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Transport Sector Unit, Infrastructure Department
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Tonga Transport Sector Review

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The World Bank

Tonga Transport Sector Review

Final Report

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The report was prepared under the direction of William Paterson by a team comprising David Bray, Philip Sayeg, Glen d'Este and John King, based on information collected in late 2004, and reviewed by Kenneth Gwilliam.

Glossary

AADT	Average annual daily traffic	MOP	Ministry of Police (Prisons and Fire Services)
ADB	Asian Development Bank	MOT	Ministry of Transport (proposed)
AusAID	Australian Agency for International Development	MOW	Ministry of Works (and Disaster Relief Activities)
b	billion	NZAID	New Zealand Agency for International Development
BAF	Bunkering Adjustment Factor	pa	per annum
CAF	Currency Adjustment Factor	pax	passengers
CEO	Chief Executive Officer	PAT	Ports Authority Tonga
CIQ	Customs, Immigration and Quarantine	PE	Public Enterprise
CPD	Central Planning Department	PFL	Pacific Forum Line
CSO	Community Service Obligation	PIASA	Pacific Islands Air Services Agreement
EU	European Union	PMS	Pavement Management System
GDP	Gross domestic product	PRTS	Pacific Regional Transport Study
GOT	Government of Tonga	PSL	Port Services Ltd
GRT	Gross Registered Tonne (a measure of ship size)	RMA	Road Management Authority (possible agency)
IMO	International Maritime Organisation	RMMS	Road maintenance and management strategy
ISPS	International Shipping & Port Facilities Code	RORO	Roll-On/Roll-Off
km	kilometre	RUM	Road User Management
LTA	Land Transport Authority (possible agency)	SOLAS	International Convention for the Safety of Life at Sea
m	million	SCPL	Shipping Corporation of Polynesia Ltd
MAC	Ministerial Advisory Council (proposed)	SDP	Strategic Development Plan
MCA	Ministry of Civil Aviation	t	tonne
MLSNR	Ministry of Lands, Survey and Natural Resources	TAL	Tonga Airports Ltd (proposed)
MMP	Ministry of Marine & Ports	TEU	Twenty-foot equivalent unit (container size)
MOF	Ministry of Finance	TOR	Terms of Reference
MOLCI	Ministry of Labour, Commerce & Industries	TPPU	Transport Policy & Planning Unit (in proposed MOT)
		TMPI	Tonga Maritime Polytechnic Institute

Tonga at a glance

Geography

Land area 747 sq km

Population

1976	90,085
1986	94,649
1996	97,784
2000	100,279

Population growth

1976-1986	0.50%
1986-1996	0.33%
1996-2000	0.63%

Economy

	Pa'anga m. (current prices)	GDP Real growth (%)	Inflation (GDP deflator) (%)
1999	257.5	2.3%	7.9%
2000	269.9	5.6%	-0.7%
2001	285.5	2.5%	3.2%
2002	319.0	2.6%	8.9%
2003 (provisional)	361.0	3.1%	9.8%

GDP/capita

(current prices)

1988	US\$ 1,735
2002	US\$ 1,433

Exchange rate

	Pa'anga per US\$1.00	Pa'anga per NZ\$1.00	Pa'anga per A\$1.00
2000 (mid-year)	1.72	0.82	1.02
2001 (mid-year)	2.15	0.89	1.10
2002 (mid-year)	2.20	1.02	1.21
2003 (mid-year)	2.20	1.25	1.41
2004 (mid-year)	2.04	1.29	1.42
2004 (1 Nov)	1.96	1.35	1.47

Transport

Registered vehicles

1992	8,447
2003	14,415

Length of major road

2003	646 km
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Executive Summary

Tonga faces many challenges to sustain and develop the internal, regional and international transport linkages that are critical to its economic development. Considerable infrastructure has been developed, but is at risk of deterioration due to inadequate maintenance and reinvestment in life-expired assets. In civil aviation, the national carrier collapsed in 2004 and some recent decisions appear to be risky and lack a transparent plan. The management and financial performance of the corporatised port authority is being challenged. Tonga is faced with new international requirements for port and airport security that have major implications for trade with key partners. Government institutional arrangements in the transport sector are fragmented. Management capacity is weak. Resources are limited.

The government has committed to policy and institutional reforms in the sector, including privatization of the international airport and the establishment of a new Ministry of Transport. As part of this reform agenda, the government is keen to look at the options to separate regulatory and service delivery functions, including opportunities to corporatize or privatize some functions. The current Review addresses these matters.

The overall and medium-term aim of the current Review is to identify ways in which the structure and efficiency of the transport sector in Tonga can be improved. Its outputs are to:

- provide a coherent and consistent analysis and evaluation of the transport sector in Tonga, recommending appropriate directions and actions to address the issues identified;
- identify appropriate institutional structures for the transport sector such that proper roles are provided for policy and planning, regulation, infrastructure and operations management and service delivery;
- assess options and provide recommendations for sustainable financing, including opportunities for corporatisation and privatization; and
- advise on infrastructure development and maintenance priorities across all sectors.

Our approach then has been to identify where improvements can be made including opportunities where bold reform may be possible, and in other cases to identify a direction of change and initiate actions that can be built on over time.

Transport sector objectives and policy framework

The government has initiated a reform program. Its development objectives and reform priorities are laudable, and provide a framework for development of the transport sector. This Review suggests that two principles are needed to provide further guidance to those responsible for implementing government policies in the transport sector:

- improve economic efficiency, which will be reflected through:
 - decisions on policy reform and recurrent and capital spending should be made on the basis of maximising net social benefits, which is the principle that underlies cost-benefit analysis;
 - infrastructure and services should be provided at the lowest possible cost;
 - government intervention in the transport market should be minimised, with a focus on safety, security and the environment; and

- where social equity warrants the provision of subsidies, this should be provided:
 - through community service obligations (CSOs) to ensure that the cost of the assistance is understood and acknowledged as being a worthwhile use of the funds involved; and
 - with the entity to provide the assistance generally selected on the basis of competitive tendering to ensure that the economic efficiency principle is met.

Recommended transport sector objectives for the government that are a consequence of the economic efficiency principle and which will enhance the capacity of the sector to support national economic and social development are :

- **reduce the cost of transport infrastructure and services** – driving down the cost of providing port, airport and road infrastructure and services to reduce transport costs, and hence reduce the costs of imports and improve Tonga's international competitiveness;
- **improve the sustainability of transport infrastructure provided by the government** – ensuring adequate maintenance and rehabilitation of productive transport infrastructure to minimise the long term cost of providing the infrastructure and ensuring its continuing availability; and
- **promote and make greater use of a competitive private sector** – ensuring a competitive private sector and making greater use of the private sector to reduce the cost of government activities (eg road works) and to obviate the need for government economic regulation of transport services.

These matters are central to the current Review and underlie the formulation of infrastructure, service and institutional development needs in the transport sector.

Enhancing institutional arrangements

Current institutional arrangements do not provide an adequate long-term basis for managing the Tonga transport sector and should be restructured. There is limited integration of transport policy across the modes, no agency is responsible for management of the land transport sector, and limited skills are dispersed across a number of agencies.

Establishment of a Ministry of Transport (MOT) that would bring together responsibility for all modes of transport into a single agency provides a sounder basis for managing the Tonga transport sector. The MOT model is a tried and proven model that has been adopted in many countries in the Pacific and throughout the world. It provides an efficient mechanism for making best use of limited resources in the transport sector and for better integrating transport policy and programs.

The preferred arrangement is an integrated model with MOT generally structured along modal lines and taking responsibility for planning, policy and regulation for all modes of transport, and for program management in the land transport sector. Implications for existing agencies are:

- the Ministry of Civil Aviation would cease to exist and its staff would be split between MOT and a corporatised airport authority;
- the Ministry of Marine and Ports would cease to exist and its staff would be split between MOT and Ports Authority Tonga (PAT);

- PAT would take over responsibility for operation of all sea ports;
- responsibility for road program planning and management would transfer from the Ministry of Works (MOW);
- MOW could provide construction and maintenance services under contract to MOT; and
- vehicle registration, driver licensing and traffic management functions would be moved from the Ministry of Police (MOP) to MOT, but traffic enforcement would remain the sole responsibility of MOP.

A Transport Policy & Planning Coordination Unit should be established within MOT with an overarching role in policy, strategic planning and CSOs across all modes of transport. It is proposed that detailed work with regard to economic regulation in the transport sector be undertaken by MOT, and recommendations submitted to MOF for approval. This should ensure consistency within government with regard to economic regulation in the Tongan economy whilst supporting policy and regulatory analytical capability in MOT.

A program of institutional strengthening and capacity building is essential to ensure successful establishment of an effective MOT (and a corporatised airport authority and to support further capacity building for Ports Authority Tonga - see below). The work will need to management and development of corporate systems including inter-related strategic, corporate and work plans needed for agencies to effectively undertake their work. The latter should include a ten year multi-modal National Transport Strategy that provides a framework for all government activities in the transport sector.

Particular attention also needs to be given to developing skills in planning and policy that are generally not currently present, monitoring public enterprises (with the Ministry of Finance) to improve their effectiveness and accountability, regulation of transport services to focus on essential needs only, and making effective use of the private sector.

Developing the aviation subsector

It is recommended that the government should move on from the current structure wherein airports are managed and operated within a ministry structure to improve accountability and efficiency. The preferred option for Fua'amotu airport is to establish a corporatised airport authority as a public company under the Companies Act, notionally called Tonga Airports Limited (TAL) in the current Review.

Current user charges at Fua'amotu airport generate revenue that meets only 56 percent of the direct cost of operating, maintaining and reinvesting in life-expired assets (estimated at 3.8 million Pa'anga per annum in mid-2004 prices). A program to achieve full recovery of these costs for Fua'amotu airport over say 5-7 years needs to be developed and implemented, with a complementary CSO agreement between MOT and TAL to provide a subsidy to meet net declining costs over this period.

TAL should also be responsible for other airports in Tonga. MOT and TAL in consultation with local communities should develop and manage CSO agreements for provision of non-commercial services by TAL. A social obligation should be placed on local beneficiary communities to contribute to the cost of local airports.

Implementation of these changes requires an improved regulatory environment especially with regard to fiscal and economic regulation, assistance for detailing and implementing the new

organisation, establishment of cost-recovery and productivity targets including a time-bound target for achieving full recovery of direct costs for Fua'amotu airport, and establishment and funding of CSOs for the provision of subsidies to TAL. These matters should ideally be addressed as part of a broad-based Business Case for the establishment of TAL.

Some essential investment will be required in airports, primarily at Fua'amotu, over about the next five years, including security fencing, runway refurbishment and new fire engines. Investigation and planning for this investment needs to commence, and careful analysis undertaken to ensure the investment is justified.

MCA has suggested that specialist firms be engaged to provide rescue and fire services, technical equipment and related services, and air traffic services at Fua'amotu airport. The contracts will have a substantial impact on TAL's performance. It is recommended that TAL be responsible for pursuing the matter, and prepare a business case to justify its decision.

A single domestic airline policy requires considerable government skills to be effective. A better approach to regulating domestic air services is to facilitate a contestable market with no barriers to entry and a willingness to see incumbents displaced by better operators.

Immediate steps need to be taken to address concerns expressed by the International Civil Aviation Organisation on safety related matters.

These matters should be addressed in a strategic ten year Aviation Strategy to be prepared by MOT, and an Airport Development Plan and more specific five year Corporate Plan that should be prepared by TAL.

It is recommended that technical assistance be provided to TAL to support its establishment, initial operation and planning for its continued development.

Improving management of road infrastructure

The direct financial cost to the government of providing the current road system for which MOW is responsible on a sustainable, operational basis is 5.3 million Pa'anga per annum (in mid-2004 prices). This amount should be recovered from motorists. The amount is three times current annual expenditure of 1.7 million Pa'anga. In the absence of increased expenditure, road condition will deteriorate, and total transport costs will increase.

A rise in fuel tax of 0.10 Pa'anga per litre for petrol and diesel used by transport vehicles and considerably higher registration charges for heavy trucks is recommended to ensure motorists better meet the costs that they impose on the government and generate sufficient revenue to allow the government to provide the funds needed to sustain the current road system. Better quality data on the number of registered vehicles and amount of fuel used could indicate a need for higher charges to generate sufficient revenue to meet the cost of sustaining the road system, and could result in the need for a slightly lesser rise in registration fees for heavy trucks.

Yet further increases in charges will be required if it is desired to upgrade the road network eg sealing and widening current roads and building more roads.

The proposed 0.10 Pa'anga per litre rise in fuel tax compares with a current retail price of petrol on Tongatapu of 1.70 Pa'anga per litre, which is 0.46 Pa'anga per litre more than the average price in 2003. Fuel taxes in Tonga are relatively low compared with other Pacific island countries. Exemptions from fuel taxes to some government agencies, and any others

that may exist for road transport vehicles, should be withdrawn immediately because of the distortions they cause to decision making on purchase and use of vehicles.

It is not recommended that there be a formal system of hypothecating revenue from specific charges to a fund solely for road expenditure. Rather, there should be an informal system to ensure that, on average over time, revenue from vehicle registration and driving licence fees and about 0.13 Pa'anga per litre of fuel tax is directed to meeting the cost of providing current roads. If the government is unable to sustain this commitment, establishment of a road fund should be reconsidered.

Road network planning, road upgrading and asset management proposals should have a clear rationale and the full life cycle costs and benefits should be taken into account. Projects that meet defined economic criteria should be prioritised and presented in a rolling work program that is consistent with the ten year Road Strategy.

A road maintenance and management system is essential to the effective and efficient management of roads in Tonga. A new approach is recommended, comprising occasional use of a sophisticated model to develop a ten year strategy and simpler tools for program management in intermediate years.

Better management of road transport

There are considerable inconsistencies between historic trends in the number of registered vehicles, revenue from vehicle registration, economic growth and fuel use that cast doubt on the reliability of current data on the number of registered vehicles. The current vehicle registration system needs to be improved, including better categorisation of vehicles, consistency in application of the system, recording of vehicles withdrawn from use, and introduction of a computerised motor registration system implemented that is appropriate to Tongan conditions and is also more customer-focussed. Improved driver training is recommended.

The current system of vehicle inspection needs to be improved, and on-road enforcement of unsafe vehicles enhanced. Compulsory Third Party vehicle crash insurance should be introduced in Tonga to ensure that people who are injured in an accident through no fault of their own are adequately protected from personal injury costs.

Changes should be made so that routine traffic infringements can be dealt with using administrative means (as now occurs with speeding fines) rather than need be taken to court as is now the case. This will free up Police resources, reduce costs and encourage improved enforcement of traffic rules.

The current regulation of truck tariffs should be abandoned. The practice places an unnecessary constraint on a competitive private sector and provides no clear benefits to the community. While the government may wish to continue to establish an upper limit on fares for standard bus and taxi services, operators should be permitted to charge lower fares. Fares for premium and special services should not be controlled to facilitate innovation and new services. Responsibility for price regulation should be shifted to MOT and MOF to ensure a consistent approach to economic regulation.

Improved road infrastructure and land transport management should be addressed in a Land Transport Strategy to be prepared by MOT.

Enhancing port management

It is recommended that explicit CSO arrangements be implemented to support the cost of providing and maintaining minor ports and harbours. Profits from operation of the Port of Nuku'alofa should not be used to cross-subsidise other ports under an expanded role for PAT because it would raise prices at Nuku'alofa and hence impair the international competitiveness of the port. MOT and PAT in consultation with local communities should develop and manage CSO agreements for provision of non-commercial services by PAT. A social obligation should be placed on local beneficiary communities to contribute to the cost of local ports.

In general, mechanisms for involving local communities, MOF and port users in the process of setting PAT's strategic direction should be strengthened, including revitalising the Port Users' Advisory Committee at Nuku'alofa and establishing an advisory committee in each island group. (Similar arrangements should be established for TAL.)

It is not clear that currently proposed investment at Nuku'alofa and other ports is worthwhile. The investments should be postponed pending the development of a port development strategy that demonstrates financial justification. Approval by the PAT Board (and MOF through the Board) of any major capital investment should be contingent on presentation to the Board of a detailed business case that includes consideration of the operational need, commercial viability, long-term sustainability, return on investment, effect on GOT dividends and assessment of project risks.

The performance of the PAT Board in meeting government needs and ensuring efficient commercial performance requires MOF representation and increased business and shipping industry experience on the Board.

Time-bound financial performance targets should be set for PAT and closely monitored. This should include a target rate of return on shareholder equity and a target of increasing port efficiency and reducing the real cost of port services. A comprehensive review of port tariffs, performance indicators and targets is urgently required. It is recommended that a cap should be placed on increases in port charges and cargo handling tariffs at international terminals of "inflation-2" percent to ensure productivity increases and lower port charges.

It is also recommended that Security should be established as a separate Profit Centre in PAT accounts to ensure its costs are clearly enunciated.

These matters should be addressed in a strategic ten year Maritime Strategy to be prepared by MOT, and a Ports Development Plan and more specific five year Corporate Plan that should be prepared by PAT.

Other maritime development

Consideration needs to be given to the current and future prospects of the Shipping Corporation of Polynesia Limited (SCPL), including consideration of long-term fleet requirements and the appropriateness of continued public ownership. A strong case for continued public ownership is not evident given a private shipping industry. Services to outer islands can be secured through subsidised services arranged by the government and selected by competitive tendering.

Continued capacity building is needed to ensure a sustainable capability for safety and environmental regulation of the maritime sector in Tonga

An independent review of the long-term viability of the Tonga Maritime Polytechnic Institute is needed to establish the resource requirements to revitalise its role in the Tonga maritime sector, and other options for providing education and training services to the Tonga maritime sector.

Conclusion

There is potential for a more focussed and integrated approach to government management of the transport sector in Tonga. Essential to improvements is the recommended:

- focus on reducing the cost of transport infrastructure and services, improving the sustainability of transport infrastructure provided by the government, and promoting and making greater use of a competitive private sector; and
- reorganisation of government agencies and associated improvements in their management, skills, and capacity to better undertake planning, monitoring of public enterprises, regulation of transport services and use of the private sector.

It is recommended that the proposed changes to institutional arrangements be implemented as soon as possible. Considerable work will be required to effectively execute the changes.

Implementing the changes should result in improved transport sector management and operations. However, achieving the full benefit of the changes needs a program of institutional development, in particular:

- ensuring that the functions and organisational arrangements of the new agencies are clearly defined and well understood by their future staff, by other government agencies and by other stakeholders;
- establishing corporate systems needed to support the effective execution of agency responsibilities; and
- capacity building of staff of the organisations to fulfil their responsibilities.

1. Why Undertake a Transport Sector Review

1.1 Background

Tonga's internal, regional and international transport linkages are critical to its economic development. Facilitating the movement of people and goods both internationally and domestically between the four main island groups is a key factor in expanding Tonga's trade opportunities.

The government is keen to promote tourism as a source of growth, which requires reliable external and internal aviation services. However, there is a history of poor decision-making and lack of accountability and transparency in aviation. The government-owned airline recently collapsed. Court action has recently been initiated over the issue of domestic airline licenses.

Tonga is faced with new international requirements for port security. These have major implications for maritime trade with key partners such as the US, Australia, New Zealand and other countries.

The institutional set-up in the transport sector is fragmented. Management capacity is weak. Resources are limited. Tonga needs to develop an institutional framework which is appropriate given the levels of human and financial resources which are available.

The government has committed to policy and institutional reforms in the sector, including privatization of the international airport and the establishment of a new Ministry of Transport. As part of this reform agenda, the government is keen to look at the options to separate regulatory and service delivery functions, including opportunities to corporatize or privatize some functions. The current Review addresses these matters.

1.2 Objectives of the Review

The overall and medium-term aim of the current Review is: to improve the structure and efficiency of the transport sector in Tonga.

The short-term objectives for the outputs of the Review as indicated in the Terms of Reference (TOR) contained in Working Paper G are to:

- provide a coherent and consistent analysis and evaluation of the transport sector in Tonga, recommending appropriate directions and actions to address the issues identified;
- identify appropriate institutional structures for the transport sector such that proper roles are provided for policy and planning, regulation, infrastructure and operations management and service delivery;
- assess options and provide recommendations for sustainable financing, including opportunities for corporatisation and privatization; and
- advise on infrastructure development and maintenance priorities across all sectors.

1.3 Approach

Reform and development of the transport sector in Tonga has been the subject of continuing review and improvement. The World Bank's interest goes back many years. In particular, the South Pacific Islands Transport Sector Review in 1989 and the subsequent South Pacific Transport Sector Study in the early 1990s presented a broad overview and development framework. Other strategic and project studies have followed.

The government of Tonga is currently facing a number of specific challenges in the transport sector, including the collapse of the national airline and a need to improve port security. Institutional arrangements in the sector are fragmented, and institutional capacity and resources are limited. However, the government has committed to policy and institutional reforms in the sector, notably privatization of the international airport and establishment of a new Ministry of Transport. It will also consider options to separate regulatory and delivery functions, and to corporatize or privatize some functions.

The current situation provides a unique occasion to assist the government to identify appropriate reforms in the transport sector that can support its overall objective of economic and social development, to provide the information that can support government decision-making, and to outline a process for implementation of the reforms.

Our approach then has been to identify where improvements can be made including opportunities where bold reform may be possible, and in other cases to identify a direction of change and initiate actions that can be built on over time.

The work of the Review is documented in this Final Report and associated technical Working Papers. The Working Papers were written to support preparation of the Final Report. In some instances the work of the Final Report extended and varied that reported in the Working Papers. Where differences occur, the work in this Final Report takes precedence.

2. Existing Transport System and Development Principles¹

2.1 Context

The Kingdom of Tonga is located in the South Pacific, between latitudes 15° S and 23.5° S; Longitude 173° W and 177° W. The country comprises about 170 islands. The islands, with a land area of 747 km², are spread over a sea area of about 700,000 km², extending about 700 km from the islands of Niuafo'ou and Niuatoputapu (called the Niuas in this report) in the north to Ata in the south. Only about 36 islands are permanently inhabited.

There are three main island groups: Tongatapu and 'Eua in the south; Ha'apai in the central part of the country; and Vava'u in the north. The Niuas lie further to the north and are closer to Samoa than to Tongatapu. The country is subject to hurricanes, but to a lesser extent than some other south Pacific countries.

Tonga has a population of around 100,000 persons. Population growth was rapid in the 1960s and 1970s but has since slowed, with growth of only 0.3 percent per annum recorded between the census years of 1986 and 1996 (see Table 2.1). Despite this low growth rate, the median age of the population is around 20 years. In part, both factors are attributable to continuing emigration, with perhaps as many Tongans reported to be now living overseas (primarily in New Zealand, Australia and the USA) as in the country.

Two-thirds of the population live on Tongatapu, where population density is the highest in the country. Nuku'alofa and Neiafu (on Vava'u) are the only substantial towns. Much of the population is located in villages that are widely distributed around the islands.

Figure 1 Map of Tonga



¹ More detailed socio-economic data and other supporting data are to be found in:

- Working Paper A for general socio-economic data, a description of the land transport subsector, and an overview of international transport demand;
- Working Paper B for a description of institutional arrangements and performance;
- Working Paper C for income and expenditure of government agencies
- Working Paper D for a description of the civil aviation subsector; and
- Working Paper F for a description of the maritime subsector.

Table 2.1 Population of Tonga

Year	Total		Distribution by age (%)			Total
	Number	Growth (% pa in pre- ceding period)	<20	21-64	65+	
1956	56,840					
1966	77,430	3.1	56	40	3	100
1976	90,090	1.5	56	41	3	100
1986	94,650	0.5	53	43	4	100
1996	97,780	0.3	50	45	5	100

Source: Statistics Department

Recent performance of the Tongan economy is mixed. Gross domestic product (GDP) grew steadily in the six years to 2002-03, at an average annual rate of around 3 percent per annum in real terms. GDP per capita in current prices is around 3,200 Pa'anga (US\$1,430). However growth in GDP has been accompanied by rising inflation and by government budget deficits. Inflation which was subdued during the early and mid-1990s, has been running at a little over 10 percent per annum for the last three years. Much of the inflation has been imported through higher costs and a declining value of the domestic currency.

The structure of the economy has changed little over the last decade. Agriculture accounts for about a quarter of economic activity, and commerce and government together contribute another quarter in approximately equal shares. The Tongan economy is heavily dependent on imports, and around half of government income is derived from taxes on imports. Exports of goods are equal to only a quarter of imports of goods. However, remittance income to Tonga is substantial, and partially offsets deficits in other areas.

2.2 Government organisational arrangements

Under current arrangements, functions and responsibilities in the Tonga transport sector are fragmented across many agencies. There are two Ministries whose core responsibility is transport sector activities:

- Ministry of Civil Aviation (MCA); and
- Ministry of Marine & Ports (MMP).

Other Ministries with direct responsibilities in the transport sector are:

- Ministry of Police, Prisons & Fire Services (MOP);
- Ministry of Works and Disaster Relief Activities (MOW);
- Ministry of Labour, Commerce & Industries (MOLCI);
- Ministry of Lands, Survey & Natural Resources (MLSNR); and
- Ministry of Education, through the Tonga Maritime Polytechnic Institute (TMPI).

Oversight of transport activities and broad strategic direction is provided by

- Ministry of Finance (MOF); and
- Central Planning Department (CPD).

In addition, there are two government owned Public Enterprises (PEs) in the transport sector:

- Ports Authority of Tonga (PAT); and
- Shipping Corporation of Polynesia Ltd (SCPL).

PEs generally operate under the Public Enterprises Act of 2002. This Act sets out the requirements for PEs in terms of accountabilities, reporting and dividend requirements; role, functions and composition of PE Boards; and the role and powers of the Minister for Finance relating to PEs. The SCPL was established in 1979 under the Companies Act.

MOF is the designated shareholder representing government as the owner of PEs declared under the Act. The Act includes provisions for the Minister of Finance to direct a PE to comply with government policies and undertakings. The Act also includes provision for the government to direct a PE to undertake a non-commercial activity in return for compensation from the government (ie provision for community service obligations - CSOs).

Responsibilities in the transport sector are summarised in Table 2.2 and Table 2.3.

The role, functions and responsibilities of Ministries and PEs with direct responsibilities in the transport sector are described in more detail in Working Paper A. It is noted that, at present, there is no agency responsible for land transport policy and planning, despite this being of major importance to the transport system, and there is no agency setting overall strategic direction, guiding principles or coordinating policies for the Tongan transport sector.

Further details of the functions of each of the agencies, the allocation of responsibilities by subsector, and an assessment of current institutional arrangements are provided in Chapter 3.

Table 2.2 Summary of responsibilities for transport sector activities

Function	Transport subsector		
	Land	Aviation	Maritime
Policy	-	MCA	MMP
Infrastructure			
- Planning	MOW	MCA	PAT/MMP
- Construction programming & management	MOW	MCA	PAT/MMP
- Maintenance management	MOW	MCA	PAT/MMP
- Delivery of works	MOW ⁽¹⁾	MOW/private	MOW/private
- Operation	MOW/MOP	MCA	PAT/MMP
- Financing	MOF	MOF	MOF/PAT
Services			
- Provision	private	private	private/PSCL
- Regulation & enforcement	MOP	MCA	MMP
- Safety	MOP	MCA	MMP

(1) The private sector plays a small role in road works, including grass mowing and supply of some aggregate and equipment.

Table 2.3 Introduction to government transport sector agencies

Agency	Responsibilities
Ministries	
Ministry of Civil Aviation	MCA is responsible for the overall administration and regulation of air transport services, including domestic and international policy bi-lateral and multi-lateral agreements, safety, operations etc; operation and maintenance of all public airports throughout Tonga; fire, rescue and security services at airports; air service navigation aids; and meteorological services.
Ministry of Marine and Ports	MMP is the government policy and regulatory agency administering ports and shipping in Tonga. MMP is responsible for maritime policy and planning; maritime legislation and regulations; regulation of safety, security and environmental aspects of shipping in Tongan waters; coordination of search and rescue in Tongan waters; examination and certification of seafarers; operation of the Seamen Employment Office; inspection and registration of ships under the Tonga flag; provision and operation of port and wharf facilities outside Nuku'alofa; and provision and maintenance of navigational aids.
Ministry of Police, Prisons & Fire Services	In the transport sector, MOP is responsible for vehicle inspection and registration; driver testing and licensing; traffic management planning; and traffic enforcement.
Ministry of Works and Disaster Relief Activities	MOW has several functions in the transport sector. It is responsible for construction and maintenance of roads and undertakes most works largely using its own resources inspection of vehicles prior to registration (on behalf of MOP); construction and maintenance of minor sea ports (other than Nuku'alofa); and construction and maintenance of minor airports (other than Nuku'alofa).
Ministry of Labour, Commerce & Industries	MOLCI has two major roles in the transport sector. Firstly, it is the first contact point for all business and industrial investments. Bus and taxi operators, and all freight transport operators in Tonga must be registered as a business with MOLCI. Secondly, MOLCI is the central agency for price control in Tonga. The Competent Authority located under the responsibility of MOLCI sets price controls for fuel prices and tariffs for use of buses, taxis and freight vehicles.
Ministry of Lands, Survey & Natural Resources	Ministry of Lands was formerly responsible for the Tonga roads system and retains responsibility for regulation of over - size vehicles (responsibility for regulation of over - weight vehicles rests with MOP). The Roads Committee, which is managed by the Ministry, coordinates road planning traffic management and use of oversize and overdimension vehicles.
Tonga Maritime Polytechnic Institute (Ministry of Education)	TMPI was established in 1985 to train Tongan seafarers to international standards of competency to meet domestic demand for trained seafarers and develop careers for Tongans in international shipping companies. TMPI is attached to the Ministry of Education and funded through the Education budget.
Public enterprises	
Ports Authority Tonga	PAT manages and operates the Port of Nuku'alofa.
Shipping Corporation of Polynesia Ltd	SCPL provides inter - island shipping services in Tonga, and manages ships owned by GOT.

2.3 Road subsector and land transport

2.3.1 Road network

MOW has conventionally been responsible for construction and maintenance of proclaimed public roads which in general are all roads classified as higher than "access", ie highway, trunk and feeder. Maintenance of access roads is generally the responsibility of property owners and communities served by these roads.

The most recent formally documented road inventory (in 2000) reports MOW being responsible for 646 km of main road and 232 km of other road, giving a total of 878 km (see Table 2.4). The 2000 survey was a technical classification of roads that updated previous work, including reclassification to clarify ownership of roads. It is considered the best available estimate of the principal road network. It is concluded that the primary road network increased over the period 1988-2000, though some roads recorded in 1988 are no longer reported as part of the formal road network.

MOW's 2003 Annual Report shows that the total network length has grown only slightly over the last decade, to 839 kilometres. More significantly, the length that is sealed has more than tripled, with over 75 percent of the network at the end of 2003 reported as being sealed. On the basis of available data and some judgement, the current Review estimates that about 90 percent of the principal network of 646 km reported by the 2000 survey was sealed at the end of 2003.

Table 2.4 Length of the national road network (km)

	Tongatapu	Vava'u	Ha'apai	'Eua	Niuas	Total
1988						
Highway	64.6	9.3	7.0	0.6	-	81.5
Trunk	188.6	93.3	31.1	20.8	29.3	363.0
Subtotal	253.2	102.6	38.1	21.4	29.3	444.5
Feeder	248.0	123.0	145.0	85.0	654.0	666.0
Access	487.0	97.0	55.0	40.0	-	679.0
Total	988.1	322.6	238.1	146.4	94.3	1,789.5
2000						
Maintained by MOW						
Sealed	216	51	13	7	-	287
Gravel	220	40	47	29	23	359
Subtotal	436	91	60	36	23	646
Community & earth roads	82	63	34	29	24	232
Total	518	154	94	65	47	878

Source: World Bank (1992a) for years 1988. Montgomery Watson (2000) for 2000.

Current MOW expenditure on road maintenance is modest - about 1.0 million Pa'anga per annum, with a further 0.1 million Pa'anga of capital works for rehabilitation of existing roads (see Section 5.2). MOW uses the private sector to cut grass on road verges, hires some equipment from the private sector² and purchases most materials from the private sector³. MOW broadly estimates that it undertakes about 80-90 percent of road maintenance using its own resources. MOW also uses its workshops to undertake commercial work for the public to use spare capacity. In the past, MOW has made greater use of the private sector to implement capital works for roads, primarily for externally-assisted projects. MOW does not currently have a list of pre-qualified contractors for road works.

Speed limits in Tonga are 65 kph on rural roads and 40 kph in villages and towns. These limits appear to be appropriate given road standards and land use.

2.3.2 Transport demand

Most vehicles in use in Tonga are imported as second-hand vehicles, being sourced directly from Japan, or from Australia or New Zealand. Vehicles are driven on the left side of the road in Tonga, which implies use of right hand drive vehicles. The reported number of registered vehicles in recent years is shown in Table 2.5. A major review of registered vehicles in 1999

² MOW has a substantial equipment pool of its own (including, at the end of 2003, 4 bulldozers, 6 graders, 9 vibrating rollers, 1 asphalt mixing plant, 2 paving mixers, 2 bitumen kettles, 3 bitumen trucks and some 14 other trucks - some of this is used for port and airport works in addition to roadworks). MOW occasionally hires in other equipment to fill gaps in its needs.

³ MOW has its own quarry for production of hard coral suitable for road surfacing.

resulted in a substantial reduction in 2000, apparently due to removal of vehicles withdrawn from service and faulty records.

Of the total reported vehicle registrations of 14,415 at the end of 2003, only 14 (0.1 percent) were recorded as being left hand drive. There is no evidence that left hand drive vehicles are involved in more crashes than right hand drive vehicles. Of the registered vehicles, about 14,120 are considered to be vehicles used for transport purposes (ie excluding special and nontransport vehicles).

Table 2.5 Reported number of registered vehicles

Year	Private							Government	Total
	Motor cycle	Car	Taxi	Light truck	Heavy truck	Buses	Other		
1998	501	6,251	3,243	6,513	2,108	166	223	652	19,657
1999	551	7,033	3,601	7,176	2,275	180	252	690	21,758
2000	286	4,062	562	3,199	772	77	71	406	9,435
2001	76	4,299	511	2,479	909	75	148	112	8,609
2002	115	5,222	654	3,541	1,693	86	241	401	11,953
2003	129	6,116	812	4,315	2,202	98	294	449	14,415

Source: MOP

A review of trends in recent years indicate substantial anomalies between the number of registered vehicles, revenue from vehicle registration fees, the typical annual distance expected to be travelled by vehicles, and the quantity of fuel used by road transport. An analysis in Working Paper A examines these differences, and concludes that:

- The reported 29 percent average annual rise in the total number of registered vehicles (39 percent per annum for trucks) from 2001 to 2003 is remarkably high and is inconsistent with average annual growth in GDP of about 3 percent per annum.
- In 2003 9276 vehicles were subject to the annual examination required as a pre-requisite for annual vehicle registration. It is possible that some vehicles evade the inspection and there may even be leakage of vehicle registration revenue. However, there is no evidence for the latter, and it is not considered that these factors account for the difference between inspected and registered vehicles.
- Comparison of registered vehicle and revenue from vehicle registrations also indicates anomalies, but on balance suggests that there could be fewer registered vehicles than reported in MOP statistics.
- An apparent modest rise in fuel imports since 2000/01 is inconsistent with the rapid rise in the number of registered vehicles since that time and also suggests that there could be fewer vehicles currently in use than those reported at the end of 2003.

Reported vehicle registrations of 14,415 vehicles at the end of 2003 therefore appear to be overstated. However, estimating the likely number of vehicles in use is not possible given the quality of the available data. In the absence of better data, this Review uses 14,120 registered vehicles used for road transport purposes at the end of 2003 (ie 14,415 total vehicles less non-transport and special vehicles), which travel an estimated 184 million vehicle-kilometres in a year and use 14 million litres of petrol and 9 million litres of diesel.

There is relatively high vehicle availability in Tonga, with average vehicle ownership of 0.9 vehicles per household at the end of 2003 (based on reported vehicle registrations). Extended family relationships and a close knit community further enhance personal access to vehicles.

A disproportionate number of vehicles in Tonga are located in Tongatapu, which has about two-thirds of the people but 84 percent of reported vehicle registrations. Vava'u accounts for 8 percent of the fleet, with the remaining 8 percent of vehicles distributed among the other island groups.

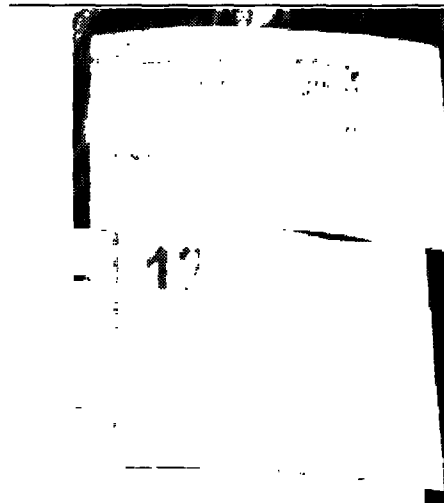
Traffic volumes in Tonga are low. A database for a pavement management system implemented in 2000 reported that in about 1998, the length of the road system carrying various levels of traffic was:

- 2 percent had AADT⁴>6,000;
- 5 percent had AADT between 3,001 and 6,000;
- 7 percent had AADT between 1,001 and 3,000;
- 7 percent had AADT between 501 and 1,000; and
- 79 percent had AADT of 500 or less.

The current Review undertook brief traffic surveys to determine typical current traffic volumes and to obtain data on traffic composition to verify that indicated by vehicle registration data. The surveys were conducted at three sites on Tongatapu over an 11 hour period which is likely to account for most daily traffic. The traffic counts indicated volumes of 8,300 on a principal road within Nuku'alofa, 3,600 on the main road to the airport, and 600 on a major road in a rural location at the eastern end of the island. These volumes reinforce the situation that the quantity of traffic on roads in Tonga is relatively low:



MOW vehicle testing facility, Nuku'alofa

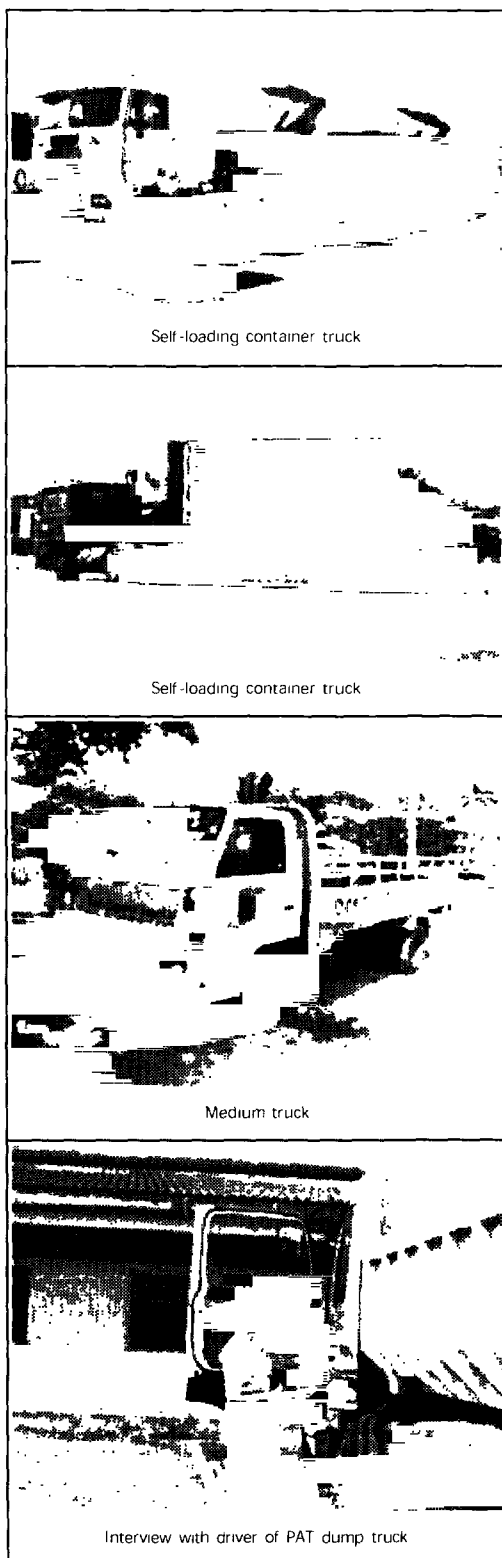


Vehicle safety inspection and registration sticker



MOW vehicle repair workshop, Nuku'alofa

⁴ Average annual daily traffic is the number of vehicles that, when multiplied by 365, gives the total traffic that uses a road in a year.



Traffic composition based on vehicle registration data (multiplied by an estimated average annual distance travelled by vehicles in each category to obtain an exposure rate) and on the traffic surveys conducted by the Review are shown in Table 2.6.

There are limitations with respect to both of these data sources, which may account for the differences. For example, identical types of vehicle are categorised differently in registration statistics (eg some pickups are registered as light trucks, and vans are sometimes recorded as light trucks). The low share of medium and heavy trucks recorded in the surveys may indicate that the survey locations were not major truck routes, but could also cast doubt on the number of trucks implied by registration data. The survey indicated that buses, which represented 5 percent of vehicles, carried 28 percent of person movement.

The performance of the land transport subsector is considered below with respect to: safety; traffic congestion; environmental performance; public transport and taxi responsiveness; and freight transport competitiveness.

Safety

Annual fatalities, expressed as a rate per 100,000 people, appear to have risen from around 8 in the 1980s to 10-12 pa in the late 1990s, and 17.4 pa in 2003. The consistent rise is cause for concern. A previous study of road safety stated that Tonga was, at the time, "a middle range country in its road safety performance. However, there is ample room for improvement" (Ross Silcock Ltd, 1997:7). In 2002, 351 traffic accidents were reported to the police. Of these, 43 involved personal injury or death. About 253, or 68 percent, occurred on Tongatapu, mainly around Nuku'alofa.

Vehicles are required to undergo a safety inspection prior to being registered for the first time and for annual re-registration. The inspection system does not appear to be effective – inspections are seemingly cursory and

some in-use vehicles are clearly in poor mechanical condition. Policing is limited, with only 0.1 percent of reported offences due to driving a defective vehicle.

Table 2.6 Traffic composition

Based on	Motor cycle	Cars and taxis	Pickup, van and 4WD	Buses	Light trucks	Medium trucks	Heavy trucks	Total
Vehicle registration data	0.5%	34.5%	14.2%	1.1%	34.3%	11.8%	3.6%	100.0%
Review traffic survey	0.5%	37.8%	44.4%	5.2%	7.3%	3.4%	1.5%	100.0%

Source Working Paper A

Traffic infringements (other than speeding fines, which are issued on the spot with 21 days to be paid) need to be pursued through court action, with inevitable delay and considerable cost. The Police do not find it worthwhile to issue parking fines for example which may attract a fine of 5 Pa'anga after a court action.

There is no system of compulsory third party insurance in Tonga. Without compulsory third party insurance, third parties injured in an accident due to no fault of their own, may go uncompensated. Informal proposals have been made for the adoption of compulsory third party insurance in Tonga, but the matter appears to have received little serious consideration by decisionmakers to date.

Police have radar for speed enforcement. Drinking while driving is an issue, but the Police do not have a breathalyser – suspected drunk drivers must be tested by a doctor at a hospital. (hospitals are under the management of the Ministry of Health).

A Roads Committee, which is the responsibility of MLSNR, exists – its members are Ministers of the ministry and also the Ministers of Police and Works. It is supported by a subcommittee of senior management from these agencies, but has no secretariat. The Committee serves an advisory and coordinating role. Its role arises from MLSNR's responsibility for defining road rights-of-way and for things that occur on the land, ie it acts as the government 'owner' of the land on which roads are located. Hence the need for coordination regarding matters such as planned roadworks, traffic management and changes in utilities. It also addresses the use of oversize and overdimension vehicles, though there is limited call with regard to this matter. The Committee, which meets about 6 times per year on an as-needed basis, does not have authorising powers. There is also a Road Safety Committee under the Ministry of Health but it appears inactive at present.

Congestion

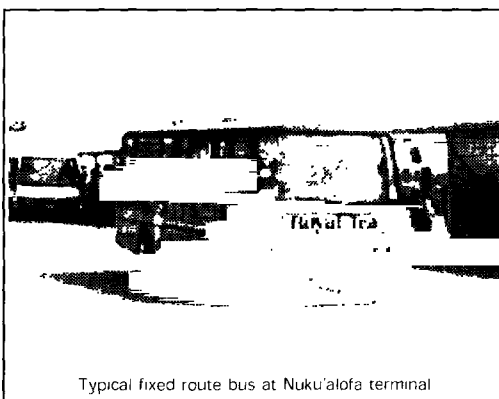
While traffic volume is generally low, some minor congestion is apparent during peak periods at a few main intersections in Nuku'alofa – though it is cited as a problem, perhaps because it is a new phenomenon. The MOP is responsible for identifying the need for signs and other traffic management devices such as channelisation, but has no technical skills in these areas. (MOW is responsible for implementing these measures.) Accordingly, traffic management measures are very limited at present. There is considerable



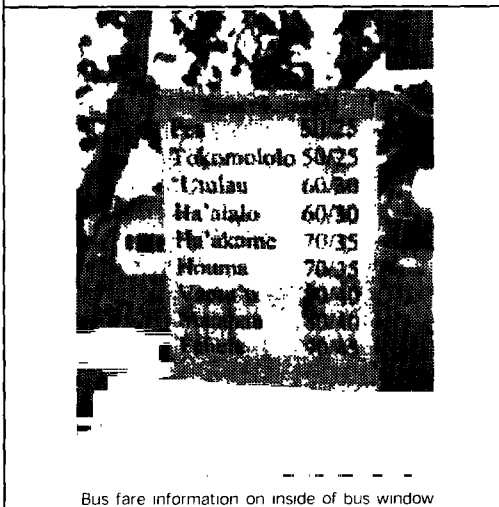
Nuku'alofa main street



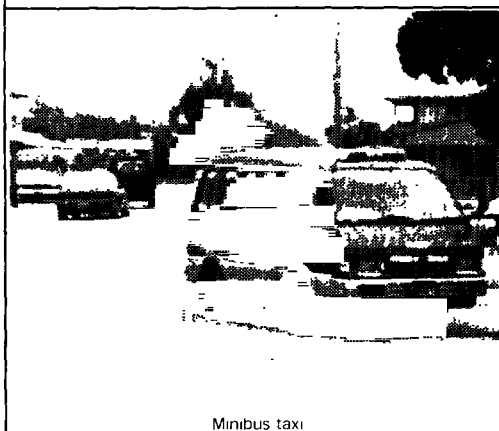
Trial roundabout



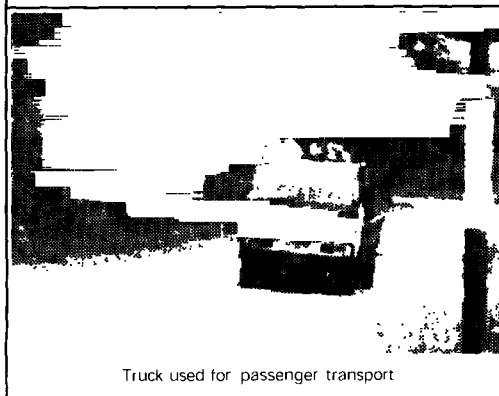
Typical fixed route bus at Nuku'alofa terminal



Bus fare information on inside of bus window



Minibus taxi



Truck used for passenger transport

scope to make greater use of simple traffic management measures to optimize use of the network, minimise congestion and increase safety.

Public transport and taxis

Buses and taxis are defined as public service vehicles. Those wishing to provide services must apply to the MOP and indicate the location of the proposed service. However, applications are effectively treated as a registration because applications appear to always be approved. Public transport vehicles must undergo an annual safety inspection prior to registration, as for all other vehicles in Tonga).

Bus, taxi and goods vehicle tariffs and vehicle hire rates are regulated by MOLCI, as are prices for fuel. Lower than regulated fares may be charged – while it appears that this occurs on occasions, is not widespread. A reported 800 taxis indicates a competitive taxi market.

Most bus operators appear to own one bus and often live in the village they serve. It further appears that all major villages on Tongatapu are served by bus. Much of the length of many bus routes near Nuku'alofa is served by several operators, with only more distant villages served by a single operator.

No restrictions apply on bus operators picking up and setting down passengers even where routes overlap. This Review saw no evidence of unruly driving of buses to compete for passengers. Standing appears not to be permitted. There are no documented bus timetables, though people in villages are reported to know the approximate timetable. Bus services operate each day except Sunday. Representatives of the Bus Industry Association say that buses generally depart from villages only when they have a load of around 50 percent of the seated capacity of a bus. Where a village is served by more than one operator, operators cooperate in setting their departure times.

Buses are generally small, factory-built Japanese vans or coaches such as made by Toyota or Nissan. While precise statistics on bus ownership are not available, it appears that average vehicle ownership would lie between one and two buses

per owner. Bus services are supplemented by light and heavy trucks for informal passenger transport.

Some taxis are owned by small firms. But most taxis are understood to be owned by individuals or families. They are often used for the owners' private purposes, thus allowing owners to access car ownership by offsetting some costs through the joint use for private and public purposes. To some extent, taxis must also supplement the bus system for important trips but as taxi fares are many times higher than that for bus, this role is likely to be relatively minor.

The bus and taxi industry is not supported by government subsidy. It is concluded that bus and taxi services perform adequately (see Table 2.7 for a summary). Close familial relationships at the village level and the availability of private vehicles for personal transport further suggest that adequate and responsive opportunities for personal transport exist.

Table 2.7 Assessment of current regulatory system for public transport

Desirable attributes	Characteristics of current system of public transport regulation
Safe	Provides for buses and taxis to have an annual safety inspection and drivers to be suitably qualified although driver and vehicle testing is perfunctory. Observations indicate that taxi and general vehicle condition is very poor despite inspection. Instances of unruly driving by bus drivers are rare. There is no evidence that buses are over-represented in crash data and are relatively safe.
Competitive	There are few formal controls on market entry for taxis and buses – a business licence is required for either bus or taxi operation. Buses compete on sections of road where their routes are coincident.
Market responsive	There appears to be no price competition (MOLCI approved fares are charged) although fare discounting is not illegal. Because of the large supply of taxis, fare discounting is more prevalent with taxis and buses. Bus operators appear somewhat responsive to market needs in terms of service frequency. Newish buses are being introduced on some routes and these appear to be quite attractive and comfortable. However, the current regulatory system does little to encourage innovation eg premium services such as express services using higher standard vehicles.
All significant demand is served	It appears that all villages are served by buses even though services may not be ideal. Taxis supplement bus services by providing services on demand and at times buses do not operate. Trucks are used informally to carry passengers in rural areas and between rural areas and towns.
Cost-effective	No government subsidy is required.

Freight Transport

There were a reported 2,200 heavy trucks at the end of 2003 - most are used for own account trucking, but a few are also available for "hire and reward" services. The number of heavy trucks is reported to have tripled from 2000 to 2003, remarkable growth if it is accurate. There are also a reported 4,300 light trucks which from time to time carry freight for hire and reward or for their own private or business purposes. The number of light trucks reportedly increased by 30 percent from 2000 to 2003.

There appear to be few large truck fleets owned by a single company or person. For example, Taumoepeau, which appears to be the only company that has large trucks for hire and reward, has a fleet of five large trucks. Other large fleets of trucks identified are concrete batching companies (less than 5), a major quarry (5), and Royco (9).

There is no evidence that the industry is constrained by regulation or that there is any dominant private monopoly. Despite price regulation by MOLCI, tariffs are in practice

negotiated. The large number of trucks and ownership structure indicates the industry is likely to be fairly competitive. There is no evidence that safety of trucks or the quality of driving is a particular issue. Given this situation, there appears to be little need for continued regulation of freight vehicle tariffs by MOLCI.

Environment

There are no pressing air and noise pollution problems in Tonga, although unpleasant odours from polluting vehicles can be experienced close to the road side particularly in built-up areas.

As there is almost no development of roads on new alignments in Tonga or to date of road capacity expansion through widening, the issue of direct negative social or environmental impacts on villages and other communities has been minor. However, there appears to be scope for developing traffic calming measures in residential and sensitive areas and opportunities to improve conditions to allow pedestrians to cross roads safely.

2.4 Maritime subsector

2.4.1 Ports facilities and vessels

There are two principal ports for international traffic:

- Nuku'alofa (Queen Salote Wharf), and
- Vava'u (Queen Halaevalu Mata'aho Wharf, Neiafu);

and several ports with regular scheduled inter-island shipping services:

- Pangai (Lifuka) and in the Ha'apai Group (Ha'afeva),
- 'Eua (Nafanua Harbour), and
- at Niuatoputapu and Niuafu'ou in the Niua Group.

In addition, there are small wharves, jetties and landings on the smaller islands, often accessed by channels blasted through fringing reefs, particularly in the smaller and remote islands of the Ha'apai and Vava'u Groups. Other islands are serviced by charter and are accessed by landing barge or anchoring offshore and transfer to small boats.

Tonga port facilities were been progressively upgraded over last 20 years under a series of AusAID, ADB and EU aid projects since the mid 1990s. A major upgrading of port and harbour infrastructure was completed in 2000 under the ADB Tonga Transport Infrastructure Project (Loan 1303-TON), and the EU has subsequently assisted with upgrading of navigation aids and minor works.

Port infrastructure for cargo and passenger shipping is generally in good condition, and suitable for current and expected needs (PRTS 2004). Channel and berth depths are good and berth lengths are adequate. In addition, current utilisation of international berths at Nuku'alofa is low and there are few delays caused by congestion, except during the peak of the squash season. Maritime infrastructure needs are for construction of jetties at some outer islands; upgrading of navigational aids for inter-island shipping; and pavement maintenance at the international container terminal at Nuku'alofa. The pavement is uneven and breaking up in places and requires maintenance. PAT and MMP infrastructure development programs are discussed in Chapter 6.

SCPL currently operates two vessels on inter-island routes in Tonga:

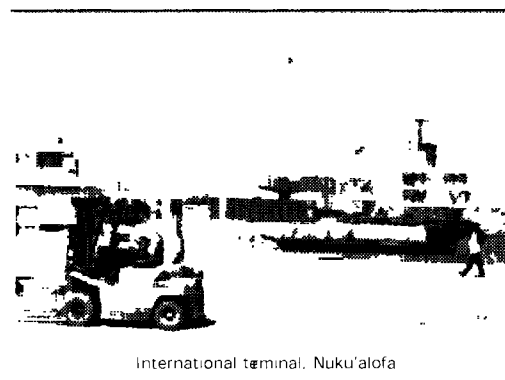
- *MV "Olovaha"*, a passenger/vehicle ferry built in 1981, which carries 350 pax and 300 tonnes of cargo and operates a weekly service to Ha'apai and Vava'u and a bi-monthly service to the Niuas; and
- *MV "Otu Tonga"*, a landing barge built 2001, which operates regular service to 'Eua, and charters to Ha'apai, Vava'u and the Niuas.

The vessels are owned by the government (ie not SCPL). *MV Olovaha* is old and nearing the end of its economic life, though there remains an outstanding loan commitment from its purchase. SCPL also manages a small container vessel that is currently on charter to a New Zealand company, and a petroleum products tanker which is currently laid up in Nuku'alofa harbour. The shipping services operated by SCPL and the ships that it manages, and services operated by the private sector are described in Working Paper F.

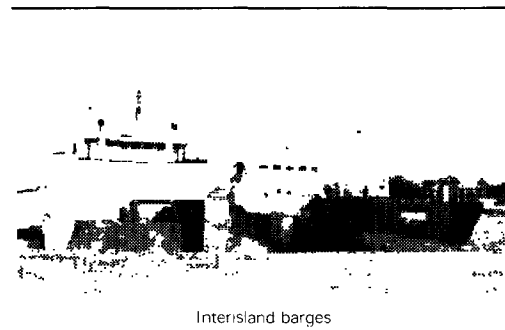
2.4.2 Demand

International cargo is loaded and unloaded at Nuku'alofa (Queen Salote Wharf – International) and Neiafu. Vava'u (Queen Halaevalu Mata'aho Wharf. The major features and trends in demand for international shipping in Tonga are:

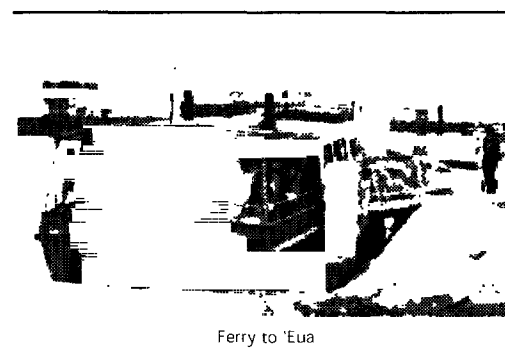
- total international cargo movement is around 260,000 tonnes per annum;
- the trade direction is highly imbalanced: around 85-90 percent imports and 10-15 percent exports;
- Nuku'alofa is the major port for international trade (around 240,000 tonnes or 93 percent of total international trade), with only small quantities (around 20,000 tonnes) loaded or unloaded at Vava'u;
- total trade and import volume has been steady for last four years, but the long-term growth over the last decade has averaged around 5 percent per year. Exports have fluctuated around a long-



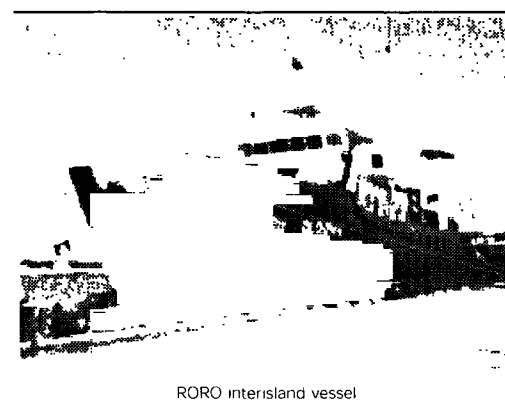
International terminal, Nuku'alofa



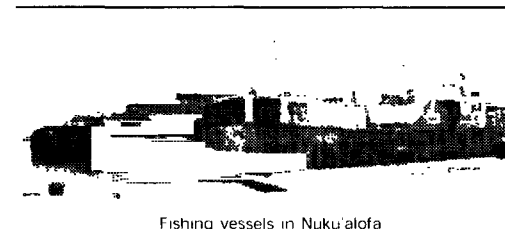
Interisland barges



Ferry to 'Eua



RORO interisland vessel



Fishing vessels in Nuku'alofa

term growth rate of almost 4.5 percent;

- containerised cargo makes up more than 60 percent of imports by tonnage, and is growing in importance as the quantity of break bulk cargo declines. The number of containers imported into Tonga is currently growing at a rate of 6.2 percent per year. The other major imports are fuel (18 percent of total tonnage) and vehicles (12 percent). Squash packed in large crates is the major export by tonnage;
- most of the containers loaded at Nuku'alofa (85 percent) are empty, reflecting the high degree of trade imbalance;
- Nuku'alofa is receiving an increasing number of 40 foot containers - prior to 2000, there was little use of 40 foot containers in Tonga, but this has grown to around 200 containers in 2004. The further growth in use of 40ft containers is constrained by lack of suitable cargo handling equipment outside the port area;
- export volume is heavily concentrated (around 70 percent) in the October-November squash season; while imports are distributed reasonably evenly through the year, with a slight peak around November-December; and
- Tonga's major trade partners are New Zealand (40 percent) and Australia (20 percent) for imports; and Japan (40 percent, mainly squash) and the United States (30 percent) for exports.

The international passenger market comprises cruise ships and yachts. There are no regular scheduled ferry services to neighbouring countries. The cruise market is a largely opportunistic market. As trends and tastes change, cruise operators constantly alter their itineraries to respond to market opportunities and seek out new destinations. The number of cruise ships visiting Tonga fluctuates, but on average, around 10 cruise ships visit Nuku'alofa each year and a smaller number visit Vava'u. Around 5,000 cruise ship passengers disembark in Tonga each year. There are also a large number of yachts calling at Tonga. In 2003, almost 2,400 persons arrived in Tonga by yacht. This is equivalent to around 500-600 yacht visits each year.

Official statistics for inter-island shipping activity have not been published since the early 1990s. Based on combining partial data from several sources, the current level of demand for inter-island transport by sea is estimated to be around:

- 30,000 passengers and 10,000 tonnes of cargo travel each year between Nuku'alofa and northern island groups; and
- 30,000 passengers travel each year between Nuku'alofa and 'Eua.

Demand for transport of passengers and cargo on inter-island ferry services is stable – there has been little change in the overall size and structure of the market over the last decade.

2.4.3 Performance

The maritime subsector is generally functioning well. Tonga has regular scheduled shipping services linking it to Australia, New Zealand, North Asia, and most Pacific Island nations. Other destinations are served by trans-shipment services via Apia, Auckland or Fiji. This combination of services provides, on average, a call by an international container shipping service at Nuku'alofa every 3 days. The services are operated by modern, container/RORO ships and are generally reported by shipping agents and shippers to be reliable and of sufficient capacity and satisfactory quality.

Domestic inter-island shipping services are provided by a combination of the government-owned shipping company, SCPL, and several private operators. The combination of inter-island services provides around two passenger/cargo ferry services per week to Ha'apai and Vava'u; daily ferry service to 'Eua (except Sunday); and regular cargo services to 'Eua. Additional services are scheduled during period periods of peak demand (Christmas, school holidays, festivals). Cargo services from Nuku'alofa to smaller islands in the Ha'apai Group are run on an "as required" or charter basis using landing barges.

The age and quality of the inter-island ships varies. The landing barges used to ship cargo to smaller island are quite new (generally less than 5 years) and in generally good condition. The ferries running to Ha'apai, Vava'u and 'Eua are older, but are also generally in fair to good condition. The SCPL ferry *MV 'Olavaha* is more than 20 years old, slow (around 7-8 knots) and uncomfortable for passengers.

The performance of the Port of Nuku'alofa is mixed:

- port charges are about 20 percent higher than Apia in Samoa, but less than half the charge at Suva in Fiji - lower port charges at Apia suggests that there is scope for efficiency gains, but overall, port charges at Nuku'alofa are competitive with other Pacific island ports;
- cargo handling rate has improved from 7 containers per hour in 2000 to almost 11 per hour in 2003-04 - the current container handling rate of 9-11 containers per hour is comparable with Apia (10-12 per hour), Suva (8-10 per hour) and Betio (8-9 per hour), but less than Pago Pago and Noumea (around 18 containers per hour); and
- port revenue per PAT employee and throughput per PAT employee has declined over recent years - although a coarse measure, this suggests a general downward trend in productivity.

Additional information on the performance of the maritime sector is provided in Working Paper F. Maritime sector development needs and the performance of government agencies in the maritime sector are discussed in Section 6 of this report.

2.4.4 Port security

International concern with terrorism has led to the introduction of a number of new codes and practices to improve port and maritime security. The most significant measure affecting Tongan ports is the International Ship and Port Facility Security Code (ISPS). Tonga is currently insulated from several other new security requirements because it does not have direct shipping services to the US.

ISPS came into effect on 1 July 2004. It is an amendment to the International Maritime Organisation (IMO) International Convention for the Safety of Life at Sea, 1974 (SOLAS). ISPS applies to ships engaged on international voyages and to the port facilities handling these vessels (including channels and waterways), whether on a regular or an occasional basis. Its requirements include putting in place security plans; exercises and training; establishing communication protocols for ships and port facilities; and exchanging security information between governments.

Failure to comply with ISPS requirements could have serious repercussions for ports and shipping companies; for ports it could mean loss of direct calls by international shipping, and for shipping, it would lead to more stringent inspections of cargo, delays and increased costs.

For a country such as Tonga that is highly dependent on international shipping, compliance with ISPS is essential.

The Tonga maritime sector has responded well to this challenge. The international port facilities at Queen Salote Port (Nuku'alofa) and Neiafu Port (Vava'u) achieved compliance with ISPS before the deadline of 1 July 2004. However ISPS imposes ongoing requirements for compliance and auditing, and standards cannot be allowed to drop.

2.5 Aviation subsector

Aviation is vital to Tonga because it provides the only practical means for international passenger travel. In particular, it provides a link for expatriate Tongans to return to visit family and friends and is essential for tourism. Tourism is one of the three priority economic development sectors (along with agriculture and fisheries) in the government's Seventh Strategic Development Plan (2001-04), and the government indicated in its Budget Papers for the fiscal year ending in June 2005 that it would continue to support the tourism industry through marketing and working with the private sector to expand investment in the industry.

2.5.1 Government air service policy

Tonga's former national carrier, Royal Tongan Airlines, collapsed in May 2004 after a failed attempt at becoming a substantial international operator by wet-leasing a Boeing 757-200 aircraft from Royal Brunei Airlines and changing both the management and Board of Directors. Its domestic services, which were at a close to break even in 2001 and 2002, were also terminated as a result of the closure of the airline.

There was no attempt to re-establish the domestic operations of Royal Tongan Airlines. Instead, two new operators were granted temporary licenses to provide domestic services (Inquiries were also made by a number of other airlines about the possibility of operating services.) The two operators granted licenses were Fly Niu Limited and Peau 'o Vava'u. About six weeks or so after the former commenced operations, the government, in a controversial decision, announced that only one airline would be permitted to operate domestic services. Peau 'o Vava'u was granted the license to operate under this regime.

Peau 'o Vava'u operates two 50-60 year old DC-3 aircraft. These aircraft are, by scheduled airline standards, very old. They have low capital cost, but high operating costs due to their age and use of aviation gasoline, which is about four times the cost of avtur fuel used for modern commercial aircraft.

The government's rationale for the "one airline" policy is limited domestic traffic. This may be a reasonable conclusion, though the lack of quantitative evidence or a report that supports the decision means that the current Review is unable to comment on its reasonableness. However, effective introduction of a one airline policy requires three key actions by the government:

- clarity regarding the policy and a sound regulatory framework, including the period over which the airline is to have the sole right provide services, what is to happen at the end of this period, how the situation will be adjusted in response to market changes that will inevitably occur over the time of the franchise including conditions under which additional airlines might be permitted to commence services, setting of airfares and, more generally, how the community will be protected from the monopoly power afforded to the single airline – this is needed to provide the airline industry with confidence in the government's policy, to mitigate against higher costs and airfares that

can be expected to result from the monopoly, and more generally to ensure that the interests of consumers are given priority over others;

- use of a transparent competitive process to select the airline - to do otherwise is to expose the government to allegations of favouritism in the selection of the airline; and
- government capacity to implement the regulatory framework – to ensure that the airline operates in accordance with the franchise and it to ensure continuing responsiveness to market needs.

It is not evident that these conditions have been sufficiently met, and the current suboptimal situation has resulted, ie controversy over selection of Peau 'o Vava'u, use of an aircraft that are not ideal in the view of this Review, and lack of a clear regulatory regime.

The failure of Royal Tongan Airlines has been costly and has disrupted community life. However, the interest and ability of the aviation industry to provide services since the closure of Royal Tongan Airlines demonstrates that Tonga can secure vital air links. Ensuring the provision of services therefore need not be the key concern of the government - rather, it is to ensure that services are provided on a sound basis. The primary role of the Government should be to ensure the presence of aviation infrastructure and a policy environment that enable the operation of safe and commercially viable air services by those best able to provide them.

2.5.2 Airport facilities

The Kingdom of Tonga has six operational airports, all located on different islands in the group. Three of the airports have sealed runways, and two have night landing facilities and are equipped for international operations with Customs, Immigration and Quarantine facilities.

The major airport, Fua'amotu, is located on the island of Tongatapu. This airport has separate domestic and international terminals, active air traffic control and Rescue and Fire Fighting Services. The airport occupies an area of 313.2 hectares on leasehold land and has a principal runway of 2,671 metres in length by 45 metres wide (see Table 2.8). There is a second grass runway that is used for light aircraft operations when cross-winds prevented use of the main runway. The pavement classification for the main runway allows it to accept all wide body aircraft, though the length prevents high gross weight take-offs for long flights, eg a fully loaded B747 aircraft flying to Los Angeles.

Table 2.8 Airports in Tonga

Name	Location	Runway surface	Runway length and width (m)
Fua'amotu	Tongatapu	Main: Asphalt concrete, with lights, Secondary: Grass	2,673 x 45 1,507 x 115
Salote Pilolevu	Ha'apai	Bitumen	1,145 x 30
Lupepau'u	Vava'u	Bitumen	1,700 x 30
Kaufana	'Eua	Gravel	685 x 20
Lavinia	Niuafo'ou	Grass	1,065 x 48
Mata'aho	Niuaotuputapu	Grass	729 x 22

As advised in October 2004

The last substantial work on the runway at Fua'amotu airport occurred in 1990 when previously deteriorated pavement was upgraded and the runway was extended by 600 metres. Other assistance at this time included the provision of equipment from the European Union

(EU), a control tower and airport lighting from the government of New Zealand, and the airport terminal from the government of Japan.

The airport terminal at Fua'amotu airport was opened in 1991. It has six check-in positions and five aircraft stands. The terminal is effectively a large shell, with partitions used to define activity areas. There are no air bridges and a supervised tarmac crossing is required of all passengers.

The terminal served both domestic and international services until recently, when domestic passenger services were relocated so that the international terminal met international security obligations. Domestic services now use the former international terminal – while old, the building is in reasonable condition and can easily accommodate the modest level of domestic traffic. Passenger congestion can occur in the international terminal, in particular in the Immigration area and departure area. However, relocation of the domestic terminal has left spare space the international terminal building, which could be better used.

Initially, only Fua'amotu, Salote Pilolevu (Ha'apai) and Lupepau'u (Vava'u) airports could accommodate DC-3 aircraft operated by Peau 'o Vava'u. In October 2004, the government announced that runways at the airports on 'Eua, Niuatoputapu and Niuafu'ou would be levelled and widened or lengthened to accommodate the aircraft, with the job undertaken by Tonga Defence Services soldiers from the engineering division. The work was to be assisted by the MCA and MOW amongst other ministries. Peau 'o Vava'u was to share the cost of the work to fulfil an obligation made as part of acceptance of the airline as the sole domestic operator.

2.5.3 Air traffic control

Upper Airspace management (above 24,500 feet) is provided by Airways Corporation (of New Zealand). Airways Corporation collects all the revenues from aircraft traversing Tongan airspace and remits an annual amount to Tonga after deducting expenses of providing air traffic management services and a profit margin. The annual remittance of NZ\$330,000 is fixed for the five year duration of the agreement, and is paid to the Ministry of Finance.

Air traffic control up to 24,500 feet is provided from a tower at Fua'amotu Airport. Airways Corporation provides calibration and certification services for the navigation aids located within Tonga.

2.5.4 Air services

Aviation activity in Tonga is focused on the capital Nuku'alofa with international services at the beginning of November 2004 being:

- non-stop international services from Fua'amotu to Apia, Auckland, Nadi, Suva, Sydney and Wellington; and
- a same plane/flight number service by Air New Zealand via Apia to Los Angeles.

Prior to the collapse of Royal Tongan Airlines, domestic services were provided to five points in addition to Nuku'alofa:

- direct services to 'Eua, Ha'apai and Vava'u (with many services to Vava'u passing via Ha'apai); and
- services from Vava'u to the two northern islands (Niuatoputapu and Niuafu'ou).

At the beginning of November 2004 there were twice daily services between Nuku'alofa and Vava'u and also Nuku'alofa and Ha'apai, except on Sundays when there is no aviation activity at all. There is also one return flight a week between Ha'apai and Vava'u, with north and south bound legs operating on different days. By early 2005 services had been restored to 'Eua, (which is some 13 miles south of Fua'amotu Airport), and necessary work done to accommodate the DC-3 aircraft on the Niuas (though the latter are awaiting certification before regular services can recommence).

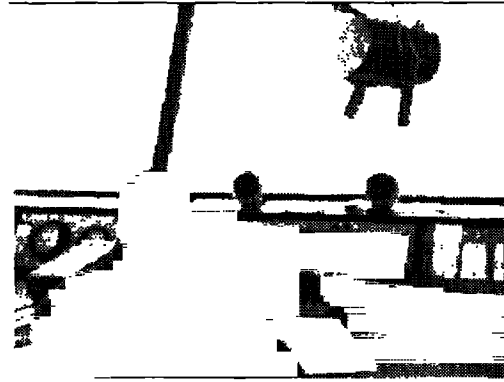
Peau 'o Vava'u currently operates two DC-3 aircraft and was reported as planning to import a third to operate services to the Niuas and 'Eua. (It had been reported that the airline was considering use of a Britten-Norman Islander, a twin engine, fixed undercarriage nine seat aircraft to operate out of Vava'u but then favoured use of a third DC-3). The smaller aircraft, whilst having a higher initial cost, is more modern, operates with one pilot, burns less fuel, and is better sized for the market.

Nineteen international services were provided to Fua'amotu airport each week at the beginning of November by four airlines:

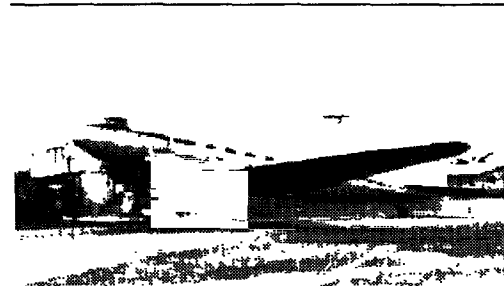
- jet services are provided by Air New Zealand (six times each week), Polynesian Airlines (nine times each week), and Air Pacific (two times each week).
- Air Fiji, which uses turboprop aircraft (two times each week) - Air Fiji has since had its designation as an international airline for Fiji withdrawn and no longer operates this service, but it has been replaced by a thrice weekly return service operated by Air Pacific between Nadi - Suva - Tongatapu

These services provide direct international links between Tonga and Sydney (Australia), Auckland and Wellington (New Zealand), Suva (Fiji), Apia (Samoa) and Los Angeles (USA).

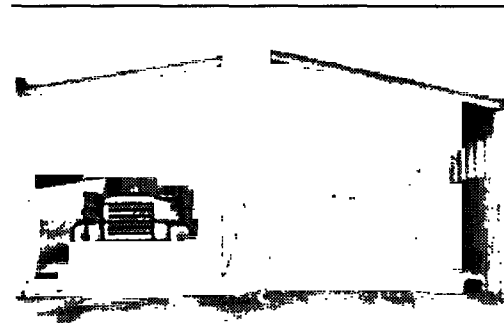
In November 2004 Polynesian Airlines commenced a twice weekly service on a triangular routing Apia - Pago Pago - Vava'u - Apia. The service connected ethnic communities



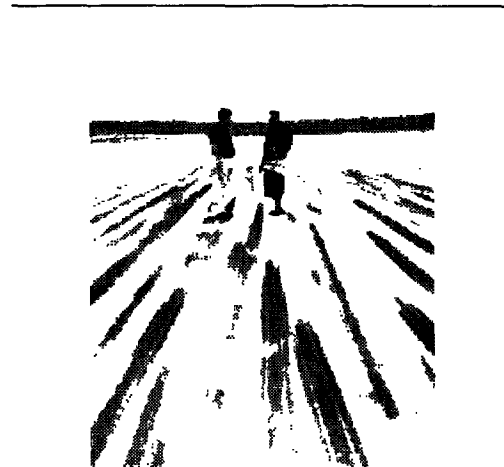
Air traffic control at Fua'amotu airport



DC-3 of Peau 'o Vava'u airlines



Fire engines at Fua'amotu airport



Skid marks on runway at Fua'amotu airport

in Tonga, Samoa and American Samoa, and improved access to valuable Hawaii and USA tourism markets through connections at Apia and Pago Pago.

This service has since been replaced with a twice weekly return Apia - Vava'u - Tongatapu service using a Dash 8 aircraft. Thus, two airlines now operate services between Vava'u and Nuku'alofa. The Polynesian aircraft is bigger, faster, pressurised and uses lower cost avtur fuel than the DC-3 aircraft used by Peau 'o Vava'u. Polynesian Airlines can sell seats on the domestic sector only where the travel is part of an international trip. Polynesian and Peau 'o Vava'u have reached agreement for the latter to purchase seats on Polynesian Airlines flights that are sold as domestic seats through Peau Vava'u.

It is possible that the Polynesian Airline service to Vava'u could be extended to other Pacific Island countries. Such extensions could be strengthened by the Pacific Islands Air Services Agreement (PIASA), if and when it comes into legal effect. A January 2005 announcement that the government of Samoa has selected, through a competitive bidding process, Virgin Blue of Australia as the preferred partner for a new joint venture airline that will take over the long-haul jet operations of Polynesian Airlines should further strengthen the airline.

2.5.5 Aviation demand

In 2003, passenger movements at the international terminal at Fua'amotu Airport were 66,210 arrivals and 63,500 departures. At the time, Fua'amotu airport was the only airport to have international services. There were also 1,417 tonnes of import cargo (including mail) and 1,686 tonnes of export cargo.

A reported 37,000 international visitors arrived in Tonga by air in 2003: 36 percent came from New Zealand, 20 percent from the USA, 18 percent from Australia, 10 percent from other Pacific Countries and 17 percent from other countries. About two-fifths of the visitors came for holiday purposes and a similar share to visit friends and relatives.

Fua'amotu and Lupepau'u airports accounted for three-quarters of domestic passenger movements in 2003. Demand in 2004 is expected to be lower because of the collapse of Royal Tongan Airlines and the subsequent interruption to services and the cessation of service to the Niuaus and to 'Eua. Domestic demand at Fua'amotu airport grew at 3.5 percent per annum from 1987 to 2003 to reach 51,300 passengers. At Lupepau'u airport over the same period demand grew at 10.4 percent per annum to 36,700 passengers.

2.5.6 Performance

Four key concerns in the aviation subsector are noted:

- Recent review missions of the International Civil Aviation Organisation (ICAO 2000 and 2004) concluded that the legislative and regulatory basis for civil aviation in Tonga was sound, but that operational deficiencies resulted in it reporting that "the ICAO recommendation remain open". At the time of the last mission, Tonga performed below the global average in five of eight key indicators.
- This Review notes uncertainty and accusations of bias in the recent introduction of a "one airline" domestic aviation policy by the government. It is suggested that lack of clarity and comprehensiveness in the policy and an accompanying regulatory framework, followed by transparent competitive tendering for selection of the airline, have contributed to this outcome.

- The recently awarded ten year contract for ground handling at Fua'amotu airport has created a monopoly for the private contractor within a loosely regulated environment.
- The operation of airports in Tonga under a ministry structure is inconsistent with good governance. It is a traditional arrangement, for which the general worldwide trend has been towards corporatisation and, in some cases, privatisation. The government has initiated change in this area by establishing a committee to examine the subject.

These matters are considered further in Chapter 4.

2.6 Transport sector management – current practices and guiding principles

2.6.1 Sectoral planning and programming

At present, the Central Planning Department provides a general framework for development of the Tongan economy and MOF provides general fiscal oversight of government agencies. However, there is no agency that is responsible for setting strategic direction, coordinating policies, integrating investment programs and monitoring the performance of the transport sector in Tonga. Likewise there is no up-to-date national transport plan or multi-modal program for transport infrastructure development.

In the past, there has been a tendency for policy making, planning and infrastructure development to be conducted on a modal basis with little multi-modal integration. In addition, there has been a tendency to regard projects for domestic funding as separate to projects proposed for external grant or loan funding. This approach is sub-optimal both for the transport sector and for the economy as a whole.

Compounding these problems, bilateral aid can sometimes be determined by donors' preferences rather than what is most important for Tonga, with the result that investments may be made in one mode that are out of line with national priorities. Central coordination of aid is required across all transport sub sectors.

2.6.2 Subsector management

government has an important role in overseeing the performance of the transport sector in terms of fiscal monitoring, economic regulation and technical supervision. This monitoring currently takes place on an agency or subsector basis, without reference to the performance of the transport sector as an integrated system.

Fiscal monitoring of Ministries and PEs is provided by MOF. However the capacity to maintain vigilant fiscal oversight of PE activities is constrained by the limited resources available, and by a shortage of skills and experience. This lack of experience extends to PE Board members.

Technical supervision of the aviation and maritime sectors (safety, security and environmental standards and certification) is undertaken by the MCA and MMP respectively. While generally sound, this is also constrained by a shortage of specific technical skills. In the road sector, the current regulatory framework and capacity for sector monitoring has not kept pace with growth and modern management practices. In particular, the Traffic Act is outdated and fails to address current road safety and traffic issues, and effective infrastructure management systems are not in place.

Economic regulation is required in instances where there is market failure, ie where the market does not result in optimal outcomes because of some distortion to the competitive provision of goods and services. It involves issues of pricing, subsidies, CSOs, market entry and market power, and requires skills in economics. The limited extent of market failure in the transport sector in Tonga results in only a modest need for economic regulation. The principal use of economic regulation to date has been constraints on market entry in the case of domestic civil aviation by MCA and regulation of tariffs for public transport and freight by MOLCI. There is a general absence of a policy framework for economic regulation in Tonga. This gap is exacerbated by a shortage in domestic skills and experience in transport economics and economic regulation.

This Review recommends the principle of minimising the need for economic regulation because of the cost and difficulty of effectively implementing it and the economic cost of suboptimal regulation. It is recommended in other sections of this report that there are opportunities to eliminate some current economic regulation but that there are also some current activities that need more effective regulation.

2.6.3 Information and tools

The quantity and quality of data in the transport sector is variable. Data in the aviation sector is generally sound, as is information on international shipping movements and aggregate movements of international sea freight – though data on fuel imports is considered unreliable. Statistics on domestic shipping activity (passengers and cargo) are scattered and of variable quality and completeness. Recent changes in responsibility for the international terminal at the Port of Nuku'alofa and changes in the coverage of the transport sector by the Statistics Department have created gaps and inconsistencies in data series.

As indicated in Section 2.3, data on the land transport sector are deficient, and do not permit adequate planning and management of the subsector to occur. For example:

- vehicle registration records are kept manually (on paper cards placed loosely in boxes), registration statistics are unreliable and there is no sound system for ensuring scrapped vehicles are removed from the register;
- basic information is available about traffic accidents (number, severity, injuries, general location, time of day, etc) but not in a format suitable for detailed analysis of causes and development of remedial measures;
- little information is available about traffic volume, traffic mix and vehicle occupancy on Tongan roads; and
- there is no current operational road maintenance and management system.

2.6.4 Proposed transport sector development principles

The government has set out economic development principles and reform priorities that provide a set of strategic development principles for the transport sector. The Seventh Strategic Development Plan (2001-04) indicated development strategies to be (with emphasis to be placed on the first three):

- ensuring that economic policies facilitate the improvement of Tonga's comparative advantage and competitiveness of domestic exports;
- facilitating the development and enhancement of the private sector;
- rationalising the services of both government and public enterprises;

- development human resources;
- improving access to government services in rural areas and outer islands;
- raising domestic savings;
- regulating and managing the utilisation of natural resources and the environment;
- managing the development of urban areas; and
- employment creation.

In its Budget Papers for the fiscal year ending in June 2005, the government reiterated reform priorities – those of particular relevance to the transport sector are:

- make the public sector more efficient;
- make public policies more effective, especially where they affect private sector performance – with the intention of ensuring the government's interventions in the economy focus on things the government does best and leaving the private sector to make commercial judgements and bear commercial risks
- continued priority for the agriculture, fisheries and tourism sectors;
- progressively divest share in public enterprises undertaking non core government functions and corporatising trading activities of ministries and departments; and
- tax reform to ensure the tax burden is spread as widely and fairly as possible, whilst maintaining simplicity.

These development objectives and reform priorities are laudable, and provide a framework for development of the transport sector. This Review suggests that two principles are needed to provide further guidance to those responsible for implementing government policies in the transport sector:

- improve economic efficiency, which will be reflected through:
 - decisions on policy reform and recurrent and capital spending should be made on the basis of maximising net social benefits which is the principle that underlies cost-benefit analysis;
 - infrastructure and services should be provided at the lowest possible cost;
 - government intervention in the transport market should be minimised, with a focus on safety, security and the environment; and
- where social equity warrants the provision of subsidies, this should be provided:
 - through CSOs to ensure that the cost of the assistance is understood and acknowledged as being a worthwhile use of the funds involved; and
 - with the entity to provide the assistance selected on the basis of competitive tendering to ensure that the economic efficiency principle is met.

This Review recommends transport sector objectives for the government that are a consequence of the economic efficiency principle and which will enhance the capacity of the sector to support national economic and social development to be:

- **reduce the cost of transport infrastructure and services** – driving down the cost of providing port, airport and road infrastructure and services to reduce transport costs, and hence lower the cost of imports and improve Tonga's international competitiveness;
- **improve the sustainability of transport infrastructure provided by the government** – ensuring adequate maintenance and rehabilitation of productive transport infrastructure to minimise the long term cost of providing the infrastructure and ensure its continuing availability; and
- **promote and make greater use of a competitive private sector** – ensuring a competitive private sector and making greater use of the private sector to reduce the cost of government activities (eg road works) and to obviate the need for government economic regulation of transport services.

These matters are central to the current Review and underlie the formulation of infrastructure, service and institutional development needs in the transport sector discussed in the remainder of this report.

3. Enhancing Institutional Arrangements

The chapter assesses current institutional arrangements, considers alternative arrangements and a preferred future structure, and identifies institutional strengthening needs. Detailed information on the material in this chapter can be found in Working Paper B.

3.1 Assessment of current arrangements

Under current arrangements, functions and responsibilities in the Tonga transport sector are fragmented across many agencies. MCA and MMP are the principal transport sector agencies; but MOP and MOW also have major roles; and MOLCI and Ministry of Lands have responsibilities for some aspects of the transport sector. In addition, there are two public enterprises in the transport sector – PAT and SCPL. MOF monitors the fiscal performance of these public enterprises.

This fragmentation creates both overlaps and gaps:

- there is no agency setting strategic direction, coordinating policies, or integrating investment programs for the Tongan transport sector;
- planning is conducted on a modal basis with little multi-modal integration – there is no strategic plan or policy framework to guide development of the sector as a whole;
- there is no agency responsible for land transport policy and planning, despite this being of major importance to the transport system and SDP7 highlighting the emerging problems of road safety, road congestion, road maintenance and pollution from vehicles;
- there is no agency providing specialist advice on economic regulation of the transport sector (market entry, prices), or the provision of subsidies (through, in line with government policy, community service obligations – CSOs);
- there is no agency responsible for monitoring the broader economic and technical performance of the transport sector (efficiency and effectiveness);
- there is a shortage of accurate, up-to-date and readily accessible data about some aspects of the transport sector, such as vehicle registrations, the length and condition of the road network and inter-island shipping;
- there does not appear to be a clear focus for a proactive approach to road safety issues – road safety is a multi-dimensional issue that is best addressed as a partnership involving the public and private sectors and Ministries responsible for education, health, road design, traffic management, and enforcement;
- some functions (such as administrative and corporate services), are duplicated unnecessarily;
- there are opportunities to share some specialist skills (such as legal, economic, and information technology) that are not being exploited;
- in the land transport sector, there is no connection or sense of balance between revenue collection from transport users (by MOP) and expenditure on roads (by MOW) - this disconnect does not encourage an efficient approach to road funding; and
- there are some residual powers that remain as apparent anomalies from previous institutional arrangements, such as continued involvement of MLSNR in regulation of

oversize and overdimension vehicles through the Roads Committee - this adds to the fragmentation and complexity of responsibilities.

In addition:

- current arrangements are not encouraging use and development of the private sector as effectively as they might;
- levels of infrastructure funding and cost recovery in the transport sector are low and Tonga has, to date, depended almost entirely on external aid to meet the cost of developing airport and port infrastructure and purchasing major equipment;
- skills in economic and technical regulation are in short supply;
- there is insufficient capacity to effectively monitor the fiscal performance of PEs and supervise their activities;
- there does not appear to be a formal mechanism for triggering reviews of tariffs for buses, taxis and goods vehicles, and it is questionable whether there is an ongoing need for control of tariffs for goods vehicle;
- in the MCA, there is not a clear separation of commercial activities from non-commercial activities, or a clear separation of regulatory from operational activities - a similar situation exists to a lesser extent in MMP;
- motor registration, traffic management and enforcement functions appear to be inadequate to cope with the demands of the growing motor vehicle fleet and emerging traffic congestion problems; and
- the system of annual safety inspection of vehicles appears to be largely ineffective.

Overall, current arrangements do not provide an adequate basis for managing the transport sector, and are not taking advantage of efficiencies available from a more integrated approach to the transport sector, or from more effective use of the resources of the private sector.

3.2 Issues and principles for institutional arrangements

3.2.1 The role of government

The government of Tonga has a vital role in guiding the transport sector to achieve the outcomes of safety; economic efficiency; social equity; and environmental sustainability. These government outcomes for the transport sector are described in Table 3.1. These broad outcomes translated into specific objectives for typical government transport agencies, as outlined in Table 3.2.

In addition, government encourages agencies to be:

- accountable for the provision of government services;
- ensure value for money in the use of public funds;
- undertake effective consultation and collaboration; and
- a good employer.

Table 3.1 Government outcomes for the transport sector

Outcome	Description
Safety	Reduce the number and severity of transport safety incidents and cost to the community – i.e. ensure safe travel, considering people, vehicle & infrastructure components
Economic efficiency	Facilitate development of trade and the economy – able to transport goods and services (local, national, international)
Social equity	Ensure equitable access to transport system and provision of an acceptable level of mobility (local, national, international)
Environment	Protect and enhance the natural and social environment

Table 3.2 Typical transport agency objectives

Objective	Description
Transport safety	Reduce the number and severity of transport safety incidents and cost to the community
Mobility of people and goods	A transport system that allow the efficient movement of people and goods
Transport infrastructure development	A transport system that promotes economic growth, access to communities and transport safety
Transport infrastructure asset management	Maintain transport infrastructure at minimum whole of life cost
Transport services	Ensure provision of safe, efficient and effective public and private transport services through driver and operator licensing, vehicle, vessel, and aircraft registration, and traffic enforcement
Customer service	Ensure ease of access and use of government services
Environment	Protect and enhance the natural and social environment – ie minimise the environmental impact of transport on air and water quality, flora, fauna protection, traditional community assets

3.2.2 Functions of government

In the pursuit of these outcomes and objectives, government becomes involved in a broad range of activities in the transport sector. These activities fall into four broad categories:

- *Policy & Planning*: involves identifying strategic needs into the future and development of the policies and plans (including economic regulation and CSOs) required to achieve government objectives. Also includes monitoring and evaluating the performance of the transport system against government objectives, and identifying strategic resource needs.
- *Regulation*: involves framing and applying technical standards for the safety, security and environmental performance of the transport sector, and the associated testing, registration, licensing and enforcement; regulation of entry by private transport service providers and tariffs charged where competitive markets are not present; and oversight of PEs.
- *Program Management*: involves translating transport policies, strategies and regulatory requirements into specific actions (programs and projects for construction, maintenance, services, security, etc), and for arranging for the actions to be implemented. Includes developing and managing contracts where services are to be delivered by the private sector or other government agencies/enterprises, and managing quality and contract performance.
- *Service Delivery*: involves constructing and maintaining the infrastructure, and delivering the transport-related services (airline services, shipping, trucking, buses, taxis, etc) that

power the transport system. Service delivery can be undertaken by private companies, or government agencies or business enterprises.

Therefore policy and planning is about formulating what needs to be done to meet government objectives for the transport sector; regulation is about making sure that appropriate safeguards are in place; program management is about how to do it; and service delivery is about doing it.

The policy, planning and regulation functions are related to 'effectiveness' in terms of achievement of government or community outcomes, that is, identifying what is needed to be done to ensure the outcomes can be met in an acceptable way. Program management and service delivery provide 'efficiency' in the delivery of government programs to achieve government and community outcomes⁵.

Government has an important role in monitoring the performance of the transport sector to ensure that these outcomes are being achieved. In this role, it is important to distinguish between three different types of supervision of the transport sector, and the different skills and approaches required for each function:

- Fiscal monitoring – involves monitoring the operations of government agencies in the transport sector, including PEs, to ensure that government money is being used wisely, in terms of efficiency, accountability and value for money. This requires financial and accounting skills in the Ministry of Finance.
- Economic regulation – involves issues of pricing and market power, and requires skills in economics. This form of supervision has similar issues across all modes (and in common with other sectors of the economy).
- Technical regulation – involves issues of safety and security standards and certification. It requires specialist qualifications and technical skills that are specific to each mode, and in the aviation and maritime sectors involves international accreditation.

The way that government functions relate to each other and the principles of effectiveness and efficiency, and the associated flow information is illustrated in Figure 3.1.

3.2.3 Compatible and incompatible functions

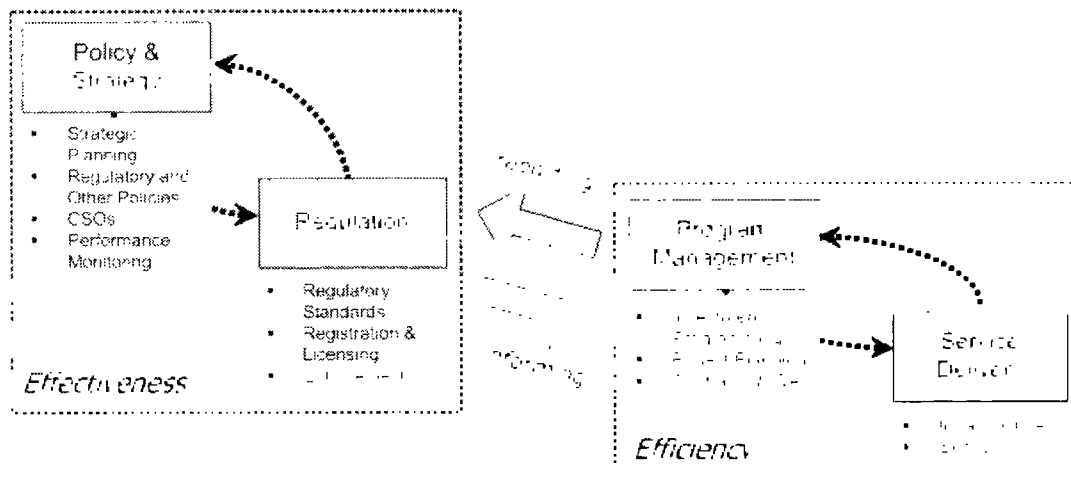
There are considerable advantages in having all transport functions under the purview of one Ministry. This can lead to aligned business plans to deliver the desired strategic direction, consistent assessment of priorities in investment across the transport sector, and shorter and clearer lines of communication and accountability. As a result, there are potential efficiency gains from managing delivery of transport sector outcomes from within a single agency.

However balanced against these advantages is the need to ensure good governance by separating incompatible functions, in particular:

⁵ Terms related to Government activity in the transport sector include:

- **Outcomes**, which are the things that the transport system needs to provide to meet Government and community objectives.
- **Effectiveness**, which is the ability of services delivered by the Government to meet the desired outcomes. Effectiveness is influenced by the quality of planning and policy.
- **Efficiency**, which is the minimisation of resources required to deliver services. Efficiency is affected by the quality of program management and service delivery.

Figure 3.1 Government outcomes for the transport sector



- separation of regulatory from operational activity, to avoid potential conflicts of interest arising from an agency regulating itself; and
- separation of commercial activities from non-commercial activities that are associated with government's social role - this ensures that commercial activities can be undertaken in a businesslike way with a clear commercial imperative, and also highlights opportunities for private sector participation.

Both of these requirements support a general preference to separate effectiveness measures (planning, policy, regulation) from efficiency measures (program management, service delivery). Separation of incompatible functions can be implemented by structuring an agency to keep incompatible functions apart, or by placing the functions in separate agencies.

3.2.4 Principles for institutional arrangements

The foundation of strategic objectives and policies of SDP7 and the tenets of good governance, efficiency and effectiveness suggest a number of guiding principles or success factors to consider when developing a structure or re-structuring government agencies.

Institutional objectives

- Institutional arrangements should be consistent with national strategic directions & priorities, and appropriate for Tongan conditions.
- There should be a focus on delivery of government objectives and associated outcomes: *Safety, Economic Efficiency, Environment, and Social Equity* – including ensuring provision of strategic direction, performance measures and targets.
- Each agency and unit has a clear strategic direction and focus on core functions.
- There should be clear linkages from outcomes – to outputs – to service delivery, to ensure that the services being delivered will provide the outputs needed by the organisation to achieve the desired outcomes.

Institutional management

- Agencies should be the right size and undertake government functions in a businesslike way (efficient, responsive and accountable).
- There should be a clear separation of powers and functions:
 - regulatory functions from operational functions, to avoid conflicts of interest;
 - commercial from non-commercial activities to ensure commercial objectives are not clouded; and
 - decisions on effectiveness ('what to do' – planning, policy, regulation) from decisions on efficiency ('how to do' – program management, service delivery), which can also be considered as, respectively, 'doing the right thing', and 'doing the thing right'.
- Strengthened capability and capacity of government agencies, especially in areas of strategic planning, business analysis, policy development, economic evaluation, asset, program and project management, and empower staff to undertake their jobs.
- Performance management systems should be in place that are transparent and hold managers accountable for outputs.
- Vigilant fiscal, economic and technical supervision and monitoring of the transport sector, using technical skills and approaches appropriate to each task.
- Enforcement of regulations in a consistent and systematic manner.

Service delivery

- Improving customer service, which increases the efficiency (reduced cost and time) and convenience to the government and the community and also the quality of service.
- Contracting out of service delivery where it can be more effectively carried out by private sector.

Linkages

- Ensure that community grievances with government regulatory and other activities are addressed.
- Establish strong linkages with transport users, the community, key industry partners and stakeholders – better outcomes result from government agencies, industry and the community working closely together to achieve shared goals.

These guiding principles define a platform of preferred characteristics of an institutional structure of the Tonga transport sector. They form the basis of the following assessment of current institutional arrangements in Tonga and assessment of restructuring options.

3.3 Options for institutional arrangements in transport

Development and assessment of options for reforming institutional arrangements has centred on the establishment of an integrated Ministry of Transport (MOT) which would bring together responsibility for all modes of transport into a single agency. The MOT model is a tried and proven model that has been adopted in many countries in the Pacific and throughout the world. It provides an efficient mechanism for making best use of limited resources in the transport sector and for better integrating transport policy and programs.

3.3.1 Alternative models

Three sets of options have been considered for restructuring institutional arrangements in the transport sector in Tonga:

- **Quickstart MOT** – this option brings the MCA and MMP activities into a MOT, but does not alter the current functions of other Ministries (notably Police and Works). It is a minimal change option that could be implemented quickly and readily.
- **Integrated MOT** – this group of options expands the scope of MOT functions to include land transport regulation (vehicle registration and driver licensing) and road program management. Two sub-options are considered for the way that MOT is structured internally.
 - B1. MOT is structured on a modal basis – it has separate land, sea and air transport divisions responsible for technical and economic regulation and program management on a modal basis, and a policy and planning unit that covers all modes of transport.
 - B2. The structure of MOT reflects its broad functions - MOT has a Policy and Planning Unit covering all modes of transport; a Regulation Unit covering all modes of transport; and a Program Management Unit managing the Tonga road system (other modes are program managed by PEs).
- **Focused MOT** – in this group of options, MOT is a slim agency that focuses on core government functions of policy, strategic planning and regulation. Program management and service delivery is undertaken by other agencies. Two sub-options are considered for the extent of transfer of functions to new agencies established in the land transport sector.
 - C1. Responsibility for land transport program management is split off from MOT and a new agency, Road Management Authority (RMA), is formed to manage these functions. In other respects, this option is similar to Option B2.
 - C2. Responsibility for land transport regulation and program management is split off from MOT and a new agency, Land Transport Authority (LTA), is formed to manage these functions. The LTA has a broader scope of responsibilities than the RMA in Option C1. In addition to road asset management, is also responsible for land transport regulation, vehicle registration and driver licensing. It would therefore collect money from road users (though not necessarily keep it) and manage spending on the road construction and maintenance program. In other respects, it is similar to Option B1.

All of the MOT options have several features in common

- legislation would be required to define the scope of powers and responsibilities of MOT, and to transfer legislative responsibilities from other Ministries, such as transfer of maritime Acts from MMP;
- a Secretary for Transport and small administration unit providing leadership and corporate services (finance, human resources, legal, information technology, etc) to MOT as a whole;
- a Transport Policy & Planning Coordination Unit (TPPU) within MOT with an overarching role in policy, strategic planning, support for economic regulation and determination of CSOs across all modes of transport - these functions are not currently being undertaken in the land transport sector by MOW or MOP, nor is economic

regulation being undertaken to any significant extent, so new staff positions will be required⁶:

- MMP and MCA cease to exist – their functions, responsibilities and staff involved in planning, policy and regulation would transfer to MOT. Program management and service delivery functions would transfer to PAT or TAL respectively;
- the Meteorological Services unit of MCA transfers to MOT;
- continued management of Nuku'alofa port by PAT (as a public enterprise), and with the potential to also take responsibility for other ports in Tonga with the cost of non-commercial ports being funded through a CSO - a CSO payment is preferred to an internal cross-subsidy because it is a transparent and accountable mechanism that does not interfere with the commercial focus of an enterprise. Transfer of operation of all ports to PAT will provide a clear separation of service delivery and regulatory functions in the port sector, and consolidate responsibility for all ports into a single agency. This would be supported by establishment of advisory committees in each island group to ensure that the local community and port user have the opportunity to provide input and guidance into the development of the port system;
- a new agency to manage airports in Tonga - the scope and structure of the agency, which is referred to as Tonga Airports Limited (TAL) is described in Chapter 4 and Working Paper D;
- MOP would continue to provide traffic management and enforcement functions;
- responsibility for setting and reviewing bus and taxi fares would preferably be transferred from the Competent Authority to the TPPU of MOT – other transport sector prices, notably truck hire rates, could be deregulated;
- improved mechanisms for involving industry and the community in the work of the Ministry, such as a Ministerial Advisory Council (MAC) - the MAC would bring together representatives of the transport industry, tourism, other business, the community and government to provide input and advice on key transport issues;
- MOT to have no construction capability, with construction and maintenance outsourced to the private sector or MOW;
- TMPI continues to operate within the Ministry of Education, but with MOT taking a more active role in developing course programs, objectives and syllabuses; and
- MOF would continue to be the agency responsible for monitoring the fiscal performance of existing and new government-owned businesses in the transport sector, and the capability of MOF in this role would be strengthened.

3.3.2 Assessment of alternative models

Each of the options has been conducted using criteria that reflect the guiding principles described above and relate to the strategic direction; institutional structure; business systems; and resources required to manage the Tonga transport sector. In general, the preferred characteristics of the institutional arrangements for the Tonga transport sector are:

⁶ Allocation of responsibilities for economic regulation in the transport sector is considered in more detail in Section 3.5.6.

- institutional arrangements that are consistent with national strategic directions & priorities, and appropriate for Tongan conditions;
- slim agencies that undertake government functions in a businesslike way (efficient, responsive, accountable);
- each government agency and unit has a clear strategic direction and focus on core functions;
- clear separation of powers and functions (regulation from activities subject to regulation, policy from operational activities, and commercial from non-commercial activities);
- strong linkages between government agencies, industry and the community working;
- effective use of the private sector, with contracting out of services that are more effectively carried out by private sector; and
- adequate and sustainable resourcing (financial, staffing).

Table 3.3 compares the relative merits of the current arrangements and MOT options using a system of ticks and crosses. The Base Case is the benchmark against which other options are compared. It is scored on the basis of whether (✓) or not (✗) it meets the criteria. The MOT options are scored on the basis of the extent to which they improve on current arrangements, with more ticks indicating greater improvement. A detailed assessment of each individual option is provided in Working Paper B.

Table 3.3 Comparison of alternative institutional models

	Existing Arrangements	A: MOT Quickstart	B1: MOT (Modal Structure)	B2: MOT (Functional Structure)	C1: MOT plus RMA	C2: MOT plus Land LTA
Strategic Direction						
Consistent with national strategic directions & priorities	✗	✓	✓	✓	✓✓	✓✓
Integrated strategic direction	✗	✓	✓✓	✓✓	✓✓	✓✓
Focus on core functions	✗	✓	✓✓	✓✓	✓✓	✓✓
Involvement of transport users	✗	✓	✓✓	✓✓	✓✓	✓✓
Institutional Structure						
Simple, appropriate structure	✓	✓✓	✓✓	✓	✓	✓
Accountability for outcomes	✗	✓	✓✓	✓✓	✓	✓
Separation of functions	✗	✓	✓✓	✓✓	✓✓✓	✓✓
Pace/extent of change	na	✓✓	✓✓	✓	✓	✓
Systems & Procedures						
More businesslike	✗	✓	✓	✓	✓✓	✓✓✓
Customer service	✗	na	✓✓	✓	✓	✓✓
Links with key partners	✓	✓	✓✓	✓✓	✓✓	✓✓
Private sector development	✗	na	✓	✓	✓✓	✓✓
Resources						
Funding mechanisms	✗	✓	✓	✓	✓	✓✓
Human resources	✓	✓	✓✓	✓	✓✓	✓✓✓
Conclusion			Preferred			Preferred

The results of the assessment of options are:

- Current institutional arrangements do not provide an adequate basis for managing the Tonga transport sector.
- The MOT Quickstart option can be implemented quickly and readily, with little impact on Ministries outside the transport sector (notably MOP and MOW). But it is a missed opportunity to develop a clearer separation of functions; greater focus on core functions; a more businesslike approach to activities such as vehicle registration and driver licensing; and more effective use of the private sector. This option could be the first step in a process of more comprehensive restructuring, but is not favoured as a long term solution.
- Option B1 is the preferred model for establishing a Tonga MOT. It addresses most of the shortcoming of current arrangements, and offers a simple and accountable structure (all functions in a single agency) that is well-suited to the current transport sector in Tonga. It offers a simple and familiar structure with clear transition path from current arrangements. It would be relatively straightforward to implement and the transition would most likely be smooth. A modal structure as proposed in Option B1 is likely to produce better productivity from scarce technical skills than Option B2. In practice, specialist technical skills (especially in maritime and aviation sectors) are more readily transferable between different functions in the same mode than between modes. For example, a maritime specialist would have relevant skills for maritime planning, policy and regulation, but would not be qualified for aviation regulation. Option B1 also has the advantage that it leaves open the option for a possible transition in the longer term to Option C2, which needs which needs greater management capacity.
- Option B2 has theoretical merit in terms of strong separation of government functions, and potential for a more integrated and multi-modal approach to transport issues, but has a number of practical weaknesses relative to Option B1. This option would be more appropriate for a large MOT with a complex range of functions and large complement of staff. The Tonga MOT should be a lean organisation that is better suited to a simple flat organisational structure with as few layers of management as possible.
- Options C1 and C2 are not recommended at this stage. Both involve the additional complexity of establishing two new agencies instead of one, and there is also a risk of reduced accountability if RMA or LTA reports to its own Board. Option C2 is the preferred model for MOT if there is to be a separate authority that is to manage the Tonga road system. Linking revenue collection with road program management under an LTA model can produce a more transparent, predictable and sustainable road funding system, as well as being consistent with establishment of a road fund or other similar funding mechanisms. In addition, it would instil a more businesslike approach to vehicle and driver registry functions, with potential for better customer service and effective use of the private sector

In summary, Option B1 is the preferred model for establishing a Tonga MOT. It addresses most of the shortcoming of current arrangements, and offers a simple and accountable structure (all functions in a single agency) that is well-suited to the current transport sector in Tonga. It also has the advantage that it leaves open the option for a possible transition in the longer term to Option C2, which needs which needs greater management capacity.

3.4 Recommended institutional arrangements

3.4.1 Ministry of Transport

The preferred option (B1) is an integrated model with MOT structured along modal lines and taking responsibility for planning, policy and regulation for all modes of transport, and for program management in the land transport sector.

The characteristics of the recommended MOT model are:

Strategic direction

- MOT would embody the principles of good governance (efficiency, accountability, separation of powers) and would apply these principles to achieving the government outcomes (safety, economic efficiency, environment, social equity) for the Tonga transport system as a whole.
- MOT would apply an integrated, multi-modal approach (land, sea, air) to transport issues, planning, and policy development, and have strengthened planning and policy capabilities across all modes.
- The vision, mission, objectives, performance measures and targets of MOT would be embodied in a corporate plan that is regularly updated.
- The strategic policy direction and infrastructure investment plan would be embodied in a National Transport Strategy (with complementary Land Transport, Aviation and Maritime Strategies) that is updated every five years and provides a blueprint for development of the Tonga transport system, covering all modes and both infrastructure and operations.

Structure and functions

The recommended structure and functions of MOT and its relationship to other transport sector agencies are shown in Figure 3.2. Key features are:

- MOT is a Ministry in the Tonga government.
- MOT is responsible for strategic planning, developing policy and regulations for all modes of transport, and for program management in the land transport sector.
- The key features of the recommended structure of MOT are:
 - Secretary for Transport provides overall leadership;
 - a small Transport Policy & Planning Unit (TPPU) that coordinates and provides advice on policy, strategic planning, economic regulation (fares, taxes, market entry, etc) and CSOs across all modes of transport;
 - Land Transport Division is responsible for land transport technical regulation (eg road rules, vehicle standards, etc - with some involvement from TPPU if there are broader economic and cross-modal issues), motor registry functions and roads program management (including traffic management), and provides specialist advice to TPPU on issues concerning land transport policy, planning and economic regulation (MOP would retain responsibility for traffic enforcement and driver testing);
 - Marine & Ports Division is responsible for technical regulation in the maritime sector, and provides specialist advice to TPPU on issues concerning maritime sector

policy, planning and economic regulation (operation of all ports becomes the responsibility of PAT);

- Civil Aviation Division is responsible for technical regulation in the air transport sector, and provides specialist advice to TPPU on issues concerning aviation policy, planning and economic regulation (operation of all airports becomes the responsibility of TAL) - this Division would also include Meteorological Services; and
- Corporate Services Unit provides administrative and corporate services (finance, human resources, legal, information technology, etc) to the Ministry as a whole. These functions would not be replicated in each Division.
- MOT would have no construction capability. All construction and maintenance would be outsourced to the private sector or MOW.

Consultation and community involvement

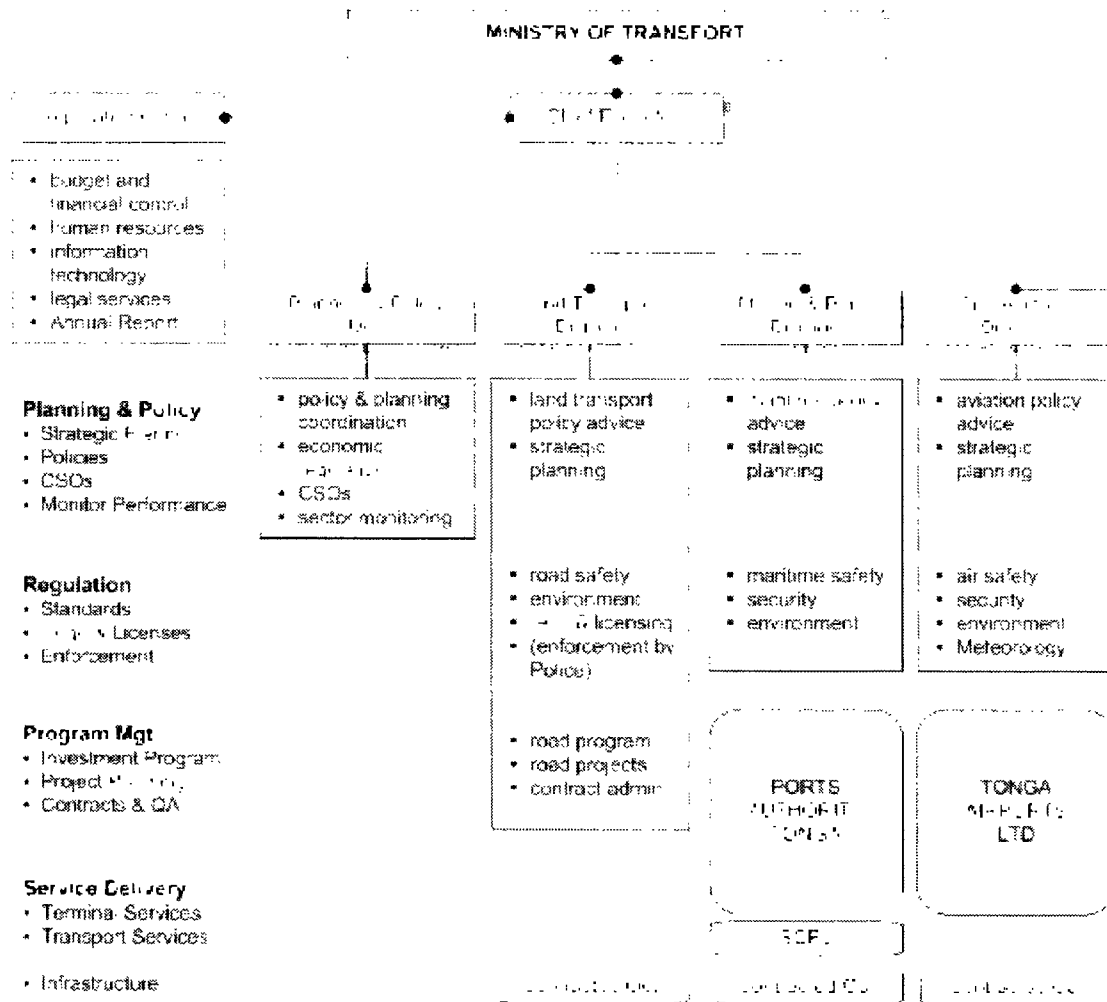
- MOT would work closely with the community, business and the transport industry to ensure that all participants in the transport sector are working together towards shared priorities.
- Improved mechanisms would be established for involving the community and industry in the work of the Ministry. A Ministerial Advisory Council (MAC) would be established to bring together representatives of the transport industry, tourism, other business, the community and government to provide input and advice on key national transport issues, such as road safety, aviation and shipping.
- A Transport Advisory Committee would be established in each island group (Tongatapu/Eua, Ha'apai and Vava'u/Niuas) to provide input and advice on local transport needs and issues across all modes of transport. In particular, each Transport Advisory Committee would provide advice to MOT on local infrastructure priorities, service needs and CSOs.

Systems and procedures

- New legislation would define the scope of powers and responsibilities of MOT and transfer legislative responsibilities from other Ministries, such as transfer of maritime Acts from MMP and aviation Acts from MCA.
- Management information systems would be upgraded to provide an improved basis for decision making and administration, including:
 - Computerising the motor registry system (with a system appropriate to the scale of the Tonga vehicle fleet and local skills). This would improve customer service, reduce the potential for revenue leakage, and provide better information for planning and policy development
 - Reactivate the pavement management system (PMS). This is needed to program road works so that life-cycle costs are minimised and the government's investment in infrastructure is protected. The PMS should be transferred to MOT with the road program management function, and reactivated (using a simplified system appropriate to the scale of the Tonga road network and local skills). Consideration should be given to contracting out the PMS and preparation of work plans to a private company.

- Establish a statistical database that provides broad indicators of demand for transport and transport system performance. The database would be collated and managed by TPPU, drawing on existing data sources.
- Establish performance indicators for maritime and airport activities that can be used as the basis for economic and technical regulation, and maintain a database and contacts with agencies in other countries that allows economic and technical performance to suitably regulated – and implement similar systems to regulate fares for land public transport services and to guide the setting of standards and performance of other aspects of the land transport sector.

Figure 3.2 Recommended structure of Ministry of Transport



- Internal processes and systems would be strengthened to improve the capacity and effectiveness of the Ministry, including:
 - Strategic Planning Process – an ongoing process which develops the strategic plan (including an investment plan) for transport in Tonga, on a 3-5 year or longer time horizon, reviewed every 2-3 years. This will describe priority strategies to achieve desired transport and government outcomes consistent with SDP. The strategic plan is then translated that into annual programs, business plans and budgets. The cycle is

completed by undertaking performance monitoring (collecting information on a series of performance measures), and preparation of annual reports.

- Decision Making Framework – this is a more detailed program planning, project evaluation and budgeting process. It involves developing alternative programs and projects to address the priority strategies, these are then evaluated (using benefit-cost and multi-criteria analysis) and developed into a rolling three-year program. Program and project management and performance measures are monitored and reported at regular intervals.
- Financial Management Systems – enhance financial and accounting systems, particularly in the land transport sector where a better and more commercial understanding of road finance is required. Issues related to road finance are discussed in detail in Working Paper E.
- Contract Management Systems – enhance the capability of MOT to manage the contracting out of delivery of road infrastructure construction and maintenance, including contract preparation, tendering and management.
- Regulated Industry Monitoring Systems – enhance the capability of MOT to undertake its regulatory activities.

Resources

- MOT would be a Ministry that is funded through the GOT budget process. Issues and options associated with possible hypothecation of revenue from road users are discussed in detail in Working Paper E. Potential for funding maritime and aviation activities of MOT through cost recovery from regulatory fees appears to be limited (see Working Paperes D and F).
- MOT would have a total of around 60-70 staff (see Table 3.4). There would be some new positions created for functions that are not currently performed, but most MOT staff positions would transfer from other Ministries (MMP, MCA, MOW and MOP).

It is not anticipated that there will be an immediate reduction in the overall number of public sector staff positions (including PEs). This results from a balancing effect:

- establishing MOT would create some efficiencies derived from sharing specialist staff resources, such as technical, legal, human resources, information technology, etc - this will reduce the number of staff required to do the current job; but
- at the same time, new staff positions would be created for tasks that are currently not being done (such as land transport policy), or where the task is recommended to be upgraded (such as motor vehicle registry and road asset management functions).

That is, the resource savings from efficiency gains in some areas will be transferred to fill gaps in other areas. The net effect is expected to be neutral in terms of public sector employment, but will deliver significant efficiency and productivity gains. In particular, benefits are expected in terms of a better integrated and more efficient transport system; more effective collection of revenue from road users; and better value for money from spending on the road network.

Table 3.4 Proposed MOT structure, functions and resources

Unit	Functions	Resources
Secretariat	<ul style="list-style-type: none"> Secretary's office High-level support to the Minister 	<ul style="list-style-type: none"> CEO Secretariat services <p><u>Staffing: 3-4</u></p>
Corporate Services	<ul style="list-style-type: none"> Provide general administrative and corporate support across the Ministry Budget, finance, accounting & audit services to the Ministry Provides specialist corporate services (legal, human resources, information technology) to the Ministry MTI Annual Report and Corporate Plan Support for the Ministerial Advisory Council 	<ul style="list-style-type: none"> Director Finance Corporate services Admin support <p><u>Staffing: 12-15</u></p>
Transport Planning & Policy Coordination Unit	<ul style="list-style-type: none"> Coordinates and integrates transport planning & policy development, and investment plans Monitors performance across the transport sector Develop systems and provide advice on economic regulation Develops and administers transport CSOs Prepares and updates Tonga Transport Strategy – 3-5 year strategic policy direction & infrastructure investment plan (complements SDP) 	<ul style="list-style-type: none"> Director Strategic planning/policy specialist Transport economist/ business analyst Admin support <p><u>Staffing: 3-4</u></p>
Marine & Ports Division	<ul style="list-style-type: none"> Provides technical and policy advice on maritime transport issues Monitors port and shipping needs, and develops strategic plans and investment strategy to achieve government outcomes for the Tonga maritime sector Administers maritime safety, security and environmental responsibilities 	<ul style="list-style-type: none"> Director Maritime planning/policy specialist Technical specialists (nautical, engineering, security) Admin support <p><u>Staffing: 10-12</u></p>
Civil Aviation Division	<ul style="list-style-type: none"> Provides technical and policy advice on aviation issues Monitors airport and air service needs, and develops strategic plans and investment strategy to achieve government outcomes for the Tonga aviation sector Administers aviation safety, security and environmental responsibilities Provides meteorology services to all sectors 	<ul style="list-style-type: none"> Director Aviation planning/policy specialist Technical specialists (aviation, engineering, security) Meteorology services Admin support <p><u>Staffing: 12-14</u></p>
Land Transport Division – Directorate	<ul style="list-style-type: none"> Provides technical and policy advice on land transport issues provides administrative support services to the Division 	<ul style="list-style-type: none"> Director Land transport planning/policy specialist Admin support <p><u>Staffing: 2-3</u></p>
Land Transport Division – Motor Registry	<ul style="list-style-type: none"> Operates the vehicle registration & driver licensing system 	<ul style="list-style-type: none"> Manager Customer services staff Admin support <p><u>Staffing: 8-10</u></p>
Land Transport Division – Roads and Traffic Management	<ul style="list-style-type: none"> Manages the Tonga road system to achieve government outcomes of safety, accessibility & efficiency Monitors road use, condition and needs, and maintains a road asset management system Develops a road asset management & investment programs and projects Develops traffic & road use management programs and projects Manages contracts for road construction & maintenance, and installation of traffic control devices Develops and implements road safety education programs, and supports the National Road Safety Council 	<ul style="list-style-type: none"> Manager Technical specialists (road asset management) Technical specialists (traffic and road use management) Admin support <p><u>Staffing: 8-10</u></p>

However the mix of skills required for MOT would be different to the current agencies. In particular, additional specialist skills would be required in strategic planning, policy and economics. These skills may be difficult to obtain from within the existing public sector workforce. This means that although it is expected that most new positions would be filled from within the public sector, there may be some redundancies and recruitment to obtain the required mix of skills.

3.4.2 Effect on transport sector ministries and public enterprises

The implications for existing agencies are:

- MCA would cease to exist and its staff would be split between MOT and TAL. The Civil Aviation and Airline Operations staff, Meteorological Services staff, and some administrative and management staff would transfer to MOT. The remainder (Airport Services staff plus some administrative staff) would transfer to TAL.
- MMP would cease to exist and its staff would be split between MOT and PAT. Policy, professional and some administrative staff of MMP would transfer to MOT. The remainder (staff involved in services at ports outside Nuku'alofa) would transfer to PAT.
- PAT would take over responsibility for operation of all sea ports. MMP staff involved in port operations at ports outside Nuku'alofa would transfer to PAT.
- SCPL would not be directly affected.
- MOW – Responsibility for road program planning and management would transfer from MOW to MOT. A small number of staff positions (around 68) and the PMS would transfer from the MOW Road Division to MOT. MOW would become a construction and maintenance service provider that may be contracted by MOT to deliver transport infrastructure services.
- MOP – Vehicle registration and licensing functions would move to MOT. Administrative and technical staff involved in these functions would transfer from MOP to MOT. These staff would be office staff – it is not proposed that any Police officers transfer from MOP. It is also recommended that planning, design and deployment of traffic management devices (signs, road marking, parking restrictions, etc) be transferred to MOT, as is conventionally the case for road agencies. MOP would remain responsible for enforcement.
- The Competent Authority in MOLCI would formally remove price regulation of land transport from its ambit and MOT would take up this responsibility. MOT's duties in this respect will need to be addressed in the legislation establishing the ministry. The Competent Authority would continue to regulate fuel prices.
- The Road Committee in MLSNR would continue to exist, but its membership would be limited to MLSNR and MOT.

3.4.3 Establishing a Land Transport Authority at a future time

The establishment of a LTA is suggested as a possible second phase of implementation of the MOT model. However, as noted above, implementation of this option is not recommended at this time. It is conditional on strengthening GOT management capacity to offset the risk of reduced accountability if LTA is outside the Ministerial structure. There are also advantages in delaying consideration of this option until after the transition to a MOT is complete (step-by-

step approach). and decisions have been made about a long-term approach to road cost recovery and sustainable road funding (see Working Paper E).

There is a straightforward transition path from the recommended integrated MOT model to a MOT plus LTA model. It would involve transforming the Land Transport Division of MOT into a separate statutory authority with its own Board, and consolidating responsibility for land transport policy into TPPU. Further details of the resulting organisation structure and the linkages between MOT, LTA and other agencies are provided in Working Paper B. Legislation would be required to establish the governance and financial basis of the Authority.

3.5 Implementing recommended changes and enhancing institutional performance

It is recommended that the proposed changes to institutional arrangements be implemented as soon as possible, though it is noted that considerable work will be required to effectively execute the changes.

Implementing the new MOT (and the proposed new government business corporation Tonga Airports Limited – see Chapter 4) will lead to improved transport sector management and operations. However, achieving the full benefit of the changes needs a more comprehensive program of institutional development, in particular:

- ensuring that the functions and organisational arrangements of the new agencies are clearly defined and well understood by their future staff, by other government agencies and by other stakeholders;
- establishing corporate systems needed to support the effective execution of agency responsibilities and
- capacity building of staff of the organisations to fulfil their responsibilities.

Similar support, though at a lesser scale, is needed by PAT. A somewhat different set of activities is needed with regard to establishment of MOT and provision of support to PEs in the transport sector. Outline Terms of Reference for this work are attached to this report (see page **Error! Bookmark not defined.**). It is expected that a period of at least five months (and preferably longer) will be needed from the time consultants mobilise for the work until the new institutions are established, including two months to confirm and detail the institutional arrangements and at least three months for the government to make the necessary legislative changes and appoint staff. It is expected that capacity building activities will continue for about nine months after implementation of the new agencies.

Work needed to implement the revised institutional arrangements and provide them with initial support includes components described in following subsections. The work is described primarily with reference to MOT, but many activities are also pertinent to the proposed corporatised airport authority (Tonga Airports Limited - TAL – see Chapter 4) and enhancement of PAT and SCPL (see Chapter 7).

3.5.1 Confirm and detail institutional arrangements

The recommended institutional arrangements of the current Review need to be confirmed by the government, after which further work is required to plan and implement the agency.

A practical time to implement MOT would be on 1 July 2006, at the start of a new financial year. This will allow sufficient time for sound planning and implementation of the agency.

However, the time is not excessive. Allowance needs to be made, for example, for the time to engage and mobilize technical assistance (see the next section), the need to pass legislation to establish MOT, update regulations, detailing of the activities of MOT and roles of its staff, selection of staff, arrangement for office accommodation, preparation of a budget, etc.

It is also recommended that consideration be given to where MOT will be situated. Continued location of divisions of MOT in their current disparate offices will weaken the integrity of the organisation and the ability to secure change. It is therefore recommended that MOT staff be in a single office to give it a fresh start, ensure its operation as an integrated ministry and to promote cross-fertilisation of skills and information between staff of the agency. This is less important for those undertaking operational functions such as vehicle registration/driver licensing and meteorology.

It is recommended that immediate actions needed to facilitate implementation of MOT are:

- designate a person who will be the contact point and 'champion' for the MOT - this person, or group of people, will need to maintain the vision for the MOT, and plan and undertake/coordinate the actions necessary for its implementation;
- advise affected public sector personnel of the change before rumours distort and weaken morale, and provide assurance about the change process;
- prepare a detailed, time-bound, responsibility-assigned set of activities to be undertaken between the present time and the date on which MOT will be established; and
- engage consultants to provide technical assistance.

3.5.2 Capacity building for staff and management

There is a vital need for development of a human resources plan for MOT that is predicated on the understanding that recruiting and retaining suitably qualified staff is the key success factor of MOT. The plan would address the need to build capability by recruiting and retaining suitably qualified staff; providing training and continuing education (short courses, graduate training, attendance at conferences), and having available suitable technical assistance, mentoring and other resources. The plan needs to recognise that:

- staff positions need to be filled;
- achieving results from staff requires that the staff have:
 - skills and knowledge that they bring to their job;
 - competences, or capabilities, that they use to apply these skills and knowledge;
 - management systems and other resources (eg computers, software, paper, transport, etc) that support them to apply their skills and knowledge, and which provide further development of staff skills;
- managers need to have particular competences, which can for example be described as (see UK Cabinet Office 2000):
 - giving purpose and direction – to create and communicate a vision for the future;
 - making a personal impact – to lead by example;
 - thinking strategically – to harness ideas and opportunities to achieve goals;

- getting the best from people – to motivate and develop people to achieve high performance;
- learning and improving – to draw on experience and new ideas to improve outcomes; and
- focussing on delivery – to achieve value for money and results.

Key elements of activities to support senior executives of MOT during the establishment phase are:

- mentoring of senior executives of MOT;
- assist MOT executives to clarify the agency vision, mission and goals, and to establish appropriate performance indicators to measure its success in delivering government outcomes;
- assistance with development of a comprehensive Corporate Plan that embodies the MOT vision, and can act as a blueprint for the MOT activities and systems; and
- recruitment and development of staff resources, including management skills – this is discussed further in the next subsection.

3.5.3 Corporate systems

A range of corporate systems are typically in use in organisations. They provide discipline, support and information that are vital to the effective operation of agencies. There is a need to ensure that they are properly designed, implemented and used. The systems include

- a system of accounts that meets government fiscal needs and provides data for management information systems;
- office and computing and other equipment needs; and
- other systems such as strategic, corporate and work plans, systems for industry regulation, data collection and management and public consultation, and tools for planning and programming the delivery of transport system improvements.

Inter-related strategic, corporate and work plans needed for agencies to effectively undertake their work should include:

- Strategic Plans - a ten year integrated National Transport Strategy with complementary ten year Land Transport, Maritime and Aviation Strategies prepared by MOT and associated ten year Port and Airport Development Plans prepared by PAT and the proposed airport authority (see Chapter 4) – the plans should focus on strategic and policy issues, with plans for the commercial entities recognising that the market in which they operate are dynamic and identifying opportunities to influence the markets to their benefit;
- Corporate Plans – MOT, PAT and the proposed airport authority should each have a five year Corporate Plan that presents their approach to implementing their respective strategies – the plans should establish time bound objectives and outputs for each agencies, activities, productivity improvements, staffing, further staff development, customer service standards, revenue and expenditure, performance indicators, critical assumptions and risk management – plans for PAT and the airport authority should include consideration of market issues, demand for their services and pricing policies, and give particular attention to their financial performance and risk management; and

- Work Plans – the Land Transport Division of MOT, PAT and the proposed airport authority should each have a rolling three year work plan (comprising a detailed one year plan and outline plan for the subsequent two years) for asset management, with justification provided for all expenditure including project appraisal at a standard appropriate to the scale of expenditure.

These plans need not be extensive documents. It is essential that Strategic and Corporate Plans be focussed and quantitative and, to the extent that is appropriate to each:

- present objectives and principles that guide the policies and practices of the agency and its work;
- focus on priority issues;
- contain forecasts of transport demand, even if only indicative;
- assess the viability of sustaining current infrastructure - and present maintenance and management strategies and programs for infrastructure that is to be sustained, with associated costs and sources of funding;
- separate investment projects that respond to forecast growth in demand or other deficiencies and for which project justification is presented (ie economic and/or financial evaluations) from other projects for which only indicative justifications are available - "wish lists" of projects should be avoided;
- for Corporate Plans, present intended operational practices, including methods for improving productivity (ie achieving more/improved output from current staff and/or similar output from reduced staff numbers);
- for TAL and PAT, financial forecasts, including income and cash flow statements and balance sheet; and
- quantitative indicators to be monitored to assess agency and plan performance.

The proposed technical assistance project will assist the agencies to prepare these plans.

3.5.4 Planning and policy

The focus of this component would be establishment of the Transport Planning & Policy Unit (TPPU) and its supporting systems. Key elements include:

- assist MOT to initiate TPPU activities and establish sustainable resourcing;
- strengthen TPPU skills in transport economics, strategic planning, policy analysis and project evaluation, through training and mentoring programs;
- assist TPPU with development of the 10 year multimodal National Transport Strategy (and support the modal divisions prepare complementary Land Transport, Aviation and Maritime Strategies) - this would be the first step in an ongoing process that develops and regularly reviews the strategic policy framework and infrastructure investment plan for transport in Tonga;
- assist TPPU to review the legislative framework of the transport sector; identify overlaps and gaps in the existing framework; identify out-dated and ineffective legislation; and develop a program of legislative reform;
- assist TPPU to establish a standard project evaluation methodology and parameters, and prepare associated manuals and training resources;

- establish a transport statistical database to support planning and decision making, and assemble a reference collection of reports of international loan funded projects in Tonga and other relevant transport sector documents;
- establish performance indicators for monitoring the performance of the transport sector - this would include a set of general indicators of supply and demand, and specific indicators designed (in conjunction with MOF) to monitor the efficiency of transport sector PEs and to guide economic and technical regulation; and
- establish links to equivalent units in Fiji and Samoa and twinning arrangements with transport agencies in New Zealand and Australia.

Although the focus of this component would be on strengthening TPPU, benefits to MOT as a whole would be maximised by involving selected staff from other Divisions in the program.

3.5.5 Monitoring of public enterprises

This Review has identified the need for improved monitoring of PEs in the transport sector to ensure that they undertake their tasks more effectively and are accountable for their activities. It is vital that PEs are accountable to the public through the government, and that this occur through formal systems such as corporate plans, links between stakeholders and PEs, financial agreements between PEs and MOF, and technical and economic regulation by MOT. Firm and consistent oversight of PEs is essential to the effectiveness of these systems.

As discussed in following chapters, technical regulation of PEs (primarily with respect to safety standards) is generally satisfactory. However, PAT and the proposed TAL are monopolies in their respective areas of operation and hence require more effective economic regulation to ensure that they remain efficient and do not impose charges that are higher than needed to recover associated costs. (There is less need for economic regulation of SCPL and land transport because these operate in competitive markets.) Technical regulation of PEs will become the responsibility of MOT, while regulation and monitoring of the financial performance of PEs (ie accounting, return on equity, payment of dividends) should continue to be the responsibility of MOF. This Review strongly recommends strengthening of the capability of MOF in this role. Allocation of responsibilities for economic regulation is considered in the next subsection.

Financial monitoring of PEs is currently the responsibility of MOF. This is an appropriate arrangement. This review draws attention to two particular aspects of financial monitoring of PEs that relate to the performance of the transport sector:

- MOF has an interest in PEs charging sufficiently high user fees to achieve profitability. Care is required that this interest, which can be met by simply raising charges, is balanced by a desire to improve productivity in PEs so that user charges can be reduced and Tonga's international competitiveness improved. This requires use of a range of performance indicators rather than profitability alone.
- The substantial assets of transport sector PEs such as PAT and the proposed corporatised airport authority (see the next chapter) result in considerable depreciation provisions. As depreciation is a non-cash expense, a net profit by such PEs means that they generate a substantial cash surplus. The intention is that this cash should be put aside to meet the eventual cost of replacing the current assets when they reach the end of their economic life. It is inevitable that, faced with a rising amount of cash on deposit, there may be a desire to use the funds for other purposes. It is vital that MOF review investment proposals by PEs to ensure that they generate financial rates of

return greater than the interest rate received from funds on deposit - if the return should be less, the only effect is to destroy shareholder value and in due course to not have sufficient funds to replace life-expired assets.

This Review does not make any specific recommendations for additional technical assistance to MOF, but notes that the institutional strengthening measures recommended for MOT and transport sector PEs (see also Chapters 4 and 6) will complement technical assistance programs to upgrade the capacity of the Public Enterprise Unit of MOF and train PE Board members that are already underway (with funding from NZAID and ADB).

In particular, the recommended institutional strengthening for the monitoring of PEs will assist MOT and MOF in the following ways:

- strengthened capacity of TAL, PAT and SCPL to formulate investment programs and corporate plans will place their activities on a more businesslike basis and provide additional information to assist MOF in monitoring their activities; and
- PE performance indicators maintained by MOT TPPU will complement the fiscal indicators used by MOF and provide a more complete picture of PE activities and performance and to ensure technical and economic regulatory obligations are met.

3.5.6 Regulating transport services

World-wide experience is that open, competitive markets result in the best transport outcomes. When competitive markets are present, there is no need for economic regulation because transport service providers cannot impose charges that are higher than needed to recover their costs including a normal profit. It is, nevertheless, common for governments to impose price regulation of public transport services to provide an extra layer of protection to the community – though prices that are artificially low will ultimately hurt the community as services will not be sustainable. Governments also generally impose technical regulation of transport services to ensure public safety.

On occasions governments may consider that there is sufficient demand to support only a single operator. In such a situation, the government should demonstrate rather than assert that it is the case and that the resulting government-mandated monopoly will result in a better outcome for the community. Competitive tendering within a transparent and clear regulatory framework should be used to select the operator, and the contract should be subject to clear and effective technical (ie safety) and economic (ie constraints on market entry, efficiency and tariffs) oversight. This is a substantial and complex task for which there are very limited skills available in Tonga. It should be used as a last resort.

As will be discussed in Section 4.6 in the context of the domestic aviation subsector in Tonga, demand that is considered sufficient to support only a single operator is not a sufficient case to justify a government-mandated monopoly. If the market is contestable (that is, if a current single operator can be challenged and possibly displaced by a new operator), there is no need for economic regulation. Economic regulation of land transport is considered further in Section 5.6.3.

Institutional strengthening to support MOT regulation of transport services should therefore be directed to developing its capacity to:

- formulate and implement policies to support contestable, if not competitive, markets;

- assess the need for, and costs and benefits of, government regulation of transport services; and
- where market entry needs to be regulated, to plan and implement the necessary actions needed to ensure that the identified net benefits accrue to the community.

An issue is the appropriate location in government of necessary economic regulatory activities in the transport sector. Three options are:

- MOLCI is currently responsible for economic regulation of land transport. Its remit could be broadened to include other modes. MOLCI responsibility is not recommended because it separates economic regulation from both transport policy (in MOT) and economic policy (in MOF).
- Locating all economic regulation in MOF (ie as a multi-sector regulator) would ensure consistency across the whole of government, allow more effective use to be made of skills that are generally in short supply and ensure greater independence from industry in the setting of tariffs. However, this approach has the limitation that MOF has imperfect technical knowledge of the transport sector and must balance the sometimes conflicting needs of fiscal supervision and economic regulation of PEs.
- Locating economic regulation of transport activities in MOT can draw on transport sector knowledge and links to transport agencies in other countries. It also requires similar analytical skills that need to be resident in MOT (in the TPPU) for transport policy analysis. The capacity for policy analysis in MOT would be markedly weakened if economic regulatory activities were shifted to MOF.

On balance, it is concluded that there is merit in MOF being ultimately responsible for economic regulation in Tonga, but that detailed work with regard to economic regulation in transport should be undertaken by MOT. MOT would submit its recommendations to MOF for approval.

3.5.7 Making effective use of the private sector

The private sector already plays a major role in the economy in Tonga, though a lesser one that occurs in many other countries around the world. ADB (2004) noted that there are no compelling reasons for governments in Pacific countries to play a larger role in their economies than occurs in other countries. The study suggested a range of factors that result in low returns on capital and constraints to business startup and development – two with particular relevance to the transport sector in Tonga are:

- reducing the role of the state in the economies of the region; and
- revamping the regulatory regimes for the business environment to be less constrained and monopolies more prudently regulated.

Addressing these issues is consistent with the government's current policy is to facilitate the development and enhancement of the private sector in Tonga. Three areas of improvement are possible, and are considered in following paragraphs.

The current use of the MOW workshop to undertake commercial work for the public is an example of government activities crowding out the private sector. The competitive commercial vehicle repair industry in Tonga that is adversely affected by the practice. It also introduces ambiguity into the role of MOW that weakens its focus on its essential role. Accordingly, it is recommended that MOW should withdraw from commercial activities

unless it can be clearly demonstrated that there is no current, or prospect for, private sector capacity to undertake the activities.

The second area of improvement is making greater use of the private sector to deliver government services. Modern public sector management separates financing of public services from their delivery. Using the private sector to deliver services, on the basis of competitive tendering and soundly managed contracts, has a number of benefits, including:

- improved focus by government agencies on the types of service that are to be provided and clearer specification of works and associated technical and financial arrangements;
- improved management of works by both contractors and government agencies under the discipline of a contractual relationship;
- more effective use of equipment and technology by contractors; and
- lower costs to government.

It is therefore recommended that MOT should arrange for all road works to be undertaken by contract, with contractors ideally to be selected on the basis of competitive tendering. MOW could be permitted to tender for these contracts, though considerable improvement in accounting systems would be required to ensure a 'level playing field', ie that MOW would tender on the basis of the full cost of its activities (eg taking account of the replacement cost of equipment and buildings, the cost of corporate systems, and the full cost of staff including costs incurred elsewhere in the public service).

A case can be made to avoid this complexity by closing MOW's road works activities and engaging the private sector to undertake all works – as has occurred in Samoa. This is, however, a substantial change that has its own set of complexities, for example ensuring there is government capacity for planning, tendering and managing contracts for road works, including ensuring that tendering is undertaken on a truly competitive basis. Moreover, it requires a very rapid buildup of the size and competence of the private sector.

It is therefore recommended that a more gradual approach to making greater use of the private sector be adopted, involving:

- avoiding the need for competitive tendering between MOW and private contractors by initially using the private sector for works for which their interest and competence is greatest, selecting the contractor on the basis of competitive tendering, and not permitting MOW to tender for these projects;
- as private sector and MOT management competence grows, extend the scope of works assigned to implementation by the private sector; and
- arrange for MOW to undertake other works on the basis of negotiated contracts subject to the constraint that MOT should retain the right to bid out works to the private sector if it judges that the private sector can undertake the work at a lower cost.

Finally, it is recommended that a renewed focus be placed on examining the need and focus of regulation of private activities in the transport sector. Regulation by government is needed to respond to 'market failure' (eg factors such as lack of competition and the presence of externalities) - because if market works satisfactorily, there should be no need for intervention. Many countries now require preparation of regulatory impact statements to describe the market failure to which the regulation is directed to redressing and to determine if the benefits from the regulation will be greater than the costs imposed by it. It also needs to be recognised

that 'government failure' can occur, that is limitations in government knowledge and administration can result in the application of regulation being less effective and efficient than may be hoped for.

It is recommended that the proposed TPPU in MOT should identify regulations that affect the transport sector and assess them giving consideration to these factors to determine if they serve the public interest or are unnecessary burdens on the community.

In practice, the principal reasons for regulation in the transport sector in Tonga will be public safety, security and environmental protection. Many of these, primarily in the aviation and maritime subsectors, will be required to meet international obligations.

3.5.8 Community service obligations

It is recommended that the TPPU be responsible for determining and managing CSOs in the transport sector. This involves determining the level of financial support that can be justified for services that are not financially viable, the best way of providing the services, the duration over which the support is to be provided, and monitoring and review of the support.

Inherent to this work is ensuring the subsidies provided through CSOs are directed to supporting services that generate the greatest benefit. This requires monitoring the costs and benefits of various CSO programs to determine if there are opportunities to redirect money from one program to another in a way that increases the social benefits gained from the subsidies.

MOT would seek funding for CSOs through conventional budget processes. MOF would review the effectiveness of the CSOs provided through MOT in the course of these processes.

The provision of a CSO by the government does not require that the government deliver the service. For example, a CSO to support shipping services to outer islands could be implemented by contracting a private operator or PE to provide the service. It is vital that sound contracting processes be used in these circumstances, covering:

- ensuring that the structure of the contract provides incentives for the manager to improve efficiency;
- the completeness and soundness of contract documentation;
- bidding and tender assessment procedures; and
- contract management.

In instances where CSO supported services are delivered by government ministries, there should still be clear documentation of the services that are to be provided, provision of services in a cost-effective manner, and monitoring of the program. That is, all CSOs should be provided on a contractual basis.

3.5.9 Other aspects of road and land transport management

Developing the role and skills of the Land Transport Division of MOT and its supporting systems will be a particularly challenging aspect of the establishment of MOT. It involves bringing together functions that are currently fragmented across several agencies, and upgrading planning, programming and regulatory activities, many of which are currently not carried out. Activities that need particular attention are addressed further in Chapter 5.

3.6 Technical assistance

It is recommended that the government seek technical assistance to support establishment of MOT, including:

- plan implementation of agreed institutional changes in detail, including the roles and responsibilities of MOT, implications for other current agencies, legislation, and specification of MOT staff and their responsibilities;
- identify and establish corporate systems needed to enable MOT to effectively and efficiently undertake its work, including accounting, management information, budgeting, computing, strategic and corporate plans, regulatory systems, data collection and management, public consultation, and planning and programming tools for delivery of transport system improvements;
- identify change management needs, including provision of advice on staff consultation and grievance processes and social provisions to support staff changes, severance, etc;
- develop the leadership and technical skills of staff in MOT; and
- develop corporate plans, an overarching national transport strategy and strategic development plans for each transport subsector that address infrastructure management and development, and management of service provision.

A draft Terms of Reference (TOR) for this work is presented on page **Error! Reference source not found.****Error! Bookmark not defined..**

4. Aviation Development

4.1 Context

The Kingdom of Tonga has determined that it should 'privatise' its main airport, Fua'amotu, which serves Nuku'alofa and is the principal international gateway to the country. To this end, the government established a 'Privatisation Committee' (also called the 'Commercialisation Committee'). The Committee is to consider the impact of privatization of Fua'amotu International Airport upon the Kingdom's transport infrastructure and how best to realise the privatization of Fua'amotu International Airport having due regard to public safety, the public interest generally and regulatory safeguard.

Discussions with the Committee indicate that the work of this Review will assist it with its deliberations. The Review has thus determined principles that can guide the consideration of private sector involvement in airports in Tonga, and then identified and assessed airport ownership options. Following subsections outline this work, which is described in more detail in Working Paper D.

While this has been the principal focus of the current Review, consideration is also given to other aviation matters, including management of airports on outer islands, and operational safety and regulation of domestic aviation services.

4.2 Current financial performance of airports

4.2.1 Value of airport assets

Considerable investment has been made in airport and other aviation infrastructure in Tonga. On the basis of available data, it is estimated that the value of assets that need to be replaced over time is about 51 million Pa'anga⁷, including 41 million Pa'anga at Fua'amotu airport, 1 million Pa'anga at other airports, and 8 million Pa'anga for navigation and radio beacons. Average annual expenditure of a little under 3.0 million Pa'anga is needed over time for replacement of these assets when they reach the end of their respective economic lives.

Included in this allowance is the cost of periodic pavement overlays at Fua'amotu airport. Allowing for periodic maintenance of other assets at Fua'amotu and other airports gives a total average annual cost for replacement of life-expired assets and periodic maintenance of 3.2 million Pa'anga.

In addition, there is a cost for the capital tied up in airports, be it an opportunity cost, interest or return on equity. The real cost of capital is taken to be 7 percent, assuming the airport is viewed as a commercialised government entity⁸. This indicates a cost of capital of 1.8 million Pa'anga per annum, giving a total cost for depreciation and cost of capital for airport assets in Tonga of 5.0 million Pa'anga per annum.

⁷ Unless otherwise indicated, all financial values used in this section are in mid-2004 prices.

⁸ This is taken to be typical of the cost of capital for commercial operations of the Government. A case could be made for a higher cost of capital to reflect the opportunity for others to use the capital for activities with a higher rate of return. The cost of capital would be much higher for a private sector entity that was exposed to commercial risk.

4.2.2 Airport cost recovery

The average annual cost of operating airports in Tonga, ie recurrent expenditure, in recent years is estimated at 1.89 million Pa'anga (see Table 4.1). About 70 percent of this expenditure is attributed to Fua'amotu airport. Inclusive of capital charges, the total cost of owning, operating and sustaining airports in Tonga is 6.9 million Pa'anga per annum

Revenue attributed to Fua'amotu airport is sufficient to meet only 40 percent of the total cost of owning, operating and sustaining the current airport (see Table 4.1). Cost recovery for other airports is only 12 percent, reflecting the minimal revenue collected from users of them. Including revenue from upper airspace charges imposed on airlines (collected by Airways Corporation of New Zealand on behalf of Pacific island states) results in overall cost recovery for airports of 37 percent.

Table 4.1 Estimated income and total cost of airports, incl. capital charges
(million Pa'anga, mid-2004 prices)

	Fua'amotu airport, Tongatapu	Other airports ⁽¹⁾	Overhead/ - joint costs	Total
Expenditure⁽²⁾				
Recurrent Expenditure				
Program direction & administration	0.05	-	0.17	0.22
Aviation security	0.32	0.05	-	0.37
Flight and rescue fire services	0.50	0.14	-	0.64
Technical, mechanical & electrical serv.	0.09	0.02	0.01	0.12
Infrastructure maintenance	0.37	0.16	0.02	0.55
Subtotal (recurrent)	1.32	0.37	0.20	1.89
Capital Expenditure				
Depreciation and periodic maintenance	2.45	0.12	0.67	3.24
Opportunity cost of capital ⁽³⁾	1.47	0.04	0.28	1.79
Subtotal (capital)	3.92	0.16	0.95	5.03
Total annual expenditure	5.24	0.52	1.15	6.92
Revenue⁽⁴⁾				
Landing fees	0.74	0.06	-	0.80
Passenger service charge	1.06	-	-	1.06
Rent and recoverable charges	0.09	-	-	0.09
Refuelling fee	0.07	-	-	0.07
Ground handling charge	0.17	-	-	0.17
Upper airspace management agreement	-	-	0.38	0.38
Total annual revenue	2.12	0.06	0.38	2.57
Cost Recovery				
Ratio of revenue to cost	40%	12%	33%	37%

(1) Lupepau'u airport (Vava'u), Salote Pilolevu airport (Ha'apai), Kaufana airport ('Eua), Mata'aho airport (Niuatoputapu), and Lavinia airport (Nuafo'ou).

(2) Average expenditure in 2001/02 and 2002/03, expressed in mid-2004 prices.

(3) Using a cost of capital to a commercialised government airport agency of 7 percent.

(4) Total income for 2003, expressed in mid-2004 prices.

Source: Review estimates

4.2.3 Key issues

Key issues that arise with regard to ownership and operation of airports in Tonga are:

- The current structure wherein airports are managed and operated within a ministry structure is becoming less common as governments seek greater accountability and commercial management of airports. The government's current consideration of change is therefore appropriate. The principal issues are: (a) whether to seek to commercialise airports under government ownership or to privatise the airport; and (b) how to implement either of these approaches given the relatively greater commercial viability of Fua'amotu airport relative to other airports.
- Current airport revenue is, in aggregate, sufficient to meet annual operating costs but can contribute to only 20 percent of the cost of periodic maintenance and replacement of life-expired assets. That is, it is unable to meet the full cost of sustaining current infrastructure and can make no contribution to the cost of capital. Enhanced commercialisation of airports will need improved cost recovery⁹.

These and related issues are considered in the next subsection.

4.3 Future ownership and operation of airports

4.3.1 Principles for private sector involvement

Principles critical to consideration of private sector involvement in airports in Tonga are:

- a sound and transparent regulatory environment is required, covering technical and economic regulation;
- where private sector involvement is proposed:
 - an Outline Business Case should be prepared identifying options, allocation of risks between the private sector and the government, strategies for managing risk, expected future costs and the present value of implementation of each of the identified options to demonstrate that the recommended proposed is the lowest cost option, and implications of the proposal for future government budgets; and
 - assuming an option involving the private sector is recommended, clear specification of contractual arrangements with a focus on desired outputs, identification of performance measures by which contract adherence would be monitored, the results of market testing to determine that the private sector would find the proposal attractive, the results of consultation with all stakeholders, and the process to be used to implement the proposal;

⁹ There is no basis on the grounds of economic efficiency for a subsidy of passengers using airports in Tonga, especially when account is taken of the economic cost of raising the revenue from other sources to pay for the subsidy. Pursuit of social equity within Tonga provides a case for some subsidy of airports on outer islands – however, the subsidy should not be open-ended (eg to simply meet the difference between costs and revenue), but rather should be established on an explicit basis related to social equity (eg say a fixed amount per capita in the catchment of the airport, or per user of the airport), should be structured to encourage TAL to perform its tasks efficiently and should require a contribution, at least in kind, from the communities that benefit from the airports. It is recommended that Fua'amotu airport should achieve full recovery of operating and maintenance costs and depreciation. Improving the level of cost recovery requires a combination of higher revenue and improved productivity in providing services.

- competitive tendering is needed to select the private sector group, with all bidders needing to respond to a conforming tender and being permitted to nominate alternative arrangements; and
- a sound contract needs to be negotiated, and good contract management skills are needed in government to monitor contract performance and redress deficiencies.

Inherent to these principles is determination of the optimal role for government and the private sector. The balance will depend on a range of factors, including commercial merit, risk management, and government contract management and regulatory capacity. Privatisation of infrastructure or services that are effective monopolies (such as an airport) places higher demands on economic regulatory capacity. The capacity for a small economy with limited human resources such as Tonga to support this capacity needs to be taken into account in assessing options.

4.3.2 Options for Fua'amotu airport

With regard to the future ownership and operation of airports in Tonga, four options are identified, as indicated in Table 4.2. The options range from the current situation to full privatisation of Fua'amotu airport wherein the government would have no interest in the airport other than the essential tasks of arranging the provision of the land for the airport and undertaking technical and economic regulation of airport operations.

Table 4.2 Options for future ownership and management of Fua'amotu airport

	Option 1 (Status Quo)	Option 2 (Corporatisation)	Option 3 (Contracting out)	Option 4 (Privatisation)
Description	The current situation (other than creation of a new Ministry of Transport that incorporates the current MCA) ⁽¹⁾	Shift airport assets and operations to a state owned company	Shift airport assets to a state owned company and use the private sector to operate the airport (on say a 10 year contract with a mid-term review)	Sell airport assets to the private sector in the form of a long term lease (say 99 years)
Responsibility for				
• Ownership	MOT	Tonga Airports Limited (TAL)	TAL	Private sector (land leased)
• Investment	MOT	TAL	TAL	Private sector
• Airport operations	MOT ⁽²⁾	TAL ⁽²⁾	Private sector	Private sector
• Aeronautical operat.	MOT	TAL	Private sector	Private sector
• Regulation				
– Technical	MOT	MOT	MOT	MOT
– Economic	MOT	MOT	MOT	MOT
– Fiscal	MOF	MOF	MOF	not applicable
• Contract management	MOT (for minor contracts, where used)	TAL (for minor contracts, where used)	MOT	MOT

(1) If the proposed MOT was not implemented, MCA would replace MOT in this column.

(2) Some use might be made of private sector contractors to undertake tasks rather than use MOT/TAL staff.

Two options involve a PE – for ease of exposition, the company is called Tonga Airports Limited (TAL - though there is no constraint to using some other name). The institutional arrangements shown in Table 4.2 assume that the MCA has been incorporated into the proposed MOT (as discussed in the previous chapter).

The four options have been assessed with regard to the following criteria:

- government capacity to design and implement the option, operate the airport, including management of aeronautical operations, manage contracts, and undertake technical, economic and fiscal regulation;
- financial effectiveness, with regard to increasing revenue, improving efficiency, and the potential for private sector profitability; and
- the economic development potential of the option (noting that the potential will be small), and likely private sector interest in those options involving the private sector.

A summary of the assessment is reported in Table 4.3. It is concluded that:

- **Status Quo:** This option neither meets the goal of improving the efficiency of the transport system nor the broader goal of improving governance and transparency of government commercial activities. It is a traditional arrangement that has been increasingly abandoned by governments worldwide. The option is not recommended.
- **Privatisation:** This option is also not recommended because it will not be possible, even in the most ideal of circumstances, for a private company to secure sufficient revenue to cover full commercial costs including capital charges and profit (see Table 4.4). Even if the airport could be profitable, this option would not be recommended at this time because the regulatory framework and institutional capacity needed to ensure satisfactory arrangements are not present, and will take time to develop. Moreover, this option (and, to a lesser extent, the contracting out option) will benefit from foreign skills and capital to achieve potential operating efficiency and revenue enhancement. The willingness of foreign entities to bid, and to bid fine prices, will be influenced by their perspective of the business environment in Tonga – this may have adversely influenced by recent government decisions¹⁰. Privatisation would also probably prevent access to donor funds for airport development.
- **Contracting out:** This option has the merit of increasing the role of the private sector compared with the Status Quo, and with it the potential for more efficient operations and enhanced revenue. However, the potential is dependent on a higher level of institutional capacity and experience than this Review judges to be present in Tonga at present. Rather, it is suggested that there is a need to gain experience with more modest contracting arrangements in a range of circumstances before attempting to implement and manage the contracting out of an entire business unit.
- **Corporatisation:** This is the preferred option. It has the capacity to bring about a substantial improvement over the current situation, with pressure for improved transparency of management of the airport and improved commercial outcomes. The government has experience in the corporatisation of other business units. There remain limitations in the regulatory environment and the independence and quality of management of these units, but this capacity can be expected to improve with ongoing experience and support.

¹⁰ For example, (a) the manner in which the one airline policy was introduced and its outcome – which can be taken to suggest changeable and non-transparent government decision-making; (b) the ten year airport ground services handling contract – which subjects a potential incoming operator to an inadequately regulated monopoly private contractor; and (c) the recent purchase by the Ports Authority Tonga of the former private ground handling company at Nuku'alofa port – which can be taken to imply ambiguity in government support for increased private sector participation in the economy. The private sector can be expected to bid higher prices to allow for uncertainty and risk that could affect their commercial viability

Table 4.3 Comparison of ownership & management options for Fua'amotu airport

	Option 1 (Status Quo)	Option 2 (Corporatisation)	Option 3 (Contracting out)	Option 4 (Privatisation)
Government capacity				
Design & implement the option	na	✓✓	✓	✓
Operate the airport	✓✓✓	✓✓✓	na	na
Manage contracts	✓✓	✓✓✓	✓	na
Undertake regulation				
• Technical	✓✓	✓✓	✓✓	✓✓
• Economic	na	x	x	x
• Fiscal	na	✓	✓	✓
Financial effectiveness				
Increase revenue	✓	✓✓	✓✓	✓✓✓
Improve efficiency	✓	✓✓	✓✓	✓✓✓
Potential for private sector profitability	na	na	✓✓	x
Other				
Economic development	na	✓	✓✓	✓✓✓
Likely private sector interest	na	na	✓	x
Conclusion		Preferred		

Table 4.4 Indicative income and expenditure for
public and private ownership of airports
(million Pa'anga, mid-2004 prices)

	All airports		Fua'amotu airport	
	Ministry ownership	Private sector ownership	Ministry ownership	Private sector ownership
Expenditure⁽¹⁾				
Routine operating & maint. costs	1.89	1.89	1.32	1.32
Depreciation and periodic maint.	3.24	3.24	2.45	2.45
Cost of capital ⁽²⁾	1.79	2.55	1.47	2.10
Total cost	6.92	7.68	5.24	5.87
Revenue⁽³⁾				
Landing Fees	0.80	1.07	0.74	0.98
Passenger Service Charge	1.06	1.59	1.06	1.59
Rent	0.04	0.08	0.04	0.08
Recoverable Charge	0.05	0.07	0.05	0.07
Refuelling Fee	0.07	0.07	0.07	0.07
Ground Handling Charge	0.17	0.22	0.17	0.22
Upper airspace management agreement	0.38	0.38	-	-
Total revenue	2.57	3.48	2.12	3.02
Cost recovery	37%	45%	40%	51%

(1) Unit operating and maintenance costs expected to decline with private sector ownership but the quality of maintenance improved to justify imposition of higher prices for airport services, resulting in no net change in costs.

(2) The real average cost of capital for the private sector is taken, conservatively, at 10 percent because of higher commercial interest rates and return on equity expected by investors.

(3) Real increases in income are assumed under private sector ownership as follows: rent to double, the passenger service charge and recoverable charges to rise by 50 percent, landing and ground handling charges to rise by one-third, and the refuelling fee to remain unchanged. Excludes revenue of 0.38 million Pa'anga pa from upper airspace management, which might be considered a tax for use of a natural resource (airspace), and hence not appropriate to be credited specifically to Fua'amotu airport, or perhaps to airports at all.

Source: Review estimates

In practice, the preferred option of corporatisation can be seen as a first and necessary step towards achieving greater efficiency and accountability for airports in Tonga. At some later time when capacity in government for contracting and contract management is greater, it would be a natural progression for TAL to contract out more, if not most, airport activities (ie to implement the contracting out model). Upon growth in the financial viability of the airport and increased regulatory capacity by government, it may be possible to later progress to the privatisation option.

It is notable that in other countries, private sector ownership of airports has generally occurred in cases where aviation demand is high, commercial viability has been undoubted, and institutional capacity in government to manage private sector involvement has been strong. These conditions do not currently exist in Tonga. Available data on private involvement in other Pacific countries indicates that there is currently no private ownership of airport infrastructure or terminal facilities, and no private sector participation in airport infrastructure or terminal facilities.

4.3.3 Other airports

Three general options in relation to the other five airports in Tonga are identified – that they be the responsibility of:

- TAL, with the government paying a transparent CSO for the operation of the airports;
- an operational unit within, preferably, the MOW, which has the type of equipment needed to maintain the airports and which avoids presence of operational units in the proposed MOT; or
- local communities, with provision of funds to meet associated costs.

In the short run, it seems unlikely that there is sufficient capacity in local communities to take full responsibility for local airports, especially in the case of Vava'u which is to have international services. Similarly, location of the airports in MOW is not recommended because there is not a natural self-interest or capacity in MOW to take responsibility for them.

Hence, the first option is recommended, ie TAL to operate the airports as a CSO funded (net of revenue from them) by the government. In practice, it may be expected that TAL would subcontract engineering work at most if not all of the five regional airports to MOW or private contractors, and would engage staff or contractors to provide services at them. A social obligation should be placed on local beneficiary communities to contribute to the cost of airports (eg to cut grass or to undertake simple repairs) as part of CSO agreements. TAL would undertake its activities through a contract with MCA/MOT (though it could be directly with MOF) that specifies the tasks that TAL is to perform and financial and monitoring arrangements. This will require, in the first instance:

- specification of the nature and magnitude of the CSOs;
- preparation of a contract for TAL to operate the airports;
- ensuring MCA/MOT has the necessary contract management skills; and
- making sure the necessary funds are available in the budget.

4.3.4 Recommendations

It is concluded, and recommended, that the best means for improving the efficiency and effectiveness of airports in Tonga in the short term is to:

- establish a public company (under the Companies Act) – called TAL in this report - that would own airport assets and be responsible for commercial operation of the airports;
- make TAL responsible for all current airports in Tonga;
- provide clear guidelines regarding safety regulation; and
- establish a subsidy payment regime to TAL to address the short term commercial non-viability of Fua'amotu airport and the need for a CSO payment to meet the cost of providing and operating airports on outer islands

Achieving the potential of this arrangement will require actions such as:

- **Regulatory environment:** With respect to regulation, it is noted that:
 - Limitations in fiscal regulation are being addressed by enhancing the role and skills of the Public Enterprise Division of MOF. This work will need to continue if the Division is to gain adequate capacity to understand and successfully challenge the business and financial accounting of government-owned businesses.
 - There is limited current capacity in government for economic regulation, ie ensuring that prices are reasonable. This is essential where the businesses have effective monopolies in their field of activity and their role cannot be contested by new entrants. In these circumstances the firms do not face competitive pressures to minimise their costs, and have market power to seek tariff increases. In Section 3.4, it was recommended that economic regulation should be located within the proposed MOT where an understanding of transport economics and industry benchmarking needs to be developed.
 - Finally, the government has skills in technical regulation of airport activities, though these (and/or the capacity to require implementation of regulatory requirements) need some enhancement – these skills, which currently reside in MCA, would be transferred to the proposed MOT. An associated task is to determine investment and other actions needed to meet international safety and security obligations.
- **Design and implementation of corporatisation:** Additional assistance will be needed to ensure that corporatisation is structured in a way that maximises its potential for effective management of airports and commercial success. This, as with establishment of a sound regulatory environment, is especially vital given current controversy over the performance of the Ports Authority Tonga¹¹.
- **Corporate entity:** The corporatised airport authority – termed TAL in this report – needs to have a firm commercial focus. This requires that it have a clear mandate and business independence to fulfil this mandate. It is therefore recommended that it be established as a corporation, created under “Companies’ Act” legislation rather than as a special purpose statutory corporation under the Public Enterprises Act to ensure that it is required to fulfil the strict role of a company rather than be an extension of

¹¹ Corporatisation per se is not the critical issue in such matters. Rather, the performance of corporatised entities will be a function of the way in which they are structured and the fiscal and economic oversight of them by the Government.

government. The shares in the company should be held by the Minister for Finance or the delegate of the Minister. The shareholder nominates the board of directors, but this should exclude staff from related government agencies and ministers or their representatives to ensure decisions are made solely in the interest of TAL – as if it were a private company. TAL should be free to employ its own management and should not limit itself to the human resources available within the existing MCA; neither should it be constrained by public sector pay scales. The company should be able to outsource a number of its needs, but should do so only if it is more cost effective and a demonstrable business case made for doing so.

- **Cost-recovery and productivity targets** Current user charges at Fua'amotu airport generate revenue that meets only 56 percent of the direct cost of operating, maintaining and reinvesting in life-expired assets (estimated at 3.8 million Pa'anga per annum in mid-2004 prices, ie a total cost of 5.24 million Pa'anga less 1.47 million Pa'anga for the cost of capital as shown in Table 4.4). A program to achieve full recovery of operating and maintenance costs and depreciation for Fua'amotu airport over say 5-7 years needs to be developed and implemented¹². User charges for other airports need to be established, taking into account potential community contributions, productivity improvements by TAL and a systematic derivation of CSO payments.
- **Community service obligations** Government requirements for TAL to provide services that are financially non-viable should be clearly identified and explicit payment, with corresponding performance obligations, made to finance their provision. It is expected that an explicit CSO should be arranged for each airport, including Fua'amotu airport for the period until it achieves full cost recovery. Derivation of CSO payments and associated arrangements should take account of factors such as those described in footnote 9 on page 55. Arrangements need to be made to manage the performance of TAL with regard to these CSO agreements.
- **Other issues:** A review should be made of the current ground handling contract at Fua'amotu airport to determine the best way forward. At a minimum, TAL should ensure that practices are in place to ensure that the contract is firmly managed in the interest of TAL and airport users. TAL also needs to prepare a Corporate Plan and secure MOF/MOT agreement to the Plan.

It is recommended that these matters be addressed as part of a broad-based Business Case for the establishment of TAL.

4.4 Aviation investment needs

Key investment needs at Fua'amotu airport, in order of priority, include:

- Perhaps a quarter or so of the current 15 kilometre perimeter fence at Fua'amotu airport is in need of replacement to meet airport security needs. There is also a need to upgrade most of the length of the track by the security fence to better allow for inspection. There is no current detailed plan for the work that needs to be done. Indicatively, the cost could be about one million Pa'anga.
- The current fire engines at Fua'amotu airport are very old and deteriorated. Two new fire engines are required, at an indicative cost of at least 0.5 million Pa'anga.

¹² Data presented in Castalia (2004) indicates that the sum of passenger and landing charges at Fua'amotu airport are low by comparison with most other countries in the region which provides the opportunity for immediate increases in fees.

- Car parking charges could be a valuable new source of revenue for the airport. This would require construction of parking controls and a toll collection facility. The cost of this work is broadly estimated at about 50,000 Pa'anga.
- The current runway at Fua'amotu was last upgraded in 1990, and would normally be due for resheeting within the next few years. There is a current need for rubber removal and repainting of the centre line and engineering inspection to determine when resheeting will be next needed, at an indicative cost of 250,000 Pa'anga. Subject to this engineering inspection, it is possible that resheeting of the current runway and taxiways, which is roughly estimated to cost about 8 million Pa'anga, could be delayed for some years – perhaps until 2010.
- Inspection of the current air traffic control tower at Fua'amotu airport indicates some of the equipment is old. Specialist examination should be commissioned to provide a schedule of equipment and training needs for the medium term.
- Whilst the arrival and departure areas in the current international terminal are congested, there are areas that appear to be poorly utilised. The current international terminal is well-suited to refurbishment by relocating internal walls to make better use of the available space and to meet current security obligations. Further investigative work is needed to estimate a cost to upgrade the terminal.
- Use of larger or heavier aircraft at Fua'amotu airport could require, respectively, widening of the current runway shoulders or extension of the runway. However, imposing charges on such aircraft that take account of the cost of doing so could deter airlines from using such larger aircraft¹³. Given no apparent current pressure for use of larger aircraft, such investment can be considered on its commercial merit if and when it becomes an issue.

Other potential investment needs are development of runways at Vava'u and 'Eua. Investigation and planning this investment has not yet been undertaken. Careful analysis is needed to determine if such investment, and those proposed for Fua'amotu airport, can be justified.

4.5 Economic regulation of domestic air services

Economic regulation of domestic air services in Tonga is conducted primarily through entry controls, with only a single airline (Peau 'o Vava'u) currently permitted to provide domestic services¹⁴. Provision of monopoly rights in this way has major consequences for the government. As indicated in Section 2.5.1, it requires a transparent, competitive bidding process to select the airline and should be accompanied by a clear, effective regulatory regime. The latter is needed because the provision of monopoly power can be generally expected to lead to lower efficiency in service provision and higher fares to recover the elevated costs that result and a tendency to seek higher profits.

¹³ Imposing higher charges on all aircraft using the airport to pay for the higher costs imposed by one particular class of aircraft is inefficient because it penalises aircraft that do not impose higher costs and hence discourages their use while facilitating use of the larger aircraft which impose higher costs than their operators are prepared to pay.

¹⁴ Since this report was first drafted, Polynesian Airlines has been permitted to operate services between Vava'u and Tongatapu as an extension of its international service, but only Peau 'o Vava'u is permitted to sell tickets on the services to domestic customers.

The situation in Tonga suggests that the case for a regulated monopoly is less than ideal. This is because government capacity in both of the above areas (ie tendering and economic regulation) is limited. Even if a sound regulatory environment was in place, governments need considerable technical skill if they are to ensure that the monopoly does not result in higher fares than need be the case. This is because the airline operator has a better understanding of its costs than the government. The government, in turn, needs to have the skill to determine the veracity of the data given to it by the operator and to analyse the data, and knowledge of industry costs outside Tonga to determine if the costs and fares proposed for Tonga are reasonable.

Accordingly, the better approach is to avoid the need for contracting and economic regulation. This can occur even if there is scope for only one operator in the market by ensuring that the market is contestable – that is, that new entrants can challenge an existing operator and displace them if the new operator is more efficient and responsible to the market. Achieving this requires the government to ensure that there are:

- no formal barriers to new entrants such as unreasonable licensing requirements;
- no informal barriers to entrants such as favouritism or obligations that allow a current operator to put pressure on the government to protect them, or non-standard technical standards that favour particular operators;
- a clear technical regulatory environment so that current and new entrants are fully aware of required standards – ideally, there should be little, if any, need for an economic regulatory framework; and
- a willingness to allow some companies to go out of business if a better operator successfully challenges them.

It also requires that there be other airlines that would be interested in challenging an incumbent. The number of airlines that showed interest in operating domestic air services when Royal Tongan Airlines failed indicates that the government can have the confidence that this will be the case. The possibility that airlines and shareholders could lose money in this process should be of no concern to the government – it is a matter for those providing the capital to weigh the risks involved in challenging an incumbent knowing the business environment and regulatory framework within which they must operate.

In this way, if a pre-existing single operator becomes less efficient and charges excessively high fares, the market will, in effect, undertake the regulatory task by attracting new entrants who consider they could provide services at a lower price. Competition in the market will select the most efficient and effective operator.

This situation is more generally applicable to the transport sector as a whole. In the case of road transport, the market is not merely contestable, but is competitive because there are many current and potential taxi, bus and truck operators who can provide services. The absence of formal entry control and relatively lenient informal controls for bus services means that low traffic routes able to support only one operator are contestable, and hence ensure that operators remain efficient. The domestic shipping market is also contestable, with some private operators able to provide commercial services.

The exceptions are ports and airports, where high capital costs and practicality mean that incumbent operators generally cannot be challenged in the market by new entrants. In these cases, economic regulation is needed to ensure that the monopolies held by these enterprises work in the interests of their customers rather than their shareholders.

A sensitive issue in all countries is the provision of cabotage, ie the right for a foreign airline to provide services within the country. Cabotage allows for increased competition and lower transport costs, at the cost of allowing a foreign airline to provide domestic services. In economic terms, Tonga would gain an advantage by allowing cabotage. The recent approval by the government of extension of the Polynesian Airlines service from Samoa to Vava'u on to Tongatapu is a step on the right direction, though the success of the service will be constrained by limitations on sale of tickets for the service. More than one airline should be permitted to operate on routes where market conditions attract and support this.

Finally, the government may wish air services to be provided under circumstances where it is not commercially viable. It is recommended that all such services be provided through explicit subsidies (ie using CSO agreements) with the operator to provide the service selected through competitive tendering. Seeking cross-subsidies for such services (eg giving an airline privileges in one area with the agreement that they provide non-commercial services) is not recommended because it disguises the true cost of providing the non-commercial services and creates obligations that weaken the ability of the government to ensure a contestable, if not competitive, aviation market.

4.6 Operational regulation

Civil Aviation in Tonga is controlled by the Civil Aviation Act 1990. In the event that a MOT is created and the MCA (excluding airport ownership and operations) subsumed into the new ministry, then either:

- the Civil Aviation Act 1990 will require amendment; or
- the Minister for Transport is also appointed as Minister of Civil Aviation.

The Minister has the power to delegate his responsibilities and has done so to the Secretary of Civil Aviation and to an appointment called 'The Director of Civil Aviation' who reports to the Secretary. This latter appointment appears to be the executive officer responsible for operational regulation. The Civil Aviation Act provides that the Minister may, with the consent of Cabinet, make regulations to give effect to the Chicago Convention and in relation to Civil Aviation. The Act gives 23 nonexclusive examples of the areas which regulations may be made.

The Minister has made regulations covering operational areas. As indicated in Section 2.5, recent ICAO audits reported that whilst the legislative and regulatory basis for civil aviation in Tonga was sound, there were areas of concern. ICAO (2004) noted that at the time of issuance of the report Tonga had not responded about some concern in a way satisfactory to ICAO. ICAO expresses the concerns as 'the ICAO recommendation remain open'. ICAO compared Tonga at the time of audit (2000) and at the time of follow-up (2003) to global experience. At the time of the audit Tonga performed below the global average in 6 of the 8 key indicators and at the time of the follow up, it was below world average performance in 5 of the 8 indicators.

It is recommended that immediate steps be taken to address ICAO concerns on safety related matters.

4.7 Air traffic control and safety

MCA has taken the view that there is an urgent need to upgrade safety and local traffic control, noting that in the absence of these improvements it would, as the technical regulator

for the aviation sector after TAL is established, be obliged to close the airport due to inadequate standards. Upgrading requires new equipment and improved systems.

TAL will face a considerable task upon its commencement. MCA considers that the urgent need to upgrade safety and traffic control and the specialist skills and equipment involved make it well suited to being provided under contract to TAL. This will allow TAL to focus on management of the airport as a whole with a view to containing costs and enhancing revenue.

MCA has proposed that specialist firms be engaged to undertake the following activities:

- rescue and fire services (RFS), which include the fire engines, fire station and associated services;
- technical equipment and services (TES), including upgrading and maintaining equipment such as navigation aids, lighting, power generation, communications, and the control tower; and
- air traffic services (ATS) for lower airspace (ie up to 24,500 feet) and ground movement.

Current MCA staff involved in the activities governed by the contracts would be transferred to the contractors. The RFS and TES contracts would be the responsibility of TAL. MCA proposes that the ATS contract be with MCA/MOT because of the potential for further development of an integrated regional airspace management system. MCA notes that there is not a deep market for provision of these services, and proposes that it can obtain best value by entering into direct negotiations with major suppliers.

In general, this Review prefers that TAL be responsible for ATS because the proposed MOT is intended to be primarily a policy, planning and programming organisation. However, there are potential linkages with other regional agencies. It is recommended that further consideration be given to this matter, with this Review preferring the option of TAL being responsible for ATS with MCA/MOT facilitating regional linkages to that of MCA/MOT assuming full responsibility. Air travellers should be expected to meet the cost of air traffic control through explicit charges.

It is intended that the contracts will be multi-year to provide for some amortisation of equipment be provided and for effective training and use of staff. While no amounts are yet available, it is possible that the contracts that would be TAL's responsibility could each have a present value of several millions of Pa'anga. As such they would account for the bulk of airport costs. Small changes in the financial terms of the contracts are therefore likely to have a major impact on the future financial performance of TAL. This indicates a need for sound contracts.

In addition to simple contractual conditions, there will be a need to address more complex matters such as: adjustments to account for inflation over the life of the contract; allocation of currency risks; incentives to ensure contractors achieve continuing productivity improvements and other cost savings; measures to ensure TAL gains some benefit from windfall gains achieved by the contractors; performance indicators; penalties for under-performance; bonuses for superior performance; performance bonds; contract renewal/extension provisions; contract termination conditions; transfer of equipment and operations to a subsequent contractor if necessary; penalties for late payment by TAL; etc.

TAL has a considerable interest in the contracts as they will have a major influence on its financial performance and it will have to manage the contracts. Accordingly, it is vital that TAL have 'ownership' of the contracts. This can be achieved by making TAL responsible for

arranging the contracts, if TAL judges them to serve its purpose – that is, the Board of TAL should consider if the proposed approach is the best way for it to achieve the outcomes with which it is charged. A business case for the contracts will therefore need to be prepared prior to entering into a process to arrange the contracts. MCA/MOT will need to provide clear guidelines on a timetable by which TAL will have to meet specified safety standards.

The proposals will lead to a substantial increase in the cost of running airports in Tonga, in particular at Nuku'alofa, because of the higher standards that will be provided. There will be no directly associated increase in revenue, though the enhanced arrangements may support attempts by TAL to increase charges. Accordingly, there will be a need for a detailed examination of how the additional costs will affect TAL's commercial viability, the opportunity for higher fees, and hence the need for an additional subsidy from the national budget. This may necessitate reconsideration of the scale of the proposed investment. These matters should be addressed in the business case.

MCA considers there to be merit in engaging specialist firms to provide rescue and fire services, technical equipment and related services, and air traffic services at Fua'amotu airport. The contracts will have a substantial impact on TAL's performance. It is recommended that TAL be responsible for pursuing the matter, and prepare a business case to justify its decision.

4.8 Technical assistance

TAL will need technical assistance in to support its creation (eg job specification for the CEO, making recommendations on composition of the Board including aspects of representation of those able to guide its effective performance such as the finance community, airport concessionaires etc, and excluding government representation to enable the MOF to hold the Board fully accountable, and accounting and corporate systems); its initial operation (eg completion of corporate systems, contracting of safety and traffic control, and provision of initial management advice); and its continued development (eg Airport Development and Corporate Plans, and continuing management advice). A draft Terms of Reference (TOR) for this work is presented on page **Error! Reference source not found.Error! Bookmark not defined..**

The TOR provides assistance to TAL to undertake the work indicated, and is not intended to cover the actual undertaking of the work. Three additional areas of specialist technical assistance included in the TOR to support the effective performance of TAL are:

- valuation of airport assets that are to be transferred to TAL given limited domestic skills in such work;
- support for preparation of the Business Case for contracting of safety and air service management - this work would necessarily investigate alternative means for achieving the desired outcomes; and
- engineering investigations of upgrading of security fencing, cleaning and resheeting needs for the runway and taxiways, and refurbishment of the terminal at Fua'amotu airport.

The effective implementation of TAL will serve as a catalyst and guide for further reform of government in Tonga, and perhaps the region. It is therefore vital that the establishment of TAL achieves all of its objectives. To this end, the extent of technical assistance should not be unreasonably constrained.

5. Road and Land Transport Management

5.1 Context

This chapter focuses on road sector finance, and also addresses road infrastructure and land transport management.

A central issue that emerges is the adequacy of spending and charging for the provision of roads. An effective road system needs to be sustainable, which in turn depends upon the provision of an optimal amount of infrastructure and suitable maintenance of it. Efficient provision of road engineering services is needed to minimise costs. Sufficient and stable funding is required to meet the cost of providing and maintaining the road network. Finally, appropriate fees and charges need to be imposed on road users to ensure they make informed transport decisions, and to generate revenue needed by the government for the provision of roads. Transparency and clarity in the derivation of user charges improves government accountability and community acceptance of charges. It also places roads on a more business-like basis.

Consideration is given in this chapter to the current cost of providing roads in Tonga and accommodating road traffic, principles for charging motorists for use of roads, current user charges and cost recovery, and recommendations for improved charges. The reasonableness of the recommended rise in fuel taxes in Tonga is addressed. Finally, consideration is given to hypothecation of revenue from road use charges to road expenditure through an off-budget road fund. It is concluded that such an arrangement is not appropriate to Tonga at present.

Subsequent sections address the effectiveness of current road infrastructure and land transport management, and recommendations for improvements that will improve the efficiency and effectiveness of the road transport subsector.

Working Paper E contains more detailed information that supports the following discussion on road use charges. More detailed discussion on road infrastructure and land transport management is presented in Working Paper A.

Unless otherwise indicated, all monetary values in this chapter are in mid-2004 prices.

5.2 The cost of providing roads & accommodating road traffic

The current length of road in Tonga by administrative category and surface type and quality is a matter for conjecture given the failure of the previously installed Pavement Management System. The best estimate of the length of road for which MOW is currently responsible is 646 km (see Table 2.4). As indicated in Section 2.3.1, it is estimated that about 90 percent of this network was sealed at the end of 2003.

Financial costs incurred by the government for the provision of these roads and for consequences of their use include:

- the cost of providing, maintaining and operating roads;
- traffic enforcement, road safety education, vehicle registration and driver licensing; and
- medical, hospital and other costs resulting from treatment of people injured in vehicle crashes that are not covered by insurance.

In addition, vehicle use imposes costs on the community at large – these are known as ‘externalities’, and include air, noise and water pollution. Some flow-on effects of the externalities, for example detrimental health impacts may also eventually flow on to the government through higher demand for public health facilities and services. Traffic congestion results in motorists imposing a travel time externality on each other; however, this is ignored in the current analysis because of there is limited traffic congestion at present.

The current level of identifiable government expenditure and the estimated cost of sustaining the present road network is summarised in Table 5.1. Costs not included in the table are:

- Sufficient data is not available to allow a reasonable estimate to be made of the cost that the government incurs indirectly as a result of road crashes. In the current absence of compulsory Third Party insurance, it is likely that ‘third parties’ (ie people other than the drivers of the vehicles involved in crashes) either go uncompensated or have their costs covered by the government and the community – these represent a subsidy to motorists. Implementation of sounder vehicle insurance arrangements would ensure that motorists as a whole meet the full cost of road crashes.
- Sunk costs, which are costs that have been incurred but will not need to be re-incurred. Examples of sunk costs are the sub-base of roads and service relocation.
- The cost of feeder and access roads, which are not the responsibility of MOW.

Table 5.1 Estimated cost of providing roads and road services in Tonga

Item	Annual amount (m. Pa'anga, mid-2004 prices)	
	Current expenditure ⁽¹⁾	Long term average annual cost
Explicit government financial costs		
Road Assets		
Management/Administration	0.21	0.50
Maintenance	1.02	2.50
Reinvestment (ie depreciation)	0.13	1.77
Subtotal (road assets)	1.36	4.77
Road Operations		
Traffic enforcement	0.27	0.27
Road safety promotion	-	0.10
Subtotal (road operations)	0.27	0.37
Vehicle registration & driver licence administration	0.11	0.15
Subtotal (explicit government financial costs)	1.74	5.29
Return on equity	-	1.67
Total cost incurred by the government	1.74	6.96
Externalities of vehicle use	-	4.24
Total	1.74	11.20

(1) Based on average of estimated expenditure in 2003/04 and budgeted expenditure for 2004/05.
Source: Consultant estimates, as elaborated in Working Paper E.

Analysis of expenditure by MOW and MOP for 2003/04 (estimated) and 2004/05 (budgeted) suggests that current average annual expenditure is about 1.7 million Pa'anga. The total long term cost to the government and community of sustaining the network is much higher.

It is estimated that expenditure of 0.5 million Pa'anga per annum is needed for effective management of road infrastructure, including an effective Road Maintenance and Management System (RMMS). It is judged that current expenditure on road maintenance of

about 1.0 million Pa'anga per annum also needs to be increased – previous studies suggest that expenditure of 2.5 million Pa'anga per annum is needed over the long term to adequately maintain the current road network for which MOW is responsible.

It is estimated that the value of road assets that depreciate over time due to the effect of wear from traffic and normal weather is 53 million Pa'anga for the 646 km road network for which MOW is responsible. With a typical average life of these assets of about thirty years, depreciation is about 1.8 million Pa'anga per annum – this is the average annual expenditure needed to replace life-expired assets in the current road network. It compares with current annual expenditure of about 0.1 million Pa'anga.

Current traffic enforcement costs are assumed to be sufficient. Improved future traffic enforcement could be achieved within this budget by removing current inefficiencies such as the need to take all but speeding violations to court. It does not appear that the government makes any significant expenditure on road safety at present. A modest allowance is included in Table 5.1 for future expenditure. Similarly, allowance is made for increased expenditure on vehicle registration and driver licensing, including computerisation of the system.

On this basis, the direct financial cost to the government of sustaining the current road network for which MOW is responsible is 5.3 million Pa'anga per annum – this is three times the current expenditure of 1.7 million Pa'anga per annum.

There are additional public costs associated with the current road system. If the value of capital tied up in the road assets was recognised, a further 1.7 million Pa'anga per annum would need to be added given a 5 percent per annum cost of capital. The cost of air, water and noise pollution from vehicle use is about 4.2 million Pa'anga per annum. This gives a total cost that motorists impose on the government and community of 11.2 million Pa'anga per annum, excluding costs that arise from crash costs not covered by insurance.

5.3 Current charges imposed on motorists

As indicated in above, motorists should be charged 11.2 million Pa'anga per annum for their use of the road system if they are not to be subsidised by others.

At present there is no formal system for the government to recover the cost of providing roads from motorists. Motorists pay vehicle registration and driver licence fees and fuel taxes, but these are paid into the general revenue of the government, and there is no formal link between the amount paid and the cost of providing roads. Nevertheless, the current annual financial expenditure on roads of 1.7 million Pa'anga (see Table 5.1) might be depicted as being financed, in round terms, through:¹⁵

- 1.0 million Pa'anga from vehicle registration and driver license fees; and
- 0.7 million Pa'anga of the revenue from fuel taxes (equal to about 3.2 seniti per litre).

The present situation thus implies a dual role for fuel taxes, with revenue also financing other government expenditures¹⁶. Fuel taxes currently account for 37 percent of the retail price of

¹⁵ Based on 14,120 registered vehicles used for road transport purposes at the end of 2003, as indicated in Section 2.3.2. As noted in that section, this may over-state the number of in-use vehicles in Tonga.

¹⁶ This is a situation that is common to countries with moderate to high fuel taxes. It reflects the Ramsey pricing principle of imposing higher rates of tax on items such as fuel that have a low price elasticity of demand (ie use of the good is not strongly affected by its price).

petrol and diesel (see Table 5.2). Total revenue from taxes, excluding Wharfage which can be treated as a port use fee, for fuel used for road transport in 2004 is estimated at 12.8 million Pa'anga¹⁷.

Table 5.2 Fuel price and taxes (Tongatapu)

	1 Nov-31 Dec 2004 (seniti/litre)		Estimate average for 2004 (seniti/litre)	
	Petrol	diesel	petrol	diesel
CIF price	92.70	95.35	83.55	80.74
Wharfage	2.20	2.20	2.20	2.20
Import duty	32.44	33.37	29.24	28.26
Port and services tax	18.54	19.07	16.71	16.15
Fuel sales tax	3.00	3.00	3.00	3.00
Sales tax	8.10	8.32	7.35	7.12
Distribution and retailing	1.10	1.10	1.10	1.10
Retail Price	170.08	174.63	154.41	149.59

Source: Working Paper A

An increase in road expenditure above the current level of 1.7 million Pa'anga per annum will require the government to collect more revenue in total or reduce expenditure elsewhere and redirect the savings to roads. These choices are beyond the remit of the current Review. For practical purposes, the Review takes the following approach:

- It is assumed that other government expenditure and revenue is unchanged. Hence, higher spending on roads must be financed by increased charges imposed on motorists.
- The environmental externality of 4.2 million Pa'anga per annum is closely related to fuel consumption. It is substantially exceeded by tax revenue above than notionally needed for current road expenditure. Motorists are therefore faced with fuel price that, effectively, incorporates the cost of the externality. Thus an objective that motorists take account of the externalities they cause when travelling (see next subsection) is met.
- Much of the cost of roads in Tonga has been financed through donor programs or using concessional finance. Accordingly, the government does not directly incur a substantial financial cost of capital with respect to road assets. It is therefore assumed that road users need not be charged for this cost. While this conclusion may be debated, it may be argued as a practical trade-off for the considerable taxes already paid by motorists.

On this basis, the cost that the government should recover from motorists is 5.3 million Pa'anga per annum. This is 3.6 million Pa'anga per annum more than currently occurs.

¹⁷ This assumes, as recommended later in this section, that current tax exemptions for fuel used by Government vehicles is withdrawn. Introduction of a broad-based Consumption Tax at a rate of 15 percent in April 2005 will replace the port and services tax, fuel sales tax, and sales tax. This can be expected to reduce the retail price of fuel by about 6.5 percent. Allowing for the effect of the lower price in stimulating demand, this Review estimates that total revenue from taxes on fuel used for road transport could fall by 1 million Pa'anga per annum.

5.4 More effective road use charges

There is no indication that current vehicle registration and driver licence fees and fuel taxes have been set on the basis of reflecting the costs that motorists impose on the government. This is reinforced by analysis in this section that identifies the appropriate charges that should be applied to recover the costs that motorists impose on the government. In undertaking the analysis, charges are estimated for categories of vehicle with similar characteristics in terms of the costs that they impose on the government.

Following subsections consider principles for imposing road use charges, make a best estimate of appropriate road use charges, report sensitivity tests, estimate the effect that capital expenditure to improve the design standard of roads or to extend the road network on road use charges, and discuss issues related to implementing improved road use charges.

5.4.1 Principles for pricing and cost-recovery

Three principles are important for road pricing: setting prices that optimise use of the road system; recovering the cost of providing roads; and giving motorists the right price signals so that they can make optimal decisions on the types of vehicles to purchase and the use they make of them.

The principle that guides economists in setting optimum road use prices is that the charge should equal to marginal social cost that each motorist imposes. This principle would, if imposed ideally, require knowledge of the characteristics of vehicles, their load and the time and location of their travel. Prices would vary continuously by the time and location of travel. No place has yet implemented such a system, though simplified forms have been put into operation in some places (eg the charge imposed on vehicles entering the centre of London) and research is being undertaken into more sophisticated forms of electronic road pricing.

This approach will ensure that motorists are aware of the cost that each trip will impose on the government and others, and hence will make sound travel decisions. However, there can be no certainty that revenue generated by the use of prices equal to marginal social costs will provide revenue that is equal to the cost of providing roads.

In practice, an objective of recovering sufficient revenue to meet the cost of providing roads is the more common principal concern. Given the need for a specific level of revenue from road use fees, the principle of "second best" pricing is required – it requires that prices used should minimise the change in travel demand from that which would occur if optimal charges were imposed. This requires determination of prices based on marginal social costs and then varying the charges and introducing additional charges to make up for a shortfall in revenue, if that should occur, in ways that minimise the effect on travel demand¹⁸.

Motorists make travel decisions on the basis of their perception of the costs they incur. Hence, the method by which charges are imposed is also important. Costs most likely to be perceived will be those that are explicitly incurred when using a road. Driver perception of costs can be expected to weaken if there is a separation of the time of payment from the time of road use. For this reason, for example, fuel taxes are better than periodic registration fees, though still not as good as a pay-as-you-go arrangement. Similarly, registration fees and fuel taxes influence the vehicles that motorists purchase.

¹⁸ It is possible for prices set at marginal social cost to generate revenue that exceeds the cost of providing roads, though this is unlikely to be the case in Tonga where traffic volumes are relatively low.

5.4.2 Attributing road costs to vehicles

In the current Review, the long term costs identified in Table 5.1 are identified to vary with factors such as the number of vehicles (eg vehicle registration fees), the distance travelled by vehicles (eg traffic enforcement costs), the amount of fuel used (eg environmental externalities), the load imposed by the vehicle on the road (road maintenance), and some costs that are broadly independent of the amount of use made of roads (eg road asset management).

For practical reasons, it is assumed that all costs will be recovered from motorists through either registration fees or a fuel tax. The cost of providing roads is allocated between motorists according to the costs that their respective vehicles impose on the government. This is done for categories of vehicle that have similar impacts on the cost of providing roads.

A feature of road maintenance is that it results from wear caused by road vehicles and weathering. That is, even if no vehicles used a road, it would still deteriorate due to the effect of sun, rain and wind. Based on evidence in the literature, the current Review takes 80 percent of road deterioration as being attributable to wear from traffic.

The costs that each category of vehicle imposes on the government are shown in Part C of Table 5.4. It is notable that heavy trucks impose a disproportionately high share of costs. This is because the damage caused to roads by vehicles rises exponentially as the load per axle increases. Comparison of Parts B and C in the table indicates that current revenue collected for cars and comparable vehicles are similar to the costs they impose on the government. Others pay less than the costs they generate, with heavy trucks paying the least.

The objective is therefore to generate sufficient total revenue to meet the long term cost of sustaining the current road system, with the share collected from each vehicle class being in proportion to the costs that they impose on the government. This is considered in the next section.

5.4.3 Proposed road use charges

The relative damage caused to roads by heavy vehicles compared to other vehicles is substantially more than the relative share of total fuel that they consume. Thus, a uniform fuel tax will not impose a sufficiently high charge for heavy vehicles. In the absence of a 'mass-distance' charge, higher registration fees can be imposed for large vehicles to ensure that they pay, in aggregate, the costs they impose on the government.

However, a higher registration fee for heavy vehicles is a second best option because the fee is unrelated to the use the vehicles make of the road system and the wear they cause to roads. Moreover, excessively high registration fees for large trucks may encourage people to purchase smaller trucks to access lower registration fees, with the vehicles then being overloaded. Hence, practical fees need to balance the share of costs recovered from registration fees and fuel taxes, and the share recovered from each vehicle category relative to the costs they impose.

This is demonstrated by considering three cases, which involve various levels of fuel tax, as shown in Part D of Table 5.3. Case 1 represents the current level of fuel taxation, with Cases 2 and 3 respectively being 10 seniti and 15 seniti increases in fuel tax.

Table 5.3 Fuel tax scenarios

	Petrol ⁽¹⁾			Diesel ⁽¹⁾		
	Case 1 ⁽²⁾	Case 2	Case 3	Case 1 ⁽²⁾	Case 2	Case 3
Total tax on fuel ⁽³⁾	0.563	0.663	0.713	0.545	0.645	0.695
Fuel tax deemed to be a road use charge	0.032	0.132	0.182	0.032	0.132	0.182
Retail price	1.544	1.644	1.694	1.496	1.596	1.646
Increase in retail price (relative to Case 1)	-	6%	10%	-	7%	10%

(1) All prices are in Pa'anga per litre. (2) Based on average level of tax in 2004. (3) Total of ports and services tax, import duty, fuel sales tax and sales tax.

If fuel taxes were to remain unchanged, additional revenue must be generated by higher vehicle registration fees. While registration fees would need to increase for all vehicles, the rise needs to be greatest for heavy trucks, with a very large annual registration fee required for them¹⁹.

A 10 seniti per litre rise in fuel taxes would require a less severe rise in vehicle registration fees to generate the necessary revenue to sustain and operate the current road system. This is especially so for heavy trucks, though registration fees for them would still be almost fifty times the current charge of 80 Pa'anga per annum. However, the greater reliance on revenue from fuel taxes results in a less equal level of cost recovery between the various vehicle categories – for example, revenue from owners and users of cars and similar vehicles is broadly double the cost that they impose on the government.

These effects are extended with a 15 seniti increase in fuel tax (Option 3), with the registration fee for large trucks being only 950 Pa'anga per annum and revenue from them being only 21 percent of the costs they generate.

Within the limitations of available data, there is no absolutely correct answer as the appropriate mix of higher registration fees and fuel taxes needed to generate the additional funding needed if the government is to adequately sustain the current road system in Tonga.

On balance, a higher fuel tax is the recommended option. It avoids this risk of perverse behaviour by truck owner. While it imposes relatively higher costs on users of cars and similar vehicles, this can be seen as a form of 'Ramsey' pricing (in which advantage is taken of the likely lower sensitivity of these users to transport costs than commercial transport operators.) It may also be seen as serving social equity - by imposing higher fees on car users, who will be relatively wealthier than people who do not own vehicles, while reducing marginally the cost of road freight which may serve a broader cross-section of the community.

An option could be an increase in fuel tax of about 10 seniti per litre, with slightly higher registration fees than those shown in Table 5.4 imposed on vehicles other than heavy trucks so that the rise in fees for heavy trucks can be reduced.

5.4.4 Sensitivity tests on road use charges

The analysis described is an average for Tonga. A more disaggregated analysis, for example by island group and more categories of vehicle would provide a more nuanced understanding of appropriate charges. In addition, the analysis is based on imperfect data, in particular with respect to the number and categorisation of vehicles, and the quantity of fuel used by them.

¹⁹ For practical reasons, registration fees have been rounded to the nearest ten Pa'anga. If this was not the case, the revenue collected from each vehicle category would be equal to the costs that they impose.

Table 5.4 Alternative fuel tax and registration fees to recover road costs

(Note: all prices are in mid-2004 values)

	Motor cycle	Cars and taxis	Pickup, van and 4WD	Buses	Light trucks	Medium trucks	Heavy trucks	Total
A. Vehicle features								
Number of vehicles	140	5,780	2,380	110	4,220	1,140	350	14,120
Operational mass (t/vehicle)	0.1	1.2	1.5	2.5	2.0	2.5	10.0	
B. Current revenue								
Unit rates:								
Indicative vehicle reg. fee (Pa'anga/year)	15	40	45	60	55	65	80	
Fuel tax ⁽¹⁾ (Pa'anga/litre)	0.03	0.03	0.03	0.03	0.03	0.03	0.03	
Total revenue (m. Pa'anga)								
Vehicle registration & driver licence fees	0.0	0.3	0.2	0.0	0.3	0.1	0.0	1.0
Fuel taxes currently used for roads	0.0	0.2	0.1	0.0	0.3	0.1	0.1	0.7
Total revenue used for roads	0.0	0.5	0.3	0.0	0.6	0.2	0.1	1.7
Actual revenue compared with target	0%	42%	100%	0%	60%	61%	10%	33%
C. Annual costs imposed by each vehicle class								
Total costs attributed to (m. Pa'anga)								
Fixed costs ⁽⁴⁾	0.01	0.53	0.22	0.02	0.68	0.29	0.12	1.87
Costs resulting from use of roads ⁽⁴⁾	0.00	0.02	0.03	0.02	0.23	0.19	2.93	3.42
Total	0.01	0.56	0.25	0.04	0.91	0.48	3.06	5.29
D. Alternative approaches to generating the target revenue⁽²⁾:								
Option 1: No change in fuel tax								
Annual vehicle registration fee ⁽⁴⁾	30	60	50	260	140	280	8,070	
Fuel tax used for roads (Pa'anga/litre)	0.03	0.03	0.03	0.03	0.03	0.03	0.03	
Annual revenue (m. Pa'anga/year)								
Vehicle registration & driver licence fees	0.0	0.5	0.2	0.0	0.7	0.4	2.8	4.6
Fuel taxes used for road purposes	0.0	0.2	0.1	0.0	0.3	0.1	0.1	0.7
Total revenue	0.0	0.6	0.3	0.0	1.0	0.5	2.9	5.3
Actual revenue compared with target ⁽³⁾	101%	112%	111%	101%	106%	102%	95%	100%
Option 2: Increase fuel tax by 0.10 Pa'anga/litre								
Annual vehicle registration fee ⁽⁴⁾	20	40	45	60	55	65	3,930	
Fuel tax used for roads (Pa'anga/litre)	0.13	0.13	0.13	0.13	0.13	0.13	0.13	
Annual revenue (m. Pa'anga/year)								
Vehicle registration & driver licence fees	0.0	0.3	0.2	0.0	0.3	0.1	1.4	2.3
Fuel taxes used for road purposes ⁽⁵⁾	0.0	0.7	0.4	0.0	1.0	0.5	0.2	2.9
Total revenue	0.0	1.0	0.6	0.0	1.4	0.7	1.6	5.3
Actual revenue compared with target ⁽³⁾	94%	181%	234%	116%	152%	137%	53%	100%
Option 3: Increase fuel tax by 0.15 Pa'anga/litre								
Annual vehicle registration fee ⁽⁵⁾	15	40	45	60	55	65	950	
Fuel tax used for roads (Pa'anga/litre)	0.18	0.18	0.18	0.18	0.18	0.18	0.18	
Annual revenue (m. Pa'anga/year)								
Vehicle registration & driver licence fees	0.0	0.3	0.2	0.0	0.3	0.1	0.3	1.3
Fuel taxes used for road purposes ⁽⁶⁾	0.0	0.9	0.6	0.1	1.4	0.7	0.3	4.0
Total revenue	0.0	1.2	0.7	0.1	1.8	0.9	0.7	5.3
Actual revenue compared with target ⁽³⁾	90%	223%	294%	148%	193%	178%	21%	100%

(1) Share of current fuel taxes notionally used for roads - see discussion in text. (2) Recovery of direct costs incurred by the government to provide the current road network on a sustainable basis. (3) Relative to total cost imposed by each category of vehicle, as indicated in Part C of the table. (4) In practical terms, fixed costs are best recovered through registration charges, and road use costs through fuel taxes. (5) The minimum fee is taken to be equal to the present registration fee. (6) Allowance is made for a reduction in fuel consumption due to the rise in fuel price.

Source: Working Paper E

Indicatively, if the composition of traffic on roads in Tonga was as indicated by surveys conducted by the Review rather than as indicated by available aggregate statistics, the registration charges for heavy trucks could be about 15 percent less than indicated in Table 5.4. If the vehicle fleet was smaller than reported, vehicle registration charges would need to rise for all categories of vehicle as the same revenue (ie 5.3 million Pa'anga per annum) would need to be recovered from fewer vehicles.

5.4.5 Effect of road capacity enhancement on road use charges

The analysis to date has considered the cost of sustaining the current road network. Upgrading the network, for example by sealing more roads, widening roads and building more roads, would impose higher costs on the government, and hence would require higher charges.

The rise in costs will depend on the type of project:

- If the works were typical of the current road system, a project with a cost of 10 million Pa'anga would increase the cost to be recovered from motorists by 0.34 million Pa'anga per annum. This rise will not generate sufficient funds to pay for the entire 10 million Pa'anga cost of the project, as it excludes expenditure on items that will become sunk costs when completed and never need further re-investment.
- If the entire 10 million Pa'anga was spent on works that deteriorate over time, the rise in the annual revenue to be recovered from motorists would need to rise by 0.8 million Pa'anga per annum.

For the purpose of comparison, each 1 seniti rise in tax on fuel used for road transport will generate about 0.2 million Pa'anga of additional revenue. A rise in fuel tax of almost 0.05 Pa'anga would be needed to generate sufficient revenue to recover the cost of 10 million Pa'anga of capital expenditure spent entirely on works that deteriorate over time.

5.4.6 Implementing improved road use charges

Raising fuel taxes and registration fees needs to be justified to the community. This can be done on the basis of that the increased revenue will be used to improve road conditions. It can also be supported by an international comparison. Figure 5.1 and Figure 5.2 show the retail price of petrol and diesel in Tonga and other Pacific countries in mid-2004.

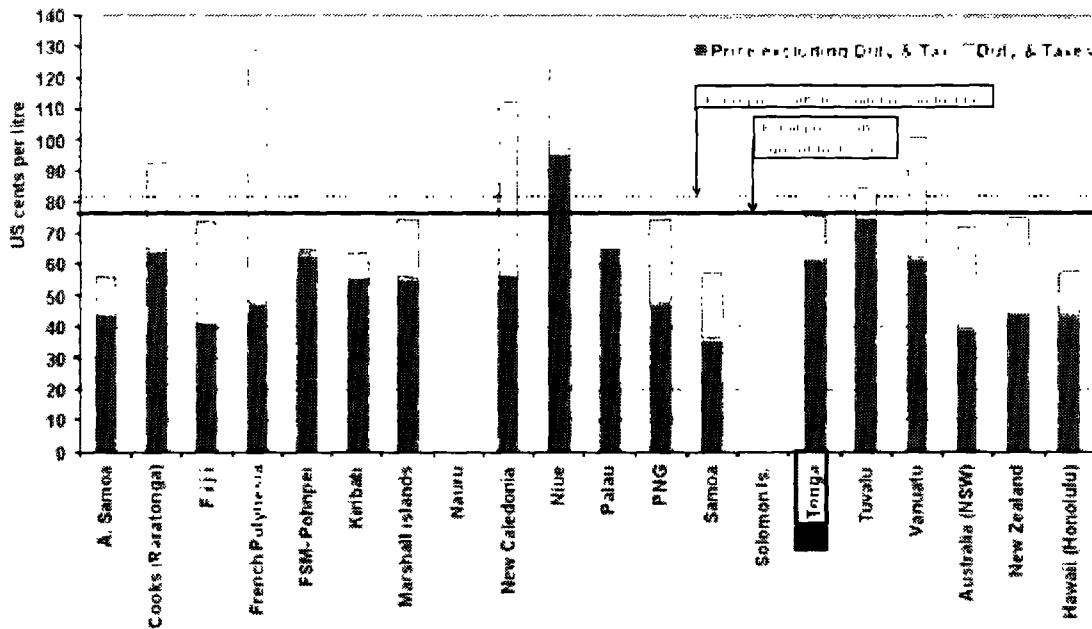
While prices shown for Tonga are reasonably high, they are not amongst the highest by a considerable margin. The rate of tax in Tonga is also generally lower than in other countries. It is notable that the price of fuel excluding tax in Tonga is considerably higher than in neighbouring Samoa and, in the case of petrol, in many other countries. This suggests the opportunity for Tonga to find new ways to secure fuel at a lower price than occurs at present.

Current fuel prices in Tonga reflect recent especially high prices. The retail price of petrol sold on Tongatapu in November and December 2004 of 1.70 Pa'anga per litre compares with a price of 1.37 Pa'anga per litre in January and February 2004, and an average price of 1.24 Pa'anga per litre in 2003. Even a modest decline in the imported costs of fuel in the future would offer the opportunity to increase the level of tax by 0.10 Pa'anga per litre while still allowing the retail price to decline.

A 0.10 Pa'anga per litre increase in fuel tax would raise the level of tax for both petrol and diesel to about 40 percent of the retail price of fuel. This is still a modest level of tax when compared to the average rate for petrol tax of 67 percent in OECD (Organisation for

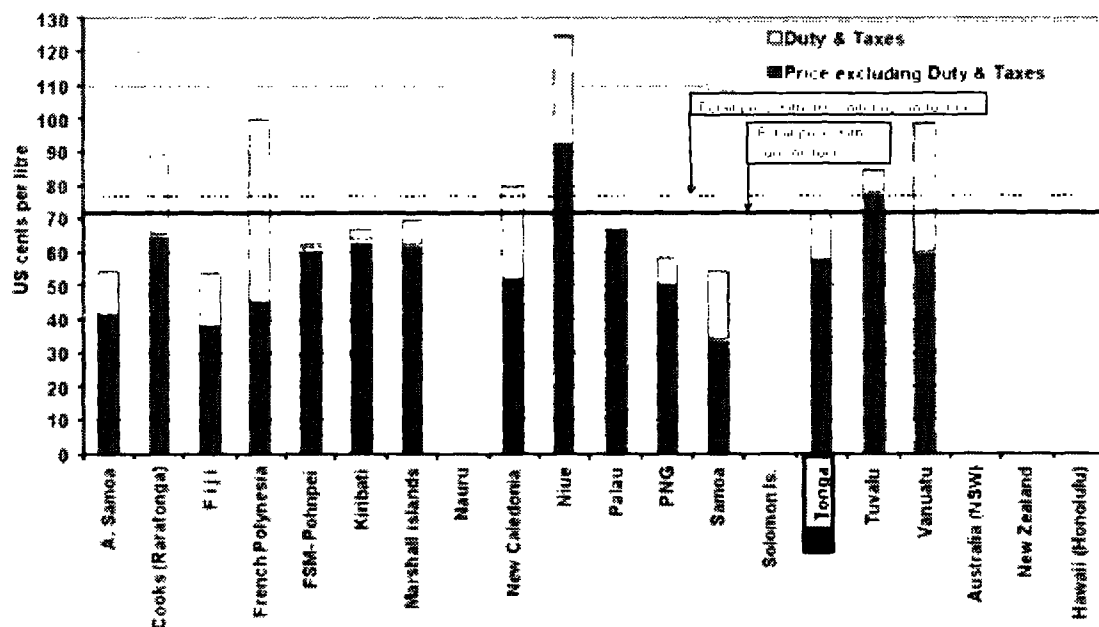
Economic Cooperation and Development) countries and 44 percent in non-OECD countries (World Bank 2001).

Figure 5.1 Petrol prices in Pacific Island countries
(May/June 2004)



Source: Pacific Islands Forum Secretariat (2004)

Figure 5.2 Diesel prices in Pacific Island countries
(May/June 2004)



Source: Pacific Islands Forum Secretariat (2004)

The present situation in Tonga, wherein the excise on petrol and diesel is similar (0.563 Pa'anga and 0.545 Pa'anga per litre respectively), has merit. It discourages a bias to the use of diesel-fuelled vehicles simply because of lower taxes, and it avoids the imposition of a lower rate of tax on fuel that is used by large vehicles that cause more damage to roads than petrol-fuelled vehicles which are generally lighter, eg cars. Consideration could be given to imposing higher tax on diesel to temper the higher registration fees needed for heavy vehicles. However, it is not recommended that this occur to a substantial extent because it may encourage adulteration of diesel with lower priced kerosene, which would result in detrimental environmental effects and risk of damage to vehicle engines.

Increasing expenditure of the road system from the present 1.7 million Pa'anga pa to the 5.3 million Pa'anga pa needed to sustain the current road system will require more staffing and contracting resources than presently used. Effective use of the funds will also require improved management systems. It is therefore recommended that the increase in expenditure should be phased in over time, say three to five years to allow development of these resources. The rise in the fuel tax and registration fees needed to provide the additional funding could also be phased in the same manner. It is essential, though, that the full extent of the rise in the fuel levy and road expenditure be committed at the outset to ensure that the reform process is completed.

The only practical means to impose a levy on petrol and diesel that is to be used to finance roads is to apply it in at the same manner as the current fuel taxes. Provision needs to be made to ensure that, as far as possible, fuel used for non-transport purposes is not subject to the additional tax.

Some government agencies currently have fuel storage facilities and obtain fuel exempt from taxes. This is not a sound practice. Part of the rationale for fuel taxes is to ensure that road users are aware of the costs that they impose. This is equally applicable to government employees and the broader community. Exemption of fuel taxes to government agencies will result in them making greater use of vehicles than would be the case if they had to pay the full price of fuel. Such exemptions also increase the risk of revenue leakage. It is therefore recommended that the exemptions, and any others that may exist for road transport vehicles, be withdrawn immediately.

5.4.7 Is a road fund appropriate for Tonga?

Road funds are used in many places to finance road development. They involve establishing an off-budget account into which specified revenue, preferably from charges applied to road users, is deposited for the sole purpose of contributing to the entire or partial cost of providing roads. There has been continuing debate about road funds. Some issues are:

- It is generally concluded that there is a case for commercialising the provision, use and funding of roads, and that this works best where the benefit principles of pricing and financing applies. This treats roads as a utility, for which a fee-for-service should be charged to meet the cost of providing roads. As indicated in Section 5.4.1, this also ensures that motorists make sound decisions on the vehicles they purchase and their use of the vehicles. If a road fund is adopted, it is better that its revenue is derived from charges imposed on those who benefit from roads than from the 'earmarking' of general government revenue for road provision.
- Making a road fund semi-independent of government, as generally occurs for other public utilities, clarifies the link between income and expenditure, and can facilitate sound and consistent decisions on road management and expenditure.

- Government has a legitimate concern regarding the generation and use of revenue imposed on those who benefit from roads, which needs to be balanced against the underlying intention of a semi-independent road fund.
- Road funds hold a monopoly over the provision and management of roads. This requires that they be subject to economic and technical regulation as well as fiscal oversight to ensure that they do not become inefficient, use excessively high standards or otherwise impose higher prices on motorists than need be the case.
- Pre-determined assignment of revenue to a fund dedicated for the provision of roads may be the best available means for ensuring the availability of funds for road works where government budgetary systems are weak and funding continuity is poor. On the other hand, poor government administration, which may justify such hypothecation may extend to governance of the road fund, which would make it likely that the funds available to it are not well used.

The debate on the merits of earmarking revenue and using road funds has waxed and waned over time. A recent, more sympathetic view is based on increasing emphasis on commercialisation of government agencies as a means for improving service delivery and efficiency. Emphasis is given to ensuring that motorists meet the cost they impose on governments and the community at large through road use fees, ie the benefit principle. Prominence is also given to governance of a road fund to ensure that the principles for its operation are clear and reflect community desires as judged by the government without the need for day-to-day oversight of the fund's activities by government. Consumer (ie motorist) representation on the Board of the fund is also recommended.

Notwithstanding the supportive view for road funds, the number of instances where such funds are either the sole or a substantial source of finance for the construction, maintenance and operation of roads is modest when compared with the number of government jurisdictions that are responsible for roads. Experience also suggests that hypothecation of revenue to support road investment is not necessarily the central issue. Rather, issues such as clarity of policy, institutional capacity, soundness of legal and accounting frameworks, and technical skill have a greater bearing on outcomes. These appear to be issues that are pertinent, to some extent at least, in Tonga.

This Review concludes that a road fund is not currently the highest priority in the road subsector in Tonga. Rather, more pressing issues are to secure from those who benefit from roads sufficient revenue to meet the cost of providing roads and to improve the management of roads. It should be possible to address these concerns without the need for a road fund.

It is recommended that an informal system of hypothecation occur, with revenue from vehicle registration and driving licence fees and about 0.13 Pa'anga per litre of fuel tax being intended to meet the cost of the vehicle registration and driver licensing system, traffic enforcement, road safety promotion and management, maintenance and reinvestment in roads at the levels indicated in Table 5.2). Monitoring this income and expenditure should be the responsibility of the TPPU in MOT in association with MOF.

The potential for a road fund should be reconsidered if the government is unable to implement more effective road use charges and provide sufficient revenue to sustain the road system and if MOT cannot upgrade its road management capacity - in anticipation that the process and formal arrangements associated with establishing a semi-independent agency may prompt resolution of these limitations.

5.5 Road infrastructure planning and management

5.5.1 Planning

The length of the road network is unlikely to greatly increase in future as past priority has been given to serving all villages and population growth is expected to be low. It is possible that some new access roads will be required in association with specific development projects, and that the government may assume responsibility for local roads where they assume a more important traffic function. Some upgrading of the road network may be desirable from an amenity or traffic efficiency point of view. Capacity expansion may be required on the busiest sections of roads through widening and/or strengthening of the pavement.

In addition to their initial capital cost, all of these types of road network upgrading have implications for future road maintenance expenditure, as indicated in Section 5.4.5. Road network planning and road upgrading proposals should therefore have a clear rationale. They should be subject to sound economic evaluation that takes account of life cycle costs and benefits to determine if they will result in a net economic benefit to the community before a decision is made to implement them. Agreement should also be reached prior to project implementation for increased future budget allocations to ensure funds will be available to fund maintenance of the upgraded facilities.

Road expenditure (covering maintenance, reinvestment in life-expired assets, upgrading and new road construction) on projects that are to an appropriate standard, meet defined economic criteria and takes account of the relative priority of projects should be presented in an:

- annual work program that is linked to;
- a three year rolling program, which is in turn consistent with;
- a ten year Road Development Plan that is;
- a component of the National Transport Strategy

A decision on which projects are funded by national budget (loan or other) and bilateral assistance can be then be made

5.5.2 Asset preservation

The current 646 km road system in Tonga for which MOW is responsible involves assets with a value of 53 million Pa'anga that depreciate over time. Optimal asset management requires accurate information on the condition of the road network as a basis for managing the maintenance and eventual reconstruction of these assets in a way that minimises the cost of sustaining the roads over their potential life cycle taking account of the effect of poor roads on raising vehicle operating costs. The annual cost of 5.3 million Pa'anga to provide a sustainable, operational road system would rise if road assets are not managed in this way.

There is no current operational road maintenance and management system (RMMS) in Tonga. A computerised pavement management system (PMS) was implemented in 1995, but was non-operational by mid-1996 due to disruption of its file structure. The original system was recovered and upgraded in late 1997, and left fully operational on a number of MOW computers in Nuku'alofa.

The PMS subsequently failed again, and was re-established in 2000 through the Tonga Pavement Management System (TPMS) Project, which was funded under the Tonga

Transport Infrastructure Project. The previous PMS system was updated to work with HDM-4 and was used to establish appropriate levels of funding for periodic and routine maintenance of the road system included in the model.

The current Review has not been able to identify any operational remnants of the PMS in Tonga. The data for the work undertaken in 2000 and some reports have been made available to the Review team from other sources.

There is a "Pavement Management System" line item in the budget for MOW, but no funds have been allocated for the period examined in the current Review (1998/99 to 2004/05). This suggests that the inability to sustain the PMS is not simply a technical weakness that can be overcome by training, but also reflects inadequate political and institutional commitment.

The installation and failure of the PMS on three occasions in less than ten years is a severe disappointment. Given this history and current limited MOW resources, there seems little merit in the government seeking to restore and manage a sophisticated RMMS by itself in the near term. Rather, it is recommended that a dual approach be adopted, involving periodic development of a road maintenance strategy and program using sophisticated optimising tools, and annual works programming that uses simpler tools and operates within the framework of the periodic strategy study. Specifically, this requires:

- Specialist consultants should be engaged to:
 - restore and update the previous model, including updating and extending the road inventory;
 - use the model to develop a ten year road maintenance and management strategy that is consistent with the government's indicative commitment of funding for roads, and detailed five and indicative ten year programs of routine and periodic maintenance and road rehabilitation;
 - provide materials and training to staff responsible for road program management in the proposed MOT (or staff in MOW if the proposed MOT is not implemented) to ensure that they are aware of (a) the logic for the strategy and its content, (b) the detailed program of works, and (c) measures to be taken to adjust the program in response to factors that could emerge over time (eg lower or higher levels of funding, unexpected road deterioration, etc);
 - develop and provide similar materials and training for simple spreadsheet-based tools that can be used to (a) record maintenance works, (b) monitor road network conditions, and (c) give guidance for updating the works programs indicated by the above work;
 - repeat this engagement every five years to prepare a strategy and program for future road maintenance and rehabilitation; and
- Government staff responsible for road program management should use the above work to plan, manage and monitor road maintenance and rehabilitation works

If the staff resources and institutional commitment to doing this work cannot be assured, consideration should be given to contracting out the PMS and preparation of three year and annual work plans to a private company to ensure the system is sustained. There is a need to broaden the "Pavement Management System" line item in MOW's budget to cover road maintenance and management activities that need to be undertaken by MOW, and for funding to be allocated to enable the necessary work to be undertaken.

Improved management of road assets is dependent on the availability of data on quantity and quality characteristics of the road network. A comprehensive, though not complete, database for the late 1990s was prepared for the Tonga Transport Infrastructure Project (Montgomery 2000). Updating and sustaining this database is needed for the proposed periodic reviews, with simpler means used to monitor the state of the road network for intermediate years.

As indicated in Chapter 3, it is proposed that MOT have no construction and maintenance capability and instead contract out all road works. It is further recommended that increased use should be made of the private sector for road works, with MOW undertaking works only selectively (see Section 3.5.7). It is recommended in turn that improved cost allocation and accounting procedures be used to ensure there is a full accounting of MOW costs, for it appears that not all costs are currently taken into account when determining the cost for MOW to undertake works. Finally, it is recommended that even where MOW is to undertake works for MOT, formal commercial contracts should be entered into between the agencies to ensure accountability and discipline in the management of road works.

This arrangement will require the development of contract preparation and contract management skills in MOT – it is recommended that MOT secure and maintain the necessary skills.

5.6 Land transport management

A number of issues emerge from the review of the land transport subsector in Section 2.3. These are considered in more detail below.

5.6.1 Vehicle registration, vehicle inspection and driver licensing

As indicated in Section 2.3, there are a number of limitations with regard to vehicle registration and vehicle inspection. There are also concerns with the driver licensing system. Key issues are:

- **Vehicle inspection.** The reason advanced for vehicle inspection is to improve the road safety by ensuring that vehicles are in sound condition. The current vehicle inspection system is not performing well. Even if the inspections were effective, vehicle condition can deteriorate substantially within the interval before the next inspection. International experience suggests that vehicle faults are not a major cause of accidents, with alcohol, speeding and driver error being the principal influencing factors. Hence, the cost and bother of vehicle inspections cannot be assumed to be warranted. It is suggested that:
 - an attempt should be made to improve the current inspection system (focusing on essential vehicle safety needs, eg tyre, steering and brakes), with a clear set of time bound performance criteria to measure its effectiveness - if the performance criteria cannot be met, consideration should be given to abandoning vehicle inspections (other than at the initial registration of a newly-imported vehicle to ensure that it is as described and for public transport vehicles);
 - public transport vehicles should be inspected twice annually to provide users with the confidence that vehicles over which they have no influence are judged to be safe; and
 - the quantity and quality of police enforcement of defective vehicles should be enhanced to provide a random and continuing discipline for vehicles to be kept in a safe condition.

- **Vehicle registration.** The principal limitations of the current vehicle registration system relate to (a) its ability to accurately record the number of in-use vehicles (ie to ensure that all vehicles in use are registered and that vehicles that cease to be used are removed from the register), (b) its ability to consistently record vehicles with similar characteristics under the same category, and (c) its effectiveness as a means for generating revenue to recover the cost of providing roads. The last of these issues is addressed elsewhere in this report (see Section 5.4). Shifting vehicle registration to the proposed MOT should also assist in improving revenue generation²⁰. With regard to the first two issues, it is recommended that a review be made of vehicle categorisation for registration purposes (which should take account of the wear caused to roads, as discussed in Section 5.4) and a computerised motor registration system implemented that is appropriate to Tongan conditions and takes a customer-focussed approach.
- **Driver licensing.** The current system of driver licensing is largely an administrative system that does not fully ensure that drivers are competent to drive their vehicles in an orderly and safe manner. While we have little hard evidence of the adequacy of the current system we are aware that there are few professional driving instructors in Tonga and that driving behaviour is at times haphazard. Professional drivers of buses, taxis and trucks should meet more exacting standards including have training in safe vehicle operations, customer care, first aid and so on. It is recommended that bilateral assistance be sought for the development of a structured curriculum for ordinary and commercial drivers and the means to implement it within Tonga.

Finally, it is recommended that compulsory Third Party vehicle crash insurance should be introduced in Tonga to ensure that people are adequately protected from personal injury costs.

5.6.2 Traffic management

Improved traffic management is required to optimise the safety and efficiency of the road network and to protect sensitive areas from unwanted traffic intrusion. Although traffic management measures are normally of fairly low cost, well planned and implemented traffic management measures complements more major investment in roads.

Traffic management requires a blend of engineering, enforcement and educational measures to make work effectively. Engineering measures include both traffic engineering and civil engineering measures. Traffic engineering involves planning the appropriate measures to achieve the desired outcome whether the proposed improvement is being carried out for safety, amenity or efficiency reasons. Civil engineering measures involve ensuring curves are the correct radius, traffic islands are the appropriate size, pavements are properly designed, drainage is adequate and construction quality is good.

This Review recommends that the responsibility for planning and provision of traffic management measures be shifted to the Land Transport Division of MOT (from MOP and MOW respectively) so that road planning and management is integrated. The Land Transport Division could also serve as a technical secretariat to an invigorated Road Safety Council (under MOH). The Land Transport Division's principal task would be to plan and implement

²⁰ This shift has the benefit of allowing MOP to concentrate on and enhance, its core activity of enforcement. It also recognises that in the current arrangement MOP has no incentive to seek higher or better structured vehicle registration fees – it is simply a tax collector for the Government. Even without a formal link between vehicle registration fees and road expenditure, MOT will have a relatively greater incentive, and be able to make a persuasive case, for increases in registration fees based on the costs imposed by vehicles on the Government and with additional revenue used to road works.

practical traffic management improvements to the road network in consultation with the Police and, as necessary, the Roads Committee. The Police should remain responsible for traffic enforcement.

An improved accident data base that identifies location and environmental factors in more detail is needed to support improved traffic management. This should be developed in conjunction with the Police. Improved data is also needed on traffic volumes, composition and speed. The Division should assist the Road Safety Council to develop road safety education for children (as recommended by Ross Silcock (1997)) and an appropriate programme of road safety improvements and other non physical activities designed to improve safety. However, the Unit has a valuable potential strategic role also.

The current need to pursue traffic infringements (other than speeding fines which are issued on the spot with 21 days to be paid) through court action causes delay and in many cases unnecessary cost. The Police do not find it worthwhile to issue small infringements because of the cost, bother and small fines that often result. It is therefore recommended that changes be made so that all routine traffic infringements are dealt with in administrative terms (as now occurs with speeding fines). The right to appeal to courts should be ensured.

5.6.3 Land transport regulation

The present system of bus, taxi and truck regulation appears to be working reasonably well. The number of taxis indicates that availability is reasonable while trucks appear to be meeting market demands with no evidence of any constraints.

Following the discussion on freight transport in Section 2.3.2, it is recommended that the current regulation of truck tariffs be abandoned. The practice places an unnecessary constraint on a competitive private sector and provides no clear benefits to the community.

The current system of bus and taxi regulation that focuses on fare regulation functions moderately well. Fare regulation will have contributed to a fairly uniform 'bus and taxi service product' by constraining the provision of services that can be commercially provided. There is potential for higher quality services better targeted to passenger's emerging needs (eg new destinations, and faster, better quality and late night services) to emerge with a more flexible fare environment.

The practice of regulating public transport fares is common worldwide (though not universal), and can be justified on the basis of giving the community confidence in the fairness of the fares being charged and knowledge that there is an upper limit on fares. It is recommended that the current practice of regulating public transport fares in Tonga be improved by:

- introducing more flexibility into the system, in particular to make it clear that:
 - the approved fare is an upper limit for standard public transport services;
 - lower fares may be charged;
 - higher fares may be charged for premium services (eg using air-conditioned vehicles or vehicles with less dense seating), with no fare controls to apply for premium services to allow innovation; and
- in accordance with the discussion in Section 3.5.6, responsibility fare regulation should be shifted from MOLCI to MOT for preparation of recommendations and MOF for review and approval.

The current regulatory system for road-based public transport effectively treats application to MOP regarding entry to the market and the location of services as a registration because with applications appear to always be approved. It is recommended that the current system should be changed to the extent that proponents need formally only register their service and that this be done with MOT.

It is possible that the resulting route network is not optimal because individual operators may not consider the effects of their route choices on other operators. It is therefore recommended that MOT should work with the bus industry to determine if there are opportunities to modify current routes and services to provide better network coverage and operating efficiency. Inherent to this approach should be the awareness that the industry has a far better understanding of community transport needs and issues related to service provision than MOT, even if MOT had the best transport planners and intentions. MOT's role should therefore be to encourage and facilitate the industry to reflect and improve on its practices rather than to determine and instruct the industry on how to undertake its business.

To ensure that the bus and taxi system performs as well as possible, it is desirable that public feedback be encouraged. MOLCI presently have one telephone number for all enquires of any nature including complaints on any matters under their purview. It would be better, and is therefore recommended, that a single number be provided for all complaints related to taxis and buses. Again, this should become the responsibility of MOT.

6. Maritime Development

The chapter considers issues facing the development of the Tonga maritime sector, reviews development needs, and identifies institutional strengthening needs. Detailed information on the material in this chapter can be found in Working Papers B and F.

6.1 Context

The maritime sector involves a combination of government agencies, Public Enterprises and the private sector. There are currently two government agencies with direct links to the maritime sector (MMP and TMPI) and two Public Enterprises (PAT and SCPL). Private sector involvement in the maritime sector includes the ship-to-wharf stevedoring function, shipping agents and shipping companies. The current split between public and private sector involvement in the maritime sector is typical of many Pacific island nations (Castalia 2004).

This structure has emerged over the period since the late 1990s. In 1999, a program of port reform was implemented, involving the establishment of Ports Authority Tonga (PAT) to operate the Port of Nuku'alofa under a "landlord" port model²¹; restructuring of the Ministry of Marine & Ports (MMP); and contracting out international terminal operations at Nuku'alofa to Port Services Ltd (PSL) under a 10 year exclusive contract. In 2004, PAT bought out the PSL contract, and now controls all aspects of operation of the Nuku'alofa international sea port, except ship-to-wharf stevedoring.

6.2 Current performance and development needs

As noted in Section 2.4, the maritime subsector is generally functioning well. Tonga port facilities have been progressively upgraded over last 20 years under a series of AusAID, ADB and EU aid projects since the mid 1990s. Port infrastructure for cargo and passenger shipping is generally in good condition, and suitable for current and expected needs (PRTS 2004). There is a good range of international and domestic shipping services, and port charges and handling rates are generally competitive with other Pacific island ports.

The major infrastructure and operational priorities are:

- construction of jetties at some outer islands; upgrading of navigational aids for inter-island shipping; and pavement maintenance at the international container terminal at Nuku'alofa; and
- continuation of the general upward trend in cargo handling rates at the international terminal at the Port of Nuku'alofa.

Although the maritime sector is generally performing well from an operational perspective, this Review has a range of concerns about financial, institutional and corporate planning aspects of the maritime sector. The following review examines the current performance and future direction of each of the major government agencies in the maritime sector.

6.2.1 Ports Authority Tonga

PAT is a PE established under the Ports Authority Act 1998. It commenced operation in early 1999, and although the scope of the Ports Authority Act potentially applies to all ports in

²¹ Under the "landlord" port model, a port authority concentrates on the provision of infrastructure and management of the port land, and does not undertake extensive port operations.

Tonga, the Port of Nuku'alofa is currently the only port declared under the Act. Under the recommended institutional reform model, PAT would extend its scope of responsibility to include all ports and harbours in Tonga.

PAT has been profitable since its establishment, but dividends and return on shareholder equity are declining. In FY2004, return on shareholder equity was only 0.4 percent. Further details of PAT financial performance and trends are provided in Working Paper C.

This Review supports the port authority model adopted in Tonga, but has concerns about the current corporate direction of PAT. These concerns would be amplified if PAT takes over responsibility for all sea ports in Tonga under the recommended MOT model. The concerns relate to recent performance of PAT and proposed initiatives outlined in its Statement of Corporate Intent (PAT 2004a), in particular:

- an ambitious capital works program (totalling some 20 million Pa'anga over the next 3 years) that does not appear to be supported by detailed financial or operational analysis or a clear business case for the investments. As a result, there are risks that the PAT works program will unnecessarily extend the capital base of PAT, create an unsustainable maintenance burden, leave PAT unable to meet the cost of reconstruction of current port assets when they reach the end of their economic lives, and reduce the potential dividend to GOT. The PAT capital works program is described in detail in Working Paper F. Contrasting this, there is an apparent lack of maintenance in some areas, such as pavement condition in the international terminal;
- the capital works program includes several projects (such as, upgrading of Vuna and Yellow Piers to provide facilities for tourist ferries, yachts, cruise liners, and recreation) that may have broader economic and social benefits (tourism, recreation, economic activity) but have questionable financial viability. These types of projects are arguably outside the charter of PAT to develop commercially viable ports in Tonga and where PAT funds are invested for broader economic and social objectives, this should be done in consultation with MOF and with reference to broader GOT funding priorities;
- a proposal to borrow some 12-15 million Pa'anga to finance the proposed capital works;
- a proposal to reduce its dividend to GOT from 50 percent (standard rate applying to PEs) to 10 percent of net profit justified on the basis of the capital works requirements;
- port revenue per PAT employee and throughput per PAT employee has declined over recent years, while average remuneration per employee has increased in real terms. Although coarse measures, this suggests a general downward trend in productivity²²; and
- PAT has expanded its activities into areas that might be more effectively delivered by the private sector. By taking over responsibility for operation of the international cargo terminal at Nuku'alofa, PAT has reduced private sector involvement in the Tonga port system. This appears to be backtracking on the original intent of port reform and contrary to SDP7 Strategic Result Area 2 to facilitate the development of the private sector. The dispute over tariff increases that precipitated the PSL buy-out highlights the lack of an effective mechanism for setting, monitoring and reviewing port charges and cargo handling tariffs, and adjudicating disputes between the various parties involved in port operations. Improved mechanisms should be established.

²² PAT expenditure on salary and related personnel expenses increased by 45 percent in 2003-04 (see Working Paper C).

When PAT assumed responsibility for operation of the international cargo terminal at Nuku'alofa, it reverted to the cargo handling tariff structure that applied in 1999, prior to the establishment of PAT and letting of the PSL contract. It is a complex and out-dated system which imposes a separate charge each time the cargo is touched by the terminal operator. This significantly increases the administrative cost and gives little predictability in charges for stevedores, agents and shippers. PAT has undertaken to review its port and terminal charges, but in the meantime, the old charging regime will apply.

This Review recommends that the system of port and terminal tariffs at Nuku'alofa should be reviewed as a matter of urgency, with the aim of establishing a tariff system that reflects the cost of services and is simple, predictable and transparent (see Section 6.3). This review should also extend to reviewing and updating port and navigation charges applying throughout Tonga.

Authorities such as PAT that hold monopoly power and own considerable assets face major challenges in making effective use of their funds:

- Their monopoly power should, almost inevitably, allow them to charge tariffs that enable them to make a profit – their challenge is to hold down their costs rather than use their market power to become less efficient than could be the case. Superficially, the substantial increase in labour costs in FY2004, when revenue remained constant in nominal terms, suggest that this challenge was not met.
- As indicated in Section 3.5.5, the substantial depreciation provision that results from their assets is a non-cash expense. Accordingly, given a net profit, such businesses generate substantial cash surpluses. It is vital that these funds only be used for projects that generate a financial rate of return greater than the interest rate received from funds on deposit. Otherwise, the investments destroy shareholder value and in due course result in there being insufficient funds to replace life-expired assets.

To ensure that this monopoly power is not abused and GOT receives a suitable return on its investment in PAT, strong safeguards should be in place to monitor and supervise the fiscal activities of PAT (and other PEs in a similar position). It is recommended that:

- Mechanisms should be strengthened for involving MOF and port users in the process of setting PAT's strategic direction, including reviewing the make-up of the PAT Board with a view to ensuring MOF representation and increasing the business and shipping industry experience; and revitalising the Port Users' Advisory Committee with a view to providing an effective forum for port users to have an input into port development decisions.
- Financial performance targets should be set for PAT and closely monitored. This should include a target rate of return on shareholder equity and a target of increasing port efficiency and reducing the real cost of port services. The combination of a target dividend and a cap on tariff increases has the effect of challenging PAT to increase its efficiency and profitability, while controlling PAT's monopoly power. In addition, this Review recommends that a comprehensive review of port tariffs, performance indicators and targets should be conducted without delay (see Section 6.3). Indicative targets that could be implemented as an interim measure are:

- a target net profit (after tax) equivalent to 6 percent return on shareholder equity and dividend equivalent to 50 percent of net profit²³; and
 - a recommended cap on increases in port charges and cargo handling tariffs at international terminals of “CPI-2” percent²⁴. The tariff increase would be calculated using the Headline CPI published in the National Reserve Bank of Tonga *Quarterly Review* and with tariffs reviewed on a calendar year basis and applying from the start of the next financial year. Although port charges have not increased since 1999, PAT has continued to trade profitably, which suggests that a catch-up adjustment in port charges is not required.
- Major new capital works should be postponed pending the development of a port development strategy developed on commercial principles in consultation with port users. Approval by the PAT Board (and MOF through the Board) of any major capital investment (say over 0.5 million Pa’anga or requiring loan funding) should be contingent on presentation to the Board of a detailed business case that includes consideration of the operational need, commercial viability, long-term sustainability, return on investment, effect on GOT dividends and assessment of project risks.
 - MOF should be consulted before PAT commits funds to capital works that do not have a commercial return on investment, but may have broader economic and social benefits (such as upgrades to port facilities in outer islands under PAT’s expanded role, or recreational and tourist facilities on the Nuku’alofa waterfront). This is in line with separating the commercial imperative of PAT, from the broader economic and social priorities of GOT, and ensuring that investments are in line with overall GOT priorities. Where appropriate, these works should be funded under an explicit CSO arrangement.
 - Profits from operation of the Port of Nuku’alofa should not be used to cross-subsidise other ports under an expanded role for PAT. More work is required to determine appropriate financial arrangements if this is to occur – a cross-subsidy from Nuku’alofa is undesirable because it distorts pricing in the port sector and places Tonga at an international disadvantage. Payment of CSOs by the government to meet the cost of these other ports is a better approach.

In addition to the concern about corporate direction, this Review has a concern about ongoing resources for port security, especially if PAT expands its responsibility to cover all ports in Tonga. PAT has achieved ISPS compliance for the international terminal at Nuku’alofa and has employed a port security officer and funded the costs of necessary capital works. However to ensure ongoing compliance, adequate provision must be made in PAT budgets to maintain ISPS compliance. It is therefore recommended that Security should be established as a separate Profit Centre in PAT accounts and reported in the PAT Annual Report, Statement of Corporate Intent and Three Year Operational Plan.

²³ PAT achieved a net profit return on shareholder equity of 4 percent in 2001-02 and 2002-03 (see Working Paper C). Therefore 6 percent return is considered to be a rate that is challenging but achievable. It is also consistent with current long-term interest rates on deposits in Tonga (opportunity cost of capital), the port’s monopoly position (low risk), and the broader importance of the port system to the Tonga economy (flow-on effects).

²⁴ International comparisons in Working Paper F suggest that port charges at Nuku’alofa are competitive but that efficiency gains of more than 10 percent are feasible. A cap of annual increases in charges of “Consumer Price Index minus 2 percent” (CPI-2) challenges PAT to progressively improve its efficiency by reducing costs in real terms at a rate of at least 2 percent per year. This is considered achievable, without compromising operational efficiency and service quality.

6.2.2 Shipping Corporation of Polynesia Limited

The Shipping Company of Polynesia Ltd (SCPL) is a 100 percent government-owned enterprise, declared under the Companies Act (1995) and the Public Enterprise Act (2002). SCPL was formed in 1979 to provide inter-island shipping services in Tonga, and to manage and operate ships owned by the government. SCPL does not own any ships.

SCPL currently operates two vessels on inter-island routes in Tonga. It also manages a small container vessel which is currently on charter to a New Zealand company, and a petroleum products tanker which is currently laid up in Nuku'alofa harbour. The shipping services operated by SCPL and the ships that it manages are described in Working Paper F.

The financial performance of SCPL appears to be reasonable (see Working Paper C). Unlike government-owned shipping companies in many countries, SCPL is not a major drain on government budgets. However SCPL is approaching a pivotal point in its operation. The inter-island ferry *MV Olovaha* is slow and uncomfortable and is reaching the end of its economic life. A recent proposal by SCPL to replace *MV Olovaha* was overly ambitious (Meyrick 2003) and has not been pursued. SCPL also manages two other ships on behalf of the government that are not used for inter-island shipping; are not producing commercial returns; and divert SCPL from its core function. These factors suggest that decision will need to be made about future fleet requirements, and this has significant implications for the future of SCPL.

SCPL operates in a competitive inter-island shipping market with at least one other operator providing similar services (except to the Niuas which SCPL operates as a CSO – see Working Paper F for details). This makes it questionable whether there is an ongoing need for a government-owned inter-island shipping service (see Section 4.4 for a discussion regarding regulation of domestic aviation services, which has relevance to domestic shipping services also).

In addition to the CSO for services to the Niuas, SCPL receives an implicit subsidy because it does not contribute directly to capital repayments for *MV Olovaha*. This distorts competition with the private sector in the inter-island ferry market, and means that the true cost (or profitability) of government involvement in inter-island shipping is not transparent.

This Review was unable to obtain an annual report, corporate plan or statement of corporate intent from SCPL. SCPL has recently engaged an accountant whose task is to improve the quality of the financial accounting and management system, but overall, the capacity of SCPL for long-term strategic and business planning is weak.

The presence of a private shipping sector in Tonga, together with the opportunity to ensure the provision of non-commercial services through CSOs, makes retention of SCPL under government ownership less necessary than might have been the case in the past. It is therefore recommended that consideration be given to selling the company to the private sector. This would be consistent with government policy (eg see Section 2.6.4). Limitations in the quality of current private sector shipping needs to be addressed through improved safety regulation of the industry by MMP/MOT.

If government ownership is to continue, clear fiscal and economic regulatory frameworks are needed to ensure that SCPL operates as an independent company (rather than as an extension of government), is profitable, efficient and does not compete unfairly with the private sector. SCPL also needs to develop a comprehensive corporate plan to indicate the markets in which

it will operate, projected tariffs and demand, associated fleet requirements and time-bound financial targets.

6.2.3 Ministry of Marine and Ports

Under current institutional arrangements, MMP has a broad role that includes policy and planning, regulation, program management and service delivery functions. Under the recommended MOT model, MMP would cease to exist. Management and operation of ports outside Nuku'alofa would pass to PAT, and the regulatory and police and planning advice functions would be incorporated into MOT.

In either case, there is a major development need arising from a shortage of suitably skilled staff to fill technical regulation positions in the maritime sector (MMP or MOT). Several key technical positions are currently vacant and attempts to train staff have been unsuccessful – when staff have been sent overseas for training in Maritime Engineering or Nautical Architecture, they have either failed the course or not returned to Tonga. As an island nation, it is vital that adequate maritime safety and environmental safeguards are in place and diligently monitored.

Given its current broad role, the recent financial performance of MMP has been acceptable. Total revenue from all MMP operations (port and navigation charges, registration, licensing and accreditation fees) has typically been equal to about a third to a half of expenditure (Working Paper C), but the majority of current revenue is derived from port-related charges or from the operation of the Tonga International Register of Ships (TIRS). Revenue from TIRS is expected to decline over the next five years as the register is wound down and port operation would be transferred to PAT under the recommended institutional reform model. The potential for funding maritime regulatory activities of MOT through cost recovery from regulatory fees appears to be very limited.

6.2.4 Tonga Maritime Polytechnic Institute

TPMI offers a range of courses aimed at preparing students for careers in the local Tongan shipping industry and for careers in international shipping. In addition, TMPI offers basic and advanced short courses on topics including fire-fighting, basic first aid, OHS, and survival at sea. Courses are developed in collaboration with Ministry of Marine and Ports (MMP) to ensure that they meet the needs of the shipping industry and international standards. MMP also examines and certifies the competency of students. Details of courses are provided in Working Paper F.

Over the past decade, the Maritime section of TMPI appears to have stagnated, with static (or declining) resources, static (or declining) enrolments, out-dated equipment, and problems with staff turnover and shortages. There are currently only 2 teaching staff specialising in maritime courses. The overall impression is that the capacity of TMPI to provide up-to-date courses for the Tonga maritime sector is in a process of gradual decline.

There have been recent proposals to transfer TMPI from Ministry of Education to MMP, but incorporating TMPI into MMP would compromise the role of MMP as independent examiner and certifier of sea-farers in accordance with international shipping conventions. In addition, it would be incompatible with the inclusion of MMP in the recommended establishment of a Tonga MOT. It is recommended that TMPI continue to operate within the Ministry of Education, but with MMP (or MOT) taking a more active role in developing course programs, objectives and syllabuses.

6.3 Institutional strengthening needs in the maritime sector

The maritime sector is generally performing well from an operational perspective but a number of weaknesses have been identified in corporate planning, investment analysis, pricing and institutional capacity. These weaknesses relate to basic government functions and can be considered separately from the recommended institutional reform package for the transport sector. For example, ensuring a sustainable capability in maritime safety and environmental regulation is a high priority equally under current institutional arrangements, or under the recommended MOT model.

The institutional strengthening program should address issues described below. A Terms of Reference for this work is included on page **Error! Bookmark not defined..**

6.3.1 Ports Authority Tonga

Institutional strengthening of PAT should focus on strengthening its capacity to provide and maintain appropriate infrastructure and set appropriate prices for use of infrastructure and services. Key elements include:

- strengthen the investment planning, evaluation and review procedures within PAT, from initial project formulation through to Board approval;
- review the make-up of the PAT Board with a view to ensuring MOF representation and increasing the business and shipping industry experience on the Board;
- assist PAT (in consultation with MOT TPPU and MOF) to develop a long-term strategy for the development and maintenance of the international port at Nuku'alofa and ports and harbours on other island groups. This process should include an assessment of current and foreseeable needs (in consultation with the shipping industry and island communities), identify potential projects to meet those needs, and identify operational measures that will be taken to achieve a continuing reduction in the real cost of port charges to users;
- strengthen the capacity of PAT to formulate and analyse proposed investments in capital projects and services, and to prepare a business case for consideration by the PAT Board. The business case should include consideration of operational need, commercial viability, financing arrangements, long-term sustainability, return on investment, effect on GOT dividends, and assessment of project risks; and
- assist PAT to undertake a comprehensive review of port tariffs and performance indicators, with the aim of establishing a tariff system that reflects the cost of services and is simple, predictable and transparent. This review should:
 - occur within the constraint of an “inflation-2” percent annual rise in port tariffs;
 - separately address commercial and non-commercial activities of PAT;
 - review current port tariffs and recommend appropriate berthage, wharfage and cargo handling tariffs for Nuku'alofa and other ports under its management. The review should be undertaken in close consultation with port users and with reference to the long-term development strategy;
 - recommend appropriate port performance indicators (financial and operational) and benchmark these indicators against comparable ports in the Pacific and elsewhere;
 - recommend appropriate operational targets;

- recommend appropriate financial targets, such as a target rate of return on shareholder equity that is consistent with the expanded role of PAT; and
- work with MOT, PAT and local communities to develop appropriate CSO arrangements for non-commercial activities of PAT, including:
 - ensuring that user charges are set at an appropriate level;
 - ensuring that there is a contribution, at least in kind, from the communities that benefit from the local ports;
 - establishing indicators to assess PAT performance of the community service obligation; and
 - involving local communities in the oversight of the performance of PAT with regard to CSO provisions.

6.3.2 Shipping Corporation of Polynesia

SCPL has demonstrated strong skills in day-to-day operation of an inter-island shipping service, but its capacity for longer-term corporate planning appear to be weak. Technical assistance to SCPL should focus on key institutional issues regarding the future of SCPL and strengthening its capabilities in long-term corporate planning. The key elements are:

- assist SCPL to assess its long-term fleet requirements and prepare a fleet management plan (ship deployment, replacement, disposal); and
- assist SCPL to formulate a comprehensive corporate plan for the next 5 years. The plan should examine the current and future prospects of SCPL, including:
 - market trends and prospects;
 - financial forecasts, under current arrangements and with SCPL accounts on a full commercial basis (taking into account the implicit capital subsidy to SCPL and the countervailing effects of non-commercial activities undertaken by SCPL for GOT);
 - the financial viability of SCPL as an ongoing commercial concern and its ability to finance future fleet replacement requirements; and
 - analysis and recommendations on the option of continued government ownership of SCPL versus privatisation.

6.3.3 Maritime safety and environmental regulation

Institutional strengthening in relation to safety and environmental regulation should focus on ensuring a sustainable capability in technical regulation of the maritime sector. In particular, it is recommended that:

- a study be undertaken to review options (training, recruitment, outsourcing, regional partnerships, etc) for a sustainable capability for technical regulation of the maritime sector in Tonga, and to develop a long-term strategy for delivering the maritime regulatory function.
- This review could be incorporated into the institutional strengthening program associated with establishment of MOT (see Section 3.5).

6.3.4 Tonga Maritime Polytechnic Institute

TMPI plays an important role in the Tonga maritime sector, but its capacity to provide up-to-date courses that fully meet sector needs appears to be declining. It is recommended that an independent review be undertaken of the long-term viability of TMPI, the resource requirements to revitalise its role in the Tonga maritime sector, and other options for providing education and training services to the Tonga maritime sector.

7. Summary of Recommendations

The recommendations of the Review are summarised below.

7.1 Institutional arrangements

- Current institutional arrangements do not provide an adequate long-term basis for managing the Tonga transport sector and should be restructured (Section 3.3.2).
- Establishment of an integrated Ministry of Transport (MOT) which would bring together responsibility for all modes of transport into a single agency would provide a sound basis for managing the Tonga transport sector. The MOT model is a tried and proven model that has been adopted in many countries in the Pacific and throughout the world. It provides an efficient mechanism for making best use of limited resources in the transport sector and for better integrating transport policy and programs (Section 3.3.2)
- The preferred model MOT model is Option B1 - an integrated model with MOT structured along modal lines and taking responsibility for planning, policy and regulation for all modes of transport, and for program management in the land transport sector. (see Section 3.4.1 for details of the proposed MOT functions, structure, staffing requirements, and the effects on other Ministries and agencies).
- A Transport Policy & Planning Coordination Unit (TPPU) should be established within MOT with an overarching role in policy, strategic planning and CSOs across all modes of transport. It is proposed that TPPU undertake detailed work with regard to economic regulation in the transport sector, with proposals submitted to MOF for approval. (Section 3.4.1)
- The establishment of a Land Transport Authority is suggested as a possible second phase of implementation of the MOT model. However implementation of this option is not recommended at this time. (Section 3.4.3)
- A program of institutional strengthening and capacity building is essential to ensure successful establishment of an effective MOT (and a corporatised airport authority and to support further capacity building for Ports Authority Tonga - see below) – it will need to include confirmation and detailing of proposed changes (Section 3.5.1), capacity building for staff and management (Section 3.5.2) and development of corporate systems including inter-related strategic, corporate and work plans needed for agencies to effectively undertake their work (Section 3.5.3).
- Particular attention needs to be given to developing skills in planning and policy which are generally not currently present (Section 3.5.4), monitoring public enterprises to improve their effectiveness and accountability (Section 3.5.5), regulation of transport services to focus on essential needs only (Section 3.5.6) and making effective use of the private sector (Section 3.5.7). More details of recommended changes to the operation of PEs in the air and sea sectors are provided in the following sections.
- It is recommended that technical assistance be provided to support implementation of MOT. (Section 3.6).

7.2 Air transport sector

- It is recommended that the government should move on from the current structure wherein airports are managed and operated within a ministry structure. (Section 4.2.3)

- The preferred option for Fua'amotu airport is to establish a corporatised airport authority as a public company under the Companies Act, notionally called Tonga Airports Limited (TAL) in this report. (Section 4.3.2)
- TAL should also be responsible for other airports in Tonga. MOT and TAL in consultation with local communities should develop and manage CSO agreements for provision of non-commercial services by TAL. A social obligation should be placed on local beneficiary communities to contribute to the cost of local airports. (Section 4.3.3)
- Current user charges at Fua'amotu airport generate revenue that meets only 56 percent of the direct cost of operating, maintaining and reinvesting in life-expired assets. A program to achieve full recovery of these costs for Fua'amotu airport (over say 57 years) needs to be developed and implemented. (Section 4.3.4)
- Implementation of these changes requires an improved regulatory environment especially with regard to fiscal and economic regulation, assistance for detailing and implementing the new organisation, establishment of cost-recovery and productivity targets including a time-bound target for achieving full recovery of direct costs for Fua'amotu airport, and establishment and funding of community service obligations for the provision of subsidies to TAL. These matters should ideally be addressed as part of a Business Case for the establishment of TAL. (Section 4.3.4)
- Some essential investment will be required in airports, primarily at Fua'amotu, over the next five years. Investigation and planning for this investment needs to commence, and careful analysis undertaken to ensure the investment is justified. (Section 4.4)
- A single airline policy requires considerable government skills to be effective. A better approach to regulating domestic air services is to facilitate a contestable market with no barriers to entry and a willingness to see incumbents displaced by better operators (Section 4.5)
- Immediate steps need to be taken to address concerns expressed by the International Civil Aviation Organisation on safety related matters. (Section 4.6)
- Local air traffic control should be the responsibility of TAL and its cost recovered from users. MCA has suggested that specialist firms be engaged to provide rescue and fire services, technical equipment and related services, and air traffic services at Fua'amotu airport. The contracts will have a substantial impact on TAL's performance. It is recommended that TAL be responsible for pursuing the matter, and prepare a business case to justify its decision. (Section 4.7)
- It is recommended that technical assistance be provided to TAL to support its establishment, initial operation and planning for its continued development. (Section 4.8)

7.3 Road and land transport management

7.3.1 Land transport

Road infrastructure

- The direct financial cost to the government of providing the current road system for which MOW is responsible on a sustainable, operational basis is 5.3 million Pa'anga per annum. This amount should be recovered from motorists. The amount is three times current annual expenditure of 1.7 million Pa'anga. In the absence of increased

expenditure, road condition will deteriorate, and total transport costs will increase. (Section 5.2)

- Motorists should make travel decisions on the basis of the total costs that their travel imposes on the government and the community. (Section 5.4.1)
- A rise in fuel tax of 0.10 Pa'anga per litre for petrol and diesel used by transport vehicles and considerably higher registration charges for heavy trucks is recommended to ensure motorists better meet the relative cost that they impose on the government and generate sufficient revenue to allow the government to provide the funds needed to sustain the current road system. (Section 5.4.3)
- Better quality data on the number of registered vehicles and amount of fuel used could indicate a need for higher charges to generate sufficient revenue to meet the cost of sustaining the road system, and could result in the need for a slightly lesser rise in registration fees for heavy trucks. (Section 5.4.4)
- Yet further increases in charges will be required if it is desired to upgrade the road network such as sealing more roads, widening roads and building more roads (Section 5.4.5)
- A 0.10 Pa'anga per litre rise in fuel tax compares with a current retail price of petrol on Tongatapu of 1.70 Pa'anga per litre, which is 0.46 Pa'anga per litre more than the average price in 2003. Fuel taxes in Tonga are relatively low compared with other Pacific island countries. Exemptions from fuel taxes to some government agencies, and any others that may exist for road transport vehicles, should be withdrawn immediately. (Section 5.4.6)
- It is not recommended that there be a formal system of hypothecating revenue from specific charges to a fund solely for road expenditure at this stage. Rather, there should be an informal system to ensure that, on average over time, revenue from vehicle registration and driving licence fees and about 0.13 Pa'anga per litre of fuel tax is directed to meeting the cost of providing a sustainable, operational road system. If the government is unable to sustain this commitment, establishment of a road fund should be reconsidered. (Section 5.4.7)
- Road network planning, road upgrading and asset management proposals should have a clear rationale and the full life cycle costs and benefits should be taken into account. Projects that meet defined economic criteria should be prioritised and presented in a rolling work program that is consistent with the ten year strategic Road Development Plan (Section 5.5.1).
- A road maintenance and management system is essential to the effective and efficient management of roads in Tonga. A new approach is recommended, comprising occasional use of a sophisticated model to develop a ten year strategy and simpler tools for program management in intermediate years. (Section 5.5.2).

Road transport operations

- The current system of vehicle inspection needs to be improved, and on-road enforcement of unsafe vehicles enhanced. The current vehicle registration system also needs to be improved, including better categorisation of vehicles, consistency in application of the system, recording of vehicles no longer in use, and introduction of a computerised motor registration system implemented that is appropriate to Tongan conditions and takes a customer-focussed approach. Improved driver training is recommended. Changes should be made so that all routine traffic infringements are

dealt with in administrative terms (as now occurs with speeding fines) rather than need to be taken to court. Finally, compulsory Third Party vehicle crash insurance should be introduced in Tonga to ensure that people are adequately protected from personal injury costs. (Section 5.6.1)

- Planning and implementation of traffic management measures should become the responsibility of the proposed Land Transport Division in the Ministry of Transport, in consultation with the Ministry of Police. The dormant Road Safety Council should be reactivated, and provided with support. It is also recommended that routine traffic infringements should be dealt with using administrative means rather than need be taken to court, while protecting the right of appeal to the courts. (Section 5.6.2)
- The current regulation of truck tariffs should be abandoned. The practice places an unnecessary constraint on a competitive private sector and provides no clear benefits to the community. (Section 5.6.3)
- While the government may wish to continue to establish an upper limit on fares for standard bus and taxi services, operators should be permitted to charge lower fares. Fares for premium and special services should not be controlled to facilitate innovation and new services. (Section 5.6.3)
- Responsibility for fare regulation should be shifted from MOLCI to MOT and MOF. (Section 5.6.3)
- To ensure that the bus and taxi system performs as well as possible, it is desirable that public feedback be encouraged, with a single number for all complaints. (Section 5.6.3)

7.4 Maritime sector

Port system

- Extend the list of declared ports under the Port Authority Act so that PAT has responsibility for all ports and harbours in Tonga. The transfer of responsibility should take place as part of the transition to a MOT-model for management of the transport sector. (Section 6.2.1)
- Establish explicit CSO arrangements to support the cost of providing and maintaining minor ports and harbours. Profits from operation of the Port of Nuku'alofa should not be used to cross-subsidise other ports under an expanded role for PAT. (Section 3.3.1)
- Strengthen mechanisms for involving local communities, MOF and port users in the process of setting PAT's strategic direction, including revitalising the Port Users' Advisory Committee at Nuku'alofa and establishing an advisory committee in each island group. (Section 6.2.1)

PAT (Section 6.3.1)

- Prepare a ten year Port Development Plan for the development and maintenance of the international port at Nuku'alofa and ports and harbours on other island groups.
- Postpone major new capital works at Nuku'alofa and other ports pending the results of the port development strategy.
- Approval by the PAT Board (and MOF through the Board) of any major capital investment should be contingent on presentation to the Board of a detailed business case that includes consideration of the operational need, commercial viability, long-term

sustainability, return on investment, effect on GOT dividends and assessment of project risks.

- Technical Assistance is required to strengthen the capacity of PAT to formulate and analyse proposed investments in capital projects and services, and to prepare a business case for consideration by the PAT Board.
- Review the make-up of the PAT Board with a view to ensuring MOF representation and increasing the business and shipping industry experience on the Board.
- Financial performance targets should be set for PAT and closely monitored. This should include a target rate of return on shareholder equity and a target of increasing port efficiency and reducing the real cost of port services.
- A comprehensive review of port tariffs, performance indicators and targets is urgently required
- A cap should be placed on increases in port charges and cargo handling tariffs at international terminals of "CPI-2" percent to ensure productivity increases and lower port charges.
- MOT and PAT in consultation with local communities should develop and manage CSO agreements for provision of non commercial services by PAT. A social obligation should be placed on local beneficiary communities to contribute to the cost of local ports.
- Security should be established as a separate Profit Centre in PAT accounts and reported in the PAT Annual Report, Statement of Corporate Intent and Three Year Operational Plan.

SCPL

- Prepare a corporate plan for SCPL. The plan should examine the current and future prospects of SCPL, including consideration of long-term fleet requirements and the appropriateness of continued public ownership. (Section 6.2.2)

Maritime safety and environmental regulation

- Review options for ensuring a sustainable capability for technical regulation of the maritime sector in Tonga, and develop a long-term strategy for delivering the maritime regulatory function. (see Section 6.3.3).

Tonga Maritime Polytechnic Institute

- TMPI should for now continue to operate within the Ministry of Education, but with MMP (or MOT) taking a more active role in developing course programs, objectives and syllabuses. (Section 6.3.4)
- An independent review of the long-term viability of TMPI should be undertaken, the resource requirements to revitalise its role in the Tonga maritime sector, and other options for providing education and training services to the Tonga maritime sector. (Section 6.3.4)



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