



Independent Consumer and Competition Commission

**REVIEW OF PNG HARBOURS
REGULATORY CONTRACT**

DRAFT REPORT

Foreword

The Independent Consumer and Competition Commission (“Commission”) was established in 2002 under the *Independent Consumer and Competition Act 2002* (“ICCC Act”) to promote competition and fair trade, regulate the prices of certain goods and services and protect consumer interests in Papua New Guinea.

The Commission currently consists of three Commissioners, Mr. Thomas Abe, who is the Chairman and full time Commissioner, and two associate Commissioners, Dr. Billy Manoka, and Mr. David Dawson.

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This is a public review and the Commission looks forward to receiving comments and submission from interested individuals, key stakeholders and the public. Where information is provided to the Commission on a ‘Commercial In Confidence’ basis, the Commission will ensure that the information is kept secure and confidential.

Mr. Thomas Abe

EXECUTIVE SUMMARY

The essential port services industry in PNG is declared under section 25 A of the *PNG Harbours Act* (“Harbours Act”) to be a regulated industry for the purposes of the ICCA Act.

In 2002, the Minister for Treasury declared under section 32 of the ICCA Act that:

- The supply of essential port services and Stevedoring Access to be regulated services and,
- PNG Ports Corporation Limited (then known as PNG Harbours Limited) to be a regulated entity.

As a result of the declarations made under the ICCA Act and the Harbours Act, the Commission is responsible for regulating the tariffs and service standards of PNG Ports in the supply of essential port services and stevedoring access at its declared ports throughout PNG.

FORMAT AND TIMETABLE OF REVIEW

The Commission is undertaking this review in an open and transparent manner and seeks the views and comments of key stakeholders, interested individuals and members of the public. Key dates are as follows:

Review Timetable

EVENTS	DATE
Commission Publishes Draft Regulatory	31 st August 2009
Consultation on Draft Regulatory Contract Begins	1st September 2009
Close on submissions on Commission's Draft (2nd Draft)	30th September 2009
Further consultation meetings key stakeholders	1st October to 30th October 2009
Final Regulatory Contract published	Mid to Late November 2009

This Draft Report has been released in conjunction with the Draft Regulatory Contract on 31st August 2009.

Under the current Contract, the Commission is required to publish the final Contract by 18th December 2009, at this stage, it is envisaged that the Commission may publish before that date, preferable in mid or late November 2009.

The Report

This report looks at a number of issues associated with the continued regulation of PNG Ports, including:

- The industry structure and competitive landscape faced by PNG Ports
- The size, funding arrangements, pricing arrangements associated with the community service obligation (CSO) required to keep outlying ports operating
- The requirements of PNG Ports under the regulatory contract
- The form of regulation the Commission will employ in regulating PNG Ports
- The cost building blocks associated with PNG Ports operations, including the necessary incentive for PNG Port to invest in capital improvements at relevant ports
- The resultant X factors to apply to prices over the next five years
- The necessary changes to the regulatory contract.

The Commission now calls on relevant stakeholders to provide submissions on the following matters:

The Commission seeks comments and views from stakeholders on the size, structure and characteristics of the PNG Ports Industry. In particular the number of port operators at each port and the services they provide. Is there any particular issues the Commission should consider as part of this review?

The Commission is considering whether the wharfage categories should be changed, to reflect current circumstances. An example would be whether a category such as 'Livestock' should replace 'Horses', 'Goats' etc.

The Commission call for submission as to the appropriate categories which should be used for regulatory purposes.

The Commission calls for submissions from stakeholders regarding the appropriate number of free days to clear the customs and quarantine processes. Specifically, the Commission calls on stakeholders to provide information regarding historical benchmarks for clearing this process at the major ports in Port Moresby and Lae. In addition, the Commission calls for stakeholders to provide benchmarks from ports outside of PNG.

The Commission seeks comments and views on the degree to which competition is occurring within the ports industry at Fairfax Harbour in Port Moresby. Is the competition occurring within Fairfax harbour significantly strong?

Is there potential for competition to increase significantly over the next 5 years?

The Commission seeks comments and views from stakeholders on the competition for the delivery of port services in Lae Port.

The Commission seeks comments and views on the degree of competition occurring in the minor ports. What is the potential for competition to develop in the next 5 years?

The Commission seeks views and comments from the industry and interested stakeholders on the efficiency of PNG Port's prices in fostering competition in the ports industry.

The Commission seeks comments on the degree of competition from other industries. Is there competition from other industries and what is the potential for that competition to develop in the next 5 years?

The Commission invites comments on the degree of countervailing market power at declared ports in PNG. Do shipping lines or their agents have strong countervailing market power in Lae and Port Moresby? Is this countervailing market power non-existent in minor ports throughout PNG?

The Commission seeks views on the ease of entry (and exit) from the ports industry in PNG. Are there any significant barriers that prevent entry of potential port operators into ports industry?

The Commission seeks comments as to:

- (i) The proposed treatment of the Motukea windfall**
- (ii) The appropriate hurdles for small scale investment not requiring Commission approval**
- (iii) The approval process for large scale investments.**

The Commission calls for comments on the:

- (i) provision of prices reflecting maximum allowable tariffs and,**
- (ii) the movement away from postage stamp prices at the ports.**

The Commission calls for comments on the amendment of this provision. What other issues should the Commission be considering regarding clause 4.3?

The Commission seeks comments from all parties as to the requirements listed regarding the condition to release PNG Ports from its obligations under the regulatory contract.

The Commission seeks comments regarding the need, or lack thereof, for a level playing field in terms of applying the regulatory contract across all port operators.

The Commission considers that a five (5) year regulatory period shall be applicable in this instance.

The Commission calls for submissions regarding the regulatory returns that should be available to PNG Ports through the Weighted Average Cost of Capital.

The Commission calls for submissions on each of the underlying settings used in the building block cost of assessment.

The Commission seeks comments and views from stakeholders on the demand characteristics of the PNG Ports market. In particular on the following issues:

- (i) Demand for port services in PNG over the next 5 years**
- (ii) The potential impact that the LNG Gas Project will have on the demand for port services.**

The Commission calls on stakeholders to provide submission regarding the likely demand and capital expenditure combination over the regulatory period.

The Commission seeks comments and views from stakeholders regarding the various changes outlined in the draft regulatory contract.

The Commission also call for stakeholders to make submissions on any other matters that stakeholders feel important to the continued development of port infrastructure throughout PNG

Following the receipt of submissions in September, the Commission will hold further consultation meetings those who have made submissions and with key stakeholders during the month of October.

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1.0 INTRODUCTION OF REVIEW

1.1 REGULATION OF PNG PORTS

The essential port services industry in PNG is declared under section 25 A of the *PNG Harbours Act* (“Harbours Act”) to be a regulated industry for the purposes of the ICCC Act.

In 2002, the Minister for Treasury declared under section 32 of the ICCC Act that:

- The supply of essential port services and Stevedoring Access to be regulated services and,
- PNG Ports Corporation Limited (then known as PNG Harbours Limited) to be a regulated entity.

As a result of the declarations made under the ICCC Act and the Harbours Act, the Commission is responsible for regulating the tariffs and service standards of PNG Ports in the supply of essential port services and stevedoring access at its declared ports throughout PNG.

1.2 ESSENTIAL PORT SERVICES

An essential port service is defined under the Harbours Act as a port service which consists of:

- Providing port facilities for loading or unloading vessels at a declared port, and,
- Providing berths and berth reservation services for vessels at a declared port;

PNG Ports Corporation Limited (PNG Ports) currently provides essential port services (berth reservations, berthage and wharfage) at 14 declared ports throughout PNG.

1.3 THE PNG HARBOURS REGULATORY CONTRACT

The tariffs that PNG Ports may charge for the supply of essential port services and stevedoring access is regulated under a regulatory instrument called the PNG Harbours Regulatory Contract (“Contract”), which among other things, also regulates the capital expenditure PNG Ports is obliged to undertake, the returns PNG Ports is allowed to earn on its assets, and the minimum service standards that PNG Ports is required to meet when delivering these services.

The Contract, which is binding between the Commission and PNG Ports was issued to PNG Ports under section 34 (1) of the ICCA Act by the Minister for Treasury in 2002 on behalf of the yet to be formed ICCA.

Originally the Contract was set to expire on 31st December 2011, however, the Commission and PNG Ports agreed to amend the term of the Contract to bring forward the date of expiration to 31st December 2009 to allow for an early review of the Contract to investigate claims by PNG Ports that the current regulatory arrangements were hindering PNG Ports from competing in an industry which was experiencing growth in competition.

1.4 PURPOSE OF REVIEW

The Commission is now undertaking a review of this Contract to determine whether:

- The current regulatory regime should continue as it is, or
- If recent changes to the ports industry have introduced sufficient competition to remove regulation altogether, and thus the removal and cancellation of the Contract or
- For a different form of regulation to be adopted that takes into account the current circumstances of the industry.

1.5 LEGISLATIVE REQUIREMENTS

Should the Commission consider it necessary to continue with the regulation of PNG Ports, and therefore a continuation of the Contract in its current form, or a slightly different form, the Commission must meet certain legislative requirements when issuing a new regulatory Contract.

In issuing a regulatory contract, the Commission is required to following the procedures outlined in the current Contract and in the ICCA Act. These procedures are outlined below.

1.5.1 Requirements under the Contract

Clause 4.2 of the Contract outlines the procedures for issuing a new contract when the current contract expires on 31st December 2009.

Under clause 4.2 (a) of the Contract, PNG Ports has the option of submitting a proposed Draft Contract (“Proposed Contract”) to the Commission for consideration that should bind it for a period of 5 years from 1st January 2010.

After considering the Proposed Contract from PNG Ports, the Commission is required to publish a Draft Contract which should bind PNG Ports for the same period.

In preparing the Draft Contract, the Commission must consider the following:

- The legitimate business interests of PNG Harbours
- The legitimate interests of suppliers to, and customers of, PNG Harbours;
- The nature and uses of the services the prices of which would be regulated under the draft PNG Harbours Regulatory Contract
- The costs of supplying the services the prices of which would be regulated under the draft PNG Harbours Regulatory Contract
- The costs of complying with relevant health, safety, environmental, social and other legislation and regulatory requirements applying to the Essential Port Services supply industry in Papua New Guinea
- The return on assets required to sustain past and future investment in the Essential Port Services supply industry in Papua New Guinea
- Any relevant international benchmarks for prices, costs and return on assets in comparable industries, taking into account the particular circumstances of Papua New Guinea
- The financial implications of the draft PNG Harbours Regulatory Contract (if it were to come into force) for PNG Harbours and the Essential Port Services supply industry in Papua New Guinea
- Any other factors specified in or under relevant legislation and
- Any other factors the Regulator considers relevant.

In addition, the Commission must ensure that the Draft Contract must not be inconsistent with, and must be prepared in accordance with, the Regulatory Principles; and must comply with the requirements of the Independent Consumer and Competition Commission Act 2002.

1.5.2 Requirements under the ICCC Act

There are several requirements under the ICCC Act that the Commission is required to comply with when issuing a Regulatory Contract to a regulated entity such as PNG Ports.

Section 35 of the ICCC Act contains conditions that must be included in a regulatory contract, while Section 26 outlines the procedures the Commission must follow in issuing the Contract.

Section 35 and Section 36 have been included in the Annexure of this Draft Report.

1.6 FORMAT AND TIMETABLE OF REVIEW

The Commission is undertaking this review in an open and transparent manner and seeks the views and comments of key stakeholders, interested individuals and members of the public.

The review is being undertaken in accordance with the Timetable outlined further below.

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The public will be invited to make comments on this draft report and the draft regulatory contract during the month of September. Following the receipt of submissions in September, the Commission will hold further consultation meetings those who have made submissions and with key stakeholders during the month of October.

Under the current Contract, the Commission is required to publish the final Contract by 18th December 2009, at this stage, it is envisaged that the Commission may publish before that date, preferable in mid or late November 2009.

2.0 THE PORTS INDUSTRY IN PNG

2.1 PORTS, SHIPPING & THE ECONOMY

Sea ports play a vital role in the transportation and shipment of goods throughout the world, where they serve as international gateways by which goods are traded between countries, and also act as important domestic links by which goods are moved within a country.

In 2004, the World Bank estimated that 6.7 billion tons of seaborne trade were accounted for as international commerce. According to the World Bank, as the globalisation of the world's economy continued to increase, the ability of a nation to compete on the international stage would have a direct link to the efficiency of its ports.

In PNG, the ports and the shipping industry continue to play a crucial role in the ongoing economic development of this country by facilitating both international and domestic trade. PNG is not linked by road or rail to its major international trading partners and therefore the ports and shipping services will continue to act as the major links by which goods will be transported to international destinations.

The PNG economy in particular is highly reliant on trade with international trade given that the major sectors of the economy which contribute towards income revenue are the mineral, petroleum, forestry and agriculture sectors, which all need to have access to international markets.

From 2002-2008 the amount of income generated by PNG's exports rose dramatically as shown on Table 2. This was mainly attributed to the boom in the global economy which triggered a general increase in export prices resulting in high exports earnings for the country. PNG's high export earnings generated from international trade during this period contributed significantly to national income. Due to the high export earning, PNG also had to import a lot of goods from major trading partners to cater for high demand generated by high export earnings and a general boom in the PNG economy. The magnitude of trade undertaken by PNG is shown below on Table 2.1

Table 2.1 PNG's International Exports and Imports (K'000)

Year	2002	2003	2004	2005	2006	2007	2008 ¹
Exports	6,387	7,842	8,437	10,291	12,851	14,079	15,443
Imports	4,197	4,231	4,703	4,732	6,084	7,797	8,434

Source: Bank of Papua New Guinea, Quarterly Economic Bulletin Statistics, December 2008

¹ 2008 figures are provisional

2.2 DEMAND FOR PORTS AND SHIPPING SERVICES IN PNG

The demand for ports and shipping services is derived demand and is not necessarily, directly dependent or responsive to the prices being charged for port services. Derived demand occurs where the demand for a particular good or service occurs as a result of a demand for another good.

In the case of ports and shipping services, the demand for such services usually occurs as a result of the need to ship goods to offshore markets, where the demand for the goods by these offshore markets is usually correlated to the level of economic activity. In general, there is a positive relationship between the economic growth and the demand for port infrastructure and shipping services. A surge in economic activity and growth would lead to a strong demand for port and shipping services. International shipping services would demand more port services as PNG's trade with international destination increased and likewise with Coastal shipping, if trade within the country increased, demand for port services would also increase.

The Commission has observed from past reviews and studies it has undertaken the demand for port services at the major and minor ports in PNG. Ships operate between ports along the coastline of the mainland and islands provinces in the Islands Region. International shipping lines operate regular freight services to and from South-East Asia, Japan, Europe, New Zealand, Australia and the South Pacific to some of the major ports in the PNG.² Table 2.2 below demonstrates the demand pattern at all major and minor ports (both private and public ports) over the last 11 years.

Table 2.2 Shipping Demand Pattern.

	11 YEAR AVERAGE	HIGH	LOW	OBSERVATION	
Total overseas and coastal ship calls	7,674 calls	8,400 calls	6,625 calls	Overseas 32%	Coastal 68%
Overseas Ship calls	2,489 calls	3150 calls	1,908 calls	Peak and low years	
Overseas logging Ship calls	787 calls	1050 calls	433 calls	32% of Overseas calls	

Source: PNG Department of Transport-Maritime Division

The ports of Lae, Port Moresby, and to a certain extent Madang and Kimbe, handle most of the County's international trade. Lae Port is a hub that is strategically located to serve the Highlands Provinces and the New Guinea Islands including the Mamose region (New Guinea coastal provinces). The Port plays an essential role in the social and economic development of PNG. It is important not only for adequate and efficient handling of exports and imports, but also for the efficient movement of goods and people between the remote and sparsely populated areas on the mainland of PNG and island Provinces. The Lae Port also serves as a gateway linking the world market to the city of Lae which is PNG's industrial commercial centre and the 5 resource-rich Highlands provinces.

² ICCC Stevedoring and Handling Services Pricing Review, 2008.

Coastal shipping services are expected to remain as key transportation mediums for some time given the lack of a quality and extensive road or rail network within mainland Papua New Guinea to transport goods between cities, towns and villages.

In particular a total of 15 out of 20 provinces are located on the coast and there is a considerable amount of domestic trade that takes place within the country between these provinces, especially in terms of agricultural produce. Provinces with higher surpluses of agricultural produce often ship their surplus to lucrative markets in other provinces. PNG's geographic structure which is rugged by nature and many small islands makes it difficult to link most parts of PNG by road and some road conditions have deteriorated badly over the years. All these factors make shipping services the only viable and cost effective solution for transporting goods and ferrying people.

The New Guinea Islands region in particular will continue to rely on coastal and international shipping services as important domestic and international links.

3.0 MARKET SIZE, STRUCTURE & CHARACTERISTICS

The provision of port services in Papua New Guinea is provided mainly by PNG Ports, especially with regard to port services servicing non project based international and domestic cargo. By project based, the Commission is referring to single large projects within PNG (such as oil, gas or mining projects) which often require highly specialised port infrastructure to import and export goods. There are also private ports which are owned and operated by private commercial interests to facilitate their own commercial interests.

The size of the ports industry in PNG can be illustrated by the number of ports that are providing services in PNG. Currently, there are 23 declared ports in the PNG, of which PNG Ports operates 16 of these ports. Of those 16 ports, 14 ports are directly managed by PNG Ports while Aitape and Samarai ports are managed by agencies on behalf of PNG Ports. The remaining 7 ports are either non-operational or operated by private commercial interests.

Table 3.1 below sets out the competitive position as defined by PNG Ports regarding the various ports throughout PNG, their operators and the purpose for which they are used. It is not a complete list of all the ports in PNG, but shows the ports and port operators who provide services in locations where PNG Ports operate.

Table 3.1 Ports in locations where PNG Ports Operate

Wharf – Operator	Services	International or Coastal
Port Moresby (Fairfax Harbour)		
PNG Ports	Berthage, Berth Reservations, Wharfage, Pilotage	International and Coastal Shipping. Containerised cargo and loose cargo.
Motukea - Curtain Brothers	Berthage, Wharfage	International Shipping for Project Based Cargo. Logs from RH.
Napa Napa – InterOil	Berthage and Wharfage	International tankers for domestic and international shipment of crude oil and refined petroleum products
Steamships	Berthage and Wharfage	Coastal Shipping
Bismark Shipping	Berthage and Wharfage	Coastal Shipping
(Naval Base)- Department of Defense	N/A	N/A
Lae		
Main Port – PNG Ports	Berthage, Reservations, Wharfage, Pilotage	International and Coastal Shipping
Lutheran Shipping	Berthage and Wharfage	Coastal Shipping
Frabelle Shipping	Berthage and Wharfage	Coastal Shipping
Lae Builders	Berthage and Wharfage	Coastal Shipping
Bismark Shipping	Berthage and Wharfage	Coastal Shipping
PNG Taiheiya Cement	Berthage and Wharfage	
Madang		

Main Port	Berthage, Reservations, Wharfage, Pilotage	International and Coastal Shipping
Lutheran Shipping	Berthage and Wharfage	Coastal Shipping
Raicoast	Berthage and Passengers	Coastal Shipping
Star Shipping	Berthage and Wharfage, Passengers	Coastal Shipping
JANT Ltd	Berthage, Wharfage	Coastal Shipping
Rabaul (Simpson Harbour)		
PNG Ports	Berthage, Reservations, Wharfage, Pilotage	International and Coastal Shipping
ENB Port Services (AH TAM Wharf)	Berthage, Wharfage, Passengers	Coastal Shipping
PNG Line	Berthage, Wharfage	Coastal Shipping
Cocoa & Copra Ltd	Berthage, Wharfage	Coastal Shipping
Aitape		
PNG Ports	Berthage, Wharfage	Coastal Shipping
Alotau		
PNG Ports	Berthage, Wharfage	Coastal Shipping
National Marine Authority	Berthage, Wharfage	Coastal Shipping
Buka		
PNG Ports	Berthage, Wharfage	Coastal Shipping
Daru		
PNG Ports	Berthage, Wharfage	Coastal Shipping
PNGSDP (Perfume Point – under construction)	Berthage, Wharfage	Coastal Shipping
Kavieng		
PNG Ports	Berthage, Wharfage	Coastal Shipping
National Fisheries Authority	Berthage, Wharfage	Coastal Shipping
Kiunga		
PNG Ports	NA	Private Use for Project Cargo
Lihir		
PNG Ports	Project Based Cargo	Coastal Shipping
Oro Bay		
PNG Ports	Berthage, Wharfage	Coastal Shipping
Kieta		
PNG Ports	Berthage, Wharfage	International and Coastal shipping
Kimbe		
PNG Ports		
Lorengau		
PNG Ports	Berthage, Wharfage	Coastal Shipping
Manus Provincial Government	Berthage, Wharfage	Coastal Shipping
Samarai		
PNG Ports	Berthage, Wharfage	Coastal Shipping
Rabaul Shipping	Berthage, Wharfage	Coastal Shipping
Wewak		
PNG Ports	Berthage, Wharfage	Coastal Shipping
Vanimo		
PNG Ports	Berthage, Wharfage	Coastal Shipping
Vanimo Forest Products	Berthage, Wharfage	Coastal Shipping

The ports operated by PNG Ports currently handle more than 90% of all international ships calls into PNG, and the majority of these ships call into the ports of Port Moresby and Lae.

There are a few ports in the country which are operated by private companies to cater for their own commercial needs. These private ports are regulated by the Maritime Division of the Transport Department. Some of the privately operated ports are:

- PNG Taiheiyo Cement Limited
- Higaturu Oil Palm Facility
- Bialla Port-Hargy Oil Palm
- Stetling Bay Lumber Company
- Kumul Platform
- Shell Bunker Facility

The Commission seeks comments and views from stakeholders on the size, structure and characteristics of the PNG Ports Industry. In particular the number of port operators at each port and the services they provide. Is there any particular issues the Commission should consider as part of this review that arise?

3.1 PNG PORTS CORPORATION LTD

Prior to 2002, port services in PNG were provided by the PNG Harbours Board (PNGHB), a statutory organisation that was established in 1963. The PNGHB owned and operated all the major ports in the PNG and its main functions were to provide wharf infrastructure and related facilities to facilitate international and coastal shipping to facilitate handling of cargoes throughout PNG.

In 2002, following economic reforms undertaken by the Government, the PNGHB were corporatised and subsequently incorporated under the companies Act 1997.

The corporatised entity became known as PNG Harbours Limited (PNGHL) and its functions were outlined in the Harbours Act. PNGHL's functions were to provide the following services:

- The regulation, management, operation and control of Declared Ports;
- The movement of shipping in Declared Ports; and

- The provision and maintenance of lightships, buoys, piers, jetties, landing stages, landing ramps and platforms in such port as well as the provision and maintenance of machinery, equipment and installations used in connection with the operation of declared ports.

In 2008, PNGHL underwent a corporate rebranding process and are now known as PNG Ports Corporation Limited. The State, through the Independent Public Business Corporation (IPBC) continues to be the sole shareholder of PNG Ports Corporation Limited.

Since its inception, PNG Ports has continued to undertake most of the functions that used to be undertaken by PNGHL. The regulation of declared ports which used to be undertaken by PNGHL is now under the responsibility of the Maritime Division of the Transport Department.

During the Coastal Shipping review, the Commission continued to receive numerous comments from the shipping industry that the port infrastructure needed to be significantly improved. The Commission's comments on PNG Port's refurbishment of the Ports and its capital expenditure program is contained in other sections of this report.

PNG Ports provides the following services at its Ports throughout PNG:

- Berthage and Berth Reservations
- Wharfage;
- Pilotage
- Storage;
- Administration of Stevedoring licenses; and
- Other miscellaneous port related services.

Berthage and Berth Reservations³

A berth reservation system applies at some ports which entitles certain classes of ships to berth on arrival in a port. Such ships are passenger vessels, foreign naval vessels, tankers and cargo vessels meeting specified requirements, giving advance notice of arrival and paying the stipulated fee. Ships without reservations, are subject to the overall efficiency of the port as determined by the Port Manager, and normally berth in order of arrival. In emergency cases, the Port Manager may, in the public interest, grant priority to any type of vessels.

As outlined further above, the tariffs for berthage and berth reservations are set by the Commission through the Regulatory Contract.

³ PNG Ports Submission 31st May 2009

Wharfage⁴

PNG Ports provides wharfage services at declared ports. There are restrictions on the amount of loading which can be facilitated by cranes, forklifts and vehicles vary at the various declared ports.

The wharfage tariffs that are applied by PNG Ports is set by the Commission. In some respects, wharfage charges are a charge for the traffic (cargo) that moves through the port, and would be the main service provided by which PNG Ports which would allows them to recover the costs associated with operating a port.

The Commission is considering whether the wharfage categories should be changed, to reflect current circumstances. An example would be whether a category such as 'Livestock' should replace 'Horses', 'Goats' etc.

The Commission call for submission as to the appropriate categories which should be used for regulatory purposes.

Pilotage⁵

Pilotage services basically involves directing and controlling the movement of ships, managing traffic situations, and handling of communications in designated ports. The tariffs and charges for Pilotage services are not regulated by the Commission through Regulatory Contract.

Under the Harbours Act the Secretary for the Department of Transport is responsible for all pilotage services in all the declared ports in PNG for purposes of Part VIII of the Merchant Shipping Act (MSA) however, these services have been delegated to PNG Ports to undertake. PNG Ports is currently the sole provider of pilotage services in all declared ports in PNG, however pilotage services are not compulsory in all declared ports.

Pilotage services are compulsory only in the ports of Port Moresby, Lae, Madang, Rabaul and Kimbe and available on a 48 hours notice. PNG Ports acting as the pilotage authority, may grant a master of a particular ship or class of ship an exemption from a declared pilotage area by issuing a pilotage exemptions certificate. The licensing arrangement for issuing pilotage exemptions are outlined under Section 206 of the MSA.

Administration of Stevedoring licenses

PNG Ports does not carry out stevedoring itself but only issues licenses to private companies for the provision of compulsory stevedoring services at all declared ports. The licenses are usually issued for a period of 5 years and are subject to reviews every 12 months. Under the Harbours Act, this function should be undertaken by the Maritime Division of the Transport Department however,

⁴ Ibid

⁵ Ibid

this function was delegated to PNG Ports under the relevant provisions of the Harbours Act.

In 2008, the Commission released a Final Report on its review into Stevedoring Prices. In its final decision, the Commission adopted a 'light handed' regulatory approach which involved monitoring the price of stevedoring charges at the ports.

Storage and Warehousing

PNG Ports does not provide warehousing facilities in all declared ports whereas; all the covered and open staking areas are for transit purposes only. However, at most of the larger ports private companies operate bonded and free warehouses to which undelivered cargo is consigned after specified period.

Four working days from the date of completion of discharge of the vessel are normally allowed free in the case of overseas inward cargo. Two days only are normally allowed for coastal cargo before storage charges accrue. Outward cargo may, subject to the approval of the Port Manager, be brought into the port seven days prior to the date of shipment without incurring storage charges.

There has been considerable discussion regarding the number of free days which should be included in the wharfage and berthage charges. In theory the regulated charges are specifically designed to recover the cost of the physical infrastructure associated with the port. As such, any return on the underlying value of the land associated with Port operations is excluded by the Commission in its consideration of the cost of providing these services. The Commission recognises that the process of discharging the vessel and the clearance process through customs and quarantine is time sensitive. As such the Commission accepts that some operators would expect that these charges included some allowance for the time to complete this process.

The Commission is notes that historically the storage and warehousing charges have typically been below the level that would other be set in the open market. Irrespective of the number of free days included in the regulated charges, the Commission would expect PNG Ports would be charging prices reflective of the competitive market price for land. Failure to do so concerns the Commission that PNG Ports is not maximising its potential revenue.

The Commission calls for submissions from stakeholders regarding the appropriate number of free days to clear the customs and quarantine processes. Specifically, the Commission calls on stakeholders to provide information regarding historical benchmarks for clearing this process at the major ports in Port Moresby and Lae. In addition, the Commission calls for stakeholders to provide benchmarks from ports outside of PNG.

4.0 ASSESSMENT OF COMPETITION

In their submission of 31st May 2009, PNG Ports expressed the view that the current regulatory arrangements were inappropriate for a number of reasons and requested the Commission to revoke the regulatory contract. A key reason given by PNG Ports for a revocation and therefore its release from the regulatory contract was that competition in the supply of essential port services at declared ports had increased since the regulatory framework was first established in 2002.

As PNG Ports stated in their submission, the regulatory arrangements had been put in place at a time when state owned entities were earmarked for privatisation, and that the regulatory contract was put in place to prevent the privatisation process from creating private monopolies. Given that competition had now emerged in the ports industry, PNG Ports stated that the regulatory contract should now be done away with.

In addition, PNG Ports implied that its competitors had a competitive advantage in delivering essential port services as they were not subject to the same conditions of the Regulatory Contract or certain international standards which PNG Ports are currently subjected to.

Therefore, the Commission has sought to assess the level of competition in the ports industry in the delivery of essential port services in order to form an opinion on whether it is necessary for the current regulatory arrangements to continue in its current form, in a different form, or to revoke it all together.

The Commission agrees with the generally accepted view that regulation always delivers second best economic outcomes compared to those delivered by competitive markets. The Commission does not wish to be imposing arduous regulatory obligations on PNG Ports which would prevent it from competing on an equal footing in an industry that has healthy competition.

In assessing the level of competition in the ports industry, the Commission has consulted widely with key stakeholders who include shipping agents, shipping lines, other port operators and key stakeholders and has considered the following key issues:

- Degree of Competition within industry
- Degree of Competition from other industries
- Countervailing market power
- Ease of market entry and exit.

The Commission's findings on the above issues are discussed further below.

4.1 DEGREE OF COMPETITION WITHIN THE INDUSTRY

It is a widely held view that competition in markets brings the greatest benefits to society. Both consumers and firms benefit from competition. Consumers receive excellent services at lower prices, while the strong rivalry between firms ensures that they operate as efficiently as possible. Other benefits from competition include the greater choices that become available to consumers as businesses become more creative and innovative.

In the case of infrastructure services which are fundamental building blocks to economic development, competition (where possible) ensures that the industry becomes more efficient, and these efficiencies flow on to other sectors of the economy. Further, competition leads to increased capital investment resulting in more services, greater choice, better and more efficient services.

In Papua New Guinea, consumers have already seen the benefits that have come from a more liberalised telecommunications market in the form of falling call charges, new innovative services, and greater network coverage.

The degree of competition within an industry can be measured by the number of firms providing services in that industry. Usually, having a large number of firms competing in the supply of goods and services is a good indication that there is healthy competition in the market, and that any one particular firm does not have the ability to exert any influence over the market.

Examples of competitive port markets are found on the United States east, west and gulf coast, in Northern Europe, the Mediterranean and in Asia. In these regions and ports, robust competition in the provision of ports services are usually characterised by intense rivalry between a large number of ports, or a large number of port operators within a port to service a particular city, hinterland, or a larger geographical region. The competitive pressures being exerted on each port or port operator in these markets ensures that ports operate as efficiently as possible and at high standards of service.

In section 5.1 of their submission, PNG Ports provided a table (p17-20) outlining the number of firms in each port which were competing against PNG Ports in providing essential port services. The Commission has taken this information and has added an extra column to denote whether international or costal ships call in at those ports, and has reproduced this table in section 2.3 of this report.

To assess PNG Port's submission that competition was present in the market, the Commission has carefully assessed the market port by port. Its discussion is broken into two sections, these being the major ports of Port Moresby, Lae and the remaining minor ports, some of which earn good profits for PNG Ports while others are loss making centres.

In the ports industry, the increased participation of new entrants in the ports industry is welcomed notwithstanding the fact that most of these ports are being used for private or project use rather than in competition to PNG Ports for servicing major shipping. Further, this competition is generally present to specific ports.

In considering the degree of competition within the industry it is important to first define each port as distinct market for port services. As such the competitive position in Fairfax Harbour is likely to be considerably different to the situation in Lae. As such the services provided in each port are now considered particularly against the threat of competitive pressure within each port.

4.1.1 Competition at Fairfax Harbour (Port Moresby)

At present PNG Ports provides berthage, reservation, wharfage and pilotage services in Fairfax Harbour. According to its submission Berthage services are also provided by the Motukea port operated by Curtain Brothers and the Napa Napa wharf operated by InterOil. In terms of berthage, the time alongside a berth is a necessary aspect of operating a port or wharf facility. The additional facilities operated by Curtain Brothers and InterOil have been designed to accommodate specific cargo which should be seen as incremental to the goods that would have otherwise been serviced by the PNG Ports infrastructure. In the example of the InterOil wharf, the absence of a designated petrochemical port at PNG Ports' facility suggests that it would be unable to service this market. Likewise for the Motukea facility, the absence of necessary back dock areas to accommodate the scale of the LNG project suggests that there is a very real capacity constraint which is addressed by the presence of Motukea.

PNG Ports

PNG Port's main wharf in Port Moresby handles the bulk of Port Moresby's seaborne international and coastal trade through the use of its 6 berths (Berth1, Berth 2, Berth 3A, Berth 3B, Berth 4A and Berth 4B). All major international and coastal shipping lines use the port given its capacity to take on various types of vessels.

There have been some concerns expressed to the Commission regarding the condition of main wharf. Main wharf plays an important role in the efficiency of PNG Ports operations. If this wharf was considered inadequate for operations it would place considerable pressure on the remainder of the port infrastructure suggesting considerable capacity constraints.

Further, PNG Ports has provided the Commission with a plan to extend berth 4A to increase the capacity of its Port Moresby harbour. At the same time the Commission is concerned that this may be too little too late, in that the projected

demand associated with an increase in economic activity may have passed by the time the extension is completed.

During discussions with Ports PNG, the Commission was informed that there were discussions around relocating the port at Port Moresby (including all other port owners) to Tatana Island.

These plans make it difficult for PNG Ports to plan for its capital expenditure program for its berths. In particular, its plans to undertake a significant refurbishment of the 4A Berth. The Commission is concerned that the movement of the main wharf will potentially result in a considerable amount of stranded capital, particularly any major capital expenditure proposed over the next five years. The Commission will not hesitate to strand any capital invested in the wharf if PNG Ports chose to transfer operations to Tatana Island. As such, PNG Ports could recover the remaining capital invested in the port if the alternative use of the port was sufficient to attract the necessary returns. The primary example of this would be the redevelopment of the harbour foreshore. That is, if the alternative use of the port was greater than the value of the RAB associated with the port operations then PNG Ports would achieve a windfall gain. Likewise if PNG Ports took the decision to move and the alternative use was of lower value than the RAB of the port, PNG Ports would generate a loss. Prices should not reflect this shortfall. Therefore, the Commission would strand any capital not recovered by the alternative use in the event of any decision to move the port.

InterOil

InterOil's Napa Napa port was built specifically for the shipment and transportation of crude oil and refined petroleum products for its refinery operations. The Commission is not aware of InterOil providing Berthage and Wharfage services to external parties. Therefore from this perspective, the Commission does not believe that InterOil is competing against PNG Ports in the essential port services market, especially in servicing coastal and international shipping lines which carry containerised and non-containerised break bulk cargo.

Although InterOil may have the potential to provide essential port services to shipping lines in competition with PNG Ports, the Commission considers that such operations would be more of a hindrance to its refinery operations than a commercial gain.

The Commission does not consider that there is a major competitive threat posed by the InterOil wharf at this present stage.

Curtain Brothers

Curtain Brothers recently began building a large port at its PNG Dockyard ("Dockyard") on Motukea Island. The Dockyard has been providing ship repair services since the mid 2000's to coastal and international shipping services.

The extent to which Curtain Brothers has been providing berthage and wharfage services to external parties is unknown to the Commission. The Commission is aware that PNG Ports (then PNG Harbours Limited) and Curtain Brothers signed a Deed of Agreement in 2002 with a term of 25 years. In the Deed of Agreement, it was agreed that PNG Ports would receive revenue from Curtain Brothers for any wharfage services that were provided at the Dockyard. The tariffs for these wharfage services are not dissimilar to the tariffs set by the Commission for PNG Port's wharfage tariffs.

Should the LNG Project be agreed to by all parties and goes ahead, it is very likely that the port at Motukea will take the majority of the project cargo for the LNG Project.

The existence of the 25 year Deed of Agreement between PNG Ports and Curtain Brothers calls into question whether there is any competition between the PNG Ports and Curtain Brothers. As highlighted earlier, under the Deed of Agreement, PNG Ports receives wharfage revenue for traffic that passes through the Motukea port. Therefore, PNG Ports would not lose any revenue to Curtain Brothers. Rather, PNG Ports stands to generate revenue without providing any services.

PNG Ports would forgo the revenue from berthage and berthage reservations associated with ships calling into its port. The loss of revenue from berthage services to PNG Ports would be dependent upon the number of ships that Curtain Brothers could attract to its port, the length of time the ships would dock at the port and the length of these ships. From its analysis the Commission believes that the lost revenue from berthage reservations would be an insignificant amount relative to the revenue generated through the Deed of Agreement.

PNG Ports also expressed the view in meetings that there were no current laws or regulations which prevented shipping lines from calling into Motukea port and using the berth facilities there, and therefore the potential threat of competition was very real.

The Commission, having consulted port users has not found evidence that shipping lines are currently using Motukea port. One reason is that the road infrastructure between Port Moresby and Motukea is not ideal, and transporting goods to and from Motukea would be difficult. However, in the long term, should the Gas project proceed, and if the road infrastructure is significantly developed, Motukea will have the right infrastructure in place to become a strong competitor to PNG Ports.

At this time, the Commission does not consider that Curtain Brothers represents a true competitor to PNG Ports. This is primarily driven by the revenue potentially available to PNG Ports under the Deed of Agreement and the absence of

effective road infrastructure between Motukea and the commercial centre of Port Moresby.

Steamships Trading Company and Bismark Maritime Services

Both Steamships Trading Company (Steamships) and Bismark Maritime Services provide coastal shipping through PNG. Each operates wharf infrastructure in Fairfax harbour and indeed at other ports.

Steamships Trading Company (Steamships) through its subsidiary, Marine Engineering Services (MES) operates a dockyard and wharf which is located near the entrance of Fairfax Harbour further up from the PNG Ports wharves. The dockyard has 4 slipways which provide ship repair services to various ships.

For sometime now, Steamships has been providing coastal shipping services in the southern region of PNG, and these ships have been berthing at its private wharves. The provision of wharf services at the MES dock is limited to coastal operations given the relatively shallow draft.

The Commission understands that there are plans to have this port further developed in order to be better equipped to provide berthing and wharfage services. The Commission has been informed that this particular wharf will not have the capacity to take international shipping lines in addition to the services it is currently providing to its coastal shipping fleet. However, the development of MES wharf can be seen as a contingency for coastal operators should the main wharf fail.

In discussions with the Commission, PNG Ports commented that the Steamships port had already provided services to a large vessel. PNG Ports claimed that this was direct evidence that there was emerging competition from Steamships. The Commission has not been satisfied that this was in fact the case. Evidence provided by Steamships suggests that the draft is not sufficient to cater for larger vessels and as such the competitive threat is relatively low.

Bismark Maritime Services (BMS) operate a small (40 meter) wharf with a single berth in Port Moresby, which is used mainly to service its fleet of six (6) coastal shipping vessels. BMS also provide berthage and wharfage services to other vessels. Bismark has two large ships (79 and 89 meters in length) which are considered too large to dock at its wharf and therefore use the berths at PNG Ports.

The Commission is of the opinion that at present, the MES and BMS wharves are not major competitive threats to PNG Ports for the following reasons:

- Capacity is limited by a single berth, therefore it can handle only one ship at any one time. This capacity is further limited by the length of the

wharf (40m), which means ships exceeding a particular length can not dock at this wharf.

- Given that the BMS wharf is a private facility, BMS ships also have preferential treatment for berthing.
- In addition the wharf wouldn't be able to provide extra services such as storage which grants, PNG Ports a competitive advantage in terms of the service it would provide.
- It only takes coastal ships, not international shipping liners, which is currently the sole domain of PNG Ports.

In terms of the relationship between the Motukea and Port Moresby operations, the Commission notes that PNG Ports is likely to face competitive pressure from the Motukea operation. However, the Commission notes that the deed of agreement between PNG Ports and Curtain Bros PNG Limited, provides for Curtain Bros to pay tariffs on all cargo passing over its wharf. As the degree of competition is limited by at least the rates outlined in the agreement, the Commission is unable to reconcile that PNG Ports would be at a significant disadvantage from the operation of the Motukea facility.

The potential degree of competitive threat is deemed to be very high within Fairfax port, primarily driven by the presence of the Motukea facility. However, the provisions outlined in the Deed of Agreement between Motukea and PNG Ports, the lack of capacity at PNG Ports facilities, the advantage of incumbency, and the lack of suitable road infrastructure linking Motukea to Port Moresby suggests that the actual threat is considerably lower than the implied threat.

As the potential threat raises interesting questions regarding PNG Ports strategic options within Fairfax harbour, including the role of PNG Ports in the harbour over the coming years. However, the Commission suggests that PNG Ports is best placed to consider its appropriate operating model.

The Commission seeks comments and views on the degree to which competition is occurring within the ports industry at Fairfax Harbour in Port Moresby. Is the competition occurring within Fairfax harbour significantly strong? Is there potential for competition to increase significantly over the next 5 years?

4.1.2 Competition at Lae Port

PNG Ports identified a number of wharf owners and port operators who were providing port services at Lae port. These included:

- Lutheran Shipping
- Frabelle Shipping
- Lae Builders
- Bismark Shipping, and
- PNG Taiheiya Cement

Having had discussions with industry stakeholders, the Commission is of the view that PNG Ports continues to be the major provider of port services in Lae, while other wharf owners mentioned above provide port services mainly for private use. These private wharves provide berthage and wharfage services to their private coastal shipping fleet.

The Commission seeks comments and views from stakeholders on the competition for the delivery of port services in Lae Port.

4.1.3 Competition at Minor Ports

In the following ports, PNG Ports is the only provider of essential port services. However, there is some capital currently being sourced from secondary parties as presented on the right of the table.

Table 4.1 Competition and investment in minor ports

No Competition	No Competition – capital from secondary party
Aitape	Kavieng – National Fisheries Authority – Not profitable
Alotau	Daru – PNGSDP perfume point – under construction/design –
Buka	No Competition
Kiunga	Lorengau – Manus Provincial Government – not profitable –
Lihir	need to work together
Oro Bay	Samarai – Rabual Shipping – not profitable – need to work
Kieta	together
Kimbe	Vanimo – Vanimo forest products – not profitable – need to
Wewak	work together.

The Commission considers that the absence of competitive pressure in these ports suggests that continued regulation of Port is necessary. Further, the Commission notes the information provided by PNG Ports regarding additional investors in some ports by Provincial Governments, project investments, and coastal operators. It is the Commission position that where ports are unprofitable or marginal any investment should be willingly accepted. PNG Ports and the various parties willing to invest should work together to ensure that any capital invested is done consistent with the strategic plan for that particular port. The Commission is of the opinion that cooperation, rather than competition is likely to

drive sustainable results in these ports. This is in large part due to the current pricing and demand assumption within these ports.

4.1.4 Private and Project Ports

There are private port operators in the ports industry in PNG apart from PNG Ports however; the extent in which these private ports undertake activities similar to PNG Ports and thus provide some degree of competition in the ports market to PNG Ports is ambiguous. This is because these private ports are operated by private firms mainly to cater for their own operational needs.

The existence of these private ports is mainly due to the unavailability of declared ports in areas where these firms operate. Most of the declared ports are located further away from the areas in which these firms operate. It would be uneconomical for a company, with massive exports and imports requirements, to use a declared port if the declared port is located further away from a declared port or if there are unreliable or no road access at all.

A good example is the port operated by Ok Tedi Mining Limited (OTML) at Kiunga. The port of Daru, which is operated by PNG Ports, is located further away from the mine's operations at Tabubil. Daru and Kiunga are only linked by Fly River. The mine owns and operates a port at Kiunga in order to bring supplies into the mine and mineral exports to its international markets via the Fly River which connects Kiunga to the coast of Western Province. The Kiunga port has been built basically due to the unavailability of a declared port in Kiunga to cater for the operational needs of the OTML. It does not compete with Daru port because Daru is further away from Kiunga and these two towns are not linked by road.

However, in some places the existence of these private ports to a certain extent may be taking away business from PNG Ports especially in circumstances where a declared port is linked by road to the private port but the extent in which this might be occurring is also still ambiguous.

For example, Bialla Port which is operated by Hargy Oil Palm is linked by road to Kimbe. When Bialla port is utilized instead of Kimbe Port to export oil palm products due to the special facilities that cater for the flow of crude palm oil into tankers, the port itself in a way is not competing with the Kimbe Port because Kimbe Port may not have the special facilities that are required by oil tankers. However, when the Company imports goods and heavy machinery via the Bialla Port, Bialla Port to a certain extent may be taking away business from PNG Ports thus signaling that there may be some degree of competition between the 2 ports. However, taking into consideration the distance between Kimbe and Bialla, the distance is such that a port should be located at Bialla. Since PNG Ports does not operate a port at Bialla, Bialla port after all may not be taking business

away from PNG Ports thus the degree of competition these 2 ports is also still ambiguous.

Private ports exist basically to service the operational needs of companies who own and operate these ports.

These ports do not exist for the primary reason of competing against declared ports operated by PNG Ports because everywhere in PNG apart from Lae and Port Moresby, the business of building and operating ports is capital intensive in nature and economically unviable in most centres. This is because currently in the market where declared ports exist, other centres do not experience a lot of ship calls and cargo throughput required to enable declared ports in these centres to operate profitably. These ports are often cross-subsidize by the profitable operations of Lae and Port Moresby ports.

The Commission seeks comments and views on the degree of competition occurring in the minor ports. What is the potential for competition to develop in the next 5 years?

4.1.5 Efficiency of PNG Port's Prices in Fostering Competition

The degree of competition within the industry is somewhat dependent of the prices charged by PNG Ports. Economic efficiency requires that prices paid by consumers for goods and services should cover the full opportunity cost of resources used. However, there are numerous occasion where the full opportunity costs may not recoverable. That is the actual prices charged must at least cover the incremental cost of doing business and at best recover all costs, including the opportunity costs. That is the price floor should equate to the incremental, or operating costs associated with service provision. Meanwhile the price ceiling should recover the standalone cost associated with service provision.

The price ceiling and floor represent the pricing bands which all infrastructure assets should be based. The price floor ensures that all costs associated with operation of infrastructure are recovered through tariffs charged by PNG Ports. The standalone costs include these costs and returns on and of any capital expenditure. That is, the standalone costs includes the full value of the opportunity costs associated with the infrastructure. In this case it represents a return on the capital invested, as calculated by the Weighted Average Cost of Capital (WACC) and applied to the regulatory asset base (RAB) and an allowance for the depreciation of these assets.

By pricing between these lower and upper limits we can establish that where tariffs are below the levels associated with ceiling there is an economic loss being made by the particular port. However, this loss may not represent a loss which should be recovered by PNG Ports as they may have been actually inappropriately employed capital at a particular port. That is, there was not

necessarily the business case to support the investment along purely financial terms.

The Commission considers the degree to which PNG Ports' current prices are reflective of the underlying costs of service provision further in section 5. However, the Commission considers that the absence of cost reflective prices, or at least prices outside the bands established above, results in an inefficient allocation of resources. Further, it potentially restricts competitive market outcomes and inhibits necessary capital investment. The Commission encourages PNG Ports to adjust its prices toward the ceiling price discussed above as a matter of policy. At the same time the Commission recognises that in some ports prices are currently below the floor price. In these circumstances PNG Ports should undertake the following steps:

- Review operating costs to ensure that they are at an absolute minimum
- Foster demand to attempt to recover a greater percentage of operating costs through the current tariffs.

Once these two steps have been taken the Commission encourages PNG Ports to increase prices, over and above the X factors defined in the regulatory contract such that the following benchmarks are met over a specified period:

- Prices at least generate sufficient revenue to recover efficient operating costs
- Prices then are sufficient to generate sufficient revenue to recover efficient operating costs and any depreciation charges
- Prices then are sufficient to generate sufficient revenue to recover efficient operating costs, depreciation, and the risk free rate of return
- Prices then are sufficient to generate sufficient revenue to recover efficient operating costs, depreciation, and the full cost of capital (as defined in the regulatory settings by the weighted average cost of capital).

The Commission is of the view that this leads to more efficient outcomes in the long run. At the same time the Commission is aware that there is potentially a shortfall between the target revenue represented at each of these pricing points and the market's ability to pay the associated tariffs. Any shortfall should preferably be funded directly from a Community Service Obligation fund, rather than directly from PNG Port's revenue.

The Commission seeks views and comments from the industry and interested stakeholders on the efficiency of PNG Port's prices in fostering competition in the ports industry.

4.2 DEGREE OF COMPETITION FROM OTHER INDUSTRIES

Whereas in the vast majority of countries port infrastructure is used to provide an access point to then service the market through road/rail/shipping/air freight the absence of the two main transport links i.e. a road and rail network throughout the country places a special importance on port infrastructure.

Shipping remains the primary or default mechanism for transporting goods across the country as the cost associated with air freight are prohibitive.

As such there is no competition between ports – Lae does not compete with Port Moresby – although it does compete with Madang – albeit on a small scale as Lae is the primary hub for the highlands.

There is therefore limited substitution between ports – PNG Ports is claiming intra competition with new operators establishing themselves where it has existing infrastructure.

In considering the necessary regulatory instruments which should be applied to ports the World Bank notes:

Economic regulation, which usually aims at monitoring market entry and pricing, is necessary when competition is weak or nonexistent. Conversely, when significant competition develops, either internally or externally, the need for strong economic regulation decreases. Indeed, when competitive pressure is well established, there may be little reason to maintain any price regulation other than a requirement to publish tariffs, a continuing prohibition against undue discrimination against similarly situated port users, and retention of a mechanism by which the government can monitor the competitiveness of the market and investigate alleged anticompetitive activity. The level of competition faced by an individual port, therefore, has important implications for the nature and degree of regulatory oversight of port operators. Ports with abundant intra and inter-terminal competition require minimal economic regulation.⁶

The level of competition in which the ports industry faces from other sectors such as air and land transport is insignificant because the whole of PNG is not linked by a road or a rail network. The country is made up of a number of coastal provinces and many islands close to the mainland of PNG. These provinces rely heavily on the ports industry to facilitate the movement of goods and people between provinces. The other sectors don't necessarily take away business from PNG Ports because:

- Airlines are unsuitable for transporting huge containerized goods due to capacity limitations. Air freight is also very expensive and

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uneconomical which can potentially push up retail prices and greatly reduce people's disposable incomes. Air transport is also only available in major centres and it is too expensive for most ordinary Papua New Guinean's to afford. Therefore, the airlines industry does not pose any real potential threat to the shipping industry.

- Transportation of goods by land does not pose any risks to the ports industry because PNG is not inter-connected by road. The only way which is economical to transport goods and people is by sea ports.

In terms of concentration in the market, PNG Ports is the only major operator in the ports industry that exists to basically facilitate international and domestic trade and also the transportation of people with in PNG. This is very crucial to achieving economic growth and prosperity in PNG. Other private port operators exist in the industry basically to facilitate their own importation and exports needs and for their own operational convenience and not necessarily to compete and take away business from PNG Ports. The ports industry market in PNG is dominated by PNG Ports due to the fact that it operates all declared ports and all these declared ports are located in areas which undertake most of PNG's economic activities.

The Commission seeks comments on the degree of competition from other industries. Is there competition from other industries and what is the potential for that competition to develop in the next 5 years?

4.3 COUNTERVAILING MARKET POWER

The degree of countervailing "power" refers to the power shipping companies have over the port operators by taking their business elsewhere if the shipping companies are unhappy with prices or services offered by the port operators. The degree of countervailing power of a shipping operator will depend on the number of ports available in a particular area have the ports available have to be operated by different competing firms.

The PNG Ports wharves in Lae and Port Moresby handle most of the cargo throughput and shipping calls annually and also experience some degree of congestion, especially Lae port. However, despite the significant amount of international and coastal ship calls and cargo throughput undertaken by these ports, this situation does not provide any countervailing powers to shipping lines because competition between these ports is constraint by the following:

- Lack of road or rail link between Lae and Port Moresby which would provide some degree of competition between these two ports for transport services. These would enable shipping line to have some degree of countervailing power on decisions about switching between the two ports; and
- Both Ports of Port Moresby and Lae are owned and operated by PNG Ports therefore port charges are standardized and regulated by the

Independent Consumer and Competition Commission, thus limiting the countervailing powers of shipping lines.

The Commission does not consider that shipping companies in PNG have countervailing powers simply because all of the declared ports in PNG are owned and operated by PNG Ports. These ports basically have charges that are the standardized nationwide. The Commission is unaware of any commercial arrangements between PNG Ports which would suggest that there is an active commercial negotiation market for port services. As such the ability of shippings to exercise any countervailing market power is extremely limited.

The Commission invites comments on the degree of countervailing market power at declared ports in PNG. Do shipping lines or their agents have strong countervailing market power in Lae and Port Moresby? Is this countervailing market power non-existent in minor ports throughout PNG?

4.4 EASE OF MARKET ENTRY

The ease of market entry (and exit) normally indicates the competitiveness of the market. Entry into the market will occur if established firms in the market are earning above normal profits. The entry of new firms into the market will potentially expand the market for the supply of port services and stevedoring access and remove any above normal profits that are currently earned by an established port operator, which in this case is PNG Ports, in the market. At the same time, potential new entrants into the ports market would be required to build port infrastructures and set up facilities required to supply port services in the ports market. This suggests a relatively lengthy and expensive start up phase thereby restricting easy entry into the market.

Additionally, the ease of entry of potential new port operators into the ports industry market depends on factors that these new firms may perceive as barriers. These factors which may potentially prevent new entrants from entering the ports market are:

- Lower costs advantage of the PNG Ports which is the established firm, substantial market share of PNG Ports and realization of economies of scale in the provision of port services by PNG Ports. Potential new entrants will hesitate to venture into the ports industry if PNG Ports is able to realize economies of scale and thus provide port services at rates that will be much lower to end-users than any potential new entrants.
- Strong preferences for port services and stevedoring access provided by PNG Ports due to product differentiation activities. Product differentiation activities are undertaken to distinguish services provided by established firms from that of any potential new entrants. Port services can potentially be differentiated by service standards, quality and reliability in order to establish initial demand in order to command

premium prices over competitors and still maintain a competitive advantage over the new entrants.

- Large capital expenditure requirement for establishing port infrastructures and other relevant facilities. In order to enter the ports industry market a significant amount of financial capital is required to build port infrastructures. The ports industry in PNG is not so lucrative apart from the ports of Lae and Port Moresby. In a situation where if firms entering the ports industry market are required to build ports facilities in other centres as well apart from Port Moresby and Lae, the massive capital outlays required to build port infrastructures may act as a barrier to entry into the ports industry market. This is because if these new entrants are allowed to cherry-pick profitable areas the ports industry in PNG will potentially suffer because it will weaken the ability of PNG Ports to cross-subsidise other non profitable ports as part of community service obligations (CSO).
- Sunk costs can potentially play a huge role in firm's decision whether to enter the ports market or not. This is because if a new firm does enter the market sunk costs will potentially be an obstacle to the firm exiting the market when faced with falling sales and profitability. Sunk costs are costs that cannot be fully recovered by the firm should the firm decide to exit the market sometime in the future when it is facing losses. Port infrastructures alone accounts for a major portion of expenses associated with venturing into the ports industry market. Most of the expenses linked to the port infrastructure itself may be allocated as sunk costs because if a firm wishes to exit the market, the infrastructure will be totally useless to the firm unless a buyer is found willing to take over the ports operations. A potential buyer for the port may be difficult to find basically due to the very reason that an existing operator may wish to exit the market. That is lack of demand for port services resulting in falling profitability and the dominance of the industry by PNG Ports in the lucrative markets of Port Moresby and Lae.

The ease of entry into the ports industry can be characterized by the degree in which firms seeking to enter the market view the potential factors that may be deemed to be barriers to entry into the market. The decisions the firms make will also depend on their financial capacity to undertake such ventures and absorb sunk costs given the capital intensiveness of port infrastructures.

Other aspects worth noting in regard to the entry of competing port operators include:

- New Distribution Patterns - Changes in distribution patterns can create new port competitors. However this is unlikely in the PNG context as Port Moresby and Lae will continue to be the major centres of commercial operations.

- Provisions in Operating Agreements - Provisions in leases, concessions, and other agreements, particularly those involving investment by the operator, will often provide some degree of protection from new competitors starting up business in the port. In other situations, however, the port service provider can be threatened with new entrants. This is potentially an issue for PNG Ports, as new project agreements provide incentives to new operators to compete directly. However, deeds of agreement similar to that between PNG Ports and Curtin Bros regarding Motukea also limit the ability of Port operators to compete directly.
- Natural Barriers - Natural barriers that constrain port capacity can limit the threat of new port entrants, particularly those requiring land or fixed facilities to operate within the port. In many ports there simply isn't space for additional berthing, storage, and other fixed facilities, providing some insulation from the entry of new competitors. However, these barriers can easily be overstated. In the long term, many of these barriers can be overcome by building in adjacent locations or extending out into the sea. There can also be new methods of operation introduced that do not require presence in the port. For example, an inland container depot could substitute for storage and other operations now performed in the port.
In the Port Moresby and Lae examples, there is a natural barrier regarding the present availability of land. However, both the tidal basin project (Lae) and the potential move to Tatana Island suggests that this natural barrier could potentially be removed.
- Government policy regarding both decisions will play an important role in defining the degree to which PNG Ports will face competition from these investments. In the example that PNG Ports is chosen as the developer of these investments it will further its Competitive advantage. Where another party is successful, PNG Ports current competitive advantage would be severely weakened. At this stage the Commission has not been provided any information regarding these two developments that would suggest that any decision regarding who will be responsible for the developments. As such the Commission does not consider that PNG Ports is currently facing considerable market pressure to warrant the removal of the regulatory contract.
- Magnitude of Switching Costs – the existence of switching costs will often determine the ability of new entrants to start up competing operations, either within a port or between ports. Switching costs can come in several forms. They could be the capital expenditure required to switch from one port facility to another. In some cases, this can be a very small cost, especially for carriers that have little fixed investment in a facility.
In the PNG example, underinvestment actually results in the costs associated with switching to be relatively low. Therefore, the

Commission concedes that if an alternative operation in either Port Moresby or Lae was established customers would have a relatively low cost of switching.

- Incumbency as an advantage – Unlike other monopoly service providers, PNG Ports has been unable to fully take advantage of its natural incumbency due to a lack of investment and historically poor performance. While both situations are currently being addressed by the management of PNG Ports, the Commission does not consider that this a particular advantage to PNG Ports over new entrants. The Commission considers that the quality of service (for example, responsiveness to customer needs, handling rates, clearance time, and so forth) can differentiate the service provider and limit the threat of new entrants and encourages the work done by PNG Ports to improve its operations.

The Commission seeks views on the ease of entry (and exit) from the ports industry in PNG. Are there any significant barriers that prevent entry of potential port operators into ports industry?

5.0 THE COMMUNITY SERVICE OBLIGATION

The Community Service Obligation (CSO) implied on PNG Ports is without doubt resulting in it having greater cost pressures than would otherwise be the case if it was able to operate Port Moresby and Lae as standalone ports. However, as a government owned entity this is the burden that necessarily falls on PNG Ports rather than other port operators. This section aims to:

- Define the CSO
- Outline various funding mechanisms for the CSO
- Considers the commercial opportunities available to PNG Ports to fund the CSO.
- Recommends the necessary reporting and funding arrangements for the CSO.
- Considers how this funding mechanism can be balanced by competitive neutrality

5.1 DEFINITION OF THE CSO

Unlike its competitors, PNG Ports maintains and operates a portfolio of port infrastructure. Within this portfolio some ports are profitable and generate a significant proportion of the revenue collected, others break even without fully contributing to capital costs associated with the underlying infrastructure. Meanwhile a number of ports are actually a drain on the resources of PNG Ports as the revenue collected does not recover operating costs associated with operating these ports.

Any under recovery of the standalone costs of providing the port services results in the need for a CSO. The CSO and the funding mechanism needs to be clearly established as part of the regulatory contract.

Under the terms of the current regulatory contract PNG Ports has interpreted the maximum tariffs for wharfage, berth reservation, and berthing services as applicable throughout PNG and across all covered ports. As part of its submission to the Commission, PNG Ports notes:

The regulatory Contract through its adoption of a postage stamp pricing approach has imposed on PNGPCL the cost imports of providing CSOs. (page 25 of submission 1)

PNG Ports further defined the government's desire to cross subsidise the profitable ports of Port Moresby and Lae to those smaller ports. The inherent cross subsidization of prices between ports has been further highlighted by PNG subsequent submission, which defines only three ports as profit making ventures.

The submission made by PNG Ports defined the accounting and economic CSO as any port which generates less than 10 per cent in a return on assets. The definition is consistent with the Commission's comments in that there is a requirement for assets to contribute to the full economic costs, including a return on assets. The Commission notes that there are a number of factors which need to be considered in assessing the definition of the CSO proposed by PNG Ports, including:

- The starting value of the regulatory asset base ascribed to each port – noting that the higher the initial value the lower the potential return on these assets given fixed cash flows
- The appropriateness of the 10 per cent as the requirement for a return on assets
- The allocation of the ascribed asset value to each port
- The ability of individual ports to generate a return given relatively weak cash flows in the first instance.

In first considering the appropriateness of starting asset value ascribed to each port one needs to consider the valuation methodology appropriate of that particular port. As noted the use of alternative methodologies is outlined in section 6. The practical application of these valuation methodologies suggests that the claims made by PNG Ports that some ports are unprofitable needs to be examined in the context of these asset values.

As one example of the differences between the Commission's approach to establishing the asset base versus PNG Ports approach, the Commission only recognizes those assets which have an economic life associated with the port infrastructure. Meanwhile the approach applied by PNG Ports was to allocate the total value of assets on its balance sheet cross the various ports.

This leads to a difference between the total value of assets between PNG Ports and the Commission of approximately K120 million.

The starting asset value, as defined by the Commission, ignores all non tangible assets and focuses primarily on the property plant and equipment values set out in the balance sheet. The Commission's focus on tangible assets is consistent with regulatory best practice and the definition of the regulatory principles outlined in the contract. It does not ignore those assets which are indeed assets of the PNG Ports business it simply does not consider that they should be included in the RAB for the purpose of setting prices or establishing the degree to which a port is subsidized. Assets such as receivables are considered as assets which the business is best placed to manage and should not generate an additional rate of return on. Likewise assets which are already employed in a money making venture, through an interest bearing bank account, do not require an additional return through the prices charged to consumers.

The allocation of this asset value is another aspect which requires careful consideration. The absence of a detailed asset valuation, such as the DORC approach outlined in section 6, limits the Commission ability to allocate the asset value specifically to an individual port on the basis of asset condition. As such in the absence of an accounting asset register based on the actual written down book value at each port an allocation methodology is required to apportion the assets to the specific ports. There are a variety of drivers which could be used, including:

- The use of revenue
- The use of operating expenditure
- The use of capital expenditure
- Following the allocation percentages applied by PNG Ports in its assessment of the CSO.

In the absence of more complete data each allocation approach has merit. The use of both operating and capital expenditure as the allocation driver reflects the management effort associated with the port. At the same time, the use of revenue also suggests that the ability for the port generate cash flows, which are ultimately the main driver of any value calculation. The application of the PNG Ports allocation percentages also holds some merit as it is expected that if anyone should know the true cost and value of an asset it should be the asset owner.

In this case each allocation methodology holds some merit. However, the application of operating and capital expenditures heavily skews the allocation of the asset base to the two main ports, Port Moresby and Lae. The Commission has not been provided with the underlying methodology used by PNG Ports. However, should this methodology be explained and generate an appropriate allocation the Commission would consider it more highly. In the absence of this explanation the Commission has chosen to allocate the asset base using the revenue driver.

Having established both the value of the asset and the allocation of this value to each individual port it is important to consider the necessary returns required on these assets. As noted above, any shortfall in the revenue collected by PNG ports on the overall costs of operating a port, including the capital costs, results in the need for a CSO payment. As such, the Commission has analysed the extent to which each port is recovering the following incremental benchmarks:

- A. Revenue greater than the operating cost associated with the specific port
- B. Revenue associated with (A) and the depreciation allocated to the specific port
- C. Revenue associated with (B) and a risk free rate of return on the capital employed at the specific port

- D. Revenue associated with (C) and the incremental cost of capital associated with a return over the risk free rate.

The full analysis of this has been provided to PNG Ports as it has been considered commercial in confidence. However, each port is allocated across the four categories and the overall quantum of the CSO is also provided for each category:

- A. Lorengau, Aitape, Kieta, Buka, Vanimo, Wewak, Daru, Kavieng, Alotea – initial shortfall of K4.28 million per annum or K21 million over the regulatory period
- B. The existing ports defined in (A) plus Oro Bay and Samarai – incremental shortfall of K3.47 million per annum or K17.34 million over the regulatory period
- C. The existing ports defined in (A) and (B) plus occasionally on a year by year basis Madang, Rabaul, Kimbe and Port Moresby – incremental shortfall of K15.9 million per annum or K79.4 million over the regulatory period
- D. All ports defined in (C) – incremental shortfall of K4.4 million per annum or K22.16 million over the regulatory period

This leads to an accumulated shortfall in revenues of K28 million per annum, or K122.2 million over the five year regulatory period. That is the Commission defines that the full cost of the CSO across PNG Ports' portfolio is K122.2 million over the regulatory period. In the short run this will be funded through the cross subsidisation across ports, primarily Lae and Port Moresby.

Under PNG Ports definition only three ports made sufficient return to be considered profitable. Irrespective of the allocation of assets the Commission's modelling has very similar results. As can be seen the majority of ports require a considerable injection from CSO payments to be financially sustainable. Presently this shortfall is funded by the returns on those three profitable ports, which account for approximately 70 per cent of total revenues collected. Overall the nominal return to the PNG Ports business is indeed satisfactory at 15.9 per cent, marginally below the nominal cost of capital of 22 per cent. This suggests that there is considerable cross subsidization from profitable ports to unprofitable ports.

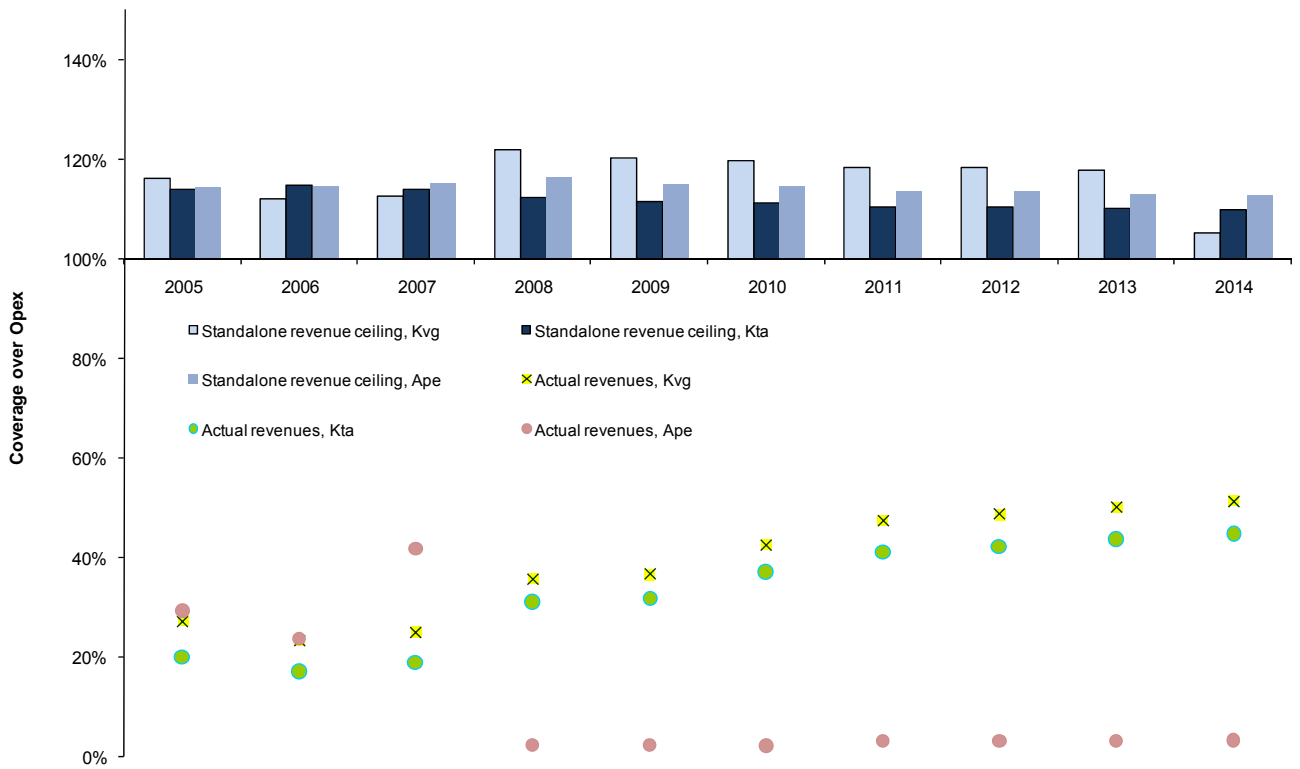
The implication of the cross subsidy is that prices in those three profitable ports are too high and as a result PNG Ports may be losing considerable volumes to competing port feasibilities. However, in considering this statement these ports need to be considered against the pricing principles outlined above, namely that each port needs to maintain prices which are consistent with generating revenue which:

- Is at least equivalent to the incremental costs of operations – namely the operating costs

- Are not higher than the standalone costs – namely that they recover the full costs associated with operations, including a return on assets.

The ability of individual ports to generate revenue within these bands is demonstrated in figures 5.1 through 5.3. In each figure the price floor is represented by 100% operating cost coverage, each column represents the standalone costs of each port in each year. Where prices reflect revenues less than the price floor, the revenue collected is found underneath the horizontal axis. Where prices are greater than the price ceiling the revenue collected is found above the column represented.

Figure 5.1 Ports with revenues below floor pricing

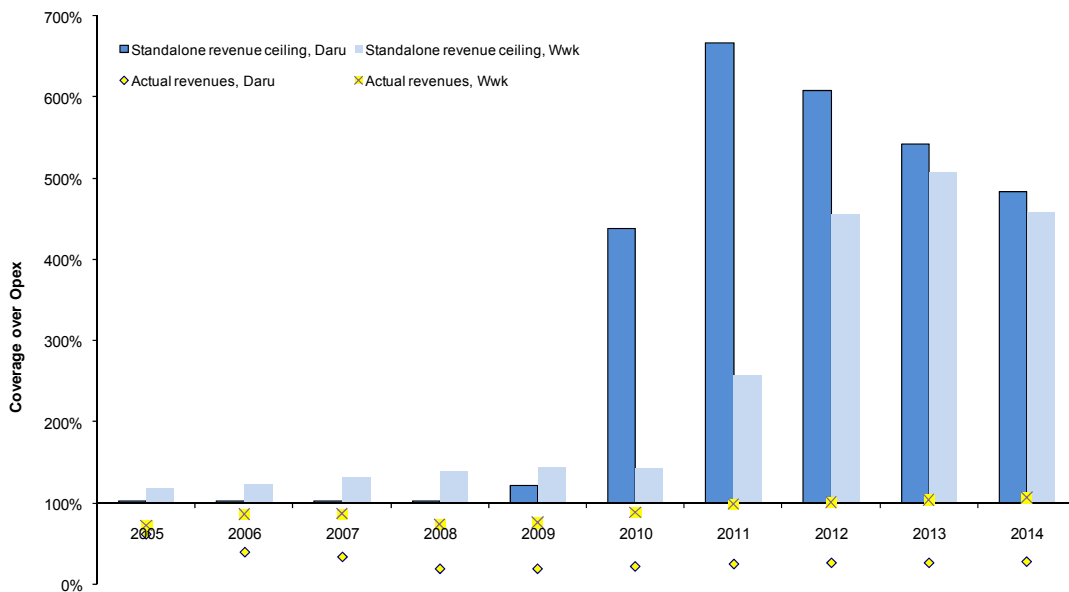


In the above figure, these ports are actually generating revenues which do not cover their operating costs. As such, merely operating these ports is resulting in a loss. Economic efficiency could be increased by not operating these ports. However, each port is vital to the survival of the local economy as there is a complete absence of other transport in and out of these regions. Closure of the port would lead to considerable social problems. These ports are in desperate need of additional support from policy makers. While the economic efficiency of PNG Ports would be improved by closing these ports, the ongoing impact to these local economies would be to isolate and retard economic growth by many decades. At the same time PNG Ports requires some incentive to leave these

ports operating and to provide the minimum efficient maintenance capital spending.

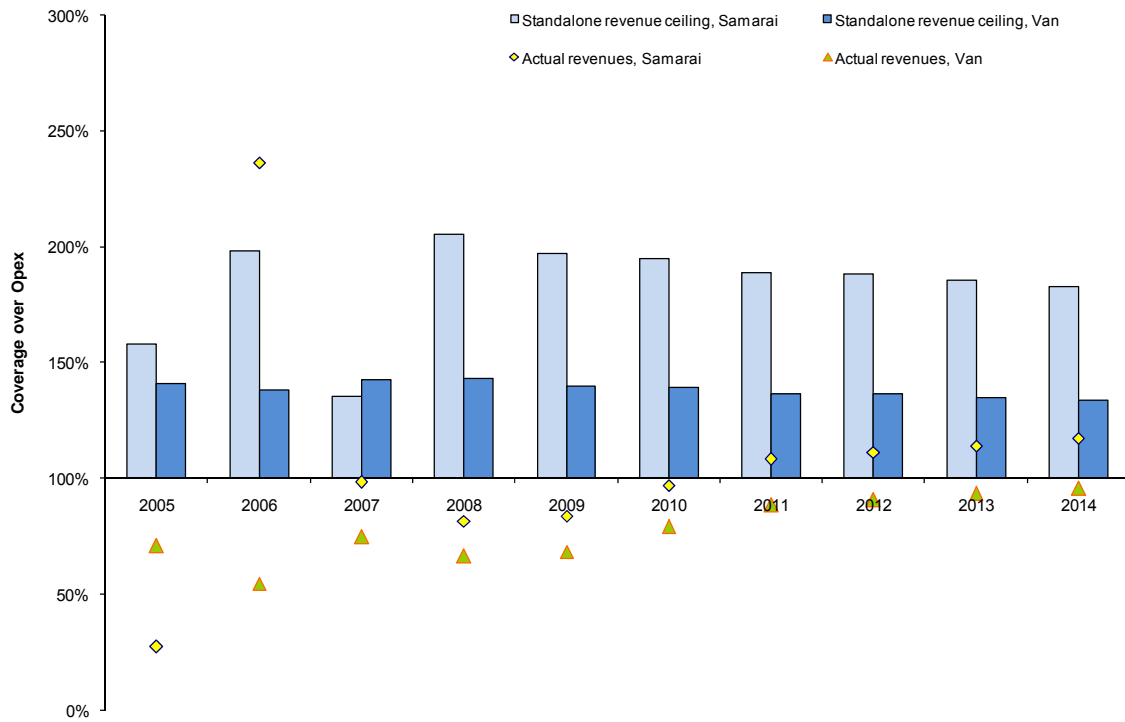
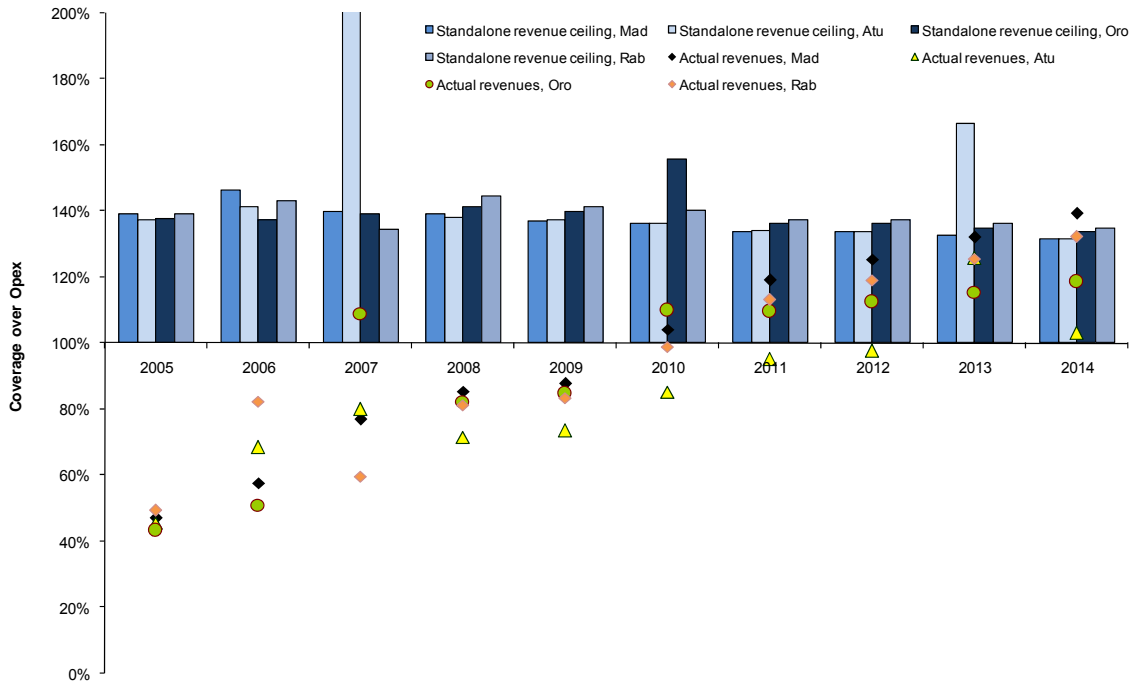
In the case of the Daru port, revenues are generally above operating costs, however, major capital investments results in a significant increase in the revenue necessary to recover the full costs of operating the port. The same is true below for the port of Wewak. PNG Ports proposed capital expenditure plan includes a K84 million upgrade of the Wewak port in 2011. Whereas revenues are generally in line with the standalone costs in 2010, the capital expenditure dramatically increases the standalone costs to greater approximately 9 times the operating costs. The Commission notes that the proposed prices would actually under recover the costs of providing services at Wewak, thereby increasing the cost of the CSO. However, the Commission considers that rather than being a flaw in the pricing mechanism, the graph below highlights the strategic issues of investing considerable capital in ports which are unable to generate an economic return to PNG Ports but may have considerable flow on benefits to the local economy which are not measured by this review. The Commission questions the efficiency of this investment and the capital K21 million invested at Daru in 2009. In each case the increase in standalone costs was over 7 times, however, the ports revenue was only sufficient to recover the operating costs. As such any capital invested is unlikely to ever generate a commercial return.

Figure 5.2 Ports with revenues close to the floor pricing



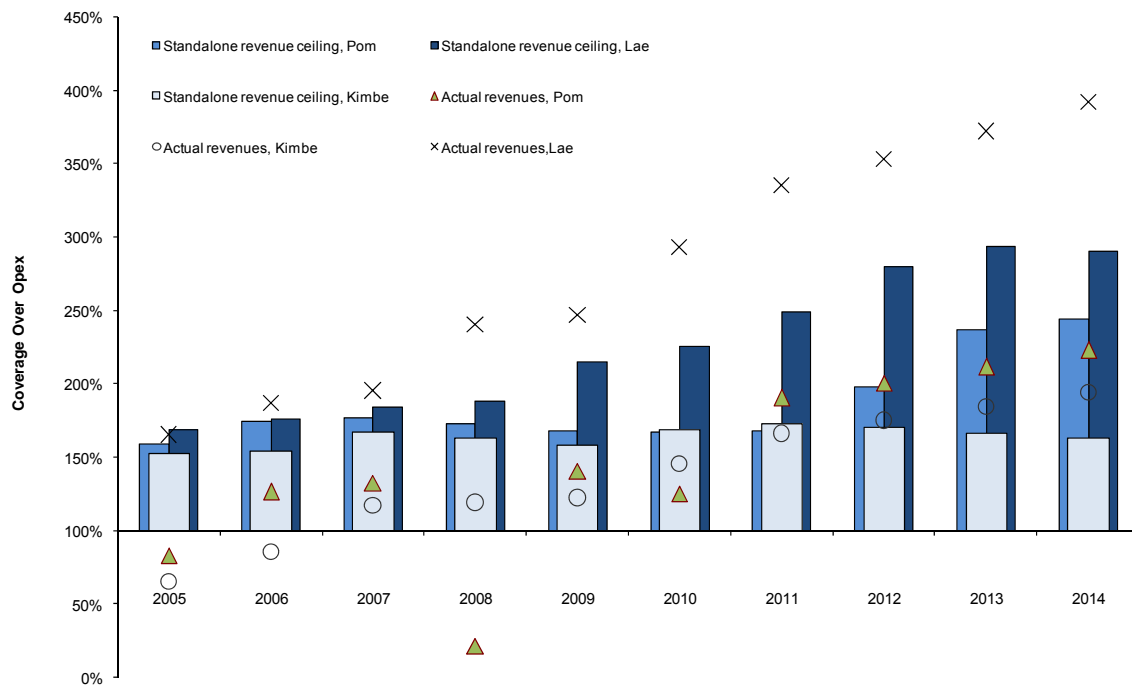
Meanwhile, other ports within PNG Ports' portfolio are likely to move towards recovering revenues within the bands dedicated above. The Commission encourages PNG Ports to continue these steps toward cost recovery.

Figure 5.3 Ports moving toward ceiling pricing



In the figure above, these ports operate at a sufficient level of revenue to support their ongoing operations. However, to varying degrees, the capital invested in these ports is not generating the required returns necessary to support the underlying value ascribed by the Commission in this analysis. PNG Ports should be free to increase prices to a point which suggests that it is able to move towards the standalone cost of delivering these services.

Figure 5.4 Ports at or above ceiling prices



In the figure above these ports are moving towards cost recovery, and in the Lae example revenues are actually outside the price bands. The Commission is concerned that this continues over the regulatory period and has the potential to result in inappropriate outcomes and prices which are relatively high across the Lae port. At the same time, additional capital expenditure required at the Lae port would result in these prices returning to the specified bands without the need to increase prices further.

The Commission notes that many ports through PNG require significant capital to be invested to bring these ports up to the necessary international standard. Further, the absence of competing infrastructure places a greater emphasis on port infrastructure. However, the practice of cross subsidizing outlying ports through the charges at profitable ports has the potential to result in economic outcomes which are less than efficient. It is also a strategy which is less efficient at the profitable ports.

Port Moresby and Lae remain the only ports capable of recovering their standalone costs. Indeed both ports are likely to over recover these costs suggesting that prices are actually too high. The Commission notes that while prices are high this over recovery at these two main ports results in the ability of PNG Ports to fund the cross subsidies required across the remainder of its portfolio. Ideally, the Commission would prefer to see the pricing for all ports in figures 5.2 and 5.3 move toward standalone pricing, or at the very least prices within the defined pricing bands above current levels. This would ultimately reduce the cost of the CSO as more ports contributed towards the full costs of their operations.

Importantly, some ports are actually outside the bands set. This suggests that there is a very real concern over the application of postage stamp pricing in terms of outcomes which do not support economic efficiency. However, these results are somewhat sensitive to allocation of both overheads and asset values. This leads to important considerations regarding the policy framework for providing the CSO. PNG Ports has noted that the CSO require it to invest in ports which are uneconomic. The Commission's analysis confirms that this is indeed the case.

5.2 CSO FUNDING ALTERNATIVES

The implications of pricing below the incremental costs of operations is that it would be better for PNG Ports as a profit making organisation to close down the necessary ports as keeping these ports open results in a reduction in the profitability of the organization. These ports are costing PNG Ports and, by implication, the Government money just to remain operational. In order for these ports to remain open there is a requirement for direct cash subsidy to PNG Ports of at least the shortfall in operating revenue and operating costs. The alternatives to a direct subsidy include:

- Cross-subsidies; profits from one activity used to pay the direct costs of providing the CSO;
- Levies on users; all users have a line item on their bill covering cost of providing each CSO;
- Direct cash transfers to consumers; cash payments to supplement the incomes of targeted groups;
- Direct funding of enterprises: governments can choose to directly fund enterprises to implement CSOs; and
- Lower rate of return; Target SOE return is below cost of capital for a commercial entity.

Figure 5.5 depicts the Asian Development Bank's critique of each funding option.

Table 5.1 Asian Development Bank CSO funding alternatives

	Cross Subsidy	Levies on Users	Cash Transfer	Direct Funding	Lower Rate Of Return
Fewest Economic Distortions	LOW	LOW	HIGH	HIGH	HIGH
Target Need	MEDIUM	MEDIUM	HIGH	HIGH	HIGH
Transparency And Accountability	MEDIUM	HIGH	MEDIUM	HIGH	LOW
Explicit decisions on CSO	MEDIUM	HIGH	LOW	HIGH	MEDIUM
Minimum Wastage	LOW	MEDIUM	LOW	HIGH	LOW
Encourage Competition	LOW	LOW	HIGH	HIGH	LOW
Review and change overtime	MEDIUM	MEDIUM	MEDIUM	MEDIUM	LOW
Develop private Sector providers	LOW	LOW	HIGH	HIGH	LOW

Source: ADB

In an ideal world the CSO would be explicitly funded from government subsidies. However, given the issues associated with the PNG government's lack of resources the Commission and PNG Ports need to establish an alternative funding source for the CSO.

The Commission notes that the two major problems associated with the funding of Port infrastructure in PNG are:

- The lack of funding available for investment in necessary port infrastructure; and
- The inability for some ports to fully recover costs given the current postage stamp pricing.

While the first issue is one that represents a capital subsidy, the second is an operating subsidy issue. The Commission considers that the two should indeed be treated separately.

5.2.1 Operating Subsidies

The question of operating subsidies is one which the Commission considers should be dealt with by PNG Ports as the operator of each port. That is the Commission has accepted that the inability of PNG Ports to recover the operating costs in some ports has been driven by the regulatory requirement for postage stamp pricing across all ports. Therefore, the Commission will enable PNG Ports to increase its prices in some ports over and above the side constraints outlined in the regulatory contract. These price increases will only be allowed during the coming regulatory period under the following circumstances:

- That PNG Ports can establish that the Port in question has been unable to recover the costs associated with its operation over at least two out of the past four years
- That PNG Ports has taken all steps over this period to reduce operating costs to their absolute minimum
- That PNG Ports has taken all available options to increase the demands associated with each port
- That PNG Ports has undertaken consultation with the relevant shipping stakeholders to consider the size of the increase that could be borne by the industry without resulting in a reduction in the use of services

The Commission expects that any such price increases would be presented to the Commission as part of the normal annual price review process. However, a formal written submission must be made by PNG Ports to the Commission as to the steps it has taken to avoid this action and indeed the price path that it proposes to move towards the various hurdle returns outlined above, that is:

- A. Revenue greater than the operating cost associated with the specific port
- B. Revenue associated with (A) and the depreciation allocated to the specific port
- C. Revenue associated with (B) and a risk free rate of return on the capital employed at the specific port
- D. Revenue associated with (C) and the incremental cost of capital associated with a return over the risk free rate.

The Commission and PNG Ports will agree on the necessary price path for these ports with the Commission to set the target where agreement cannot be met. Furthermore, as all ports move toward full cost recovery the Commission will monitor the prices at remaining profitable ports and would expect as the need for the cross subsidy is reduced so would be the prices charged at these profitable ports this will be needed to maintain volumes with increasing competition at these ports. Given the size of the price increases necessary to result in fall in prices in profitable ports, the Commission notes that this is unlikely over the next five years. The Commission expects that come the next regulatory period pricing across each port will be within the floor and ceiling levels established for each port. The Commission will expect that PNG Ports will provide an annual report on the performance of any port which prices have been increased outside the settings contained in the regulatory contract. This report will include the following:

- An assessment of the impact on demand from increased prices
- An assessment of the profitability of the port in question
- An assessment of the sustainability of further price increases, typically in line with the requirements of the regulatory contract
- An assessment of the operating cost efficiency across the port

- An assessment of the increased service level provided at the port given the increased revenue generated.

In the short run the Commission will continue to allow PNG Ports to fund the implied CSO through the cross subsidisation from the profitable ports, albeit at a lower overall commercial return than would be optimal for competition. However, as implied by the increased capital expenditure plans at both Port Moresby and Lae, the ability of these two profitable ports to support this cross subsidy is likely to be diminished by latter years of the regulatory contract.

The Commission views the removal of the postage stamp pricing as necessary to the continued success of PNG Ports in managing its port infrastructure. Increasing capital requirements across PNG Ports' profitable ports is likely to result in an inability in the longer term to fund the CSO through cross subsidies. The Commission encourages PNG Ports to take this opportunity to move its prices toward cost recovery at each port.

In future regulatory contracts the Commission is likely to move to a weighted average price cap across ports rather than the current revenue cap regulation. This would enable PNG Ports to price a port at the most efficient level to recover its costs. The Commission does not see that operating cost subsidies will be such an issue by the following regulatory review.

5.2.2 Capital Cost Subsidies

Where the Commission considers operating cost subsidies are unlikely to be an issue at the following regulatory review, capital cost subsidies will continue to be an issue for PNG Ports. Specifically, the inability of outlying ports to generate sufficient revenue over and above operating costs to self fund capital expenditure. This is best highlighted by the Daru and Wewak examples in figure 5.2. Capital expenditures in low revenue ports without steep changes in underlying demand is likely to result in capital projects which are uneconomic.

In these examples capital subsidies are required to provide the necessary funding for capital expenditure. Basically PNG Ports would not invest if it were required to fund its investments at the regulatory cost of capital. Hence a capital cross subsidy is required. The source of these capital cost subsidies is a major concern. However, as highlighted by PNG Ports in its submission there is some investment activity from project partners in outlying ports, shippers, and provincial governments. All parties are seeking a common goal, an increase in the efficiency and effectiveness of the port infrastructure in each region. As noted above, the Commission considers that this represents an opportunity for cooperation between the various parties to maximise the returns from these investments.

A component of the solution is the establishment of a mechanism for these parties to work together through an open discussion as the needs of each port. As such the Commission considers that PNG Ports should produce a strategic plan for each port, which would be shared with all parties to facilitate this discussion. The emphasis of the plan would be the opportunities available to improve port facilities through joint investments. At the same time, PNG Ports would be required to state when it would be able to fund these investments on its own. Should a particular project be favoured by one or more of the stakeholders, they would then have the opportunity to contribute funding to the port infrastructure as a contributed asset. This would result in the capital investment occurring earlier than would otherwise been the case if PNG Ports was required to fund 100 per cent of the project. It could also come with the incentive of potentially reduced rates for use of that port, by the organisation that provides the contributed funds.

Where such external funding is provided, PNG Ports and the relevant stakeholders must then agree the structure of the deal in terms of what will be provided in return for the funding. In some cases the deal is likely to include access to specific infrastructure (likely if a shipper or specific project investor is providing capital) or may be made on behalf of the local people (likely if a Provincial Government is involved). In each case, PNG Ports and the relevant parties will agree by a contractual arrangement before the project is committed to and therefore avoid any confusion as to the rights of all parties. The Commission will only intervene in the establishment of such agreements where it results in a reduction of competitive tension in the market at each port. In assessing any such agreements, the Commission will, in the first instance, look favourably on parties which have committed capital to establish upstream markets rather than parties seeking access at subsidised costs after the market is created.

The alternative approach by the Commission would be to request the NEC mandate through Government Policy or Legislation, that Provincial Governments must not use Government grants (or funds) to build by-pass ports or infrastructure. All investment by Provincial Governments must be by contributed assets (or capital) to PNG Ports who must treat such contributions as a means of reducing price increases to constituents of those parties contributing the capital. The mechanism to force Provincial Governments to avoid by-pass investment (with problems such as no ongoing maintenance and safety requirements), would be to sanction or reduce future budget allocations to that region by the amount invested in the by-pass infrastructure.

5.3 COMMERCIAL OPPORTUNITIES TO FUND THE CSO

Throughout the Commission's review of PNG Ports the LNG Project has loomed large on the horizon. Included in this has been the massive incremental demand that is expected to be generated by the project and the commercial arrangements that PNG Ports is party to with other port operators.

All industry players are aware of the significant investment undertaken by Curtain Brothers at Motukea in preparation for the LNG project. In addition, the existence of a deed of agreement between PNG Ports and Curtain Brothers regarding the use of the Motukea facility is also common knowledge in the industry.

The Commission is aware that the collection and sharing of revenues between Motukea and PNG Ports has been a sticking point until this stage. However, the Commission has received assurance from Motukea that it has the necessary facilities in place to accommodate PNG Ports' staff as per the deed of agreement. The Commission considers that PNG Ports should take this opportunity to establish its presence on the Motukea wharf.

PNG Ports stands to benefit significantly from the project cargo expected at Motukea should the LNG project proceed. The Commission considers that this additional volume should bring windfall revenue to PNG Ports. These windfall benefits should be used to fund the capital investment required as part of the capital CSO discussed above. The Commission therefore considers that the following arrangements are required to ensure that this revenue is allocated to the capital CSO:

- Any monies received by PNG Ports from Motukea via the arrangements established as part of the deed of agreement should be considered an asset of PNG Ports
- Such monies should be invested in a risk free bank account within PNG
- The asset should be reported by PNG Ports on its balance sheet, as capital CSO held in trust at the bank
- An offsetting liability should also be carried on PNG Ports balance sheet for future capital CSO payments

Small scale capital investments, requiring a capital CSO at outlying ports will be funded by PNG Ports from its balance sheet. Any large scale capital investments will require the Commission's approval as to the release of funds for the particular investment. The Commission will be looking at the underlying business case for the investment. Unless a satisfactory investment case can be made the Commission will not allow the relevant capital to be spent unless it can be demonstrated that without the investment the underlying infrastructure would be forced to close immediately or in the near term for safety reasons. A satisfactory investment case may include lower than efficient prices at that port leading to a lower return than mandated in the regulatory setting considered in the following section of this report. It could also be for the purposes of improving efficiency at that port or for increasing volumes through that port.

Where the Commission can establish that the capital investment would result in an economic return, albeit lower than the return established by the WACC, the

capital will be rolled into the capital base. However, only the equivalent amount of capital sufficient to generate a return equal to the WACC will be included.

For example, should the project in question cost K100 million but only generate a K10 million return and the WACC be 16 per cent, suggesting a return of K16 million, only K62.5 million will be rolled into the asset base. The shortfall will be reported as a cost to PNG Ports and will result in a reduction in the asset and the liability on PNG Ports' balance sheet.

As part of the Commission's reporting requirements for PNG Ports, it will request:

- An annual statement as to the money collected from Motukea
- The balance sheet reporting as to the movement with the asset and liabilities associated with the Motukea revenue
- A report on the various small scale projects funded from the Motukea revenue
- A report on the large scale projects proposed to be funded from the Motukea revenue, including investment cases for each project.

5.3.1 Capital Subsidy Funding Dividend Policy

The Commission believes that the benefits of the Motukea deed of agreement should be used for the CSO capital subsidy as described above. Where such approach is considered fair of significant benefit to the people of PNG, the Commission would recommend that the NEC provide a statement of Government Policy which explicitly requires PNG Ports dividend policy to be set in such a way that dividends shall only be paid by PNG Ports once sufficient funds are held in trust to cover the capital subsidy required to cover the capital program approved by the Commission during this regulatory reset, and the reset for the subsequent regulatory period. This appears fair given Government has not provided the necessary grant of capital to fund the currently identified capital requirements, during the life of the next first regulatory period.

5.3.2 Subsidy And Competitive Neutrality

During the period in which there is the use of capital subsidy to bring the PNG Ports infrastructure up to industrial standard, the Commission will need to monitor prices during its annual price adjustments process to ensure there is Competitive neutrality in the market at each port. To assist this process PNG Ports will be required to adopt ring-fenced accounting by port and report this on an annual basis to the Commission.

The Commission seeks comments as to:

- (i) The proposed treatment of the Motukea windfall**
- (ii) The appropriate hurdles for small scale investment not requiring Commission approval**
- (iii) The approval process for large scale investments.**

6.0 REQUIREMENTS UNDER THE REGULATORY CONTRACT

The new regulatory contract has been designed to provide PNG Ports with sufficient flexibility to increase prices in some ports while undertaking considerable capital expenditure in others. This section looks at other matters raised by PNG Ports, primarily:

- Postage stamp pricing
- Discriminatory competition
- Revocation of the regulatory contract due to competition.

The section also looks at the reporting frameworks which will be required in light of PNG Ports proposed capital expenditure and more flexible pricing arrangements.

6.1 POSTAGE STAMP PRICING

The efficiency of pricing should be considered as paramount to the success of the PNG Ports ability to manage the infrastructure. At the same time, another important consideration is the broader government policy relating to PNG Ports. If having considered the various mechanisms for delivering the CSO the government is of the view to continue the current cross subsidy arrangements it will necessary for all ports to at least recover the operating costs of providing these services, within certain operating constraints. These constraints may include situations where the operation of the port is severely affected by either natural or man-made disruptions. Other examples would be where demand for the particular port collapses as a result to circumstantial change beyond the control of PNG Ports, for example the withdrawal of a major customer for financial reasons.

Given the variability of demand for goods this is likely to be driven by circumstances outside the control of PNG Ports. The Commission would expect that PNG Ports would provide along with its annual price review a document on ports which fail to recover at least their operating costs over the previous 12 month period. Where a port continues to be uneconomic the Commission, PNG Ports and the Department of Transport will be required to meet to discuss the longer term options available to PNG Ports to address the issue. PNG Ports should not be seen as the delivery mechanism for government's social policy objectives. Where operations at a consistently underperforming port are deemed to be in the national interest, however, the corresponding cash flows do not support its continued operation, the Commission is likely to recommend that a direct subsidy is necessary to ensure continued operations.

A proportional response will be required from all three parties to ensure that PNG Ports retain the flexibility to appropriately manage its network of ports. In the

example that the port is suffering only a temporary dip below the level which would be considered economic, the Commission would expect to receive justification from PNG Ports as to the steps it is taking to address the issue. This would include:

- Steps it has taken to reduce costs to the most efficient point possible
- Steps it has taken to foster and encourage demand to the particular port
- Steps it will take to increase tariffs to levels which would recover sufficient revenue to become economic.

It is the Commission's preference that uneconomic ports are addressed as quickly as possible in terms of prices not under-recovering revenue sustainably.

This preference is driven by the desire to avoid the situation where there is significant cross subsidization between customers. At the same time, the Commission recognizes the unique geography of PNG, the developing nature of the economy, and the inability for numerous economic actors throughout the economy to afford basic needs, and the lack of government infrastructure to undertake more targeted social programs. This less than ideal circumstance results in numerous second best outcomes throughout PNG. However, the Commission is firmly of the view that these second best outcomes should reflect at a minimum basic economic principles. As such the pricing of ports below the level necessary to at least recover operating costs will be addressed throughout this regulatory contract period.

PNG Ports has claimed that the current regulatory arrangements prevent it from matching competitive prices from competing ports. This new arrangement will allow this to occur in that PNG Ports will be able to match prices but will be restricted from charging at rates which would otherwise be uneconomic. That is, where prices recover the full cost of providing a service, including the full return on and of capital, PNG Ports should not be able to increase its prices. So in the event that a competing service provider offers an equivalent service to PNG Ports at a higher rate PNG Ports, charges will be capped to ensure that it is not able to use its strength in the market to capture economic returns which it is not entitled to. As such the revenue requirement set by the Commission for profitable ports will be the maximum revenue permitted.

The introduction of a competitor in the market faces similar pressures to PNG Ports in that they too require a return on their investment and to recover the operating and depreciation costs through the prices they charge. If a situation occurs whereby the prices charged by the competing private provider are lower than those charged by PNG Ports, a number of questions will need to be considered:

- Are the lower prices a reflection of the competing port provider's ability to attract demand, thereby lowering the average cost of production

- Are the lower prices a reflection of the competing port provider's ability to extract additional cost savings which PNG Ports has not been able to make
- Are the lower prices a reflection of an economic advantage provided to the competing port provider by virtue of special concessions regarding project infrastructure.

Where the competing port provider has been able to attract additional demand, resulting in lower average costs, or greater economies of scale, than those available to PNG Ports, the Commission does not consider that it should protect PNG Ports from this type of competition. Rather, the Commission considers that it should provide strong incentives for PNG Ports to increase the demand through each port in PNG.

Likewise the ability for a rival port operator to extract additional costs saving should not be something that the Commission protects PNG Ports from. The Commission's role should be to foster this competition. In the event that prices are lower at a competing port owing to the ability of this port to achieve cost savings this should spur PNG Ports to increase its efforts in pursuing its own cost reduction program.

The Commission will not provide protection for PNG Ports from a competing service provider. Where prices have been reduced owing to efficiencies generated, through either economies of scale or cost reductions, PNG Ports will be provided the flexibility to compete. It is the Commission's position that PNG Ports and any competitors should have equivalent opportunities to compete for demand and to find efficiencies within their operations.

The Commission calls for comments on the:

- (i) Provision of prices reflecting maximum allowable tariffs and,**
- (ii) The movement away from postage stamp prices at the ports.**

6.2 DISCRIMINATORY COMPETITION

PNG Ports has argued that under clause 4.3 of the existing regulatory contract it is protected against these deals through the discriminatory competition clause which states the following:

4.3 Discriminatory Competition

(a) PNG Ports and the Regulator must consult in the event that any third party commences the provision of Essential Port Services where the third party receives any financial assistance or guarantee from the Independent State of Papua New Guinea or an agency thereof which is on terms more favourable than those which would be available to PNG Ports in equivalent circumstances as a consequence of the provision on concessional finance, guarantee or political risk insurance terms,

concessional tax treatment or exemption from any tax or regulatory requirement (Discriminatory Competition). In this event, PNG Ports may make submissions to the Regulator about the financial effect of the Discriminatory Competition upon revenue and capital expenditure requirements of PNG Ports.

The intent of this clause was the protection of a private owner of PNG Ports in the event of the privatization of the ports back in 2002. This privatization did not occur. As such the Commission must consider the implication of this clause in light of the current environment. The Government's decision to award special concessions to a particular project service provider is a policy decision. Aside from any concessions requiring exemption from the provisions of the ICCC act, such concessions do not require any examination from the Commission. Furthermore, the current status of PNG Ports as an SOE effectively means that any such decisions which impact directly on the operations of PNG Ports are the equivalent of the government taking detrimental actions against its own company. The implications of these concessionary decisions are assumed to form part of any such policy considerations on the matter.

In its current form, the Commission does not consider that it is appropriate to roll forward the provisions set out in clause 4.3. Rather, it is the Commission preference that the clause be amended to include a specific provision to only apply in the event that a third party takes a majority shareholding in PNG Ports. The Commission does not believe that it should be required to adjudge on the implications of specific policy settings unless there is an imperative to support capital investment.

Any government decision to sabotage a government owned entity by providing specific concessions to a privately owned company is an issue that must be dealt with by the relevant government stakeholders, of which the Commission does not see itself as one. However, the Commission notes that in the vast majority of countries the policy debate is typically reversed in that it is government entities that are being accused of having an unfair advantage owing in large part to their ownership structure, the perceived ability to access funds at lower rates to private companies, and perceived preferential treatment regarding taxation arrangements. With this in mind, SOE's are typically required to prove that there is no competitive advantage to its ownership. This competitive neutrality is something that the Commission supports above the introduction of artificial barriers to competition. At the same time the Commission understands that the development opportunities presented by various projects may require some concessionary support. The implications of this concessionary support will need to be considered on a case by case basis and exemptions sought under the appropriate channels set out in the ICCC Act.

The Commission does not consider that it appropriate for PNG Ports, under its 100 per cent ownership by the government of PNG, should be protected under

the current discriminatory competition clause in the regulatory contract. As such it proposes the following introductory statement and clause are included in the new regulatory contract

4.3 (a) Subject to the provisions of 4.3 (b),

4.3 (b) Clause 4.3 (a) cannot be invoked while PNG Ports is under 100 per cent PNG government ownership.

The Commission calls for comments on the amendment of this provision. What other issues should the Commission be considering regarding clause 4.3?

6.3 RELEASE FROM REGULATORY CONTRACT

The Commission may release PNG Ports from the regulatory contract at any time under clause 10.1 of the regulatory contract. However, no conditions for the determination are outlined in the regulatory contract. As such there is a large degree of latitude for the Commission to release PNG Ports. At the same time, the Commission must be satisfy itself that a release from the regulatory contract would serve the PNG economy.

The Commission has chosen to consider the release of PNG Ports within the following general principles:

- Where a fully competitive market can be established the Commission would need to be satisfied that the release of PNG Ports from the regulatory contract would not create an environment where PNG Ports may exert any market power which lead to prices which did not reflect the full cost of service delivery
- Where PNG Port could demonstrate that it was fully compliant with the service standards set out in Appendix 4 of the regulatory contract for a period of at least six months
- Where the Commission can be satisfied that there are at least two additional transport modes servicing a particular part (e.g. rail, road, air)
- Where the Commission can be satisfied that removal of the regulatory contract would lead to prices which are within the floor and ceiling rates defined by this regulatory contract
- Where it can be demonstrated to the Commission that the regulatory contract is materially retarding the growth of the PNG economy

- Where the settings of the current regulatory contract can be demonstrated to be restricting the investment of capital expenditure in the essential port services by PNG Ports
- Where the settings of the current regulatory contract are proposed to be replaced by a new regulatory contract agreement which provides more clearly an environment which fosters investment in the essential port services throughout PNG.

The Commission seeks comments from all parties as to the requirements listed and the potential release of PNG Ports from its obligations under the regulatory contract.

6.4 LEVEL PLAYING FIELD FOR ALL PORTS

In the event that the Commission did not release PNG Ports from the regulatory contract, PNG Ports claimed that all other operators should be subject to a level playing field. PNG Ports has stated that there should be like for like regulation of all businesses providing services within Declared Ports in PNG under Section 33 of the ICCA Act.

The Commission is unlikely to ever provide blanket coverage across an entire industry. While on the surface this may provide a level playing field for all operators it is likely to lead to a reduction in both the number of alternative service providers and a reduction in the services and degree of innovation throughout the declared ports.

A blanket regulation of all ports would remove any incentive on port operators to compete as all prices would be the same. Further, the Commission would be unable to determine whether or not the prices set would adequately mimic a competitive market outcome leading to the likelihood that prices would either be above or below the market clearing level. This in turn would lead to either an over or under supply of port services. The dynamic and allocative efficiency implications of this over or under supply of services would have flow on impacts in secondary markets leading to a loss of economic efficiency throughout the PNG economy.

The primary basis for PNG Port submission regarding regulation of all businesses providing services within the declared ports appears to be the lack of consistency between the conditions faced by competitors. The conditions referred to by PNG Ports include:

- The requirements outlined in the regulatory contract
- The various international codes and standards, including the International Ships and Port Security (ISPS) code

- The requirement to reinvest the profits from port operations in maintenance of existing infrastructure and new capital expenditure programs.

The Commission agrees with the first point, that competing service providers are not subject to the conditions outlined in the regulatory contract. However, the Commission does not consider the terms of the regulatory contract are overly onerous. These conditions are likely to be the bare minimum standards required by competing operators. Under the various terms of the regulatory contract, the Commission provides the following:

- A price path for PNG Ports – all competing ports are likely to have in place agreements with various customers as to the terms and conditions associated with using port facilities, including the price of tariffs. The regulatory contract provides a default standard for PNG Ports and provides clear guidance as to the calculation of this standard though both the regulatory contract and this statement of regulatory intent.
- The requirement to invest at least 80 per cent of the proposed capital expenditure plan – All competing ports have similar arrangements in place, albeit that they are not as prescriptive as the obligations set out in the regulatory contract. The Commission’s rationale for being as prescriptive as setting a minimum capital expenditure program was borne out of the historical performance of PNG Ports’ predecessor, or the legacy corporation’s lack of investment in the port facilities. Further, the requirement was predicated on the sale of the ports and was a mechanism to ensure that’s capital which was used to determine the price path was indeed invested.

The regulatory contract provides ample incentive for PNG Ports to make the necessary investments in the port infrastructure to improve the services provided to its customers. Likewise a competing port faces the same challenge of investing in capital to improve services. As both companies have the requirement to generate a return on monies invested, the Commission does not consider that this requirement is inconsistent between PNG Ports and any potential competitors. Further, it should be noted that the capital plan adopted is first proposed by PNG Ports before being included in the underlying settings used to determine the prices outline in the regulatory contract.

- Various pass through events – The majority of events are included in the regulatory contract provisions for the pass through of unexpected costs. The Commission notes that the regulatory contract provides PNG Ports considerable pass through triggers, thereby transferring a considerable amount of risk from PNG Ports to its customers. The Commission believes that this is actually more generous than the conditions likely to be entered into by competing ports with its

customers, particularly where these customers represent some of the largest companies in the world. However, the intent of the regulatory contract has also been to provide PNG Ports with the opportunity to manage the ports with sufficient flexibility. Therefore, the Commission, while noting that these are more generous than a strictly competitive market would dictate, has decided to retain this flexibility to the advantage of PNG Ports.

- Minimum service standards – Under normal competitive market conditions services are transacted between economic actors at specified service levels. Failure to deliver these services at the specified level is often likely to lead to economic penalty on the service provider. Under the regulatory contract there are eight general minimum service standards. The Commission does not consider that any of these are particularly onerous in terms of the type of services which would be considered as basic and fundamental to the provision of port services. As such the Commission does not consider that these result in a cost structure which is over and above the costs which would be incurred by a competing service provider.

The Commission does not consider that claim made by PNG Ports that competitors are not subject to the same conditions, as defined under the regulatory contract, is correct. The regulatory contract establishes the pricing framework applicable to PNG Ports on the basis of accepted and commercially used pricing principles. Further, the Commission does not consider that the regulatory contract provides for any costs which are over and above those expected to be incurred by a competitor to PNG Ports.

The Commission is unaware of any specific exemptions from the ISPS code or any other international standards or codes granted to competitors of PNG Ports. Until such information is made available the Commission has assumed that the compliance with these various requirements is monitored by relevant authorities. The Commission councils all port operators, including PNG Ports, to ensure that all necessary steps have been taken to ensure compliance with the requirement of the ISPS code.

As such the Commission will not make all port operators subject to the same economic regulatory regime faced by PNG Ports under the regulatory contract.

The Commission seeks comments regarding the need, or lack thereof, for a level playing field in terms of applying the regulatory contract across all port operators.

7.0 ECONOMIC REGULATION OF PNG PORTS

7.1 THE ECONOMIC RATIONALE FOR REGULATION

The Commission has assessed that competition in the ports industry in PNG is either weak or limited thus warranting the need for continued regulation of PNG Ports. Therefore the Commission, in this section discusses, among other things, the form of regulation that will apply to PNG Ports.

7.2 FORM OF REGULATION

The Regulatory Contract for the regulated entity provides that economic regulation is to be of the CPI plus X form that is of an incentive-based variant. In applying this form of regulation, the regulatory contract requires the Commission to set a revenue cap to apply to the relevant regulated entity for a regulatory control period (being a period of at least more than five years). In setting the maximum allowed revenue for the regulatory control period, the Commission makes use of the “building block model” to ensure that the expenditures of the firm are correctly amortised over time.

7.3 CURRENT FORM OF REGULATION

PNG Harbours⁷ was declared by the Treasurer to be a regulated entity under section 32 of the ICCA Act 2002 and the regulated services were subject to a Regulatory Contract issued under Part III, Division 2 of the ICCA Act 2002.

The Commission adopted a forecast cost-of-service approach to establishing PNG Harbours efficient costs of operating their business and setting a revenue path according to a CPI + X formula. In adopting this approach, the Commission was required to take into consideration the following regulatory contract principles under Part III, Division 2 of the ICCA Act 2002:

A regulatory contract shall;

- Have a term not exceeding ten years;
- Regulate prices for the supply of regulated goods and services by the regulated entity over the term of the regulatory contract;
- Specify service standards the relevant regulated entity shall meet;
- Specify a process for the issue of a new regulatory contract to replace that regulatory contract on the expiry of its term;

⁷ Now PNG Ports

- Specify pricing policies and principles that are to be adopted in any regulatory contract that is issued in replacement of that regulatory contract on the expiry of its term; and
- Deal with such other matters as the ICCA Act 2002 or an Act that declares an industry to be a regulated industry, or a regulation made under such an Act, requires be dealt with in a regulatory contract.

To be able to meet the above requirements, the Commission explored amongst others the following alternative forms of price control methods;

- Total revenue cap;
- Average revenue cap; and
- Price cap.

Taking into consideration the above forms of the pricing methodology for the regulated entity's purposes and consistent with the regulatory requirements, the Commission decided to regulate PNG Harbours under an incentive regulation approach. This meant that PNG Ports was to be regulated using Price Cap (Maximum Average Price Cap) form of regulation.

Under this arrangement, PNG Ports is required to set prices for the Supply of Essential Services and Stevedoring Access for each regulatory year such that their Maximum Average Revenue for the services provided should increase by no more than the Consumer Price Index (CPI) plus/minus an X-factor, hence a $CPI + X$ formula.

7.4 LENGTH OF REGULATORY PERIOD

The Commission's views that a five year regulatory period is the most appropriate time period. This time period takes into account competition that has emerged within the ports industry, particularly in the supply of essential port services and that these changing circumstances need to be reflected in the regulatory arrangement going forward. A five year period also recognises the costs involved and seeks to keep the costs associated in providing the services at a minimum cost while at the same time providing an open, transparent process for determination of price and consideration of the need to continue with some of pricing regulation.

Prior to the end of this regulatory period, the Commission would again conduct a review of the regulatory arrangement in particular the price path and consider whether to continue on with the existing regulatory arrangement or introduce some form of regulation. This process ensures that decisions for regulation are continually under review and that change in circumstances and industry conditions are recognised.

The Commission notes that adoption of a five year period places a reasonable limit on the number of years that the regulatory arrangement would operate before it was necessary to reassess the need for continuation of such an arrangement. Hence, there are benefits for both the service provider and for the customers from the adoption of a shorter regulatory period.

The Commission considers that a five (5) year regulatory period shall be applicable in this instance.

7.5 BUILDING BLOCK APPROACH

The first step towards determining tariffs is to calculate the total efficient costs of the business.

The Commission has adopted an efficient cost building block approach to assess the revenue required by the PNG Port so that it can provide the regulated service and obtain a commercial return on its investment. The logic of this approach is simple; Revenues calculated in this way automatically covers the service providers' costs including an adequate return.

The Commission has used an incentive regulation approach like any other declared goods and services it has reviewed in the previous years to determine their price path. The Commission has used the following building blocks components to determine the efficient costs of providing port services through out PNG.

- Operating and maintenance costs
- Return on Assets
- Initial capital stock+
- Return of Assets (WACC)
- New capital expenditure
- Return of capital- economic depreciation

The sum of these efficient costs represents the notional revenue that the PNG Ports will earn in any regulatory year and should equate to the actual revenue earned given the actual prices being applied.

This efficient cost is calculated as:

Total efficient costs = Return on capital +
Operating and maintenance costs +
Return of capital (depreciation)

Where the Return on Capital = Regulated Asset Base (RAB) multiply by Weighted
Average Cost of Capital

This approach is referred to as the “Building Block method” because each component is individually calculated and the components are combined to determine the total efficient costs. This chapter examines each of the components and the associate issues on how the service standards may affect the efficient costs.

7.5.1 Return on Capital

Capital investment in the ports industry requires a lot of financial capital to undertake due to the fact that port infrastructures are capital intensive in nature. Debt and equity are the two major sources of financing capital investments. However, before a regulated entity such as PNG Ports decides to invest/re-invest in port infrastructures and facilities, the return on these capital investments must be sufficient. The return on capital or assets (ROC or ROA) is the revenue or return required by PNG Ports in order to go ahead and undertake capital investments which are necessary to maintain its service standards and at the same time also enable PNG Ports to operate at a reasonable profitable level. The calculation of the return on assets and the asset base itself is the most debatable area, and the area where the industry raises most of its concerns on the type of methodology to be adopted and used by the Commission. The ROC is usually derived by multiplying the weighted average cost of capital (WACC) with the regulatory asset base (RAB) of a regulated business. The formula is as shown below:

$$\text{ROC} = \text{RAB} * \text{WACC}$$

Where:

ROC is the return on Capital;
RAB is the regulatory asset base of a business; and
WAAC is the weighted average cost of capital.

Prior to determining a fair and reasonable rate of return on assets, the Commission must first review and make a decision on the value of the RAB. It must also take into consideration the appropriate valuation method of valuing the assets and the opening value of the RAB to apply for the forthcoming regulatory period.

(i) Regulated Asset Base

Ports Industry businesses are long term capital intensive business. The regulated asset base comprises the physical assets that are used to provide the regulated services and is a key ingredient of the building block approach. The regulatory

values of the business assets represent the value of the investment upon which the owners of the business earn a return, and the value that is returned on the economic life of the assets (regulatory depreciation). Capital related costs represent a significant component of the total cost of providing the regulated services.

To determine the return on capital for a service provider, the Commission must initially establish the value of the RAB that is employed to deliver the regulated services. The RAB is often determined based on the cost of the assets that are employed by the industry or the regulated business. This is a reflection of the investment that has been made in the business. The critical issue for the Commission, however, is what represents the economic investment that is economically efficient and prudent. The use of accounting concepts such as the valuation of the assets of the business as reported in the financial accounts, does not necessarily represent the economic valuation of the business (although accounting standards are increasingly being adjusted to bring them into line with the concept of an economic value). Thus, a regulated business may have a higher or lower value in economic investment terms than simply the book valuation of its assets. This is often reflected in the premium over the book asset valuation that purchasers of a business are willing to pay when acquiring a business.

There are number of possible methods of calculating an initial RAB for the industry. These could be broadly identified as the:

- Depreciated historical valuation method;
- Depreciated Optimised Replacement Cost (DORC) method; and
- Optimised Deprival Value (ODV) method.

Depreciated Historical Valuation

Depreciated historical costs represent the original cost of the asset less the straight-line depreciation of the asset over its useful life. The methodology accepts without a doubt that historic decisions on a new capital investment incorporated into the asset base were all appropriate and that no market or technology changes have occurred since the assets were constructed that would lead to changed asset designs or decisions. In effect, depreciated historic cost assumes that all past investment decision were prudent and that no assets have been stranded since their construction. In order, for the Commission to adopt a depreciated historic value assessment of the asset base, it would need to draw on the asset base register and other information held by the entity. The Commission needs to consider if this approach is applicable and appropriate to effectively value the assets at their purchase cost given any potential accounting revaluations.

The depreciated historic valuation methodology is generally simple to apply assuming that the asset registers are complete and up to date. This approach is

considered useful as a transitional measure given the problems associated with the pre-existing historic cost values such as:

- Historic cost values for existing assets may not exist
- The purchase price do not reflect efficient cost
- The circularity issue. This arises when trying to value a registered asset on the basis of associated regulated revenue.

Replacement cost valuation

Replacement cost is an example of subjective approach of valuation. Unless the regulated business replaces an asset, it cannot be absolutely sure what it would cost to do so.

Under replacement cost valuation, consideration should be given to the following;

- The current replacement costs of the infrastructure;
- Age of assets and their remaining economic lives to determine an appropriate depreciation profile for all the assets in the business and work out their current value; and
- The level of utilisation of each asset in the asset base, with any assets which were not being fully utilised (within the constraints of good engineering practice) requiring some form of optimisation, which would include taking into account those assets which have been built and are now longer in use and discounting for those assets which are superfluous to the efficient operational requirements of the businesses.

Under the replacement valuation approach, a DORC methodology can be approached to arrive at a “replacement cost” estimate.

To adopt a replacement cost valuation, which is optimised, requires excessive and large amounts of discretion and engineering judgment as well as significant information regarding the asset register and contributed capital for the business.

Valuation of physical assets is based on the current replacement cost of assets rather than the actual or historical costs of the events of the assets, and this may lead to excessive asset values which when recovered in price path tariffs rise beyond the affordability levels of customers.

The Commission is not generally supportive of the use of the DORC methodology. It in effect provides an upper end of the valuation methodologies, but in doing so, and in particular when used to set the initial asset valuation, effectively gives the business a ‘free kick’ in that it allows a much higher level of fees and charges despite the actual level of investment made by the business. Also there is as high degree of subjectivity required in the approach requiring the engagement of an independent expert to conduct a thorough audit and review of

all the assets owned and operated by the industry. The Commission considers not using this approach to setting the asset valuation.

Optimised Deprival Valuation (“ODV”)

The optimised deprival valuation (“ODV”) is defined as the cost, the asset owner would incur or the revenue that would be forgone if the business is deprived of the assets and its associated revenue. ODV measures the value of the asset to the business operating as designed to its current form.

An ODV approach allows for the possibility that the value of the assets will be based on the value of the future stream to the owner should the owner be deprived of the underlying assets. ODV approach also has the added advantage that it is a better reflection of the cost that a new entrant would pay for an existing asset in operation. A new entrant entering the market would be able to earn an appropriate rate of return on any capital investment made to purchase the business.

To implement an ODV approach, a return on assets test (“RAT”) is highly likely, as a means to estimate the likely revenue that can be generated by the asset in its existing form (taking into account the demand projections that were made at that time). The revenue stream can then be discounted back to the implied value of the asset base for the purposes of the ODV assessment and the pricing arrangements which result from this value.

An ODV valuation has the theoretical advantage of determining the value of the business from a financial perspective. While the other methodologies rely upon an approximation of the business on the asset value or the actual expenditure on physical assets, the ODV at least tries to recognise the fact that it is the financial value of the business upon which the owner seeks to generate. If the owner cannot earn a competitive return on this financial valuation of the business, the owner would be inclined to look for an alternative investment opportunity. Conceptually, this represents a more appropriate valuation of the business for regulatory purposes, although from a practical perspective, it creates its own difficulties.

In practice, the Commission will need to have regard to all available information when deciding upon the RAB to use for price determination purposes. Thus, the Commission will seek information from the industry on the historical asset valuation of the business concerned drawing from their audited balance sheets, and will also examine any other information which may help to quantify the RAB value.

8.0 BUILDING BLOCK SETTINGS

8.1 OPERATING AND MAINTENANCE COST

Operating costs are a significant factor in developing the cost build up in the calculation of total revenue requirement. Operating costs are incurred by the business immediately and therefore, the business requires an offset amount of revenue to ensure continued operation of PNG Ports' service network through out Papua New Guinea. An operating and maintenance cost basically covers any day to day costs or expenses in running a particular business which may include and not limited to:

- Administration costs
- Wages and salaries
- Fuel costs and material costs
- Repairs and maintenance
- Insurance
- Leasing costs and any other service contract expenses paid to third parties

In determining the operating costs that are built into the regulatory model, the Commission must balance the needs of the business to fund operational activities with the needs of consumers by ensuring operating expenditure is at efficient levels.

Operating and maintenance costs are expressed as a single lined item in the cash flow analysis but it is intended to include all the on going costs of a non-capital nature for running the regulated entities. Forecasts of such costs will be made on the basis of previous experience and contractual arrangements in place.

Industry benchmarks for such costs may also provide a valuable guide. These costs are treated as a pass through item in establishing regulated revenues and have a direct bearing on associated tariffs. It is important that the estimates be the best available and amendable to audit procedures. Industry benchmarking is briefly discussed below.

8.1.1 Operating Costs Benchmarking

Benchmarking is a process of comparing and measuring an organization's internal processes, i.e. the cost, productivity or quality of a specific process or method to another that is widely considered to be an industry standard or best practice. Essentially, benchmarking provides a snapshot of the performance of the business and helps you understand where your business is in relation to a particular standard.

Operating costs must be based on efficient service delivery. A competitive and efficient market would try to ensure that its operating and maintenance costs are minimized. That is for PNG Ports its regulatory responses for prices, oversight and third party access as a substitute for competition; therefore require the estimation of the minimum or efficient costs that would be incurred by PNG Ports in providing its services specifically to its customers concerned.

Benchmarking the performance of PNG Ports against other relevant ports in the region is the most common means of estimating efficient costs. Benchmarking within the Ports Industry is essential however, PNG Ports would have a vivid idea on its own performance and standard so it is imperative that it reaches out and above its own industry into other industries that perform similar process but may have to perform this process extremely well in order to succeed.

The Commission seeks submission from relevant stakeholders as to the appropriate benchmarks which PNG Port should be measured against.

8.1.2 PNG PORTS Operating Costs

According to preliminary forecasts by PNG Ports which are shown on Tables 8.1 K378 million is set to be spent by PNG Ports on operational expenses from 2009 to 2013.

TABLE 8.1 PNG PORTS CORPORATION LIMITED EXPENSE BUDGET

PORT	2009	2010	2011	2012	2013	Total
POM	2,929,900	4,922,232	5,512,900	6,174,448	6,915,382	26,454,861
LAE	4,148,620	6,969,682	7,806,044	8,742,769	9,791,901	37,459,015
MADANG	967,667	1,625,680	1,820,762	2,039,253	2,283,964	8,737,326
RABAU	1,637,940	2,751,739	3,081,948	3,451,782	3,865,995	14,789,404
KIMBE	975,053	1,638,090	1,834,660	2,054,820	2,301,398	8,804,021
ALOTAU	589,933	991,088	1,110,019	1,243,221	1,392,407	5,326,668
ORO BAY	695,029	1,167,649	1,307,767	1,464,699	1,640,463	6,275,608
KAVIENG	273,567	459,592	514,743	576,512	645,694	2,470,108
DARU	89,333	150,080	168,090	188,260	210,852	806,615
WEWAK	568,133	954,464	1,069,000	1,197,279	1,340,953	5,129,829
BUKA	266,433	447,608	501,321	561,479	628,857	2,405,699
KIETA	240,133	403,424	451,835	506,055	566,782	2,168,229
AITAPE	33,733	56,672	63,473	71,089	79,620	304,587
SAMARAI	33,333	56,000	62,720	70,246	78,676	300,976
VANIMO	149,887	251,810	282,027	315,870	353,774	1,353,367
LORENGAU	121,880	204,758	229,329	256,849	287,671	1,100,488
H/OFFICE	28,153,407	47,297,723	52,973,450	59,330,264	66,449,896	254,204,741
Total						378,091,542
Total excluding (Head Office)						123,886,801

8.1.3 Operating Costs Forecast Methodology

The Commission has been provided a forward forecast from PNG Ports that suggests that operating costs will increase in real terms by 2 per cent per annum over the regulatory period. Given the demand forecasts proposed by the Commission a 2 per cent real increase is not unreasonable and actually represent a decline in average terms as demand growth is likely to outstrip significantly this increase.

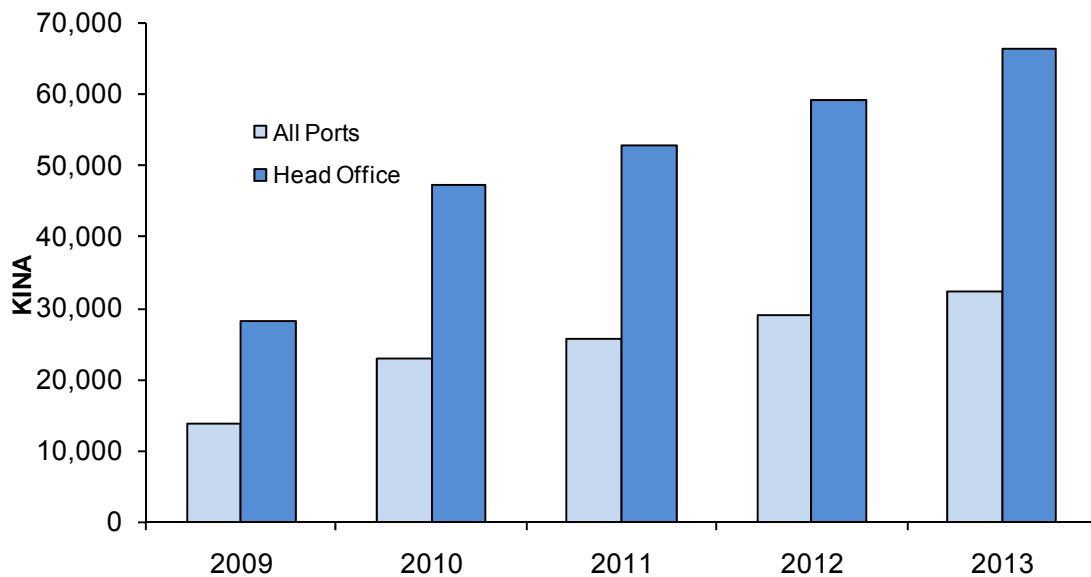
In order to derive the 2010 OPEX, the 2009 OPEX is divided by the product of 8 by 12 and by 1.12 (the sum of 100 percent plus the inflation and additional cash expense allowance of (10 percent + 2 percent)).

The OPEX from 2011-2013, is for each year derived by multiplying the preceding year's forecasted OPEX by the total sum of inflation and additional cash expense allowance (10+2 percent) 12 percent and adding the result back to the preceding years OPEX. For example, the 2011 OPEX for Port Moresby port is derived by multiplying Port Moresby port's 2010 OPEX which is K4,922,232 by 12 percent . The result which is K590,668 is then added back on to K4,922,232 (2010 OPEX) to come up with the end result which is the 2011 OPEX of K5,512,900. The monthly OPEX for each year is derived by multiplying the OPEX by a seasonal factor of one-twelfth (1/12). For example, for Port Moresby port in 2011 is derived by multiplying K5,512,900 by 1/12 to come up with the monthly OPEX of K459,408.

8.1.4 Allocation of Operating Costs

According to the submission by PNG Ports, about 67 percent of the K378 million will be incurred by the HO and the remaining 33 percent of total OPEX will be spent on operational expenditures of all the 16 operational declared ports. The OPEX of PNG Ports for all the 16 operational ports, excluding expenditures to be incurred by HO, amounts to about K124 million which is 33 percent of PNG Ports' total OPEX. Ports that will incur most of the OPEX are Lae (30.2 percent) and Port Moresby (21.4 percent) followed by Rabaul (11.9 percent), Madang and Kimbe (7.1 percent each).

Figure 8.1 PNG Ports OPEX 2009-2013: Overheads versus direct costs



The ports of Lae and Port Moresby alone will account for about 52 percent of total OPEX from 2009-2013 compared to a combined 48 percent for remaining ports. The total OPEX for the ports is forecasted to increase by 68 percent from 2009-2010 and by 12 percent annually from 2011-2013.

While the Commission is comfortable with the real increase in operating costs proposed by PNG Ports, the overhead costs associated with head office is cause for some concern. Of particular concern is the 60 per cent increase in overheads from 2009 to 2010. Unless an acceptable justification can be provided the Commission will use the 2009 value as the starting point and will roll these number forward by 2 per cent real per annum.

The Commission seeks additional justification from PNG Ports as to the services provided by the head office and measures taken to improve efficiency within the overhead functions.

Further, the Commission notes that it has used the one of numerous allocation methodologies to allocate these overheads. The Commission will investigate other methodologies as part of the finalisation of this review.

8.2 STARTING REGULATORY ASSET BASE VALUE

In determining the appropriate amount of depreciation to be included in the underlying cost base the ICCC needs to establish both the starting Regulatory Asset Base (RAB) and the appropriate depreciation schedule. Unfortunately, the original regulatory contract need not specific a starting RAB. If it had the determination of the roll forward RAB would be simply:

- The starting RAB
- less depreciation

- plus additional capital expenditure
- plus an allowance for the indexed value of the RAB

In absence of the starting RAB, the ICCC has looked at alternative methodologies for establishing this value. While typically a full engineering valuation would be the preferred approach, the practical limitations of the PNG operating environment prevent this from being used. Further, the returns available in many ports simply do not allow for such methodology to be easily applied as the degree to which the condition of the assets has deteriorated would effectively mean that their depreciated replacement cost would be zero.

The practical application of these valuation methodologies suggests that the claims made by PNG Ports that some ports are unprofitable needs to be examined in the context of these asset values. As one example of the differences between the Commission's approach to establishing the asset base versus PNG Ports approach, the Commission only recognizes those assets which have an economic life associated with the port infrastructure. Meanwhile the approach applied by PNG Ports was to allocate the total value of assets on its balance sheet across the various ports. The Commission considers that only physical plant and equipment associated with the provision of port infrastructure is to be included in the asset base. As such the Commission has taken the \$285million from the PNG Ports balance sheet and assessed this as the initial value of the RAB. Given the average returns over the past four years this asset value represents a return on assets of approximately 13 per cent. If the Commission assumed a higher asset value this implied return would fall. The implication of this fall would potentially include the provision of write downs as the asset value would not be supported by the underlying cash flows. The Commission does not wish to trigger such an event.

The starting asset value, as defined by the Commission, ignores all non tangible assets and focuses primarily on the property plant and equipment value set out in the balance sheet. The Commission's focus on tangible assets is consistent with regulatory best practice and the definition of the regulatory principles outlined in the contract. It does not ignore those assets which are indeed assets of the PNG Ports business it simply does not recognize that they should be included in the RAB of the purpose of setting prices or establishing the degree to which a port is subsidized. Assets such as receivables are considered as assets which the business is best placed to manage and should not generate an additional rate of return on. Likewise assets which are already employed in a money making venture, through an interest bearing bank account, do not require an additional return through the prices charged to consumers.

8.2.1 Roll-Forward of RAB

Upon determining the appropriate method of re-valuing/valuing assets of a business, the opening RAB value could be considered as a roll over of closing value of this subsequent regulatory year resulting from the previous 2002

regulatory calculation, or a roll forward of the previous 2002 starting value to the end of 2009, or a new RAB could be determined for the first year of the next regulatory period using the chosen re-valuation methodology.

Roll-forward Approach:

$$\text{Closing RAB}_{t-1} = \text{Opening RAB}_{t-1} + \text{prudent capital expenditure} - \text{straight line depreciation} - \text{asset disposals}$$

** Concern: Forecast capital expenditure for current price path may differ from the actual capital expenditure undertaken during the current regulatory period.*

Assess actual capital expenditure over current regulatory period against a prudence test including assessment of any investment decision according to all available information.

Adjustment to the “opening” asset valuation for regulatory purposes at January 2010 should be consistent with the financial maintenance concept of the regulatory asset value.

8.2.2 Capital Expenditure

The Commission is likely to accept all capital expenditure in profits where the rate of return is above the risk free rate. However, ports such as Buka, which have consistently generated returns below its operating costs, the Commission is unlikely to accept major capital works.

PNG Ports has submitted the following capital expenditure plan, which the ICCC is likely to accept the large majority of. The one exception is the K84million for an overseas wharf extension in Wewak. The ICCC will not be providing an incentive to PNG Ports to invest significant sums of capital expenditure in marginal ports without understanding the strategic benefit for this investment. Table 8.2 below outlines PNG Ports capital expenditure forecasts over the next 5 years.

Table 8.2 Projected Capital Expenditure

Project	Spend
Lae Berth 3 Extension	78,000,000
Kimbe berth modifications	10,000,000
Lae Tanker Berth & Cement Factory Extn	275,000,000
Mobile harbour Cranes (Lae & POM)	30,000,000
Lae Passenger Terminal upgrade	3,000,000
Lae Port Office rehabilitation	1,000,000
POM Berth 4a Extension	280,000,000
POM Berth 4a Concrete repairs	15,000,000
Wewak Overseas Wharf Extension	84,000,000
Daru Trestle Rehabilitation	18,000,000
Daru Causeway Repairs	3,100,000
POM Main Wharf Rehabilitation	13,000,000
Kimbe Barge to relived acute congestion	6,000,000
POM Barge - Dangerous Goods handling	10,000,000
Dredging of all 17 Harbours	10,000,000
Inland Container Terminals	54,000,000
Buka Coast Wharf rehabilitation	4,500,000
Buka Pavement repairs	1,600,000
Lae Stevedores Mess rehabilitation	900,000
Design work tanker loading platform	5,000,000
Security Scanning	15,000,000
POM Stevedores Mess Rehab	900,000
Lae berth 3 Concrete repairs	1,500,000
Lae Tanker berth extension design	5,500,000
Lae pavement Repairs	2,500,000
POM Reefer Points upgrade	700,000

8.2.3 PNG PORTS Capital Expenditure PROGRAM

According to PNG Ports' Capital Expenditure plans, PNG Ports is set to spend about K648 million⁸ from 2009 to 2013 on its ports infrastructures around the country apart from some capital expenditures on its head office (HO).

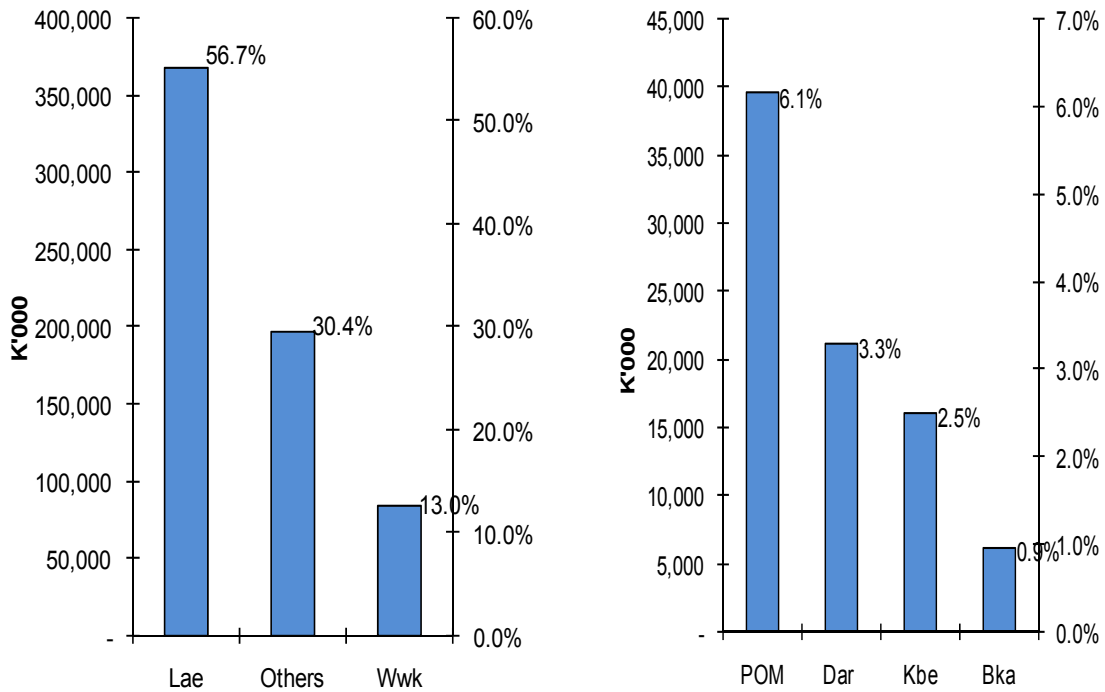
All the Capital Expenditure information in Table 1 was provided to the Commission in the PNG Ports Submission. The Lae Tidal Basin and Berth 4a extension projects have been excluded in order to quantify and analyze the impact these two projects will have on PNG Ports' Capital Expenditure plans and the tariffs of all essential ports services (ESPS) when these projects are factored in to the 2009-2013 Capital Expenditure.

Figure 8.1 shows the magnitude of capital expenditure over the various ports by PNG Ports from 2009 to 2013. Should the Lae Tidal Basin and POM Berth 4a

⁸ POM Berth 4a extension worth K280 million is excluded.

extension projects are not undertaken, about 70 percent of the total Capital Expenditure will be spent on the Lae and Wewak ports. Port Moresby port will only account for about 6.1 percent of Capital Expenditure.

Figure 8.1 Capital expenditure without Tidal Basin Project and 4A Extension



8.2.4 Port Moresby Berth 4a Extension and Lae Tidal Basin Projects

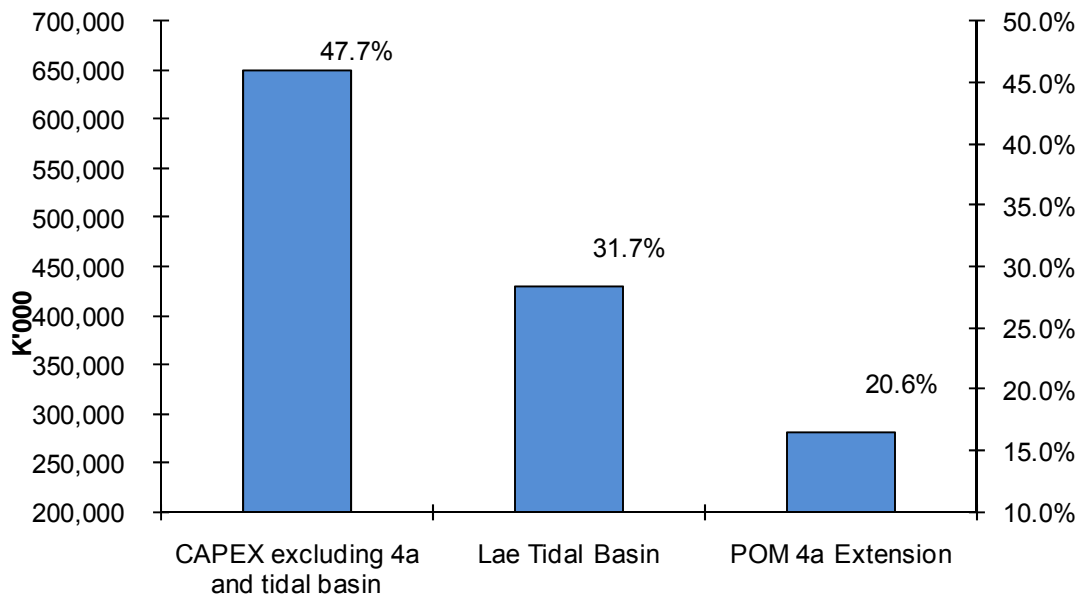
The Lae Tidal Basin and Berth 4a Extension projects are major projects that will potentially be undertaken over the next regulatory period. These two projects will have a significant impact on PNG Ports' Capital Expenditure plans.

The berth 4a project will cost PNG Ports about K280 million and the Lae Tidal Basin Project will cost about US\$150 million which is equivalent to around K430 million (K1=US\$0.3500)⁹. When these two projects are included in PNG Ports' Capital Expenditure, the total Capital Expenditure for the next regulatory period increases significantly.

Plans are in place by PNG Ports to have the Port Moresby port berth 4a extension project to commence in January 2011 and take about 2 years to complete. The Lae Tidal Basin Project remains unclear at the moment whether PNG Ports will be tasked by the Government to solely undertake this project or under some kind of private-public partnership arrangements.

⁹ The Kina exchange rate has been averaging about US\$ 0.3500 therefore, US\$ 0.3500 was the rate used to convert the US\$150 million to Kina and rounded up to K430 million for the Lae Tidal Basin.

Figure 8.2 Capital Expenditure with Tidal Basin Project and 4A Extension



The impact of these two projects is clearly shown in Figure 8.2. The current Capital Expenditure will account for about 47.7 percent of Capital Expenditure, Lae Tidal Basin project alone apart from other Capital Expenditure on Lae port will account for about 31.7 percent of Capital Expenditure and Port Moresby port berth 4A extension project will account for about 20.6 percent of total Capital Expenditure. The total Capital Expenditure for the next regulatory period will increase from K648.2 million to over K1.3 billion should these two projects be undertaken over the next regulatory period and Lae and Port Moresby ports will account for about 82 percent of the total Capital Expenditure of PNG Ports.

There are a number of capital investments which are justified on the basis of expected future demand. However, from a regulatory perspective key considerations must be given to the likelihood that these demands do not eventuate or at best occur at a date later than expected. The profile of expenditure on infrastructure assets is often lumpy in that the average cost declines as additional users enter the market. This decline in average cost, resulting in a very low marginal cost for the majority of time and an extremely high marginal cost some of time, means that assets which have relatively long lives suffer from the 'if you build it they will come' problem. This effectively means that it is efficient to overbuild the capacity of infrastructure without the business case fully supporting this investment.

Where there is considerable overcapacity in the infrastructure it may be likely that the cost of the asset is required to be spread out over the life of the asset. In this example it may be inefficient to fully recover the cost of the asset if there is not

sufficient demand for the amount of capacity made available by the service provider.

In the event that the expected demand does not eventuate the Regulator must balance the need to provide sufficient incentive to invest while not over investing at the expense of other more necessary investment. The Regulator is typically at a disadvantage to the business in that it does not necessarily know the basis of the demand assumptions made by the business. As such it may be necessary to establish a mechanism which supports the capital investment but does not allow the full costs to be recovered until the demand is actually cited. In this example it may be necessary for the prices to be under the ceiling established by the standalone costs.

The Commission's primary concern about the capital plan proposed is the lack of supporting documentation provided as to the underlying business case for each investment. This is not to say that it does not exist, only that the Commission has yet seen it.

The Commission will not accept any capital proposed over K25 million at ports which are not recovering or will not be able to recover the capital requirements. As such the Commission will not roll the investment proposed at Wewak into the RAB.

The Commission calls on PNG Ports to provide the strategic capital asset plan and supporting business cases for investments over K25 million. Further, the Commission calls on stakeholders to comment on its decision to exclude capital invested in Wewak.

8.2.5 Foreign Exchange Risks & Nominal Capital Expenditure

Foreign exchange risks

The Commission has not received any submission from PNG Ports regarding the foreign exchange settings appropriate to its forward capital expenditure plan. The Commission is interested to understand whether the foreign exchange is still an issue that PNG Ports is struggling to control. If not the Commission proposes to remove any foreign exchange hedging in the contract and allow PNG Ports to address these risks.

Nominal capital expenditure

The Capital expenditure plan proposed by PNG Ports has been presented in nominal terms. As such in considering the actual capital spent in any given year the Commission will assess it against the nominal numbers presented in this report.

8.3 WEIGHTED AVERAGE COST OF CAPITAL

Port infrastructures are capital intensive in nature. Debt and equity are the two major sources of financing capital investments. The WACC is the weighted average of the cost of debt and equity of a regulated business such as PNG Ports. The WACC of a regulated business usually has a significant impact on the total revenue requirement of the business and ultimately on service standards and the final charges of services provided. Relatively small changes to the WACC of a regulated business can have a significant impact on the revenue requirement of the business (which is the ROA).

Impact of WACC on Return on Assets

If the return on assets is too low due to a low WACC, the regulated business will be unable to recover the efficient costs of providing the services it usually provides thus reducing its incentive to reinvest further in capital infrastructures. When there is lack of reinvestment in infrastructures, service standards will deteriorate to the detriment of users. However, if the return on assets is too high, a regulated entity may have a strong incentive to over-capitalize to the detriment of users who will be required to pay unnecessarily high prices for services provided by the regulated business.

Therefore, balancing the impacts of these scenarios is very important so as to ensure that neither the business nor the customers are disadvantaged by a WACC that is detrimental to the business or the consumer.

Equation and Variables

$$WACC = R_e * E/V + R_d * D/V$$

Where:

- R_e is the required return to equity holders;
- R_d is the required return to debt holders;
- E is the value of equity;
- D is the value of debt; and
- V is the value of debt plus equity ($D + E$).

Return on Debt

The return on debt (R_d) is calculated by adding the risk-free market rate to a debt margin.

$$R_d = R_f + DM$$

Where:

- Rf is the risk-free market Rate
- DM is the debt margin

Level of Gearing

The cost of capital of a business is usually financed through debt and equity. The WACC is the weighted average of returns to debt and equity. The weights on debt and equity depend on the level of debt and equity used in financing a business. The proportion of debt to equity is often referred to as the 'level of gearing'.

Risk-Free Market Rate

The risk-free rate (Rf) reflects the return on an investment that is generally risk-free and it is used to derive both the return on debt and return on equity. The Rf is usually added to the MRP in order to calculate Re and also the Rf is added DM to the in order to derive the Rd. The Re and Rd are weighted according to each variable's share of financing resources and are used to derive the WACC.

Treasury fixed coupon bonds are normally considered to be risk-free investments therefore, the yield on a Treasury fixed coupon bond with 10 years of maturity is often taken to be the risk-free rate. However, in a situation where there is lack of appropriate traded Government fixed coupon bonds, a hypothetical Treasury fixed coupon bond with a maturity of 10 years may be adopted as the risk-free rate. The hypothetical bond is usually worked out by linearly interpolating the yields on two Treasury Fixed Coupon Bonds with maturities closest to either side of the 10 year bond using a moving average period. The moving average period usually applies in order to smooth out any short term variations in yields a few days preceding the day the WACC is calculated.

Debt Margin

The debt margin is the margin that a business has to pay to the lender in addition to the nominal risk-free rate in order to secure debt financing. The debt margin reflects the amount of risks posed by the business to defaulting on its debt obligations therefore, the debt margin very much depends on the perceived riskiness of the business. A low risk business will be able secure debt financing at a much cheaper rate than a high risk business. This is because a low risk business will pay a lower debt margin than a high risk business due to the fact that the chances of the business defaulting is very low as indicated by the business's credit rating.

The degree of risk of a business is usually determined by rating agencies and there are two approaches that are normally used to rate businesses. The rating agency may adopt a:

- Benchmark credit rating deemed appropriate for the regulated business; or

- Determine the credit rating of the business based on financial modeling that incorporates the outcomes of the regulatory review.

The credit rating is then used in conjunction with all relevant market data to determine the debt margin of the business. However, the calculation of the debt margin of the business has to be consistent with the method used in calculating the risk-free rate by way of using the same maturity period of Treasury Fixed Coupon Bonds and the same moving average period.

Return on Equity

The return on equity (Re) is calculated using the Capital Asset Pricing Model (CAPM) formula. The CAPM model states that the return on equity is the weighted average of the market risk and the risk-free rate of the business. The CAPM formula is as illustrated:

$$\begin{aligned} Re &= R_f + \beta_e * (MRP) \\ &= R_f + \beta_e * (R_m - R_f) \end{aligned}$$

Where:

- β_e is the equity beta
- R_m is the market rate of return; and
- MRP is the market risk premium ($R_m - R_f$)

Market Risk Premium

The market risk premium (MRP) is defined as the difference between the market rate of return (R_m) and the risk-free rate (R_f). It is the return that is earned in addition to R_f by the equity holder for investing in a well diversified portfolio. The R_f is usually lower than the R_m because investing in Government bonds are generally considered to be very low risk. This is because the chances of the Government defaulting is very minute compared to investing in a diversified portfolio. The difference between the R_m and the R_f is therefore the premium earned by the equity holder.

Equity Beta

The equity beta represents the degree of riskiness of a regulated business relative to the overall market. In order to estimate the equity beta for a regulated business, the business has to be listed on the stock market. This is because equity betas are usually estimated by analysing the share price of the business relative to the market as a whole.

However, in most cases regulated businesses are not listed on the stock market thus creating a situation where the task of estimating the equity beta is rather difficult and problematic. A way around this situation would be to either base the equity beta of the unlisted business on a comparable business or on the average equity beta of a range of comparable businesses. Should either of these measures are taken the level of gearing of the comparable business or group of comparable businesses have to be adjusted for differences in gearing levels.

This is important because the level of debt financing affects the riskiness of return to equity holders because as debt levels increase, debt service payments will also rise thus reducing the return to equity holders. The value of the equity beta is dependent on the level of gearing. If the level of gearing is high, the value of the equity beta will also be high thus implying a higher systematic risk and vice versa.

The only beta required to calculate the WACC is the equity beta however, in order to estimate the equity beta using financial data from comparable businesses listed on the stock market, the asset beta and the debt beta are required. The asset and equity betas are required in order to adjust the gearing levels of these comparable businesses in line with the gearing level of the regulated business. The process of adjusting the equity betas for differences in gearing levels is known as the de-levering and re-levering process. This process is undertaken by de-levering a comparable firm's equity beta or the average equity beta of a list of comparable firms in order to derive the asset beta of the firm. The asset beta is beta that excludes debt financing where if the listed firms were to be financed entirely by equity, the asset beta should equal the equity beta. The asset beta of the listed firms is then re-levered using a benchmark gearing level, to be determined by the Commission, in order to come with a comparable benchmark equity beta for the regulated business. The formula which is used to undertake the levering processes is the Monkhouse formula shown below:

$$\beta_e = \beta_a + (\beta_a - \beta_d) \times \left(1 - \frac{R_d}{(1 + R_d) \times t} \right) \times \frac{D}{E}$$

Where:

- β_a is the asset beta;
- β_d is the debt beta representing part of the systematic risk posed by the business's operations which are transferred from equity holders to lenders;
- R_d is the return required by debt holder;
- T is the tax rate;
- D is the value of debt; and
- E is the value of equity.

The Commission calculation

The Commission has been provided external assistance from PricewaterhouseCoopers (PwC) for an estimate of the cost of capital applicable to PNG Ports.

Summary of PwC report.

In determining an appropriate estimate of WACC for the ports services pricing review for the Commission, PwC outlined a range of values of the different

parameters that have been used to determine plausible range for an appropriate WACC.

Nominal international risk-free rate

This rate uses a 20-day averaging period of US Treasury bonds with a 10-year term to maturity, this is then deflated by a US inflation forecast from the US Federal Reserve and inflated using a range of estimates for PNG inflation using a number of different sources. Following this, a country risk premium is incorporated to reflect the inherent risks of investing in PNG. An international risk-free rate is determined due to the lack of appropriately traded government bonds in PNG.

Debt margin

The debt margin is based on a 20-day averaging period of corporate bonds with a BBB+ credit rating and a 10-year term to maturity. Australian corporate bond data is used due to the lack of observable corporate bond rates within PNG.

Beta

The beta approach relied on the estimation of an equity beta using observed market information regarding ports companies around the world from two different data sources – Bloomberg and Damodaran,

Market risk premium

The market risk premium was based on historical and recent information used by other regulators.

Gearing

The gearing ratio was based on observed market information on the gearing ratios of the ports industry from around the world using the two different data sources – Bloomberg and Damodaran.

Taxation

As the pre-tax approach has been applied, the effective tax rate is based on the statutory tax rate.

Within PwC's assessment of the WACC a number of ranges were considered in the inputs. These inputs and the subsequent range of calculations are set out in Table 8.3.

Table 8.3 PwC's WACC input ranges and final range

INPUTS		
<u>Inputs for Risk-Free Rate</u>	Low	High
US risk free rate	3.7%	3.7%
CRP	2.5%	5.3%
PNG Inflation	3.8%	6.0%
US Inflation	1.8%	1.8%
Debt Margin	3.1%	5.2%
MRP	6.5%	6.5%

Effective Tax Rate	30.0%	30.0%
Gearing	40.0%	25.0%
Debt Beta	0.07	0.07
Asset Beta	0.97	0.81
Equity Beta	1.28	1.26
CALCULATION		
Calculating International Risk-Free Rate	Low	High
1 + Risk-Free Rate	1.037	1.037
1 + US Inflation	1.02	1.02
1 + PNG Inflation	1.04	1.06
1 + CRP	1.025	1.053
International Risk-Free	8.46%	13.79%
Post-Tax Nominal Return on Equity	16.8%	22.0%
Post-Tax Real Return on Equity	12.5%	15.1%
Pre-Tax Nominal Cost of Debt	11.6%	19.0%
Pre-Tax Real Cost of Debt	7.5%	12.2%
Nominal Vanilla WACC	14.7%	21.2%
Real Vanilla WACC	10.5%	14.4%
Post-Tax Nominal WACC	13.3%	19.8%
Post-Tax Real WACC	9.2%	13.0%
Pre-Tax Nominal WACC	19.0%	28.3%
Pre-Tax Real WACC	14.7%	21.0%

The Commission's comments on the PwC Report

The Commission notes that the work completed by PwC provided a range of estimates for the various WACC parameters. The Commission has considered each of the settings and landed on the point estimates outlined in table 8.4.

Table 8.4 The Commission's WACC estimate

Inputs for Risk-Free Rate	
US risk free rate	3.7%
CRP	3.0%
PNG Inflation	10.0%
US Inflation	1.8%
Debt Margin	4.0%
MRP	6.0%
Effective Tax Rate for Equity	30.0%
Effective Tax Rate for Debt	30.0%
Gearing	40.0%
Gamma	0.0%
Equity Beta	1.26
Calculating International Risk-Free Rate	
1 + Risk-Free Rate	1.037
1 + US Inflation	1.02
1 + PNG Inflation	1.10
1 + CRP	1.03
International Risk-Free nominal	15.50%

Calculating the WACC	
Post-Tax Nominal Return on Equity	23.1%
Post-Tax Real Return on Equity	11.9%
Pre-Tax Nominal Cost of Debt	19.5%
Pre-Tax Real Cost of Debt	8.6%
Nominal Vanilla WACC	21.6%
Real Vanilla WACC	10.6%
Post-Tax Nominal WACC	19.3%
Post-Tax Real WACC	8.5%
Pre-Tax Nominal WACC	27.6%
Pre-Tax Real WACC	16.0%

It is recommended that PNG Ports seeks its own advice regarding the calculation of the WACC as it is a key determinate of the cash flows that PNG Ports will be able to generate from its assets. As the RAB is rolled forward on a nominal basis, the Pre tax real WACC is used to determine the nominal return on the asset base.

The Commission calls for submissions regarding the regulatory returns that should be available to PNG Ports through the Weighted Average Cost of Capital.

8.4 RETURN OF CAPITAL (Economic Depreciation)

As part of the building block approach to estimating the total cost to be recovered in the total fees charged to customers, allowance must be made for PNG Ports to recover their investment in the total asset over its operating life. This 'cost' is usually referred to as 'depreciation' and represents the usage of the investment over its economic life.

The amount of capital that will be recovered through depreciation will be directly linked to the Regulatory Asset Base (RAB). The Commission has adopted a straight line approach. Under this approach, an equal proportion of the asset is depreciated over each year of its estimated effective life.

The Commission has used the average asset life provided by PNG Ports in calculating the depreciation.

8.5 Conclusion on Building Blocks

The various building blocks have been used to consider the underlying costs and the necessary revenue required for PNG Ports to make a sustainable profit.

The Commission calls for submissions on each of the underlying settings used in the building block cost of assessment.

The building blocks for each port

Having applied the building block methodology the Commission has determined the revenue requirement for PNG Port as follows.

Table 8.5 The building blocks for each port

K'000	2008	2009	2010	2011	2012	2013	2014	
Opex	67,387	75,474	84,531	94,674	106,035	118,760	133,011	
Depreciation	8,869	10,807	13,827	20,544	30,944	42,276	48,245	
RAB	208,248	254,962	329,292	477,106	751,691	1,025,087	1,146,081	
Return on assets	33,320	40,794	52,687	76,337	120,271	164,014	183,373	
Expected revenue	109,576	127,075	151,044	191,555	257,250	325,049	364,629	
Actual revenue	94,095	108,209	146,491	199,004	251,408	318,965	406,436	
Shortfall	-15,482	-18,866	-4,553	7,449	-5,843	-6,084	41,807	
Actual return	17,838	67,415	48,133	83,786	114,428	157,930	225,180	
NPV of Revenue	98,212	98,372	120,075	133,703	138,452	143,980	150,381	
Total NPV of Revenue	Not included	Not included						686,591
NPV of Costs	114,371	115,522	123,807	128,699	141,670	146,727	134,912	
Total NPV of Revenue	Not included	Not included						675,814

The corresponding X factors are dependent completely on the assumed demand assumptions across each port. The Commission is aware that forward demand forecasting is a problematic issue, particular at this stage of PNG development. The status quo demand estimates are generally now based on the PNG LNG project proceeding and as such all status quo estimates are likely to be heavily skewed towards very aggressive demand scenarios. The fiscal stimulus from the LNG project is likely to have significant multiplier impacts which, irrespective of the amount of project cargo carried across PNG Ports wharves, is likely to lead to significant increase in the demand for port services from auxiliary goods.

The Commission has received a forward forecast from PNG Ports regarding its expected demand growth over the next five years. This forecast is based on the following projects and demand drivers:

- Upcoming PNG LNG Project, places higher demand for factors of productions including construction materials, specialized machinery, equipment & tools which are sea-bound
- Given prospective oil discoveries and potential LNG project by InterOil (PNG) Ltd , refinery activities at Napa Napa is expected to increase
- Building construction boom due to ongoing short supply of houses / accommodation / office space in NCD, and in response to LNG projects. This drives demand for importing necessary construction materials

- Tolukuma Gold Mine (TGM) located about 100 kilometres north of Port Moresby in the Fane District of Central Province has an annual production of approximately around 80 000 ounces.
- Cloudy Bay timber project by PNG Sustainable Development Programme with estimated 2.4 million cubic meters
- Population pressure in the city is mounted continuously thus, food demand is expected to rise. Imports of consumable goods as well fresh vegetable / fruits from the Highlands will be common.
- The Cassava Bio-fuel project at Rigo District of Central Province undertaken by Changhae International, a leading consumer and producer of Cassava ethanol in South Korea is set to eventuate in due course. It is also anticipated that a factory will be established there.
- Lae port, centrally located and is on most Pacific shipping routes, is serving a town dubbed as PNG's industrial and commercial trade centre, as well as the highlands region, which is the most populous region in the country and richly endowed with natural resources including gold, oil, and gas; eco-conditions for growing coffee, cocoa, and tea.
- Ramu Agri-Industries' expansion plans will have an impact on many business activities. RAI has diversified from being a sugar company to a food business that includes oil palm, peanuts and beef, harnessing the plains of Markham in Morobe Province.
- The mining project operated by Harmony Gold Mining Ltd under the Morobe Mining Joint Ventures including the highly prospective Wafi-Golpu copper-gold deposit and extensive exploration tenement at Wau/Bulolo in Morobe Province. The Hidden Valley project entailing construction of a significant gold and silver mine with projected production of 4.2 million tonnes of ore a year, is scheduled to begin production in 2010.
- the Ramu nickel project is expected to come into production and therefore, there would expect growth of an average of 13% over the next five years.
- the on-going oil & gas exploration and production in the Southern Highlands is set to be on another level in light of LNG project
- Kainantu Gold mine project is expected to go full swing with operations following successful acquisition by Barrick Gold Ltd
- Porgera mine is increasing its production
- Tea & coffee productions and vegetable supplies up in the Highlands
- Tuna canneries and processing projects, e.g. Tuna Longline Fishing project, Isabellia Fish Cannery, etc.
- Copra, cocoa, rubber vanilla productions rising
- Ramu NiCo Management Ltd will commence production in early 2010. The construction at Ramu nickel-cobalt project by China Metallurgical Group Corporation (MCC) is still underway with commissioning of the mine site is

expected at the end of 2009, and commissioning of the plant targeted for 2010. The project will have annual output of about 31 000 tonnes of nickel and 3 300 tonnes of cobalt contained in a high grade intermediate product over 20-year plus mine life.

- The Southwest Trading Limited is a local fishing company based in the Bogia District, Madang Province of Papua New Guinea and has plans to develop PNG's rich tuna and deep-sea fisheries resources, which is considered to be world's biggest in the Western Pacific valued at about US\$1.5 million.
- Middle Ramu & Josephstaal proposed timber projects with output of 4.8 million & 2 million cubic meters
- Yanderra / Marengo mine in the province is set to kick off in due course
- Sinivit Gold mine located in ENBP has commercial production commenced in October 2007 and about 300 ounces of Gold were produced by end of year and 242 ounces of silver were produced at the end of June 2008. Annual production is planned to be 30-35 000 ounces beginning in second quarter of 2009 at a cost of US\$ 170 -200 per ounces of gold.
- Nautilus subsea gold/silver project 'Solwara Project 1' - Exploration progressing on the submarine massive sulphide deposits. PNG is the first country in the world to grant deep water offshore exploration licence to evaluate these deposits. Nautilus Minerals is to commence mining of Nautilus's Solwara 1 project in late 2009 with an average mining rate of 1.8 million tonnes of concentrate gold / copper per annum.
- The province, Kimbe, is still renowned for copra, cocoa and rubber production wherein production of these crops is expected to increase with interest from potential investors
- New Britain Palm Oil Ltd ('NBPOL') has extensive hectares of oil palm plantation and is set to increase its production with rise in its prices following growing demand particularly from China and India.
- Cocoa & Copra productions by small - medium scale entrepreneurs in the WNBP is improving
- Forestry and agricultural production in Kimbe is growing at an increase rate thus, it is expected that volume is expected to boost thus, the need to improve facilities as well.
- NBPOL also estimates its output to reach its all time high given the demand.

PNG Ports has stated that the impact of these various projects will be an increase in Port Moresby, Madang, Kimbe of approximately 8 per cent, Lae of 9 per cent, and Wewak of 6 per cent. PNG Ports as assumed that the remaining ports will grow at approximately 5 per cent per annum.

Confidential discussions with at least one shipper have indicated that they are currently in the process of upgrading their shipping infrastructure by 20 per cent per annum. The Commission considers that the difference between the shippers estimates and PNG Ports is material. Further, the impact of the LNG project is likely to be significant. While the other projects listed above are also likely to have an impact, the sheer size of the LNG project will generate a significant demand over and above what most parties are expecting.

The Commission is keen to provide significant incentives for PNG Ports to increase the usage of the ports, as such it would prefer to underestimate rather than over estimate the likely demand for ports services. However, the interaction of the ambitious capital expenditure plan and the likely increases in the prices that this is likely to generate means that this must be done within reason. If demand forecasts are underestimated the Commission is concerned that the resulting pricing increases associated with the capital expenditure program will be too high and result in increased prices which would ultimately be passed on to the end consumers of various products. An over estimation of demand is likely to lead to an under recovery of revenues by PNG Ports, something the Commission is extremely reluctant to sanction.

In terms of the overall demand from the LNG project the likely demand could be anywhere between a 500 per cent to 800 per cent increase in economic activity throughout the Port Moresby economy. The Commission's estimate is based on the following calculations:

- The current economy is approximately \$300 million (USD)
- The LNG project is likely to have an annual spending of \$2.8 billion (USD) per annum
- Of that spend only 20 per cent is likely to trickle down to the PNG economy
- Of that approximately 70 per cent is likely to trickle down to the Port Moresby economy
- This leads to an increase in the first year of the project of \$392 million (USD) per annum
- This increases the GDP of the Port Moresby economy to \$692 million (USD), an overall increase of 130 per cent
- Subsequent increases in the project spend and the amount likely to follow through to the Port Moresby, and indeed the Lae, economies is likely to lead to at least a 10 per cent growth rate over the economy on this over the following four years.

The compounding growth rate would therefore be 1.46 or a resulting growth in the GDP in Port Moresby to \$1 billion (USD) in 2014, or an annualised growth rate of 28 per cent. The Commission assumes that this GDP growth is likely to be replicated in the growth over the PNG Ports port facilities in Port Moresby.

Similar calculations¹⁰ have been conducted for Lae with the annualised growth rate expected to be 13 per cent.

The Commission has accepted the growth rates provided by PNG Ports for all remaining ports. This translates to an 8 per cent increase the Kimbe, Madang and Rabaul ports and 5 per cent in all remaining ports.

The Commission seeks comments and views from stakeholders on the demand characteristics of the PNG Ports market. In particular on the following issues:

(i) Demand for port services in PNG over the next 5 years

(ii) The potential impact that the LNG Gas Project will have on the demand for port services.

Resultant X factors

Assuming the Commission demand assumptions are correct the resulting X factor across all ports in 2010 and 2011 would be 10 per cent plus CPI. The price control formula would then be kept constant in real terms, that is CPI increases only.

The Commission is aware that the underlying demand assumptions and the capital expenditure program are the main drivers of these X factors. As such the Commission has considered the following demand and capital expenditure combination in assessing the likely X factors in the final decision.

Table 8.6 Potential X factors for the final regulatory contract

Capex	Demand – PoM, Lae, Others		
	8%,8%, 5%	14%, 8%, 5%	28%, 13%, 5%
YEAR	2010,2011,2012,2013,2014	2010,2011,2012,2013,2014	2010,2011,2012,2013,2014
50%	15%, 10%, 0%,0%,0%,	10%,10%,0%,0%,0%,	0%,0%,0%,0%,0%,
60%	20%, 10%,0%,0%,0%,	13%,13%,0%,0%,0%,	2%,0%,0%,0%,0%
70%	20%, 15%,0%,0%,0%,	15%,15%,0%,0%,0%,	3%,3%,0%,0%,0%
80%	20%, 12%, 10%,0%,0%,	17%,17%,0%,0%,0%,	5%,5%,0%,0%,0%
90%	20%, 12%, 12%, 6%,0%,	19%,19%,0%,0%,0%,	10%,5%,0%,0%,0%
100%	20%,12%,12%,12%,0%,	20%,12%, 12%,0%,0%,	10%, 10%,0%,0%,0%

The Commission’s expectation is that PNG Port will be spend 100 per cent of its proposed capital plan and that demand will be high. As such the Commission has set the X factor equal to 10 per cent in years 2010 and 2011. At the same time the Commission is aware that X factor would be higher or lower if the demand and Capital expenditure assumptions. As such the Commission has modelled the various demand and capital assumptions. In table 8.6 the second row of the table sets out the various demand assumptions in Port Moresby, Lae and the remaining ports. Three demand scenarios have been assumed:

¹⁰ Rather than 20 per cent, the Lae tickle down has been assumed to be 10 per cent of the project spend.

- Port Moresby and Lae grow at 8 per cent per annum, with remaining ports growing at 5 per cent
- Port Moresby grows at 14 per cent (half that assumed by the Commission), Lae grows at 8 per cent (as assumed by PNG Ports) and remaining ports grow at 5 per cent
- Port Moresby grows at 28 per cent, Lae at 13 per cent, 8 per cent at Kimbe, Rabual and Madang, and remaining ports at 5 per cent (the Commission assumption)

Meanwhile, capital was assumed to be spent in proportion to proposed spend at 10 per cent increments from 50 per cent. The remainder of the table was populated with X factors which resulted in the net present value of the costs equating to the net present value of the revenues generated.

As can be seen the various X factors are heavily reliant on the underlying demand and the degree to which PNG Ports is able to undertake its capital expenditure plan. Under the lowest demand scenario and 100 per cent capital expenditure plan the X factors 20 per cent in 2010 and 12 per cent in years 2011-2013. At the same time under the aggressive demand assumption and conservative capital expenditure program, no X factor was required.

The Commission is attempting to balance the needs of PNG Ports with those of users of the port infrastructure. As such it will need to monitor PNG Ports capital expenditure and demands as part of the ongoing regulation over this next regulatory period.

Given the intersection between the underlying demand expectations and the capital expenditure program the Commission expects to conduct negotiations with PNG Ports to select the appropriate mix of the two in the final decision and subsequent contract.

The Commission calls on stakeholders to provide submission regarding the likely demand and capital expenditure combination over the regulatory period.

9.0 THE NEW REGULATORY CONTRACT

Based on the discussions outlined in this Draft Report, the Commission recommends the following changes to the regulatory contract:

9.1 NAME OF CONTRACT, TERM, AND DATES

9.1.1 Name of Contract

The name of the Contract will be changed from “PNG Harbours Regulatory Contract” to “PNG Ports Regulatory Contract”.

9.1.2 Term

The Term of the Contract will be for a period of 5 years from 1st January 2010 to 31st December 2014.

9.1.3 Dates

Dates in relevant clauses of this contract have been changed to reflect the term of the contract and the time at which submissions and certain information should be made available to the Commission.

The Commission is moving away from measuring CPI from “September to September” and moving to a “June to June” format. This is to accommodate for a move for annual tariff submissions for regulatory year t to be made in August of regulatory year t-1. This will ensure that when tariffs are approved in September of regulatory year t-1 for regulatory year t, PNG Ports will have three (3) months to inform the industry of the changes in tariffs.

9.2 BUSINESS CASE AND STRATEGIC INVESTMENT PLAN

Clause 4 of the Regulatory Contract will be changed as follows.

Clause 4.1 : The Commission formally request to see the business case for any capital expenditure over K25 million per project where the capital expenditure is not for augmentation of existing port facilities at any port which has not, and is projected to make an under recovery of operating costs from its revenue in any year over a four year time horizon.

Where a port is recovering at least its operating costs but less than the risk free rate of return this threshold is increased to K35 million per project.

Where a port is recovering revenues such that it recovers the costs associated with its operating costs, depreciation, and at least the risk free rate PNG Ports, this threshold is increased to K50 million per project.

In addition to individual business cases, PNG Ports is required to provide the Commission with its strategic plan for all port infrastructure over a rolling 10 year period as part of its annual price review submission. This rolling 10 year strategic plan should be made available on the PNG Ports website such that all parties are able to provide comment on the proposed forward capital expenditure plans.

Failure to provide these documents to an appropriate standard will result in the X factors and CPI established in Schedule 2, Part 2 for the applicable regulatory year of 0 per cent across the profitable ports. All relevant information must be included in the annual price submission to the Commission as part of the supporting documentation referred to in Schedule 2.

Clause 4.3 will be changed as follows;

4.3 Discriminatory Competition

(a) Subject to the provisions of 4.3 (b), PNG Ports and the Regulator must consult in the event that any third party commences the provision of Essential Port Services where the third party receives any financial assistance or guarantee from the Independent State of Papua New Guinea or an agency thereof which is on terms more favourable than those which would be available to PNG Ports in equivalent circumstances as a consequence of the provision on concessional finance, guarantee or political risk insurance terms, concessional tax treatment or exemption from any tax or regulatory requirement (Discriminatory Competition). In this event, PNG Ports may make submissions to the Regulator about the financial effect of the Discriminatory Competition upon revenue and capital expenditure requirements of PNG Ports.

4.3 (b) Clause 4.3 (a) cannot be invoked while PNG Ports is under 100 per cent PNG government ownership.

New clause 4.3 (c), (d), (e) and (f) have been added to ensure that reporting requirements are accounted for.

9.3 TARIFF FORMULAE

The Commission formally requires that any price changes for the subsequent regulatory year must be submitted, along with supporting documentation, to the Commission for approval by no later than 31 August in any year. The Commission will be required to provide its approved tariffs by 31 September in

the same year. Failure to provide prices before the 31 August deadline will result in prices remaining constant over the subsequent year.

Schedule 2 of the Regulatory Contract will be changed in the following manner.

Part 2. Essential Services Price Control

X_t is the Price Control Factor for Regulatory Year t and equals:

- (a) where Regulatory Year t is 2010 : 0.10;
- (b) where Regulatory Year t is 2011 : 0.10; and
- (b) in any other case: 0; and

CEF_t is the Capital Efficiency Factor for Regulatory Year t and equals:

- (a) In each Regulatory Year t the X factor should be considered against the various settings outlined in chapter 8 of the draft report.
- (b) In each Regulatory Year t the value of CEF_t as calculated pursuant to Part 5 of this Schedule 2.

Part 5. Capital Efficiency Factor (CEF_t)

PNG Ports will be required to provide an annual capital expenditure report comparing its proposed capital expenditure against the actual capital expenditure for the previous year. The Commission will then allow the following X factors depending on the capital expenditure over that period:

CER_t	X 2010	X 2011	X 2012	X 2013	X 2014
Less than 0.50	0%	0%	0%	0%	0%
At least 0.50 but less than 0.60	2%	0%	0%	0%	0%
At least 0.60 but less than 0.70	3%,	3%	0%	0%	0%
At least 0.70 but less than 0.80	5%	5%	0%	0%	0%
At least 0.80 but less than 0.90	10%	5%	0%	0%	0%
At least 0.90	10%	10%	0%	0%	0%

The Commission notes that this is still very much subject to discussion regarding the capital expenditure program, the underlying demand assumptions, and the allocation and quantum of overheads. See table 8.6 in the draft report.

9.4 SERVICE STANDARDS

An addition will be made to the service standards section in Schedule 4 to ensure that PNG Ports maintain refer points at some minimum standard.

9.5 REGULATORY PRINCIPLES

The regulatory principles in Schedule 5 will read:

REGULATORY PRINCIPLES

1. There must be an examination of:
 - (a) the appropriate rate of return to apply in setting the new price path;
and
 - (b) the level of future capital expenditure and operating expenditure to maintain service levels, including any efficiency factor to be applied to operating expenditure.
 - (c) The Capital stock will be treated as having a starting value as at 1 January 2009 of K285,500.

- 5 The CSO funding
 - (a) Operating CSO
PNG Ports will be permitted to cross subsidise ports throughout PNG for the five years of this regulatory contract.

For any port not recovering its operating costs through revenues, PNG Ports must provide the Commission with the following:
 - (i) Evidence that the port in question has been unable to recover the costs associated with its operation over at least two out of the past four years
 - (ii) Evidence of the all steps taken over this period to reduce operating costs to their absolute minimum
 - (iii) Evidence of the steps taken to increase the demands associated with each port
 - (iv) Evidence that PNG Ports has undertaken consultation with the relevant shipping stakeholders to consider the size of the price increases that could be borne by the industry without resulting in a reduction in services.

Once this has been provided, the Commission and PNG Ports will agree on the necessary price path for these ports. Furthermore, as all ports move toward full cost recovery the Commission will monitor the prices at remaining profitable ports and would expect as the need for the cross subsidy is reduced so to would be the prices charged at these profitable ports.

PNG Ports will provide an annual report on the performance of any port where prices have been increased outside the settings contained in the regulatory contract. This report will include the following:

- (i) An assessment of the impact on demand from increased prices
- (ii) An assessment of the profitability of the port in question
- (iii) An assessment of the sustainability of further price increases
- (iv) An assessment of the operating cost efficiency across the port
- (v) An assessment of the increased service level provided at the port given the increased revenue generated.

(b) Capital CSO

The capital CSO will be funded out of funds raised by PNG Ports from alternative sources, including but not limited to:

- (i) Project investments
- (ii) Provincial Governments
- (iii) Coastal and international Shippers
- (iv) Motukea

Where capital is raised through a joint venture the Commission will register any agreement regarding the use of the infrastructure resulting from this investment.

In terms of revenue collected through the deed of agreement between Motukea and PNG Ports, the following accounting treatment will be required:

- (i) Any monies received by PNG Ports from Motukea via the arrangements established as part of the deed of agreement should be considered as an asset of PNG Ports
- (ii) Such monies should be invested in a risk free bank account within PNG
- (iii) The asset should be reported by PNG Ports on its balance sheet, as capital CSO held at bank
- (iv) An offsetting liability should also be carried on PNG Ports balance sheet for future capital CSO payments.

Small scale capital investments, requiring a capital CSO at outlying ports will be funded directly from PNG Ports' balance sheet at PNG Ports discretion. Any large scale capital investments will require the Commission's approval as to the release of funds of the particular investment. The Commission will be looking at the underlying business case for the investment. Unless a satisfactory investment case can be made the Commission will not allow the relevant capital to be spent unless it can be demonstrated that without the investment the underlying infrastructure would be forced to close immediately.

Where the Commission can establish that the capital investment would result in an economic return, albeit lower than the return established by the Weighted Average Cost of Capital (WACC), the capital will be rolled into the capital base. However, only the equivalent amount of capital sufficient to generate a return equal to the WACC will be included.

As part its annual reporting requirements PNG Ports will provide:

- (i) An annual statement as to the money collected from Motukea
- (ii) The balance sheet reporting as to the movement with the asset and liabilities associated with the Motukea revenue
- (iii) A report on the various small scale projects funded from the Motukea revenue

- (iv) A report on the large scale projects proposed to be funded from the Motukea revenue, including investment cases for each project.

All relevant information must be included in the annual price submission to the Commission as part of the supporting documentation referred to in Schedule 2.

9.6 YEARLY CAPITAL EXPENDITURE

Schedule 6 will reflect the discussions held in Section 8 of this draft report. In particular, the table in section 8.

Year	2010	2011	2012	2013	2014
Yearly Forecast Capital Expenditure	See final table in section 8				

9.7 FOREXCHANGE RISKS & NOMINAL CAPITAL EXPENDITURE

As discussed in 8.2.5 the Commission is interested to hear from PNG Ports on foreign exchange risks.

With regard to the Capital expenditure plan proposed by PNG Ports, this information was presented to the Commission in nominal terms. As such, in considering the actual capital spent in any given year the Commission will assess it against the nominal numbers presented in this report.

9.8 PROJECTS

Schedule 8 will be deleted - in its place of the rolling strategic asset plans of PNG Ports.

9.9 PORT BY PORT CAPITAL EXPENDITURE

Schedule 9 of the Contract will be updated to reflect the capital expenditure PNG Ports intends to undertake at each port.

ANNEXURE 1

SECTION 35 AND SECTION 36 OF THE ICCA ACT 2002

35. REGULATORY CONTRACTS ISSUED BY THE COMMISSION.

(1) Subject to Subsection (2) and Section 36, the Commission may issue a regulatory contract in accordance with this section applying to a regulated entity in relation to the supply of regulated goods and regulated services and related matters as specified in the regulatory contract.

(2) The Commission shall not issue a regulatory contract under Subsection (1) that applies to a regulated entity where the term of that regulatory contract coincides in whole or in part with the term of a regulatory contract issued under Section 34(1) that applies to that regulated entity.

(3) A regulatory contract shall –

- (a) have a term not exceeding 10 years; and
- (b) regulate prices for the supply of regulated goods and regulated services by the regulated entity over the term of the regulatory contract; and
- (c) specify service standards the relevant regulated entity shall meet, together with payments which the relevant regulated entity shall make to customers and other persons (whether by way of rebate or otherwise), or price reductions which may be imposed, if the relevant regulated entity fails to meet those service standards; and
- (d) specify a process for the issue of a new regulatory contract to replace that regulatory contract on the expiry of its term (including the date by which the relevant regulated entity shall provide a draft of the new regulatory contract to the Commission and the date by which the Commission shall issue the new regulatory contract); and
- (e) specify pricing policies and principles that are to be adopted in any regulatory contract that is issued in replacement of that regulatory contract on the expiry of its term; and
- (f) deal with such other matters as this Act or an Act that declares an industry to be a regulated industry, or a regulation made under such an Act, requires to be dealt with in a regulatory contract.

(4) A regulatory contract issued under Subsection (1) may regulate prices in any manner the Commission considers appropriate, including –

- (a) fixing a price or the rate of increase or decrease in a price; and
- (b) fixing a maximum price or maximum rate of increase or minimum rate of decrease in a maximum price; and

- (c) fixing an average price for regulated goods or regulated services or an average rate of increase or decrease in an average price; and
- (d) specifying pricing policies or principles; and
- (e) specifying an amount determined by reference to a general price index, the cost of production, rate of return on assets employed or any other specified factor; and

- (f) specifying an amount determined by reference to quantity, location, period or other specified factor relevant to the supply of regulated goods or regulated services; and
- (g) fixing a maximum revenue, or maximum rate of increase or minimum rate of decrease in maximum revenue, in relation to regulated goods or regulated services.

(5) In addition to the matters referred to in Subsection (3), a regulatory contract issued under Subsection (1) may also –

- (a) specify conditions relating to prices; and
- (b) provide that a calculation is to be performed, or a matter is to be determined, by the Commission in a matter specified by the regulatory contract; and
- (c) require the relevant regulated entity to provide information to the Commission, customers or other persons; and
- (d) specify restrictions or limitations on how the Commission or any other statutory authority may exercise powers conferred on it by this or any other Act in relation to the regulated entity concerned or other suppliers of regulated goods or services supplied or capable of being supplied by the regulated entity concerned; and
- (e) deal with such other matters as this Act or an Act that declares an industry to be a regulated industry, or a regulation made under such an Act, specifies or contemplates may be dealt with in a regulatory contract.

(6) In issuing a regulatory contract under Subsection (1), the Commission shall, in addition to having regard to its objectives specified in Section 5, have regard to –

- (a) the legitimate business interests of the regulated entity to which the regulatory contract applies (the “relevant regulated entity”); and
- (b) the legitimate interests of suppliers to, and customers of, the relevant regulated entity; and
- (c) the particular circumstances of the industries in which the relevant regulated entity operates for the purpose of making, producing and supplying the regulated goods and regulated services to which the regulatory contract relates; and
- (d) the nature and uses of the regulated goods and regulated services to which the regulatory contract relates; and
- (e) the costs of making, producing and supplying the regulated goods and regulated services to which the regulatory contract relates; and
- (f) the costs of complying with applicable laws and regulatory requirements; and

- (g) the return on assets required to sustain past and future investment in the industries in which the relevant regulated entity operates for the purpose of making, producing and supplying the regulated goods and regulated services to which the regulatory contract relates; and
- (h) any relevant international benchmarks for prices, costs and return on assets in comparable industries, taking into account the particular circumstances of Papua New Guinea; and
- (i) the financial implications of the regulatory contract for the relevant regulated entity and for the industries in which the relevant regulated entity operates for the purpose of making, producing and supplying the regulated goods and regulated services to which the regulatory contract relates; and
- (j) any factors specified by another Act or by regulation under this Act or any other Act; and
- (k) any other factors that the Commission considers relevant.

36. PROCESS FOR ISSUE OF REGULATORY CONTRACTS BY COMMISSION.

(1) Where the Commission proposes that a regulatory contract should apply to a regulated entity, the Commission shall, not more than two years and not less than nine months before issuing a regulatory contract under Section 35(1) that applies to that regulated entity, invite the regulated entity to submit to the Commission by a date that is at least two months after the date the invitation was issued –

- (a) a draft regulatory contract that applies to that regulated entity and that complies with the requirements of Section 35(3); and
- (b) such written submissions as to the form and content of that draft regulatory contract as the regulated entity considers appropriate.

(2) After considering any material submitted by a regulated entity on or prior to the date specified in the invitation issued under Subsection (1), the Commission shall –

- (a) send to the Minister, the regulated entity and any other person the Commission considers appropriate; and
- (b) make available for inspection and purchase by members of the public, a copy of –
- (c) the draft regulatory contract and written submissions (if any) submitted to the Commission by the regulated entity under Subsection (1) by the date specified in the invitation issued under Subsection (1); and
- (d) an issues paper prepared by the Commission which sets out the Commission's preliminary views in relation to, and identifies any issues which the Commission considers relevant in connection with, the form and content of any regulatory contract that may be issued under Section 35(1) for the purposes of applying to the

regulated entity and that also invites submissions on the matters raised in the issues paper by a date that is at least two months after the issues paper was issued.

(3) At least one month prior to the date it issues any regulatory contract under Section 35(1) and after having considered any submissions received by the Commission on or prior to the date specified in the issues paper, the Commission shall send to the Minister, the regulated entity and any other person who has made submissions as described in this section –

- (a) a copy of the regulatory contract that it proposes to issue under Section 35(1) for the purposes of applying to the regulated entity; and
- (b) a summary of the information on which the regulatory contract is based; and
- (c) a statement of the reasons for making the regulatory contract in that form.

(4) The procedure and time limits set out in this section may be varied, in relation to their application to the issue of a regulatory contract, by the terms of any regulatory contract by which the relevant regulated entity is bound.

(5) Unless the declaration of the relevant entity as a regulated entity has been revoked, the Commission shall ensure that prior to the term of a regulatory contract applying to a regulated entity expiring, the Commission issues under Section 35(1) a replacement regulatory contract that will take effect upon the expiry of the term of the previous regulatory contract.

(6) If the Commission fails to issue a replacement regulatory contract in accordance with Subsection (5), the draft regulatory contract (if any) submitted by the regulated entity under Subsection (1) shall be deemed to be a regulatory contract issued by the Commission under Section 35(1) and shall apply until such time as the Commission issues a regulatory contract under Section 35(1).