



GOVERNMENT OF SAMOA

SAMOA SECOND INFRASTRUCTURE AND ASSET MANAGEMENT  
PROJECT (SIAM II)

COMPONENT 5.01: LAND ADMINISTRATION AND SURVEY

PROJECT FINAL REPORT

Draft

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## ACRONYMS

CGPS	Continuous Global Positioning System
CORS	Continuous Operating Reference System
DCDB	Digital Cadastral Data Base
GIS	Geographic Information System
GoS	Government of Samoa
GPS	Global Positioning System
IDA	International Development Association
IP	Intellectual Property
LEI	Land Equity International Pty Ltd
LII	Land Information Integration
MNREM	Ministry of Natural Resources, Environment and Meteorology
MWTI	Ministry of Works, Transport and Infrastructure
NMA	National Mapping Agency
PUMA	Planning and Urban Management Agency
RTK	Real Time Kinetic
RS	Remote Sensing
SGRS2005	Samoa Geodetic Reference System 2005
SIA	Spatial Information Act
SIAM-2	Second Infrastructure Asset Management Project
SIG	Samoa Integrated Grid
SLC	Samoa Land Corporation
SMG 2	Samoa Map Grid (Zone 2)
SOPAC	South Pacific Applied Geoscience Commission
SPREP	Secretariat of the Pacific Regional Environmental Program
TA	Technical Assistance

## 1. INTRODUCTION

### 1.1 Project Description

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. The GoS has committed to land related reforms and to economic and public sector change as a firm basis for achieving the strategic objectives outlined in the Strategy for the Development of Samoa, 2002-2004.

The Government of Samoa (GoS) is implementing a Second Infrastructure Asset Management Program (SIAM-2) under credit from IDA. This project is a component of SIAM-2 and is described as C5.01 - Sustainable Management Land Administration and Survey (the Project).

The contract for delivery of consulting services was awarded to the Australian based company, Land Equity International Pty Ltd in late 2004 and a 12 month contract was signed in Apia on 4<sup>th</sup> February 2005. The contract completion date was extended to 28<sup>th</sup> February 2006 by mutual agreement.

### 1.2 Project Structure

The Project consisted of two primary components which were developed into 6 sub-components to address the requirements of the terms of reference. The structure shown in the table below was adopted as the framework for project implementation.

Component	Sub-component	Adviser
1. Survey and Geographic Information	1.1 Geodetic Survey	Andrew Dyson Keilani Soloï
	1.2 Land Information Integration	Neil Pullar
	1.3 National Mapping	Chris Grant
2. Land Administration Reform	2.1 Land Registration Conversion	Dennis Brady
	2.2 Land Registration Legislation	Kevin Nettle Mataese Elisara-Laulu
	2.3 Land Valuation	Mark McLoughlan

### Framework for Implementation of Work Plan

All specialists nominated in the project proposal were mobilised as nominated without change.

The TA team worked in close collaboration with relevant counterparts in the respective divisions/sections of MNREM. In particular there was strong support from CEO Tu'u'u

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Luafatasaga Dr. Ietitaia Setu Taule'alo and close cooperation with the Project Component Manager, Vitaoa Pele Fuata'i.

The institutional arrangements were significantly modified during implementation as a result of changes to ministers and ministerial portfolios. These modifications had limited impact on the component implementation as the core responsibilities of land administration and survey remained with the MNREM throughout.

### 1.3 Scope of Report

A total of 33 draft and final reports were prepared and submitted to MNREM as required under the list of contract deliverables. A table summarising these reports is in Attachment 1 of this report. The summary indicates the respective submission dates of the draft and final reports. In addition software code developed under the project and operational manuals for staff implementing the changes introduced have been documented and passed to MNREM via CD.

This is the Final Report (TA Report No. 33) for Component C5.01. It presents a review and analysis of the implementation of the project. It also provides a summary of the outcomes under the respective sub-components with particular emphasis on the risks which potentially impact on sustainability. The key Conclusions and Lessons are also included in Part 4.

## 2. IMPLEMENTATION STRATEGY

### 2.1 Sustainability Objective

LEI submitted a work plan which was based on the achievement of long term sustainability through the transfer of experience across all stakeholder levels. From the outset, the approach adopted by LEI has been to maximise technology transfer to MNREM operational staff. This was achieved by:

- (i) Adopting on-the-job training techniques whenever possible; and
- (ii) Locating TA Advisers directly with counterparts in the MNREM office environment.

The on-the-job training strategy was highlighted in LEI's successful competitive bid and was further reinforced in contract negotiations, subsequent reports and briefings with senior executives. During the October 2005 World Bank Mission it was acknowledged that the reforms affecting the legal, technical and operational structure of land administration in Samoa were significant. The capacity of MNREM to support the changes was highlighted as a major sustainability issue.

The strategy of on-the-job training using MNREM equipment was reinforced as a vital factor in mitigating this risk. Equipment specification and procurement were given priority and the deployment of advisers was timed to maximise use of newly procured survey, computer and ancillary equipment.

### 2.2 Legislation

A significant element of the Project involved fundamental change to legislation across the range of land administration in Samoa. Draft laws were submitted to MNREM for:

- Land Title Registration Act;
- Land Titles Registration Regulations;
- Survey Act

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- Survey Regulations;
- Valuation Act;
- Valuation Standards & Code of Ethics
- Spatial Information Agency Act

During the consultation process the MNREM frequently requested changes to the recommended drafts which were generally incorporated into the final draft. The TA role was to recommend draft laws - the final responsibility for the preparation of a Bill for submission to the Parliament rests with the Office of the Attorney General. That office will ultimately determine the final constitution of the proposed bills based on the views of all concerned and reflecting the community needs. The initial drafts prepared by the TA are available to assist the AG in this regard.

### 2.3 Risk

The Inception Plan contained an assessment of the risks associated with each of the sub-component activities; these are reviewed in the implementation summary below as part of the future directions and sustainability consideration of the project.

## 3. IMPLEMENTATION SUMMARY

The following is a summary of the project implementation under the six sub-components identified in the project implementation table above.

### 3.1 Geodetic Survey

#### 3.1.1 Reports

The following reports were prepared and submitted to MNREM in draft and final form to cover the activities of the Geodetic Survey sub-component:

Report Number	Report Topic	Date*
4	Technical Specifications for GPS & Ancillary Equipment	May 05
6	Geodetic Network Initial Review & Options for Upgrade	June 05
11	Geodetic Network Upgrade Action Plan	Aug 05
12	Draft Survey Act (final)	Feb 06
16	Survey Regulations	Feb 06
21	GPS Guidelines and Receiver Operation Manual	Nov 05
22	GPS Adjustment Manual	Dec 05
29	Samoan Geodetic Network Information Brochure	Feb 05
30	Upgrade of the Samoan Geodetic Network	Feb 06
32	Survey Guidelines Manual	Feb 06

\* indicates Final report submission

#### 3.1.2 Outcome

The Geodetic Survey sub-component has delivered significant achievements. These include:

- establishment of a world class Primary Network throughout Samoa;

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- establishment of a high precision Secondary Network for Apia;
- purchase of state of the art GPS equipment by MNREM;
- acquisition of the ability to utilise the GPS equipment.

**Geodetic Upgrade:** The Geodetic Upgrade was completed to provide a single strengthened and unified geodetic reference framework capable of supporting land information integration and the eventual coordination of cadastral boundaries.

*Technical Assistance Report No. 6 - Samoan Geodetic Network Initial Review & Options for Upgrade* presented the findings of the initial review of the Samoan Geodetic Network, options and recommendations for upgrading the network. It also reviewed of the capacity of the public and private sector to participate in the upgrade and operate in the new geodetic system. The staff numbers and the skill levels in both sectors was considered to be generally low.

*Technical Assistance Report No. 11 - Samoan Geodetic Network Upgrade Action Plan* was prepared as a working guide to the upgrade process. The work plan concentrated on the key activities associated with upgrading the geodetic network such as: the Global Positioning System (GPS) survey activities; GPS training; processing and adjustment of the data; datum definition; and transformation issues. Wherever possible the upgrade was conducted in compliance with the action plan. In those instances where, for various reasons, it was necessary to diverge from the plan, the impact on sustainability of the network was minimal.

As mentioned above the approach adopted by LEI has been to maximise technology transfer through on-the-job training of MNREM staff. An implication of this strategy was the agreement to specify and procure the GPS equipment as early as possible in the project and to train MNREM staff by using this equipment in the network upgrade observations.

This approach was not always been fully understood or appreciated at the operational level. There is no doubt senior executives of MNREM afforded the project the highest priority, however staff were often unavailable as needed for the geodetic upgrade program due to other commitments. As a result the coverage of the tertiary level network (in urban Apia), and the vertical control, was not as comprehensive as initially programmed. This is not considered serious as the most important primary and secondary networks have been completed to an extremely high standard.

In summary, the decision to involve survey staff in all operational aspects of the geodetic upgrade (planning, field logistics, GPOS observation and adjustment) has left a base level of skills and experience to cope with any extensions necessary and take the essential control/ownership of all aspects of the Samoan Geodetic Reference System 2005. Without the on-the-job training afforded to survey staff in undertaking the geodetic upgrade there is little doubt that the skill levels in the MNREM would be insufficient to sustain the newly established network. On balance it is considered that this outweighs any shortfall in the extent of minor level network coverage and vertical control.

**Survey Legislation:** Until this project cadastral surveys were governed by the Survey Ordinance 1960, which was based on similar legislation from New Zealand. The draft Survey Act and enabling Regulations will tailor the licensing of surveyors and the practice and regulation of cadastral surveying to the developing Samoan environment. During consultations some differences in opinion were evident between the MNREM and the surveying industry. These were not resolved during the project and will undoubtedly be considered when the Office of the Attorney General (Parliamentary Counsel) commences drafting a Bill for presentation to the Parliament.

### 3.1.3 Future Directions

A commitment will be needed to effectively apply and sustain the gains of the project. The key issues for the future include:

**Extension of the Tertiary Network:** Mainly due to time constraints it was not possible to establish a comprehensive tertiary network in Apia. However, MNREM has acquired high precision GPS equipment and key survey staff have been trained in all aspects of GPS surveying. The Ministry is therefore in a good position to support the extension of the Apia Tertiary Network on an area priority basis and to manage the physical maintenance of the network into the future. In addition Mr Keilani Soloi, National Survey Adviser, has received considerable experience during the project and his company remains a useful private sector resource in Samoa.

At this stage the purpose of connection to the geodetic network is primarily to facilitate the maintenance of the Digital Cadastral Database. There is no intention to develop a fully coordinated cadastre in which the legal boundaries are capable of being defined by coordinates in the Samoa Map Grid or other spatial reference framework.

A strategy of extending the tertiary network on a *user-needs* basis has been proposed. The Survey Manual contains guidelines for the establishment of tertiary survey marks by surveyors undertaking development surveys. In this manner the network will be progressively extended as needed, under the direction of MNREM and at minimum cost. This is preferred to the initial strategy of blanket coverage of Apia with tertiary level survey marks which, in all probability, would be destroyed before they were ever put to any use.

The limited coverage of tertiary network is not considered serious as the most important primary and secondary networks have been completed to an extremely high standard. The strategy to extend the tertiary network on a *user-needs* basis has the advantage of:

- Involving the private sector in the extension of the tertiary network and reducing the work-load and costs of the Survey section;
- Ensuring tertiary mark protection by location in optimum positions in new developments – reducing destruction and maintenance costs;
- Encouraging awareness of the Geodetic Network in the surveying and general user community;
- Linking the maintenance of the DCDB into the survey plan approval process and ensuring the currency of this fundamental spatial database;
- Ensuring marks are available and fit for purpose as required – rather than a strategy of blanket coverage with tertiary level monumentation which may or may not be needed for many years and may or may not survive for eventual use;
- Facilitating the future transition to “Continuously Operating Reference Stations” which provide real-time positional information.

As an elaboration on the last point above; GPS technology has advanced to the stage where horizontal position can be determined by to a high accuracy through a network of Continuously Operating Reference Stations (CORS). Satellite systems to be launched over the next decade facilitate these techniques and many jurisdictions are examining the potential of establishing CORS networks to meet community needs for position. As a result, the continued reliance on tertiary networks of permanent survey marks, which are expensive to establish and maintain is will be increasingly subject to review.

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Undoubtedly Samoa will benefit from these developments in the future and will be in a good position to assess the extent of investment needed in the Tertiary level geodetic network accordingly.

**Geodetic Control Unit:** MNREM has acquired high precision GPS equipment staff have been trained in GPS operations. It is important that technology is effectively used and the integrity of the geodetic network maintained by ensuring all aspects of operational planning; observations; data processing & analysis; and the adjustment and analysis of the network are controlled by someone with the appropriate level of expertise. For this reason the establishment of a specialist Geodetic Control Unit is suggested (TA Report No. 30).

**Vertical Network & Datum:** The *Initial Review* included a summary of available levelling, drew attention to problems with the existing vertical control and made a number of recommendations for consideration. This was not afforded any priority in the Ministry and this, coupled with time limitations, meant the vertical network and datum issues were not fully addressed. While not critical to the SGRS 2005, good height control is particularly important in such areas where small changes in height can be critical. Detailed recommendations concerning the Vertical Network are included in TA Report No. 30 and these include an upgrade of the network at a later stage.

**Survey Mark Maintenance:** A geodetic network and the associated cadastral survey monuments are a valuable and expensive resource and it is essential that they are maintained if the full benefits are to be realised and sustained. If Samoa is to gain the maximum benefit from the upgraded geodetic network it is imperative that the monuments are protected from destruction over time. It is particularly important to provide an awareness program to inform agencies, construction authorities' private construction companies, and the public on the importance of survey marks and the need to determine their locations before commencing any construction or excavation activities.

**Training:** Substantial training has been provided throughout the GPS campaign in the various aspects of GPS surveying. Most of the personnel from Survey Section are now competent in the operation of the GPS equipment for static surveys and limited staff have had exposure to fast static and Real Time Kinetic (RTK) operations. However, as the general level of survey education within the Ministry remains low it is considered that:

- Basic survey education capabilities should be developed in Samoa for all survey staff;
- Consideration should be given to cooperating with other Pacific nations to develop more advanced survey training to be offered at a location in the Pacific;
- Consideration be given to establishing partnership arrangements with suitable agencies with expertise in GPS and geodesy in Australia and/or New Zealand and that from this arrangement there should be the opportunity for Ministry staff to gain appropriate work experience with these agencies; and
- Consideration be given to sending survey staff to attend suitable short courses that might be offered in Australia and New Zealand or elsewhere in the region.

**Equipment Maintenance:** The Ministry's GPS equipment was delivered in 10<sup>th</sup> August. It was purchased together with a three year extended warranty and maintenance agreement on the equipment, firmware and software. Under the agreement, the GPS hardware is covered by warranty until 31<sup>st</sup> August 2008. As part of the agreement with GeoSystems the equipment is to be returned for an annual check. The cost of transport is to be met by GeoSystems. It is

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important to ensure that the equipment is returned for its annual check. To ensure the equipment is maintained in a serviceable condition after the expiry of the current maintenance agreement, it is recommended that the Ministry budget for an extension of the agreement in 2008.

**Risks:** The risks to the successful implementation of the Geodetic Network Upgrade were identified at the outset. The table summarises the impact of the key risks and status at project completion:

Identified Risk	Impact & Status Comment
MNREM unable to provide adequate resources to support all aspects of the geodetic upgrade work.	High impact – low staff and skill levels available and inability to fully commit available resources impacted on most aspects of the geodetic program.
Inadequate budget for GPS and ancillary equipment procurement.	No impact - budget increased and all equipment available
Delay in acceptance of recommendations relating to the adoption of a new geocentric datum and map grid could impact on computations for the new Samoan Geodetic Network.	Minimal impact -recommendations accepted,
Delay in procurement of GPS equipment will impact on upgrade survey work and limit MNREM on-the-job training.	High impact - delays were experienced resulting in shortened GPS field survey campaign.
Lack of participation by stakeholders	Low impact – good participation in consultation process by GoS agencies and private sector.
Insufficient funding for training	No impact – funding increased and allocated.
MNREM unable to provide suitably qualified staff for GPS training	Medium Impact - participation by staff was limited to few key personnel and the sustainability of the GPS program is dependant on these personnel being dedicated to the program.

### 3.2 Land Information Integration

#### 3.2.1 Reports

The following reports were prepared and submitted to MNREM in draft and final form to cover the activities of the Land Information Integration sub-component:

Report Number	Report Topic	Date*
3	Interim Land Information Integration Strategy	May 05
7	Land Information Integration Procurement	April 05
23	Proposed Geospatial Metadata Standards Parts 1 & 2	Feb 06

24	Land Information Integration Software Documentation	Feb 06
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\* indicates Final report submission

### 3.2.2. Outcome

The primary outcome of the LII sub-component is an increased capacity to integrate spatial data across GoS agencies and other data users. From the outset a number of existing technical factors facilitated the achievement of this outcome. The Land Information Integration Strategy (*TA Report No.3*) identified these factors which, in brief, included:

- Relatively high level of computerisation in Ministries with supported local and wide area networks;
- A number of simple MS Excel and MS Access land related software applications in some of the land related sections of MNREM;
- GIS is being used in a number of organisations in Samoa, with support in the establishment of this systems being provided by regional organisations such as SOPAC and SPREP and development assistance programmes. This support includes the establishment of a Map Server by SOPAC;
- A GIS User Group has been established and the membership spans Government Ministries, public agencies, the private sector and staff from regional organisations.

At the same time the following potential barriers were identified:

- Critical land records are either not archived or have used a previous technology that is no longer viable (eg microfilms of survey plans);
- There is no computerised form of the cadastral maps and this limits the effective use of maps in land administration processes and in organisations in Samoa who want to use a cadastral layer in their GIS applications;
- Current land registration, survey examination, lease administration and valuation rely heavily on traditional registers, files, indexes and labour intensive processes that could be made more efficient with the computerisation of key land records and processes.
- There are an increasing number of ad hoc Excel applications utilising data from the land registration process being developed with MNREM. These applications are difficult to maintain and it is difficult to verify the accuracy of queries and reports generated from them;
- The number of MNREM computer users is increasing and there is a need to introduce a little more formality and control with respect to the Ministry's information resources.

The LII sub-component has successfully laid a foundation for Samoa to modernise critical elements of government land administration and survey processes through land information integration. This is the result of capitalising on the existing positives and addressing the barriers by:

- developing new software applications supporting land registration, survey and land related processes;
- the introduction of a rigorous backup and archive regime and a Disaster Recovery Plan;
- the definition and implementation of standards,
- the redesign of certain land information processes impacting on various government administrative functions and
- the use of on-the-job training of Ministry staff to effectively use new technology and to be responsible for the effective operation of new redesigned processes;

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- developing policies for spatial information sharing (in conjunction with the National Mapping sub-component below)..

### 3.2.3 Future Direction & Risks

**Office Capacity:** The Draughting and Plan Examination Section has a pivotal role in the management and operation of the changes introduced. Staff numbers have been increased in this section but it still struggles to effectively manage its workloads with respect to Plan Examination and DCDB Conversion. Plan Examination processes are inefficient, expertise is low and it has not been possible during this project to implement necessary change.

Access to a reliable and current DCDB was identified as a priority amongst all spatial information stakeholders. Accordingly it was identified as a primary data set for which the proposed Spatial Information Agency will be responsible. The DCDB conversion and maintenance must now become a primary focus of the MNREM. Similar issues exist with respect to the population of the Survey Geodetic Database with mark details. Only the bare minimum details of the marks surveyed in the GPS campaign associated with this project have been captured.

**Risks:** The risks to the successful implementation of the LII strategy were identified at the outset. The table summarises the status of the risks at project completion:

Identified Risk	Status Comment
Inadequate funding for equipment procurements, outsourced data conversion (microfilm conversion) and software application and database development	This only remains a risk with respect to the 20,000 microfilms that remain unconverted and with some questions as to whether funding can be found to complete this task. NOTE: These records are of historical importance and are not critical to current land registration transactions.
Inadequate resources for data conversion activities	Remains a critical risk especially in Draughting Section.
Inadequate on-going support for proposed computerized systems	Support for the computerized systems rests principally with two key MNREM staff. The local support at the hardware level is good.  At a software level the support capability is minimal. To minimize this risk, remote access has been provided to the LII Advisor so that he can support the systems from New Zealand. The continuation of this software support beyond the project will depend on a new contract for support being negotiated.
Vulnerability of computerized systems to disasters	Remains a risk. A more rigorous backup regime has been developed in January 2006 but this has not been tested nor has there been sufficient time to ensure the new backup processes has been completely understood and properly implemented.
Vulnerability of computerized systems to the failure of a key piece of equipment	No longer a significant risk as redundancy has been built into the LII equipment to cover failures with most

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	items of equipment.
Lack of support from (private sector) surveyors and lawyers	No longer a risk although MNREM need to re-think what services they should be providing at the public counter and what additional resources should be made available to serve land related professionals in the private sector.
Future office arrangements could require new network connections	No longer a significant risk – subject to future office configurations providing for (wireless) workstations which remain within range of the Wireless Access Point. The introduction of further computerization has heightened the urgent need for ergonomic office furniture.
Archiving	No longer appears a significant risk. However, the scanning of current land records has only been operational for a couple of weeks and it is not yet apparent as to whether there is an appreciation by MNREM management as to how critical these processes are.

### 3.3 National Mapping Agency

#### 3.3.1 Reports

The following reports were prepared and submitted to MNREM in draft and final form to cover the activities of the National Mapping sub-component:

Report Number	Report Topic	Date*
10	Spatial Information Agency Position Paper	Feb 06
13	Spatial Information Policy Paper	Feb 06
15	Spatial Information Act (draft)	Feb 06
18	Geographic Names Operational Guidelines	Feb 06

\* indicates Final report submission

#### 3.3.2 Outcome

Much of the geographic information which underpins natural resource management resides in the national mapping program of a country. Maps have traditionally been the medium for presentation of geographic (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.

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. With integration as the rationale the National Mapping sub-component commenced with a review of the status of

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mapping and related activities in Samoa (*TA Report No. 10*) which resulted in the recommendations concerning

- (i) Policy development to underpin spatial information integration, and
- (ii) Establishment of a national agency to oversee the implementation of the GoS policies.

**(i) Policy:** In collaboration with key stakeholders, and with the cooperation of the GIS Users Group, a policy framework was developed to:

- eliminate unnecessary duplication in the collection and maintenance of spatial information;
- manage information on behalf of the community;
- provide a firm spatial data infrastructure for Samoa;
- assist in development of spatial information products;
- facilitate the collection of core data sets.

Overarching policy statements with supporting guidelines were recommended as a useful foundation to build the efficient and effective spatial information infrastructure desired by the Government of Samoa. These are:

- *It is the policy of the Government of Samoa to continually facilitate open access to spatial information resources to improve management and development of the Nation and to discourage costly duplication of data collection, maintenance and application system (GIS) development.*
- *It is the policy of GoS that spatial information is best managed by the individual agencies with the greatest need to collect and maintain data which is essential for the achievement of a mandated responsibility. These agencies are in the best position to advise on the currency, completeness and limitations of their data bases.*
- *Spatial information is a national asset, owned on behalf of the people by the GoS. In order to maximise the benefit of Samoa's assets it is the policy of the GoS that spatial information will be shared amongst agencies with due regard to the protection of privacy and confidentiality and subject to the prevailing policy on pricing of information.*

The policy paper (TA Report No. 13) gives specific guidelines for policy implementation in the areas of:

- **Information Sharing** – Ownership of data by GoS and the role of agencies as trustees and conditions of access and use of data. This included guidelines for
  - Pricing of Spatial Information
  - Copyright and Intellectual Property
- **Data Custodianship** - Established 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.

**(ii) Spatial Information Agency:** It was suggested during the inception study that the traditional terminology of *National Mapping* no longer adequately encompassed the

breadth of the information production and distribution role envisioned. An alternate in the form of a national *Spatial Information Agency* was agreed.

One of the principle roles of the Spatial Information Agency for Samoa will be the oversight of policy relating to production and management of spatial information resources in Samoa. 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 Geographic Names Board – the Spatial Information Act

**Geographic Names:** Under the proposed *Spatial Information Act* for Samoa a Geographic Names Board is established as a statutory advisory board within the Ministry of Natural Resources, Environment and Meteorology (MNREM). The primary role of the Board is to provide advice and assistance to the Minister and to develop rules and guidelines for designating place names throughout Samoa for approval by the Minister.

The mandated role for the Geographic Names Board is comprehensive and aims to remove the present anomalies in the naming of roads, places<sup>1</sup>, features. The role importantly includes provision for the GNB to name and define and amend boundaries of administrative areas<sup>2</sup>.

**Institutional Capacity;** GIS technology has been adopted by a number of agencies in Samoa and the level of GIS proficiency amongst active stakeholders is growing rapidly. The benefit of improved access and data sharing is well understood by operational staff consulted. The emergence of the Samoa GIS Users Group is testimony to this understanding and barriers at the operational level should be minimal. The User Group is an excellent technical forum and the MNREM should support its ongoing operation through encouraging Ministry technical staff to participate and take an active role in its operation.

### 3.3.3. Future Direction & Risks

The consensus amongst stakeholders is that policies relating to the production, maintenance accessibility and application of spatial information are necessary and a Spatial Information Agency, if appropriately structured and mandated, will facilitate the implementation of policy. There is widespread recognition that the agency should be established as a re-constituted Technical Services Division where custodianship of the primary spatial data layers (topographic, cadastral and geodetic) resides.

The legislation giving force to the Spatial Information Agency is unlikely to be given high priority in the existing new legislation program. This does not prevent the GoS formally adopting the policy statements outlined. In so doing stimulus will be provided for the MNREM to commence the restructure of the Technical Services Division which will include a realignment of resources to facilitate the establishment of the new statutory agency.

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<sup>1</sup> "Place" is defined in the legislation as meaning any town, village, settlement, district, division, locality, feature, object, road or reserve over the land and maritime jurisdiction of Samoa

<sup>2</sup> administrative area defines the extent of any town, district, land division, village or locality in Samoa; but does not include electoral divisions.

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**Risks:** The risks to the successful implementation of the National Mapping sub-component were identified at the outset. The table summarises the impact of the risks and the status at project completion:

Identified Risk	Impact & Status Comment
Inability to support MNREM with equipment and training to undertake primary data custodian role in support of the National Agency	Low impact - equipment in place. Re-structure of MNREM Technical Services division essential to sustain changes.
Inability of GoS to develop and support introduction of appropriate policy framework.	Low impact on implementation, but commitment to the adoption and implementation of national policy on Spatial Information has high impact on sustainability.
The adoption of divergent GIS technologies by different public agencies.	Low risk due introduction of data standards and the adoption of software and hardware as defacto standards in training implemented by SOPAC and SPREP.  NOTE: The GIS User Group plays a positive role in mitigating this risk.
Inability to establish and sustain the DCDB.	High risk – critical priority for achieving and sustaining of the primary land information objectives of the project

### 3.4 Land Registration Conversion

#### 3.4.1 Reports

The following reports were prepared and submitted to MNREM in draft and final form to cover the activities of the Land Registration Conversion sub-component:

Report Number	Report Topic	Date*
2	Land Registration System – Review, Analysis & Future Strategy <sup>3</sup>	May 05
26	Land Registration User Manual	Feb 06
27	LRS Training Plan & Industry Awareness Program	Feb 06
28	LRS Records Conversion Project	Feb 06
31	Installation of Land Administration Equipment	Dec 05

\* indicates Final report submission

#### 3.4.2 Outcome

The inception review considered that the existing registry system provided a good foundation for evolution into a title (Torrens) system. Some sections of the Register Book are damaged but it did not appear that information has been lost. In addition, the concepts and basic

<sup>3</sup> This report prepared jointly with Land Registration Legislation sub-component

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operations of the existing system proved to largely parallel those of a potential title registration system – forms, numbering, examination of Register and transactions, Register updating, records storage and maintenance.

A series of options for the upgrade of the Land Registration System were developed. These are described in detail in TA Report No. 2 and include:

1. Upgrade system but leave laws unchanged.
2. Upgrade the system, amending the law to support the use of new technology and procedures.
3. Upgrade the system, amending the law to support the use of new technology and procedures and clarifying the effect of registration whilst retaining a deeds registration system
4. Upgrade system, amending the law to support new technology and procedures, and providing for a transitional period leading to a conclusive Torrens title system of registration but no provision for indemnity
5. Upgrade system, amending the law to support new technology and procedures, and providing for a transitional period leading to a conclusive Torrens title system of registration and provision for indemnity.
6. Upgrade system, amending the law to support new technology and procedures, providing for the immediate conclusiveness of registration and making provision for indemnity.

After consideration Option 5 was accepted as the most appropriate future strategy. This option operated at two levels – the first enables the implementation of a computerised Registry and, at another level, to convert the system into Torrens Title.

By adopting this option the sub-component was in a position to upgrade the operational system. This introduced a computer system and new procedures which have significantly realised the desired aim of:

- Improving client services by providing the public with copies of the Register and with information regarding deeds and plans lodged but not yet registered.
- Improving the management and control of unregistered documents.
- Providing searchers with a direct link from the plan to the Register folio via a new folio number based on the lot and plan number.
- Providing a mechanism to close off the deteriorating paper Register.
- Simplifying the content of the Register folio and the check of deeds.
- Providing for the scanning of deeds and plans into a digital imaging system and provide an essential backup to Registry records.
- Providing business reports and statistics to management.
- Providing a registration system capable of delivering same day or, if warranted, 'while you wait' deed registration services.

In parallel new legislation was developed to enable:

- the Register to be held on computer rather than paper;
- all information to be available digitally;
- simplified transaction forms to replace the free-form deeds; and
- automatic creation of easements and dedication of new roads on plan approval.

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The proposed Land Title Registration legislation is pending at the completion of the TA input. The legislation is discussed in a following sub-component.

**Staff Capacity:** The training of Registry staff was impacted by the need to maintain essential business operations. It was not possible during implementation to remove staff from the Registry to concentrate on learning the new system. The training therefore, was conducted on a one-on-one basis often interrupted by customer service needs. Despite this, the team was most co-operative in balancing the demands and demonstrated a commitment to learning the new system operations and principles. The Principal Land Registry Officer (PLRO) has a good awareness of the system operations, the position's system responsibilities and the role to be filled in managing the Land Registration System.

The Senior Registry Officer and two Registry Officers have been trained in the operation of the LRS and are reasonably confident of performing the range of LRS functions. They have access to the User Manual in hardcopy form and via the HELP key in the LRS. They are familiar with the contents of the manual. The PLRO is aware of the role that this position plays in checking and releasing folios and in the administrative functions.

In summary the foundation is in place to provide Samoa with a modern and efficient land registration system providing security of title, certainty and speed of transactions and ease of access to information for all users.

### 3.4.3 Future Direction & Risks

**Records Conversion Program:** A Registry depends on records. It not only creates records but it accumulates them at an ever increasing volume. This has consequences for records management generally but especially for storage and maintenance and access functions. The storage of large amounts of paper demanded by the registration process is a problem for Registries generally.

The notion of 'records conversion' is seen as attractive option to solve the storage maintenance and access problems and other records management issues. Conversion of records to a computer database including the imaging of documents is a valuable tool in satisfying the requirements of a good records management regime. Reasons for 'conversion' include better access to records and/or security by having back-up records. These are valid reasons and can often be sufficient in cost to justify the conversion of records. Questions like when and how are raised but other questions such as precisely what records to convert and what resources will be necessary to complete the task are sometimes not sufficiently examined. For example, *must* all records be converted?

Conversion of records is expensive both in staff resources and time. The project must be thoughtfully developed; it must be carefully managed and it must have a firm commitment by management to adequately resource the project *for the expected life of that project*. In this case the life estimates, as fully discussed in *TA Report No. 28*, is aggregated as follows:

- **Register conversion**  
Registration Section: 1.2 man years  
Draughting Section: 10.5 man years
- **Document imaging**

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Registration Section: 2 hours/day for deeds and, until the new title legislation, a further 1.5 hours for the new form folios

Project staff: 3.3 man years to image historical deeds and Registers

**Industry Awareness Program:** There were consultations with a range of real estate professionals in preparing the system upgrade program. MNREM will need to conduct further awareness or education workshops for members of the public all sectors of the real estate industry to explain the requirements imposed by the above legislation, the implications on each sector and on Registry operations and requirements. The information presented at these workshops should be complemented by handouts and brochures describing these implications and operational requirements. These are described in detail in *TA Report No. 27*.

With new legislation a computer Register will be created and all information will be available digitally. The industry is generally aware that the upgrade to Registry operations will:

- Provide searchers with a direct link from the plan to the Register folio via a *lot and plan folio identifier*.
- Improve client services by providing the public with copies of the Register and with information regarding deeds and plans lodged but not yet registered.
- Provide a mechanism to close off the paper Register – the Register is deteriorating and there is real risk of losing information and even folios.
- Simplify the content of the Register folio and the check of deeds lodged for registration.
- Provide for the scanning of deeds and plans into a digital imaging system and provide an essential backup of Registry records.
- Provide business reports and statistics for management

**Risks:** The risks to the successful implementation of the Land Registration system reforms were identified at the outset. The table summarises the status of the risks at project completion:

Identified Risk	Impact & Status Comment
Legislation not available to support the implementation of a Torrens Title Registry	Low risk short term - absence of the proposed new legislation did not prevent the implementation of the first phase of the Registry upgrade.  High risk long term – prevents full upgrade to the Torrens system
Ability of the staff to maintain the system in parallel with data conversion.	Medium / High risk – staff have been trained and understand the system, but backlogs in data conversion remain significant.
Limited validation information and inaccuracies within the existing register and errors generated during conversion process	High risk – can only be minimised by checking each record to ensure the computer record matches the bound register.

### 3.5 Land Registration Legislation

#### 3.5.1 Reports

The following reports were prepared and submitted to MNREM in draft and final form to cover the activities of the Land Registration Legislation sub-component:

Report Number	Report Topic	Date*
2	Land Registration System – Review, Analysis & Future Strategy <sup>4</sup>	May 05
20	Land Registration Legislation (draft)	Jan 06
25	Review of Customary Land Tenure	Jan 06

\* indicates Final report submission

#### 3.5.2 Outcome

After a review of existing legislation a first draft of a Land Title Registration Act and Title Registration Regulations were prepared. Subsequently a draft submission was Cabinet was prepared for consideration by MNREM. The cabinet submission outlined the background reasons for the changes to land registration legislation and practices. In summary these were:

1. The lack of clarity in the present law regarding the effect of registration under the land Registration Act 1992/1993 (The current system in Samoa is a hybrid system which is an amalgam of old deeds registration principles with more modern title registration practices. This has given rise to confusion and conflicting Court judgments on the legal status of registered documents).
2. The need to upgrade the practices and procedures of the Land Registry.

The Registry has been operating in an environment where the practices and procedures are outdated, the records are deteriorating and adequate equipment is lacking. Measured against current best practice there is a lot of scope for improvement. The common complaints amongst all users of the system were delays in registration of documents and difficulty in searching titles. The delays in registration are largely attributable to the lack of any system for monitoring and controlling the progress of matters lodged for registration and outdated and laborious registration practices.

As described in the Land Registration Reform sub-component above a range of options for overcoming these and other issues were presented. The strategy adopted was based on an option that operates at two levels – the first to enable the implementation of a computerised Registry and, at another level, to convert the system into Torrens Title.

When enacted the new legislation will effectively change the current hybrid state to full Torrens title on the following conditions:

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<sup>4</sup> This report jointly prepared for Land Registration Conversion sub-component

- (i) The conversion to title registration would be on a provisional basis by creating limited titles which would mature into full titles after 12 years (the period for limitation of actions against land under the Limitation Act 1975), with any new land coming into the system such as leases of customary land or Government land going directly to full title.
- (ii) During the provisional period the limited titles would be conclusive as regards any registration entries made after the date of conversion but they would be subject to interests, if any, created before conversion and not shown on the titles
- (iii) The conclusiveness of titles would be subject to the exceptions set out in *TA Report No. 2* (part. 5.3.1), concerning the extent of indefeasibility of title.
- (iv) A State indemnity would be available for persons suffering loss through mistakes within the Land Registry; or the registration of another person's interest.

**Customary Tenure.** While not a requirement of the initial project design a review of Customary Land Tenure was undertaken. TA Report No. 25 was envisioned as background for the Land Administration Reform sub-component of SIAM II. The report provides a historical perspective and assists in developing an understanding of the traditional systems of tenure over customary land and in exploring a framework for potential inclusion of customary land in the formal registration process.

### 3.5.3 Future Direction & Risk

At the completion of the Project the draft Title Registration Act and Regulations were in the hands of the Attorney General (Parliamentary Counsel) for drafting of an appropriate Bill for parliament. It is anticipated that the Bill will have wide support from both sides of parliament when presented. The passage of the Bill is essential for the completion of the land Registration System reforms, however the delay in enactment has had little immediate impact on the development and implementation of operational changes in the system.

The issue of incorporating customary land into the title register was not within the scope of the project. However there is no technical obstacle to the registration of tenure – leasehold or other – in the formal registry subject to ability to unambiguously describe the boundary of the extent of the customary interest.

## 3.6 Land Valuation

### 3.6.1 Reports

The following reports were prepared and submitted to MNREM in draft and final form to cover the activities of the Land Valuation sub-component:

Report Number	Report Topic	Date*
5	Valuation System – Initial Review & Analysis	May 05
8	Valuation Standards & Code of Ethics	May 05
17	Valuation Legislation ( Alternative Draft)	June 05
19	Valuation Adviser Exit Report & Formula Valuation System	June 05

\* indicates Final report submission

### 3.6.2 Outcome

There is currently no legislative authority that regulates and sets standards for the practice of Valuers in Samoa. This was identified as a weakness in the valuation industry under the TOR for the project. Notwithstanding this, the initial review suggests the existing valuation processes are adequate for the current levels of valuations in Samoa. The existing process can be best described as involving a case by case assessment where inspections are carried out; reports are completed describing the property and fixed improvements; and appropriate sales are analysed.

In circumstances where there is no broad based land tax or land rating system, there appears to be no pressure to introduce a mass appraisal system that allows for high volume assessments quickly and efficiently. Notwithstanding this, a framework for a Formula Valuation System over Apia urban area was prepared for possible use at a later date (TA Report No. 19).

Some key issues emerging from the initial review were:

- Does the Taking of Land Act make adequate provisions for the assessment of compensation for the taking of customary land? There may be special considerations for the assessment of customary land based on such notions as culture, tradition, spiritual connections which the Act does not address.
- Is there any desire from the Government of Samoa to increase its revenue base by an impost of a land/property tax or rates in Apia urban area?
- The implications of formalising the registration of valuers where there are a very limited number of practising valuers – who/what should be the regulator?

In accordance with the TOR draft land valuation legislation was prepared based on best international practice. At the request of MNREM the draft was substantially overhauled to provide for registration and regulation of valuers by MNREM rather than by a constituted Valuation Board. Given the small size of the valuation profession and the limited number of property valuations conducted (there is no land tax system) and the unlikely prospect of expansion in the immediate future the discretion of the CEO is probably reasonable.

Notwithstanding the modifications made a draft Valuation Act and draft Standards and a Code of Ethics for valuation practice in Samoa is now available. Ultimately the GoS, on the recommendation of the Attorney General's office will determine the extent to which control and regulation of valuers and valuation practice is legislated in Samoa. The initial drafts provide a framework for such determination when required.

### 3.6.3 Future Direction & Risk

The key risks in this sub-component were essentially related to the capacity of MNREM staff and the training needed to increase the technical and confidence of staff to carry out a national property valuation role.

**Institutional Capacity:** The valuers at MNREM are qualified to handle the majority of tasks presented to them. However, they have limited exposure to a culture of international best practice (this includes the unqualified valuation staff) and they would benefit from overseas placement in a recognised valuation office. Any opportunities for such placement, especially in

New Zealand or Australia, should have substantial benefits to any, or all, of those involved. It is recommended that MNREM actively seek opportunities for this to occur.

**Training:** There is an identified need for targeted in-country training possibly by a valuer with international experience and a position for periods of up to six months. This may suit a valuer under the Australian Business Volunteers program or some similar scheme. Furthermore, staff require support and the opportunity for higher education. Ideally, all valuers in Samoa should have a Degree in Land Management, from the University of South Pacific, Fiji or its equivalent. It is important that the valuers' education includes experience in the specialist valuation area of Assessments for Compensation purposes. Valuers also require experience in defending their valuations, including court room exposure.

## 4. CONCLUSIONS & LESSONS

### 4.1 Project Design

Extensive experience in implementation of development projects suggests a key overall lesson is that the issues affecting sustainability are less likely to be technical in nature and more likely to be institutional. In this respect it is considered that the original project design placed more emphasis on the delivery of technical outcomes with less emphasis on the institutional strengthening needed to sustain the changes into the future.

A design which places the consultant in a technical assistance or adviser role was adopted by LEI rather than the role of contractor operating independent of the responsible agency. This resulted in extensive on-the-job training facilitated by advisers working in close cooperation with MNREM and located with staff in the day to day office environment.

A further observation on the project design is that the reforms proposed were extensive and ambitious in the time proposed and with regard to the capacity of the public and private sector to digest and sustain the changes.

### 4.2 Legislation

The project introduced draft legislation which is proposed to support the reforms in Land Registration, Surveying and Valuation. The proposed new laws are:

- Land Title Registration Act;
- Land Titles Registration Regulations;
- Survey Act
- Survey Regulations;
- Valuation Act;
- Valuation Standards & Code of Ethics
- Spatial Information Agency Act

This is a comprehensive legislative program affecting all aspects on land administration in Samoa. At the conclusion of the TA input drafts were finalised, but, with the exception of the draft Title Registration Act, these had not been passed to the Office of the Attorney General for draft Bill preparation.

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The draft laws were the result of considerable consultation at Government and Private Institution level. Consensus on the final composition of the respective laws was not always readily achieved; particularly concerning the topic of industry regulation. In all cases the views of the MNREM have been adopted in the final draft in the knowledge that the Parliamentary Counsel will ultimately be responsible for the preparation of the draft Bill for submission to the Parliament of Samoa.

All the proposed law changes are important for the formalisation of the reforms introduced in the project. It is understood that there is a current backlog of priority legislation before parliament and this is likely to delay consideration of some of the proposed legislation. However, many of the policy, organisational and operational changes can effectively proceed, or at least commence, in anticipation of legislation. The exception is the Land Title Registration Bill which is critical to the introduction of the "Torrens" system of title registration and must be given priority.

### 4.3 Capacity

#### 4.3.1 Public Sector

The changes proposed are extensive, if not radical in some cases, and have a significant impact on all aspects of the management and operation of surveying, mapping and land registration in Samoa. While the MNREM has prime responsibility for these functions in Samoa, and for the sustainability of the project reforms, the changes have an impact across many GoS agencies, especially in the areas of Land Information.

The staff numbers and skill levels are considered to be relatively low in the Ministry and this represents the greatest risk to sustainability. The project successfully implemented the new registration system, a digital cadastral database and an upgraded geodetic network; however it has highlighted the dependence on the small number key staff members who have emerged as leaders in the operation of the systems and technologies. In some cases organisational changes will be needed in the Technical Services Division of MNREM to ensure that these key staff are assigned to dedicated support of the new processes. These staff have been identified in the respective TA Reports

There were numerous recommendations contained in the 32 reports prepared during the 12 month implementation period. To some extent the MNREM appeared un-prepared for this "flood" of information. This imposed a considerable burden on the relevant sections of the MNREM who experienced some difficulty in responding to recommendations within the nominated time. In addition field survey staff were often unavailable for project priorities due to routine work commitments. To a large degree this highlights (i) the breadth of changes introduced and (ii) the limited capacity available within the Ministry to support the changes.

Sustainability will be at risk unless management undertakes changes which bring the organisational structure into closer alignment with the operation of the new systems.

#### 4.3.2 Private Sector

The private sector plays an important role in land administration in Samoa. However, with the possible exception of the legal profession, the sector is small and has limited technological

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capacity. The Inception Report (TA Report No. 1) provides an overview of the relevant private sectors.

For example there is no GPS equipment in the private sector and the small number of active practitioners have no experience in the technology. Since the introduction of GPS technology is a prime element of the survey objectives of the project, MNREM must take a lead in familiarization of the industry in this technology. The involvement of the private sector in the tertiary geodetic network provides an excellent opportunity for this.

All the legislation proposed in the project impacts to some extent on the mode of practice of the legal, surveying and valuation sectors. That affecting the surveying sector removes the historical reliance on the laws of New Zealand for cadastral survey licensing and regulation of practice in Samoa. While the Law Society is a well established representative body the Surveying and Valuation sectors are presently too small to have a similar representative body. As a result some proposals concerning the introduction of Licensing and Regulatory *Boards*, based on industry representation, have not been completely accepted. In the view of the MNREM the introduction of representative Boards will be appropriate when the respective professional groups grow in response to community needs.

### 4.4 Training & Education

There is limited opportunity to undertake formal training and education in Samoa in project related fields. The technologies (GPS, GIS and related computer-based technologies) which underpin the reforms introduced are constantly evolving. The sustainability of the project is at risk if staff and practitioners are unable to keep abreast with these developing technologies.

Approaches recommended for increasing the skill levels and capacity to sustain the upgraded systems include:

- Development of basic technical education by cooperating with other Pacific Nations to deliver education programs in Samoa or another Pacific location. In this respect discussions were initiated with the University of the South Pacific who are designing (in collaboration with the University of Otago) Certificate and Diploma courses in Geomatics aimed at meeting the needs of the region.
- Establishing partnership arrangements with suitable agencies with expertise in Title Registration, GPS/Geodesy and Spatial Data Management in Australia and/or New Zealand and that from this arrangement there should be the opportunity for Ministry staff to gain appropriate work experience with these agencies; and
- Selecting staff, and sponsoring private sector practitioners, to attend suitable short courses that might be offered in Australia and New Zealand or elsewhere in the region
- Additional on-the-job training from the TA on a short term input basis over the critical data conversion for the DCDB and land registration system and the full conversion to Torrens after enactment of the enabling legislation.

**ATTACHMENT 1**  
**PROJECT REPORT TABLE**

## Attachment 1 Project Reports

No	Title	Draft	Final	Comments
1	Inception Report	28 Feb 05	21 Mar 05	
2	Land Registration System – Review, Analysis & Future Strategy	12 Mar 05	10 May 05	
3	Interim Land Information Integration Strategy	12 Mar 05	22 Apr 05	
4	Technical Specifications for GPS & Ancillary Equipment		2 Mar 05	
5	Valuation System Initial Review & Analysis Report	16 Mar 05	5 May 05	
6	Geodetic Network Initial Review & Options for Upgrade	24 Mar 05	8 Jun 05	
7	Land Information Integration Procurement	12 Mar 05	16 Apr 05	
8	Valuation Standards & Code of Ethics	29 Apr 05	13 May 05	
9	Draft Valuers Legislation (not proceeded to final)	13 May 05		Draft considered too detailed for current valuation industry in Samoa - see 17 below.
10	Spatial Information Agency Position Paper	11 May 05	2 Feb 06	
11	Geodetic Network Upgrade Action Plan	22 May 05	16 Aug 05	
12	Draft Survey Act	21 June 05	2 Feb 06	
13	Spatial Information Policy Paper	3 June 05	2 Feb 06	
14	Draft Spatial Information Act	7 June 05	2 Feb 06	
15	Draft Geographic Names Act	13 June 05		Act incorporated into Spatial Info Act on MNREM request. Final

	(not proceeded with to final)			version not necessary
16	Draft Survey Regulations	21 June 05	2 Feb 06	
17	Alternative Draft Valuation Legislation		28 Jun 05	See 9 above – alternative submitted at request of Ministry.
18	Draft Geographic Names Guidelines	22 June 05	2 Feb 06	
19	Valuation Adviser Exit Report		28 Jun 05	Includes report on Formula Valuation System
20	Draft Land Registration Legislation	25 June 05	Jan 06	Final Draft submitted to Attorney General for draft of Bill. Draft Cabinet Paper submitted June 05
21	GPS Guidelines & Receiver Operation Manual	22 Aug 05	11 Nov 05	Operational manual – subject to ongoing revision
22	GPS Adjustment Manual	14 Oct 05	2 Dec 05	Operational manual – subject to ongoing revision
23	Draft Proposed Geospatial Metadata Standard Pt 1 & 2	14 Oct 05	2 Feb 06	Operational standard – subject to ongoing revision
24	Land Information Integration Software Documentation		2 Feb 06	All LII Software (source code), DCDB User Manual, Training/ workshop material and equipment specifications/costs submitted on separate CD.
25	Review of Customary Land Tenure		26 Jan 06	Background to Customary Land in Samoa
26	Land Registration User Manual		2 Feb 06	Operational manual – subject to ongoing revision
27	LRS Training Plan & Industry Awareness Program		2 Feb 06	
28	LRS Records Conversion Project		2 Feb 06	
29	The Samoan Geodetic Network Information Brochure	2 Dec 05	3 Feb 06	
30	The Upgrade of the Samoan Geodetic Network	5 Jan 06	3 Feb 06	
31	Installation of Land Administration Equipment		23 Dec 05	
32	Survey Guidelines Manual	3 Feb 06		
33	FINAL REPORT			

