



# Technical Assistance Report

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Project Number: 40122  
October 2007

## Republic of Palau: Preparing the Babeldaob Water Supply Project (Financed by the Japan Special Fund)



## CURRENCY EQUIVALENTS

(as of 22 August 2007)

The currency of the Republic of Palau is United States dollars.

## ABBREVIATIONS

ADB	–	Asian Development Bank
C&P	–	consultation and preparation
CSPU	–	country strategy and program update
EIA	–	environmental impact assessment
EMP	–	environment management plan
EQPB	–	Environment Quality Protection Board
FMICRA	–	financial management internal control and risk assessment
FMAQ	–	financial management assessment questionnaire
HIE	–	household income and expenditure
IEE	–	initial environment examination
LARP	–	land acquisition and resettlement plan
MOU	–	memorandum of understanding
MRD	–	Ministry of Resources and Development
OEK	–	Olbiil Era Kelulau
PPTA	–	project preparatory technical assistance
PSC	–	project steering committee
PWD	–	Public Works Department
TA	–	technical assistance

## TECHNICAL ASSISTANCE CLASSIFICATION

<b>Targeting Classification</b>	–	Targeted intervention (TI-M7)
<b>Sector</b>	–	Water supply, sanitation, and waste management
<b>Subsector</b>	–	Water supply and sanitation
<b>Theme</b>	–	Sustainable economic growth
<b>Subtheme</b>	–	Fostering physical infrastructure development

## NOTE

In this report, "\$" refers to US dollars.

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## I. INTRODUCTION

1. During the 40th Annual Meeting of the Board of Governors in Kyoto, Japan, in May 2007, the Government of Palau requested technical assistance (TA) from the Asian Development Bank (ADB) to prepare a project to develop water supply and sanitation systems on the island of Babeldaob. This proposed TA was identified in the 2007–2009 country strategy and program update (CSPU). The Fact-Finding Mission visited Palau 6–13 June 2007, during which consultations were held with the Government to determine the nature and scope of the project preparatory technical assistance (PPTA) and the proposed financing. The PPTA will be comprised of two components: (i) preparation of a water supply sector development plan for Babeldaob and Koror State, and (ii) preparation of feasibility studies to improve the security of the treated water supply to communities on Babeldaob and within the state of Koror, and to enable the expansion of the Koror-Airai water supply network to the state of Aimeliik. An understanding was reached with the Government on the purpose, scope, implementation arrangements, cost estimates, financing arrangements, and terms of reference for consultants, as reflected in the Memorandum of Understanding of the Fact-Finding Mission.<sup>1</sup>

## II. ISSUES

2. With the exception of the water supply for Koror and Airai, Palau's water supply systems are operated and maintained by state governments. The Koror-Airai water supply is operated and maintained by the Public Works Department (PWD) and supplies water to approximately 64% of the country's population. Based on 2005 census data, the population of Palau is growing annually at about 1.4%. However, the proportion of the population living in the Koror-Airai urban area has declined from 71% in 1995 to 64% in 2005. This decline may be attributed to the construction of Compact Road, which has allowed customary landowners in Babeldaob improved access to their land, facilitating agriculture and other economic developments.

3. A goal of the proposed *National Policy on Population and Sustainable Development*<sup>2</sup> is "to stimulate controlled economic development in balance with the carrying capacities of Palau's environment and infrastructure," which is consistent with the third element of ADB's strategic focus for assistance to Palau, "[to] facilitate sound infrastructure development and management."<sup>3</sup> Currently, Palau's water policy is contained within existing water supply legislation, and draft legislation is now being prepared for the protection of watersheds.

4. The Government finances the operation, maintenance, and the capital costs for water supplies. Currently, charges exist for water supplied through the PWD-operated network that services the Koror-Airai area. This network is metered; however, the water rate for customers living within the states of Airai is fixed at \$5.00 per month as water for this supply system is solely derived from within Airai. Customers within Koror are charged \$0.85 per 1,000 gallons. Water supply systems operated by state governments are not metered, and a monthly flat rate fee for water usage is charged by the various states.

5. The Government is considering legislation to take over responsibility for the operation of all public water supply and sewerage systems in Palau. If the proposed legislation is passed, either a new public infrastructure ministry or a state-owned water supply and sewerage corporation would be formed and would be responsible for national water supply and sewerage

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<sup>1</sup> The TA first appeared in *ADB Business Opportunities* on 20 July 2007.

<sup>2</sup> Government of Palau. 2007. *National Policy on Population and Sustainable Development*. Koror.

<sup>3</sup> ADB. 2006. *Palau (2007–2009) Country Strategy and Program Update*. Manila.

operations. The Ministry of Finance has also expressed a desire to privatize water and sewerage services. Revenues obtained through water rates do not cover the water supply's operation, maintenance, and capital costs, and changes to the existing tariff structure may be required to allow full recovery of these costs with transparency. Without full cost recovery, water supply and sewerage operations will not be sustainable.

6. The PWD reports that approximately 50% of water produced for the Koror-Airai water supply cannot be accounted for, and the PWD believes that illegal connections are the major cause. The rate of arrears is also high, accounting for 1.8 months of average water rates revenue. The existing water supply legislation does not provide the PWD with the authority to disconnect consumers with accounts in arrears or to penalize consumers with illegal connections.

7. The PWD reports that average per capita water consumption for piped water is approximately 200 gallons per person per day and is likely to increase. Currently, the daily demand for the Koror-Airai water supply system is 4 million gallons per day. Water for this system is abstracted from a reservoir with a capacity of 20 million gallons and from the Ngerikill River, located in Airai. Disruptions to the water supply, affecting approximately 14,000 people, are experienced during severe droughts, as in 1983 and 1997. The Government is concerned that the frequency of severe droughts may increase due to climate change, and it has identified a need to improve security of supply to the Koror-Airai area.

8. With the opening of the Compact Road, demand for residential and agricultural lots on Babeldaob, particularly in Aimeliik, is increasing. A limited secure water supply is constraining development on Babeldaob, and new water sources and expanded water supply networks on Babeldaob must be developed. The Government is considering the establishment of an interlinked water supply network for Babeldaob to facilitate development and has identified the expansion of the Koror-Airai network to Aimeliik as a high priority. The Government proposes constructing a bulk water supply main following the Compact Road from the Shell gas station in Airai to Aimeliik/Ngatpang Cross Road, a distance of approximately 6 miles.

### III. THE TECHNICAL ASSISTANCE

#### A. Impact and Outcome

9. The impact of the PPTA will be secure, reliable, and affordable water supplies to communities on Babeldaob and in Koror. The outcome will be sustainable management of the national water supply system and improved reliability and security of the water supply to Koror. The PPTA design and monitoring framework is in Appendix 1. The initial poverty and social analysis is in Appendix 2.

#### B. Methodology and Key Activities

10. The PPTA will be comprised of two components: (i) preparation of a water supply sector development plan for Babeldaob and Koror State; and (ii) preparation of feasibility studies to improve the security of supply of treated water to communities in Babeldaob and Koror, and to enable the expansion of the Koror-Airai water supply network to Aimeliik.

11. **Component 1: Preparation of Palau's Water Supply Sector Development Plan.** A water supply sector development plan focusing on water supply services to communities on Babeldaob and in Koror will be prepared. The sector development plan will (i) provide an

analysis of existing demand and demand forecasts for the period 2008–2020 for high-, medium-, and low-demand growth scenarios; (ii) assess the condition of existing water supply assets and the level of service currently provided to consumers, including reliability, quality, and affordability, and provide a financial analysis and assessment of the PWD-provided water supply services; (iii) create a least-cost investment plan for the period 2008–2020 to provide communities on Babeldaob and in Koror with safe, reliable, and affordable water supplies; (iv) assess the Government's capacity to implement the investment plan, and recommend measures to build project implementation capacity; (v) assess the procurement systems and procedures currently used by the Government; (vi) in consultation with key stakeholders, including the Government, nongovernment organizations, and community service organizations, identify options for institutional reforms to the PWD water supply services, develop a plan to implement the institutional reforms within a 3-year period, and determine the physical, institutional, and human resources requirements and tariff structure to meet the objective of a safe, reliable, and affordable water supply while providing cost recovery by 2013; and (vii) identify amendments necessary to existing water supply legislation to enable the corporatization of PWD water supply services and to facilitate effective management of water supplies.

12. The first component will also include a survey to assess the willingness of various consumer groups, particularly the poor on Babeldaob and in Koror, to pay for improved water supply services.<sup>4</sup> A community awareness campaign promoting responsible use of water and highlighting the need for realistic water rates will also be undertaken.

13. **Component 2: Water Source and Bulk Supply Main Feasibility Studies.** Two feasibility studies, including preliminary designs, will be prepared. The feasibility studies will provide the basis for an investment project.

14. Feasibility Study A will identify secure sources of water within Aimeliik to initially yield 1 million gallons of potable water per day with the potential to expand the production to 2 million gallons per day. The study will assess suitable sites for the intake works, water treatment plant, and alignments for an access road and water mains, e.g., raw water and clear water.<sup>5</sup> Cost-effective water treatment options, suitable for application in Palau, will be identified and assessed. A working paper presenting the study's findings and recommendations, including preliminary project cost estimates, will be submitted to the Government for consideration. Following the Government's consideration and agreement on a preferred option, preliminary designs of the treatment process, intake structure, water treatment plant, water mains and associated infrastructure, and access roads will be prepared. Environmental and social impacts will be assessed, and an environmental impact assessment (EIA) and a land acquisition and resettlement plan (LARP) will be prepared according to the requirements and approval of the Government and ADB. Project cost estimates will also be refined. The preliminary designs, approved EIA and LARP, and cost estimates will be presented in the studies' final report. Initial examination of flow-gauging data collected by the United States Geological Survey indicates that the Tabecheding River, in Aimeliik, may be a suitable water source.

15. Feasibility Study B will identify and assess options to convey up to 1 million gallons of treated water from the proposed water treatment plant in Aimeliik, as outlined above, to the existing Koror-Airai water supply network. The study will assess options to minimize operation

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<sup>4</sup> The Government of Palau conducted a household income and expenditure survey (HIES) during 2007. A report presenting the survey data and data analysis is expected to be available by October 2007.

<sup>5</sup> The raw water mains will convey untreated water from the intake works to the proposed water treatment plant. The clear water mains will convey treated water from the water treatment plant to the Compact Road.

cost, including the potential to construct a high-level, clear water service reservoir to maximize the potential in conveying water between Aimeliik and Airai by gravity feed. The study will identify suitable pipeline sizes and materials, as well as horizontal and vertical pipeline alignment options, to minimize the cost of conveying water between Aimeliik and Airai and land acquisition requirements. A working paper presenting the study's findings and recommendations, including preliminary project cost estimates, will be submitted to the Government for consideration. Following Government consideration and agreement on a preferred option, a preliminary design of the water main and clear water service reservoir will be prepared. Environmental and social impacts will be assessed, and an EIA and a LARP will be prepared to meet the requirements of and obtain the approval of the Government and ADB. Project cost estimates will be refined. The preliminary designs, approved EIA and LARP, and cost estimates will be presented in the studies' final report.

### **C. Cost and Financing**

16. The total cost of the PPTA is estimated at \$875,000, of which \$700,000 will be financed on a grant basis by the Japan Special Fund (JSF), funded by the Government of Japan. The Government will contribute \$175,000 in-kind as counterpart funds. The cost estimates and financing plan are in Appendix 3. The Government has been informed that approval of the TA does not commit ADB to finance any ensuing project.

### **D. Implementation Arrangements**

17. The Ministry of Resources and Development (MRD) will be the Executing Agency for the TA. A project steering committee, chaired by the Minister for Resources and Development, will be formed to provide overall direction. Other committee members will include the Minister of Finance, the Governor of Airai State, the Governor of Aimeliik State, the Director of Capital Infrastructure Projects, and the Director of the Environment Quality Protection Board (EQPB) or their representatives.

18. The PPTA will be implemented intermittently over 12 months and is expected to commence in November 2007 and be completed by 31 December 2008. The total consultant input is estimated at 28.5 person-months, of which 15 person-months will be from international consulting services and 13.5 person-months will be from national consulting services. The consultants will be recruited through a firm using the quality- and cost-based selection method in accordance with ADB's *Guidelines on the Use of Consultants* (2007, as amended from time to time) and will be evaluated using a quality-cost ratio of 80:20. The consulting firm will nominate the consultants' team leader. The consultants will have expertise in water supply development, financial and economic analysis, tariff analysis, water supply legislation, social analysis and poverty impact assessment, and environmental matters. The international consulting services will provide expertise in water supply development (5 person-months, 3 positions), economic and financial analysis (4 person-months, 2 positions), poverty and social development (1 person-month), environmental and social safeguards (3 person-months, 2 positions), water supply legislation (1 person-month), and geotechnical engineering (1 person-month). The national consulting services will provide expertise in water supply engineering (3 person-months), social safeguards (4.5 person-months, 2 positions), community awareness (3 person-months), and computer-aided drafting (3 person-months).

19. Separate reports and working papers will be required for each component. Reporting will include an inception report that focuses on any necessary changes to the scope of work or work program, as well as interim, draft final, and final reports. In addition, each consultant will be

required to produce draft final reports relevant to their inputs for discussion with the Government, ADB, and other stakeholders. The final report must be submitted within 1 month of receipt of comments from ADB and the Government. Consultants will also prepare briefing papers for periodic consultation workshops.

#### **IV. THE PRESIDENT'S DECISION**

20. The President, acting under the authority delegated by the Board, has approved the provision of technical assistance not exceeding the equivalent of \$700,000 on a grant basis to the Government of Palau for preparing the Babeldaob Water Supply Project, and hereby reports this action to the Board.

## DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets/Indicators	Data Sources/ Reporting Mechanisms	Assumptions and Risks
<p><b>Impact</b></p> <p>Secure, reliable, and affordable water supplies to communities on Babeldaob and in Koror</p>	<p>The continuity of supply to users increases from the current 95%+ to 99.9%+ by 2012</p> <p>The PWD is able to meet requests for all new connections in Koror, Airai, and Aimeliik by 2012, as currently the PWD is unable to provide connections to customers in Aimeliik</p>	<p>PWD records</p>	<p><b>Assumptions</b></p> <ul style="list-style-type: none"> <li>• Existing long-term monitoring of river flows is accurate</li> <li>• Climate change impacts do not significantly reduce river flow</li> </ul>
<p><b>Outcome</b></p> <p>The Government and ADB agree on the project design and feasibility study</p>	<p>The Government and ADB agree on the final loan project designs</p>	<p>MOU signed by the Government, the MRD, and ADB</p>	<p><b>Assumption</b></p> <ul style="list-style-type: none"> <li>• Civil society recognizes Government's role in providing reticulated water</li> </ul> <p><b>Risks</b></p> <ul style="list-style-type: none"> <li>• Land access issues are not resolved in a timely manner</li> <li>• States legislate an approach to water management that is inconsistent with a user-pays system</li> </ul>
<p><b>Outputs</b></p> <ol style="list-style-type: none"> <li>1. Palau water sector development plan finalized</li> <li>2. HIE surveys and survey data analysis completed</li> <li>3. Community awareness campaign promoting responsible use of</li> </ol>	<p>Water sector development plan endorsed by OEK by September 2008</p> <p>HIE data and analytical report reviewed and endorsed by ADB by July 2008</p> <p>Average per capita domestic demand is reduced from 200 gallons per day to less than 150</p>	<p>OEK records</p> <p>ADB review findings</p> <p>PWD records</p>	<p><b>Assumptions</b></p> <ul style="list-style-type: none"> <li>• OEK supports reform of Government water supply and sewerage services</li> <li>• A suitable and secure source of water exists</li> <li>• The Aimeliik State Legislature approves project proposal</li> </ul> <p><b>Risks</b></p> <ul style="list-style-type: none"> <li>• State governments and civil society do not support a</li> </ul>

Design Summary	Performance Targets/Indicators	Data Sources/ Reporting Mechanisms	Assumptions and Risks
<p>water and need for realistic tariffs designed and implemented</p> <p>4. Preliminary design of the water intake works and treatment plant in Aimeliik approved</p> <p>5. Preliminary design of a bulk water supply main from Airai to Aimeliik approved</p>	<p>gallons per day by end of 2010</p> <p>Designs approved through PWD and ADB review by July 2008</p> <p>Designs approved through PWD and ADB review by July 2008</p>	<p>Government letter of approval</p> <p>ADB review findings</p> <p>Government letter of approval</p> <p>ADB review findings</p>	<p>user-pays national water system</p> <ul style="list-style-type: none"> <li>• The Government, EQPB, and ADB social and environment safeguards cannot be met</li> </ul>
<p><b>Activities with Milestones</b></p> <p>1. The water supply sector development plan includes the following:</p> <p>1.1 Assessment of existing average daily demand and demand patterns, including average daily per capita demand, for the Airai-Koror water supply network and various state-operated water supplies on Babeldaob. Preparation of demand forecasts, including average daily per capita demand, for the Airai-Koror water supply network and state-operated water supplies on Babeldaob for the period 2008–2020 for high-, medium-, and low-demand growth scenarios. The findings of the demand assessment and demand forecasts will be presented in the PPTA interim report for review by ADB and the PWD by 1 April 2008.</p> <p>1.2 Preparation of a least-cost investment plan for the period 2008–2020 to provide communities on Babeldaob and in Koror with safe, reliable, and affordable water supplies by 1 April 2008.</p> <p>1.3 Assessment of the Government's implementation and procurement capacity by 1 April 2008.</p> <p>1.4 Assessment of the condition of existing water supply assets and the level of service currently provided to consumers including reliability, quality, and affordability, and a financial analysis and assessment of the water supply services provided by the PWD by 1 April 2008.</p> <p>1.5 Preparation of a tariff study that recommends a tariff structure for full recovery of operations and maintenance and capital costs by 2013. Updated tariff structure to be considered by the National Legislature by 31 December 2008.</p> <p>1.6 Preparation of a road map for institutional reform of the PWD water supply services within 3 years including identification of amendments required to the existing water supply legislation by 30 June 2008. The institutional reform roadmap to be considered by OEK by 31 December 2008.</p> <p>1.7 Willingness to pay for water survey for improved water services data and analysis submitted to ADB by 1 April 2007.</p> <p>1.8 Community awareness campaign promoting responsible use of water and highlighting the need for realistic water rates to be designed and implemented by 30 June 2008.</p>		<p><b>Inputs</b></p> <ul style="list-style-type: none"> <li>• ADB: \$700,000 (funded by the Japan Special Fund)</li> <li>• Government: \$175,000</li> <li>• Beneficiaries and affected people</li> <li>• Consultants: 14.5 international person-months and 13 national person-months: US\$498,000</li> </ul>	

<b>Activities with Milestones</b>	
<p>2. Water source and bulk supply main feasibility studies include the following:</p> <p>2.1 Assessment of the current demand for reticulated potable water and preparation of demand forecasts to 2020 for communities on Babeldaob and in Koror. Demand assessment and forecasts to be finalized by 1 December 2007.</p> <p>2.2 Study to identify secure sources of water within Aimeliik to yield initially 1 million gallons of potable water per day with the potential to expand the production to 2 million gallons per day. Identification of suitable sites for intake works, water treatment plant, clear water reservoir, and alignments for an access road and water mains, e.g., raw water and potable. Identification of cost-effective water treatment solutions suitable for application in Palau and preparation of preliminary process designs. Report presenting study findings including source and treatment options, preliminary cost estimates, and options for procurement to be finalized by mid-February 2008.</p> <p>2.3 Preparation of draft bid documents suitable to design, supply, and install a contract, an initial environmental evaluation, EIA, and a resettlement plan. Bid documents to be finalized by 1 May 2008.</p> <p>2.4 Identification of cost-effective options to convey up to 1 million gallons of treated water between Airai and Aimeliik including the assessment of feasible pipeline routes, pipeline size and material options, pumping requirements, and potential clear water reservoir sites.</p>	

ADB = Asian Development Bank, EIA = environmental impact assessment, EQPB = Environment Quality Protection Board, HIE = household income and expenditure, MOU = memorandum of understanding, MRD = Ministry of Resources and Development, OEK = Olbiil Era Kelulau, PWD = Public Works Department, TA = technical assistance.

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## INITIAL POVERTY AND SOCIAL ANALYSIS

Country/Project Title:	Palau/Preparing the Babeldaob Water Supply Project		
Lending/Financing Modality:	Project	Department/ Division:	PARD/PAHQ

### I. POVERTY ISSUES

#### A. Linkages to the National Poverty Reduction Strategy and Country Partnership Strategy

- Based on the country poverty assessment, the country partnership strategy, and the sector analysis, describe how the project would directly or indirectly contribute to poverty reduction and how it is linked to the poverty reduction strategy of the partner country.

The project is directly linked to the third strategic focus in the Palau CSPU 2007–2009, “facilitat[ing] sound infrastructure development and management,” and to a proposed water supply and sanitation project also identified in the CSPU.

The water supplies within Palau are extremely vulnerable to drought due to limited development of secure water resources. Palau’s largest water supply system, which services the Koror-Airai area, has limited capacity as the water is sourced from small catchments. Major water supply disruptions were experienced during the 1983 and 1997 El Niño events. The recent construction of Compact Road on Babeldaob has provided many Koror and Airai residents with ready access to their traditional lands. There is a trend for these residents to move to Babeldaob; however, the lack of a reliable and safe water supply is constraining development opportunities.

With the exception of the Koror-Airai water supply system, state governments operate and maintain Palau water supplies. The underfunding of water supply operations and maintenance budgets in most state-operated water supply systems has made most water supplies prone to disruption; in some instances, untreated water is distributed to consumers.

#### B. Targeting Classification

- Select the targeting classification of the project:  
 General Intervention  Individual or Household (TI-H);  Geographic (TI-G);  Non-Income MDGs (TI-M1, M2, etc.)

- Explain the basis for the targeting classification:

The project supports M7, specifically Millennium Development Goal Targets 9 and 10.

#### C. Poverty Analysis

- If the project is classified as TI-H, or if it is policy-based, what type of poverty impact analysis is needed?  
n/a
- What resources are allocated in the project performance technical assistance (PPTA)/due diligence?

Poverty and social development specialist (1 person-month); community awareness specialist (national, 3 person-months); resettlement specialist (international, 1 person-month); resettlement specialist (national, 2 person-months).

- If GI, is there any opportunity for pro-poor design (e.g., social inclusion subcomponents, cross subsidy, pro-poor governance, and pro-poor growth)?

Opportunities for pro-poor design will be identified during the social surveys to be undertaken by the PPTA consultants.

<b>II. SOCIAL DEVELOPMENT ISSUES</b>	
<b>A. Initial Social Analysis</b>	<p>Based on existing information:</p> <p>1. Who are the potential primary beneficiaries of the project? How do the poor and the socially-excluded benefit from the project?</p> <p>They include the residents of Koror, Arai, and Aimeliik, who will benefit through improved water services and a sustainable water supply. Development of a new water source to supplement the Koror-Airai water supply and to enable expansion of the Koror-Airai water supply network to areas on Babeldaob will facilitate economic growth and generate employment opportunities through residential development and agricultural expansion.</p> <p>2. What are the potential needs of beneficiaries in relation to the proposed project?</p> <p>A safe and sustainable water supply.</p> <p>3. What are the potential constraints in accessing the proposed benefits and services, and how will the project address them?</p> <p>Potential constraints include acquisition of easements and right-of-ways and provision of adequate operations and a maintenance budget for water supply. The project will address these potential constraints through (i) early identification of land acquisition requirements and extensive consultation with affected persons and other stakeholders; and (ii) the provision of legislation and a tariff structure to enable water supply operations to be financially sustainable.</p>
<b>B. Consultation and Participation</b>	<p>1. Indicate the potential initial stakeholders.</p> <p>An initial stakeholder analysis will be undertaken by the community awareness specialist.</p> <p>2. What type of consultation and participation (C&amp;P) is required during the PPTA or project processing (e.g., workshops, community mobilization, involvement of nongovernment organizations and community-based organizations, etc.)?</p> <p>Workshops with stakeholder groups including nongovernment organizations and community service organizations, and one-on-one consultations with affected persons.</p> <p>3. What level of participation is envisaged for project design?  <input type="checkbox"/> Information sharing    <input checked="" type="checkbox"/> Consultation    <input type="checkbox"/> Collaborative decision making    <input type="checkbox"/> Empowerment</p> <p>4. Will a C&amp;P plan be prepared? <input checked="" type="checkbox"/> Yes    <input type="checkbox"/> No    Please explain.</p> <p>A C&amp;P plan will be prepared by the community awareness specialist.</p>
<b>C. Gender and Development</b>	<p>1. What are the key gender issues in the sector/subsector that are likely to be relevant to this project/program? n/a</p> <p>2. Does the proposed project/program have the potential to promote gender equality and/or women's empowerment by improving women's access to and use of opportunities, services, resources, assets, and participation in decision making? <input type="checkbox"/> Yes    <input checked="" type="checkbox"/> No    Please explain.</p> <p>The project is not expected to have any gender-specific impacts.</p> <p>3. Could the proposed project have an adverse impact on women and/or girls or to widen gender inequality?  <input type="checkbox"/> Yes    <input checked="" type="checkbox"/> No    Please explain.</p> <p>The project is not expected to specifically impact or exclude women from benefiting from the project. The project will identify practical modalities to maximize benefits to communities, especially women and other vulnerable groups. If women are adversely affected during resettlement, the resettlement plan will include ways to mitigate the adverse effects. All data collected will be gender-disaggregated.</p>

<b>III. SOCIAL SAFEGUARD ISSUES AND OTHER SOCIAL RISKS</b>			
<b>Issue</b>	<b>Nature of Social Issue</b>	<b>Significant/Limited/ No Impact/Not Known</b>	<b>Plan or Other Action Required</b>
<b>Involuntary Resettlement</b>	The project will require land acquisition. However, most of the land required is likely to be within the existing Compact Road reserve and within land owned by the state of Aimeliik. Preliminary surveys and investigation based on preliminary technical design will be undertaken; if required, a LARP will be prepared.	Limited impact	<input type="checkbox"/> Full Plan <input checked="" type="checkbox"/> Short Plan <input type="checkbox"/> Resettlement Framework <input type="checkbox"/> No Action <input type="checkbox"/> Uncertain
<b>Indigenous Peoples</b>	The majority of the population has ethnic origins in Palau; therefore, the majority can be considered indigenous. However, under the ADB definition of indigenous persons, i.e., a group or cultural identity distinct from that of the dominant or mainstream society, there are no indigenous persons.	No impact	<input type="checkbox"/> Plan <input type="checkbox"/> Other Action <input type="checkbox"/> Indigenous Peoples Framework <input checked="" type="checkbox"/> No Action <input type="checkbox"/> Uncertain
<b>Labor</b> <input type="checkbox"/> Employment Opportunities <input type="checkbox"/> Labor Retrenchment <input type="checkbox"/> Core Labor Standards	Short-term employment opportunities may be generated during the project's construction phase. Longer-term employment opportunities, particularly in the service sector, could also be generated due to commercial development triggered by a more accessible, secure, and reliable water supply.	Limited impact	<input type="checkbox"/> Plan <input type="checkbox"/> Other Action <input checked="" type="checkbox"/> No Action <input type="checkbox"/> Uncertain
<b>Affordability</b>	The project could result in an increase in water tariffs, which may impact on the poor. A tariff study, which will consider affordability issues, will be prepared through the PPTA.	Limited impact	<input type="checkbox"/> Action <input checked="" type="checkbox"/> No Action <input type="checkbox"/> Uncertain
<b>Other Risks and/or Vulnerabilities</b> <input type="checkbox"/> HIV/AIDS <input type="checkbox"/> Human Trafficking <input type="checkbox"/> Others (conflict, political instability, etc.)	No other social risks beyond land acquisition have been identified.	No impact	<input type="checkbox"/> Plan <input type="checkbox"/> Other Action <input checked="" type="checkbox"/> No Action <input type="checkbox"/> Uncertain

**IV. PPTA/DUE DILIGENCE RESOURCE REQUIREMENT**

1. Do the terms of reference for the PPTA (or other due diligence) include poverty, social and gender analysis and the relevant specialist/s?  
 Yes       No If no, please explain why.
  
2. Are resources (consultants, survey budget, and workshop) allocated for conducting poverty, social and/or gender analysis, and C&P during the PPTA/due diligence?     Yes       No If no, please explain why.

ADB = Asian Development Bank, C&P = consultation and preparation, CSPU = country strategy and program update, LARP = land acquisition and resettlement plan, PPTA = project preparatory technical assistance.

**COST ESTIMATES AND FINANCING PLAN**  
(\$'000)

<b>Item</b>	<b>Total Cost</b>
<b>A. Asian Development Bank Financing<sup>a</sup></b>	
1. Consultants	
a. Remuneration and Per Diem	
i. International Consultants	390.0
ii. National Consultants	115.0
b. International and Local Travel	65.0
c. Reports and Communications	5.0
2. Workshops	10.0
3. Surveys and Laboratory Testing	60.0
4. Representative for Contract Negotiations	5.0
5. Contingencies	50.0
<b>Subtotal (A)</b>	<b>700.0</b>
<b>B. Government Financing</b>	
1. Office Accommodation and Transport	100.0
2. Remuneration and Per Diem of Counterpart Staff	50.0
3. Others <sup>b</sup>	25.0
<b>Subtotal (B)</b>	<b>175.0</b>
<b>Total</b>	<b>875.0</b>

<sup>a</sup> Financed by the Japan Special Fund, funded by the Government of Japan.

<sup>b</sup> Includes communication costs from the offices provided by the Government, report printing costs, and representation fees payable to stakeholders.

Source: Asian Development Bank.

## OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

### A. Scope of Consulting Services

#### 1. Component 1: Preparation of Palau's Water Supply Sector Development Plan.

To complete this component's goal, the following professional positions must be staffed: international financial analyst (2.5 person-months), international water supply legislation specialist (1.0 person-month), international water supply engineer (1.0 person-month), national water supply engineer (1.0 person-month), and national community awareness specialist (2.5 person-months). The activities of these professional positions include but are not limited to the following.

1. **Lessons Learned.** Using the lessons of past experience to increase the likelihood of project success, (i) search the Operations Evaluation Department's Evaluations Information System,<sup>1</sup> past relevant project completion reports, and project performance evaluation reports to identify lessons from previous Pacific water supply projects; (ii) review the findings of the Operations Evaluation Department's relevant publications;<sup>2</sup> and (iii) review other donor agencies' evaluations that may have past/ongoing water sector activities in Palau.

2. **Demand Assessment.** Assess the existing average daily demand and demand patterns, including average daily per capita demand, for the Koror-Airai water supply network and various state-operated water supplies on Babeldaob. Prepare demand forecasts, including average daily per capita demand, for the Koror-Airai water supply network and state-operated water supplies on Babeldaob for the period 2008–2020 for high-, medium-, and low-demand growth scenarios. The demand forecasts will take into account changes in per capita demand resulting from tariff increases and water conservation public awareness campaigns. The findings of the demand assessment and demand forecasts will be presented in the PPTA interim report for review by ADB and PWD by 1 April 2008.

3. **Prioritized Least-Cost Investment Plan.** Identify the investment options to provide communities on Babeldaob and in Koror with safe, reliable, and affordable water supplies for the period 2008–2020. From the investment options identified, develop a prioritized least-cost investment plan for the period 2008–2020.

4. **Level of Service.** Assess the condition of existing key water supply assets and the level of service currently provided to consumers including reliability, quality, and affordability.

5. **Financial Assessment.** (i) Prepare a financial management assessment questionnaire (FMAQ) and a financial management internal control and risk assessment (FMICRA) for review and comment by ADB; (ii) assess the PWD's financial management capabilities, including internal control mechanisms, using information obtained through the FMAQ and the FMICRA; (iii) emphasize the PWD's capacity—or that of its water supply operations successor—to manage and monitor project disbursements, incorporating previous country disbursement experience; (iv) prepare the draft financial management assessment report, provide it to ADB for review and comment, and update it to reflect ADB comments and suggestions; and (v)

<sup>1</sup> Available: <http://www.adb.org/evaluation/>.

<sup>2</sup> Such as the following: ADB. 2003. *Special Evaluation Study on ADB's Capacity Building Assistance for Managing Water Supply and Sanitation to Republic of the Fiji Islands, Kiribati, Papua New Guinea, and Republic of the Marshall Islands*. Available: <http://www.adb.org/Documents/SES/REG/sst-reg-2003-08/water-supply-sanitation.pdf>; and ADB. 2007. *Success Rates: Successful Projects in the Health and Water Supply, Sanitation, and Waste Management Sectors 2001–2006*. Available: <http://www.adb.org/Documents/Evaluation/Success-Rates/Success-Rates-Health-and-Water.pdf>

prepare a final financial management assessment report reflecting assessment findings and recommendations, and provide to ADB.

6. **Tariff Study.** (i) Review the existing water supply tariff arrangements applicable for the PWD-operated water supply system and the state-operated water supplies on Babeldaob; (ii) in consultation with the Government, identify the water supply sector's cost recovery objectives and targets; (iii) determine average financial tariffs necessary to meet operation and maintenance costs, debt service, and full cost recovery for the water supply networks on Babeldaob and in Koror based on the least-cost investment plan; (iv) assess the affordability of average tariffs, and develop tariff structures that ensure affordability of water supply services to low-income groups; (v) develop sector financial projections, and assess the ability of tariffs to meet cost recovery objectives; and (vi) identify subsidies necessary to ensure the continued provision of services to the poor.

7. **Institutional Reform Road Map.** Consult with key stakeholders including Government, nongovernment organizations, and community service organizations, and identify options for institutional reforms to the PWD water supply services. Prepare a road map for the institutional reform of the PWD water supply services to be implemented by 2012 and full cost recovery by 2013. The road map will identify the structure and the systems of the corporatized utility including utility management and planning, technical capacity-building requirements, commercial accounting, management information reporting, physical and human resources requirements, customer services and public relations, community education and awareness, and the amendments required to the existing water supply legislation.

8. **Community Awareness.** (i) Undertake an initial stakeholder analysis, and develop a consultation and participation (C&P) plan for the legislative amendments, tariff review, and development of a new water source in Aimeliik, including the provision of a bulk water supply main between Aimeliik and Airai; (ii) provide the initial stakeholder analysis and C&P plan in the inception report; (iii) prepare and implement a program to raise public awareness of water conservation, water supply systems, their needs and costs, and consumer responsibilities regarding water management; (iv) develop and distribute awareness materials through workshops, stakeholder meetings, and publicity campaigns; (v) in consultation with local communities, establish water user associations in Koror, Airai, and Aimeliik; (vi) consult with the national and state governments, nongovernment organizations, community service organizations, and the private sector for awareness activity preparation and implementation; (vii) provide community liaison assistance to the resettlement specialists necessary in the next component to undertake social surveys and consultations with affected persons; and (viii) implement a public awareness campaign for the introduction of the new tariff structure.

2. **Component 2: Water Source and Bulk Supply Main Feasibility Studies.** To complete this component's goal, the following professional positions must be staffed: international water supply engineer (2.0 person-months), international water resources specialist (1.0 person-month), international water supply process engineer (1.0 person-month), international geotechnical specialist (1.0 person-month), international financial analyst (0.5 person-month), international water supply economist (1.0 person-month), international poverty and social development specialist (1.0 person-month), international environment specialist (2.0 person-months), international resettlement specialist (1.0 person-month), national water supply engineer (2.0 person-months), national environment specialist (2.5 person-months), national resettlement specialist (2.0 person-months), national community awareness specialist (0.5 person-month),

and national computer-aided drafting operator (3.0 person-months). The activities of these professional positions include but are not limited to the following.

**9. Identification of Suitable Water Sources within Aimeliik State.** (i) Liaise with the Ministry of Resources and Development (MRD), the Environment Quality Protection Board (EQPB), and other key stakeholders to obtain existing water resource studies, available stream flow data, and rainfall data for Aimeliik, and review and analyze the available data; (ii) in consultation with the MRD and the EQPB, determine an appropriate drought frequency probability for the screening of potential suitable water sources; (iii) identify potential surface water sources that could reliably yield 2 million gallons of treated water per day during drought conditions; (iv) assess the yield, and develop flow-duration curves for each potential suitable water source; (v) identify suitable sites for the intake works and a water treatment plant, and assess the constraints for developing each site, taking into account access, source water quality, geotechnical conditions and soil stability, potential impacts on other water users, minimization of land acquisition and resettlement impacts, and minimization of development costs; (vi) identify suitable and appropriate options for water treatment to meet Palau's drinking water standards; (vii) prepare preliminary cost estimates to develop each water source including intake works, water treatment plant, raw water and clear water pipelines as far as Compact Road, clear water reservoir, raw water and clear water pumping stations if required, all-weather access roads to the water treatment plant and intake site(s), and the provision of electricity supply; (viii) estimate annual operation costs to produce 1 million gallons of treated water per day and eventually 2 million per day; and (ix) prepare a working paper to present to the Government and ADB demonstrating the water source identification study findings, cost estimates for each option, and recommendations.

**10. Water Source and Treatment Plant Preliminary Design.** Following endorsement of the water source identification study working paper, the selection of a preferred option by the Government, and receipt of ADB endorsement, (i) conduct topographic and geotechnical surveys to confirm site suitability for the intake works, water treatment plant, pipeline, and access road routes; (ii) refine source water yield estimates based on any additional data collected during the investigation of suitable water sources; (iii) assess the quality of raw water to abstract at the intake works site under various stream flow conditions, and refine the proposed raw water treatment process based on the raw water quality assessment; (iv) identify suitable modes for procurement of the intake works, and prepare draft dib documents and technical specifications; (v) prepare preliminary specifications and design drawings for the intake works, water treatment plant, raw water and clear water pipelines, clear water reservoir, raw water and clear water pumping stations, access roads, and electricity supply; and (vi) refine cost estimates based on the preliminary design.

**11. Airai/Aimeliik Bulk Supply Main.** (i) Identify suitable alignment options within the existing Compact Road reserve for a bulk water supply main from the existing bulk supply main at Airai to Aimeliik; (ii) identify constraints for each option; (iii) in consultation with the MRD, determine the design flow rate for the pipeline, noting that the minimum conveyance capacity of the bulk supply main will be 1 million gallons per day; (iv) in consultation with the MRD, determine the required capacity, suitable materials, and construction technique for a service reservoir for Aimeliik; (v) determine, in consultation with the Government, and identify suitable monitoring and control systems for the service reservoir; (vi) identify potential suitable sites for a service reservoir for Aimeliik accounting for access; potential to maximize distribution of water by gravity; minimization of environmental, land acquisition and resettlement impacts; geotechnical conditions and soil stability; earthworks requirements; and cost minimization; (vii) prepare preliminary cost estimates for each option; (viii) prepare a working paper for the Government, ADB and key stakeholders, presenting the merits, estimated cost, and

recommendation of each reservoir option; (ix) following endorsement of the working paper and the selection of the preferred option for Aimeliik's service reservoir, undertake topographic and geotechnical surveys to confirm the selected site's suitability; (x) identify options to minimize the cost to convey water between Airai and Aimeliik, including identification of suitable pipe materials, sizes, and possible pumping regimes; (xi) in consultation with the MRD, determine normal operating pressures for the bulk supply main; (xii) undertake a transient analysis for the various pipe materials, pipe size options, and pumping regimes; (xiii) determine the maximum and minimum operating pressures expected within the pipeline, and identify suitable pressure ratings for the various pipeline material options; (xiv) prepare draft bid documents, including technical specifications and design drawings for the bulk supply main, service reservoir, and any associated works; and (xv) refine cost estimates based on the preliminary design.

**12. Financial and Economic Analyses.** (i) Estimate the financial and economic internal rates of return for the components, as relevant, following ADB's guidelines; (ii) conduct sensitivity analyses, including the computation of sensitivity indicators and switching values, which should reflect changes in individual key parameters and assumptions and not be limited to changes in aggregate costs and benefits; (iii) assess the project's vulnerability to corrupt practices, referring to the World Bank publication, *Many Faces of Corruption*, which assesses vulnerability to corruption across sectoral value chains, including the water and sanitation sector in general; and (iv) assess where corruption could occur in the project, and provide some input on how to address these issues through project design/implementation arrangements.

**13. Environmental Assessment.** Assess environmental impact, and prepare an initial environmental examination (IEE) or environmental impact assessment (EIA) for the proposed water source development, including the intake works, water treatment plant, access roads, and pipelines. The IEEs and EIAs will be prepared in accordance with ADB's *Environmental Policy* (2002), *Environmental Assessment Guidelines* (2003), particularly Operations Manual Section F1 in *Environmental Considerations in ADB Operations* (2003), and comply with the Government's environmental assessment requirements and procedures. Also prepare a summary IEE, environmental management plans (EMP), and monitoring plans following ADB guidelines, including matrices to reflect overall IEE findings and recommendations. Assess potential impacts of climate change on the project, and recommend adaptation measures to climate change in project design. Fieldwork and assessments will include: (i) field surveys and quantitative sampling of areas affected by the project, directly and indirectly, including intake works, the water treatment plant, access roads, pipelines, the service reservoir, and affected lands; (ii) screening for the presence of fisheries resources, including availability of migratory fish species; rare, threatened, or endangered species; and other ecologically-sensitive habitats and related issues; (iii) establishment of baseline information, including physical/chemical analysis on air quality, water quality, and noise; (iv) socio-cultural and economical characteristics, including identification of possible cultural heritage and archaeological sites, and management of associated impacts; (v) consultations with affected people and stakeholders in the project area during the environmental assessment study to explore their perceptions, suggestions, and acceptance of the project, and the preparation of a record of the public consultations; and (vi) assessment of the institutional capacity of the MRD and other concerned agencies in implementing the proposed EMP, a training proposal to enable the MRD to implement the EMP and monitoring plan, and assistance to the MRD in securing environmental clearance for the core subproject as required by the Government.

**14. Poverty and Social Development.** (i) Prepare a preliminary assessment of whether the project will benefit primarily poor consumers and if poor groups will remain excluded, following the criteria presented in ADB's *Handbook on Poverty and Social Analysis* (2007); (ii) determine the scale and scope for further detailed poverty and social analysis to make the project design

more pro-poor and deal effectively with any issues of risk, involuntary resettlements, gender, labor, affordability, indigenous or vulnerable people, including foreseeing the need to prepare any necessary mitigative measures or plans; (iii) prepare a gender analysis of the project according to the guidelines provided in ADB's *Handbook on Social Analysis* (2007), and identify project design elements which have the potential for women to participate in and benefit from the project and those that could potentially exclude women from participating in or benefiting from the project; (iv) assess whether vulnerable groups will suffer due to the project, and assess the necessity for mitigating measures; and (v) propose measures to ensure that the project complies with national labor legislation.

15. **Resettlement Assessment.** (i) Prepare a resettlement framework and resettlement plans for the intake works, water treatment plant, access roads, pipelines, service reservoir and affected lands, and associated components to comply with relevant ADB policies and operations manuals, e.g., *Involuntary Resettlement Policy* (1995) and *Operations Manual F2 on Involuntary Resettlement* (2006), and using *Handbook on Resettlement: A Guide to Good Practice* (1998) and the *Handbook on Poverty and Social Analysis* (2001) as guides; (ii) ensure that the resettlement framework provides guidelines for updating and amending resettlement plans, and these plans will then be disclosed to affected persons and posted on ADB's website; (iii) provide an assessment of the MRD's capacity to administer a land acquisition program in compliance with ADB requirements; (iv) in preparing the resettlement frameworks and resettlement plans, review Government policies and guidelines/procedure on land acquisition and resettlement, and identify any gaps between ADB's and the Government's policies; and, where necessary, propose measures to bridge the gap; (v) train MRD land acquisition, resettlement, and social development staff in procedures required for EPC compliance with ADB's land acquisition and resettlement policies; (vi) undertake social surveys and analyses and assess the project's impacts on the poor, ethnic minorities, and other vulnerable groups; (vii) develop resettlement plans for the intake works, water treatment plant, access roads, pipelines; service reservoir and affected lands, and associated components including an inventory of losses, an entitlements matrix, a detailed budget, implementation schedules, a management and monitoring framework, and grievance and appeals procedures; (viii) prepare cost estimates to supervise the resettlement plans' implementation; and (ix) prepare a draft participation strategy that outlines stakeholders' involvement at different stages of the project cycle for each core subproject.

## **B. Implementation Arrangements**

16. The MRD will be the Executing Agency for the PPTA. Implementation of the PPTA is expected to commence in November 2007 and be completed by 31 December 2008. A project steering committee, chaired by the Minister of Resources and Development, will be formed to provide overall project direction. Other members of the committee will include the Minister of Finance, the Governors of Airai and Aimeliik States, the Director of Capital Infrastructure Projects, and the Director of the EQPB, or their representatives. The Government will provide adequate office space, utilities, and telecommunication facilities for the consultants.

## **C. Reporting Requirements**

17. Separate reports and working papers will be required for both components. Reporting will include an inception report that focuses on any necessary changes to the scope of work or work program, as well as interim, draft final, and final reports. In addition, each consultant will be required to produce draft final reports relevant to their inputs for discussion with the Government, ADB, and other stakeholders. The final report must be submitted within 1 month of receipt of comments from ADB and the Government. Consultants will also prepare briefing papers for periodic consultation workshops.