



# Report and Recommendation of the President to the Board of Directors

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Project Number: 40037  
November 2007

Proposed Loans, Administration of a Loan from the  
OPEC Fund for International Development, and  
Administration of a Grant from the Cooperation Fund  
for Fighting HIV/AIDS in Asia and the Pacific

Papua New Guinea: Lae Port Development Project

## CURRENCY EQUIVALENTS

(as of 31 October 2007)

Currency Unit	–	kina (K)
K1.00	=	\$0.357
\$1.00	=	K2.797

## ABBREVIATIONS

ADB	–	Asian Development Bank
ADF	–	Asian Development Fund
AusAID	–	Australian Agency for International Development
CSP	–	country strategy and program
EA	–	executing agency
EIRR	–	economic internal rate of return
EMP	–	environmental management plan
FIRR	–	financial internal rate of return
GDP	–	gross domestic product
HIV/AIDS	–	human immunodeficiency virus/acquired immune deficiency syndrome
ICCC	–	Independent Consumer and Competition Commission
IPBC	–	Independent Public Business Corporation
JFPR	–	Japan Fund for Poverty Reduction
LDA	–	Lae district administration
LIBOR	–	London interbank offered rate
MPA	–	Morobe Provincial Administration
MPG	–	Morobe Provincial Government
MTDS	–	Medium Term Development Strategy
NGO	–	nongovernment organization
NPV	–	net present value
NTDP	–	National Transport Development Plan
OCR	–	ordinary capital resources
OFID	–	OPEC Fund for International Development
PMU	–	project management unit
PNG	–	Papua New Guinea
PNGHL	–	PNG Harbours Limited
PPCL	–	PNG Ports Corporation Limited
PPTA	–	project preparatory technical assistance
PSC	–	project steering committee
ROE	–	return on equity
SOE	–	state-owned enterprise
TA	–	technical assistance
TEU	–	twenty-foot equivalent units
WACC	–	weighted average cost of capital

## NOTES

- (i) The fiscal year (FY) of the Government ends on 31 December. "FY" before a calendar year denotes the year in which the fiscal year ends, e.g., FY2007 ends on 31 December 2007.
- (ii) In this report, "\$" refers to US dollars.

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## LOAN AND PROJECT SUMMARY

<b>Borrower</b>	Papua New Guinea
<b>Classification</b>	Targeting classification: General intervention Sector: Transport and communications Subsector: Ports, waterways, and shipping Themes: Sustainable economic growth, gender and development Subthemes: Fostering physical infrastructure development, gender equity in empowerment and rights
<b>Environment Assessment</b>	Category A. A summary environment impact assessment was circulated to the Board of Directors of the Asian Development Bank (ADB) on 20 August 2007.
<b>Project Description</b>	The Project will expand the cargo handling capacity of Lae port, improve the livelihood of those directly or indirectly affected, and reduce the incidence of HIV/AIDS in Lae. It will finance (i) the construction of a tidal basin (700 x 400 meters), a multipurpose berth, and terminal works including all buildings, storage areas, roads, drainage, water, electricity, and sewerage services, with built-in flexibility to increase the capacity further in a cost-effective manner; (ii) resettlement and livelihood improvement; (iii) consulting services in project management, construction supervision, financial management, resettlement, and socioeconomic monitoring; and (iv) gender-responsive programs for HIV/AIDS awareness and prevention.
<b>Rationale</b>	<p>Ports have always been important in the logistic chain for international trade. They are particularly critical for an island economy like Papua New Guinea (PNG), which depends greatly on exports. Lae port is PNG's largest, busiest, and single most important port. It is a gateway linking the world market with a large hinterland—half of the territory—where about half of the population lives.</p> <p>Since 1995, Lae port has witnessed an average annual increase in cargo of 131,000 tons, with containerized cargo growing at more than 5% per year and general cargo at 2.5%. In 2005, the volume of cargo through Lae port reached 2.4 million revenue tons, stretching Lae port to the limit of its capacity. Frequent congestion at the port imposes high costs on its users and hampers both international and domestic trade. The situation is expected to worsen, as the country's economic prospects remain strong and the hinterland of Lae port is experiencing a boom in development. Some shipping companies have already purchased more ships, and are increasing demand for efficient modern port infrastructure and management. Failure to expand capacity at this time and to manage Lae port more efficiently will dampen PNG's economic development.</p>

Instead of simply improving the port, the Project will build new facilities, for three reasons: (i) the terminal area at the existing port is not large enough for efficient operations; (ii) the existing berths are built on a steep foreshore with increasing threat of geotechnical instability, heightening the financial risks of any port improvement project; and (iii) opportunities to extend the existing berths are limited, whereas the Project allows additional berths to be built at relatively low marginal cost.

**Impact and Outcome** The Project is expected to catalyze industrial and commercial development and promote trade for PNG by relieving a binding constraint on key port infrastructure in Lae.

**Project Investment Plan** The investment cost of the Project is estimated at \$154 million, including taxes and duties of \$4.44 million.

**Financing Plan** ADB will provide a blended loan of \$100 million—\$60 million from ordinary capital resources (OCR) and \$40 million from the Asian Development Fund (ADF)—to finance 64.9% of the total cost. A loan of \$6 million from the OPEC Fund for International Development (OFID) will finance the civil works for the port facilities. A \$1.5 million grant from the Japan Fund for Poverty Reduction will finance the livelihood enhancement activities and social services associated with resettlement, and a \$0.75 million grant for the HIV/AIDS component will come from the Cooperation Fund for Fighting HIV/AIDS in Asia and the Pacific (HIV/AIDS Cooperation Fund) and will be administered by ADB. The Government will provide \$45.75 million, or 29.7% of the total project cost.

ADB's \$60 million loan from OCR will be provided under its London interbank offered rate (LIBOR)-based lending facility. The loan will have a term of 24 years including a grace period of 4 years, an interest rate to be determined in accordance with ADB's LIBOR-based lending facility, a commitment charge of 0.35% per annum, and such other terms and conditions set forth in the draft loan and project agreements.

A loan in various currencies equivalent to Special Drawing Rights 25,242,000 (\$40 million) will be provided from ADB's ADF resources. The ADF loan will have a maturity of 32 years including a grace period of 8 years, an interest charge of 1% per annum during the grace period and 1.5% per annum thereafter, equal amortization, and such other terms and conditions set forth in the draft ADF loan and project agreements.

The loan of \$6 million from OFID will have a maturity of 20 years, including a grace period of 5 years and an interest charge of 1.5% per annum plus a service fee of 1% which will be fixed over the term of the loan.

<b>Allocation and Relending Terms</b>	The Government will relend the loans to the Independent Public Business Corporation on the terms and conditions acceptable to ADB. The currency risk of the loans will be borne by the Government.
<b>Period of Utilization</b>	Until 30 June 2012
<b>Estimated Project Completion Date</b>	31 December 2011
<b>Executing Agency</b>	Independent Public Business Corporation (IPBC)
<b>Implementation Arrangements</b>	<p>IPBC will set up and maintain a fully staffed and adequately funded project management unit (PMU) with engineering and contract management, resettlement and environment, and finance and administration divisions. A project steering committee will be formed to oversee the project implementation and provide policy guidance. It will be chaired by IPBC's managing director and will have the director of IPBC's infrastructure planning and development division as secretary. The other members will be senior representatives from the Departments of National Planning and Monitoring, Treasury, Justice and Attorney General, Lands and Physical Planning, Transport, and Environment and Conservation, and from the Independent Consumer and Competition Commission and the Morobe Provincial Government (MPG) as well as the chairperson of the board of directors and the chief executive officer of PNG Ports Corporation Limited.</p> <p>The Morobe Provincial Administration (MPA), the administrative arm of MPG, will implement the livelihood and social improvement program to be financed by Japan Fund for Poverty Reduction (JFPR) and the HIV/AIDS awareness and prevention program to be financed by the HIV/AIDS Cooperation Fund. But disbursement and financial management will be centralized in the PMU for internal control.</p>
<b>Procurement</b>	The procurement of civil works will follow ADB's <i>Procurement Guidelines</i> (2007, as amended from time to time). The major civil works, involving dredging, berth, and terminal construction, will be grouped into one contract package to be awarded through one-stage, one-envelope international competitive bidding with prequalification. For the resettlement and livelihood improvement activities, which will involve contracts of various sizes for works, national competitive bidding and shopping will be used as appropriate.
<b>Consulting Services</b>	International and national consultants will (i) support the PMU in port engineering and contract management, financial management, resettlement, and socioeconomic monitoring; (ii) supervise construction and monitor the environment;



(iii) undertake resettlement and livelihood and social improvement activities; and (iv) raise awareness of HIV/AIDS and its prevention. The consultants will be hired according to ADB's *Guidelines on the Use of Consultants* (2007, as amended from time to time). They will be selected through quality- and cost-based selection, individual consultant selection, consultants' qualifications selection, single-source selection, or other methods as appropriate.

### **Project Benefits and Beneficiaries**

The Project is economically viable. At a 12% discount rate, the net present value is about K104 million and the economic internal rate of return is 15.8%. The Project will turn a land with little financial and economic value at present into a free trade zone or industrial park, catalyze private sector development, and add value to PNG's exports. In the process, it will (i) generate more than 1,000 jobs for local communities—mostly unskilled laborers based in Lae—during the implementation; (ii) create opportunities for local people to be employed as seafarers, sea workers, and port agents and operators; and (iii) become another stable source of income after completion for the stevedoring companies, which are 50% owned by the local ethnic groups. Industrial and commercial development resulting from the Project will add hundreds of job opportunities.

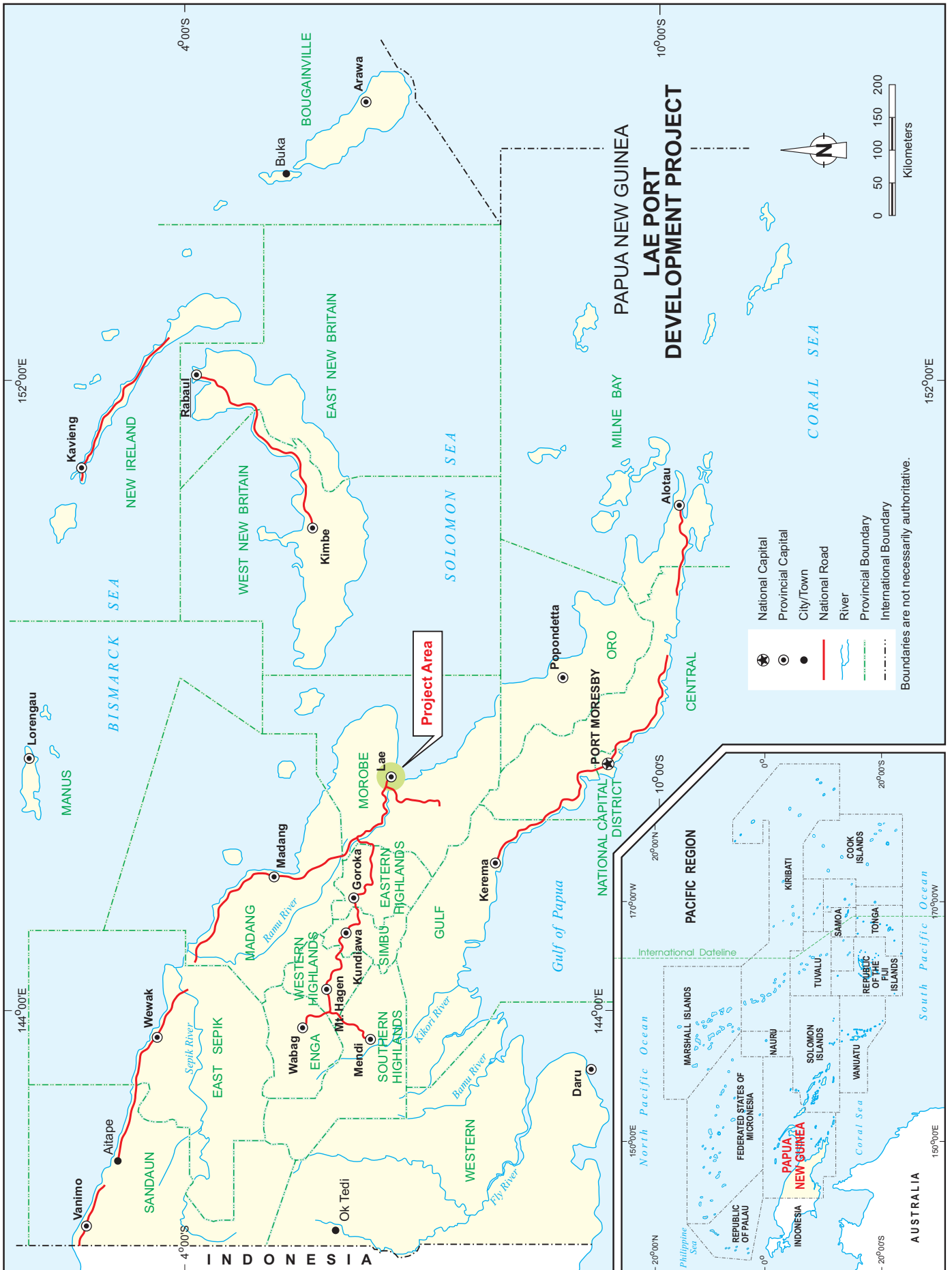
### **Risks and Assumptions**

Resettlement poses the greatest risks to the Project. Risks relate to internal conflicts between local ethnic groups, perceptions about land ownership, procurement, contract enforcement, and social equity. To mitigate these risks, extensive dialogue has been held with local groups and evidence of government ownership of the project area has been presented. Two major stakeholders, the Labu and the Ahi, who were hostile to each other, have formed a Bulo Committee to coordinate the views of different clans. Resettlement and livelihood improvement programs are formulated equitably to address the concerns of the resettling people, the Labu, and the Ahi. ADB's ADF loan will finance resettlement, and JFPR resources will finance livelihood and social improvement. Implementation responsibilities will be split between IPBC (resettlement) and MPA (livelihood and social improvement). Contract packages and procurement methods are properly defined so that capable, reputable, and reliable contractors, suppliers, and nongovernment organizations are hired.

Another major risk is corruption, given the size of the Project and its implementation context. The risk is heightened by the need to hire contractors and consultants. To mitigate this risk, (i) all PMU management and staff will be trained in ADB's and the Government's anticorruption policies, including the concept of whistle-blowing as well as other methods of reducing vulnerability to corruption; (ii) IPBC will develop and maintain a project website where the audited project financial accounts, project progress,

and procurement activities will be disclosed; (iii) the imprest accounts will be used prudently and monitored closely; (iv) key consultants will be selected by ADB in consultation with IPBC, and bidding documents and contract awards for all international and national competitive bidding contracts will be reviewed beforehand by ADB; and (v) financial management will be centralized in the PMU for internal control. Identifying IPBC as the Executing Agency further mitigates the risk of corruption, as Transparency International is represented on the IPBC board of directors and IPBC is among the organizations that are PNG's most closely watched.

Other risks pertain to law and order, project management, construction quality, and HIV/AIDS prevalence. The project design takes these risks into account. The Government will be required to provide security during the project implementation. IPBC will assign a team of qualified counterpart staff to the PMU. The Project will provide 162 person-months of international and national consulting services to strengthen the PMU in port engineering and contract management, financial management, socioeconomic monitoring, and resettlement. It will also finance a construction supervision team to enforce the civil works contract and verify quality. Mobilizing the private sector in support of an effective and sustainable response to HIV/AIDS will mitigate the risk of the disease.

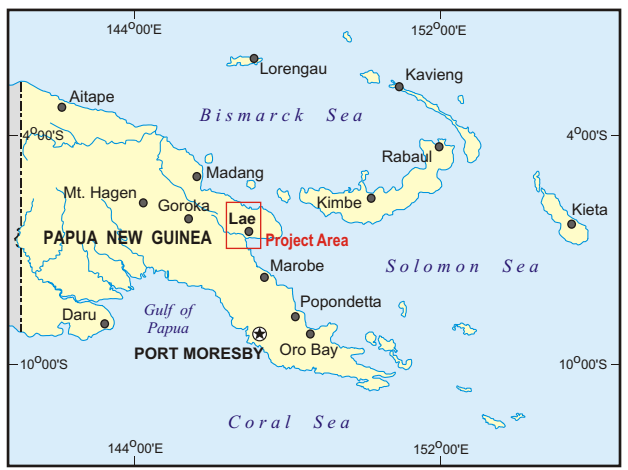




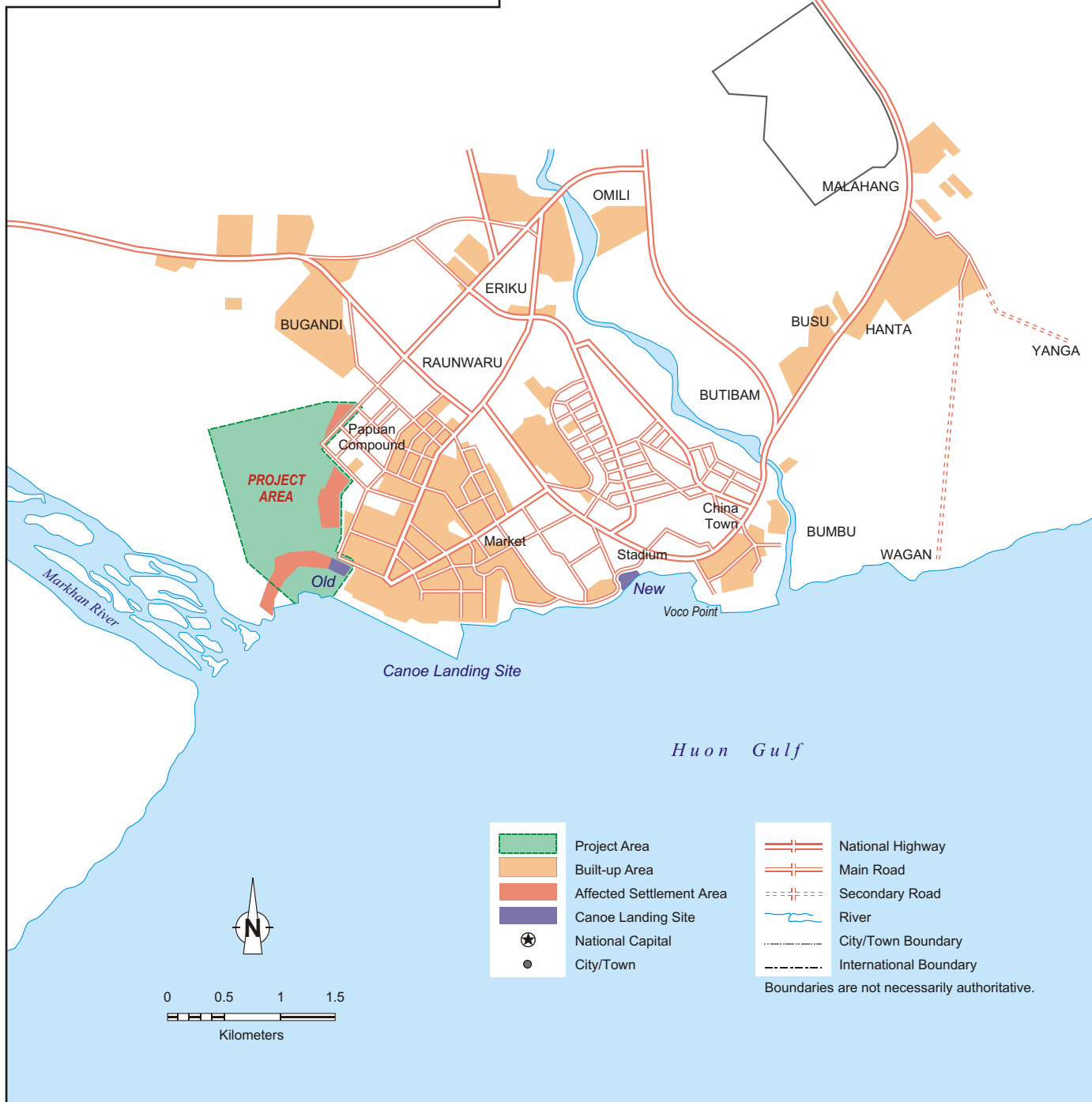
PAPUA NEW GUINEA  
LAE PORT DEVELOPMENT PROJECT

LAKE PORT

MARKHAM RIVER



## PAPUA NEW GUINEA LAE PORT DEVELOPMENT PROJECT



## I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on (i) proposed loans to Papua New Guinea (PNG) for the Lae Port Development Project (the Project), (ii) the proposed administration by the Asian Development Bank (ADB) of a loan from the OPEC Fund for International Development (OFID) for the Project, and (iii) the proposed administration by ADB of a grant for the Project from the Cooperation Fund for Fighting HIV/AIDS in Asia and the Pacific (HIV/AIDS Cooperation Fund). The design and monitoring framework is in Appendix 1.

## II. RATIONALE: SECTOR PERFORMANCE, PROBLEMS, AND OPPORTUNITIES

### A. Performance Indicators and Analysis

2. Ports have always been a critical link in the logistic chain for international trade. More than 80% of internationally traded goods are shipped from ports. Globalization of production and the rapid expansion of world trade have made ports even more important to economic development, as port capability and efficiency influence the location of plants or distribution centers and determine the competitiveness of local producers.

3. The port sector is particularly critical for a country like PNG, a Pacific island country whose territory comprises the eastern half of New Guinea and 600 offshore islands. Of its 20 provinces, 15 are on the coast. More than 60% of the country's 6 million people are widely dispersed across islands and coral atolls and along the banks of major rivers. There is no national rail or road network. Although 46 airports and numerous airstrips serve a network of scheduled, charter, and missionary air services, even to some very remote communities, air transport is too costly for any trips other than emergencies.

4. PNG's economy is small and open and is highly dependent on trade, particularly exports, to generate economic growth and fiscal revenue. In 1980–2004, exports rose steadily from \$985 million to \$2,529 million, while imports had moderate growth. Exports increased from 35% of gross domestic product (GDP) in 1986 to almost 48% in 2002, and even reached more than 50% in some years. Imports, on the other hand, stayed close to 30% of GDP. More than 90% of the country's exports are shipped from its ports.

5. PNG's good economic performance has always been associated with strong trade performance. From 1991 to 1994, a surge in mineral and crude oil exports and an associated increase in imports spurred economic growth of 6% on average. The recent economic recovery, after a prolonged recession from 1995 to 2002, also benefited from an increase in agricultural and mineral exports caused by the high commodity prices on international markets.

6. Coastal trade, particularly outbound container cargo from Lae to other PNG ports, has been growing rapidly since 2001. Full outbound containers that year numbered 13,395 twenty-foot equivalent units (TEU); by 2005 they totaled 23,811 TEU, for an increase of 78%.

7. In sum, the port sector has a crucial role in the social and economic development of PNG. It is important not only for the adequate and efficient handling of exports and imports, but also for the efficient movement of goods and persons between the remote and sparsely populated areas on the mainland and islands and the centers of economic activity.

8. PNG's port sector consists of 22 declared ports and numerous publicly and privately operated wharves, jetties, and landings. The fully state-owned PNG Ports Corporation Limited (PPCL) operates 16 of the 22 declared ports, including two ports operated by its agents. The other six declared ports are either being run by private entities or not operating. An analysis of the PNG port sector is in Appendix 2.

9. The PPCL-operated ports handle about 90% of international ships calling at PNG ports and 80% of PNG's international and domestic cargo. The ports of Lae and Port Moresby alone account for more than 70% of the throughput of the declared ports.

10. From 1995 to 2005, the throughput of the PPCL ports climbed from 3.8 million to 5.3 million revenue tons, increasing steadily since 2002, thanks to the rising exports of minerals, petroleum, coffee, copra, palm oil, logs, timber, and marine products. While the number of vessel calls has barely risen, overall traffic has grown by almost 40%, and containerized traffic, by 80%, because of the larger size of ships. International ships have increased in size from 150 meters (m) to 180–200 m, and in carrying capacity from 15,000 to 44,000 deadweight tons. Coastal trade vessels have similarly grown in size from 70–80 m to 100–120 m.

11. The increase in vessel size and carrying capacity and the growing trend toward containerization have had significant impact on all PNG ports, particularly Lae port, PNG's largest, busiest, and single most important port. Lae port handles about half of the throughput of the 22 declared ports and more than 60% of the international and coastal trade registered in PPCL's ports, and generates more than 50% of PPCL's revenue. It serves as a gateway linking the world market with a large hinterland comprising Morobe province, the city of Lae (the capital of the province, and PNG's industrial and commercial center), and five resource-rich provinces in the Highlands. The hinterland is home to about half of the population and represents half of the territory. PNG's most significant road, the Highlands Highway, runs from Lae to the Highlands region, dispensing imports ranging from heavy machinery to food products in the region and bringing the country's major export items to Lae port. About 50% of PNG exports and 90% of coffee exports are shipped from Lae port.

12. Lae port was built in the 1930s to handle mostly break-bulk cargo but has developed into a focal point of imports and exports and a regional hub distributing cargo to and from the more remote populated areas along the coastline and the islands. Since 1995, the volume of cargo handled at the port has increased by 131,000 revenue tons each year on average,<sup>1</sup> with containerized cargo growing at more than 5% yearly and general cargo, at 2.5%. In 2005, 2.4 million revenue tons of cargo passed through Lae port.

13. Lae port has been adapting to the demands of container operations over the past decade. But investment in facility maintenance and expansion has not kept pace with the growing trend toward containerization and larger ships. The current five berths<sup>2</sup> at Lae, with a total length of about 520 m, and a total storage area of 53,620 square meters (m<sup>2</sup>)<sup>3</sup> for cargo marshaling, are aging and cannot handle increasing cargo volumes and ship sizes. Berth 4 for domestic ships can no longer accommodate these ships and is underused. Berth 1, with a total length of 123 m and water depth of 11 m, is suitable for overseas vessels but is now used as a domestic terminal. Overseas vessels are mainly served by berths 2 and 3, which have a total length of 307 m. As a result, port congestion at Lae is frequent, imposing high costs on port

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<sup>1</sup> At 12 tons of cargo for every TEU.

<sup>2</sup> Including a passenger berth.

<sup>3</sup> Including covered storage of 14,620 m<sup>2</sup> and open storage of 39,000 m<sup>2</sup>.

users. In 2005, all classes of vessels reportedly spent 210 days waiting for a berth, each day's delay in the harbor costing a shipping company \$8,000–\$15,000. Some vessels are turning away from the port. Others are considering imposing congestion charges in the range of \$200–\$250 per TEU, which will translate into higher costs for importers and exporters, and eventually consumers and the general economy. Port congestion also poses health and safety hazards, and the issue of compliance with the International Shipping and Port Security Code. As Lae port is the principal gateway for PNG, delays at the port have a cascading effect on other ports.

14. With a throughput reaching 2.4 million revenue tons, Lae port is operating at the limits of its capacity. The situation is expected to deteriorate, as the economic prospects for PNG remain strong, and the hinterland of the port is experiencing a boom in development. Some shipping companies have already purchased more ships, and are increasing their demand for efficient modern port infrastructure and management. Failure to expand capacity at this time and to manage Lae port more efficiently will dampen economic development.

15. Instead of simply improving the port, the Project will build new port facilities because (i) the terminal area at the existing port is not large enough for efficient port operations; (ii) the existing berths are built on a steep foreshore with increasing risks of geotechnical instability, heightening the financial risks of any port improvement project; and (iii) the Project allows more berths to be built at relatively low marginal cost, whereas opportunities to extend the present berths are limited.

16. The Project is the first phase of the tidal basin master plan, under which the port facilities will be expanded into a new swamp area. It is also part of the blueprint drawn up by the Morobe Provincial Government to promote industrial development in Lae city. By increasing the cargo-handling capacity of Lae port, the Project will promote trade and private sector investment in industrial and commercial activities and contribute to export-led economic growth.

## **B. Analysis of Key Problems and Opportunities**

17. PNG faces challenges in sustaining economic growth, providing employment, and creating an environment conducive to private sector development. However, the current macroeconomic stability, high commodity prices, and dynamic global economy, particularly the emerging Asian economies, offer excellent opportunities for the country to accelerate economic growth, generate employment, increase national wealth, and improve living standards.

### **1. Challenges**

18. **Sluggish Economic Growth.** The biggest challenge PNG faces is sustaining economic growth. Since 1960, economic growth has been uneven and highly volatile, showing a downward trend. The economy grew at an average rate of 5.5% in 1960–1975, but slowed down to less than 1% in 1996–2004. Because of high population growth, real per capita GDP growth has declined even faster, resulting in estimated real per capita GDP at the end of 2004 50% lower than that in 1975.<sup>4</sup> The low level of economic growth has adversely impacted poverty, infrastructure, social services, employment, and human resources. The incidence of poverty is projected to have increased from 37.5% of the PNG population in 1996 to 54% in 2003.<sup>5</sup> Infrastructure has deteriorated to such a state that it hinders access to markets and

<sup>4</sup> IMF. 2006. *Growth and Productivity in Papua New Guinea*. Washington, DC.

<sup>5</sup> World Bank. 2004. *Poverty Assessment: Papua New Guinea*. Washington, DC.



services, imposes high costs on producers and consumers, and discourages investment. Social services are either under-provided or not provided at all, and the social indicators are the worst in the Pacific region. Urban unemployment is high, at around 40%. Many well-educated people have left the country, further straining its already thin human resources.

19. **Challenging Business Environment.** PNG offers many business opportunities, given its rich endowment of minerals, oil and natural gas, forestry, fishery, and eco-conditions for high-value agricultural production and its proximity to the fastest-growing Australian and Asian markets. However, most of the public goods that the private sector needs to flourish are either missing or under-provided. Private investment, despite a recent increase stimulated by high commodity prices, has been stagnant. The manufacturing and service sectors are withering. The contribution of manufacturing to GDP used to be in the range of 5 to 11%; it is now around 6%. The more than 40% share of services in GDP in the 1970s and 1980s has declined to less than 30% (footnote 4).

20. The stagnation in private activities can be explained by the high costs of doing business in PNG, which are attributable to the following factors:

- (i) **Corruption and serious problems with law and order.** PNG is perceived to be one of the countries where corruption is rampant. It was ranked 162<sup>nd</sup> out of 180 countries by Transparency International in its 2007 Corruption Perceptions Index.<sup>6</sup> Tribal conflicts and criminal activities such as rape, robbery, and murder are rising in PNG and have seriously damaged the country's image. High turnover among qualified national and international staff results in high costs for both the Government and funding agencies. Businesses in PNG also suffer from high security costs and cite crime and theft as the prime impediment to investment. On average, companies in PNG spend about 12% of their gross income on private security and loss from theft. The high crime rates hamper economic activities and undermine investors' confidence. Since the mid-1990s, foreign investment in PNG has markedly slowed.
- (ii) **Poor infrastructure.** Electricity is cheap by regional standards, but is available to only 60% of urban households. Many businesses are forced to run their own generators. Telecommunication services are costly and unreliable and are also restricted to urban areas. Only 11% of the national roads and 14% of provincial roads are in good condition. Half of the feeder roads are often impassable. Wharves, jetties, and airstrips have fallen into disuse. Some 60% of maritime navigation aids need replacement.
- (iii) **Weak institutional capacity.** There is a shortage of skills in almost all professions. Labor productivity is low across all economic sectors outside mining and oil. Of PPCL's more than 400 staff, only four are engineers—two at the head office and the other two working in Port Moresby.
- (iv) **Complex land ownership issues.** The PNG landmass of about 462,000 square kilometers accounts for more than 80% of the land area in the South Pacific. However, mobilizing land for development purposes is very risky, costly, and

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<sup>6</sup> The Transparency International Corruption Perceptions Index ranks countries in terms of the degree to which corruption is perceived to exist among public officials and politics, with scores ranging from 0 (highly corrupt) to 10 (highly clean).

time-consuming because more than 90% of the land in PNG is customarily owned, and land ownership is subject to considerable dispute. Even when land is sold, traditional landowners still refuse to give up their title. The history of the project land shows that the pre-independence administrations and the Government spent almost a century taking control of ownership. Customary land ownership has led to a vast amount of unused land. In the city of Lae, where there seems to be a severe shortage of commercial and residential land, idle land is everywhere, without any signs of development.

## 2. Opportunities

21. **Macroeconomic Stability.** Macroeconomic stability is a precondition for economic growth. Since 2002, the present government has managed to restore macroeconomic stability through prudent fiscal and monetary policies and debt policies. Inflation has been drastically brought down. The fiscal outcome has improved: the budget deficit in 2006 was projected to be 0.6% of GDP. Public debt has fallen, from 72% of GDP in 2002 to a projected 42.4% in 2006. The exchange rate has been stable. Aided by high commodity prices in international markets, PNG's economy emerged from a 6-year contraction to grow at around 3% in real terms in 2004, 2005, and 2006. The GDP growth rate is estimated to reach 6.5% in 2007 and is projected to remain at 6.5% in 2008.

22. **Favorable External Environment.** The world economy has been rapidly expanding since 2002. Developing Asia is particularly dynamic. From 1991 to 2004, East Asia grew at an annual average rate of 9.1% and South Asia at 5.7%. The buoyant global economy and the dramatic transformation in developing Asia from agriculture to resource-intensive economies have increased demand for raw materials and primary goods and driven up prices. The price of oil increased to more than \$90 per barrel in 2007, more than triple the amount 4 years earlier. The prices of aluminum, copper, iron ore, lead, nickel, and other minerals have also surged. The prices of food and beverages, under downward pressure from agricultural productivity and technological advances, stabilized in 2005. The growth of the global economy is foreseen to slow down but to remain strong. Developing Asia is expected to maintain its strong growth and will be an increasingly important consumer in sustaining and pushing up the prices of primary commodities. A recent ADB study<sup>7</sup> projected a long-term rising trend until 2015 for most commodity prices in real terms, including the prices of some agricultural commodities, despite improvements in productivity and resource use efficiency. This prospect offers an excellent opportunity for PNG to attract foreign investment, create jobs, expand trade, and increase foreign exchange earnings.

23. **Government Development Strategy.** Acknowledging the failure of the previous development plans and strategies, the Government in 2004 formulated a Medium Term Development Strategy (MTDS) for 2005–2010, through a consultative and participatory process. The MTDS sets the goal of improving living standards through an overarching development strategy of export-driven economic growth, rural development, and poverty reduction. Broad-based economic growth driven by exports is central to the MTDS, which recognizes the opportunities offered by the global markets and PNG's comparative advantages. On the basis of the development strategy, seven areas of expenditure, including the improvement of transport infrastructure, the promotion of income-earning opportunities, HIV/AIDS prevention, and law and justice, were prioritized. The budget allocated to these priority areas has been increased

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<sup>7</sup> ADB. 2006. *Asia's Imprint on Global Commodity Markets*. Manila.

substantially to 52.9% of total expenditure and 88.5% of development budget expenditure in 2007. The Government prefers to borrow from ADB for economic growth projects.

24. **Government Sector Strategy.** The Government's National Transport Development Plan (NTDP) 2006–2010 lists priority investment projects in the land, water, and air transport subsectors, with heavy emphasis on land transport. The Highlands Highway and Lae port, which form the country's single most important lifeline for growth and development, top the priority lists. While emphasizing asset maintenance and rehabilitation, the NTDP acknowledges the need to fill the gaps in PNG's transport network, and to expand the port facilities. Both the central and provincial governments consider the Project strategic and support the Project.

25. **ADB Strategy.** ADB's country strategy and program (CSP) for PNG (2006–2010)<sup>8</sup> supports the Government's development goals, strategies, and priorities stated in the MTDS. Drawn from ADB's operational experience in PNG, the CSP chooses to be selective and to focus ADB's interventions in the period covered on four strategic areas that combine the Government's priorities and ADB's policies: (i) public financial management, (ii) private sector development, (iii) the transport sector, and (iv) health and HIV/AIDS.

26. The CSP recognizes that, although the maritime subsector is not a core operational sector under ADB's Medium-Term Strategy II,<sup>9</sup> it is critical to PNG's economy, and is an area in which ADB has been deeply involved and in which its financing can be most effectively used. The CSP therefore proposes a continued focus on the road and maritime transport subsectors. Specifically, to assist the Government in achieving its development objectives, ADB would support the Highlands Highway Rehabilitation Project and the Lae Port Development Project in addition to implementing the four ongoing loan projects.<sup>10</sup>

27. **External Assistance.** Australia is the largest source of aid for PNG and offers about \$225 million a year in assistance. The Australian Agency for International Development (AusAID) pursues better governance, sustainable growth, conflict reduction, and social stability, and synergies between these objectives. In the transport sector, AusAID focuses on supporting a rational policy and planning framework, sector management and leadership, and road and airport maintenance projects. The Bougainville Wharves Rehabilitation Project was financed by AusAID in October 2002–April 2004. The financing amounted to about \$10 million and was used for the construction of wharves and storage facilities to boost the island economy by facilitating imports and exports to and from South Bougainville.

28. The World Bank financed two port projects with a total committed loan amount of \$12.7 million in the 1970s. ADB has provided five loans to the maritime sector since 1980. The total loan amount was about \$70 million—\$43 million from ordinary capital resources (OCR) and \$27 million from the Asian Development Fund (ADF). In addition, an ADB OCR loan of about \$12 million was channeled to the port subsector through the Transport Infrastructure Development Project, approved in 1991. The loans financed the rehabilitation of wharves and navigation aids,

<sup>8</sup> ADB. 2006. *Papua New Guinea Country Strategy and Program (2006–2010)*. Manila.

<sup>9</sup> ADB. 2006. *Medium-Term Strategy II (2006–2008)*. Manila.

<sup>10</sup> ADB. 1999. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Papua New Guinea for the Road Maintenance and Upgrading (Sector) Project*. Manila (Loan 1709-PNG); ADB. 2000. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Papua New Guinea for the Rehabilitation of the Maritime Navigation Aids System*. Manila (Loan 1754-PNG); and ADB. 2004. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Papua New Guinea for the Community Water Transport Project*. Manila (Loan 2079-PNG); and ADB. 2006. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Papua New Guinea for the Road Maintenance and Upgrading (Sector) Project (Supplementary Loans)*. Manila (Loans 2242-PNG and 2243-PNG).

the construction of port facilities, the restoration of remote water transport infrastructure, and institutional reforms. ADB's technical assistance (TA) grants totaling about \$3.6 million were provided mostly for preparing the loan projects. External assistance to the sector is summarized in Appendix 3.

29. **Lessons Learned.** ADB-financed projects in PNG have generally performed poorly. Major problems mentioned in the country assistance program evaluation 2003<sup>11</sup> and the CSP for PNG (2006–2010) include substantial delays in project start-up and completion, major changes in project scope, failure to comply with ADB's project administration requirements, and project sustainability. The lessons are as follows. First, the project design must be simple and focused. A complex design covering a wide geographic area or several sectors will lead to project delays and implementation problems. Second, government ownership and active participation in a project is the key to project success. Third, new complex systems and procedures for PNG are neither necessary nor sustainable. Fourth, institutional capacity for project implementation must be carefully assessed. Finally, land acquisition requires particular efforts before project implementation.

30. The design of the Project takes these lessons into account. The Project is simple and straightforward in design, and is focused on crucial physical infrastructure. Policy dialogue with the Government has been continuous, to enhance ownership. Institutional capacity has been assessed, and the Executing Agency carefully chosen. To reduce the likelihood of delay in project start-up, the prequalification and bidding documents and engineering design for the major works, sufficient for tendering and bidding, have been prepared, under the project preparatory technical assistance (PPTA).<sup>12</sup> Dredging and construction of the wharf and terminal have been grouped into one contract package to ensure economy in administration and avoid interfacing problems. The land issue has been extensively studied, and a resettlement plan and a livelihood and social improvement program have been formulated in an equitable way to minimize social risks.

### III. THE PROPOSED PROJECT

#### A. Impact and Outcome

31. The Project is expected to catalyze industrial and commercial development and promote trade for PNG by relieving a binding constraint on key port infrastructure in Lae.

#### B. Outputs

32. The Project will have three outputs: (i) operational new port facilities, (ii) improved livelihood for those affected, and (iii) reduced incidence of HIV/AIDS in Lae. The Project activities will consist of (i) the construction of port facilities including a tidal basin, a berth, and terminal works; (ii) resettlement and livelihood and social improvement for the people affected by the Project; (iii) project implementation support; and (iv) gender-responsive HIV/AIDS awareness and prevention.

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<sup>11</sup> ADB. 2003. *Country Assistance Program Evaluation for Papua New Guinea*. Manila.

<sup>12</sup> ADB. 2006. *Technical Assistance to Papua New Guinea for Preparing the Lae Port Development Project-Tidal Basin Phase I*. Manila.

## **1. Port Facility Construction**

33. The Project will expand the capacity of Lae port by building a tidal basin (700 x 400 m) northwest of the present port facilities with a dredged depth of 13 m below Chart Datum, a multipurpose berth (240 m long and 45–50 m wide), and terminal works including all buildings, storage areas, roads, drainage, water, electricity, and sewerage services. The tidal basin and berth are designed to accommodate vessels with an overall length of 200 m, beam of 32.2 m, and fully laden draft of 12 m. There is built-in flexibility for extending the berth by another 150 m without incurring dredging cost; introducing rail-mounted quayside gantry cranes, heavy mobile cranes, and heavier handling equipment; and increasing depth to 15 m below Chart Datum.

## **2. Resettlement and Livelihood and Social Improvement**

34. The specific needs of the port expansion call for the relocation of 482 households (with a population of 2,912) currently occupying the project area despite the very unhealthy living environment. Another affected group, the Labu, live about 2 kilometers (km) away from the project area, but their canoe landing site next to the port and an associated fish market will need to be acquired to construct an inter-port road. The Project will relocate the 482 households to better land in the Malahang area of Lae and provide each household with a 700 m<sup>2</sup> residential area, a one-bedroom house with reasonable living conditions, and relocation assistance. It will also develop the SP beach into an alternative landing site and fish market for the Labu. Relocation will significantly improve living conditions for the majority of the people affected. A livelihood and social improvement program to complement the resettlement and further ensure livelihood sustainability will be provided through Japan Fund for Poverty Reduction (JFPR). The description of the JFPR is provided in Supplementary Appendix A. School and health facilities in Malahang will be expanded, and community infrastructure such as community centers, a sport area, and an all-weather market at the resettlement site will be provided. Other interventions include (i) assisting re-settlers and the Labu in improving techniques in small-scale agriculture and animal husbandry and marketing of their products; (ii) assisting the Labu in community-based fish culture; (iii) providing micro-credits to re-settlers and the Labu; and (iv) providing livelihood, health, nutrition, and vocational training for re-settlers.

## **3. Project Implementation Support**

35. The Project will provide support for project implementation, financial management, construction supervision, resettlement, and socioeconomic impact monitoring.

## **4. Gender-Responsive HIV/AIDS Awareness and Prevention**

36. To minimize the potential risk of new HIV/AIDS infections, the Project includes a program of support for effective and sustainable response to the AIDS epidemic. The activities in the program include (i) developing an AIDS code of conduct, (ii) renovating the seafarers' support center at Lae port, (iii) providing institutional strengthening of clinical structures, (iv) developing the capacity of nongovernment organizations (NGOs), (v) enhancing the outreach and impact of the AIDS site committee at Lae port, (vi) establishing AIDS site committees and women's help desks at police stations around Lae port, (vii) caring for people living with HIV/AIDS, and (viii) establishing an integrated response center for HIV/AIDS.

## **C. Special Features**

### **1. Policy Dialogue with the Government**

37. ADB's policy dialogue with the Government is focused on (i) resettlement, (ii) ownership and project management, (iii) tariff and revenue generation, and (iv) public-private partnership. Land ownership in PNG is very sensitive and controversial, and is a major obstacle to the country's development. Since the PPTA fact-finding mission, ADB has paid particular attention to land and resettlement issues. The mission provided a copy of ADB's *Involuntary Resettlement Policy* (1995) to the Morobe Provincial Government and explained the policy. It also met with the major stakeholders (Ahi and Labu) to explain the policy. Based on the declaration made in the National Gazette of 26 October 2000, the land required for the Project is national land. This will be further confirmed by a legal opinion to be issued by the Attorney General's Office.

38. The feasibility study, the engineering design, prequalification and bidding documents, the environmental impact assessment, and the resettlement plan—all responsibilities of the Government—were prepared under ADB's PPTA. ADB will further assist the Government during project implementation in selecting and hiring qualified consultants to fill gaps in skills. However, the success of the Project depends on the strength of its owner. It is extremely important for the Government to mobilize a team of highly motivated, devoted, and dynamic professionals with qualities of integrity, reliability, and hard work. The Government agrees to pool human resources from within and outside the country and to set up a strong project management unit (PMU) to safeguard the owner's interest.

39. Tariff is a major source of port revenue. Tariff for the new port facilities should be high enough to recover investment costs and avoid subsidizing foreign shipping lines. The Government agrees to review the tariff structure 6 months before the project completion and to set a new tariff that reflects the costs. It also agrees to take proactive measures that would attract private companies to develop and use one side of the tidal basin, to generate additional revenues.

40. The project facilities, after completion, have the potential to attract the private sector to operate and bring private sector management expertise and resources into PNG's port sector. The Government agrees to explore the possibility of partnering with the private sector in operating the new port facilities, at least 1 year before project completion.

### **2. Donor Coordination and Project Complementarity**

41. In preparing the Project, close coordination and consultations with major donor agencies, particularly AusAID, were undertaken to identify areas of collaboration, ensure complementarity, and maximize the comparative advantages of the organizations.

42. Lae port and the Highlands Highway form the backbone of PNG's economy. The Project will complement the efforts of the Government and AusAID, and ADB's current and future investment in the Highlands Highway. Since 1995, the Government has strived to rehabilitate the Highlands Highway connecting the Chimbu, Western, and Southern Highlands provinces. AusAID is supporting the Government through its Key Roads for Growth Maintenance Project, which will be maintaining the Highlands Highway between Lae and the Eastern Highlands province (Chimbu border) from 2006 to 2010. ADB has prioritized a Highlands Highway project in its CSP 2005 and is targeting 2008 for approval.

### **3. Partnership with AusAID and OFID**

43. By agreeing to the Transport Sector Support Program (TSSP, December 2005) with the Government, AusAID is well positioned to address sector issues and institutional capacity building. The TSSP takes a program approach to the sector, aimed at improving governance and the performance of the Government in transport service delivery to support broad-based economic growth. It seeks a long-term engagement with the Government (20–25 years) and is backed by initial funding of K700 million over 4 years, divided into three facilities: (i) a TA facility, (ii) a challenge fund facility, and (iii) an infrastructure maintenance fund facility. The TA facility will support sector reform and capacity building, the challenge fund facility will provide incentives for reform and improving performance, and the infrastructure maintenance fund will finance national transport network priorities.

44. To complement the Project, AusAID will assist PPCL in strengthening its institutional capacity to manage its capital and maintenance investment programs and improve port services, with an initial focus on preparing Lae port to take over operation in case contracting and other arrangements do not materialize. The scope of assistance includes (i) assisting the Government in exploring public-private partnerships for operating the new port facilities built under the Project, and (ii) providing technical assistance to strengthen the ports operation division of PPCL, including the services of a port operations adviser to assist the manager of Lae port in improving the efficiency of operations. Among the functions of this adviser will be to prepare PPCL to establish a port operation strategy that maximizes the use of the increased wharf capacity created by the Project.

45. The Project presents a rare opportunity to increase the technical capacity in the port sector. As part of its support for the PPCL port operations division, AusAID will explore options for strengthening the division in the short term and, more importantly, in the long term. The longer-term options could include financing the seconding to the PMU of young engineers with potential from the University of Technology, to allow them to learn by doing, provided that the young engineers will work for PPCL for at least 5 years after project completion. AusAID is currently in a planning phase for TSSP, including an assessment of PPCL systems and processes. Its full package of assistance to PPCL in capacity building, institutional strengthening, and sustainable port infrastructure maintenance will be defined around February 2008.

46. OFID will cofinance the civil works for the new port facilities with a loan of \$6 million.

### **4. Stakeholder Participation and Consultation**

47. Extensive public consultations have been conducted with government officials, the business sector, local communities, affected people, and international and national NGOs involved in livelihood restoration, service delivery, and HIV/AIDS awareness and prevention (Supplementary Appendix E). The consultations were held to explain ADB's policies on environment, resettlement, and procurement; increase project awareness; build project ownership; address technical, environmental, and social concerns; and identify appropriate project interventions. Various ADB missions conducted public consultations and met with about 300 stakeholders from the central, provincial, and Lae district governments; the Lae business community; local ethnic communities; civil society NGOs (including faith-based organizations and community-based organizations); and donor agencies. During the PPTA study, the consulting team distributed information leaflets and held public hearings, surveys, focus group discussions, and key informant meetings at provincial, district, port, and settlement levels. In total, more than 1,000 stakeholders were consulted. The stakeholders showed keen interest in

the Project and eagerness to benefit from it. They expressed concerns related to environmental and social issues, and these concerns were considered in the engineering design, the environmental management plan, the resettlement plan, the JFPR project, the HIV/AIDS awareness and prevention program, and the project design.

#### D. Project Investment Plan

48. The project investment cost is estimated at \$154 million, including taxes and duties of \$4.44 million. The costs of the different components are summarized in Table 1 and detailed in Appendix 4.

**Table 1: Project Investment Plan**  
(\$ million)

<b>Item</b>	<b>Amount<sup>a</sup></b>
Civil Works <sup>b</sup>	109.42
Land Acquisition	1.49
Compensation and Relocation	0.31
Livelihood and Social Support	1.50
HIV/AIDS Prevention	0.75
Consulting Services	9.57
Training	0.03
Contingencies <sup>c</sup>	25.75
Financing Charges during Implementation <sup>d</sup>	5.18
<b>Total</b>	<b>154.00</b>

HIV/AIDS = human immunodeficiency virus/acquired immune deficiency syndrome.

<sup>a</sup> Includes taxes and duties of \$4.44 million.

<sup>b</sup> In 2007 prices.

<sup>c</sup> Physical contingencies computed at about 15% for civil works. Price contingencies computed at 1.2% for foreign exchange costs and 3.2% for local currency costs; include provision for exchange rate fluctuation on the assumption of a purchasing power parity exchange rate.

<sup>d</sup> Include interest and commitment charges. Interest during construction is computed at the 5-year forward London interbank offered rate.

Source: Asian Development Bank estimates.

#### E. Financing Plan

49. The Government has requested ADB to provide a blend of two loans totaling \$100 million—an OCR loan of \$60 million and an ADF loan in various currencies equivalent to 25,242,000 Special Drawing Rights (\$40 million). The OCR loan will carry a term of 24 years with a grace period of 4 years, an interest rate determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility, a commitment charge of 0.35% per annum, and such other terms and conditions set forth in the draft OCR loan agreement. The Government has provided ADB with (i) the reasons for its decision to borrow under ADB's LIBOR-based lending facility on the basis of these terms and conditions, and (ii) an undertaking that these choices were independently made, without relying on any communication or advice from ADB. The ADF loan will have a maturity of 32 years including a grace period of 8 years, an interest charge of 1% per annum during the grace period and 1.5% per annum thereafter, equal amortization, and such other terms and conditions set forth in the draft ADF loan agreement. The Government will relend the loans to Independent Public Business Corporation (IPBC) through a subsidiary loan agreement on the terms and conditions acceptable to ADB. The currency risk of the loans will be borne by the Government.



50. OFID will provide a loan of \$6 million on a joint basis. It will have a term of 20 years, including a grace period of 5 years, and an interest charge of 1.5%, plus a 1% service charge to be fixed for the term of the loan. Grants of \$1.5 million from the Government of Japan through JFPR, and \$0.75 million from the HIV/AIDS Cooperation Fund, will also be provided. The funds from OFID, JFPR, and the HIV/AIDS Cooperation Fund will all be administered by ADB.

51. ADB will finance 64.9% of the total project cost, and the Government, 29.7%. The rest will be financed by JFPR, the HIV/AIDS Cooperation Fund, and OFID. The cost estimates, by financing agency, are summarized in Table 2 and detailed in Appendix 5.

**Table 2: Financing Plan**  
(\$ million)

<b>Source</b>	<b>Total</b>	<b>%</b>
Asian Development Bank	100.00	64.9
OCR	60.00	38.9
ADF	40.00	26.0
JFPR	1.50	1.0
HIV/AIDS Cooperation Fund <sup>a</sup>	0.75	0.5
OFID	6.00	3.9
Government	45.75	29.7
<b>Total</b>	<b>154.00</b>	<b>100.0</b>

ADF = Asian Development Fund, HIV/AIDS Cooperation Fund = Cooperation Fund for Fighting HIV/AIDS in Asia and the Pacific, JFPR = Japan Fund for Poverty Reduction, OCR = ordinary capital resources, OFID = OPEC Fund for International Development.

<sup>a</sup> Contributor: Government of Sweden.

Source: Asian Development Bank estimates.

## **F. Implementation Arrangements**

### **1. Project Management**

52. IPBC will be the Executing Agency (EA).<sup>13</sup> It will set up and maintain, in a phased manner, a fully staffed and adequately funded PMU comprising an engineering and contract management division, a resettlement and environment division, and a finance and administration division, under the leadership of a project director with integrity, managerial skills, and familiarity with the government systems and local culture. The organization structure for project implementation is shown in Appendix 6. The PMU will (i) implement the resettlement plan in association with the Morobe Provincial Administration (MPA), (ii) prepare bidding documents and handle the bidding, (iii) manage the contracts, (iv) monitor the progress of the Project, (v) prepare applications for fund withdrawals, (vi) prepare the project progress reports and project completion report, (vii) maintain project accounts and financial records for auditing, and (viii) monitor the socioeconomic impact of the Project. The PMU will be given adequate financial authority to approve contract variations to facilitate project progress, and will manage the construction supervision contract and civil works contract to ensure reasonable progress and timely completion of the Project. The Project will provide 162 person-months of international

<sup>13</sup> IPBC, established in 2002, is the trustee of the state assets and state-owned enterprises, including PPCL. Its strategic objectives include mobilizing resources to implement government policy and achieve its objectives, and catalyzing economic and social development. It reports to the minister for information and state enterprises and the National Executive Council.

and national consulting services to strengthen the PMU in procurement, contract management, financial management, socioeconomic impact monitoring, and resettlement.

53. A project steering committee (PSC) will be established to oversee the project implementation and provide policy guidance. It will be chaired by IPBC's managing director and will have the director of IPBC's infrastructure planning and development division as secretary. The other members will be senior representatives from the Departments of National Planning and Monitoring, Treasury, Justice and Attorney General, Lands and Physical Planning, Transport, and Environment and Conservation, the Independent Consumer and Competition Commission (ICCC), and Morobe Provincial Government (MPG), as well as the chairperson of PPCL's board of directors, and PPCL's chief executive officer. The PSC will be required to meet at least quarterly and provide ADB with minutes of the meetings.

54. MPA, the Administrative arm of MPG, will be the Implementing Agency for the livelihood and social improvement program financed by JFPR and the HIV/AIDS awareness and prevention program financed by the HIV/AIDS Cooperation Fund. However, disbursement and financial management will be centralized in PMU for sound internal control.

## **2. Implementation Period**

55. The Project will be implemented over 4 years, from 2008 to 2011. The pre-construction activities, such as detailed engineering design, the preparation of prequalification and bidding documents, and the tendering and awarding of contracts, began in January 2007 and are expected to be completed by 2008. The resettlement activities will begin in December 2007 and are also expected to be completed by 2008. The civil works for the port facilities are expected to start by early 2009 and to be completed by 31 December 2011. The implementation schedule is in Appendix 7.

## **3. Procurement**

56. All procurement for works under the ADB and OFID loans and the JFPR grant will follow ADB's *Procurement Guidelines* (2007, as amended from time to time). The procurement will consist mainly of civil works to increase the capacity of Lae port and the works necessary to resettle 2,912 people and improve their livelihood.

57. The major civil works involving dredging and the construction of the wharf and the terminal will be grouped into one contract package to attract international bidders, in view of the lack of local capacity, to reduce administrative pressure on the EA, and to avoid interfacing problems. It will follow one-stage, one-envelope international competitive bidding with prequalification.

58. The resettlement and livelihood and social improvement activities will involve contracts of various sizes, as detailed in the procurement plan in Appendix 8. National competitive bidding and shopping will be used as appropriate.

## **4. Consulting Services**

59. International and national consulting services will be required to support the PMU in port engineering and contract management, financial management, resettlement, and socioeconomic monitoring, and in construction supervision and environmental monitoring. A

total of 729 person-months of consulting services—291 person-months international and 438 person-months national—have been budgeted for these purposes. Various consulting services will also be required to carry out the resettlement and livelihood and social improvement activities and the HIV/AIDS prevention program (Appendix 8).

60. All consulting services financed with loans from ADB and grants from JFPR and the HIV/AIDS Cooperation Fund will be engaged in line with ADB's *Guidelines on the Use of Consultants* (2007, as amended from time to time). Individual consultants will be selected for the services in port engineering and contract management, financial management, socioeconomic monitoring, and resettlement. An international consulting firm will be recruited through quality- and cost-based selection for construction supervision and environmental monitoring. IPBC has requested ADB to select the consultants to speed up the Project, as time is critical to its success. The terms of reference for support to the PMU and construction supervision are outlined in Appendixes 9 and 10. For the component to be financed by the HIV/AIDS Cooperation Fund, the Lae Chamber of Commerce and Industry will be recruited through single-source selection.<sup>14</sup>

## 5. Advance Action and Retroactive Financing

61. The Project is revenue-generating. As time is critical to the financial and economic viability of the Project, the Government has asked ADB to approve advance action for the recruitment of consultants and the procurement of civil works. Advance action covers prequalification, invitation of bids, bidding, bid evaluation, and limited contract award. The advance action will conform to ADB's *Procurement Guidelines* and *Guidelines on the Use of Consultants*. The Government has been advised that approval of the advance action, if granted, does not commit ADB to financing the Project.

62. To meet the implementation schedule, the pre-construction activities must start in 2007. The Project will provide retroactive financing for project management and resettlement costs, including consulting services. The retroactive financing will apply to expenditures incurred no earlier than 12 months before the date of the Loan Agreement. The Government has been informed that the amount of retroactive financing must not exceed 20% of the ADB loan amount and that approval of retroactive financing does not commit ADB to financing the Project.

## 6. Anticorruption Policy

63. ADB's *Anticorruption Policy* (1998, as amended to date) was explained to and discussed with the Government and IPBC, both of which must adhere to its requirements during project implementation. Consistent with its commitment to good governance, accountability, and transparency, ADB reserves the right to investigate, directly or through its agents, any allegations of corrupt, fraudulent, collusive, or coercive practices relating to the Project. To support these efforts, relevant provisions of the *Anticorruption Policy* will be included in the loan

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<sup>14</sup> The Lae Chamber of Commerce is a private sector entity representing a majority of the businesses in Morobe province. It is recognized for its (i) demonstrated commitment to promoting innovative socially responsible practices in Morobe province; (ii) high representation of businesses involved in infrastructure and economic development; (iii) availability of local office and dedicated staff in Lae; (iv) extended presence and outreach of its programs and initiatives in Lae and Huon districts; (v) demonstrated ability to partner with a broad range of government agencies, especially the Morobe Provincial AIDS Council and civil society NGOs, faith-based organizations, and community-based organizations involved in HIV/AIDS prevention, treatment, and care; and (vi) adequate accounting, financial management, and auditing standards.

regulations and bidding documents for the Project. In particular, all contracts to be financed by ADB in connection with the Project will include provisions specifying the right of ADB to audit and examine the records and accounts of IPBC and all contractors, suppliers, consultants, and other service providers as they relate to the Project. If ADB determines that representatives of the Government, a beneficiary, a contractor, or a consultant have engaged in corrupt, fraudulent, collusive, or coercive practices, ADB may take the following actions: (i) reject the proposal for contract award, or (ii) declare the firm or individual ineligible for ADB-financed contracts, indefinitely or for a stated period of time.

## **7. Disbursement Arrangements**

64. The proceeds of the loans from ADB and OFID and the grants from JFPR and the HIV/AIDS Cooperation Fund will be disbursed in accordance with ADB's *Loan Disbursement Handbook* (2007, as amended from time to time), through direct payment, payment via imprest account, and reimbursement. To facilitate project implementation and funds flow, IPBC will establish separate imprest accounts for the loans from ADB and the grants from JFPR and the HIV/AIDS Cooperation Fund at a commercial bank acceptable to ADB after the loans and grants take effect. IPBC will use the imprest accounts exclusively to finance eligible expenditures as specified in the loan and grant agreements. The initial amount to be deposited into each imprest account will not exceed either 6 months of estimated expenditures to be financed from the imprest account or 10% of the loan or grant amount, whichever is less.<sup>15</sup> For the contract for the dredging and wharfing civil works and international consulting services, direct payment or reimbursement will be used. The OFID loan for the joint cofinancing of port facilities under the Project will be administered by ADB, and disbursed by OFID through direct payment.

## **8. Accounting, Auditing, and Reporting**

65. IPBC, through the PMU, will maintain separate accounts for the Project and prepare separate financial statements indicating the sources and uses of funds, and have them audited by an independent auditor acceptable to ADB. The audited project accounts, IPBC's corporate accounts, and the respective auditors' reports (which should include a separate audit opinion on the use of the imprest account for the loan or grant) will be submitted to ADB within 6 months after the end of each fiscal year. IPBC, through the PMU, will also prepare and submit to ADB monthly and quarterly project progress reports, and a project completion report within 3 months of the completion of the Project.

## **9. Project Performance Monitoring and Evaluation**

66. Within 12 months of loan effectiveness, ADB and the Government will agree on a system for monitoring and evaluating the performance of the Project in relation to its goals and purposes, with emphasis on trade, economic activities, job creation, and livelihood improvement. Six person-months of international consulting services are provided under the Project for setting up the system with baseline data and assessing the socioeconomic impact of the Project. The international consultant will begin work before the Project starts. The international financial specialist will collect and enter data into the system. Annual performance monitoring reports and the final report will be prepared by the socioeconomist and submitted to the PMU and IPBC. IPBC will submit to ADB the annual performance monitoring reports within 3 months after the

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<sup>15</sup> The imprest accounts will be used prudently according to the actual needs of the Project and the capacity of the Executing Agency to liquidate advances.

end of each calendar year, and the final report within 3 months after project completion. The indicators may include (i) industrial and commercial activities, (ii) job creation, (iii) exports and imports, (iv) traffic volume, (v) port charges, (vi) income generation, and (vii) social services. The employment impact indicators will include information about unskilled laborers, poor laborers, and women laborers.

## **10. Project Review**

67. ADB, the Government, and IPBC will undertake semi-annual and midterm reviews to consider (i) the compliance to the loan covenants; (ii) physical achievements against milestones along with any reasonable changes, and disbursement and financial progress; and (iii) Project implementation issues requiring resolution or action. The midterm review shall be undertaken within 24 months of the loan effectiveness date.

## **IV. PROJECT BENEFITS, IMPACT, ASSUMPTIONS, AND RISKS**

### **A. Economic Benefit**

#### **1. Traffic Forecast**

68. Traffic forecasts up to 2030 for overseas and coastal cargo have been prepared for Lae port. Reflecting a strong relationship between cargo volume and the growth of the PNG economy, the forecasts are based on expected GDP growth. For 2007–2011, GDP is assumed to grow at 4% on average, in line with the projections presented in the 2007 National Budget. After 2011, an average GDP growth rate of 3% is assumed. The traffic forecasts for the Project are summarized in Appendix 11.

#### **2. Economic Analysis**

69. The economic analysis (Appendix 11) compares with- and without-Project scenarios. The assessment covers the period 2008–2030 and assumes a construction period of 4 years starting in 2008. All benefits and costs are in constant 2007 prices.

70. The economic costs of the tidal basin are (i) capital cost, including labor, equipment and materials, consulting services, and physical contingency; (ii) land cost; (iii) resettlement cost; and (iv) maintenance cost. The economic benefits arise from (i) savings in congestion costs (i.e., in vessel waiting time and inventory costs), (ii) reduced need for lighterage and diversion of transshipment to other ports, (iii) income generated by a larger coastal shipping and port industry, and (iv) productivity gains for private businesses and smallholders from a more efficient transport system. The Project will also have other benefits, such as supporting the delivery of essential social services and minimizing the cost of consumer goods. These additional benefits are difficult to quantify and are therefore not included in the economic assessment.

71. At a 12% discount rate, the Project is economically viable. The net present value (NPV) is about K104 million and the economic internal rate of return (EIRR) is about 15.8%. The savings in congestion costs, and income from a larger coastal shipping and port industry, are important benefits. But the key to the Project is the flow-on benefits from the additional

international and coastal shipping it makes possible. The larger capacity at Lae port will provide substantial productivity benefits to private businesses and smallholders by allowing them to engage in higher-value-added activities, notably the export of agricultural products to overseas markets. The expanded port capacity is also important in minimizing costs in the economy by allowing the import of key items that are not produced locally.

72. The EIRR calculation was subjected to sensitivity analysis to test the effects of negative changes in the key parameters that determine the benefits and costs of the Project. The sensitivity analysis showed the Project to be economically viable despite a 10% increase in costs or a 10% decrease in benefits or a 1-year delay in the construction period.

## **B. Financial Benefit**

73. The financial analysis assumes that PPCL will operate the new port facilities built under the Project.

### **1. Tariff Analysis**

74. Tariffs for essential services are regulated by a contract between PPCL and ICCC. Essential services are defined in the contract as wharfage, berthing, and berth reservation. An analysis was undertaken to evaluate the level of tariff necessary for PPCL to maintain an average 15% pretax return on equity (ROE), at the company level, for 10 years after project completion. The analysis was undertaken for Phase I of the Tidal Basin development, which excludes \$29.51 million dredging costs for Phase II.<sup>16</sup> The 15% return is considered appropriate for the industry and region and is consistent with the equity risk-weighted return factor used in the calculation of weighted average cost of capital (WACC). Financial statements, including project costs, were projected for PPCL as a whole through 2021. Based on this evaluation, a 26.7% one time composite tariff increase applicable to all ports or 57.3% one time composite tariff increase for Lae Port in 2012 are projected to provide a 15% average ROE at the company level through 2021.

### **2. Financial Analysis**

75. Financial projections have been prepared for PPCL (Appendix 12) in accordance with ADB's *Guidelines for the Financial Management and Analysis of Projects* (2005) to assess the financial viability and sustainability of the Project. The financial evaluation was undertaken in real terms using constant 2007 prices. The project cost estimates and financial projections in nominal terms were converted into real terms by adjusting for the projected effects of foreign and domestic inflation and currency fluctuation. Incremental costs and benefits were derived under with- and without-project scenarios.

76. Assuming the existing revenue items remain the only sources of revenue, applying 57.3% Lae-specific increase in tariffs in 2012 to project cash flows, and removing \$29.12 million costs for Phase II, the after-tax financial internal rate of return (FIRR) is 6.82%, which compares favorably with the WACC of 5.09%. The results of the sensitivity analyses (10% reduction in

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<sup>16</sup> These dredging works are to be undertaken jointly with Phase I so as to facilitate port expansion in a cost effective manner. A matching revenue flow will only be generated when additional investment is made in wharfs, loading equipment, storage areas etc under Phase II. It is preferable that tariffs are set at a level that recovers the dredging costs when Phase II begins operation.

demand, 1-year delay in construction, 10% increase in project costs, and 10% reduction in tariffs) confirm the robustness of the Project's financial viability. Details of the financial evaluation are found in Appendix 12.

## **C. Project Impact**

### **1. Resettlement**

77. The Project is classified as category A in line with ADB's *Involuntary Resettlement Policy* (1995). It requires the acquisition of 120 hectares of government-owned marshland, which is now occupied by 482 households (2,912 people), and an all-weather canoe landing site with an associated market about 2 km away from the project area, which is now used by three Labu villages. The resettlement site for the 482 households will be leased by the Government from its customary owners that use it as farmland.

78. A full resettlement plan conforming to ADB's *Involuntary Resettlement Policy* (1995) and the *Operations Manual*, section 2 on Involuntary Resettlement (2006), defines entitlements, project interventions, and implementation arrangements on the basis of a comprehensive socioeconomic survey. The resettlement and livelihood and social improvement costs are estimated at \$6.7 million. The Government and ADB will finance the resettlement costs, and JFPR, the livelihood and social improvement costs. With these funds, the Project can ensure, in line with ADB's *Involuntary Resettlement Policy*, that no one will be worse off as a result of the Project. The resettlement plan is summarized in Appendix 13.

### **2. Poverty Reduction Impact**

79. PNG is suffering from rising poverty. A World Bank assessment in 2004<sup>17</sup> noted a significant increase in the incidence of poverty from 37.5% in 1996 to 54% in 2003. While economic growth may not necessarily benefit the poor, economic contraction will certainly be detrimental to them. The poor suffer most during the economic downturn, because it takes a toll on infrastructure, social services, and law and order—all of which are fundamental to economic activities and income generation. There was a direct linkage between the long period of economic contraction in the 1990s up to 2002 and an increase in poverty in PNG.

80. The Project will contribute to economic growth by promoting industrial and commercial investment and trade. Investment and trade are the engines of economic growth and income generation. The Project will play a catalytic role in developing a swamp area that now has negligible economic and financial value into an industrial park or free-trade zone, where the country's export products can be processed and take on added value before being exported. Although it does not systemically address poverty reduction and is classified as a general intervention, the Project will contribute to some extent to poverty reduction in Lae city through job creation, resettlement, and livelihood improvement. The Project will (i) generate more than 1,000 jobs for local communities—mostly unskilled laborers based in Lae—during implementation; (ii) create employment opportunities for local populations employed as seafarers, sea workers, and port agents and operators; and (iii) become another stable source of income after its completion for the stevedoring companies, which are 50% owned by local ethnic groups. Industrial and commercial development resulting from the Project will add at least hundreds of job opportunities. Resettlement activities financed by ADB, and livelihood

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<sup>17</sup> World Bank. 2004. *Poverty Assessment: Papua New Guinea*. Washington, DC.

enhancement activities and social services financed by JFPR, will provide the poor settlers in the project area with better living conditions, social services, and opportunities for employment. The summary poverty reduction and social strategy is in Appendix 14.

### **3. Social and Gender Impact**

81. During project preparation, the potential social and gender impact of the Project and the related increase in sea and road traffic and connectivity was analyzed through field surveys, focus group discussions, and interviews with key informants. These consultations were complemented by discussions with government agencies, including MPA, the Lae district administration (LDA), the National AIDS Council, and the Morobe Provincial AIDS Council; civil society NGOs, including the National Council of Women, the Morobe Provincial Council of Women, community-based organizations and faith-based organizations; major local ethnic groups including Labu Holdings Ltd. and the Ahi Landowner Group; and the private sector including the Lae Chamber of Commerce and Industry and Lae port users. The consultations, which were documented, confirmed widespread support for the Project.

82. Women and vulnerable groups will not be disproportionately affected by the Project. Interventions for women and vulnerable groups, intended to promote gender and social equity, are part of the Project. The JFPR grant will finance training for women in child care, health, hygiene, and vocational skills, and provide opportunities for women to avail themselves of micro-credit to start a business. The HIV/AIDS prevention program will further mitigate risks for women.

### **4. Environmental Impact**

83. The Project is classified as environmental category A by ADB. It involves the clearance of about 120 hectares of bush, and the dredging and reclamation of about 6.5 million cubic meters of material—3.4 million cubic meters unsuitable and 3.1 cubic meters suitable.

84. A full environmental impact assessment of the Project was carried out under the PPTA. Project impact on flora and fauna was extensively assessed. The Project is in a swamp area whose vegetation was removed in the 1980s. The current vegetation consists of secondary plant growth. No ecologically important or protected species were found.

85. The impact on the vegetation in the project area will be irreversible. However, the impact is considered minor in view of the advanced degree of degradation of the existing vegetation and the virtual absence of natural value.

86. A major environmental concern is the disposal of 3.4 million cubic meters of unsuitable dredged material in the ocean. The disposal of dredged material was initially governed by the London Convention of 1972, which will be entirely superseded by the Protocol to the London Convention of 1996. Unlike the London Convention, which specified substances that cannot be dumped at sea, the Protocol specifies seven categories of material that may be dumped at sea subject to appropriate precautions and specified criteria. Dredged material is one of the categories.

87. Two soil tests were conducted by two different consulting companies to determine the disposal option. The first one was carried out by Haskoning Nederland BV, the Netherlands, the PPTA consultant, and the results were compared with the Dutch Standard 2000, as PNG has



not developed its own standard. The copper and nickel content was found to exceed test values, but by not more than 50%. Accordingly, in the view of Haskoning Nederland BV, the material dredged from the project area can be dumped at sea. To reconfirm the marine disposal option, Sinclair Knight Merz, Australia (SKM) undertook another soil study conforming to the Australian National Ocean Disposal Guidelines for Dredged Material. The laboratory testing results led SKM to conclude that the high concentration of metals reflects the natural environment and that the sediment from the dredge area is nontoxic and acceptable for ocean disposal according to the disposal guidelines.

88. The disposal option will be an integral part of the bidding documents and will be implemented through the construction contract. The contractor will be required to release the dredge fines at sufficient depth by means of a vertical pipe to avoid resuspension in the surface waters and subsequent dispersal by tidal or other currents. The Project provides a total of 20 person-months of international consulting services under construction supervision for stringent environmental monitoring and enforcement.

## 5. Project Risks

89. Resettlement poses the greatest risk to the Project. Risks relate to internal conflicts between local ethnic groups, conception about land ownership, procurement, contract enforcement, and social equity. To mitigate the risks, extensive dialogue has been held with local groups, at which evidence of government ownership of the project area has been presented. Two major stakeholders, the Labu and the Ahi, who used to be hostile to each other, have formed a Bulo Committee to coordinate the views of different clans. The resettlement and livelihood improvement programs equitably address the concerns of the resettling people, the Labu, and the Ahi. The ADB ADF loan will finance the relocation costs, and JFPR the interventions aimed at income and livelihood sustainability. Implementation responsibilities will be split between IPBC (resettlement) and the MPA (livelihood and social improvement). Contract packages and procurement methods have been properly defined to ensure that capable, reputable, and reliable NGOs, suppliers, and contractors are hired.

90. Another major risk is corruption, given the size of the Project, and the context in which the Project will be implemented. The risk is heightened by the need to hire contractors and consultants to implement the Project. To mitigate the risk of corruption, (i) all PMU management and staff will be trained in ADB's and the Government's anticorruption policies,<sup>18</sup> the concept of whistle-blowing, and methods of reducing vulnerability to corruption; (ii) IPBC will develop and maintain a project website to disclose the audited project financial accounts, project progress, and procurement activities; (iii) the imprest accounts will be prudently used and closely monitored; (iv) ADB will select key consultants in consultation with IPBC, and review beforehand the bidding documents and contract awards for all international and national competitive bidding contracts; and (v) financial management will be centralized in the PMU for internal control. Identifying IPBC as the EA further mitigates the risk of corruption, as Transparency International is represented on the IPBC board of directors, and IPBC is among the organizations that are PNG's most closely watched.

91. Other risks pertain to law and order, project management, construction quality, and HIV/AIDS prevalence. The project design takes those potential risks into account. The Government will be required to provide security during the project implementation and IPBC will

<sup>18</sup> Including ADB's *Anticorruption Policy* (1998, as amended to date) and zero-tolerance position, and the Government's commitments under the Anti-Corruption Action Plan for Asia and the Pacific.

assign a team of qualified counterpart staff to establish the PMU. In addition, the Project will provide 162 person-months of international and national consulting services to strengthen the PMU in contract management, financial management, socioeconomic monitoring, and resettlement. It will also finance the services of a construction supervision team to enforce the civil works contract and verify its quality.

## V. ASSURANCES

92. In addition to the standard assurances, the Government and IPBC have given the following assurances, which will be incorporated in the legal documents:

- (i) **Counterpart financing.** The Government will ensure that throughout the implementation of the Project, adequate budgetary allocations of the required counterpart funds are made, approved, and released in a timely manner in order to ensure the proper implementation of the Project.
- (ii) **Project management unit.** The Government will cause IPBC to ensure that the PMU remains fully staffed and adequately funded throughout the implementation of the Project.
- (iii) **Project steering committee.** Within 3 months of loan effectiveness, the Government will ensure that the PSC has been established.
- (iv) **Construction quality.** The Government will cause IPBC to ensure that the Project is built in accordance with the technical design specifications and that construction supervision, quality control, and contract management are implemented in accordance with internationally accepted standards.
- (v) **Environment.** The Government will ensure that the Project is carried out, and all project facilities are designed, constructed, operated, maintained, and monitored, in compliance with all applicable PNG environmental laws and regulations, and ADB's *Environment Policy* (2002). In case of any discrepancies between the PNG's environmental laws, regulations, and procedures and ADB's requirements, ADB's *Environment Policy* will prevail. The Government and IPBC will implement and comply with the environmental management plan (EMP) included in the final environmental impact assessment. The Government and IPBC will submit semiannual reports to ADB on the implementation of and compliance with the EMP. The dumping of dredged sediment offshore shall be permitted only if appropriate mitigation measures are in place and conducted in compliance with ADB's *Environment Policy* and applicable laws and regulations of the Government.
- (vi) **Project Performance and Management System.** The Government will cause IPBC to establish a project performance and monitoring system, and monitor and evaluate project impact to ensure that the Project is managed effectively and the benefits are maximized.
- (vii) **Monitoring.** The Government will cause IPBC to ensure that the project stakeholders are involved in monitoring the implementation of the Project. This

shall include ensuring that the PMU meet with the representatives of stakeholders on a regular basis to report on the delivery of project inputs, and the effectiveness of project interventions.

- (viii) **Resettlement.** The Government will ensure that the land to be utilized or acquired under the Project for the port facilities is government-owned land and that the land is not subject to any ownership dispute. The Government and IPBC shall ensure that the resettlement activities under the Project are implemented in accordance with ADB's *Involuntary Resettlement Policy* (1995) and the resettlement plan agreed upon between ADB and the Government. The Government and IPBC shall further ensure that (a) the people who are required to be relocated or have their assets dispossessed or both under the Project shall have been given adequate compensation and other related resettlement assistance in accordance with ADB's *Involuntary Resettlement Policy* and the resettlement plan prior to their relocation or the dispossession of their assets; (b) the Malahang resettlement site shall have been fully developed and ready for occupation prior to the relocation of the people affected by the Project; and (c) the new boat landing facility and fish market in SP Beach shall have been fully developed and operational, prior to the acquisition of the existing boat landing site and the associated fish market in Landaun Market for the purpose of the Project.
- (ix) **Labor, health, and gender development.** The Government will cause IPBC to ensure that civil works contractors engaged under the Project (a) comply with all applicable labor laws and related international treaty obligations, and do not employ child labor under the Project; (b) provide information to all construction workers during the construction period on the prevention of sexually transmitted infections, including HIV/AIDS, in health and safety programs; (c) provide prompt and equal pay to men and women for work of equivalent value in accordance with national laws and international treaty obligations; (d) provide safe working conditions for both male and female workers; and (e) provide separate and culturally appropriate facilities for men and women workers. The Government will cause IPBC to ensure that specific provisions to this effect are included in the bidding documents and contracts for civil works. The Government will cause IPBC to monitor compliance and report to ADB on the implementation of these activities in the project progress reports.
- (x) **Security measures.** The Government will undertake the measures required to provide adequate security for the smooth and uninterrupted implementation of the Project. The Government will also ensure that (a) all civil works contracts require the preparation of an action plan for adequate security for the smooth and uninterrupted implementation of the Project, (b) the cost of implementing such a plan is included in the budget for such civil works, and (c) such plan is fully implemented.
- (xi) **Tariff.** Six months prior to the operation of the port facilities, the Government will undertake the requisite actions to achieve tariff levels that allow full cost recovery.
- (xii) **Public-private partnership.** Within 12 months of loan effectiveness, the Government will develop a public-private partnership policy to guide business

partnership arrangement between the public and the private sector. Within 24 months of loan effectiveness, the Government will cause IPBC to prepare, in accordance with its public-private partnership policy, a time-bound action plan to develop a strategic public-private partnership model to ensure effective and efficient service delivery in the operation of the new port facilities constructed under the Project

- (xiii) **Governance and anticorruption.** The Government will cause IPBC to ensure that (a) the Project is carried out in compliance with all applicable PNG anticorruption regulations, and ADB's *Anticorruption Policy* (1998, as amended to date); (b) all PMU staff actively participate in the training in PNG's anticorruption regulations and ADB's *Anticorruption Policy*; and (c) a project website is developed and maintained to disclose the audited project financial accounts, project progress, and procurement activities.

## VI. CONDITION FOR LOAN EFFECTIVENESS

93. The following is the condition for loan effectiveness:

- (i) The project management unit will have been established to the satisfaction of ADB.

## VII. CONDITIONS FOR DISBURSEMENT

94. The following are the conditions for disbursement:

- (i) The issuance of a legal opinion showing the legal and valid ownership of the Government of the land to be acquired and utilized under the Project;
- (ii) The Subsidiary Loan Agreement will have been duly executed and delivered on behalf of and is legally binding upon the Government and IPBC in accordance with its terms

## VIII. RECOMMENDATION

95. I am satisfied that the proposed loans would comply with the Articles of Agreement of Asian Development Bank (ADB) and recommend that the Board approve

- (i) the loan of \$60,000,000 to Papua New Guinea for the Lae Port Development Project from ADB's ordinary capital resources, with interest to be determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility; a term of 24 years, including a grace of period of 4 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft loan and project agreements presented to the Board;
- (ii) the loan in various currencies equivalent to Special Drawing Rights 25,242,000 to Papua New Guinea for the Lae Port Development Project, from ADB's Special Funds resources, with an interest charge at the rate of 1.0% per annum during

the grace period and 1.5% per annum thereafter; a term of 32 years, including a grace period of 8 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft loan and project agreements presented to the Board;

- (iii) the administration by ADB of a loan not exceeding \$6,000,000 to Papua New Guinea for the Lae Port Development Project to be provided by the OPEC Fund for International Development; and
- (iv) the administration by ADB of a grant assistance not exceeding \$750,000 to Papua New Guinea for the Lae Port Development Project, to be provided from the Cooperation Fund for Fighting HIV/AIDS in Asia and the Pacific.

Haruhiko Kuroda  
President

26 November 2007

## DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets/Indicators	Data Sources/Reporting Mechanisms	Assumptions and Risks
<p><b>Impact</b></p> <p>Enabling environment for industrial and commercial development is created.</p>	<p>15–20 new industrial and commercial enterprises established by 2020</p> <p>500–1,000 jobs generated by 2020</p>	<p>Post–project completion survey</p>	<p><b>Assumptions</b></p> <p>Policy environment and incentives for investment improve.</p> <p>Law-and-order problems are addressed.</p>
<p><b>Outcome</b></p> <p>Port bottleneck constraining trade is relieved.</p>	<p>Lae port cargo handling capacity increased by about 1.4 million revenue tons per year after completion</p> <p>Lae port cargo handling rate increased from 140 tons per hour to 210 tons per hour by 2015</p> <p>Ship calls increased from 600 to 900 by 2017</p>	<p>Stevedoring and cargo handling reports</p> <p>Port statistics</p>	<p><b>Assumptions</b></p> <p>Highlands Highway is rehabilitated.</p> <p>Macroeconomic and political stability continues.</p> <p>Global economy remains buoyant and sustains high commodity prices.</p> <p>Lae Port management is improved by AusAID.</p>
<p><b>Outputs</b></p> <ol style="list-style-type: none"> <li>1. New port facilities are operational.</li> <li>2. Livelihood of directly and indirectly affected people is improved.</li> <li>3. HIV/AIDS incidence in Lae is reduced.</li> </ol>	<p>Basin, multipurpose berth, and terminal constructed by 2011</p> <p>482 new houses for 2,912 people built by 2008</p> <p>3 schools in Malahang expanded by 2008</p> <p>473 children enrolled in the schools in Malahang by 2008</p> <p>1 health clinic improved by 2008</p> <p>\$40,000 micro-credit provided to 200 households by 2011</p> <p>HIV/AIDS prevalence in Lae and Huon district decreased by 20%</p> <p>Income levels for re-settlers and Labu people increased by 3–</p>	<p>Independent monitoring reports by the NGO</p> <p>Provincial administration's health and education reports</p> <p>Reports of Wau Microbank Limited</p>	<p><b>Assumptions</b></p> <p>There is no sudden change in Government's strategic focus and priorities.</p> <p>Government provides counterpart funds on time.</p> <p>Governance issues will not impede the implementation program.</p>

Design Summary	Performance Targets/Indicators	Data Sources/Reporting Mechanisms	Assumptions and Risks
	5% by 2011		
<b>Activities with Milestones</b> <ol style="list-style-type: none"> <li>1. Construct a tidal basin (700 x 400 meters), a multipurpose berth of 240 meters, and terminal works by 2011.</li> <li>2. Resettle 482 households by 2008.</li> <li>3. Rehabilitate and enhance the livelihood of the affected people by 2010.</li> <li>4. Mobilize the response of the private sector and NGOs to HIV/AIDS.</li> <li>5. Mitigate environmental risks through engineering design, the construction contract, and environmental monitoring.</li> </ol>			<b>Inputs</b> <ul style="list-style-type: none"> <li>• ADB: <ul style="list-style-type: none"> <li>\$60 million OCR loan</li> <li>\$40 million ADF loan</li> <li>\$1.5 million JFPR grant</li> <li>\$0.75 million HIV/AIDS Cooperation Fund grant</li> </ul> </li> <li>• OFID: \$6 million loan</li> <li>• Government: \$45.75 million</li> <li>• Beneficiaries: Government, private sector, landless and poor settlers, local communities, and nongovernment organizations (NGOs)</li> </ul>

ADF = Asian Development Fund, AusAID = Australian Agency for International Development, HIV/AIDS = human immunodeficiency virus/acquired immune deficiency syndrome, JFPR = Japan Fund for Poverty Reduction, NGO = nongovernment organization, OCR = ordinary capital resources, OFID = OPEC Fund for International Development.

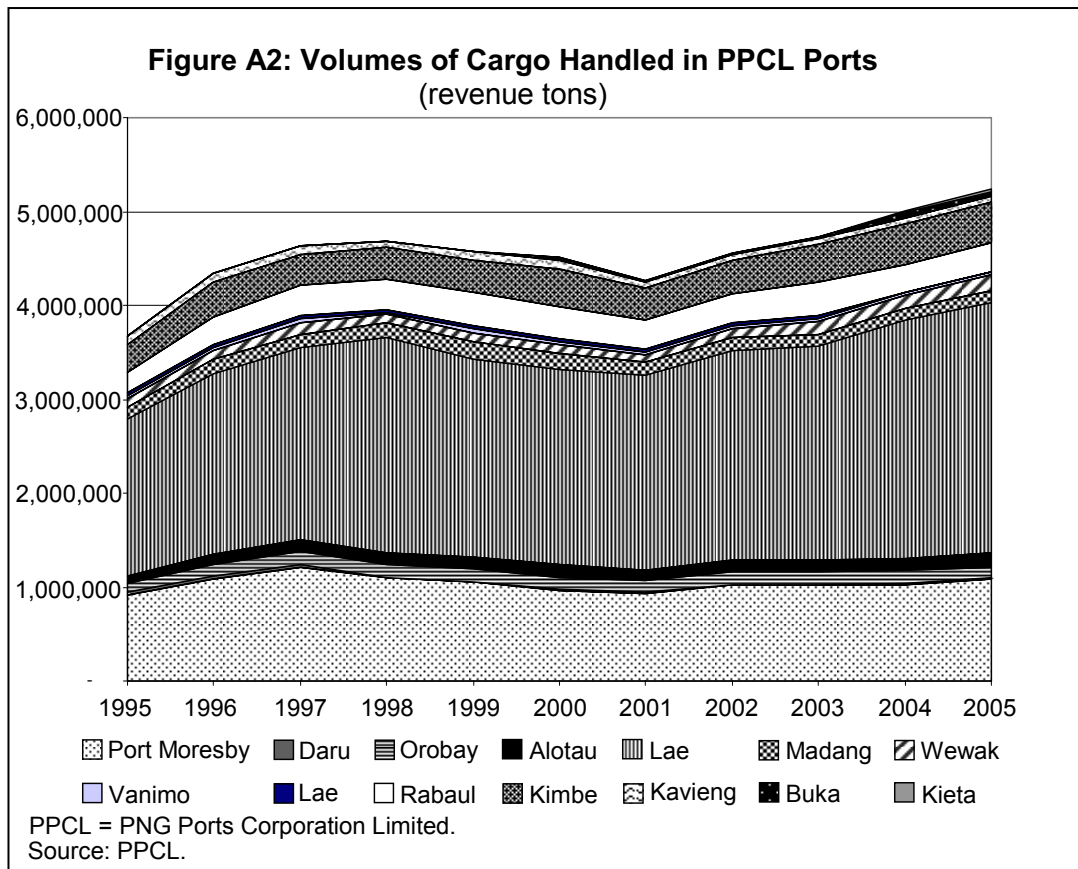
## ANALYSIS OF THE PORT SECTOR

### A. An Overview

1. **Port Infrastructure.** The port sector of Papua New Guinea (PNG) comprises 22 declared ports and many small wharves, jetties, and landing stages. Only the ports of Lae, Moresby, Madang, Kimbe, and Rabaul have appropriate port infrastructure and receive international as well as coastal traffic. Private organizations also establish and operate port facilities where government ports do not exist or where there are greater benefits. This is particularly the case for forestry, petroleum, mining companies, and some agricultural firms.

2. **Cargo Throughput.** Of 22 declared ports, PNG Port Corporation Limited (PPCL) operates 16 major ports, including two ports operated by its agents. The 16 ports are Aitape, Alotau, Buka, Daru, Kavieng, Kieta, Kimbe, Lae, Lorengau, Madang, Moresby, Oro Bay, Rabaul, Samarai, Wewak, and Vanimo. The other six ports are either not in operation or are operated by commercial entities.

3. About 90% of vessel calls and more than 80% of PNG's international and domestic cargo are handled at PPCL-operated ports. The throughput at the various ports in the past 10 years is shown in Figure A2. The increase in cargo handled since 2002 is noticeable. The ports of Lae and Port Moresby account for over 70% of the total throughput. Kimbe represents 8%, and Rabaul, 6%.





**B. Lae Port**

4. Lae port is PNG's single most important port for international and domestic trade. Table A2 gives details of its growing share in the total volume of cargo handled by PPCL from 1995 to 2005.

**Table A2: Share of Lae Port in Cargo Handled by PPCL in 1995 and 2005**  
(%)

Item	Imports		Exports		Transit		Total	
	1995	2005	1995	2005	1995	2005	1995	2005
<b>Overseas</b>								
Containers	54.9	64.7	60.3	62.6				
Break-bulk	62.3	60.6	15.3	57.3				
Palm Oil			0.0	0.0				
Fuel	59.0	39.2	9.1	15.2				
Total	57.5	62.4	28.0	39.4	11.8	48.4	49.9	54.3
<b>Coastal</b>								
Containers	24.6	28.7	61.1	66.7				
Break-bulk	16.9	30.5	51.3	45.0				
Palm Oil								
Fuel	0.2	55.6	44.9	54.8				
Total	19.4	35.6	54.1	59.9	10.3	36.1	37.7	47.0
<b>Total</b>	<b>47.6</b>	<b>51.8</b>	<b>42.3</b>	<b>50.5</b>	<b>11.3</b>	<b>44.6</b>	<b>45.5</b>	<b>51.0</b>

PPCL = PNG Ports Corporation Limited.

Source: PPCL.

5. The rapid increase in cargo volume since 2002 has led to congestion at Lae port. Unless port capacity is expanded to accommodate the rising volume of imports and exports, vessel waiting times may increase to the limit that shipping companies decide not to call at the port any longer. PNG's economy and its potential to develop will then be seriously affected.

**C. Independent Public Business Corporation (IPBC)**

6. IPBC was established in 2002 by the IPBC Act to succeed the Privatization Commission. It is the trustee and manager of all the assets vested in the General Business Trust, including 23 state-owned enterprises (SOEs) and state equities in various local companies in the mining and petroleum and other industries. Its board of directors comprises representatives from Transparency International, the Department of the Attorney General, the PNG Trade Union Congress, the PNG Chamber of Commerce, the National Council of Women, and the Department of Treasury.

7. According to the IPBC Amendment Act of 8 June 2007, IPBC's strategic objectives include (i) catalyzing economic and social development, and (ii) mobilizing resources to implement government policy and achieve its objectives. Its functions have been expanded to include acting as a central borrowing and capital-raising authority for SOEs and as an agent for SOEs in negotiating, entering into, and carrying out financial arrangements.

8. From 2003 to 2005, the net trust income rose from about K23 million to almost K34 million, and net trust assets, from K1.45 million to K3.24 million.

#### D. PNG Ports Corporation Limited (PPCL)

9. From 1963 to 2002, the major ports were owned and operated by PNG Harbours Board, established as a self-supporting commercial statutory authority fully owned by the Government. In 2002, the Harbours Board was corporatized as PNG Harbours Limited (PNGHL) as a first step to privatizing the ports. In November 2006, PNGHL was renamed PNG Ports Corporation Ltd. (PPCL), still a state-owned company under IPBC's trust.

10. Before it was corporatized in 2002, PPCL was badly managed and had poor financial management and planning and weak internal controls. As a result, it operated at a loss from 1998 to 2003. However, since 2004, PPCL has recorded profits: K17.7 million in 2004, K5.6 million in 2005, and K22.6 million in 2006.<sup>1</sup> The improved financial performance is the result of an increase in tariffs and a reduction in costs.

#### E. Institutional Capacity Assessment

11. Although it has a staff of more than 400, which is not a small number for handling 16 ports, PPCL does not have core in-house capacity in port engineering, contract management and supervision, port operation, financial management, and information technology. As a result, contract award processes are problematic and time-consuming, ongoing maintenance programs are progressing at an unacceptable pace or are at a standstill, port efficiency is low, management information is available but unprocessed, and financial statements have been disclaimed by the auditor. In addition, PPCL has well-established systems that are highly bureaucratic and inefficient.

12. On the other hand, IPBC is dynamic and proactive. IPBC is the trustee of 23 SOEs including PPCL. It also owns equity in some local enterprises. Although it does not have capacity at this stage, IPBC stands a better chance to mobilize a good team of professionals to staff the PMU because (i) it has clean financial statements and a stronger financial position than PPCL; (ii) it is now stable after election and has good management, comprising a board with representation from Transparency International and staff, mostly from the private sector; (iii) it will be more devoted to the Project than PPCL, as PPCL has its own capital and maintenance program; and (iv) it is a young organization in the process of establishing itself, with a tendency to embrace institutions favorable to its growth.

#### F. Issues and Challenges

13. **Regulatory Framework.** The current regulatory framework is shaped by government decisions on the privatization of the ports. In 2002, before the election, the Government attempted to privatize PNGHL and transferred its government functions to the Department of Transport (DOT). After the election, the new government suspended the privatization program, and eventually decided not to privatize PNGHL in 2005. Instead, PNGHL has been put under IPBC's trusteeship until the time when it can be privatized, while its tariff-setting and service standards are regulated by a 10-year contract with Independent Consumer and Competition Commission (ICCC). With these developments and the creation of the National Maritime Safety Authority (NMSA), the division of responsibility between PPCL, DOT, and NMSA is unclear. There is confusion as to who should do what.

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<sup>1</sup> Unaudited results from PPCL's management accounts.

14. **Private Sector Participation.** Private sector participation is needed to provide necessary financing for maintenance as well as managerial skills. However, of PPCL's 16 ports, only two are profitable, three just manage to break even, and the rest need to be cross-subsidized. It is a challenge for PPCL to attract increasing participation from the private sector, and to ensure efficient and effective port infrastructure and operations in the remote areas on the mainland and other islands of PNG. A system of cross-subsidization of the non-profitable port installations will always be required and will need to be included in any arrangements made with the private sector.

15. **Operational Issues.** Currently, all decisions are made at PPCL's headquarters in Port Moresby. Operational and financial delegation of authority is low between the board of directors and the management, and between the headquarters and individual ports. While centralization has led to some benefits, it has also caused inefficiency, indecisiveness, and irresponsiveness to port users. The problem is more manifest at Lae port, which is the largest port and generates more than 50% of PPCL's revenue. On the other hand, the current Lae port management, without substantial capacity building, may not be ready to take on greater operational and financial authority.

16. **Maintenance.** Because of the economic downturn, little maintenance was done in the 1990s in the port sector, as in other sectors. Almost all PPCL ports require maintenance. PPCL needs to clear its maintenance backlog and move from a reactive to a proactive approach.

#### **G. Government and PPCL's Strategy**

17. The Government and PPCL have organized a series of studies—among these, the strategic and organizational review prepared by CPCS Transcom—to strengthen the performance and competitiveness of PPCL and the port sector. PPCL is restructuring the skill mix within the organization by reducing staff without appropriate skills and recruiting the necessary staff through a competitive process. It has developed a 5-year maintenance program with a total budgeted amount of K165 million. For 2007, K44 million has been budgeted for maintenance. The Government and PPCL have also agreed that an appropriate level of financial and operational authority should be delegated to Lae port management once it is ready to take on greater responsibilities.

## EXTERNAL ASSISTANCE TO THE PORT AND MARITIME SECTOR

Table A3.1: Asian Development Bank

A. Loan		Loan Amount (\$ million)			Date
Loan Number	Project Title	ADF	OCR	Total	Approved
0468-PNG	Lae Port	-	12.0	12.000	25 Sep 80
0469-PNG	Lae Port	8.000		8.000	25 Sep 80
0738-PNG	Ports Development	-	11.0	11.000	02 Jul 85
1153-PNG	Transport Infrastructure Development	-	12.0	12.000	14 Jan 91
1754-PNG	Rehabilitation of the Maritime Navigation	-	19.8	19.800	12 Sep 00
2079-PNG	Community Water Transport	19.005		19.005	24 Mar 04
<b>Total</b>		<b>27.005</b>	<b>54.8</b>	<b>81.805</b>	

B. Technical Assistance		Type	TA Amount (\$)	Date Approved
0284-PNG	Lae Port Development	PP	150,000	06 Mar 79
0473-PNG	Port Development Study	PP	250,000	29 Jul 82
0642-PNG	Navigational Aids Improvement Study	PP	240,000	10 Dec 84
0686-PNG	Management Information Systems Study	AD	120,000	02 Jul 85
1077-PNG	Second Ports Development	PP	350,000	02 Dec 88
1304-PNG	Ports Subsector Tariff Revision and Training	AD	100,000	30 May 90
1390-PNG	Institutional Strengthening of the Ports Subsector	AD	367,000	18 Oct 90
3162-PNG	Rehabilitation of the Navigation Aids System	PP	500,000	01 Feb 99
3615-PNG	Community Water-Transport Project	PP	580,000	21 Dec 00
4793-PNG	Lae Port Development - Tidal Basin Phase I	PP	900,000	30 May 06
<b>Total</b>			<b>3,557,000</b>	

AD = advisory, ADF = Asian Development Fund, OCR = ordinary capital resources, PNG = Papua New Guinea, PP = project preparatory, TA = technical assistance.

Source: Asian Development Bank estimates.

Table A3.2: World Bank Group

Project Name	Loan Amount (\$ million)			Date
	IBRD	IDA	Total	Approved
Ports Project (Kieta, Lae, Port Moresby, and Alotau)		9.2	9.2	1972
Second Ports (Port Moresby and Samarai)	3.5		3.5	1978
<b>Total</b>	<b>3.5</b>	<b>9.2</b>	<b>12.7</b>	

IBRD = International Bank for Reconstruction and Development, IDA = International Development Agency.

Source: World Bank.

Table A3.3: Australia

Project Name	Amount (A\$)	Date Approved
On Scene Oil Spill Model	128,000	1993
Maritime College Project	8,700,000	1995
Rehabilitation of the Maritime Navigation Aids System <sup>a</sup>	800,000	2000
Bougainville Wharves Rehabilitation Project	11,500,000	2001
PNG International Shipping and Port Security (ISPS) Assistance Project	54,000	2004
<b>Total</b>	<b>21,182,000</b>	

<sup>a</sup> Attached to Asian Development Bank. 2000. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Papua New Guinea for the Rehabilitation of the Maritime Navigation Aids System*. Manila (Loan 1754-PNG).

Source: Australian Agency for International Development.

Table A3.4: Other Funding Sources

Project Name	Funding Source	Loan Amount (\$ million)	Year
Second Ports (Port Moresby and Samarai)	Kuwait Fund	3.5	1978
Community Water Transport	OPEC Fund	4.0	2004

Source: Asian Development Bank estimates.

## DETAILED COST ESTIMATES BY EXPENDITURE

(million)

Item	Kina			US Dollar		
	Foreign	Local	Total	Foreign	Local	Total
<b>A. Civil Works<sup>a</sup></b>						
1. Port Facilities <sup>b</sup>	212.05	121.07	333.12	68.07	38.86	106.93
2. Resettlement Housing Construction	0.00	4.77	4.77	0.00	1.53	1.53
3. Canoe Landing Site Development	0.00	3.00	3.00	0.00	0.96	0.96
<b>Subtotal (A)</b>	<b>212.05</b>	<b>128.84</b>	<b>340.89</b>	<b>68.07</b>	<b>41.35</b>	<b>109.42</b>
<b>B. Land Acquisition</b>	<b>0.00</b>	<b>4.82</b>	<b>4.82</b>	<b>0.00</b>	<b>1.49</b>	<b>1.49</b>
<b>C. Compensation and Relocation</b>	<b>0.00</b>	<b>1.00</b>	<b>1.00</b>	<b>0.00</b>	<b>0.31</b>	<b>0.31</b>
<b>D. Livelihood and Social Support</b>	<b>0.00</b>	<b>4.67</b>	<b>4.67</b>	<b>0.00</b>	<b>1.50</b>	<b>1.50</b>
<b>E. HIV/AIDS Prevention</b>	<b>2.34</b>	<b>0.00</b>	<b>2.34</b>	<b>0.75</b>	<b>0.00</b>	<b>0.75</b>
<b>F. Consulting</b>						
1. Support to PMU	9.16	0.00	9.16	2.94	0.00	2.94
2. Construction Supervision	18.69	0.00	18.69	6.00	0.00	6.00
3. Housing Construction Supervision	0.00	1.56	1.56	0.00	0.50	0.50
4. Audit Fees	0.00	0.40	0.40	0.00	0.13	0.13
<b>Subtotal (F)</b>	<b>27.85</b>	<b>1.96</b>	<b>29.81</b>	<b>8.94</b>	<b>0.63</b>	<b>9.57</b>
<b>G. Training</b>						
1. Training for Resettlement Committee	0.09	0.00	0.09	0.03	0.00	0.03
<b>H. Contingencies</b>						
1. Physical Contingencies for Port Facilities <sup>c</sup>	33.12	18.18	51.30	10.63	5.84	16.47
2. Contingencies for A2, C, and F3	0.00	1.18	1.18	0.00	0.38	0.38
3. Price Contingencies for Port Facilities <sup>d</sup>	15.17	12.56	27.73	4.87	4.03	8.90
<b>Subtotal (H)</b>	<b>48.29</b>	<b>31.92</b>	<b>80.21</b>	<b>15.50</b>	<b>10.25</b>	<b>25.75</b>
<b>I. Financial Charges</b>						
1. Commitment Charge	1.74	0.00	1.74	0.56	0.00	0.56
2. IDC	14.39	0.00	14.39	4.62	0.00	4.62
<b>Subtotal (I)</b>	<b>16.13</b>	<b>0.00</b>	<b>16.13</b>	<b>5.18</b>	<b>0.00</b>	<b>5.18</b>
<b>Total</b>	<b>306.75</b>	<b>173.21</b>	<b>479.96</b>	<b>98.47</b>	<b>55.53</b>	<b>154.00</b>

ADB = Asian Development Bank, IDC = interest during construction, PMU = project management unit.

<sup>a</sup> In 2007 prices.<sup>b</sup> Including \$4.44 million taxes and duties calculated at 10% of the value of imported equipment.<sup>c</sup> Physical contingencies estimated at around 15%.<sup>d</sup> Price contingencies computed at 1.2% on foreign exchange costs and 3.2% on local currency costs; includes provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.

Source: Asian Development Bank estimates.

**DETAILED COST ESTIMATES BY FINANCING AGENCY**  
(million)

Item	ADB		Other Cofinanciers				HIV/AIDS		Government			
	Cost		ADF		OFID		JFPR		Cooperation Fund		Government	
	\$	% of Cost Category	\$	% of Cost Category	\$	% of Cost Category	\$	% of Cost Category	\$	% of Cost Category	\$	% of Cost Category
<b>A. Civil Works<sup>a</sup></b>												
1. Port Facilities <sup>b</sup>	106.93	31.00	37.39	35.00	6.00	6.00	0.00	0.00	0.00	0.00	30.24	28.00
2. Resettlement Housing Construction	1.53	0.00	1.53	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3. Caneo Landing Site Development	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.96	100.00
<b>Subtotal (A)</b>	<b>109.42</b>	<b>33.30</b>	<b>38.92</b>	<b>36.00</b>	<b>6.00</b>	<b>5.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>31.20</b>	<b>29.00</b>
<b>B. Land Acquisition</b>	<b>1.49</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>1.49</b>	<b>100.00</b>
<b>C. Compensation and Relocation</b>	<b>0.31</b>	<b>0.00</b>	<b>0.31</b>	<b>100.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>D. Livelihood and Social Support</b>	<b>1.50</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>1.50</b>	<b>100.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>E. HIV/AIDS Prevention</b>	<b>0.75</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.75</b>	<b>100.00</b>	<b>0.00</b>	<b>0.00</b>
<b>F. Consulting</b>												
1. PMU	2.94	2.94	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2. Construction Supervision	6.00	6.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3. Housing Construction Supervision	0.50	0.00	0.50	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4. Audit Fees	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	100.00
<b>Subtotal (F)</b>	<b>9.57</b>	<b>8.94</b>	<b>93.40</b>	<b>5.20</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.13</b>	<b>1.40</b>
<b>G. Training</b>	<b>0.03</b>	<b>0.00</b>	<b>0.03</b>	<b>100.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
1. Training for Resettlement Comm												
<b>H. Contingencies</b>												
1. Physical Contingencies for Port Facilities <sup>c</sup>	16.47	8.86	53.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.61	46.20
2. Contingencies for A2, C, and F3	0.38	0.00	0.24	63.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	37.00
3. Price Contingencies for Port Facilities <sup>d</sup>	8.90	8.90	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Subtotal (H)</b>	<b>25.75</b>	<b>17.76</b>	<b>69.00</b>	<b>1.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>7.75</b>	<b>30.00</b>
<b>I. Financial Charges</b>												
1. Commitment Charge	0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.56	100.00
2. IDC	4.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.62	100.00
<b>Subtotal I</b>	<b>5.18</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>5.18</b>	<b>100.00</b>
<b>Total</b>	<b>154.00</b>	<b>60.00</b>	<b>38.90</b>	<b>26.00</b>	<b>6.00</b>	<b>3.90</b>	<b>1.50</b>	<b>1.00</b>	<b>0.75</b>	<b>0.50</b>	<b>45.75</b>	<b>29.70</b>

ADB = Asian Development Bank, ADF = Asian Development Fund, HIV/AIDS Cooperation Fund = Cooperation Fund for Fighting HIV/AIDS in Asia and the Pacific, IDC = interest during construction, JFPR = Japan Fund for Poverty Reduction, OCR = ordinary capital resources, OFID = OPEC Fund for International Development, PMU = project management unit.

<sup>a</sup> In 2007 prices.

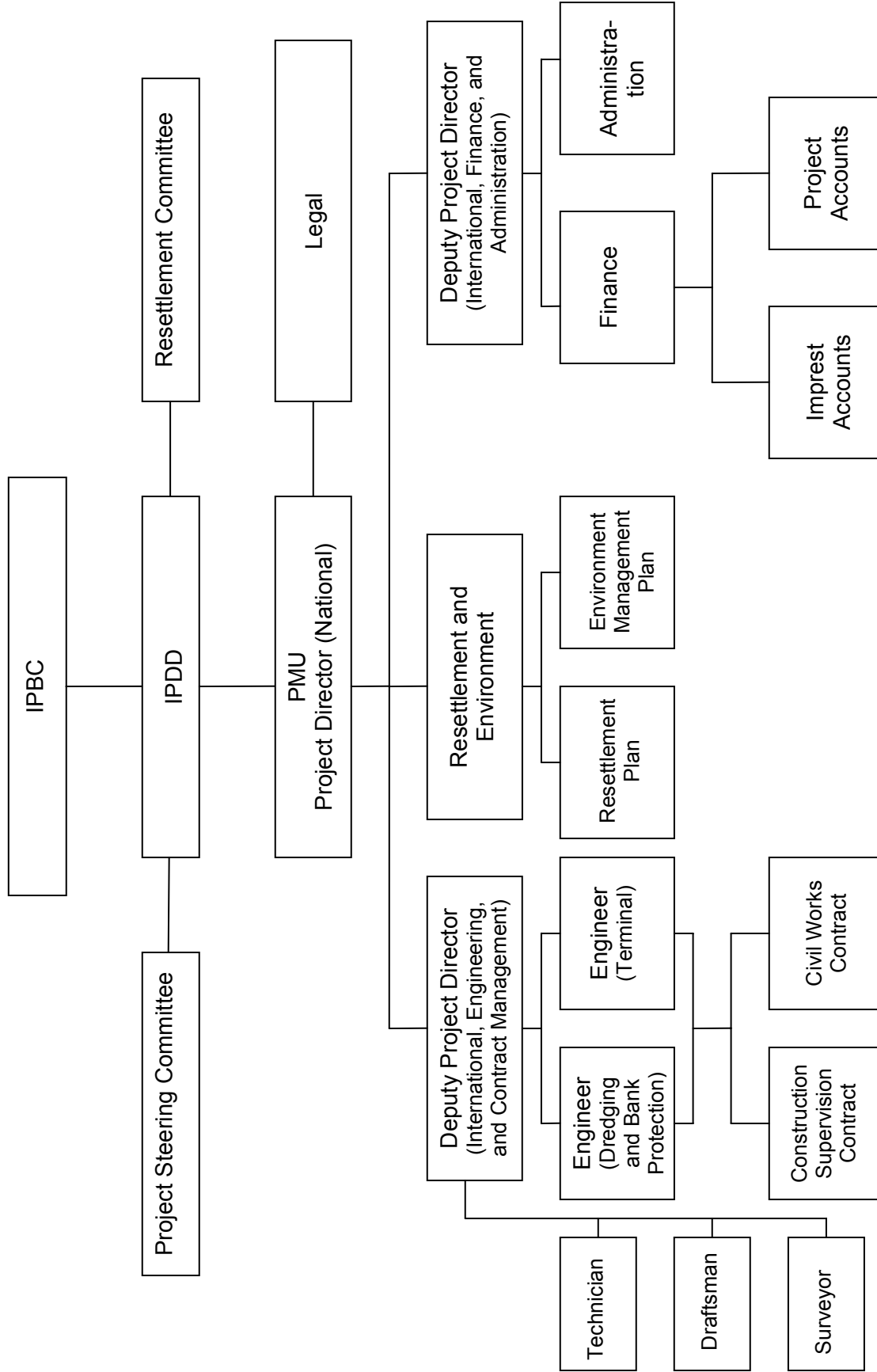
<sup>b</sup> Including \$4.44 million taxes and duties calculated at 10% of the value of imported equipment.

<sup>c</sup> Physical contingencies estimated at around 15%.

<sup>d</sup> Price contingencies computed at 1.2% on foreign exchange costs and 3.2% on local currency costs; includes provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.

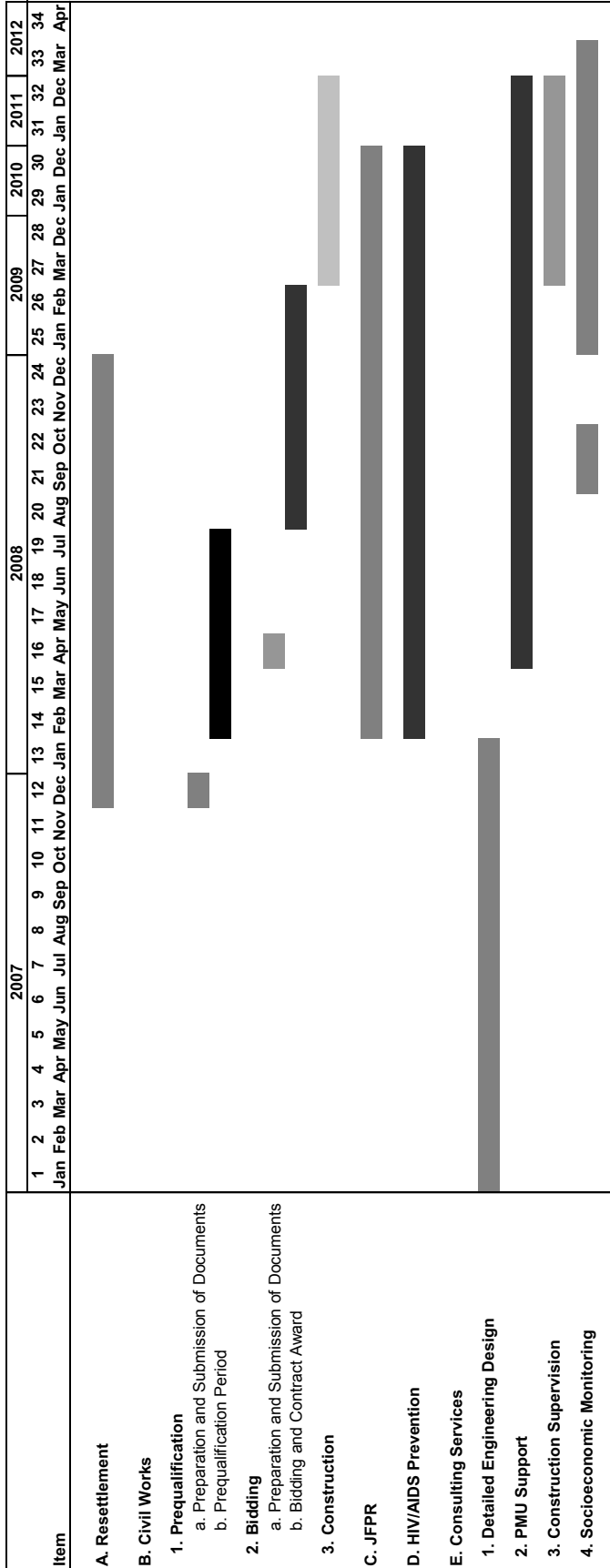
Source: Asian Development Bank estimates.

**ORGANIZATION STRUCTURE FOR PROJECT IMPLEMENTATION**



IPBC = Independent Public Business Corporation, IPDD = Infrastructure Planning and Development Division, PMU = project management unit.  
 Sources: Asian Development Bank and IPBC.

### IMPLEMENTATION SCHEDULE



HIV/AIDS = human immunodeficiency virus/acquired immune deficiency syndrome, JFPR = Japan Fund for Poverty Reduction, PMU = project management unit.  
Source: Asian Development Bank estimates.



## PROCUREMENT PLAN

### Project Information

Country	Papua New Guinea
Name of Borrower	The Independent State of Papua New Guinea
Project Name	Lae Port Development Project
Loan or TA Reference	To be determined (tbd)
Date of Effectiveness	tbd
Amount US\$ (total from all financiers):	\$119,839,000.00
Of which Committed, US\$	tbd
Executing Agency	The Independent Public Business Corporation
Approval Date of Original Procurement Plan	23 November 2007
Approval of Most Recent Procurement Plan	23 November 2007
Publication for Local Advertisement <sup>1</sup>	First Quarter 2008
Period Covered by this Plan	18 months after approval of this plan

### Procurement Thresholds, Goods and Related Services, Works, and Supply and Installation

Procurement Method	To Be Used Above
ICB Works	> \$3 million
ICB Goods	> \$500,000
NCB Works	> \$100,000, ≤ \$3,000,000
NCB Goods	> \$100,000, ≤ \$500,000
Shopping Works	≤ \$100,000
Shopping Goods	≤ \$100,000
<b>Exceptional Methods</b>	

ICB = international competitive bidding, NCB = national competitive bidding.

### Procurement Thresholds, Consultants' Services

Procurement Method	To Be Used Above (Value \$)
Quality- and Cost-Based Selection (QCBS)	\$600,000
Consultants' Qualifications Selection (CQS)	Less than \$200,000
Least-Cost Selection (LCS)	Not applicable
<b>Exceptional Methods</b>	
Single-source selection, selection of individual consultants.	

### List of Contract Packages and Consulting Services

Contract Description	Estimated Cost (\$ million)	Procurement Method <sup>a</sup>	Expected Date of Advertisement	Prior Review (Y/N)	Comments
<b>A. Civil Works</b>					
<b>1. Civil Works Financed with ADB Loans</b>					
a. Dredging, land reclamation, and wharf and terminal construction	106.930	ICB with prequalification	October 2007	Yes	
b. Construction of 482 houses	1.530	NCB	October 2007	Yes	
<b>2. Civil Works Financed by JFPR</b>					
a. School expansion	0.382	NCB	October 2007	Yes	
b. Expansion of Malahang Clinic	0.034	Shopping		No	
c. Sport area	0.031	Shopping		No	
d. Market roofing	0.062	Shopping		No	
e. Community center	0.093	Shopping		No	
<b>B. Consulting Services</b>					

<sup>1</sup> General procurement notice, invitations to pre-qualify and to bid, calls for expressions of interest.

<b>Contract Description</b>	<b>Estimated Cost (\$ million)</b>	<b>Procurement Method<sup>a</sup></b>	<b>Expected Date of Advertisement</b>	<b>Prior Review (Y/N)</b>	<b>Comments</b>
<b>1. Consulting Services Financed with ADB Loans</b>					
a. Construction supervision and environmental monitoring	6.000	QCBS	October 2007		ADB selection
b. Individual consultants in port engineering, contract management, financial management, socioeconomic monitoring, and resettlement	2.940	ICS			ADB selection Diverse expertise required
c. Construction supervision for housing construction	0.500	QCBS		Yes	ADB selection
<b>2. Consulting Services Financed by JFPR</b>					
a. Construction supervision for expansion of schools and health clinic	0.010	SSS		No	Small value
b. Construction supervision for community infrastructure	0.005	SSS		No	Small value
c. Agricultural services for Labu people	0.093	SSS			Small value
d. Fish culture for Labu people	0.190	ICS			ADB selection Individuals have technical know-how
e. Micro-credit finance program	0.052	SSS			Wau Microbank Limited is the only such bank in Lae
f. Skills training for women	0.056	SSS			Small value
g. Vocational training for men	0.031	SSS			Small value
h. Monitoring	0.150	CQS			
<b>3. Consulting Services Financed by HIV/AIDS Cooperation Fund</b>					
a. HIV/AIDS prevention	0.750	SSS			ADB selection. Lae Chamber of Commerce is capable of implementation

ADB = Asian Development Bank, CQS = consultants' qualifications selection, HIV/AIDS = human immunodeficiency virus/acquired immune deficiency syndrome, ICB = international competitive bidding, ICS = individual consultant selection, JFPR = Japan Fund for Poverty Reduction, NCB = national competitive bidding, QCBS = quality- and cost-based selection, SSS = single source selection.

<sup>a</sup> For ICB contracts, three copies of the invitation to bid and the prequalification and bidding documents should be submitted to the Asian Development Bank (ADB) for approval 21 days before the proposed date for the issuing of the bidding documents. The bid evaluation report and the proposal for contract award should be submitted to ADB for review and approval 30 days before the expiration of the bid validity. Domestic preference will apply to ICB contracts only.

Source: Asian Development Bank estimates.

## OUTLINE TERMS OF REFERENCE FOR CONSULTING SERVICES TO PROJECT MANAGEMENT UNIT

1. The project management unit (PMU) will be established by the Independent Public Business Corporation (IPBC). The Project will strengthen the PMU with individual consultants to assist in awarding and managing contracts, safeguarding financial integrity, and implementing the resettlement plan, the Japan Fund for Poverty Reduction (JFPR) Project, and the HIV/AIDS Cooperation Fund Program. It is anticipated that a total of 162 person-months of international and national consulting services (90 person-months international and 72 person-months national) will be required to strengthen the PMU.

### **A. Project Implementation Specialist/Port Engineer** (international, 42 person-months)

2. The scope of work includes but is not limited to the following:

- (i) Acting as the deputy project director of the PMU.
- (ii) Establishing a clear line of command within the PMU and procedures, and cultivating a disciplined workforce.
- (iii) Assisting the project director in motivating, managing, and maintaining a team of competent and stable staff within the PMU.
- (iv) Establishing a bid evaluation committee consisting of relevant and capable members in consultation with IPBC and the project director of the PMU.
- (v) Organizing the bidding and bid evaluation for civil works in line with the *Procurement Guidelines* (2007, as amended from time to time) of the Asian Development Bank (ADB), and preparing bid evaluation reports.
- (vi) Working closely with the construction supervision consulting firm that will act as the engineer, as defined in the terms and conditions of Federation International des Ingenieurs-Conseil (FIDIC), to achieve as far as possible a smooth running contract where potential problems are identified as soon as possible and dealt with in an efficient and effective way.
- (vii) Managing the contract with the engineer, and certifying financial claims before the contract is signed by the project director.
- (viii) Reviewing and certifying variations in the construction contract(s) and submitting these to the project director for approval. Contract variations should be dealt with in a timely fashion to avoid delays and consequent costs to the contract.
- (ix) Assisting the project director and PMU in its role as the employer, as defined in FIDIC terms and conditions, and overseeing the performance of the engineer and, through the engineer, the performance of the civil works contractor(s). Reviewing the engineer's payment certificates and ensuring, as far as possible, that these are processed such that the employer meets its obligations with regard to payments under the contract.
- (x) Reviewing submissions from the engineer relating to claims, requests for additional payment, and requests for extensions of time submitted by the contractor, and working with the contractor and the engineer to achieve a reasonable outcome.
- (xi) Preparing monthly and quarterly progress reports in line with ADB's project administration memorandum.
- (xii) Preparing a project completion report in line with ADB's project administration memorandum.
- (xiii) Training the PMU staff to manage and supervise contracts.

**B. Financial Management Specialist** (international, 42 person-months)

3. The scope of service includes but is not limited to the following:

- (i) Establishing financial rules and procedures, and developing an accounting system to maintain the project accounts and financial management system within the PMU.
- (ii) Developing disbursement/cash management processes and procedures with appropriate internal controls and reporting for the various sources of funding.
- (iii) Maintaining separate project accounts and financial statements to identify goods and services financed from different sources.
- (iv) Safeguarding financial integrity in the PMU.
- (v) Arranging annual auditing and ensuring that the audited project accounts and financial statements, and the auditor's reports in English, are submitted to ADB within 6 months after the end of each financial year.
- (vi) Preparing monthly, quarterly, and annual financial reports and submitting them to the PMU, IPBC, and ADB within 2 weeks after the end of each period.
- (vii) Training the local staff in financial management. Cultivating a financially disciplined workforce.
- (viii) Collecting data for the project performance and socioeconomic monitoring system designed by the socioeconomic specialist, and transmitting the data to the specialist.

**C. Project Performance and Socioeconomic Monitoring Specialist** (international, 6 person-months)

4. The scope of services includes but is not limited to the following:

- (i) Reviewing the project documents, including the report and recommendation of the President, loan documents, the resettlement plan, and project progress reports.
- (ii) Establishing a project performance and socioeconomic monitoring system adequate for assessing project performance and impact in relation to the project goal, outcome, and outputs, including gender-disaggregated baseline data, monitoring methodology, frequency of data collection, and record keeping. Indicators may include (a) industrial and commercial activities, (b) job creation, (c) exports and imports, (d) traffic volume, (e) port charges, (f) income generation, and (g) social services.
- (iii) Communicating with the international financial specialist and obtaining data.
- (iv) Analyzing the data collected and assessing the performance and socioeconomic impact of the Project against the baseline data.
- (v) Preparing the final report to be incorporated in the project completion report, and submitting it to the PMU, IPBC, and ADB within 3 months after the end of each year.

**D. Resettlement Specialist** (national, 72 person-months)

5. The scope of work includes but is not limited to the following:

- (i) Working under the leadership of the PMU.

- (ii) Reviewing and gaining familiarity with the resettlement plan, and the JFPR and HIV/AIDS Cooperation Fund programs.
- (iii) Preparing specifications and procuring the housing and construction contracts in accordance with ADB's *Procurement Guidelines* (2007, as amended from time to time).
- (iv) Arranging transport and relocating people in the project area in an orderly manner.
- (v) Contracting appropriate agencies to implement the JFPR and HIV/AIDS Cooperation Fund activities according to the approved JFPR and HIV/AIDS Cooperation Fund documents.
- (vi) Monitoring the resettlement, and the JFPR and HIV/AIDS Cooperation Fund activities and the performance of the Implementing Agencies.
- (vii) Ensuring that funds are spent on the purposes for which they were intended.
- (viii) Preparing monthly, quarterly, and annual progress reports summarizing the progress of activities funded from different sources, problems encountered, proposed solutions, and gender-disaggregated employment, and submitting the reports to the PMU, IPBC, and ADB within 1 week after the end of each period.
- (ix) Being participatory, consultative, and innovative in carrying out responsibilities.
- (x) Achieving successful results.

## E. Cost Estimates

6. The total cost of the consulting services, which will be financed entirely by ADB, is estimated at \$2.94 million, as detailed in the following table:

**Table A9: Cost Estimates**  
(\$'000)

Item	Total Cost
Remuneration and Housing	
International Consultants	1,958.0
National Consultants (excluding housing)	324.0
International and Local Travel	82.6
Transport	315.0
Contingency	260.4
<b>Total</b>	<b>2,940.0</b>

Source: Asian Development Bank estimates.

## **OUTLINE TERMS OF REFERENCE FOR CONSULTING SERVICES IN CONSTRUCTION SUPERVISION AND ENVIRONMENTAL MONITORING**

1. An international consulting firm will be selected to provide a total of 567 person-months of consulting services in construction supervision (201 person-months international and 366 person-months national). The international consulting firm will appoint a project manager to undertake the duties and responsibilities of the engineer as defined in the construction contract. The engineer will appoint and provide with appropriate delegated authority a suitably qualified chief resident engineer and other suitably qualified site staff comprising engineers, inspectors, surveyors, draftsmen, and a materials technician. The engineer will also appoint a design team based at the home office whose function will be to check and, when satisfied, approve the contractor's design for those works for which the employer's requirements have been specified.

### **A. Scope of Work**

2. The scope of the services includes but is not limited to the following:
- (i) Representing the interest of the employer as defined in the construction contract in any matter related to the construction contract and to its proper execution.
  - (ii) Working closely with the project management unit (PMU), the employer's representative, to achieve a clear understanding of its objectives, and providing advice to it relating to the execution of the works, so as to achieve a harmonious working relationship.
  - (iii) Undertaking the duties and responsibilities of the engineer as defined in the contract.
  - (iv) Reviewing the contractor's work programs and, after consulting with the PMU and when satisfied, giving approval to those work programs.
  - (v) Assessing the adequacy of resources employed by the contractor and its methods of work in relation to the required rate of progress, and, when required, taking appropriate action.
  - (vi) Verifying and, when satisfied, approving the contractor's design for those works for which the employer's requirements have been specified. Ensuring that the contractor obtains the necessary building permits.
  - (vii) Reviewing the contractor's temporary works proposals, adequacy of resources, method, and risk assessments to assess their suitability (including safety) for the tasks to be undertaken, and taking appropriate action.
  - (viii) Preparing and issuing to the contractor any additional drawings and specifications required for the execution of the contract.
  - (ix) Ascertaining the suitability of manufacturers, sources of machinery and equipment, and materials that contractors propose to use to construct the works, either for temporary works or for incorporation in the permanent works.
  - (x) Providing necessary and sufficient site inspection of the works and ensuring the satisfactory performance of the contractor(s) and execution of the Project in accordance with the contract documents and sound engineering practices; and ensuring the works' quality and conformity with the drawings and specifications prescribed in the contract.
  - (xi) Certifying the quality and quantity of completed works.

- (xii) Examining and making prompt recommendations to the PMU relating to all claims and requests for additional payment and extensions of time submitted by the contractor.
- (xiii) Reviewing and checking the contractors' applications for payment and ensuring that, subject to any necessary amendment, these are passed promptly to the PMU to enable the employer to meet its obligations with regard to payments under the contract.
- (xiv) Preparing monthly reports showing the progress of the works, the contractor's performance, quality of the works, and the Project's financial status including projections and highlighting potential problems and ongoing contractual difficulties.
- (xv) Maintaining a representative at the site at all times when the contractor is working.
- (xvi) Proposing to the PMU for its approval, any variations in the drawings or specifications that may be considered necessary for the completion of the works, indicating any effect that the changes may have on the contract amount and any additional time required to complete the Project; and, where the variation exceeds the engineer's power to approve under the contract, submitting the variation order for approval by the PMU.
- (xvii) Informing the PMU of problems, actual or potential, that may arise in connection with the execution of the contract, and recommending suitable solutions.
- (xviii) Extending timely assistance and directions to the contractor in all matters relating to the interpretation of the contract documents and other matters relating to contract compliance and progress.
- (xix) Preparing and maintaining inspection and engineering reports and records to adequately document the progress of the works and the performance of the contractor.
- (xx) Receiving and maintaining as permanent records all warranties required under the terms of the contract for materials and equipment accepted and incorporated in the works. Recording details of all materials and their source, incorporated in the works, and as-built drawings provided by the contractor. All records are to be handed over to the PMU on completion of the works.
- (xxi) Supervising all soils and materials testing and all verification surveys including hydrographic surveys, and maintaining permanent records of these.
- (xxii) Carrying out, if necessary, the inspection or testing of any materials, manufactured products, electrical and communication equipment, plant and machinery for incorporation in the Project in compliance with accepted international standards and practices either in or outside Papua New Guinea (PNG).
- (xxiii) Regularly inspecting the contractor's operations with regard to the safety of methods employed, and drawing the contractor's attention to areas where improvements are necessary.
- (xxiv) Designing a system for setting up and maintaining all records, and submitting this to the PMU for comment.
- (xxv) Assisting the PMU in developing procedures for taking over the works on their completion.
- (xxvi) Finalizing the value of the works and providing recommendations on any outstanding contractors' claims. Reporting to the PMU on the financial outcome of the contract.

- (xxvii) Submitting, within 1 month from the completion of the contract, a final report summarizing the construction activities and including all factors having an effect on the amount, cost, and progress of the works.
- (xxviii) Assisting the PMU in preparing monthly and quarterly progress reports and the project completion report.
- (xxix) Issuing the completion certificate or handover certificate.
- (xxx) Preparing a list of defects and instructing remedial works.
- (xxxi) Performing any and all other items of work that are not specifically mentioned above but are necessary and essential to the successful supervision and control of the construction activities in accordance with the plans, specifications, and terms of contract.
- (xxxii) Ensuring that project implementation complies with the Government's environmental policy and procedures, the Asian Development Bank's (ADB's) *Environment Policy* (2002) and requirements, the Project's environmental impact assessment and environmental management plan (EMP), the World Bank Group's Environment and Health and Safety Guidelines, and the Loan Agreement.
- (xxxiii) Providing technical support to the PMU and timely assistance to the contractor including orientation on environmental aspects of the Project before the start of the work, and during implementation in the interpretation of the contract documents related to EMP and the monitoring plan.
- (xxxiv) Assisting, advising on, and providing supervision for effective EMP implementation to ensure that the works are executed in accordance with established standards, criteria, and procedures; ensuring the implementation of the civil works in compliance with the EMP; and making recommendations for certification of payment to be made to the contractor for the engineer's consideration.
- (xxxv) Reviewing the present status of environmental management in Lae Port and identifying issues and problems. Preparing a detailed environmental management plan for the port during the operational phase, considering the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78 Convention) and the associated annexes ratified by PNG,<sup>1</sup> and the Convention on the Prevention of Marine Pollution by the Dumping of Wastes and Other Matter (London Dumping Convention).
- (xxxvi) In coordination with PNG Ports Corporation Limited (PPCL), preparing and implementing environmentally responsible port management guidelines aimed at environmentally sound port operation. The guidelines that incorporate environmental principles in port operation will include sanctions and fines for infringement of the guidelines. The environmentally responsible port management guidelines must be approved by the board of PPCL.
- (xxxvii) Assessing environmental and social impact and formulating mitigation measures for the development of the Labu canoe landing site, particularly the construction of the breakwater, retaining seawall, and jetty, and related land reclamation. Ensuring that environmental and social impact is mitigated to insignificant levels.
- (xxxviii) Assisting PPCL in establishing an institutional arrangement for the

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<sup>1</sup> Annex I (Regulations for the Prevention of Pollution by Oil), Annex II (Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk), Annex III (Prevention of Pollution by Harmful Substances Carried by Sea in Packaged Form), Annex IV (Prevention of Pollution by Sewage from Ships), and Annex VI (Prevention of Air Pollution from Ships).



environmental management of Lae Port in the form of an environment, health, and safety division or unit staffed with an adequate number of personnel. Undertaking the necessary on-the-job training for the appointed staff, and involving them in environmental management and monitoring of port operation.

- (xxxix) Identifying environmental management components/activities that can be contracted out to private operators, and preparing the necessary arrangements.
- (xl) Assisting PMU in preparing manuals/booklets, brochures, and pamphlets related to the environmental management of the port.
- (xli) Preparing monitoring and evaluation reports. Submitting the reports to the engineer for incorporation in a semiannual report to be submitted to the Government and ADB.

3. Independent Public Business Corporation (IPBC) will provide, through the construction contract, offices and all furniture, computer and communications equipment, and office supplies including stationery required to undertake the services, as well as soils and materials testing facilities, service vehicles with drivers, and maintenance and operational items including fuel and other materials required to carry out the services. It will also provide liaison with government agencies, provide the consultants with access to all information as may be allowed by law, and assist in obtaining the necessary work permits, visas, and other documents necessary to enable the international consultant to carry out the services under the contract.

## **B. Reporting Requirements**

4. The required reports are as follows:

- (i) Monthly progress reports with a maximum of five pages (in eight copies), to be submitted within the first week of the following month, summarizing the progress made against the planned schedule, problems encountered, and proposed solutions.
- (ii) Quarterly progress reports with a maximum 30 pages (in eight copies), to be submitted within the first week of the following quarter, summarizing progress made during the quarter against the planned schedule, expenditure, contract variations, problem resolution, and projected cash flow.
- (iii) Final report (in eight copies), to be submitted 1 month from the completion of the contract, summarizing the construction activities and including all factors having an effect on the amount, cost, and progress of the works.
- (iv) Quarterly environmental monitoring reports (in eight copies), to be submitted 1 week after each quarter.
- (v) An environmentally responsible port management policy.
- (vi) Other reports as required during construction.

## **C. Personnel**

5. The required personnel and qualifications for construction supervision are indicated in Table A10.1:

**Table A10.1: Construction Supervision Team Personnel and Qualifications**

<b>Designation</b>	<b>Qualifications</b>	<b>Period of Assignment</b>
<b>A. International Consultants</b>		
1. Project manager	Relevant degree with, preferably, 20 years' related experience	4 months
2. Design check team		9 months
3. Chief resident engineer	Relevant degree with, preferably, 20 years' related experience	36 months
4. Deputy resident engineer	Relevant degree with at least 10–15 years' related experience	36 months
5. Section engineer (dredging and slope protection)	Relevant degree with at least 5 years' related experience	24 months
6. Section Engineer (wharf)	Relevant degree with at least 5 years' related experience	24 months
7. Section Engineer (paving, building, and services)	Relevant degree with at least 5 years' related experience	24 months
8. Inspector (piling)	Preferably, 20 years' related experience	24 months
9. Port Environment Specialist	A master's degree with, preferably, 10 years of experience	20 months
<b>B. National Consultants</b>		
1. Assistant engineer (dredging and slope protection)	Relevant degree with at least 5 years' related experience	24 months
2. Assistant engineer (wharf)	Relevant degree with at least 5 years' related experience	24 months
3. Assistant engineer (paving, building, and services)	Relevant degree with at least 5 years' related experience	24 months
4. Hydrographic surveyor	At least 5 years' related experience	24 months
5. Inspector (slope protection)	5–10 years' related experience	24 months
6. Inspector (wharf and deck)	5–10 years' related experience	24 months
7. Inspector (paving and services)	5–10 years' related experience	24 months
8. Inspector (buildings)	5–10 years' related experience	18 months
9. Surveyor	5 years' related experience	36 months
10. Materials technician	5 years' related experience	36 months
11. 3 draftsmen	5 years' related experience	108 months

Source: Asian Development Bank.

6. The indicative organizational structure for the construction supervision team is shown in Figure A10.

#### **D. Cost Estimates**

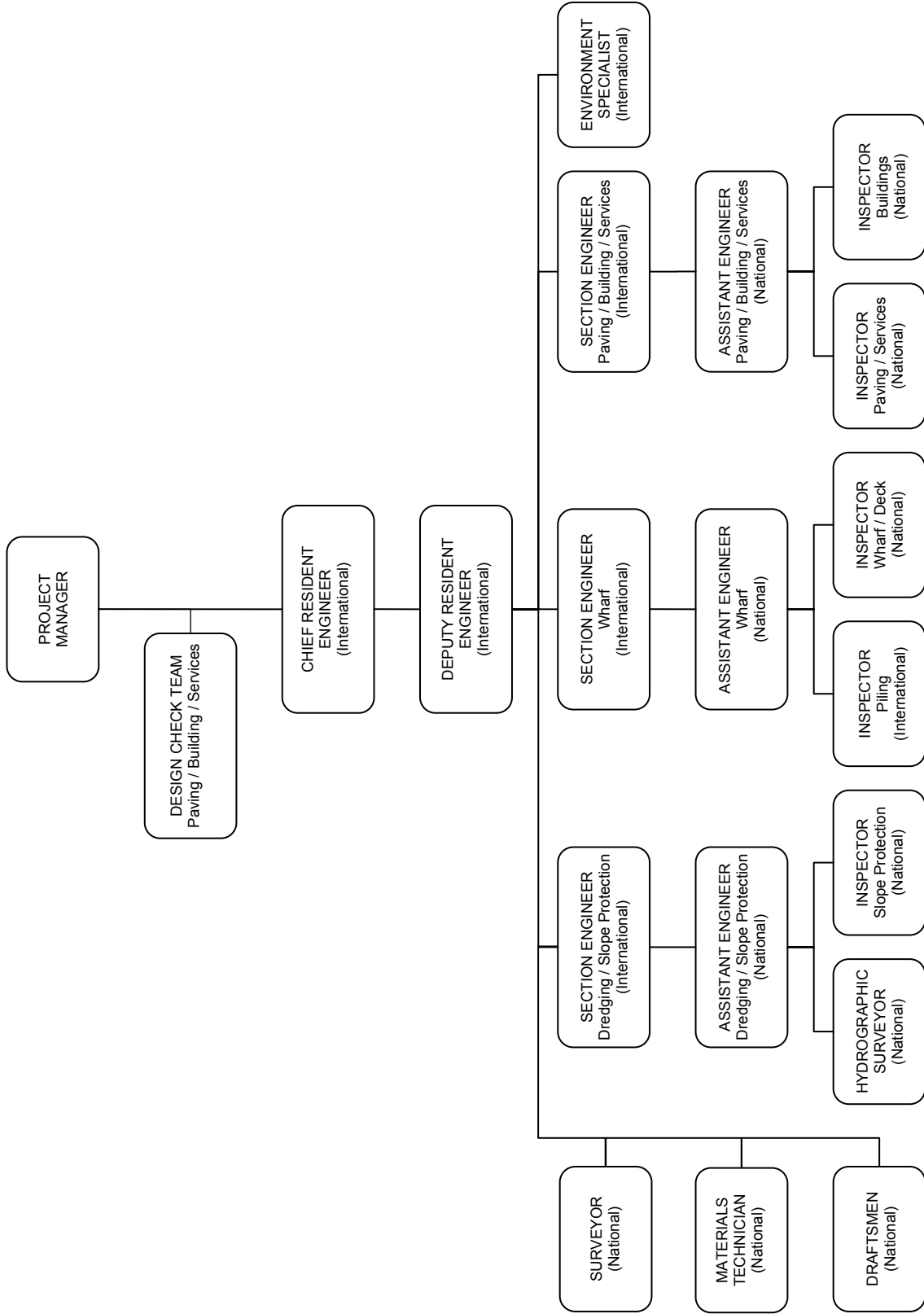
7. The total cost of the consulting services, which will be financed entirely by ADB, is estimated at \$6 million, as detailed in the following table:

**Table A10.2: Cost Estimates**  
(\$ million)

<b>Items</b>	<b>Total Cost</b>
Remuneration	
International Consultants	3.3870
National Consultants	1.3824
Housing	0.3714
International and Local Travel	0.1908
Reports and Communications	0.0500
Miscellaneous Administration and Support Costs	0.0100
Contingency	0.6084
<b>Total</b>	<b>6.0000</b>

Source: Asian Development Bank estimates.

Figure A10: Construction Supervision Organizational Structure



Source: Asian Development Bank.

## TRAFFIC FORECAST AND ECONOMIC ANALYSIS

### A. Traffic Forecasts

1. Lae is the main center in Papua New Guinea (PNG) for manufacturing and processing activities and the gateway to the Highlands region, where approximately half of the population lives. Lae port plays a critical role in the distribution of local production within PNG, to other Pacific islands, and to more distant international markets, and in the import of consumer goods and production inputs. The growth in the economy has contributed to a large increase in traffic handled at Lae port in recent years, from 1.7 million revenue tons in 2001 to 2.4 million revenue tons in 2005.<sup>1</sup>

2. Traffic forecasts have been prepared for Lae port for the period to 2030. As much of PNG's international and coastal shipping passes through the port, there is a strong correlation between the cargo volume at the port and PNG's economic growth.<sup>2</sup> Hence, projections of gross domestic product (GDP) growth underpin the traffic forecasts. For the period up to 2011, GDP is assumed to grow at 4% per year, in line with projections presented in the 2007 National Budget. After 2011, growth of 3% per year is assumed.

### B. Economic Assessment

#### 1. General

3. An analysis of Lae port shows that it will soon be unable to handle any more cargo. Yet there is little if any capacity available at other ports in PNG to handle the growing overseas and coastal cargo. Lae port will become a major bottleneck in the economy in the absence of an upgrade in its capacity. The constraint that this bottleneck will impose on shipping activity will damage PNG's aggregate trade performance and impede agricultural, industrial, and commercial development in the hinterland of Lae port.

4. The economic evaluation of the Project was carried out by comparing with-Project and without-Project scenarios. The assessment covers the period 2008–2030, on the assumption that construction will extend over a period of 4 years starting in 2008. All benefits and costs are in constant 2007 prices.

5. During project preparation, various alternatives were considered, including improving the existing port facilities, expanding Madang port, and increasing the use of air cargo. The Project is considered to provide the least-cost option. Expanding Madang port would require an upgrade of the road link between Madang and Lae and incur the ongoing cost of road transport. The total cost of the Madang option is considered to be at least as high as that of the Project. Furthermore, it would introduce additional risk to the transport system as PNG has a poor record in maintaining the road network. The cost of air cargo is prohibitive. A key factor in favor of expanding Lae port is its central position as both a destination and a source of cargo. Other ports could be expanded to provide an arrival point for imports, for redistribution to other parts of PNG, and a departure point for PNG exports from other parts of the country. But the other ports

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<sup>1</sup> These volumes are exclusive of liquid bulk (346,000 revenue tons in 2001 and 248,000 revenue tons in 2005), because this cargo is handled at the dedicated oil terminal in the port of Lae.

<sup>2</sup> The elasticity of cargo handled in Lae port with respect to GDP is estimated at 1.7 for 1967 to 2005, 1.3 for 2003–2011, 1.37 for 2011–2030.

lack the same access to the outward trade provided by the Highlands region, the agricultural and forestry activity surrounding Lae, and the manufacturing and processing operations already established in Lae. Another factor in favor of the Project is that the existing berths at Lae port have been built on a steep foreshore with risks of geotechnical instability. The Project would provide a backup in case of collapse at the existing berths.

## 2. Costs

6. Project economic costs include resettlement cost, land cost, dredging costs, and the cost of constructing the berth and terminal. Taxes and duties are excluded from the economic assessment. Costs were divided into tradable and non-tradable components. The non-tradable component is made up of land, labor, and housing material, and is estimated to represent 5% of costs. Project land cost is based on willingness to pay, using the projected purchase and lease prices. To account for local unemployment and underemployment, costs for labor were adjusted by a shadow wage rate factor of 0.8 to arrive at the economic price/opportunity cost. The market price is assumed to equal the opportunity cost for all other cost items. A standard conversion factor of 0.933 was applied to calculate the economic price of non-traded goods, and to estimate the opportunity cost of operating costs.<sup>3</sup>

## 3. Benefits

7. Without the Project, congestion at Lae port will result in longer ship waiting times and higher inventory costs on cargo. The Project will reduce these congestion costs while also allowing a higher level of shipping activity than would otherwise be possible. This higher level of shipping activity is important in four key respects:

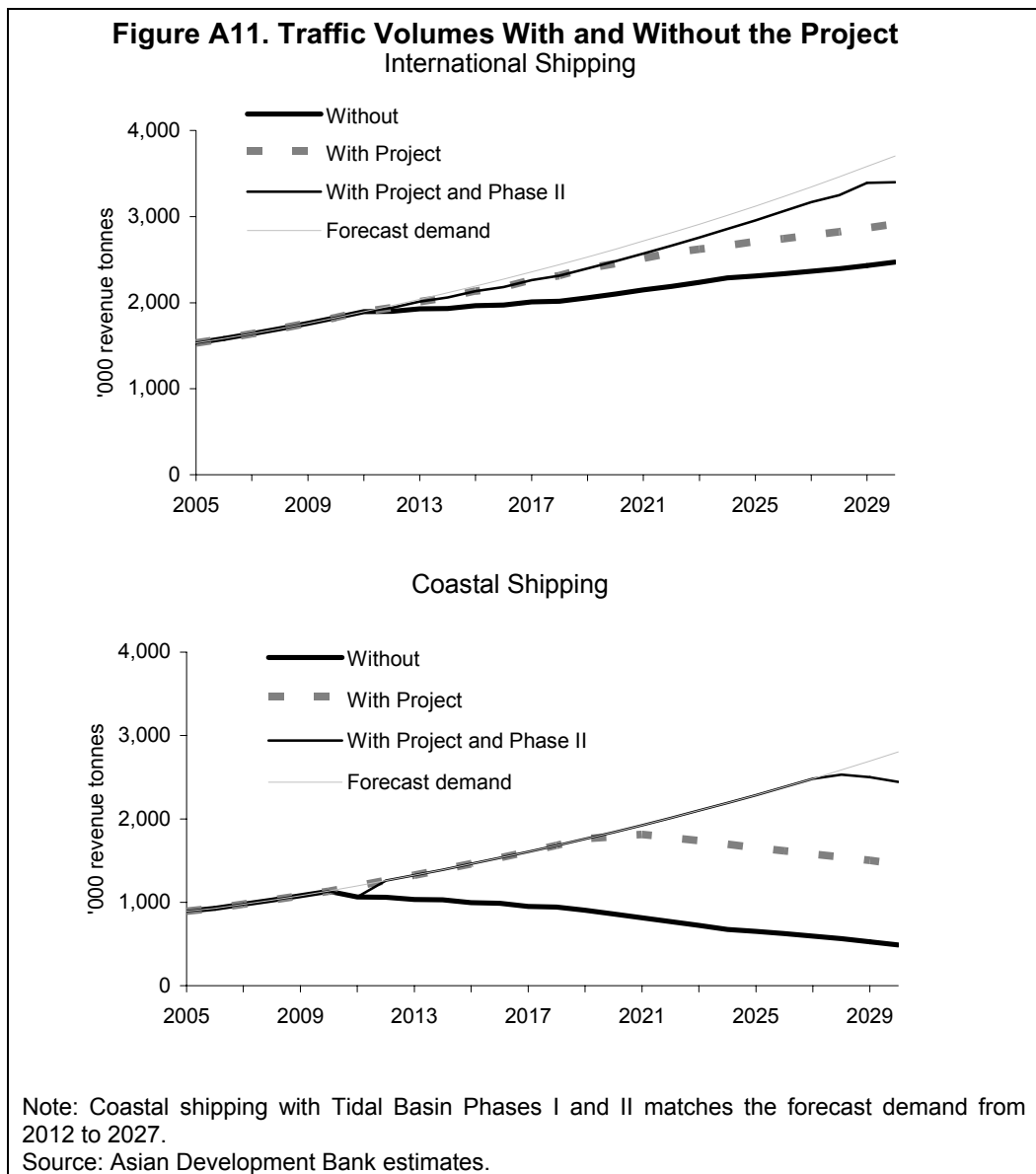
- (i) A larger coastal shipping and port industry would generate additional value added, notably through the employment of additional labor.
- (ii) It would avoid the need to divert transshipments to alternative ports, or to use lighterage services to unload cargo.
- (iii) It would allow export activity that would otherwise not take place. Most of the PNG population is dependent on agriculture for cash incomes. The export of tree crops is particularly important as a means of supplementing subsistence lifestyles and lifting the standard of living above the poverty line. In the absence of this export activity, the economy's resources would be used. But they would be used in less productive and hence lower-income activities.
- (iv) It would allow the import of additional production inputs. PNG's shallow economic structure leads to a high dependency on manufactured imports, from vehicles and boat engines to building materials to basic food processing equipment. A loss of access to these items would prevent some activities from taking place (e.g., some transport services would not be provided and some fishing would not take place). It would also tend to reduce the efficiency of other activities (e.g., by requiring equipment to be used beyond its economic life or by preventing

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<sup>3</sup> The standard conversion factor is equal to the weighted average adjustment factor made in deriving the economic opportunity cost of construction.

maintenance). The loss of access to imported production inputs would lower the overall productivity of the economy.

8. The level of shipping activity under the cases examined is summarized in Figure A11. Under the without-Project case, by 2030 outward coastal shipping from Lae would be 20% of the projected demand while inward coastal shipments to Lae would be about half the projected demand. This would have the flow-on effect of reducing international shipping to less than 70% of projected demand by 2030. The Project is projected to delay the decline in coastal shipping and lead to a much smaller cutback in international shipping than under the without-Project case. The Project and Phase II of the tidal basin combined are almost sufficient to meet the projected demand for international and coastal shipping until close to 2030.



#### 4. Results of the Economic Assessment

9. At a 12% discount rate, the Project is found to be economically viable. The net present value (NPV) is K104 million and the economic internal rate of return (EIRR) is 15.8%.

10. Important benefits are found to be generated by the Project through the savings in congestion costs and the generation of income by a larger coastal shipping and port industry.<sup>4</sup> But the key to the Project is the flow-on benefits realized from the additional international and coastal shipping it allows. The larger capacity at Lae port is estimated to provide substantial productivity gains for smallholders and other local producers by allowing them to engage in higher-value-added activities, notably the export of agricultural products. The expanded port capacity is also important in minimizing costs in the economy by allowing the import of key items not produced locally.

11. The estimates of the benefits from the additional international and coastal shipping made possible by the Project are considered to be conservative. This is because the assumed productivity effects are low and because the economic evaluation does not take into account benefits to consumers (i.e., additional consumer surplus) provided by a higher level of imports. The actual benefit from the Project could substantially exceed the estimates presented.

12. The EIRR calculation was subjected to sensitivity analysis to test the effects of negative changes in the key parameters that determine the benefits and costs of the Project. The sensitivity analysis found that the Project remained economically viable in the face of a 10% increase in costs or a 10% decrease in benefits or a 1-year extension in the construction period. In what could be considered as the worst-case scenario—a combination of increased costs and decreased benefits—the NPV would decrease from K104 million to K5 million, with EIRR going from 15.8% to 12.2%. The switching value for the Project for increased construction costs was determined to be 30%, and the switching value for decreased benefits was determined to be 24%.<sup>5</sup>

13. The results of the economic assessment and sensitivity analysis of the Project are presented in Tables A11.1 and A11.2.

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<sup>4</sup> Congestion savings become “negative” over time because, compared with the without-Project scenario, more ships and cargo will be handled in the with-Project scenario, leading to a total increase in waiting time and inventory cost at high rates of capacity usage.

<sup>5</sup> The switching value shows the percentage increase in a cost variable or decline in a benefit variable required for the NPV to become zero, which is the same as the EIRR reducing to the cutoff level of 12%.



**Table A11.1: Economic Internal Rate of Return**

Year	Savings in Congestion Costs	Savings in Lighterage and Diverted Transshipment	Additional Shipping Value-Added	Productivity Gain on Exports from Coastal Areas	Productivity Gains on Items Shipped to Coastal Areas	Tidal Basin Construction and Operating Cost	Net Benefit
K million (2007 prices)							
2008	0.0	0.0	0.0	0.0	0.0	(69.6)	(69.6)
2009	0.0	0.0	0.0	0.0	0.0	(143.4)	(143.4)
2010	0.0	0.0	0.0	0.0	0.0	(189.5)	(189.5)
2011	41.9	8.8	0.0	0.0	0.0	(1.4)	49.2
2012	40.6	6.5	4.9	4.3	1.5	(5.1)	52.6
2013	38.6	6.1	9.7	8.6	2.9	(5.2)	60.8
2014	36.7	4.2	14.6	12.9	4.4	(5.4)	67.5
2015	34.0	4.3	19.4	17.3	5.9	(5.7)	75.2
2016	31.3	2.8	24.3	21.6	7.4	(5.9)	81.4
2017	27.2	3.5	29.2	25.9	8.8	(6.0)	88.6
2018	23.4	2.4	34.0	30.2	10.3	(6.5)	93.9
2019	17.7	3.8	38.9	34.5	11.8	(6.6)	100.0
2020	14.3	5.4	40.8	38.8	12.2	(6.7)	104.7
2021	(18.4)	7.4	42.7	43.1	12.5	(7.1)	80.3
2022	(23.7)	3.8	45.4	47.5	13.2	(7.2)	79.0
2023	(23.7)	3.8	45.1	51.8	12.8	(7.3)	82.5
2024	(23.7)	3.8	44.8	56.1	12.4	(7.7)	85.7
2025	(23.8)	(0.2)	46.2	69.0	12.1	(7.8)	95.5
2026	(23.8)	(1.4)	46.0	82.0	11.1	(8.0)	105.9
2027	(23.8)	(2.7)	45.9	94.9	10.2	(8.4)	116.1
2028	(23.5)	(3.7)	45.8	107.9	9.3	(8.6)	127.1
2029	(22.9)	(4.5)	45.6	120.8	8.3	(8.7)	138.6
2030	(22.2)	(5.3)	45.5	133.7	7.4	(9.2)	149.9
<i>Memo items:</i>							
NPV (K million)	104.7	22.9	127.8	154.5	35.8	(341.7)	103.9
EIRR (%)							15.8%

( ) = negative, EIRR = economic internal rate of return, NPV = net present value.  
Source: Asian Development Bank estimates.

**Table A11.2: Sensitivity Analysis**

Item	EIRR (%)	NPV (12%) (K million)	Switching Value (%)
1. Base Case	15.8	104	0.0
2. Increase in costs (10%)	14.4	70	30.0
3. Decrease in benefits (10%)	14.2	59	23.5
4. 1-year delay	14.9	80	0.0
5. Combination of 2, 3, and 4	12.2	5	0.0

EIRR = economic internal rate of return, NPV = net present value.  
Source: Asian Development Bank estimates.

## SUMMARY FINANCIAL ANALYSIS

### A. Introduction

1. A financial analysis was undertaken to assess the Project's viability and sustainability in accordance with the *Financial Management and Analysis of Projects* (2005) of the Asian Development Bank (ADB). A tariff analysis was also performed to assess the impact of tariff adjustments on the financial position of the PNG Ports Corporation Limited (PPCL) as a whole. The tariff analysis evaluates the level of tariff necessary for PPCL to maintain an appropriate pretax return on equity (ROE) over the analysis period.

2. The Project's costs are estimated at \$154.0 million, of which ADB is financing \$100 million, or 64.9%, through a combination of ordinary capital resources and Asian Development Fund loans. The remainder is being financed by the Government, the OPEC Fund for International Development, Japan Fund for Poverty Reduction (JFPR), and the HIV/AIDS Cooperation Fund. The major components of the Project are the preparation and dredging of the tidal basin, berth construction and paving, and environmental and resettlement costs.

3. The analysis measures the revenue generated from these components with the future costs of operation and maintenance and debt servicing measured by financial internal rate of return (FIRR) and net present value (NPV). Assumptions have been made for the tidal basin expansion and related operations, leading to with- and without-Project analyses and streams of incremental costs and revenues over a 23-year period starting in 2008. The results of these "base-case financial projections" are compared with the weighted average cost of capital (WACC) for the Project to determine financial sustainability. A sensitivity analysis further assesses the impact of changes in cost and revenue assumptions on the base-case FIRR.

### B. Major Assumptions

4. **Cargo Size and Traffic.** The Project will generate additional revenues from the increased cargo size and traffic from 2012 (completion of construction) to 2019 (the point at which the port reaches full capacity). The traffic forecast for Lae port has been forecast for 24 years, from 2007 to 2030. The average gross domestic product (GDP) elasticity of the cargo handled at Lae port in 1967–2005 was 1.70. Since there is a strong correlation between cargo volume and PNG's economic development, a major assumption made for the traffic forecast is GDP growth rate. For 2007–2011, it is assumed that the average GDP growth rate will be 4%, in line with the projections presented in the 2007 National Budget. After 2011, 3% average GDP growth rate is assumed.

5. **Tariffs:** Tariffs for essential services are regulated by a contract between PPCL and Independent Consumer and Competition Commission (ICCC) for 31 July 2002--31 December 2011. Essential services are defined in the contract as wharfage, berthing and berth reservation. The Contract sets out the maximum tariffs which can be charged for these services and the procedures for preparing the follow-on regulatory contract. The regulated tariff is based on approved capital and operating costs and can be adjusted annually for changes in inflation, the exchange rate and other cost factors.<sup>1</sup> The same tariffs must be charged at all ports.

6. Regulated tariffs for wharfage and berthing are not assumed to increase until the tidal basin expansion comes online in 2012. This coincides with the renegotiation of the contract

<sup>1</sup> Additional tariff increases of 16% and 12% were provided in 2003 and 2004 to improve the financial position of PPCL and raise funds for PPCL's maintenance program.

between PPCL and ICCC, which will determine new regulated tariffs (i.e., for wharfage and berthing). Discussions with ICCC indicate a willingness to explore an increase in charges at Lae Port to compensate for the additional services and the cost of the tidal basin expansion. In the light of past increases of 16% in 2003 and 12% in 2004, and the cost savings and expansion in business opportunity offered to users by the upgrade of port facilities, a substantial increase is considered reasonable. Unregulated charges and tariffs are likely to increase more slowly but also more often (every 5 years) as PPCL develops a more commercial attitude toward the exploitation of its assets. These charges and tariffs include storage tariffs, stevedoring license fees and pilotage charges, rental of offices and sheds, and charges on statutory authorities for the use of port property. The port also earns certain other operating revenues that are independent of traffic growth. The charging of port and cargo dues ended recently, following the repeal of the bylaws authorizing their collection, so these dues are not included in the financial forecasts.

7. An analysis was made to evaluate the level of tariff necessary for PPCL to maintain an average 15% pretax ROE, at the company level, for 10 years after project completion. The analysis was undertaken for Phase I of the Tidal Basin development, which excludes \$29.51 million dredging costs for Phase II.<sup>2</sup> The 15% return is considered appropriate for the industry and region and is consistent with the equity risk-weighted return factor used in the calculation of WACC. Financial statements, including project costs, were projected for the company as a whole through 2021. According to this evaluation, a one-time composite tariff increase of 26.7% applicable to all ports in 2012 (35% for wharfage and berthage; 17.5% for all other services) provides a 15.3% average ROE through 2021. The required 26.7% tariff increase is far below the expectations of the shipping companies.

8. Assuming the Project is built by IPBC and transferred to PPCL after completion, PPCL's financial statements have been projected from 2012 to 2021 on the basis of a composite tariff increase of 26.7% (and additional financial assumptions listed below). Based on the projections, it appears that PPCL will be financially healthy and generate sufficient cash flow to repay the Project loans (Table A12.1).

9. This analysis is undertaken on the assumption that tariffs remain uniform across ports. The major ports of Lae and Port Moresby currently cross-subsidize the smaller ports.<sup>3</sup> A uniform tariff increase made to recover investment at Lae would reduce or perhaps remove the cross-subsidy. This would offer efficiency benefits by bringing tariffs more into line with the cost of service delivery. However, an increase in tariffs at the smaller ports may be undesirable on social grounds as the smaller ports generally service less developed areas. Furthermore, a uniform tariff increase may create a cross-subsidy in favor of Lae at the expense of Port Moresby. This would be undesirable on both efficiency and equity grounds. These considerations suggest there are grounds for revising the regulatory regime and allowing a tariff increase specific to Lae Port.

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<sup>2</sup> These dredging works are to be undertaken jointly with Phase I so as to facilitate port expansion in a cost effective manner. A matching revenue flow will only be generated when additional investment is made in wharfs, loading equipment, storage areas etc under Phase II. It is preferable that tariffs are set at a level that recovers the dredging costs when Phase II begins operation.

<sup>3</sup> Papua New Guinea Independent Consumer and Competition Commission, 2007. Review of the PNG Coastal Shipping Industry. Final Report. February. p.31

**Table A12.1: PPCL Projected Financial Statements 2012–2021**  
(K'000)

Item	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
<b>BALANCE SHEET</b>										
<b>ASSETS</b>										
<b>Current Assets</b>										
Cash and Net Short-Term Deposits	15,949	16,158	16,899	16,672	17,067	17,266	17,470	18,213	17,917	18,372
Net Accounts Receivable	17,753	18,303	18,872	19,461	20,071	21,069	21,734	22,423	23,136	23,875
Other	256	256	256	256	256	256	256	256	256	256
<b>Total Current Assets</b>	<b>33,959</b>	<b>34,717</b>	<b>36,027</b>	<b>36,389</b>	<b>37,393</b>	<b>38,591</b>	<b>39,461</b>	<b>40,891</b>	<b>41,309</b>	<b>42,503</b>
<b>Long-Term Assets</b>										
Investments	9,234	9,234	9,234	9,234	9,234	9,234	9,234	9,234	9,234	9,234
Fixed Assets	835,032	865,032	895,032	925,032	955,032	985,032	1,015,032	1,045,032	1,075,032	1,105,032
Depreciation	(301,633)	(317,450)	(333,716)	(350,431)	(367,595)	(385,776)	(404,974)	(425,189)	(446,421)	(468,670)
Net Fixed Assets	533,399	547,582	561,316	574,601	587,437	599,256	610,058	619,843	628,611	636,362
Other Long-Term Assets	4,299	4,299	4,299	4,299	4,299	4,299	4,299	4,299	4,299	4,299
<b>Total Long-Term Assets</b>	<b>546,932</b>	<b>561,115</b>	<b>574,849</b>	<b>588,134</b>	<b>600,970</b>	<b>612,789</b>	<b>623,591</b>	<b>633,376</b>	<b>642,144</b>	<b>649,895</b>
<b>TOTAL ASSETS</b>	<b>580,891</b>	<b>595,832</b>	<b>610,876</b>	<b>624,523</b>	<b>638,363</b>	<b>651,379</b>	<b>663,051</b>	<b>674,267</b>	<b>683,453</b>	<b>692,398</b>
<b>LIABILITIES AND EQUITY</b>										
<b>Current Liabilities</b>										
Accounts Payable	3,095	3,110	3,126	3,377	3,158	3,174	3,190	3,204	3,453	3,232
Lae Port Development Plan Loans	224,522	218,075	210,494	202,913	191,790	180,667	169,543	158,420	147,296	136,173
Existing Loans	6,007	3,607	1,207	0	0	0	0	0	0	0
Other	15,503	15,503	15,503	15,503	15,503	15,503	15,503	15,503	15,503	15,503
<b>Total Current Liabilities</b>	<b>249,128</b>	<b>240,296</b>	<b>230,331</b>	<b>221,794</b>	<b>210,451</b>	<b>199,344</b>	<b>188,237</b>	<b>177,127</b>	<b>166,253</b>	<b>154,909</b>
<b>Long-Term Liabilities</b>										
Other Long-Term Liabilities	(1,471)	(1,471)	(1,471)	(1,471)	(1,471)	(1,471)	(1,471)	(1,471)	(1,471)	(1,471)
<b>Total Long-Term Liabilities</b>	<b>(1,471)</b>	<b>(1,471)</b>	<b>(1,471)</b>	<b>(1,471)</b>	<b>(1,471)</b>	<b>(1,471)</b>	<b>(1,471)</b>	<b>(1,471)</b>	<b>(1,471)</b>	<b>(1,471)</b>
<b>Total Liabilities</b>	<b>247,657</b>	<b>238,825</b>	<b>228,860</b>	<b>220,323</b>	<b>208,980</b>	<b>197,873</b>	<b>186,766</b>	<b>175,656</b>	<b>164,782</b>	<b>153,438</b>
<b>Equity</b>										
Shareholder's Equity	110,791	110,791	110,791	110,791	110,791	110,791	110,791	110,791	110,791	110,791
Accumulated Profit/Loss	125,067	148,841	173,849	196,033	221,216	245,340	268,119	290,444	310,504	330,793
Asset Revaluation Reserve	97,375	97,375	97,375	97,375	97,375	97,375	97,375	97,375	97,375	97,375
<b>Total Equity</b>	<b>333,233</b>	<b>357,006</b>	<b>382,015</b>	<b>404,199</b>	<b>429,382</b>	<b>453,506</b>	<b>476,285</b>	<b>498,610</b>	<b>518,670</b>	<b>538,959</b>
<b>TOTAL LIABILITIES AND EQUITY</b>	<b>580,890</b>	<b>595,831</b>	<b>610,875</b>	<b>624,522</b>	<b>638,362</b>	<b>651,378</b>	<b>663,050</b>	<b>674,266</b>	<b>683,452</b>	<b>692,397</b>
<b>INCOME STATEMENT</b>										
<b>Revenue</b>										
Wharfage	51,678	53,228	54,825	56,470	58,164	59,909	61,706	63,558	65,464	67,428
Berthage	12,560	13,131	13,728	14,352	15,004	15,686	16,399	17,144	17,924	18,738
Storage	16,027	16,508	17,003	17,513	18,039	19,323	19,903	20,500	21,115	21,748
Licenses	1,536	1,582	1,629	1,678	1,729	1,852	1,907	1,965	2,024	2,084
Pilotage	15,495	16,200	16,936	17,706	18,510	20,126	21,040	21,997	22,996	24,042
Hire of Offices, Sheds, etc.	10,224	10,224	10,224	10,224	10,224	10,735	10,735	10,735	10,735	10,735
Miscellaneous	4,239	4,367	4,498	4,632	4,771	5,160	5,315	5,475	5,639	5,808
Other Revenue	1,893	1,931	1,970	2,009	2,050	2,091	2,132	2,175	2,219	2,263
<b>Operating Revenue</b>	<b>113,654</b>	<b>117,171</b>	<b>120,813</b>	<b>124,585</b>	<b>128,491</b>	<b>134,882</b>	<b>139,139</b>	<b>143,548</b>	<b>148,115</b>	<b>152,847</b>
<b>Expenses</b>										
Staff Costs	15,799	15,852	15,906	15,959	16,013	16,068	16,123	16,178	16,233	16,289
Maintenance	4,501	4,501	4,501	7,501	4,501	4,501	4,501	4,501	7,501	4,501
Utilities	5,875	5,939	6,003	6,069	6,135	6,203	6,272	6,308	6,344	6,381
Office Costs	4,175	4,238	4,301	4,366	4,431	4,498	4,565	4,634	4,703	4,774
Other	5,784	5,801	5,818	5,836	5,853	5,871	5,889	5,906	5,924	5,942
Insurance	3,334	3,334	3,334	3,334	3,334	3,334	3,334	3,334	3,334	3,334
Depreciation	15,368	15,817	16,266	16,715	17,164	18,181	19,198	20,215	21,232	22,249
Interest	8,448	8,037	7,664	7,271	7,289	7,034	6,574	6,114	5,653	5,193
<b>Total Expenses</b>	<b>63,285</b>	<b>63,519</b>	<b>63,794</b>	<b>67,051</b>	<b>64,721</b>	<b>65,690</b>	<b>66,456</b>	<b>67,189</b>	<b>70,925</b>	<b>68,662</b>
<b>Income Before Tax</b>	<b>50,369</b>	<b>53,652</b>	<b>57,019</b>	<b>57,534</b>	<b>63,770</b>	<b>69,192</b>	<b>72,683</b>	<b>76,358</b>	<b>77,190</b>	<b>84,184</b>
Income Tax	15,111	16,096	17,106	17,260	19,131	20,758	21,805	22,908	23,157	25,255
<b>Net Income</b>	<b>35,258</b>	<b>37,556</b>	<b>39,913</b>	<b>40,274</b>	<b>44,639</b>	<b>48,434</b>	<b>50,878</b>	<b>53,451</b>	<b>54,033</b>	<b>58,929</b>
<b>CASH FLOW STATEMENT</b>										
<b>Net Income</b>	<b>35,258</b>	<b>37,556</b>	<b>39,913</b>	<b>40,274</b>	<b>44,639</b>	<b>48,434</b>	<b>50,878</b>	<b>53,451</b>	<b>54,033</b>	<b>58,929</b>
<b>Adjustments and Provisions</b>										
Depreciation Expense	15,368	15,817	16,266	16,715	17,164	18,181	19,198	20,215	21,232	22,249
Interest Expense	8,448	8,037	7,664	7,271	7,289	7,034	6,574	6,114	5,653	5,193
<b>Operating Activities</b>										
Change In Accounts Receivable	(4,124)	(549)	(569)	(589)	(610)	(998)	(665)	(689)	(713)	(739)
Change In Accounts Payable	261	15	16	251	(219)	16	16	14	249	(221)
<b>Net Operating Activities</b>	<b>55,211</b>	<b>60,876</b>	<b>63,290</b>	<b>63,922</b>	<b>68,262</b>	<b>72,667</b>	<b>76,001</b>	<b>79,105</b>	<b>80,454</b>	<b>85,411</b>
<b>Investing Activities</b>										
Capital Expenditures	(30,000)	(30,000)	(30,000)	(30,000)	(30,000)	(30,000)	(30,000)	(30,000)	(30,000)	(30,000)
<b>Net Investing Activities</b>	<b>(30,000)</b>	<b>(30,000)</b>	<b>(30,000)</b>	<b>(30,000)</b>	<b>(30,000)</b>	<b>(30,000)</b>	<b>(30,000)</b>	<b>(30,000)</b>	<b>(30,000)</b>	<b>(30,000)</b>
<b>Financing Activities</b>										
Dividends Paid	(30,686)	(13,783)	(14,905)	(18,090)	(19,456)	(24,311)	(28,099)	(31,126)	(33,973)	(38,640)
Lae Port Development Plan Loan Repayments	(6,447)	(6,447)	(7,581)	(7,581)	(11,123)	(11,123)	(11,123)	(11,123)	(11,123)	(11,123)
Existing Loan Repayments	(2,400)	(2,400)	(2,400)	(1,207)	0	0	0	0	0	0
Interest Expense	(8,448)	(8,037)	(7,664)	(7,271)	(7,289)	(7,034)	(6,574)	(6,114)	(5,653)	(5,193)
<b>Net Financing Activities</b>	<b>(47,981)</b>	<b>(30,667)</b>	<b>(32,550)</b>	<b>(34,149)</b>	<b>(37,867)</b>	<b>(42,468)</b>	<b>(45,797)</b>	<b>(48,363)</b>	<b>(50,750)</b>	<b>(54,957)</b>
<b>Total Net Cash</b>	<b>(22,770)</b>	<b>209</b>	<b>740</b>	<b>(227)</b>	<b>395</b>	<b>199</b>	<b>205</b>	<b>742</b>	<b>(295)</b>	<b>454</b>
Cash and Short-Term Deposits at Beginning of Year	38,719	15,949	16,158	16,899	16,672	17,067	17,266	17,470	18,213	17,917
Cash and Short-Term Deposits at End of Year	15,949	16,158	16,899	16,672	17,067	17,266	17,470	18,213	17,917	18,372

PPCL = PNG Ports Corporation Limited.  
Source: Asian Development Bank estimates.

10. As Lae Port accounts for approximately half of PNG's port traffic, a Lae-specific tariff increase that is revenue-neutral would need to be the order of double the size of a uniform tariff increase. A one time composite tariff increase of 57.3% (75.0% for wharfage and berthage and 37.5% for all other services) in 2012, is projected to provide a 15% average ROE at the company level through 2021. As port charges are a relatively small share of total shipping costs, such a tariff increase has a small impact on the cost of shipping to and from Lae Port. It is estimated that coastal shipping costs would rise by approximately 6.0% under the 57.3% tariff increase, while international shipping costs would rise by approximately 3.5%. This is a gross increase and excludes the savings in shipping costs that the Project would generate through lower congestion costs and other improvements to port efficiency. The net cost increase is considered to be within the expectations of shipping companies and manageable by the economy given the additional trade made possible by the Project.

11. **Project Costs.** Project costs are estimated at \$154.0 million. However, the project design includes \$29.51 million additional dredging and related costs to accommodate a 150 meter berth extension and thus alleviate capacity constraints expected in 2018 from consistently increasing traffic. While incurring these costs now is justified financially, they can be excluded from the financial analysis to evaluate the viability of the Project to support current demand.

12. **Operating Costs.** All costs and prices are expressed in 2007 dollars. The major cost assumptions are as follows:

- (i) Staff costs: 10% increase in Lae 2006 staff costs of K0.2 million including benefits.
- (ii) Maintenance: 0.5% x the civil works component of capital costs, consistent with international practice.
- (iii) Utilities: K0.30 per revenue ton in 2006.
- (iv) Insurance: 0.5% x asset values (replacement cost). This is very close to the premium rate charged on PPCL's existing assets and is in line with international practice.

13. A comparison of the total costs and benefits included in the financial analysis of the Project are summarized in the Table A12.2. These projections have been prepared on the basis of a composite tariff increase of 57.3% for Lae Port only.

### C. Weighted Average Cost of Capital and Financial Projections

14. For the purposes of the financial analysis, the calculation of the pretax WACC is based on the amount of financing from the various sources. The contributions of JFPR, the HIV/AIDS Cooperation Fund, and the Government are designated as equity. The cost of debt reflects the cost of the funding sources. The opportunity cost of equity has been estimated at 15%. A long-term international inflation rate of 0.8% and a long-term domestic inflation rate of 3.1% have been assumed. The pretax WACC rate is estimated at 5.09%.

### D. Base-Case Results and Sensitivity Analysis

15. Assuming the existing revenue items remain the only sources of revenue, applying the 57.3% Lae-specific tariff increase in 2012 to project cash flows, and removing \$29.12 million dredging costs for Phase II, the after tax FIRR is 6.82%, which compares favorably with the WACC of 5.09%. The results of the sensitivity analyses (10% reduction in demand, 1-year delay

in construction, 10% increase in project costs, and 10% reduction in tariffs) confirm the robustness of the Project's financial viability.

**Table A12.2: Financial Projections**  
(K'000)

Year	Capital Costs	Net Revenue	Main-tenance	Staff	Utilities	Insu-rance	Tax	Residual Value	Net Cash Flow
2008	(17,543)								(17,543)
2009	(36,694)								(36,694)
2010	(130,281)								(130,281)
2011	(141,904)								(141,904)
2012		37,576	(1,469)	(175)	(148)	(1,469)	(10,295)		24,021
2013		38,704	(1,469)	(180)	(177)	(1,469)	(9,534)		25,874
2014		39,865	(1,469)	(186)	(207)	(1,469)	(9,872)		26,662
2015		41,061	(1,469)	(192)	(238)	(1,469)	(10,220)		27,474
2016		42,293	(1,469)	(198)	(269)	(1,469)	(10,578)		28,310
2017		44,308	(1,469)	(204)	(302)	(1,469)	(11,171)		29,693
2018		45,637	(1,469)	(210)	(335)	(1,469)	(11,558)		30,596
2019		45,637	(1,469)	(217)	(336)	(1,469)	(11,556)		30,591
2020		45,637	(1,469)	(223)	(336)	(1,469)	(11,554)		30,586
2021		45,637	(1,469)	(230)	(336)	(1,469)	(11,552)		30,581
2022		46,406	(1,469)	(237)	(337)	(1,469)	(11,780)		31,114
2023		46,406	(1,469)	(245)	(337)	(1,469)	(11,778)		31,109
2024		46,406	(1,469)	(252)	(337)	(1,469)	(11,775)		31,103
2025		46,406	(1,469)	(260)	(337)	(1,469)	(11,773)		31,097
2026		46,406	(1,469)	(268)	(337)	(1,469)	(11,771)		31,092
2027		47,175	(1,469)	(277)	(338)	(1,469)	(11,999)		31,624
2028		47,175	(1,469)	(285)	(338)	(1,469)	(11,996)		31,618
2029		47,175	(1,469)	(294)	(338)	(1,469)	(11,993)		31,611
2030		47,175	(1,469)	(303)	(338)	(1,469)	(11,991)	138,729	170,334
								FIRR	6.82%

FIRR = financial internal rate of return.

Source: ADB estimates.

**Table A12.3: Sensitivity Analysis**

Item	FIRR (%)
1. Base case	6.82
2. Increase in costs (10%)	6.10
3. One year delay	6.40
4. Reduction in demand (10%)	5.89
5. Reduction in tariff (10%)	6.36

FIRR = financial internal rate of return

Source: ADB estimates.

## SUMMARY RESETTLEMENT PLAN

1. The Project will increase the cargo handling capacity of Lae port through the construction of a tidal basin, a multipurpose berth, terminal works and buildings, storage areas, roads, drainage, water, electricity, and sewerage services. The specific needs of the port extension (next to the existing port and with access to the ocean) make it impossible to avoid physical and economic displacement. The project requires 120 hectares of government-owned marshland and entails the physical relocation of three villages (Maus Markham, Wara Tais, and Sodas) with 2,912 people from 482 households. The re-settlers are from various provinces of Papua New Guinea (PNG) and have been living in the area since the 1980s despite the fact that this land has been gazetted as government land and earmarked for the extension of the port for decades. Due diligence has been carried out and all stakeholders agree that this is officially governmental land. Nevertheless, various ethnic groups claim ownership over this land, as land is considered by most people in PNG to be a non-commodity. The failure to achieve mutual agreements with all groups involved has resulted in significant resistance and the cancellation of earlier attempts to implement this project (Loans. 0468-PNG and 0469-PNG of the Asian Development Bank [ADB] approved on 25 September 1980) after detailed design, mobilization, and clearing of the project site.

2. Besides the 2,912 people who need to be physically relocated, three villages (Labu Butu, Labu Miti, and Labu Tale—hereinafter “Labu villages”) will lose their only all-weather canoe landing site and an associated market because of the Project, stricter implementation of the International Shipping and Port Security Code, and increased traffic in fishing grounds in the Lae bay port area.

3. The resettlement site at Malahang will be leased from the BUP Development Co., which was created by the BUP Association to handle landholdings of the Busulum, Uapu, and Pualu ethnic groups. The site is now used as farmland by these groups and inhabited by some settlers. The BUP Association has committed itself to avoiding the displacement of these settlers by offering them the opportunity to lease at an affordable rate the lands they are now occupying without title.

4. This resettlement plan (hereinafter “RP”) was prepared in accordance with ADB’s *Policy on Involuntary Resettlement* (1995), the *Operations Manual* section 2 on Involuntary Resettlement (2006), and the *Handbook on Resettlement* (1998). This RP defines entitlements, project interventions, and implementation arrangements on the basis of a comprehensive socioeconomic survey. It was endorsed by the Independent Public Business Corporation (IPBC) and the Morobe Provincial Government on 20 September 2007. Intensive and comprehensive consultations with all stakeholders (the three resettlement villages, the Labu villages, and the host communities) have been carried out in a gender-sensitive manner. Key information related to the RP, including measurement of losses, detailed asset valuations, entitlements and special provisions, grievance procedures, timing of payments, and displacement schedule, was disclosed to the affected people in September 2007 and the RP was disclosed locally at the local councils and to the public through the ADB website.

5. Each of the eligible 482 households (identified in a participatory process and through a detailed socioeconomic survey) is entitled to a one-bedroom house at the resettlement site, 700 square meters of land, a water storage tank, and a pit toilet. The land will be leased out to the re-settlers (482 households) at a rate affordable to all (K100 = \$30 per year), while the houses and the other infrastructure will become their property. The re-settlers will be also

assisted in transporting their salvageable assets to their new homes and in extending their homes with these materials. Vulnerable individuals have been identified and they will be assisted in the resettlement process to ensure that their living conditions are enhanced.

**Table A13.1: Resettlement Impact**

<b>Assets Lost</b>	<b>Maus Markham</b>	<b>Wara Tais</b>	<b>Sodas</b>	<b>Labu Villages</b>	<b>Hosts</b>
Lands	± 120 ha (no titles that are legal or can be legalized)			None	+40 ha
Houses	221	97	164	None	None
Kitchens	84	28	4	None	None
Sheds	23	1	12	None	None
Toilets	216	55	125	None	None
Shops	5	2	7	None	None
Canteens/Coffee shops	8	4	17	None	None
Economic trees	✓	✓	✓	None	✓
Gardens/Farms	✓	✓	✓	None	✓
Access to fishing grounds	✓	✓	✓	✓	None
Communal properties	3 churches	None	2 churches	None	None
Cultural/Ritual sites	None	None	None	None	None
Informal markets	✓	✓	✓	✓	None
Canoe landing areas	✓	✓	✓	✓	None
Formal jobs	None	None	None	None	None
Self-employment	None	None	None	None	None
Jobs in the Informal sector	Some	Some	Some	None	None

Source: Asian Development Bank estimates.

6. The package offered to the re-settlers ensures compensation at replacement costs for all, and is for most a significant enhancement of living conditions. The asset valuation carried out in a participatory manner disclosed that 50% of the people live in houses with a value of less than K5,000 and only 19% have assets with a replacement value of more than K10,000. The value of the resettlement package is K25,000 (around \$7,000). Six households have assets that exceed the value of the compensation package. It is assumed that they are able to maintain salvageable assets with a value that exceeds the difference (K2,000–K5,000). “Better-off” households with secure employment will also be invited to join a subsidized credit scheme that will enable them to build a larger house at the resettlement site. This scheme will be closely monitored to ensure that the better-off households are not worse off after the resettlement.

7. The re-settlers are also entitled to relocation assistance for all affected livelihood assets (shops, shades, poultry, etc.). They will be compensated for the loss of trees and garden crops with seedlings having a value equal to the replacement costs, and assisted in planting the seedlings in a professional manner to ensure long-term and maximized benefits.

8. The re-settlers and other affected people (including landowners) will receive preferential access to employment in the construction of the resettlement site as well as the tidal basin. During the physical relocation, experienced governmental services and nongovernment organizations (NGOs) will help the re-settlers dismantle the old houses and other structures, move their salvageable assets to the resettlement site, and establish new structures with these materials. They will also provide special assistance to vulnerable populations (elders, handicapped, single-headed households, etc.). The re-settlers will receive a lump sum cash compensation (K500, equivalent to the average urban income for 1 month) to cover additional costs during the relocation (food, additional transport, new materials, etc.).



9. After the relocation, the affected people will receive assistance through agricultural extension agencies and NGOs to improve or at least restore their livelihood. At present, a large number of people obtain their livelihood from informal activities, some of which are closely associated with ease of access to the port (sex workers, sale of narcotics, buying and selling of products found at the port, etc.). The relocation will affect these activities, while all other activities can be continued at the new site: products can be sold on markets close to the resettlement site, which will be enhanced to host the re-settlers. Skills training and short courses in the home processing of food products (chips, jam, dried fruits, snacks, fruit juices, cookies, etc.), vocational training, and technical school training will be offered to make the re-settlers more employable and lay the groundwork for sustainable and legal income-generating activities. Agricultural extension and training will be offered in animal husbandry (chickens, ducks, rabbits, fish, pigs, etc.) in backyard enclosures and the cultivation of vegetables in gardens and a subsidized micro-credit program will be made available to better-off households. While the distance to the markets at the new site is equal or shorter, the ocean is farther away (4 km) and the distance will affect the fisherfolk. But as most people are not from the coastal areas and the fishing grounds are owned by the indigenous peoples of that area, the number of households that indicated fishing as their source of livelihood is very low (less than 5%). The livelihood impact will be closely monitored by an independent monitoring agency against the detailed socioeconomic survey baseline data and additional measures elaborated in a participatory manner to address outstanding social issues if the need arises.

10. Affected communal infrastructures (five churches) will be rebuilt at the resettlement site or existing infrastructure in the host villages enhanced, if this is the preferred option of a congregation. To accommodate the 2,912 re-settlers a health center will be extended in line with national standards. The Bowali elementary and primary schools and the Malahang technical school will be provided with additional classrooms and additional teacher housing to host the 473 pupils from the resettlement site. As a large number of children do not go to school because their parents are unable or unwilling to pay the school fees, the Project will raise awareness of the benefits of education and assist in increasing the educational level of the affected people. Additional communal infrastructure (a sport facility and community centers) will be put in place in line with national standards. Access to the urban water and electricity grid is available, but whether or not to connect their houses to these grids remains the decision and responsibility of the individual households.

11. The Project will further need to acquire an all-weather canoe landing site, which is the main access "road" for three Labu villages, and an associated fish market. To enable the Labu villages to land their canoes in the future, the existing good-weather landing site at SP beach will be enhanced with a breakwater structure to facilitate landing under all-weather conditions, and the existing fish market will be enhanced with permanent shades to replace the market lost at the old site. The Labu villages will also receive training and support in establishing floating fish cages in the Labu lagoons and in carrying out fish farming and other non-fishing-based income-generating activities to offset any income loss related to the extension of the port.

12. Extensive consultation and participation was undertaken during the resettlement planning and preparation phase, with the Morobe Provincial Administration, the provincial resettlement committee, the community resettlement committees, the BUP Association, the Labu Association, NGOs (Adventist Development Relief Agency, Habitat for Humanity, Catholic Women's Association, Catholic Youth Development Center, Lutheran Church, Young Women's Christian Association, etc.), and other institutions (e.g., the National Agricultural Research Institute, the University of Technology). Public participation and consultation will continue throughout

resettlement plan implementation as well as during the evaluation, and stakeholders will be empowered and enabled to participate actively in the process.

13. The implementation of this resettlement plan and all its components will be coordinated by the resettlement office of the project management unit and closely supervised by the resettlement committee, which comprises IPBC, PNG Port Corporation Limited (PPCL), and the Morobe Provincial Administration. To enable the resettlement office to carry out this work, training and backstopping will be provided. Infrastructure will be established by construction companies under the technical supervision of qualified management companies, while land development (clearing, road construction, and laying of connections to water and electricity grids) will be done by the BUP Development Co. under the supervision of the provincial public works department. The relocation planning and assistance during relocation will be facilitated by the resettlement office and the provincial administration. NGOs and specialist governmental bodies will also assist vulnerable populations during and after the relocation and implement livelihood restoration activities, while external monitoring will be carried out by an independent and experienced monitoring agency. The experienced and well-established provincial ombudsman, an office established to settle disputes between ethnic groups and the State, will serve as grievance redress mechanism to allow affected people to appeal decisions and actions, and to obtain resolution in case these grievances are found to be justified.

14. The satisfactory completion of the relocation process for the three settlements will need to be documented in an external monitoring and evaluation report and evaluated by ADB before the Government and ADB approves the award of civil works contracts for the new port facilities.

15. The total costs of compensation, relocation, livelihood restoration, and internal and external monitoring, including contingencies, are estimated at \$6.7 million. They will be financed by the Government (counterpart funds), ADB ADF loan, and a grant from the Japan Fund for Poverty Reduction (financing livelihood restoration and external monitoring).

**Table A13.2: Estimated Costs of the Resettlement Plan**  
(\$ million)

Item	Total
<b>Resettlement site purchase from BUP Development Co.</b>	1.49
<b>Housing:</b> Construction of 482 1-bedroom prefabricated houses (including gutter), 482 pit latrines (including concrete slab and metal base), and 482 water tanks (including connection to house roof), and construction supervision	2.03
<b>Communal infrastructure:</b> Enhancement of two existing markets (shades, etc.); construction of an open-space sport area, three community centers (prefabricated buildings), and five churches (prefabricated buildings); expansion of existing elementary and primary schools and a health center; and construction supervision	0.65
<b>Alternative all-weather canoe landing area at SP beach:</b> Breakwater facility, fish market shades and facilities, and construction supervision	0.96
<b>Compensation for livelihood assets:</b> Crops, economic trees, and medicinal plants	0.05
<b>Special assistance for vulnerable populations</b>	0.09
<b>Relocation (trucks, drivers, fuel, etc., for 1 month)</b>	0.09
<b>Relocation allowance</b>	0.08
<b>Livelihood enhancement training (for women and men)</b>	0.09
<b>Income improvement:</b> Agriculture and animal husbandry, floating fish cage cultures, etc.	0.38
<b>Seed money for micro-credit scheme (600 households)</b>	0.05
<b>Training and backstopping for resettlement committee</b>	0.03
<b>Monitoring and evaluation</b>	0.15
<b>Contingency</b>	0.56
<b>Total</b>	<b>6.70</b>

Source: Asian Development Bank estimates.

Table A13.3: Entitlement Matrix

Asset Type	Maus Markham, Wara Tais, Sodas	Hosts	Labu Villages
Homestead land	A leased residential plot (block) at the resettlement site (Malahang) of 700 m (35 x 20 m)	Cash compensation	—
Housing (property)	A 1-bedroom house and assistance in dismantling the old house and moving all salvageable items to the new site	—	—
Housing (tenant)	Assistance in finding new housing at an affordable rate	—	—
Latrine	An individual pit latrine for all houses	—	—
Water supply	A 1,000 gallon water tank, including concrete slab and metal base, roof gutters, and downpipe for collecting the water for all houses	—	—
Kitchen	Assistance in dismantling the infrastructure and moving it to the new site	—	—
Shed	Assistance in dismantling the infrastructure and moving it to the new site	—	—
Shop/Bar	Assistance in dismantling the infrastructure and moving it to the new site	—	—
Market	Construction of shelters at the two nearest market and enhancement of existing market facilities	—	All-weather landing site and market at SP beach
Access to health and education	Construction of additional classrooms in elementary and primary schools and enlargement of health center	—	None
Communal infrastructure	Construction of open-space sport area and community center and replacement of five churches with prefabricated buildings of equal quality or cash compensation for affected structure	—	—
Cultural and ritual site(s)	—	—	—
Canoe landing site	Access to the SP beach landing site	—	Ownership of SP beach and market
Standing crop	In-kind compensation (seedlings) for all affected crops at replacement value, as determined during census	To be provided by BUP Ass.	—
Economic trees	In-kind compensation (seedlings) for all affected crops at replacement value, as determined during census	—	—
Access to fish in the port area	Non-fish-based livelihood enhancement and restoration options	—	Floating fish cages
<b>A. Relocation Assistance</b>			
Relocation planning	Assistance in planning, organizing, and coordinating the distribution of new plots, dismantling houses and other structures, transferring materials, moving out, and rebuilding structures	None	None
Assistance to move	Daily transportation facilities for moving household goods and salvageable materials to resettlement site	None	None
Moving allowance	Cash compensation (K500 per household)	None	None
Vulnerable populations	Additional assistance through nongovernment organizations and government services	—	—
<b>B. Livelihood Enhancement and Restoration</b>			
Skills training	Training of women trainers	None	None
Short courses	Training for women ( health, hygiene, sanitation, nutrition, HIV/AIDS awareness, sewing, cooking)	None	None
Vocational training	Training for young men at the youth development center	None	None
Vocational training	Training for adult men at technical school (metalworks, motor mechanics, joinery trade)	—	—
Agricultural demonstration plots	Raising of small livestock, vegetable gardening, fruit trees, seedlings, home processing of food products	—	—
Income restoration	Training in agriculture and livestock rearing and preferential access to employment during construction of the tidal basin and the resettlement site	—	—
Small business development	Micro-credit through a special micro-credit scheme in collaboration with the Wau Microbank Limited (Lae)	—	—

— = not applicable; HIV/AIDS = human immunodeficiency virus/acquired immune deficiency syndrome, Source: Asian Development Bank.

## SUMMARY POVERTY REDUCTION AND SOCIAL STRATEGY

### A. Linkages to the Country Poverty Analysis

<b>Is the sector identified as a national priority in country poverty analysis?</b>	<input checked="" type="checkbox"/> Yes  <input type="checkbox"/> No	<b>Is the sector identified as a national priority in country poverty partnership agreement?</b>	<input checked="" type="checkbox"/> Yes  <input type="checkbox"/> No
<b>Contribution of the sector or subsector to reduce poverty in Papua New Guinea</b>			
<p>The rehabilitation and maintenance of transport and marine infrastructure is identified in the Medium Term Development Strategy (MTDS) 2005–2010 as a strategic priority to promote export-driven economic growth and rural development (including agriculture, forestry, fisheries, and tourism). The Government’s commitment to spearhead the development of Papua New Guinea (PNG) through the improvement of physical infrastructure is reiterated in the draft National Poverty Reduction Strategy, and consistently reflected in the National Transport Development Plan (2006–2010), and the Five-Year Development Plan (2003–2007) of the Morobe Provincial Administration. The provincial plan identifies the need to improve and maintain physical infrastructure and communication network, to facilitate and accelerate mobility and goods and service delivery, and encourage income-earning opportunities in the rural area. The “national corridor,” which connects Lae port with its hinterland, carries the greatest volume of freight, and serves about 40% of the country’s population. The Lae Port Rehabilitation Project will contribute to supporting economic growth and development in Morobe province, with extended benefits to the five Highlands and Madang provinces, by strengthening the port’s ability to meet the increased demand from overseas ships and its role as transshipment port for freight arriving on overseas ships bound for Alotau, Buka, Kiavieng Lihir, Madang, and Rabaul. The upgraded port facilities will allow faster and cheaper access to minerals, oil, gas, coffee, spices, fresh vegetables, and cattle from the Highlands as well as imports of capital goods and consumables from abroad.</p>			

### B. Poverty Analysis

#### Targeting Classification: General intervention

#### What type of poverty analysis is needed?

In 2005, PNG had an estimated population of about 5.9 million with about 85% of the people living in rural areas. According to the 2000 census, with population growing at a steady annual rate of 2.7% from 1980 to 2000, PNG’s population doubled in the 30 years since independence. Despite its proclaimed potential, PNG faces many impediments to socioeconomic growth. Key factors affecting PNG’s development outlook—which fully reflect the conditions in the project area—include: a highly diverse and complex clan- and tribe-based social structure, widely scattered and often isolated rural communities, weak governance, a limited human capital base, and serious law-and-order problems. The country’s fast-growing population is adding significantly to the decline in living standards and the burden of delivering essential social and support services. Poverty estimates have not been updated since the last household survey in 1996. From 1996 to 2003, the number of Papua New Guineans living below \$1/day is estimated to have doubled, from 1.1 million to 2.2 million people. The poverty headcount index, for the \$1/day poverty line, was about 39.4% in 2003, up from 24.6% in 1996. An estimated 70% of the population, or 3.9 million Papua New Guineans, now live on less than \$2/day, up from 54% in 1996.

According to the UNDP Human Development Index (HDI), PNG has improved since the mid-1970s, but very slowly. In 2006, PNG ranked 139th among 177 developing countries, reflecting alarming economic and social intra-country disparities. On the UNDP Human Poverty Index (HPI), PNG ranks 75th among 102 developing countries. PNG’s main social indicators, such as life expectancy and maternal and child mortality rates, show improvements since 1975, but are still well below the averages for lower-middle-income countries (LMICs). PNG still has limited primary health care. Infectious diseases are claiming many lives, and there are serious public health risks from endemic diseases such as malaria. A general HIV epidemic is under way, with prevalence rates among 15- to 49-year-olds at 3–4% in Port Moresby, well over 2% in other urban areas, and over 1% in rural areas. In education, the rate of participation in primary schooling is improving, but it remains lower than in most other countries in the region.

In Morobe province, as a result of poor rural infrastructure, people in rural areas are pulled by migratory factors to urban areas to seek better services and income-earning opportunities. In the rural areas, poor rural infrastructure is a market disincentive. In urban areas, lack of appropriate skills and employment opportunities forces people into the informal sector. In addressing the issue of poverty and lack of basic infrastructure, the Morobe Provincial Strategic Development Plan (2003–2007) identified the following contributing factors to ever-increasing levels of poverty: (i) inaccessibility of basic services, (ii) increasing number of in-migrants from other provinces, (iii) lack of

income-earning opportunities, (iv) increasing rate of unemployment, and (v) increasing number of unskilled labor.

### C. Participation Process

**Is there a stakeholder analysis?**  Yes  No

Extensive consultations were carried out during the PPTA and loan fact-finding missions in Port Moresby and Lae. These involved a broad range of stakeholders, which include: government agencies (the Morobe Provincial Administration [MPA], Lae district administration [LDA], the National Council of Women, the Morobe Provincial Council of Women, the National AIDS Council, the Morobe Provincial AIDS Council); civil society representatives (including nongovernment organizations [NGOs], community-based organizations, and faith-based organizations); business community representatives (Lae Chamber of Commerce, port authorities, users, and operators); and Labu and Ahi people. Field surveys, focus group discussions and key-informant interviews have been organized in the form of (i) written information disclosure on resettlement and environmental issues (information leaflets); (ii) larger stakeholder meetings (information dissemination with representatives of affected communities before the census and survey); (iii) key-informant meetings at provincial (MPA), district (LDA), port (PMU/IPBC), and settlement level; (iv) focus group discussions (e.g., Lae Chamber of Commerce and Industry, the Adventist Development Relief Agency, the National Agricultural Research Institute, Soroptimist International, Young Women's Christian Association, Save the Children, and the Lae Police Department); and (v) a full household census and market and trade survey among local households, traders, passengers, and shop owners in the three affected settlements. Relevant information from the stakeholder analysis has informed the design of the loan components and formed the rationale for the special features under the loan, which include: mobilizing the private sector to respond to gender and HIV/AIDS issues, with funding from the Swedish Cooperation Fund, and promoting livelihood rehabilitation and enhancement activities in the project area, with funding from JFPR.

**Is there a participation strategy?**  Yes  No

The project processing and preparation of the resettlement plan and environment impact assessment are highly consultative and participatory. The process of consultation and participation is continuing daily and will continue throughout the project cycle. This is guaranteed by the institutionalization of the process. IPBC has assigned a full-time staff as the resettlement officer to dialogue with various groups. The Ahi and the Labu have formed a joint committee, the Bulu Committee. Resettlement committees at the communal and provincial levels have been established to serve as mechanisms for addressing grievances and resolving disputes.

### D. Gender Development

#### Strategy for maximizing impact on women:

In the light of women's greater vulnerability to the risks and impact of infrastructure development and the need to strengthen their ability to avail themselves of the opportunities derived from increased connectivity and transportation, the Project will:

- Mitigate the inherent risks involved with increased road/port traffic and connectivity, by promoting greater partnership among the private sector, civil society NGOs, and the Morobe Provincial AIDS Council. The activities, to be funded by the Swedish Cooperation Fund, will involve: gender-responsive AIDS behavior change and awareness campaigns as well as capacity development initiatives aimed at strengthening the outreach and impact of NGOs working with most-at-risk groups in the working area. AIDS site committees and women's help desks at police stations will be established in hot spots around the port. Effective modalities for the sustainable reintegration and rehabilitation of People Living with HIV/AIDS (PLWHA), including AIDS orphans and at-risk groups (e.g., female sex workers, destitute single mothers, and female heads of households) will be pilot-tested in the project area.
- Restore and enhance livelihood opportunities of affected communities. The design of the JFPR-funded activities will take into consideration the specific needs and constraints faced by women in the affected communities in terms of their ability to restore or enhance their income, and fully avail themselves of the opportunities provided by the increased seaport and related road traffic and connectivity.

The economic, health, and social/gender impact of the loan will be monitored through the project performance monitoring system (PPMS) and consistently reflected in the project progress reports. All data collected during the Project will be sex-disaggregated.

**Has an output been prepared?**  Yes  No

### E. Social Safeguards and Other Social Risks

Item	Significant/ Not Significant/ None	Strategy to Address Issues	Plan Required
<b>Resettlement</b>	<input checked="" type="checkbox"/> Significant <input type="checkbox"/> Not significant <input type="checkbox"/> None	A resettlement plan has been prepared according to the <i>Involuntary Resettlement Policy</i> (1995) of the Asian Development Bank. It has been disclosed to the public and to affected people. Internal and external monitoring arrangements will be put in place.	<input checked="" type="checkbox"/> Full <input type="checkbox"/> Short <input type="checkbox"/> None
<b>Affordability</b>	<input type="checkbox"/> Significant <input type="checkbox"/> Not significant <input checked="" type="checkbox"/> None		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<b>Labor</b>	<input type="checkbox"/> Significant <input checked="" type="checkbox"/> Not significant <input type="checkbox"/> None	Project construction related to the construction of the port infrastructure will create demand for local (unskilled) laborers in the project area. Modalities for ensuring women's equal access to the business and employment opportunities provided during and after the port facilities have been developed.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<b>Indigenous Peoples</b>	<input type="checkbox"/> Significant <input checked="" type="checkbox"/> Not significant <input type="checkbox"/> None	PNG population consists of more than 800 indigenous people's groups, and there is no particular dominant group. The directly affected people are illegal settlers from other parts of PNG. Their needs will be addressed under the resettlement plan.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<b>Other Risks and/or Vulnerabilities</b>	<input checked="" type="checkbox"/> Significant <input type="checkbox"/> Not significant <input type="checkbox"/> None	PNG is characterized by an HIV generalized epidemic, with prevalence rates among 15- to 49-year-olds at 3–4% in Port Moresby, well over 2% in other urban areas, and over 1% in rural areas. In Morobe province, HIV prevalence is on the rise, with 600 officially registered HIV cases (and an estimated 60% unreported cases), 2.5% HIV prevalence among women attending antenatal clinics, and four new HIV cases reported weekly at Angau Memorial Provincial Hospital in Lae. In this context, the anticipated increase in sea and road traffic associated with the rehabilitation of Lae port presents critical health and social/gender risks, which have been addressed in the loan design and implementation arrangements.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

HDI = Human Development Index, HPI = Human Poverty Index, Lae district administration = LDA, LMIC = lower-middle-income countries, MTDS = Medium Term Development Strategy, NGO = nongovernment organization, PLWHA = People Living with HIV/AIDS, PNG = Papua New Guinea, PPMS = project performance monitoring system, PPTA = project preparatory technical assistance.