

# **The Regulation, Registration and Representation of Surveyors in the Pacific Islands Countries**

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## **SUMMARY**

Much of the legislation controlling the administration of ownership, registration, valuation, transfer and use of land in the Pacific Islands nations was imported by colonial powers in the 19<sup>th</sup> century and has remained in force, with only minor amendments, despite the independence of these nations. Pre-independence all surveyors were male expatriates who had gained their qualifications in their home country and were represented by their national (home) body. Although training of Pacific Islanders took place before independence the qualifications obtained were only sufficient for registration purposes within their own country and they were not (and are still not) accepted for membership of international institutions.

Only Fiji and Papua New Guinea has representative organisations for surveyors and the capacity to offer tertiary education in surveying disciplines. None of the courses offered are recognised for membership of international surveying institutions so many academically qualified surveyors, holding senior positions in government and private organisations, find it impossible to obtain the representation they need to participate in many of the current initiatives in the region.

This paper reviews the present status of surveyor education in the region, considers the contribution that can be made by FIG and CASLE, and examines the current and future role of Australia and New Zealand in the education and representation of surveyors in the region. The forming a South Pacific Institute of Surveyors to represent all surveyors in the Pacific Island countries is proposed as a possible way forward.

# The Regulation, Registration and Representation of Surveyors in the Pacific Islands Countries

Bob CURLEY and Spike BOYDELL (Fiji)

## 1. INTRODUCTION

This paper relates specifically to the 12 countries in the Pacific that are served by the University of the South Pacific (Cook Islands, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, Vanuatu) but much of what is written relates to the other Pacific Island Countries (PICs) (see Map 1). Before considering the present status of the surveying profession in the region and the educational requirements for the future, it is worth considering a brief history of the profession in the region.

In general, the Pacific Islands nations were settled more than a thousand years ago, by what are now referred to as the indigenous peoples. Although the islands were sighted and visited by Europeans in the 16<sup>th</sup> and 17<sup>th</sup> centuries it was not until the late 18<sup>th</sup> century that the European settlement of these islands began in earnest. The major powers of the day (Britain, Germany and France and to a lesser extent the USA) annexed most of the islands, with the exception of Tonga, which has retained its independent sovereignty.



Map 1: Pacific Island Countries

At the start of the First World War Germany had to relinquish its territory in the Pacific, with New Zealand or Australia granted mandates to govern these ceded territories. Between 1960 and 1990, all the countries in the region became independent to some degree, with some opting for full independence whilst others retained some level of support with associated lack of autonomy.

## 2. EXISTING LAND TENURE SYSTEMS

As a simplification, a sort of feudal system of land tenure existed on all of the islands with rights in land being granted by chiefs or the nobility according to birthrights or for services rendered in accordance with local custom. The rules regarding the allocation and use of land were flexible and dynamic and related more to need rather than ones status in the community. Under such a system, the demarcation of land boundaries was imprecise with natural features being used whenever possible. No written records of land holdings were kept and there was no horizontal transfer of land rights. People did not buy and sell land; all land transfer being

vertical from the top down and following the bloodline established through either or both parents.

This system of land administration suited the needs of both the community and the individual, being reasonably environmentally friendly and ensuring sustainability, if not development in the capitalist context. If land disputes did occur at the local community level these were resolved by consensus of the village or clan elders. Disputes between larger clans and tribes usually being resolved by warfare.

The arrival of foreigners interfered with this system, to the extent that the chief granted access to land for money or money's worth rather than for services rendered. The value of the land depended largely on its size and location, so some sort of survey was required. During the survey, it was deemed necessary to mark the corners and extent of the property to alert others to the fact that the land was now "owned" and controlled by somebody else.<sup>1</sup> Fences or barriers were erected to keep stock in and intruders out, and in many instances these fences and barriers became the de facto boundaries even if they did not actually follow the surveyed boundary.

Many such transactions took place before the official annexation/cession of the territories. To prevent further alienation of the land owned by the indigenous population, land which is now called customary land or native land, the Governor of the day proclaimed that foreigners were not allowed to purchase land from the customary land owners and that the Crown, in the form of the Governor, would control all land transactions. Under such a system, a survey of the land to be transferred became compulsory and it was deemed that all such surveys should be carried out by surveyors commissioned or registered by the Crown.

### **3. LAND SURVEYING RULES AND REGULATIONS**

Given the formal responsibilities of New Zealand and Australia in the region it is not surprising that many of the rules, regulations, and procedures for land surveys mirror those used in those territories. Even in those countries where New Zealand and Australia had no formal obligations surveyors recruited from New Zealand and Australia often carried out the surveys. It is therefore necessary to review the regulation and representation of the profession in these two larger neighbouring countries as a prerequisite before assessing the situation in the Pacific Islands nations.

#### **3.1 Zew Zealand**

In 1840, the British Government entered into a treaty known as the Treaty of Waitangi that guaranteed Maori rights of ownership, but following the arrival of British settlers large portions of native land were alienated. Local survey systems were set up to describe the land that was alienated. Following the introduction of the Torrens Land Title system in South Australia in 1858, New Zealand adopted the system throughout New Zealand with both Crown and Maori land transferred to this system.

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<sup>1</sup> For a more in depth discussion on the concept of *ownership* in the Pacific, see Boydell & Shah (2003).

One of the fundamental principles of surveying is that of “control”, which requires a framework of coordinated and connected points to which all other surveys should be connected. This principle is usually described as working from the whole to the part. The need for such control was identified in New Zealand but its implementation impeded by the lack of resources and technology, coupled with the ruggedness and lack of accessibility to many parts of the country. New Zealand was to wait more than 50 years before a national control network was established, thus the local survey systems persisted for many years with each survey relying on permanent markers for its origin and a series of metes and bounds for its extent.

The regulation of the surveying profession in New Zealand began with the passing of the *New Zealand Institute of Surveyors and Board of Examiners Act 1900* (Coutts 2003). Under this, the already existing New Zealand Institute of Surveyors (NZIS), founded in 1888, was made a body of Statute. There followed the *Surveyors Registration Act 1928* and the *Surveyors Act 1938*, the latter required the holding of Annual Practicing Certificates and made it compulsory for surveyors on the register to be members of NZIS.

The *Surveyors Act 1966* and the *Survey Act 1986* followed but they did not substantially alter the above procedure. The cadetship scheme survived until the opening of the Survey School at Otago University in 1963. The first qualification offered was a Diploma in Surveying; a Bachelor of Surveying degree was introduced in 1968. Both of these courses were replaced with a four-year Bachelor of Surveying degree in 1978. Currently some 50 graduates per year complete the course. In addition to the Bachelor of Surveying degree, qualification for licensing requires a minimum of two years postgraduate experience plus the passing of an applied professional competency examination set by the Surveyor’s Board.

More recently, the review of legislation regarding cadastral surveys resulted in the Cadastral Survey Act 2002. The rules for licensing are similar to the previous rules for registration but Continuing Professional Development (CPD) has become a mandatory requirement for renewing licenses, which now last for three years.

A two-year Diploma Course for surveying technicians has been reintroduced and is offered by UNITEC in Auckland.

Two national organisations represent New Zealand land surveyors, the New Zealand Institute of Surveyors (NZIS) and the recently formed Institute of Cadastral Surveyors (ICS). The membership of NZIS caters for a broader range of surveyors than just those involved in cadastre and there are about 1200 members, with ICS currently having about 20. The NZIS also allows various categories of membership including student and technician membership.

### **3.2 Australia**

There is a similar surveying history for Australia with colonisation taking effect in 1788. The main difference with Australia when compared to New Zealand and the rest of the Pacific nations is that the land rights of the indigenous (aboriginal) people were not recognised. That

situation has now changed with the introduction in 1993 of the Indigenous Native Land Titles Act. However, during the intervening two centuries many land transactions took place initially under the English deeds system and since 1874 all States of Australia adopted the Torrens Title System that was first introduced into South Australia in 1858.

Due to the rapid influx of settlers and demand for surveys, the lack of competent surveyors, the harsh terrain and the absence in many cases of natural features property surveys were carried out in local survey systems. These used permanent marks, which established local origins for the independent surveys, and orientations obtained by astronomical observations. The limits of the property being defined by a series of bearings and distances from the origin.

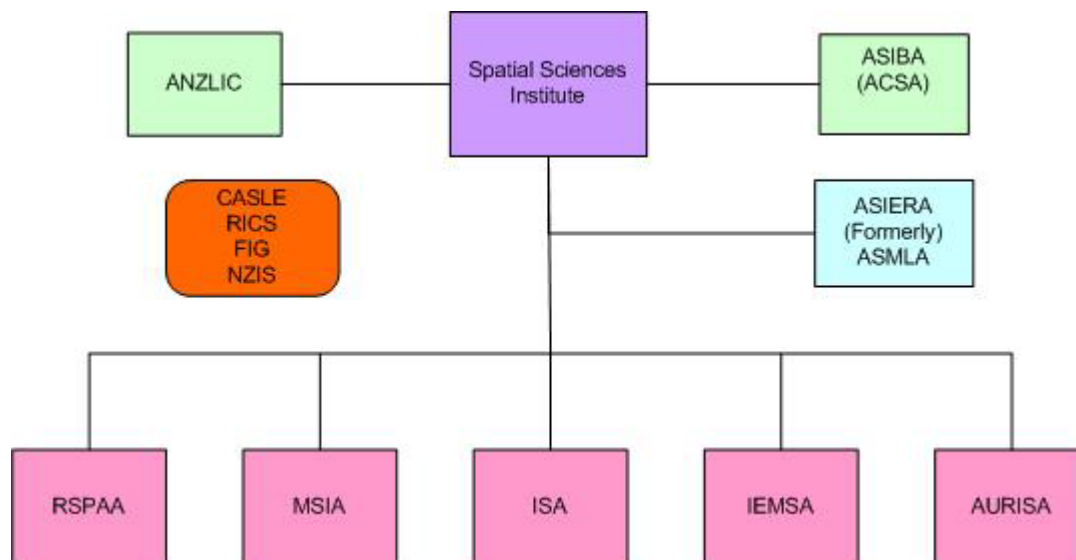
Each Australian State or Territory developed its own rules and regulations regarding the carrying out of surveys and the registration requirements of surveyors. In 1952, the Institution of Surveyors Australia (ISA) was formed, with each of the six states and two territories constituting a division of the Institution.

There are approximately 3,600 members of ISA, but these members are predominantly those employed in cadastral surveying. Kindred institutions represent the smaller groups of surveyors that operate in other areas such as mining and civil engineering. Reciprocal membership arrangements exist between the individual states, territories, and New Zealand through the Mutual Recognition Act 1993.

With a highly developed mature property market and construction industry, both the Property Valuation Surveyors and the Quantity Surveyors have their own representative bodies – the Australian Property Institute (API) and the Australian Institute of Quantity Surveyors (AIQS). The Royal Institution of Chartered Surveyors (RICS) has a presence in all states, territories and New Zealand, catering for all surveying disciplines under its system of sixteen faculties.

Initially, as with New Zealand, the profession in Australia was responsible for the education and training of its surveyors and it retains the responsibility for assessing surveyors for the full requirements of registration. More recently, the education of surveyors has been passed over to the universities and there are now nine universities offering land surveying/geomatics programmes. Essentially all courses are 4-year Bachelor Degrees in geomatics, surveying, cartography, or spatial sciences. The blurring of the divisions between the various disciplines has led to broader based degrees but they still cover the professional requirements for registration and licensing of land surveyors.

The Spatial Information Industry Action Agenda (SIIAA) report *Positioning for Growth* indicates that there were 1022 students commencing studies in Spatial Information with 360 commencing studies in surveying in 1999. Despite these figures, there is presently a serious shortage of surveyors in Australia.



**Figure 1:** Organisation of the Spatial Data Industry in Australia  
(source: Curley & Boydell for this paper)

There has been a reorganization of the spatial data industry in Australia with the formation of the Spatial Sciences Institute (SSI). The five major representative bodies agreed to support the formation of SSI and they now operate within the SSI as commissions (see Figure 1). The Australia Spatial Information Business Association (ASIBA) is the *business* commission, representing the companies that operate within the industry and provides the link between the professions, government and the public sector. The Consulting Surveyors of Australia (ACSA) has recently merged with ASIBA. The Australia and New Zealand Land Information Council (ANZLIC) is the commission representing *government* interests. The Australasian Spatial Information Education and Research Association (ASIERA) is the *education* commission, replacing the former Association Surveying and Mapping Lecturers of Australia (ASMLA). ASIERA has widened its membership to include the Pacific Islands and non-government research organisations. At present, on the role of CASLE, FIG, RICS and NZIS is not clear or defined in the Australian structure, hence it is not integrated in Figure 1.

### 3.3 Pacific Islands Nations

Having provided an overview of the background and prevailing situation in Australia and New Zealand it is appropriate to put the Pacific Island Countries (PICs) into context. The legislation regarding registration of title imported from New Zealand and Australia required all alienated land to be surveyed by a licensed surveyor. There is a view (Williamson 1981) that the systems that were introduced “do not meet the social and economic demands placed on them at the present [1981] time. Such systems can seriously limit the availability and transfer of land hence restricting the development and economic advancement of the country”.

Williamson argued that the Torrens Title System was often wrongly regarded as a “survey system” that required the adoption of “fixed boundaries” and that this misconception led to surveys being carried out far more accurately than the local circumstances required. This

required highly qualified surveyors and took much longer and hence cost much more than was actually necessary. Whilst the Pacific Islands nations were still under colonial rule expatriate surveyors ran the system. Even after independence, expatriate surveyors were retained to satisfy the requirements of the legislation.

The Commonwealth Association of Surveying and Land Economy (CASLE) addressed the need for formal training courses in the region at their meeting in Wellington in March 1973. The recommendations of the Working Party appointed to prepare a report on the findings of the Seminar were:

(5.1) That CASLE do all it can to encourage and assist in the establishment of a technicians' course in surveying (incorporating valuation) in Fiji or another country suitable to service the South Pacific Region.

(5.2) That member-societies and CASLE itself encourage and actively assist in the establishment and development of societies in the Pacific Region.

CASLE recognised that “There is a need for strong professional societies throughout the region. These societies should cover all three disciplines [land surveying, quantity surveying and land economy] and should also ensure that all those who engage in professional work are admitted to some form of society membership.” These same issues re-emerged some three decades later on the agenda of the 2004 CASLE General Assembly (Boydell 2004).

Certain stigma's relating to the profession endure. In his Commonwealth Secretariat report on *Land Economy and Surveying in the South Pacific* (Denham 1979), Denham summarised public perception of land surveyors as: “The layman often confuses the fully qualified land surveyors with the assistant technician he sees operating in the field. The high degree of intellectual comprehension required of a land surveyor is not realised. Presumably this is why those who drafted Fiji's Seventh Development Plan 1976-1980 and drew up the tabulation of professional manpower put surveyors in the lower class below social workers and librarians – as if all surveyors were technicians.”

#### **4. REPRESENTATION OF SURVEYORS IN THE PACIFIC ISLANDS**

Only two Pacific Island nations, Papua New Guinea and Fiji, have national associations to represent surveyors.

##### **4.1 Papua New Guinea**

Papua New Guinea has the Association of Surveyors of Papua New Guinea (ASPNG) that represents the interests of the land surveyor, with the Papua New Guinea Institute of Valuers and Land Administrators (PNGIVLA) representing those surveyors involved in the land economy/property sector.

Not surprisingly, Papua New Guinea has made most progress in the area of training and representation of surveyors. For clarification, it is perhaps worth stating that before the *Papua and New Guinea Ordinance in 1949*, Papua and New Guinea were separate. Papua was a British colony whilst New Guinea, originally controlled by Germany, became a League of Nations Mandated Territory administered by Australia.

The first representative body was the Surveyors Institute of British New Guinea, formed in 1901 by Mr. Henry Stuart-Russell (President) and Mr. John Richmond (Secretary). Unfortunately, no records of its activities survived (Mastamak 2001). It would be almost another 60 years before 13 expatriate surveyors formed the ASPNG, in May 1960, and another nine years before the first PNG national became a member of the ASPNG in 1969. This reference to expatriate surveyors is important, given that in 1972 there were 102 registered surveyors of which only four were Papua New Guineans (Larmer 1973).

The Survey Ordinance 1969 was introduced to regulate the surveying of land boundaries for land titling. The requirements for registration allowed holders of a Diploma in Surveying from the Papua New Guinea Institute of Technology to register after two years practical experience under articles to a registered surveyor and the completion of specified projects and an oral examination.

The course continues and there is now a Diploma and Bachelor Degree in Surveying, a Diploma and Bachelor Degree in Cartography and a Bachelor degree in Land Administration. Currently the combined intake for the courses is around 80 students.

Papua New Guinea gained its independence on the 16<sup>th</sup> September 1975. Larmer (*op. cit.*) reports that in 1972 the membership of the ASPNG stood at 130 with 10 of those being Papua New Guineans. In June 2003 the membership stood at 109 with 21 of those being overseas residents and 88 being locally resident. Not all local residents are PNG citizens but the vast majority of them are, however these figures indicate there has been a drop in resident membership over the last thirty years despite the fact there had been 1,142 graduates from UNITECH up to 1999 (Curley, for this paper)

Not all graduates from the Department of Surveying and Land Studies were land surveyors, some were cartographers and some land administrators and not all graduates were Papua New Guineans. Nevertheless, these figures are a matter for concern regarding the sustainability of the profession.

It is also interesting to note that there was no representative body for Valuers in Papua New Guinea before independence. In 1972, there were 17 Valuers, 15 of them in the Valuer General's section of the Department of Lands, Surveys, and Mines. All were members of the Australian Commonwealth Institute of Valuers.

The reported population in 1972 was approximately 2.5 million. The latest figures available in 2003 had the population at around 5 million. This doubling of the population in thirty years has increased the demand for prime land, particularly in the urban and peri-urban areas and will increase dramatically if a formal land policy for registration of customary land is put in



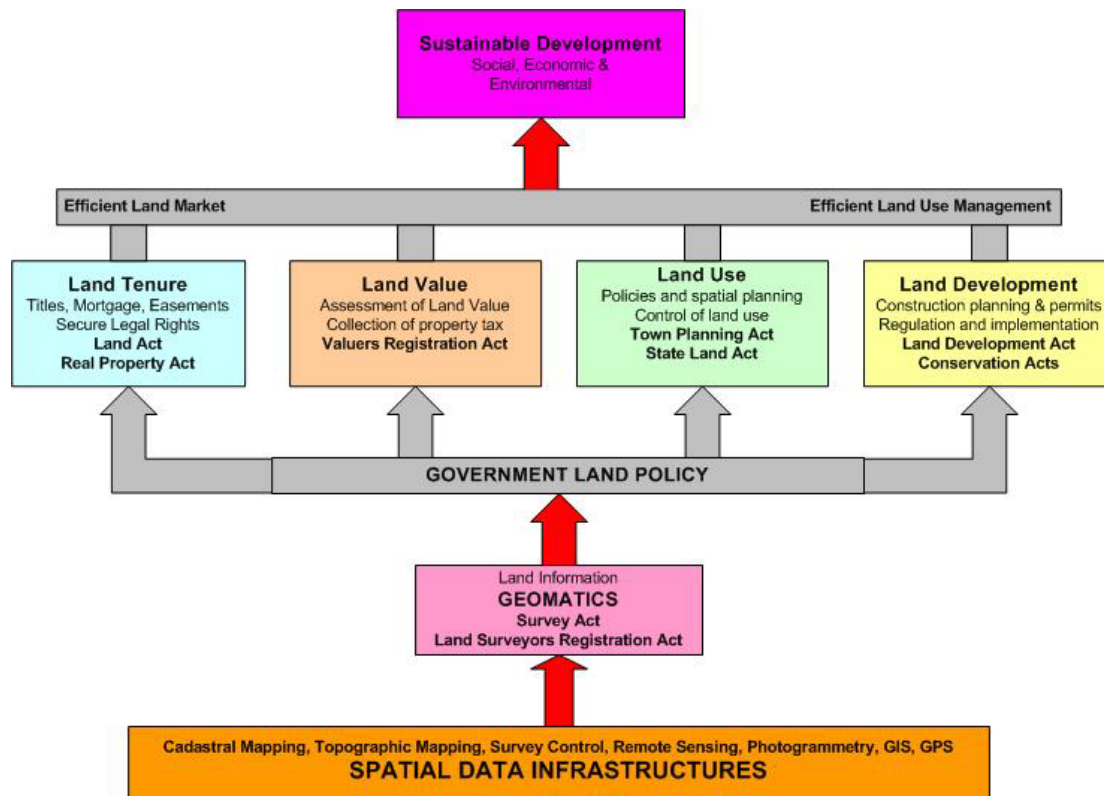
place (Henaio 2003). Before independence there were three groupings for land: Native Land, Government Land and Freehold Land. Since independence the three groupings still exist, but there has been compulsory acquisition of expatriate held freehold land by the State. The acquired land has then been leased back to the occupiers, so the current situation is reported as Customary Land (97%), Government Leases (2%) and remaining freeholds (1%). A similar post-independence restoration of alienated land to either the state or indigenous landowners has also occurred in Vanuatu and Niue, with cases before the courts in Fiji.

## 4.2 Fiji Islands

Fiji has the Fiji Institute of Surveyors (FIS) to represent the land surveyors and the Institute of Valuation and Estate Management of Fiji (FIVEM) to represent those in the property sector. There is also a Fiji Institute of Quantity Surveyors (FIQS), which is a member of the Pacific Association of Quantity Surveyors (PAQS).

In Fiji, a system of cadetships was introduced in 1940, but by 1957 it had produced only two local surveyors (Mohammed 1966). In 1958 a Survey School was set up to accelerate the training of local surveyors and it is reported that from 1951-1977, 24 students had qualified as surveyors. During this period, the Surveyors Act 1969 passed the responsibility for training and registration of all surveyors, whether trained locally or overseas to the Surveyors Registration Board (Dutt & Volavola 1977).

Fiji was a British colony until it gained its independence in 1970, after which it operated as an independent nation with the Queen as Head of State. After a military coup in 1987 Fiji became a republic. It has an estimated population of 868,000 (2003), the majority of which live on the two main islands of Viti Levu (10,429 km<sup>2</sup>) and Vanua Levu (5,556 km<sup>2</sup>) but there are approximately 300 islands with an area greater than 2.6 km<sup>2</sup> that are populated. Land is classified into three groupings, variously reported as Native Land (83.40%), Government Land (8.40%) and Freehold Land (8.20%). Many of these figures do not stand up to scrutiny, as the vast majority of the land has not been surveyed or registered. The need for registration of individualized holdings of land as opposed to group holdings of land in the Native land category would place unmanageable demands of the surveying profession. Likewise, the profession does not have the capacity to support the establishment of new commercially based leasehold structures on Native land under proposals being considered by the NLTB.



**Figure 2:** A Global Land Management Perspective, applied to the USP situation (Curley, 2004 for this paper – adapted from Enemark, 2004)

Although the University of the South Pacific was opened in 1968 it was not until 1981 that a surveying course was offered. The courses offered by the Land Management and Development Department have concentrated on land tenure, land use, real estate and land planning. From 2005, a new programme in Geomatics, initially at Certificate level, will be offered to provide a Land Surveying stream to complement the other programmes and address demand in the University (12 member) region. The model adopted is in keeping with the FIG approach recommended by Enemark (see Figure 2).

In addition to the regional offerings of the University of the South Pacific, diploma level courses in Engineering Surveying and Survey Procedures are offered in the Diploma in Civil Engineering at the Fiji Institute of Technology (FIT), which is a tertiary and further education (TAFE) level institution.

The Fiji Association of Surveyors was established during the colonial period but ceased operating in the 1960s. The Fiji Institute of Surveyors (FIS) was formed in July 1980. It has various membership grades including Student, Technician, Professional Associate and Fellow. There are currently (2004) 25 Professional Associates, 3 Retired members, 11 Technicians and 3 students making a total of 42 members. Although the numbers are small the Institute is quite active and holds regular branch and national committee meetings as well as an annual conference.

## 5. SOLOMON ISLANDS

Whilst there is no regulation or registration of land surveying in the Solomon Islands, the Solomon Islands College of Higher Education (SICHE) ran a Survey School between 1964-8, which was part of the Government Lands and Survey Department. The Survey School was incorporated into the Honiara Technical Institute, offering 2-year courses in surveying and a one-year course in survey drafting. Records show that in the first 4 years 36 students attended the survey course and eight students the survey drafting course. Students came from the Cook Islands, Fiji, Kiribati, Niue, Nauru, Solomons Islands, Samoa, Tonga, Tuvalu and what is now Vanuatu. In 1985, it became the Solomons Islands Institute of Higher Education (SICHE). It offers only Diploma level courses and there were plans to establish Degree level course but political instability has hindered the progress in this area. There are currently aid funded proposals to undertake a major review of the role of SICHE, with a view to possible integration with the University of the South Pacific to provide better opportunities in Honiara.

## 6. GENERAL LAND SURVEYING CHALLENGES IN PICS

Perhaps we need to step back and contextualise the Pacific Island nations, which range from 12 nations to 22 nations depending on the definition of various regional organisations.<sup>2</sup> The Pacific islands region is unique because of the combination of geographical, biological, sociological and economic characteristics (Miles 1999). The region occupies a vast 30 million km<sup>2</sup> of the Pacific Ocean. The 22 countries and territories comprise some 550,000 km<sup>2</sup> of land with 7.5 million inhabitants. Notably, if the largest landmass, Papua New Guinea, is excluded from the summation, the remaining 21 nations comprise 87,587 km<sup>2</sup>, with a total population of 2.7 million. The region comprises three sub regional groupings: Micronesia, Polynesia, and Melanesia, with a diversity of people and cultures - over 2,000 different languages are spoken across the region.

The common characteristics of the region include:

- *Remoteness and geographic isolation*: whilst historically this has had ecological benefits, with economic advancement travel within countries and within the region remains difficult.
- *Environmental fragility*: many unique species have evolved as a result of geographical and ecological isolation. Pacific island habitats are vulnerable to damage or destruction through changing land use, population and consumption.
- *Rapid population growth*: resulting in increasing commercialisation of subsistence based economies and resultant increased exploitation in natural resources – notably land, forests and fisheries.
- *Limited land resources*: in terms of soil and forests, with terrestrial and nearshore resources vulnerable to overexploitation and pollution.

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<sup>2</sup> The University of the South Pacific (USP) incorporates twelve Pacific Island Nations, whereas the South Pacific Geoscience Commission (SOPAC) has a membership of 19 Pacific Island Countries/ Territories and the South Pacific Games (SPG 2003) in Fiji included 22, encompassing the full width of the Pacific Ocean, with an administrative responsibility for one-seventh of the earth's surface (i.e. double that of the USA and almost triple the area of Australia).

- *Poorly functioning and immature land markets*: a poorly functioning land market leads to several ills including land speculation, the creation of slums and squatter settlements, environmental deterioration and an inefficient urban development pattern which increases the cost of doing business in the city and adversely affects the urban economy (ESCAP n.d). Pacific land markets lack the efficiency, equity, environmental soundness and compatibility to be classed as well functioning.
- *Access to land*: the communal and traditional nature of land *ownership* is very different in the Pacific islands when compared to its larger neighbours of Australian and New Zealand, and other parts of the globe. The majority of land was never alienated under colonialism, with 83-100% remaining vested in the indigenous owners.
- *Housing*: land and housing have particular significance for the urban poor, as a house provides both shelter and a place for income generation. Urban settlements of the poor in the region are often characterised by home-based workshops from which the poor earn their incomes. When the poor are locked out of the formal land and housing markets they revert to the informal land and housing markets to meet their needs with resultant establishment of slums, squatter settlements and illegal subdivisions. Housing should not be wrongly classified as slums because they are traditional or made of traditional materials.
- *Dependency on marine resources*: traditional dependence on marine resources for daily needs, tools, transport and waste disposal was largely sustainable. The oceans marine diversity represents the sole opportunity for economic development in nations such as Marshall Islands, Kiribati and Tuvalu, but contemporary demands are often associated with donor aid opportunities and in many nations, non national demand is unsustainable.
- *Poverty*: income distribution is often very uneven. Rural communities are generally at or below the poverty line. Urban drift ensures a more apparent level of comparative poverty in urban and peri-urban areas.
- *Limited diversification*: small domestic markets with low production levels and relatively un-diversified distribution.
- *Limited capacity*: small size and large distances result in weak public and private sector capacity.
- *Vulnerability*: critical environmental, ecological, and economic risks (exposure to events in global markets) have to be added into the equation - cyclones, earthquakes, tsunamis, volcano, landslides, and the additional challenge of global warming consuming our raised atolls.

Meanwhile, donor aid has moved quickly towards land surveying legislation and regulation in the Marshall Islands, Samoa, and Vanuatu, without providing the necessary educational, training or professional support in place to accommodate such legislation. When considering future needs it is also necessary to consider the developments that have taken place in the developed countries in the region and to see how those would affect the small island states in the region.

## 7. GEOCENTRIC DATUM

Australia, New Zealand and Papua New Guinea have all adopted a geocentric datum and it is assumed that all the Pacific Islands states will follow this move in the near future. The

Permanent Committee on GIS Infrastructure for Asia and the Pacific (PCGIAP), established at the 13<sup>th</sup> United Nations Regional Cartographic Conference for Asia and the Pacific (UNRCC-AP), is coordinating work in the area regional horizontal and vertical datums.

## **8. DIGITAL CADASTRAL DATA BASES**

The value of digital mapping in a land administration system has long been recognised. In the early days, this was achieved by scanning paper documents and producing raster or vector products. For many medium and small scale mapping products this has proved sufficient, these have been used for land use and land planning projects, and remote sensing has provided an economical way of keeping the database up to date.

However, for the purpose of land transactions land surveys to a specified and verifiable accuracy are required. It follows that any digital database used to replace or augment the paper system should maintain the required accuracy and integrity of that system. New Zealand has produced a survey accurate digital cadastral database and their experience has been documented (Spaziani 2002). Spaziani concludes that “The move from paper based records to intelligent survey records in any jurisdiction is not a matter of *if* only a matter of *when*.” It is therefore reasonable to assume that the Pacific Island nations will move to such a system it is just a matter of time. Indeed Kiribati, Fiji and Samoa have already begun the process.

## **9. EXPANDING LAND MARKETS**

It is difficult to obtain accurate and up to date statistics for the various categories of land in each country but taking Samoa as an example it is reported that there are three types of land in Samoa (Peteru 2003): Customary Land 81%, Freehold Land 12%, and Government Lands (Public Lands) 7%. The Deeds Registry shows that there had been 12,638 deeds of conveyance registered, which relates to less than 20% of the land in Samoa. Not all deeds of conveyance relate to a single plot of land so it is not know exactly how many plots of land there are but a rough guide to the amount of work involved would be that 1% of the land yields approximately 600 plots.

If the percentage of land available for transfer were substantially increased, as is the intention of many of the land reform policies, then the current resources would be grossly inadequate. For example, it would not be possible for the land surveyors to cope with the demand for surveys and subdivisions. Without planning, it takes at least 6 years to produce a registered land surveyor, so in the short term any increase in the demand for surveys would have to be met by employing expatriate surveyors.

With both Australia and New Zealand experiencing shortages of skilled personnel in this area it is unlikely that the demands could be met from within the region.

## 10. SPATIAL DISTRIBUTION OF LAND

A fact that is quite often overlooked is that the PICs, whilst having relatively small land areas, have huge sea territory. Kiribati is a prime example; the land mass of Kiribati is 811km<sup>2</sup> but this area is made up from 33 islands scattered across 3000km of the Pacific Ocean. Table 1 shows that the EEZ of Kiribati is approximately 1 million square kilometres. Although most of this area is not under development now, if we look closer to shore and consider only the territorial seas there is still a vast area for which survey and spatial data are required.

Country	Land Area in km <sup>2</sup>	200nm EEZ area in km <sup>2</sup>	Nations forming Boundaries
Cook Islands	240	3,250,000	Tonga, France, USA, UK
Fiji Islands	18,270	1,135,000	Tuvalu, Solomons Islands, Vanuatu, Tonga
Kiribati	811	1,000,000	Nauru, Tuvalu, USA
Marshall Islands	181		
Nauru	21	431,746	PNG, USA, Kiribati
Niue	260	400,000	Tonga, Western Samoa USA
Samoa	2,934	96,000	USA, France
Solomons Islands	28,450	1,500,000	PNG, Vanuatu, Fiji Islands, Tuvalu, France
Tokelau	10		
Tonga	748	600,000	Fiji, Western Samoa, Cook Islands, New Zealand
Tuvalu	26	1,000,000	Kiribati, Fiji Islands, Solomons Islands
Vanuatu	12,200	870,000	Solomons Islands, Fiji, France

**Table 1: Source UNCLOS – United Nations Commission on the Law of the Sea.**

Many developed nations are looking toward establishing a marine cadastre, and indeed much of the existing legislation in the region regarding the environment and conservation requires spatial data in the form inventory mapping.

## 11. SPATIAL DATA INFRASTRUCTURES (SDI)

The widespread use of spatial data and has resulted in multiple datasets relating to the same spatial location. Quite often, these datasets are incompatible and it is the function of a spatial data infrastructure to improve the efficient sharing of data between the various stakeholders in the spatial data community. In Fiji for example, there are currently 29 sources of spatial data, but few of these SDIs are capable of ‘talking’ to one another. At present, there are user groups but no professional body overseeing developments in this area. There is a need for capacity building in this area.

The South Pacific Applied Geosciences Commission (SOPAC) was established in 1972 and it assists its member nations in the region in the assessment, exploration and development of their near shore and offshore mineral and other marine non-living resources. It provides baseline data for coastal engineering and development, hazard evaluation, hydrography and survey activities, Geographic Information Systems; the environmental affects of physical modifications to the coast, fresh water and sanitation issues. During the course of its activities it has provided training particular in the area of computer software use for GIS. SOPAC have taken the regional lead in Community Risk Programmes in the Pacific, which is of significance to FIG WG8.4, in particular SOPACs Draft Pacific Regional Position Paper for the Second World Conference on Disaster Reduction.

## **12. FINDING A WAY FORWARD**

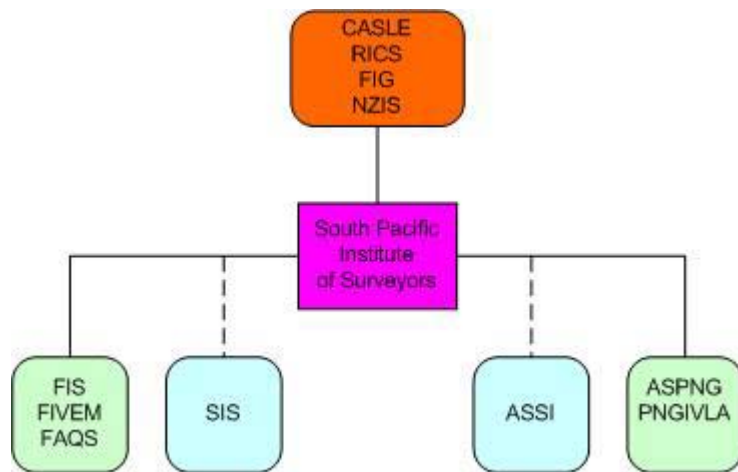
This paper has provided a background on the Regulation, Registration, and Representation of Surveyors in the Pacific Islands Countries. As stated, the only regulation, registration and representation occurs in Papua New Guinea and Fiji. Other PICs are introducing legislation for registration, without the representation (or support) of a professional member organisation.

Meanwhile, land tenure and land policy initiatives are taking place, but donors and member governments have forgotten to bring land surveyors along in the ‘development’. Twenty – first century land policy and the individualistic aspirations supported by proponents of a de Soto approach to titling cannot be accommodated with the present capacity of the island countries. The University of the South Pacific has identified the demand, and is striving to develop educational initiatives in Geomatics, but these require a clear professional career structure for graduates to succeed in meeting the aspirations of the region.

It was suggested at the CASLE meeting in Wellington (1973) that “In order to foster the spirit of CASLE perhaps some formal South Pacific body could be formed to unite common interests and in particular common problems that exist in the smaller developing countries”. More than three decades later, this challenge needs urgent attention.

What is now needed is international NGO support under the umbrella of FIG to catalyse the provision of a regional surveying body to assist in the evolution of the profession in the Pacific Islands. Whilst there is not current capacity for countries to establish their own institutes (which is currently a requirement for FIG representation), there is scope to establish a South Pacific Institute of Surveying (SPIS) to represent the countries in the region, to serve and promote the broad FIG definition of a surveyor (see Figure 3 for a possible model).

This new Institute would be able to serve the ‘special’ needs of the region and could be evolved through the communication resources of USPNet, which provides dedicated audio and video satellite facilities to the twelve member countries of the University of the South Pacific. There is potential to initially host the SPIS within the proposed School of Island and Ocean Resources at the University of the South Pacific to harness the telecommunications resources and facilitate good governance and best practice, sensitive to regional needs.



**Figure 3:** A possible professional surveying structure for Pacific Island Countries (Curley & Boydell for this paper)

### 13. WHAT IS THE IMPACT OF FURTHER INACTION?

A “booming” property market and tourism industry are inflating prices in Fiji, which is putting much of the property out of reach of the average Fijian. It is also presenting opportunities for corruption and in particular money laundering. The Reserve Bank identified 900 transactions that were “suspect” during 2003, as people are bringing in “dirty money” and buying property with large amounts of cash, or transacting offshore. Much of this land is freehold, and there is the likelihood of further related property disputes relating to it. The proposed Financial Services legislation in Fiji, with associated formalisation of the Real Estate sector, highlights the need for registration, regulation, and representation of the profession.

This paper has reintroduced the debate on the Regulation, Registration, and Representation of Surveyors in the Pacific Islands Countries in the hope of gaining some institutional support from FIG to assist in building land surveying /geomatics capacity (as well as the broad definition of a surveyor) within the region.

### REFERENCES

- Boydell, S. and Shah, K. "An Inquiry into the Nature of Land Ownership in Fiji." Presented at *Traditional Lands in the Pacific Region: Indigenous Common Property Resources in Convulsion or Cohesion*, Brisbane, Australia, September 7-9, 2003
- Boydell, S. “Alleviation of Poverty: the role of surveyors, land economists and related professions in the Pacific Islands”. Presented at the Commonwealth Association of Surveying and Land Economy (CASLE) *Technical Conference for Built Environment Professions: "Alleviation of Poverty: The Role of Surveyors, Land Economists and Related Professions"*, Anglia Polytechnic University, Chelmsford, UK, 21-24 April 2004.



- Coutts, B. *(De) Regulation of the New Zealand surveyors*. New Zealand Surveyor No. 293, pp 20-24. June 2003.
- Dutt, B. & Volavola, M. *History of Land Surveying in Fiji*, Ministry of Lands and Mineral Resources, October 1977
- Enemark, S. *Integrated Land and Environmental Management – A Conceptual Approach*. Plenary paper presented at FIG Working Week, Athens, Greece, 22-27 May 2004.
- ESCAP. (n.d.). *Urban Land Policies for the Uninitiated* [Website]. United Nations Economic and Social Commission for Asia and the Pacific - Human Settlements Division n.d. [cited 12/05/2002 2002]. Available from [http://www.unescap.org/huset/land\\_policies/index.htm](http://www.unescap.org/huset/land_policies/index.htm).
- Henao, L. *Voluntary Registration of Customary Land in Papua New Guinea*. 37<sup>th</sup> Survey Congress, Association of Surveyors of Papua New Guinea. Holiday Inn, Port Moresby . Papua New Guinea 2003
- Larmer, M.J. *Report on Papua New Guinea*. Seminar on Surveying and Land Economy in the Pacific. Organised by CASLE, Wellington, New Zealand 21 March 1973. Published by Commonwealth Association of Surveying and Land Economy, 12 George Street, London, SW1P 3AD. England, 1973.
- Mastamak, S.J. *The Land Surveyors of Papua New Guinea*, Crawford House Publishing, Adelaide, 2001.
- Miles, G. *Pacific Islands Environment Outlook, Global Environmental Outlook (GEO) of UNEP*. Apia, Samoa: Co-publication of SPREP, UNEP and EU, 1999.
- Mohammed, E. *Cadastral Surveying in the Fiji Islands*. Pacific Collection, USP Library 1966.
- Peteru, M. V. *Land Registration and Titling Process in Samoa (LRTP)*, Samoa Infrastructure Asset Management Project Phase-2, Samoa Government, Apia, Samoa. September 2003.
- Spaziani, D. *Constructing a Survey Accurate Digital Cadastre*. FIG XXII International Congress, Washington, D.C., USA. April 19-26, 2002.
- Williamson, I. P. *The Cadastral Survey Requirements of Developing Countries in the Pacific Region with Particular Reference to Fiji*. 23<sup>rd</sup> Australian Survey Congress, Sydney, Australia. 1981

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**Spike Boydell** PhD FRICS FIVEM is a Chartered Surveyor with a background in valuation, environmental issues, land tenure, and sustainable development. As Associate Professor and Head of the Department of Land Management and Development at the University of the South Pacific, based in Suva, Fiji, he provides academic teaching, research, consultancy and professional liaison leadership in property valuation, land management and environmental issues. With a strong emphasis on the 'three pillars' of sustainable development, the Department of Land Management and Development is involved in all aspects environmental, economic, geographic, legal and social information for prudent decision-making by regional governments, organizations and individuals in the South Pacific Region. Spike is a UN Visiting Expert in Land Tenure, RICS International Native Title Spokesperson, RICS International Environment Faculty Board Member for Oceania, and a Fellow of the Institute of Valuation and Estate Management of Fiji. He is currently Chair-elect (2006-10) of FIG Commission 8 (Spatial Planning and Development).

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