

# Position Paper<sup>1</sup>

## Spatial Information Agency For Samoa

### Table of Contents

1	Introduction .....	2
2	Background .....	3
2.1	SIAM 2 3	
2.2	Terminology.....	4
2.3	Stakeholders.....	5
2.3.1	Key Issues .....	5
2.3.2	Existing Mapping and Spatial Records.....	6
2.4	Samoa GIS User Group.....	8
2.5	Institutional Capacity.....	9
2.6	MNREM – Corporate Perspective.....	9
3	Spatial Information Agency.....	10
3.1	Key Policy Issues.....	10
3.2	General Principles .....	10
3.3	SIA Strategic Objective & Scope .....	11
3.3.1	Strategic Goal .....	11
3.3.2	SIA Scope.....	11
3.4	Implementation Framework .....	12
3.4.1	Organisational Structure .....	13
3.4.2	Regulatory Structure .....	13
4	Conclusion .....	14

### APPENDICES

Appendix 1	SIA Act draft outline	14
Appendix 2	Proposed Corporate Structure of MNREM	18

<sup>1</sup> Prepared by National Mapping Adviser Chris Grant

# 1 Introduction

Much of the geographic information which underpins natural resource management resides in the national mapping program of the country. Maps have traditionally been the medium for presentation of geo-referenced (or spatial) information. The traditional application and exchange of spatial information via paper maps has been an expensive technical and labour intensive exercise usually performed by a dedicated government agency. The advent of digital mapping with the powerful tools provide by GIS has resulted in a revolution in mapping and created an appetite for spatial data across a broad range of users.

There is growing activity in the development and application 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 geo-spatial information across the nation. The embryonic GIS Users Group formed with the support of SPREP<sup>2</sup> and SOPAC<sup>3</sup> is a response to this situation.

Under the terms of SIAM 2 Component C5, The Government of Samoa (GoS) wish to establish a "National Mapping Agency" with responsibility for the production, distribution, maintenance and ownership of intellectual property rights (on behalf of the GoS) of national maps and associated data. There is no existing, relevant legislation. The mandate for the mapping of land and the recognition of official maps prepared in, or relating to, Samoa, is set out in Section 16 of the Lands and Environment Act 1989 (currently replaced by a bill to enact the Ministry of Natural Resources and Environment Act, 2004).

It is envisioned that a properly constituted and resourced agency will provide the overarching policy and regulatory framework needed. At present the MNREM is responsible for the core data. Accordingly it is proposed that the "National Mapping Agency" will be an integral part of the Ministry of Natural Resources, Environment and Meteorology (MNREM) under a restructured Technical Services Division, based around the existing surveying, mapping and valuation functions/capabilities. A revised corporate structure is suggested at Appendix 2.

During consultation it was determined that the name "National Mapping Agency" did not accurately embrace the breadth of the information production and distribution role envisioned. An alternate in the form of a national Spatial Information Agency is proposed. The emphasis on a *spatial information* role brings Samoa into line with global trends and is considered to be more reflective of the responsibilities of the sections of MNREM who will make up the proposed Agency.

The purpose here is to review the environmental settings which exist in Samoa and prepare a position paper outlining a model for implementation of the Spatial Information Agency (SIA) including, *inter alia*:

- The scope of activities of the Agency;
- A recommended implementation framework, administrative processes, structures and systems required within MNREM;
- An appropriate format for the legislation (i.e. whether as a regulation under existing legislation or as a separate Act); and

---

<sup>2</sup> South Pacific Regional Environmental Program

<sup>3</sup> South Pacific Applied Geoscience Commission

- An outline of the features or elements of the proposed legislation.

The general principles are developed and the role of an SIA in respect of the “core” spatial data bases which underpin the effective integration of land information is identified in this paper. A broad outline of a SIA Act is suggested at Appendix 1. Once this paper has been considered and agreed in principle the SIA concept and enabling laws and institutions will be developed in greater detail.

## 2 Background

### 2.1 SIAM 2

The background for this SIA Position Paper is provided by the Second Samoan Infrastructure Asset Management Program (SIAM 2). This GoS/World Bank sponsored project includes a Component C5 – Sustainable Management: Land Administration and Survey. Assuming a wide stakeholder readership, this Component is briefly described to place the position paper in general context.

Component C5 consists of two sub-components (i) Survey & Geographic Information and (ii) Land Administration Reform. These are broken into the key activities shown in the table below which provides the basic implementation framework for the Component.

Survey & Geographic Information	Land Administration Reform
Geodetic Survey	Land Registration Conversion
Land Information Integration	Land Registration Legislation
National Mapping Agency	Land Valuation

A brief summary of the outcomes sought as a result of undertaking the key activities is as follows:

**Geodetic Survey:** A single strengthened and unified geodetic reference framework capable of supporting land information integration with particular application to cadastral boundaries. The MNREM will have GPS equipment and staff will be fully conversant with the application of this technology, and the downstream processing, through direct on the job and other training.

**Land Information Integration:** Policies, standards and processes in place which maximizes the integration and application of spatial data in Samoa.

**National Mapping Agency<sup>4</sup>:** Draft legislation or regulation for a national agency and agreed approaches to data custodianship, information sharing and access. Standards for the production and maintenance of national mapping including the guidelines for changes to place names and national boundaries are proposed.

**Land Registration Conversion:** A strategy for transition between the deeds system and the Torrens system of land registration in Samoa. The policy for adoption of this system for the registration of all land in Samoa will be developed.

<sup>4</sup> This is the term used in the Project Specifications and TOR and is used to describe the activity under the Survey and Geographic Information Sub-component

**Land Registration Legislation:** Laws underpinning the transition to the Torrens system will be drafted and presented to Cabinet. An analysis of the impact of extension of the land registration reforms to the Land and Titles court will be completed as a framework for consideration of future policy on the inclusion of customary land in the formal registration process.

**Land Valuation:** An appropriate valuation system, capable of being implemented nation-wide, for the purposes of public and private sector use and it will be supported by draft legislation

The creation or management of *Geo-spatial information* in some form is a common theme throughout these activities. This position paper, and subsequent consideration of the national mapping agency activities, is therefore being undertaken in close collaboration with all members of the adviser team responsible for the 6 activities listed under project Component 5. There is a particularly close link, if not a direct overlap, between the national mapping objectives and the outcomes sought under LII when the issues of policy, data standards and institutional issues for data access are considered.

## 2.2 Terminology

It is useful at the outset to briefly clarify the terminology which will be used throughout. For example:

**Spatial Data:** Terms such as geographic data, spatial data, geo-spatial data, etc, are commonly applied in dealing with the topic of mapping these days<sup>5</sup>. While there may be subtle differences in meaning the terms are commonly used to describe data which is concerned with the size, area or position of any location, event or phenomenon on the surface of the earth. In the context of this paper the terms are regarded as interchangeable and for the sake of consistency the term *spatial data* will in general be used throughout.

**National Mapping:** In this paper the term national mapping is taken beyond the traditional national series of (usually) small to medium scale topographical mapping to encompass responsibility for the *core datasets* of Samoa. Therefore, a name more appropriate to this function has been proposed. This name is the Spatial Information Agency (SIA).

**Core Data:** As used here core data refers to data, or sets of data, which is necessary to provide the framework for the optimal use of many other GIS applications. *Core datasets* cannot readily be derived from other datasets and are essential to the outcomes of a number of agencies. In other words, these are the datasets for which several government agencies or industry groups require a complete national coverage in order to effectively and efficiently achieve their corporate objectives and community responsibilities.

The core datasets are respectively the geodetic reference network, the national topographic coverage (in all formats and images) the cadastral map base (either analogue or digital<sup>6</sup>) and the textual land registration/valuation database systems. The role and responsibility of the proposed NSIA is almost exclusively centred on the maintenance and supply of these core data bases which provide what is now commonly called the *Spatial Data Infrastructure*.

**Spatial Data Infrastructure (SDI)<sup>7</sup>:** Refers to the technology, policies, standards and human resources necessary to acquire, process, store, distribute and improve the utilization of spatial data. In this context, the function of national mapping is considered to be synonymous with the provision of the Spatial Data Infrastructure for Samoa

---

<sup>5</sup> For more general definitions refer to "The SDI Cookbook Version 2, 25 January 2004". – a publication of the Technical Working Group - Global Spatial Data Infrastructure (GSDI). ([www.gsdi.org](http://www.gsdi.org))

<sup>6</sup> Usually in the form of a Digital Cadastral Data Base (DCDB)

<sup>7</sup> Reference - The SDI Cookbook Version 2. ([www.gsdi.org](http://www.gsdi.org))

## 2.3 Stakeholders

The stakeholders in spatial information are wide ranging and include all those who have either an active or passive interest in spatially referenced data. The stakeholders may be *active* if they generate spatial data for their own purposes, or conduct value adding operations on the data of others. Examples are utilities, forest and agricultural resource managers etc. On the other hand they may be *passive* if they apply spatial data derived from other sources for use in areas such as statistics and emergency services. In addition there are donor supported regional organisations such as SPREP and SOPAC which play a role in the development and dissemination of mapping and/or GIS applications in the stakeholder community.

The stakeholder agencies were undergoing change as a result of ministerial portfolio rearrangements during the inception consultations. The stakeholders as they were constituted at the time of project inception were identified as:

Ministry of Natural Resources and Environment (MNRE)

- Technical Services Division
  - National Mapping Section
  - Draughting and Plan Examination Section
- Planning and Urban Management Agency (PUMA)<sup>8</sup>
- National Disaster Management Office

Ministry of Agriculture, Forestry, Fisheries and Meteorology (MAFFM)

- Samoa Forestry Division<sup>9</sup>
- Meteorology Division<sup>10</sup>

Samoa Water Authority,

Statistics Division (Ministry of Finance)

Electric Power Corporation (EPC)

Ministry of Works Transport and Infrastructure (MWTI)

Police and Fire (Emergency Services)

Samoa Port Authority

### 2.3.1 Key Issues

The stakeholders were extensively consulted in collaboration with the Land Information Integration Adviser and the most common concerns which emerged can be summarised as:

- Access to Data – an inventory of map data and a formal policy framework for effective information sharing is needed to overcome the present uncertainty surrounding information existence and availability.
- Map Server - The status of the SOPAC project to install a Map Server for Samoa was under review. Some concern was evident regarding the siting of this facility in the Division of Meteorology, however this would seem to be diminished by the recent transfer of the Division to the (now) MNREM. The siting of the server in the Division of Meteorology Division provided a much needed boost to that Division's communication capacity and, considering the nature of the Division's public emergency role, this is a positive outcome.
- Cost of Data - The high cost of access to base topographical data was regarded by many as a barrier to information sharing. While revenue generation is GoS policy, the cost factor could drive

---

<sup>8</sup> Some elements of PUMA are now part of MWTI

<sup>9</sup> The Samoa Forest Division is now part of MNRE

<sup>10</sup> The Meteorology Division is now part of MNRE

- users to data poaching leading to separate data bases with the attendant data integrity and accuracy constraints.
- Cadastral Mapping - The absence of complete cadastral map coverage, preferably in the form of a digital cadastral map base (DCDB), was universally identified as a serious barrier to the effective use of spatial information. The use of a cadastral map coupled with accurate land tenure data (ownership and occupation) is a priority requirement for utility agencies.
  - Geographic Names - Lack of road name signage and wide confusion on road names on topographical maps adversely affecting response of Emergency Services (Fire) and others. A road name index is urgently needed.
  - Intellectual Property - MNREM expressed some concern that some copyright data was being used to generate new products and on-sold by the user without recognition of the IP owner.
  - Marine charts and bathymetric detail was being acquired in an uncoordinated manner – arrangements between Department of Foreign Affairs with the NZ navy (Apia harbour) and with various research bodies. For example any research approved in Samoan waters should be conditional upon any spatial data generated being made freely available to the GoS.

### **2.3.2 Existing Mapping and Spatial Records**

The key discussions are summarised below and these are considered to reflect the existing records situation.

#### **Ministry of Natural Resources, Environment and Meteorology (MNREM)**

There is presently no legislative and/or regulatory base concerning national mapping and the related geographic naming function, beyond that in Section 16 of the Lands and Environment Act 1989.

**National Mapping Section** provides analogue and digital topographic data tailored to meet the needs of the stakeholder users. The 1:50,000 topographical series is virtually the sole source of this data. This series consists of 6 published map sheets of Samoa and was produced from aerial photography flown under contract by the Australian company Airesearch Mapping Pty Ltd in 1999. The Ministry has access to aerial photography and the digital topographic data in 4 standard layers. The stocks of published maps are plentiful. Reprinted stocks can be purchased from the supplier. There is presently no program to revise this series with selected new aerial photographic coverage.

Maps for coastline monitoring are complete. A new system for redefining maritime boundaries of Samoa has been implemented and the definition of boundaries awaits the establishment of the new national geodetic datum. The enabling legislation for this activity is the Maritime Zones Act 1999, as amended. The specific topic of hydrographic maps and charts over the maritime jurisdiction of Samoa was raised as a general issue of concern during discussion with stakeholders.

The 1:20,000 topographic series compiled in 1983 is now obsolete; however it remains a useful reference for road and other geographic place names.

Limited consideration has been given to establishing an inventory of geographic place names. A staff member of the National Mapping Section (Mr Nomeneta Saili) recently attended a training program in Toponymy at the Central Mapping Authority, Bathurst, New South Wales, Australia.

**Draughting and Plan Examination:** An unofficial digital cadastral database (DCDB) was commenced in the mid-90s on a trial basis with assistance from the (then) survey adviser. This resulted in about 50% cover of Apia. There is no apparent program to complete standard cadastral map coverage. The Draughting and Plan Examination section is responsible for the receipt, technical examination and storage of the subdivision

plans from surveyors. These are the critical source data for cadastral mapping - one of the core datasets of the SIA. It is proposed that this section be supplemented to perform a complete cadastral survey and mapping service by introducing cadastral (licensed) surveying capacity into the section. This will round out the scope of the section and allow the existing survey section to focus attention on the establishment and maintenance of the geodetic network for Samoa – another core dataset of the SIA.

**Survey Section:** This section is presently responsible for all survey activities within MNREM including the maintenance of the Samoan Geodetic Network. The upgrade of this network and the sustainability of the network is a primary role in the SIAM 2 project (Component C5). Importantly the network will be upgraded to allow integration of cadastral surveys in Apia into the geodetic reference framework of Samoa. The section does not have a complete set of records and there is a need to create a survey database as a repository of all geodetic and other survey records, both manual and computerised. Considerable data will be generated from upgrading the geodetic network. This data should be integrated into this data base and made readily available to all interested users.

As foreshadowed in the preceding section it is envisioned that the Survey Section would focus energy and attention on the geodetic network under the new SIA and become - for example - the Geodetic Survey Section of SIA.

### **Ministry of Agriculture and Forests**

**Samoa Forestry Division (SFD):** The SFD has now been transferred to the Environment Division of MNREM.

Under a joint GoS/ FAO project, commenced in 2003, the SFD has now completed a Forest Resource Information System (SAMFRIS). As a result the SFD has good technological capacity and some staff trained in GIS.

The SAMFRIS is reliant on the availability of topographic base data from MNREM for which there is a high cost. The SAMFRIS has highlighted problems in the currency of topographic data – specifically road location data and village names. The option of IKONOS satellite imagery for base topographic updating is being considered. It could be noted here that the GIS User Group (see 2.4 below) is sponsoring research into the potential use of this imagery and to date 3 of the 8 images available have been rectified.

The SFD does have a policy on data sharing which allows use of their data provided ownership is acknowledged, the use of the data is specified and data is not passed to a third party. Notwithstanding this the absence of a national spatial data sharing policy is identified as a major issue.

**Agriculture Division:** The soil data layer is considered out of date, however the Ministry's Agriculture Division have no (GIS) capacity to upgrade this data.

**The Meteorology Division:** This division is now transferred to Ministry of Natural Resources and Environment (now MNREM). As mentioned in the key issues (2.3.1 above) it has responsibility for the newly installed map server which serves as a means of displaying or 'publishing' spatial information on the web. This facility will be an integral part of the data sharing arrangements in the future.

### **Samoa Water Authority**

With Technical Assistance provided by AusAID, the SWA is modelling its distribution system which serves about 20,000 customers with some 16,000 water meters installed. They are making use of village boundary detail from the 2001 census and the road detail from the 1:50,000 topographic series from MNREM. Specific

mention was made of the cost of acquiring this base topo data. The SWA has limited computer resources and has no GIS capacity at this time.

The lack of current cadastral map coverage, linked to ownership (titles) was considered a major issue for effective operations. The availability of up to date aerial images would also be very useful for water supply and distribution operations.

The comments of SWA reflect the concerns of other utilities such as SamoaTel, EPC and MWTI.

### **Ministry of Police Prisons and Fire**

The Fire Department is considered here as representative of emergency services.

The department uses an orthophotomap over an area of 5 miles radius surrounding Apia. This does not have street names, fire hydrants and other water sources (pools etc) and other essential features they need to respond quickly and effectively. They have no way of knowing the source location of an emergency call and those street names they do have are confusing and non-standard

The FD considered they are 'flying blind' in each emergency call-out and fear the consequences. They expressed a clear vision of their need for an inter-active GIS system to enable them to provide a safe and responsive service.

### **Samoa Port Authority**

This authority is understood to maintain hydrographic charts prepared and periodically updated by the NZ navy. This information is not presently available as a spatial dataset for general reference and potential use.

## **2.4 Samoa GIS User Group**

Partly as a response to the concerns expressed above a Samoa GIS Users Group has been formed as an informal stakeholder forum. This is in complete accord with the principles of a SIA as they are developed in this position paper. The Group has an agreed Mission Statement and five Goals for achieving this Mission. Because of the strategic confluence of the GIS Users Group and the proposed SIA these are included here.

#### **Mission:**

The mission of the Samoa GIS User Group is to advance and promote the application of GIS and remote sensing technologies in Samoa as a tool for improved decision making by developing standards and fostering collaboration between users and promoting the professional development of members.

#### **Goals:**

1. Promote Spatial Information Management
2. Provide Advice on GIS/RS Technology Development
3. Promote the development of institutional protocols for data management and sharing
4. Raise awareness on the applications of spatial technologies
5. Promote training and professional development of members

The Mission Statement and Goals of the GIS User Group illustrate the conformity with the generally accepted objectives of the SIA. The consensus is that the policy goals should be incorporated into those of the SIA to allow the GIS User Group to focus greater attention on pressing technical and operational issues.

## 2.5 Institutional Capacity

There are varying levels of GIS proficiency amongst active stakeholders, however activity is growing rapidly and the need for improved access and information sharing is well understood by technical staff consulted. The technology is not universally available across all agencies and most expressed a need for equipment and other system support. However there appears to be sufficient hardware and software systems to support a critical mass of development across the spatial data sector of Samoa.

SPREP, in conjunction with SOPAC has played a passive role in GIS development in the region. As a result of their training initiatives, the skills are reasonably well established. The GIS Users Group has devised a training needs survey and further training is proposed in 2005 under the sponsorship of SOPAC.

Without any sense of complacency, it is evident that there is a strong awareness of the need for training and programs are either underway or proposed. With the added tangible training commitment in the budget provisions of SIAM 2 it can be generally concluded that IT capabilities amongst the staff are unlikely to be a major barrier to implementation of the SIA and related LII activities.

## 2.6 MNREM – Corporate Perspective

The current corporate plan<sup>11</sup> defines the GoS mandate (vision) for the Ministry as:

*Sustainable management of the country's natural resources and environment to ensure a better quality of life for all Samoans.*

This will be achieved through:

*Best practice in the sustainable development of the country's resources and environment in partnership with all relevant stakeholders.*

The Ministry currently has six divisions. As already noted there have been portfolio changes which impact on the role and function of the MNREM. These include the transfer of the PUMA functions to the Ministry of Works, Transport and Infrastructure and the transfer of the Meteorology and Samoa Forestry Divisions from the Ministry of Agriculture, Forestry, Fisheries and Meteorology to the MNREM. Operationally these changes have been put into affect and they are not expected to have any adverse impact on the aims of this position paper.

Current IT staff have the skills and experience to deal with the increased system management responsibilities arising from LII initiatives (ie backups, disaster recovery, website maintenance, etc). The existing MNREM communication network provides the means to link key mapping and land administration initiatives with only minor additional hardware procurement to accommodate new computerisation initiatives.

There are some software development skills in the National Mapping Section that would be capable of maintaining (and enhancing) any application software developed in this project. These staff would need to be provided with appropriate software development tools and be briefed on the approach and features of any application software developed in this project. Expectations will also need to be managed as these staff already have heavy current workloads and it would be unreasonable to expect them to undertake major

---

<sup>11</sup> Ministry of Natural Resources & Environment, Corporate Plan 2003 -2005, 1<sup>st</sup> Review – July 2004

software development. Their role in maintaining and supporting these software applications should be made clear.

The Technical Services Division has the specific objective of providing technical services necessary to achieve the ministry's corporate mandate. In addition to a property valuation role the division is responsible for the geodetic surveying, cadastral surveying, topographic and bathymetric mapping, and cadastral map/plan preparation functions which make up the core datasets which are central to the role of the NSIA as proposed.

Because of the relevance of the MNREM mandate to the SIA principles and the responsibility, through the Technical Services Division, for the core spatial datasets it is logical to recommend that MNREM would undertake the SIA role. The addition of the Meteorology Division to the Ministry, which brings with it the responsibility for the newly installed web based map server, complements this recommendation. It will be proposed that the Technical Services Division undergo minor restructuring to give full effect to the establishment of the SIA.

## 3 Spatial Information Agency

### 3.1 Key Policy Issues

Arising from the consultations some key policy issues will need to be addressed in project implementation to give credibility to the national Spatial Information Agency.

- **SIA Mandate** - The options include (i) new legislation, (ii) regulations under the principal act enabling the MNRE or (iii) informal arrangement based in inter-agency goodwill (least likely option). The guiding principle is that the SIA should be non-threatening to the mandates of other stakeholder agencies.
- **Geographic Names Board Mandate** – similar to SIA, however likely to derive mandate as an advisory board under a proposed national Spatial Information Agency Act.
- **Information Sharing** – Ownership of data by GoS and the role of agencies as trustees and conditions of access and use of data.
- **Data Custodianship** - Establish the concept and the responsibilities of data custodians based on the principle that management of spatial data should be as close to the source as possible. This may require MOU agreements between stakeholders which will reinforce the nature of custodianship of data and responsibility for data accuracy and reliability which attaches thereto.
- **Pricing of Spatial Information** - The cost of data is ideally based on reducing barriers to access through a policy of equity and reasonable cost recovery on a whole of government basis.
- **Copyright and Intellectual Property** - Ownership of data by government including data provided by third party contractors/consultants (eg Aerial photography) and value added use thereof.

### 3.2 General Principles

#### Decentralisation Vs Centralisation:

National mapping involving the collection and distribution of spatial data in analogue or paper based formats has traditionally been a central government function. This model of centralisation was due to the high cost of associated technology and the long time scales of most mapping programs. Also maps were not regarded as a consumer product, but more of a national asset used by government for taxing, planning, defence and development purposes.

Technology such as Geographic Information Systems (GIS) changes this. Spatial data is now a product used by a mass market of users who can create their own maps via desk top mapping, GPS surveying, GIS, satellite imagery, scanning and intelligent software. This emerging GIS business environment is characterised by:

- Numerous and growing number of actors involved in the collection and application of spatial data;
- Potential proliferation of GIS products and formats;
- Duplication of effort and data storage;
- Barriers to data exchange between users.

Like most countries GIS finds growing application in Samoa. This growth brings with it the concern that individual GIS users will develop their own data sets because:

- The core datasets are not available or accessible at the time they are needed,
- There is no culture of data sharing;
- Existing spatial datasets are not easily transported across agency systems
- Data is too expensive

In spite of a trend towards decentralisation, core national spatial data are still required and the cost of acquiring these remains high when compared to the cost of the hardware and software which make up the GIS systems. Thus the overarching aim is to establish a national SIA which will be responsible for the establishment and delivery of those core datasets which are necessary for the optimal use of most GIS applications and foster maximum collaboration amongst the GIS community of Samoa.

### **3.3 SIA Strategic Objective & Scope**

#### **3.3.1 Strategic Goal**

The strategic goal of the Spatial Information Agency is

*To meet the national interest by assisting the Government of Samoa and the community to make appropriate decisions concerning the management of natural resources and the environment and to improve the overall quality of life of all Samoans.*

The strategic objectives for the SIA are to:

- Provide and maintain national coverage of medium and small scale topographic data and hydrography charts over the Samoan maritime zone ;
- Provide aerial photography and other remote sensed imagery over Samoa;
- Provide and maintain the physical geodetic survey infrastructure to support all levels of spatial data applications and to link this infrastructure to international networks;
- Improve and maintain the core databases in a form that facilitates the integration of spatial data;
- Foster the extended use and sharing of spatial information and the growth of the spatial information industry in Samoa;
- Protect GoS copyright on spatial data, products and published material.

#### **3.3.2 SIA Scope**

In order to achieve the strategic objectives as envisioned in 3.3.1, the SIA will have both a policy and production role.

**Policy Role:**

An appropriate and supportive policy framework which is non-threatening to stakeholders is critically important. Potential stakeholders will subscribe to the principles, and buy-in as active participants, to the extent that there is positive assistance in meeting their respective corporate responsibilities. To achieve this environment it is proposed to introduce a Spatial Information Advisory Board to foster the active participation of decision makers representing all stakeholders.

The Board will oversee the development, promotion and maintenance of the policy framework necessary to:

- ensure there is a active and effective platform for data interchange;
- foster stakeholder and customer consultation;
- define the roles and responsibilities of data ownership;
- identify the custodians of national spatial data resources;
- minimise, if not remove, barriers for access to spatial data;
- ensure Samoa is appropriately represented at regional and international level;
- foster technological innovation and training.

To achieve the benefits inherent in the above requires a commitment by Board members to cooperation and collaboration. A Memorandum of Understanding is proposed to identify the level of commitment and the benefit expected from membership by all participants.

#### **Production Role:**

The NASI should have production oversight of the core spatial datasets over the land and seabed jurisdiction of Samoa. These have been previously defined as those datasets which are necessary for the optimal use of many other GIS applications. These specifically relate to the production and maintenance of:

- Topographical maps and hydrographic charts and images at all scales and all formats;
- Cadastral maps at all scales including the development and maintenance of the digital cadastral database (DCDB)
- The Geodetic Reference Framework of Samoa; and
- The index of Geographic Place Names for Samoa.

In addition the ASI will provide:

- advice to the GoS on all aspects of spatial data production, application and management;
- the secretariat and administrative support to the Spatial Information Advisory Board.
- the secretariat and administrative support to the Geographic Names Board of Samoa (as constituted)

### **3.4 Implementation Framework**

The establishment and maintenance of a program of national mapping is universally regarded as an important function of government. There are many international models for agencies undertaking this program ranging from the centralised approach of United Kingdom and New Zealand to the decentralised models in the Federations of Australia and Germany. Comparisons between Samoa and such models are of limited value given the relative size of the respective jurisdictions. Many are funded from state budgets (taxes) as a '*public good*' service of government and function without individual legislation, but as prescribed agencies under relevant Public Sector legislation.

In nations with well established national mapping resources, and a sophisticated technological base, the private sector plays an increasing partnership role with government in the application of spatial information products in an expanding geographic information industry. The capacity of this sector is not well developed

in Samoa at present, however it must be fostered and the SIA should contemplate a more active role of the private sector in the future.

While international experience is useful it is not realistic to simply transfer operational models from other jurisdictions when developing a regulatory and organisational structure for Samoa. The model for Samoa should fit the prevailing technological and institutional environment and meet the general principles outlined above.

### 3.4.1 Organisational Structure

Options for the organisational structure for the SIA include:

- a) Establish a holistic new agency
- b) Assign to a section of existing agency
- c) Modify an existing agency

**a) Establish a new agency.** A new agency with a mandate to produce spatial information for all applications will meet strong, and justifiable, resistance from stakeholders who rely on current and timely spatial information for their corporate goals. In a centralised model national spatial data objectives will inevitably come into conflict with stakeholder objectives. The latter involve the fulfilment of the stakeholder's mandate and service responsibilities and must prevail.

**b) Assign to an existing section of an agency.** It is established that the MNREM mandate includes many of the elements of spatial information and a National Mapping Section exists in the Technical Services Division of the MNREM corporate structure. The section however does not, as presently constituted, have responsibility for delivery of all spatial data components of the SIA as described here.

**c) Modify an existing agency.** It is considered that the main operational components of the SIA exist within the Technical Services Division of the MNREM. An organisational structure based on minor modification of this Division is the preferred approach. The proposed corporate structure is depicted in the organisation chart at Appendix 2. It will be necessary to add the consultative and policy formulation components to the SIA and these are shown as the Spatial Information Advisory Board and Geographic Names Board in the draft organisational structure below.

The respective roles of these Boards will be developed in detail as the outline proposed in this position paper is adopted by the Ministry and the GoS.

### 3.4.2 Regulatory Structure

Options for the enabling framework for the establishment and operation of the SIA are:

- a) Guidelines – based on the collective agreement of stakeholders.
- b) Regulation – under an existing Act
- c) Legislation - a new Act

**a) Guidelines.** This option has maximum flexibility – minimum empowerment. It is largely reliant on the goodwill of key stakeholders. There is evidence that some goodwill exists amongst stakeholder agencies (eg GIS User Group) to forge agreements to meet national objectives. Experience suggests however that goodwill is notoriously short-lived, reliant on individuals at any particular period and is often set aside in the pursuit of entrepreneurial ambition.

**b) Regulation.** The adoption of regulations under an existing Act offers a firmer foundation if the parent Act is well established and effective. The relevant legislative environment in Samoa is however still emerging. For example the MNRE Act is yet to be enacted and further amendments are required to reflect the newly acquired responsibilities.

**c) Legislation.** This option has minimum flexibility – maximum empowerment. A new act is considered the best option for ensuring that the goals of a SIA are achieved during the evolutionary stage. It also creates the SIA as a semi-independent entity which, similar to PUMA, is transportable within the bureaucracy. The Act should provide for establishment of advisory boards such as the Spatial Information Advisory Board and the Geographic Names Board.

## 4 Conclusion

In summary the establishment of a Spatial Information Agency for Samoa is proposed as a positive step towards the production, management and effective application of the spatial information assets of Samoa.

It is proposed that the Agency will be:

- organisationally structured within a modified Technical Services Division of the MNREM
- enabled by legislation which provides for the establishment of the Agency and for the establishment of
  - A Spatial Information Advisory Board,
  - A Geographic Names Board

## APPENDIX 1

### Spatial Information Agency Act - An Outline

An act to establish a Spatial Information Agency and to implement a policy and institutional framework which supports the orderly and efficient access to spatial data across Samoa and fosters the development of a spatial data industry for effective planning, management and protection of natural resources for all Samoans.

- Part 1 – Preliminary
- Part 2 – Spatial Information Agency
- Part 3 – Objectives Functions and Powers
- Part 4 – Geographic Names Board
- Part 5 – Miscellaneous

#### Part 1 PRELIMINARY

Title: Spatial Information Act, 200...

Definitions:

*Comment*

- *The Position Paper contains some guide on the type of terms to be defined*

#### Part 2 SPATIAL INFORMATION AGENCY

The Agency consists of

- a) The Spatial Information Advisory Board
- b) The Divisional Head
- c) Other officers and employees

*Comment*

- *Spatial data is a vital commodity to an increasing range of government and community functions. Its importance is often understated, but the absence of accurate, timely and accessible spatial data has a significant impact on government performance in almost all spheres of responsibility.*
- *The establishment of a Board is proposed to give stakeholders comfort that the SIA is not a central bureaucracy and they have an influence on the policies which govern the production and sharing of spatial data across Samoa.*
- *The Divisional Head is proposed to be an Assistant CEO under the PSC Act 1977*

#### Part 3 OBJECTIVES, FUNCTIONS and POWERS

Objectives

The following objectives will be pursued in undertaking any function or duty under this Act:

- a) To provide and maintain national coverage of medium and small scale topographic maps, marine charts and other remote sensed imagery needed for the sustainable management of land, sea and other natural resources of Samoa;
- b) To provide and maintain the geodetic survey system and the basic spatial reference framework for Samoa and to link this framework to international networks;
- c) To provide, improve and maintain the databases of core spatial data for Samoa in a form which provides a platform for the integration of spatial data;
- d) To foster the extended use and sharing of spatial data and the growth of the spatial data industry in Samoa;
- e) To protect Government of Samoa interests in all matters of Intellectual Property concerning the production, supply and ownership of spatial databases products and published material. copyright

## Functions

A. Functions of the Spatial Information Advisory Board are :

- a) To implement the provisions of this Act and to exercise the powers conferred to meet the objectives including
  - To ensure there is a active and effective platform for data interchange;
  - To foster stakeholder and customer consultation;
  - To define the roles and responsibilities of data ownership;
  - To identify the custodians of national spatial data resources;
  - To minimise, if not remove, barriers for access to spatial data;
  - To ensure Samoa is appropriately represented at regional and international level;
  - To foster technological innovation and training.
- b) To receive the annual report of the Spatial Information Agency;
- c) To promote strategic planning and coordinated action in relation to the supply, application and sustainable use of spatial data resources of Samoa.
- d) To appoint special committees and working groups to advise on policy, technical and other related matters,

B. Functions of the Spatial Information Agency are:

- a) To produce, maintain and disseminate the core spatial data sets over the land and seabed jurisdiction of Samoa;
- b) To establish and maintain the geodetic survey network of Samoa;
- c) To license surveyors to undertake cadastral surveyors under the respective laws and regulations
- d) To establish and manage the index of road, object and place names of Samoa;
- e) To provide advice to Government on all aspects of spatial data production application and management,
- f) To provide secretariat and technical support to the Spatial Information Advisory Board and the Geographic Names Board of Samoa;

## Powers

The Board shall have powers ...

Power may be delegated....

*Comment:*

- *Powers and functions of the board do not extend to operational control of the Spatial Information Agency or other agencies represented on the Board*
- *Some distinction needs to be made between powers of this Act and the MNREM Act in respect of management and control of the SIA.*

#### **Part 4 GEOGRAPHIC NAMES BOARD**

There shall be a Geographic Names Board of Samoa

##### **Membership**

The Board shall consist of "x" members of whom:

- Chair person
- Representatives of
  - agencies
  - institutions (eg University Professional bodies ?)
  - villages / customary authorities

##### **Powers and Functions**

The Geographic Names Board shall have the following powers and functions:

- a) To adopt rules of orthography and nomenclature in respect of place, object and road names in Samoa;
- b) To adopt guidelines for the assignment and approval of all place, object and road names in Samoa;
- c) Assign names to any place, object and road in Samoa;
- d) To alter a recorded place, object or road name in Samoa;
- e) To investigate and determine the form, meaning, pronunciation, origin and history of any place name;
- f) To compile and maintain a dictionary of place and road names with a record of their form, spelling, meaning, pronunciation, origin and history;
- g) To publish a gazette of place and road names;
- h) To make enquires and recommendations on any matters referred to it by the Minister;

##### *Comment*

- *The efficacy of establishing the GNB under this act- rather than as a separate Act - needs to be confirmed*
- *The above is a guide to the nature and scope of a geographic names board – detail in the form of operational guidelines will be further developed..*

#### **Part 5 MISCELLANEOUS**

Relevant complimentary legislation;

- Lands Surveys and Environment Act 1989 (as amended)
- MNREM Act (to be enacted)
- Survey Ordinance 1961 ( under revision)
- Survey Regulations 2003 (draft)

**APPENDIX 2.**

**Proposed MNREM Corporate Structure**

