazard zone mapping.

Village interviews
A total of 24 interviews were conducted with between 1 to 3 persons at each Station during the 5-week field monitoring programme. The primary objective of the interviews was to elicit accurate information on site specific coastal hazards such as erosion and flooding from the sea which could be quantified. Some interviews provided other information on long-term changes in shoreline and coastal mitigation issues of concern to each village.

The Ministry of Women, Community and Social Development's Seiuli Eneliko Seiuli alerted pulenu'u and sui-o-le-malo at their July monthly meeting that the field monitoring programme would be undertaken. In addition, a formal letter written by Seiuli Eneliko Seiuli to all pulenuu and sui-o-le-malo was carried at all times by the survey team in the event a village or person was not prepared for the survey team conducting site investigations. In all cases the community was well warned of the survey team's visit.

The interviews were informal and usually took place around the Station where the effects of coastal hazards from cyclone Heta and past events could easily be recounted. The questions probed the interviewees for accurate accounts of erosion and flooding particularly as a result of cyclone Heta. All of the interviews were conducted in Samoan. The responses were translated into English and recorded by team members.

Case study

A 'Very High' sensitivity station at Manase was selected and revisited by the team and presented in this document. C5 station is 10m away from bridge at Saleia, Savaii [and a hard structural option was selected for this area to protect the coastline].

Details of C5 Station as previously surveyed in 2000 are outlined as follows:

According to the interviews held with the people from Manase and Saleia, this station was found severely affected by waves during the most recent cyclone Heta in 2004 and river flooding from the streams nearby in 2001.

Figure 1: Leveling work carried out at L19 station. This image illustrates part of the vertical seawall severely damaged during cyclone Heta in 2004. Petania Tuala, Senior Mapping Officer has the instrument and the chainmen with the staff. Photo taken at Vaiala Beach, Upolu.

One other significant change discovered in this area was the position of high tide which has been shifted to almost two meters inland.

During this study the nearby vegetation (coconut) used to cover the area as seen in the photographs in 2000 has been removed and sand continue eroded inland (retreat) and replaced the small swamp area used to be at this place (refer to photograph taken in 2000 and 2004).

Figure 2: CHZD data of C5 Station at Manase, Savaii

Island:	Savaii	
Village:	Manase	
CSI station:	C5	
Sheet No:	12	
Grid reference:	659909E, 5512549N	
Data collected:	21 June 2001	
Collected by:	Coastal Management Consultancy Ltd	
Variable class:	Data:	CSI
Elevation above MHWS:	1.24 m	5
Max. storm wave run-up at MWHS:	4.50 to 6.00 m	5
Gradient:	-5 to -5 degrees	5
Max. tsunami wave run-up at MHS:	4.9m in 1960	4
Lithology	Coral sand	5
Natural landform:	Barrier ridges	5
Long-term trend:	0.18 to 0.18 m/y	2
Max. short-term fluctuation:	+/- 10.00 to 15.00 m	4
	CSI =	35
	Rating =	Very High

Findings

The following is a summary of the findings during this study which indicates a total of five weeks spent in the field gathering data. The main purpose of the field programme was to monitor CHDB Stations already carried out in IAMP1. The survey focused on the Stations ranging from 'High' and 'Very High'. The actual coastline surveyed was about 18% of the total coastline length of Upolu, Savaii, Manono and Apolima Islands equating to about 103km.

Table 3: Summary of major outputs achieved during the CHZ station monitoring programme between August and September 2004

	Length of coastline surveyed	Field surveys (weeks)	Islands surveyed	CSI stations	Village interviews	Staff input
Totals	103km	5	4	50	24	9

CSIs

1. Discrepancies with some of the previous data in the past survey were found for instance:
2. Confusion over the coordinates and grid references for N1 Tiavea-tai Station which was found at Amaile Station (that was not included in this study);
3. B3 CSI class total was miscalculated therefore rated 'Low', it should have now read 'High'. This has been corrected and reflects field observations.
4. Of the 50 Stations surveyed, their CSI ranged from 'Medium' which is characterised by moderately hard rock platforms with very low erosion rates (-0.03 to -0.49m/y) to 'Very High' which in turn are characterised by low-lying sand barriers (beaches, dunes and

spits) with relatively medium rates of long-term erosion (>2.00m/y) and high short-term shoreline fluctuations (>30m), that are over topped by heavy seas (CMCL, 2001).

Figure 3: C5 station at Manase with significant vegetation growth in 2000. Note: The 8 mature coconut palms. Photo taken July 2004 by MNRE CHZ Survey Team

Coastal hazards

1. Significant coastal erosion and impacts on infrastructure is being experienced at various Stations. Equally the landward retreat is placing public services such as roads and utility extremely vulnerable particularly in areas where lithology generally includes beachrock and unconsolidated sediments (sands) for example Vaisala, Savaii.
2. Of the 50 Stations surveyed around Upolu, Savai'i, Manono, and Apolima, 62% recorded signs of significant erosion.
3. Flooding from the sea is a complex process and is the resultant of storm surge, storm wave run-up, wave overtopping of barriers, and ponding in flood basins enhanced by fresh water flooding.
4. Developments (such as low-value assets and infrastructure) in numerous high coastal sensitive (risk) areas surveyed continue to be sited within the CHZ for example tombs, residential dwellings, and carriage ways.
5. General erosion evident by the exposure of beach rock, vegetation loss and exposure of root systems indicating landward retreat.
6. Property owners within the CHEZ faces as large a risk from erosion as they do from flooding.

Geomorphology

1. Approximately 10% of the Stations indicated minor sand accretion/accumulation (Saleaula and Falealupo, Savaii and Leusoalii, Upolu). Sale'aula reveals significant build-up and accretion of coral. Study conducted in 2000 indicated a Northwest growth since 1991 of a 50 to 130m-wide by 1,570m-long free form spit at a net 17.6m/y, along the crest of the fringing reef. Since 1954, the pit tip has grown 250m at 5.6m/y (CMCL, 2001). This is a very rare occurrence for Samoa.

2. Significant losses from coastal erosion are occurring substantially at 66% of the stations which surveyed in this study.

Figure 4: Image of the CHZ Station at Manase. Note: In comparison to the image above only 1 coconut palm is firmly supported in the dune while the other coconut palm's support is clearly eroded. Photo taken July 2004 by MNRE CHZ Survey Team.

Anecdotal observations

1. Anecdotal observations at the Station particularly and generally on coastal hazards and their effects were recorded from 24 interviews. Focused discussion emphasized the effects of Heta as a starting point. Although Heta was not as severe as it passed 80km west of the islands it did damage trees, crops and coastal infrastructure. Observations included elevation and distance inland reached by storm tides, the duration of flooding, and the damage sustained from cyclonic waves and inundation by the sea.
2. In areas sheltered by wide fringing reefs and not directly facing the full assault of cyclone Heta much lower impacts were observed, e.g. Fagaloa Bay, Uafato (Upolu).
3. The Faleolo Stations are in an area of national significance due the proximity of the Faleolo International Airport. The B4 Station recorded minor erosion along the coastline parallel to the runway. However, B1 Station further west depicted significant changes as a result of erosion and land clearing for the new resort development.
4. Not all areas experienced significant short-term changes. The field data collection and comparisons made with images collected during CHDB assessments in 2000 against current images taken during this study showed 22% of the Stations having relatively stable coastlines with very minor erosion evident. Generally where lithology has been formed from relatively stable basaltic lava flows it is patently stable (Falelima, Savai'i).
5. General flooding experienced within immediate 5-10m of coastline resulted in families moving temporarily inland to higher elevations (Solosolo, Upolu).
6. Implementation of hard-planning options to protect coastlines (for example rock sea-walls) has taken away from the aesthetics of coastal beaches. The poor designs have led to slumping which subsequently appears to accelerate the erosion effect (Fasitoo, Upolu).

Conclusion

1. A total 103km of Samoa's coastline encompassing Upolu, Savaii, Manono, and Apolima islands are and will continue to be subject to significant adverse effects from the identified natural coastal hazards of erosion and flooding from the combination of sea and rainfall.
2. Within the CHZ infrastructure, property and assets have a high probability of being damaged or destroyed during future significant cyclonic events.
3. Where practicable high value infrastructure should be sited primarily beyond the CHEZ to mitigate and avoid the costs associated with damage and destruction that occurs during natural hazards such as cyclones, erosion, landslip, or flooding.
4. Correct positions and coordinates of the stations with some discrepancies have been corrected and geographically corrected and use to update and revise the existing Coastal Hazard Database for further study to be conducted in the future.

Recommendation

For on-going monitoring it is recommended that:

1. all 276 Stations be studied for accuracy with respect to each: Station's coordinates; and CHDB variables, data, CSI class and ranking.
2. all 276 Stations be monitored and the CHDB be updated by the MNRE following the above recommendation.
3. the use of the data found in this study to be a preliminary analysis for Coastal Infrastructure Management Plans and Sustainable Management Plans to investigate the need for regulatory measures such as site specific set-backs from the shoreline to reduce damages within CHZ. In addition, require development regulators, communities and villages to impose building standards (development practices) and landscaping for future flood conditions and erosion.
4. capacity building of staff be conducted in all aspects of CHZ identification, surveying and mapping, CHDB management and CHZ strategic planning, management and implementation.
5. for any future monitoring work to be carried out, the use of the Global Positioning System to be employed to give accurate position and reduced level base on the center of mass of the earth. This technology will reduce timeframe for traversing from any survey benchmark located around the country and accurate level of the coast will be identified.
6. with existing data available for the coastal hazard zone starting to be out of date and changes have been found at some areas, future aerial survey should be considered to update the existing coastal hazard zone maps. Any new photography shall be conducted and flown at the low level flight plan in order to obtain high resolution and accurate large scale orthophotomaps to replace the existing CHZM.

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Appendix 1

The 50 stations CHDB 2000

Upolu/Manono/ Apolima	Code	Village	CSI	Savaii	Code	Village	CSI
	C3	Fagalii	H		D4	Asaga	VH
	C22	Faleapuna	VH		M1	Asau	VH
	J7	Falelatai	H		C6	Avao	VH
	B1	Faleolo	H		F1	Faaala	VH
	B3	Faleolo	H		D10	Faga	VH
	B4	Faleolo Teminal	H		D11	Faga	VH
	G5	Iliili	H		D12	Faga	VH
	F8	Saleapaga	VH		A6	Falealupo	VH
	C10	Leusoalii	H		A7	Falealupo	VH
	C11	Luatuanuu	VH		J2	Falelima	H
	B12*	Utualii	M		G3	Gataivai	H
	A4	Manono-uta	H		C4	Manase	VH
	A2	Samatau	H		C5	Manase	VH
	C20	Saoluafata	VH		D1	Puapua	VH
	Q5	Sataoa	VH		D2	Puapua	VH
	I7	Savaia	H		D9	Saasaai	VH
	C16	Solosolo	VH		C2	Safotu	VH
	H5	Tafitoala	VH		I2	Salailua	H
	N1	Tiavea-tai	VH		C11	Saleaula	VH
	D5	Uafato	VH		B3	Sataua	VH
	L19	Vaiala	H		A1	Tufutafoe	VH
	E6	Vailoa	H		A2	Tufutafoe	VH
	MN1	Faleu	H		A3	Tufutafoe	VH
	MN5	Salua	H		B5	Vaisala	VH
	AP1	Apolima-tai	H		B6	Vaisala	VH

Note: This site was included due to the severity that was experienced during cyclone Heta along this area of coastal infrastructure.

Enhancing disaster responsiveness by building institutional capabilities

Filomena Nelson*

Introduction

In the past 20 years, Samoa has been hit by 4 tropical cyclones, experienced some long dry spells and associated bush fires, flooding associated with torrential rainfall and cyclones, few earth movements with the highest magnitude of 7.2 on the rector scale in 1996, agricultural infestation (taro leaf plight) and other minor events. While these disasters cannot always be prevented their effects, namely death and injuries, damage to lifeline infrastructure, loss of agricultural crops, damage to the environment and long-term socio-economic disruptions can often be mitigated by forethought, planning and coordinated action.

To do this requires the local institutions that deal with emergencies and disasters should be strengthened and human resources developed. It also requires the establishment of effective emergency and operational plans and procedures, implementation of hazard analysis and mapping and the formulation of legal mechanisms to enforce the application of disaster risk reduction strategies, Disaster information management systems should also be developed at both the national and regional levels, disaster awareness and education programmes implemented and a focal operational emergency center set up.

Like other Small Island Developing States in the Pacific Region, Samoa's approach to disaster management was rather ad-hoc. The focus was more on dealing with the event rather than dealing with risks. However as the world experienced many natural disasters and human-induced calamities, the approach to disaster management had shifted from managing the event - which focused on preparedness, response and recovery - to managing the risks, dealing with disaster mitigation and risk reduction.

This paper examines Samoa's past and current disaster management experience. The aim is to identify the areas where capacity building is needed in order to strengthen the responsiveness of local institutions and community and therefore improve nation-wide resilience to disasters.

Past experience

Up to July 1985 when the first national disaster plan was developed the Government had operated an ad-hoc committee to deal with disasters. There were no management plans, no emergency operation centre, no policies or any legal mechanisms and not even a designated office with dedicated staff responsible for disaster management.

An institutional framework for disaster management was formalised when the first National Emergency Plan was approved in 1986 by Cabinet. The approved plan saw the establishment of a National Emergency Coordinating Committee and an International Relief Working Group. The Department of the Prime Minister became the focal point for disaster management programmes.

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The functions of the National Emergency Coordinating Committee included the promotion and coordination of all activities relating to emergencies particularly the national state of preparedness, maintenance of the National Emergency Plan and the coordination of relief operations. The International Relief Working Group was responsible for informing international organisations of the status of an emergency and maintaining regular liaison with those institutions regarding relief requirements and operations. The plan was later revised and approved in 1997. The revised plan was quite lengthy focusing on preparedness, response and recovery. Further revisions were undertaken in 2000 and 2002 although these were not formally approval.

Apart from these committees, the government departments, non-governmental organisations, private and voluntary agencies were allocated disaster management responsibilities according to their specialist skills. For example the Police was responsible for the coordination of damage surveys, search and rescue as well as road and public safety while the Department of Agriculture assessed and reported on damage to agricultural crops and livestock while the Department of Public Works coordinated the rehabilitation of physical infrastructure.

In 1997 the first National Disaster Management Officer was appointed and the National Disaster Council was formed and became operational while the National Emergency Coordinating Committee was renamed as the National Disaster Management Working Group Membership of both the Council and the Working Group were expanded to include more Ministers of Cabinet, other relevant government departments and corporations as well as international organisations.

The National Disaster Management Plan required the development of hazard-specific operational response plans. These plans would facilitate effective and specialised responses to specific hazards that Samoa was prone to. Up to now the only hazard-specific operational response plan that was completed was the one for tropical cyclones. For the organisational response plans only the Draft National Disaster Plan for saving Samoa's historical records and the Samoa Red Cross Disaster Plan had been started.

While the existing plan required the setting up of the National Coordination Center at the Emergency Coordination Centre, it is currently being used by Police as their central communication centre. The Emergency Coordination Centre did not have a dedicated communication system except for the Police's own communication system. This cyclone-proof structure was built in 1991 and located at the Police Headquarters is well-suited for the National Coordination Center.

For disaster warning Samoa relied heavily on externally generated warning from the Tropical Cyclone Warning Center in Nadi, Fiji; Weather Services Office of American Samoa and the Pacific Tsunami Warning Centre in Honolulu. Warning reports were received by the Meteorological Division which advised the National Disaster Council and the public accordingly. The system relied heavily upon the populace listening to the radio or watching television.

Risk reduction measures that were in place included coastal land use plans and building code. The national building code was developed after cyclone Val in 1991 had but lacked effective monitoring and enforcement. Coastal management plans were still being developed with 15 of the 43 plans completed.

Some local training workshops were conducted by the South Pacific Applied Geo-Science Commission (SOPAC). Only limited opportunities were available for overseas training. Except for some pamphlets developed by the Samoa Red Cross Society there were limited awareness and educational materials such as pamphlets and posters. The Ministry of Natural Resources & Environment (MNRE) had started an annual Disaster Awareness Day during National Environment Week during the first week of November to coincide with the beginning of the cyclone season (November – April).

Current development

As a result of public sector reforms the disaster management function of the government was transferred to the MNRE in July 2003. The Disaster Management Section is part of the Meteorology Division and its programme is part of the MNRE's Corporate Plan and has developed its own annual Business Plans linked to MNRE's budget.

Since 2003 a review of the disaster management structure has proposed some changes. The whole of Cabinet will meet as the National Disaster Council (NDC) when an emergency is declared while the National Disaster Management Working Group has become the Disaster Reduction and Management Advisory Committee (DRMAC). The Disaster Management Section will be the Disaster Reduction and Management Office (DRMO) – see Figure 1.

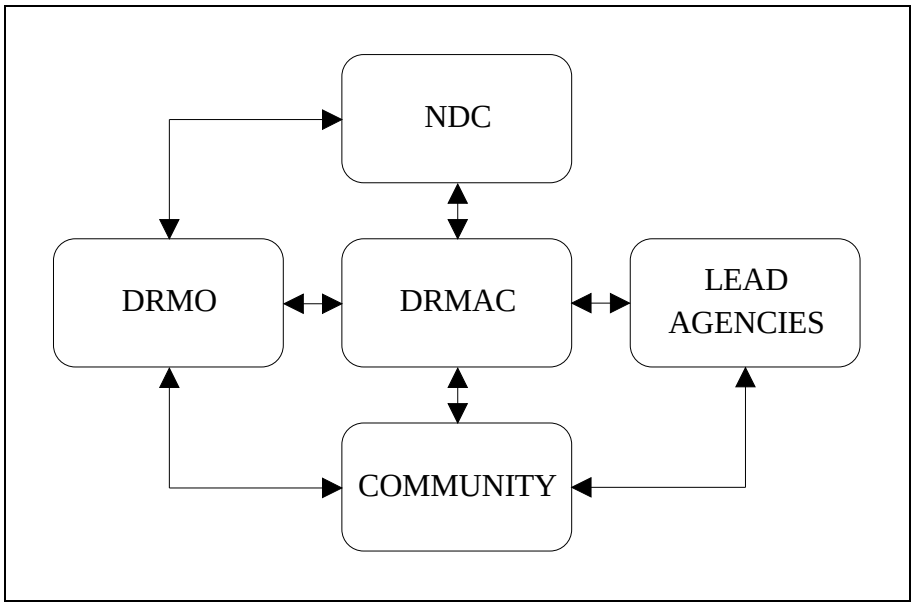

Figure 1: Revised institutional framework for disaster management

Addressed and elaborated in a World Bank-funded project the above framework would help strengthen Samoa's disaster management capabilities. The key group in the revised structure is the NDPC which will lead the planning and implementation of all disaster programmes during the preparedness, response and recovery phases. It will advise the NDC on all disaster matters and coordinate community public awareness and simulation exercises. While the NDC will assume full control during a declared emergency it is the DRMAC that will advise the NDC and take charge of the emergency responses during and after the event. Within the DRMAC are the various lead agencies responsible for particular emergencies - for example the Ministry of Health for public health, Police for fire and the MNRE for environmental emergencies. The DRMO will facilitate the work of the DRMAC and will link its activities to the NDC and the community.

The project will also consider a holistic approach to disaster management and will address all the range of natural and man-made hazards that are likely to affect Samoa. Other areas covered under this project include a review of the current National Disaster Management Plan, development of agency response plans, drafting of legislation, development of a public and community education and awareness programmes and setting up the DRMO facilities.

Consultation and interactions with the relevant stakeholders are being carried out during the review of the National Disaster Management Plan and Emergency Procedures as well as the development of the disaster legislation. Plans and procedures would be designed and formulated to suit local circumstances and the way things are done at the community level. All the affected agencies will develop their response plans to address the particular hazards that they deal with and associated procedures would be regularly tested to test their effectiveness and readiness. To avoid duplication and waste of resources the roles and responsibilities of all agencies will be well defined although their will be overlaps in some instances.

Conclusion

Before the approval of the first National Disaster Management Plan in 1986, Samoa's approach to managing disasters was ad-hoc. There were no mechanisms or systems in place such as management plans, policies, legislation, an emergency operations centre and resources to facilitate the development and implementation of disaster management programmes. Limited awareness and training programmes were developed or delivered. Hence Samoa was largely unprepared to deal with any disaster.

Samoa's resilience to disasters will be strengthened with more streamlined institutional framework and integrated management arrangements including a revised management structures, a well-developed and practical National Disaster Management Plan and new legislation. The new Plan contains the disaster management structure, its roles and responsibilities; the functional roles of each agency involve; the range of hazards that Samoa will likely to be affected by as well as the procedures to develop and implement risk reduction measures and to plan for effective preparedness and response and quick recovery.

Once the plans are in place, they will be reviewed and tested to improve familiarity with procedures and to identify weaknesses for remedy. The disaster management legislation will give legal effect to the National Disaster Management Plan and enforce compliance with the requirements of the Plan by all agencies involved.

The National Emergency Operations Centre will be equipped with suitable and more reliable communications equipments as well as other required resources. The National Disaster Management Office has designated staff responsible for the development and implementation of disaster management programmes as well as appropriate equipments to facilitate the delivery of its functions.

Community education and awareness programmes will create the enabling environment for promoting partnership and networks amongst stakeholders leading to improved knowledge and greater disaster preparedness. The involvement of districts and villages in risk reduction planning is very important and is currently being promoted through the development of coastal infrastructure management plans. These types of plans would complement the new National Disaster Management Plan.

The current strengthening of disaster management in Samoa is in line with attempts within the region and throughout the world to improve and mechanisms for effective mitigation of, preparedness for, response to and recover from disasters. The urgency of this task is supported by the increase in intensity and frequency of natural disasters happening around the world.

Recommended reading

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Soo se auala e faalauiloa ai silafia lautele o le siosiomaga i Samoa*

Tu'u'u Ieti Taule'alo†

Upu tomua

O le tausaga e 1989 na faatoā amata ai ona aloa'ia e le Malo le faatāua o le siosiomaga, na fetaui tonu ma le taimi na faatū ai i Samoa le ofisa o le Faalapotopotoga o le Siosiomaga o le Pasefika. Sa oo ina faatūina le Vaega o le Siosiomaga ma le Faasao i lalo o le Matagaluega tuai o Eleele ma Fuagafanua, ma faataatia ai ma le tulafono fou o Eleele, Fuagāfanua ma le Siosiomaga.

Talu mai lea vaitaimi, sa ave le faamuamua i taumafaiga e faalauiloa ai silafia lautele o le siosiomaga i vaega eseese o le atunuu - e le gata i le Malo ao Alii ma Faipule, Faletua ma Tausi, Sa'oao ma Aumaga ae maise alo ma fanau - ina ia siitia le malamalama ma le silafia o tagata uma i mataupu tau le pulea faaauau o le siosiomaga ma le faaaogaina tatau o puna'oa faanatura. Sa una'ia foi polokalame o le siosiomaga faa-itūlagi o le Pasefika ma le lalolagi atoa, e lagolagoina ai taumafaiga mo le faamalosia ma le faatupula'ia atili o silafia lautele o tagata taitoatasi i Samoa.

Ua faatalanoa i lenei pepa fuafuaga ma manatu o loo ta'ita'ina ai polokalame e faalauiloa silafia lautele o le siosiomaga i Samoa, e pei ona faatino e le Matagaluega o Puna'oa Faanatura & Siosiomaga. O loo faaaoga metotia masani ia faafaigofie ai ona malamalama le toatele - e ala i faalogona faa-natura o tagata e pei o le Va'ai, Faalogo, Pa'i, Sogi ma le Tofo - ae maise le fuafuaina lelei o le faatinoga o faiga faalauiloa ina ia tōsina finagalo e talia ma manatua mataupu o le siosiomaga. E faai'uina le pepa i se va'ai aotele i le aogā o nei taumafaiga pe a fua i laasaga ua iai nei le siosiomaga o Samoa talu mai le 1989.

Auivi mo le faalauiloaina o silafia lautele

Na molimauina le ma'ale'ale o le tulaga sa iai le siosiomaga o Samoa i le 1989, sa utiuti foi le silafia lautele o tagata i mataupu tau siosiomaga aua e lē se tulaga sa masani ai le fetufaa'i faatalanoa pe tusitusia iai ni manatu. Sa leai ni galuega po o ni auaunaga e pulea ai ma faaaoga tatau le siosiomaga e ui sa faalagolago malosi le soifua o tagata ma le atina'e o le atunuu i puna'oa faanatura o loo maua i le siosiomaga. Na atili faafaigata ona talia e le toatele le talitonuga o atina'e faaauau aua o faamanuiaga faa-siosiomaga e lē maua i se taimi vave ae maua faasolosolo pe umi foi tausaga o faatali. O le tele o taimi e lē maua tuusa'o i se toatasi taui o galuega faatino ae auala mai faamanuiaga i le saunia o tulaga e lagolago ai isi atina'e o le tamaoaiga.

Ua fuafuaina se auivi e fai ma taiala i le faalauiloaina o silafia o le siosiomaga, e faavae i le una'ia ma le faamalosia o polokalame faagasolo e fai pea lava pea i masina taitasi. O lona uiga ia silafia e tagata lautele e iai taumafaiga e faia i lea taimi i lea taimi e faalauiloa ai mataupu o le siosiomaga, ina ia latou sauniuni iai . O se faataitaiga i le tausaga e 2004 sa amata fuafuaga a le Matagaluega i le Aso Faalauiloa o Otaota i le masina o Ianuari, sosoo ai le Aso Faalauiloa o Vailaau Oona ia Mati, o le Aso o le Olaga Faanatura ia Me, o le Aso o

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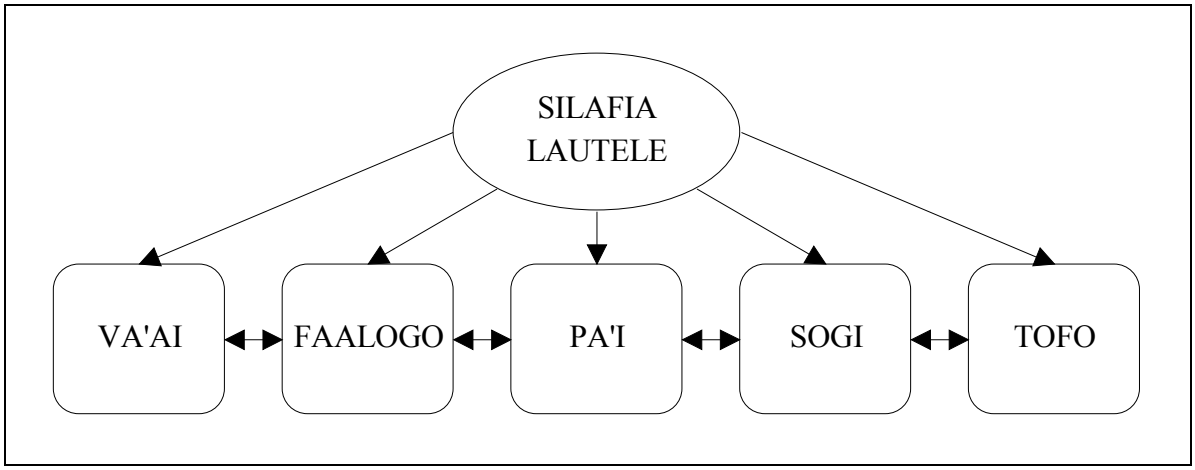
* Promoting public awareness of the environment in Samoa by any means

† Dr. Taule'alo o le Pulesili o le Matagaluega o Puna'oa Faanatura & Siosiomaga

Fesuiaiga o le Tau ma le Osone ia Iulai, o le Aso o Suavai ia Setema ao le Vaiaso o le Siosiomaga i le vaiaso muamua o Novema, e aofia ai ma le Aso Faalauiloa o Faalavelave Faafuase'i Ogaoga.
E le gata i Aso Faalauiloa Faapitoa ae sa faaaoga foi aoaoga ma poloketi faapitoa o le siosiomaga e atili faalautele ai le malamalama ma le silafia o tagata. O le agaga maualuga o lenei auivi, ia tele gaoioiga e faatino faaauau ma faasolo, ia faaaoga metotia eseese ina ia faigofie ona gaua'i loto ma manatu o tagata e fia malamalama i mataupu o loo tala'i; ma ia taumafai e tapu'e mafaufauga ma talitonuga e lagolagoina ai polokalame o le siosiomaga. Ua faamoemoe e ausia nei tulaga i le faaaogaina o soo se auala e mafai ona faalauiloa ai silafia lautele.

Ua faaalia i le Ata 1 i lalo le faataatiaga o le auivi mo le faalauiloaina o silafia lautele o le siosiomaga, e faaaogaina ai faalogona e lima faale-natura o tagata - o le Va'ai, Faalogo, Pa'i, Sogi ma le Tofo. O nei faalogona e le gata ina mafai ona faaaoga taitasi – e pei o le Va'ai i se ata tifaga; Faalogo i se polokalame i le leitio; Pa'i i se manulele; Sogi i le manogi o le nofoaga e lafoa'i ai lapisi poo le Tofo i suavai - ae mafai foi ona faaaoga faatasi e pei o le Va'ai ma Faalogo i le ata o le televise; ma le Pa'i, Sogi ma Tofo i taumafa Samoa.

O le faamoemoega autū o lenei auivi ia mafai ona faaaoga e tagata ituaiga o faalogona eseese i le taimi e faalauiloa ai silafia ina ia faigofie ona manatua ma talia fe'au o loo faalauiloa. Ia saunia lelei polokalame ina ia tele faaaliga ma taumafaiga eseese e faalauiloa ai silafia. Ia lē fiu gofie se tagata e talia polokalame faalauiloa ae ia faigofie ona utagia aua o loo faaaoga ai faalogona eseese. O le isi itu tāua ia mafai ona faafaigaluega ituaiga o auala ma faatinoga ua masani ai tagata i aso fai soo ina ia faigofie ona malamalama ma teu fatu le silafia o polokalama faalauiloa eseese.



Ata 1: Auivi mo le faalauiloaina o silafia

Va'ai
E aupito faigofie ona fausia polokalame faalauiloa e le Matagaluega e faaaoga ai le faalogona o le Va'ai e pei o fe'au faatōsina i le televise, tusitusiga i le initaneti; faamatalaga i nusipepa; lomiga o tusigatala ma lipoti; fe'au i pepa tufa ma faaaliga o tusigaata ma oloa. E faapēna foi ona tāua le Va'ai e ala i aoaoga i potu aoga ma asiasiga i eleele faasao, vaomatua ma nofoaga o otaota e vave ai ma faigofie ona malamalama tagata ina ua vaava'ai i auaunaga o loo faatino.

O le Va'ai o tagata i gaioiga e masani ai e pei o sauniga lotu, aufaipese ma ausiva faapena ma le faatinoga o tu ma agaifanua faaSamoa e faalauiloa ai mataupu o le siosiomaga, o isi ia o

metotia e mafai ai ona talia gofie ma manatua polokalame faalauiloa. E aoga foi faata'ita'iga lelei e pei o le Va'ai o faatasi atu le Palemia ma Minisita i aso faalauiloa o le siosiomaga e faafaigofie ai ona lagolagoina e tagata e pei ona faatāua e le Kapeneta.

Faalogo

E tele ona o faatasi faalogona o le Va'ai ma le Faalogo, e pei ona mafai ona tilotilo ma faalogo i se ata tifaga i le televise ma isi ituaiga faiga e faaaoga ai leo ma ata. E faapēna foi i faiga faalauiloa e aofia ai mafutaga ma semina faalea'oa'oga, fonotaga fetufaa'i, faigalotu poo faafiafiaga e pei o pese, siva ma faleaitu; e mafai ai ona taufai Vaai ma Faalogo le tasi i le isi o i latou o aafia i na polokalame. Peita'i e iai isi ituaiga o polokalame e faapitoa lava na o le Faalogo e pei o faasalalauga o tala ma pese i le leitio. E aoga tele polokalame e faaaoga ai le leito aua e toatele le aufai leitio i lo i latou e fai televise ma e toatele le aofa'i o i latou e mafai ona faalogologo i se polokalame i le leitio ae maise ai i nuu i tua.

Pa'i

O le faalogona o le Pa'i e faaaoga i polokalame faalauiloa e ala i le faatinoga o galuega o poloketi, faata'ita'iga ma faaaliga o oloa, iloiloina o faasinomaga o auaunaga ma asiasiga i nofoaga faapitoa e pei o fanua faasao. E lē gata i le Pa'i ae faaaoga faatasi foi ma isi faalogona e pei o le Va'ai i poloketi ma oloa ma le Faalogo i le tagi o manulele, Sogi i manogi o fugālaau ma le Tofo i fua o laau aina e maua i fanua faasao.

Sogi

E pei ona tā'ua i luga, e apalai le faalogona o le Sogi i polokalame faalauiloa e faataula'i i manogi e pei o togātogo, nofoaga e lafoa'i ai lapisi ma masini e faamamā ai otaota o fale le tā'ua. Ae faapēna foi ona faaaoga le Sogi e manatua ai faiga faalauiloa e ala i le manogi o tēuga i laula'au ma fugāla'au o nofoaga e faia ai polokalame poo 'ula mo le auvalaaulia. E faaaoga foi le Sogi ma le Tofo e manatua ai mea taumafa o aso faalauiloa.

Tofo

Ua faamatala i luga le faatāua o le faalogona o le Tofo e manatua ai mea taumafa ua saunia mo polokalame faalauiloa, e faaaoga faatasi ma isi faalogona e pei o le Va'ai, Pa'i ma le Sogi. E aofia ai foi i le Tofo o taumafa le amana'ia o mea'ai faapitoa a Samoa e pei o vaisalo, fāausi, taufolo ma pīsua; ma manatua ai agavaa faaSamoa i latou na saunia taumafa. O le faalogona o le Tofo e mafai foi ona aofia ma faauiga ai faaaloaloga faaSamoa e pei o manu palagi, meaituāolō ma pusa'apa.

Fuafuaga o le faatinoga o faiga faalauiloa

Ua molimauina le tatau ona fuafua lelei o le faatinoga o polokalame faalauiloa eseese aua le faigofie ona taliaina fe'au o loo faalauiloa. Afai ua manino le ulutala o se mataupu e faalauiloa – o se faataitaiga, o le Aso Faalauiloa mo le Faasāina o Pepa Iila – ona fuafua lea o ituaiga auala e faatino ai, e faalagolago iai le nofoaga e faaaoga ma i latou e vala'aulia. E mafai ona faatino le polokalame o Pepa Iila i le nofoaga e lafoa'i ai otaota i Tafa'igata. O le aoga o lea nofoaga e mafai ai ona vaai le auvala'aulia i le tele ma ituaiga eseese o pepa iila o loo la'u mai e lafoa'i, ma malamalama i galuega o loo faia i le tia'i o lapisi.

E le gata la i le Vaai i le nofoaga ma galuega o lapisi ae mafai ai foi ona Sogi le auvala'aulia i le manogi o lapisi aua e fili faatasi pepa iila ma isi ituaiga otaota. O i latou e vala'aulia e aofia ai le Malo, sui o le aufaipisini ma i latou o loo aafia i le faatinoga o galuega tau lapisi. E aoga tele le auai o le Palemia ma Minisita o le Kapeneta, e faailoa ai le lagolagoina e le Malo o le polokalame e taofia pepa iila. E lelei foi le faatasi mai o sui o le atunuu, ae maise ai le fanau laiti mai a'oga tu lata ane aua o le manuia o nei taumafaiga i le lumana'i e fua i le talia e

tupulaga. Ae faalauiloa faalaua'itele le polokalame e ala i le Vaai i ata o le televise, le Faalogo i lipoti o le Leitio ma le Tago ma faitau i tala o nusipepa.

I le aso e faatino ai le faiga faalauiloa e valaaulia se faife'au na te taitai le sauniga i se lauga puupuu ma se tatalo e faamamafa ai le aoga ma le tāua o se siosiomaga mamā. Ona o Samoa o se atunuu kerisiano e taua tele lea tulaga ina ia mafai ona Faalogo le auvala'aulia ma le aufaafofoga i le feau o le Tusi Paia e faatatau i le auga o le aso. Ona sosoo lea ma se saunoaga a le Minisita o le Siosiomaga, e fia Faalogo iai le atunuu i se finagalo o le Malo e uiga i le tāua o le famamā o Samoa. Ae faai'u le polokalame o le aso i se taumafataga māma e Tofo ai mea'ai Samoa, ma Vaai ai i le faaaogaina o ma'ilo Samoa e laulau ai taumafa. E tāua tele lea tulaga e faamamafa ai le aoga o mea'ai Samoa mo le soifua maloloina ma le faaaogaina o ma'ilo e laulau ai taumafa aua e vave ona pala, ae lē o pepa iila.

E mafai foi ana faatino le polokalame ua taua i luga i se nofoaga tutotonu i le taulaga i Apia. E ui o le a misi ai le Vaai ma le Sogi i le nofoaga e tia'i ai lipisi i Tafa'igata ae tele isi itu e lelei ai e pei o le faigofie ona auai o le toatele o le atunuu lautele aua e latalata i nofoaga e faaee ai taavale. E mafai foi ona faatino ai ma isi faiga faalauiloa e pei o le Vaai ma le Faalogo i siva, pese, faleaitu poo koneseti e faatatau i le aso, poo le faatino o mafutaga semina e atili faalauiloa ai mataupu o pepa iila e ala i le Vaai ma Faalogo. E mafai ona filifilia tagata vala'aulia faapitoa mo mafutaga o aoaoga e aofia ai i latou e sili ona aafia i pepa iila e pei o le aufaipisinisi. O le a mafai foi ona Vaai ma Pa'i i faataitaiga e pei o le faaaliga o oloa fou e sui ai pepa iila.

Upu faai'u

Ua faamatala i lenei pepa faiga ma auala o loo faatino ai e le Matagaluega o Puna'oa Faanatura & Siosiomaga le faalauiloaina o silafia o le siosiomaga i Samoa. Ae ona o le felefele ma le lavelave o lenei mataupu i le tau faatōsina mai o loto ma manatu ia malamalama i mataupu o loo faalauiloa, o lea ua fuafua ai faiga e tele ituaiga o metotia e faaaoga ai, ma ia lava saunia ina ia fia auai mai iai tagata. Ia mafai ona faaaoga faalogona e lima faanatura o tagata o le Vaa'i, Faalogo. Pa'i, Sogi ma le Tofo e faafaigofie ai ona manatua mataupu ma gaua'i mai finagalo o tagata lautele. E le gata i lea ae tatau ona faaaoga faiga ua masani ai le toatele ina ia faigofie ona malamalama ai tagata ma manatua silafia o loo faalauiloa. O lona uiga ia lē pito tasi ona fua ma faataunuu polokalame, a 'ia fetuutuuna'i auala ma fesuisuia'i metotia eseese e talafeagai i lea taimi ma lea taimi.

E ui ina e le i faia se suesuega faapitoa e fua ai le aoga ma le tali mana'o o taumfaiga faalauiloa a le Matagaluega, ae ua tele ni fesuiaiga ua vaaia i le ono tausaga talu ai nei e faailoa ai le faatupula'ia o le malamalama i mataupu o le siosiomaga. Ua tupu ma telē le Matagaluega ua silia i le tolu selau le aofa'i o le aufaigaluega. E faapena foi ona faaopopo ana matafaioi ua aofia ai le puleaga o Fanua, Vaomatua, Siosiomaga, Suavai, Va'aitau ma auaunaga o Tomai Faapitoa pe a faatusatusa i le na o Fanua ma Tomai Faapitoa sa iai ae le i oo mai i le 1989. Ua faatupula'ia foi galuega ma polokalame faatino a le Matagaluega e le gata i Samoa ao le itūlagi o le Pasefika ma le lalolagi atoa. Ao le faaaliga sili o le talia e le atunuu o faiga faalauiloa a le Matagaluega, o le alualu lea i luga o le lagolagoina e le atunuu o ana polokalame faaauau, ma le faatupula'ia o le silafia lautele o le toatele i mataupu tau siosiomaga ua faata'ita'i iai o latou olaga faitele ma le faatinoga o pisinisi ma isi atina'e.