

**REPORT
ON A
PROJECT GRANT
FROM THE TRUST FUND FOR EAST TIMOR
(TO BE ADMINISTERED BY THE ASIAN DEVELOPMENT BANK)
TO THE
UNITED NATIONS TRANSITIONAL ADMINISTRATION IN EAST TIMOR
(FOR THE BENEFIT OF EAST TIMOR)
FOR THE
WATER SUPPLY AND SANITATION REHABILITATION PROJECT**

July 2000

ABBREVIATIONS

ADB	–	Asian Development Bank
AusAID	–	Australian Agency for International Development
BPAM	–	Badan Pengelola Air Minum (District Water Board)
CNRT	–	Conselho Nacional Resistencia Timorese (National Council of Timorese Resistance)
CTA	–	chief technical adviser
GDP	–	gross domestic product
ICRC	–	International Committee of the Red Cross
IDA	–	International Development Association
NCC	–	National Consultative Council
NGO	–	nongovernment organization
NC	–	National Council
PDAM	–	Perusahaan Daerah Air Minum (Local Government Water Enterprise)
PID	–	program implementation document
PMU	–	Project Management Unit
TFET	–	Trust Fund for East Timor
UN	–	United Nations
UNDP	–	United Nations Development Programme
UNICEF	–	United Nations International Children's Fund
UNOPS	–	United Nations Office of Project Services
UNTAET	–	United Nations Transitional Administration in East Timor
WSA	–	Water and Sanitation Authority
WS&S	–	water supply and sanitation

NOTES

- (i) UNTAET's fiscal year is from 1 July to 30 June.

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PROJECT SUMMARY

Project Rationale

In September 1999, East Timor experienced extensive destruction as a consequence of which three quarters of the population fled their homes and most of the country's infrastructure and private homes were destroyed. The widespread destruction included looting, burning, and damage to town and village water supplies and sanitation facilities throughout the country. Typically in towns with public water supply systems, vehicles, pumps, and motors were removed; water treatment plants damaged; offices, stores and other buildings burned; pipelines, tools and spare parts stolen; storage tanks ruptured; latrines and septic tanks damaged; and water sources impaired. And with the burning of houses, water connections, including meters, were completely destroyed. None of the former water supply or sanitation institutions now exist. Therefore it is essential to support physical repair and rehabilitation, and reestablish new institutions and systems for managing, operating, maintaining, and developing urban and rural water supplies in East Timor that are both appropriate and sustainable.

The total needs for rehabilitation of the water supply and sanitation (WS&S) sector were estimated at US\$39.9 million for the FY 2001-2003, with approximately US\$12 million to 15 million expected from Trust Fund for East Timor (TFET) funds and the remaining balance from other sources. However, with current TFET funds being allocated across various sectors, only US\$4.5 million can be made available for FY 2001. The following Project description corresponds to the TFET funds available (US\$4.5 million). Discussions with the United Nations Transitional Administration in East Timor (UNTAET) and the TFET trustee indicate that more funds may become available in FY 2002, in which case a follow-up project will be developed.

Project Description

The Project will (i) develop a WS&S sector management and investment program that includes establishment of a project management unit (PMU) under UNTAET's Water and Sanitation Authority (WSA), and preparation of a detailed, budgeted, program implementation document for coordinated improvement of East Timor's WS&S sector; (ii) implement a capacity building and institutional development program that will identify and implement priority activities to support physical reconstruction already under way or being planned, and to complement capacity-building and institutional development activities by other donors; and (iii) commence a WS&S implementation program, comprising (a) the WSA WS&S quick response facility, (b) complementary works for Dili water supply repair and rehabilitation already under way by other donors, and (c) complementary works for the district water supply repair and rehabilitation already under way by other donors.

The Project is classified as environmental category B. An initial environmental examination was undertaken, and its summary is a core appendix.

Beneficiaries

Urban and rural populations throughout East Timor will benefit.

The immediate benefits of the Project include (i) providing the means for improved WS&S, and (ii) upgrading the quality of life for people in both urban and rural areas whose attempts to improve their status and health are continually impeded by the need to divert time, energy, and financial resources to acquire their daily water needs. The Project will generate employment through local labor, thus helping to create a stable social and economic environment. It is expected that the Project will directly or indirectly benefit a large part of the country's 800,000 population.

The Project is designed to distribute its benefits in an equitable manner across East Timorese urban and rural communities, contributing to sustainable development and operation in the WS&S sector, and reducing poverty.

Executing Agency

UNTAET will be the recipient of the grant from the TFET. UNTAET will establish within WSA a PMU that reports to the UNTAET infrastructure cabinet member through the head of Public Utilities via the head of WSA. The PMU will program, administer, and coordinate daily project activities. UNTAET will also establish a project steering committee involving broad stakeholder representation.

Cost Estimates and Financing Plan

The total cost of the Project is estimated at US\$4.50 million equivalent. The Project will be financed on a grant basis entirely out of the TFET. These funds have been committed by donors; however, contributions to the TFET do not include ADB resources. The International Development Association (IDA) of the World Bank Group is the trustee of the TFET, with IDA and ADB being joint implementing agencies.

Period of Utilization

Until 31 December 2001.

Estimated Project Completion Date

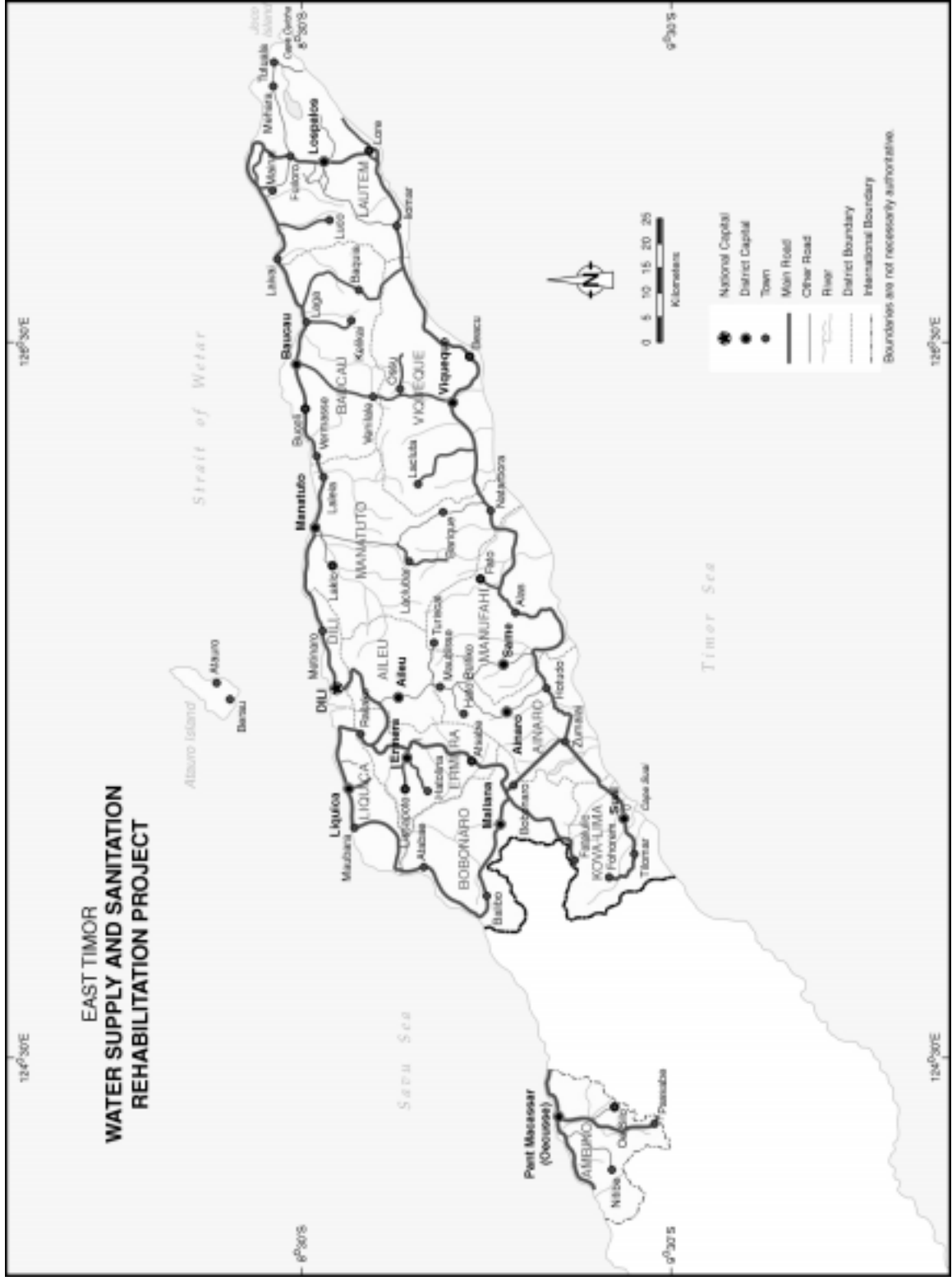
30 June 2001.

Procurement

All procurement under the Project will be conducted in accordance with ADB's *Guidelines for Procurement*. The proceeds of the Project will finance imports of goods and services, local purchases, and civil works identified under the Project. Under ADB's guidelines, these may be procured off the shelf, or through international shopping, local competitive bidding, or international competitive bidding, as appropriate. Eligibility for procurement and engagement of consultants will include ADB member countries, East Timor, and all other donors and members of organizations that

have contributed to the TFET.

International consulting services will be required for the PMU. The consultants will be selected in accordance with ADB's *Guidelines on the Use of Consultants* and other arrangements satisfactory to ADB for the engagement of domestic consultants.



I. THE PROPOSAL

1. I submit for your approval the following report on a project grant to the United Nations Transitional Administration in East Timor (UNTAET) for the benefit of East Timor from the Trust Fund for East Timor (TFET) for the Water Supply and Sanitation Rehabilitation Project.¹ The Project framework is in Appendix 1.

II. INTRODUCTION

2. UNTAET, in consultation with the National Consultative Council of East Timor (NCC) and members of East Timor's civil society, have asked the Asian Development Bank (ADB), through the TFET, to provide assistance to rehabilitate and restore damaged and inadequate water supply and sanitation infrastructure throughout East Timor, and concurrently to reestablish the human and institutional capacity needed to manage, operate, and maintain the facilities. An ADB Mission² was to prepare an initial emergency rehabilitation project with authorized UNTAET representatives. The agreements reached were confirmed in a memorandum of understanding. Funding for the Project will be drawn from the TFET, which is established under the trusteeship of the International Development Association (IDA) of the World Bank Group. The TFET does not include ADB's own resources. The Project has been prepared in accordance with the Joint Management Arrangements for the Trust Fund for East Timor.³

III. BACKGROUND

A. Description of Damage

3. On 30 August 1999, the people of East Timor voted overwhelmingly for independence. The following month, East Timor experienced extensive destruction during which three quarters of the population fled their homes, and most of the country's infrastructure and private homes were destroyed. In the western half of the territory and the highland areas, most property of value including residential and public buildings, utilities, telecommunications facilities, and inventories of essential food and agriculture stocks were removed, burned, or destroyed. The eastern half experienced similar attacks with an estimated 75 percent of residential buildings destroyed.

4. The widespread destruction included looting, burning, and damage to town and village water supply and sanitation (WS&S) facilities throughout the country. Typically in towns with public water supply systems, vehicles, pumps, and motors were removed; water treatment plants damaged; offices, stores and other buildings burned; pipelines, tools and spare parts stolen; storage tanks ruptured; latrines and septic tanks damaged; and water sources impaired. And in the burning of houses, water connections, including meters, were completely destroyed.

5. Elsewhere in peri-urban and rural villages throughout the countryside, damage to water supplies was not extensive, but there are reports of wells being poisoned, handpumps stolen, pipes removed, and spring intakes damaged. Apart from the physical damage to infrastructure, most water WS&S records and documentation were destroyed, so there is now only scant

¹ The Project first appeared in *ADB Business Opportunities in May 2000*.

² The Mission comprised Mr. Walter Poick, Financial Analyst (Mission Leader) and Mr. Ian Binch, ADB Staff Consultant.

³ R74-00: *Joint Management Arrangements for the Trust Fund for East Timor*, 23 March 2000.

information available about past operations, the status of institutions, or the systems themselves. Additionally, most former water supply managers have left East Timor.

6. None of the former water supply or sanitation institutions now exist. The challenge for UNTAET will be to reinstate institutions and systems to manage, operate, maintain, and develop urban and rural water supplies in East Timor that are both appropriate and sustainable; and that unlike before, do not burden future administrations with the need for recurrent cost subsidies from what, inevitably, will be very tight central budgets.

B. Response to the Crisis

1. Governance

7. UNTAET was established on 25 October 1999 for an initial period until 31 January 2001 pursuant to Resolution 1272 (1999) of the Security Council of the United Nations (UN), with powers to ensure stability and establish a transitional government and judiciary, laws, and policies. It is expected that the UNTAET transitional government will continue to administer East Timor at least through to general elections. Governmental responsibility is exercised by a transitional administrator, who since July 2000 has been assisted by a cabinet consisting of eight portfolios, four of which are held by East Timorese and four by international UNTAET staff. The cabinet is chaired by the transitional administrator, who is also the Special Representative of the Secretary-General (SRSG). The cabinet portfolios are as follows:

- (i) Police and Emergency Services,
- (ii) Justice,
- (iii) Political Affairs,
- (iv) Finance,
- (v) Internal Administration,
- (vi) Infrastructure,
- (vii) Economic Affairs, and
- (viii) Social Affairs.

8. UNTAET's financial year runs from 1 July to 30 June, with its recurrent budget drawn from UNTAET's own Trust Fund using UN disbursement guidelines.

9. East Timor is divided into 13 districts (including the enclave of Oecusse-Ambeno), 63 subdistricts, and 442 villages. An UNTAET district administrator, with supporting international and local staff representing the range of sectoral activities, oversees each district. There are reportedly plans by local leaders to subdivide the territory into three regions after transition to self-government. A key objective during the transition is to establish a small civil service with a lean administrative structure that can be sustained in the long term.

10. The capital development budget, to be drawn from the TFET, was assessed by a World Bank-coordinated, multiagency, joint assessment mission in October-November 1999. The mission identified needs for technical assistance and investment projects in consultation with the National Council for Timorese Resistance and UNTAET. The mission reviewed WS&S sector restoration requirements and estimated the cost of a three-year program of reconstruction and recovery for water systems and utilities to be about US\$25 million, and for drainage and sanitation systems about US\$8 million.

11. The NCC was established under UNTAET Regulation No. 1999/2 on 2 December 1999. It was designed as a mechanism through which representatives of the East Timorese people could actively participate in the decision-making processes during UNTAET's administration, and through which the views, concerns, traditions, and interests of the East Timorese people could be represented. The aim of the NCC was to provide advice on all matters related to the exercise of the transitional administrator's executive and legislative functions, while not prejudicing the administrator's final authority. The NCC has now been replaced by a National Council (NC). The NC has 33 members drawn from the following areas: 13 district representatives, 7 representatives from CNRT, 3 drawn from other political parties, and 1 representative each from the youth/students, women's groups, Timorese NGO forum, Catholic church, Protestant church, the Muslim community, professional associations, farmers, labor, and business.

2. Impact of Crisis on Poverty

12. In 1996, when East Timor was part of Indonesia, its per capita income was US\$431. The Indonesian national average was US\$1,153. Agriculture continues to dominate the economy, with some 76 percent of the national labor force involved in the sector. Subsistence agriculture, mainly rice and corn crops, with supplementary coffee and beef production, dominates the modes of production. As a result of the 1997 Asian financial and economic downturn, gross domestic product (GDP) in Indonesia, including East Timor, declined as devaluation of the Indonesian rupiah and high interest rates dampened economic activity. Indonesia was the country hit hardest by the Asian downturn. The decline in East Timor's GDP was, however, more pronounced due to its dependence on Indonesian central government grants, which financed up to 85 percent of current and capital expenditure. Between 1997 and the 1999 popular consultation, East Timorese GDP contracted by some 25 percent. In 1998, per capita income was estimated to have fallen to US\$300, among the lowest in the Asian and Pacific Region.

13. As a result of the post-August 1999 violence, both public and private sectors suffered almost total collapse. The planting season for 2000 was seriously disrupted due to destruction of field crops, subsequent labor shortages, and lack of access to seeds and tools. All of these made the social and economic development challenge a daunting one that could be met only with effective and substantial international assistance.

14. In 1996, 30 percent of East Timorese households were living in poverty—double the national average in Indonesia. The number of households living below the poverty line rose to an estimated 50 to 60 percent as a result of the 1997 Asian downturn. The human dislocation and destruction that occurred consequent to East Timor's separation from Indonesia has resulted in severe disruption to the essentially subsistence economy. Although an estimated 120,000 people have now returned to their villages, many face severe food shortage as their crops, seeds, and other means of livelihood were destroyed. The international community, especially the World Food Program, has been distributing food and seeds. Even the small East Timorese middle and upper groups were not spared from poverty as banks and their records were burned. Indonesian banks exclusively serviced banking in East Timor; only three banks have plans to reopen and possibly settle depositors' claims. Up to 80 percent of East Timorese may now be living below the poverty line. However, food stability will improve if agriculture recovers as expected this year. The World Food Program estimates that by the end of 2000, a considerable portion of the population will no longer be at risk, and the program will then be able to scale down its intervention.

C. Water Supply and Sanitation Sector

15. A detailed sector profile is provided in Appendix 2.

1. Preconsultation Water Supply and Sanitation Management

16. Under Indonesian administration, public water supplies were controlled by the Directorate General of Human Settlements (DG Cipta Karya) of the Ministry of Public Works based in Jakarta, working through its provincial and district offices. At the local level, public piped water supply systems were classified according to their size and financial viability. The highest system was a local government water enterprise (PDAM). A system was classified as a PDAM if it was able to internally generate sufficient revenue to be sustainable. The only PDAM in East Timor was in Dili, and while it had recently graduated to PDAM status, it is understood to have still needed subsidization from the central government. At the intermediate level, each district had a district water board (BPAM) responsible for all public piped water supplies in its district. The principle was that, over a defined time, the larger district town systems were supposed to develop their management, administrative, and operation and maintenance skills to the point where the BPAM could graduate to a PDAM. In the meantime, all BPAM systems had to be subsidized from the central budget. The base level of public water supplies were those in the main subdistrict towns. The district BPAM office carried out operation and maintenance of the subdistrict town systems, which also required substantial subsidies. Thus, prior to the crisis, no public water supplies in East Timor were financially viable, all were subsidized from the central budget. And even with such support, water quality, coverage, and service reliability was universally poor.

17. Rural water supplies and all sanitation during the Indonesian administration were the responsibility of the Department of Health (Depkes). At the subdistrict level, Depkes operated a system of “sanitarians” working out of the local puskesmas, or community health center. Their role included helping with community environmental health training and helping villagers with development of their WS&S facilities. Despite their presence, an Australian Agency for International Development (AusAID) design team noted in September 1999⁴ that there was a generally low level of service provision in both WS&S throughout the rural areas. The team concluded that many rural communities in East Timor do not have adequate access to clean water and that this is a significant factor contributing to the poor health and hygiene conditions in the villages.

2. Water Supply Status

18. It has been estimated that prior to the postconsultation disruption, less than half of East Timor's total population had access to safe water and sanitation. A recent census, SUSENAS 1998,⁵ indicated the access to various forms of water supply was approximately as shown in Table 1:

⁴ Coffey MPW Pty Ltd., in association with Egis Consulting Australia, September 1999, East Timor Environmental Sanitation and Water Supply Project – Revised Project Design Document. Prepared for the Australian Agency for International Development.

⁵ National Social and Economic Survey (Survei Sosial Ekonomi Nasional), SUSENAS 1998, Jakarta, 1998.

Table 1: Access to Water Supply

Water Source	Approx. % of Total East Timor Popl'n using source	Approx. % of Dili Popl'n using source
Pipe	13.0	41
Pump	10.0	37
Well	10.0	7
Spring	61.0	13
River	6.0	2
Rain	–	–
Other	–	–

Source: *Survai Sosial Ekonomi Nasional, 1998.*

19. Prior to the crisis, the public water supply network was fairly extensive, covering the 13 district towns and 49 of the 63 subdistrict towns, a total of 62 systems. However, the quality of system construction was generally poor, and coverage was variable but low, commonly ranging from about 25 to 40 percent in the central parts of towns. Private shallow wells were used extensively in Dili and other towns, especially those near the sea or on river plains. All 440 rural villages had water supplies of varying type, but most were of very low standard. During the violence, damage to all public piped water systems was extensive but rural water supplies were not as badly affected. When hostilities abated, many nongovernment organizations (NGOs) moved into East Timor to deliver humanitarian assistance; a number specialized in water and environmental health. Over the past few months, these NGOs have formed the core of assistance to the WS&S sector, providing equipment, materials, and personnel to make emergency repairs, mainly to piped town water supplies but also for some of the 440 rural villages scattered throughout East Timor. This work is being done in collaboration with the district administrators, who have hired employees of former water supply companies to help with repairs, operation, and maintenance. By May 2000, water supplies in most of the 13 district towns, including Dili, had been reestablished, albeit in rudimentary form. Local and international NGOs have also been engaged in rehabilitating rural water supplies; providing hand pumps; cleaning contaminated wells; and repairing pipes, tanks, and the like. Overall, public water supplies in towns across East Timor are now still in a very rudimentary and quite precarious condition, although for the most part some water is available. Historically rural communities have not normally had acceptable water supplies, so even though they did not suffer too much in the crisis, most require rehabilitation and development.

20. A piped and treated water supply system served approximately 8,200 households in Dili. This was operated by the previous Indonesian PDAM (Dili Water Authority). The level of service was less than satisfactory, with water often not available and of poor quality. Customers were charged Rp150 per cubic meter for household supplies; larger consumers were charged at higher rates. Some 40-50 percent of Dili's population is estimated to have relied on poor quality water from shallow wells in their yards. Since the disruption, the Water and Sanitation Authority (WSA), assisted by the International Committee of the Red Cross (ICRC) and the Government of Australia, has employed staff and carried out system repairs. Despite this, many areas of Dili still experience daily water shortages, mainly through leakage from the poorly maintained pipe system. Most existing district reticulation systems are in need of repair and augmentation to meet the needs of urban communities. Water losses because of leakage or illegal tapping is very high.

21. In other district and subdistrict towns which were formerly operated by the previous BPAMs, average service coverage was in the low 20 to 30 percent range and water quality was generally unsatisfactory. None of the more than 60 piped systems provided 24-hour service. Customers in the smaller centers were charged at differing rates, generally much lower than Dili.

3. Sanitation Status

22. Evidence suggests that at preconsultation, the excreta disposal situation in East Timor was already causing significant health problems. 1998 SUSENAS Table 2 illustrates the various excreta disposal methods used:

Table 2: Excreta Disposal Methods

Disposal Method	Approx. % of Total East Timor Population Using Method	Approx. % of Dili Population Using Method
Private toilet with septic tank	10	34
Private toilet without septic tank	15	23
Shared toilet	6	6
Public toilet	11	1
Direct on cesspool	23	16
Bushes, forest, and yard	29	7
Pond	–	–
River and stream	4	–
Other	12	1

Source: *Survai Sosial Ekonomi Nasional, 1998.*

23. Postconsultation disturbance resulted in destruction of many buildings that housed toilets with or without septic tanks. It did not greatly affect the traditional (i.e., nontoilet) facilities. The overall effect of the destruction of both sanitation facilities and water supplies is that a far greater number of persons are now using traditional methods. So far, little effort has been made to restore or improve environmental sanitation in either towns or villages.

4. Short-Term Focus

24. Much of the funding for the emergency phase came from bilateral and multilateral sources. UNTAET has recently established the Water and Sanitation Authority (WSA) for East Timor. Staff are now being recruited, and operational funding obtained from the UNTAET Trust Fund and bilateral and multilateral donors. As WSA's capacity increases, the NGOs are keen to hand over responsibility for public WS&S, and to focus on rural WS&S, which is their main target area. None of the former water supply or sanitation institutions now exist. The challenge for UNTAET is twofold. First it will have to repair and rehabilitate the many damaged urban and rural WS&S facilities to an appropriate level of operation. Its second task will be to reestablish institutions and systems for managing, operating, maintaining, and developing urban and rural water supplies in East Timor that are both appropriate and sustainable. These, unlike before, must not burden future administrations with the need for subsidies from what, inevitably, will be very tight central budgets.

5. Medium- to Long-Term Sector Development

25. An ADB mission was fielded in April 2000 to develop a draft sector development framework for East Timor's water sector. This framework aims at providing the people of East Timor with adequate and affordable WS&S services using appropriate technology and good system management. It proposed that this would be done by:

- (i) building local capacity and capability to effectively manage the WS&S sector;
- (ii) rehabilitating and developing WS&S facilities in urban and rural communities; and
- (iii) promoting improved health, hygiene, and community participatory practices.

26. The draft sector framework recommends the following four strategic foci:

- (i) A WS&S sector management and investment program would establish a Project Management Unit (PMU) and prepare a detailed program implementation document.
- (ii) A capacity building and institutional development program would establish the human and institutional framework necessary to complement the physical WS&S works.
- (iii) A WS&S implementation program would cover repair and rehabilitation of urban and rural WS&S across East Timor.
- (iv) Environmental health promotion and strengthening of local NGOs would provide complementary programs for health promotion, hygiene education, and strengthening of local NGOs.

In close cooperation with the East Timorese, other donors, and stakeholders, this framework and its four strategic foci will be reviewed, reassessed, and adjusted to current needs under this Project.

6. Sector Management

a. UNTAET's Water and Sanitation Authority (WSA)

27. East Timor's water and power sectors are currently being managed and coordinated by UNTAET's head of public utilities, a position that sits under the infrastructure portfolio. The various departments under the Cabinet Infrastructure group are public works; energy, water and sanitation; transport and communications; and National Institute of Cadaster and Geodesy. A WSA (previously Office of Water and Sanitation) draft strategic plan and an organization chart are in Appendix 3.

28. The recently established NC is expected to form a number of sectoral committees to assist and advise the Cabinet. Those covering infrastructure, health, environment, and natural resources are most relevant to the WS&S sector. In designing any program of rehabilitation and reconstruction for East Timor, the NC and its relevant committees must be consulted and the views and experience of its constituent members taken into account.

29. The WSA has recently been established as part of UNTAET's infrastructure portfolio under the Public Utilities department. It is currently staffed by nine expatriate and 56 local personnel. They are based in Dili, focusing on rehabilitation and operation of the town water supply system. A further 110 local staff are employed by district administrators in districts outside Dili working as water supply field staff, pump and water treatment plant operators, and performing other operation and maintenance duties. WSA plans to establish a presence in the main district towns as soon as supervisory staff become available.

b. UNTAET's WSA Policies and Plans

30. Being in its early and formative stages, WSA is still developing policies and plans for the WS&S sector. WSA has already considered the type of national organizational structure that might be appropriate for developing and managing WS&S in East Timor, and prepared a draft strategic plan with the following mission statement:

To ensure the communities of East Timor have access to such water and sanitation services as are considered essential for public health, protection of the environment and for promotion of economic growth.

31. The plan identifies seven key result areas and their objectives:

(i) Policy and Planning: Plan, develop policy, and organize for the achievement of the mission statement. Measure and report to Government on progress to achieve the mission statement.

(ii) Water Resources: Assess, control the use of, and protect the water resources of East Timor.

(iii) Public Water Supply: Provide adequate, safe, and sustainable water supplies for the communities of Dili and major urban centers in the districts, with the long-term goal of full cost recovery from users of the water supply services.

(iv) Community Water Supply: Facilitate at the national level, the promotion of adequate, safe, and sustainable water supplies for village communities through community-owned and -managed water supply systems.

(v) Sewage and Wastewater: Facilitate at the national level, the safe disposal of sewage and wastewater in urban areas.

(vi) Urban Drainage: Facilitate at the national level, the collection and safe disposal of nuisance surface waters from major urban areas.

(vii) Solid Waste: Facilitate at the national level, the collection and safe disposal of solid and hazardous waste from major urban areas.

D. External Assistance and Donor Coordination

32. Details of committed and potential external assistance to the WS&S sector are given in Appendix 4.

1. Emergency Phase

33. Postcrisis rehabilitation of both urban and rural water supplies is ongoing, with key inputs from ICRC, UN agencies, NGOs, Japan International Cooperation Agency (JICA), AusAID, and UNTAET through its district administration offices and WSA. This work has been, and remains, focused principally on emergency repairs to key water supply infrastructure and maintaining systems in a fairly basic operating condition.

34. International NGOs: ICRC, Care International, Oxfam International, *Action Contra Faim*, and local NGOs: Bia Hula, Forte, and Hamoris Timor Oan (HTO) are the main NGOs involved in the WS&S sector. Supported by their internal resources and bilateral and multilateral donors, they have been at the cutting edge of the emergency restoration phase, working on both urban and rural water supplies and, to a lesser extent, sanitation. The international NGOs have been, and are still, working very closely with UNTAET district administrations on operation and maintenance of urban water supply systems. However, as the emergency phase comes to a conclusion, many have expressed the desire to hand over the urban systems to UNTAET's WSA to allow the NGOs to concentrate more on rural development, which they consider to be their area of comparative advantage.

35. At the commencement of the humanitarian assistance phase, it was UNTAET's district administrators, with assistance from NGOs and their donors that commenced WS&S emergency rehabilitation. They have engaged about 110 local staff (former employees of water entities) to undertake repairs, operation, and maintenance in a number of district towns outside Dili. Now that the WSA is becoming better established, and the country is moving from the humanitarian to the development phase, it is expected that WSA will systematically take over the WS&S operations in major district town centres from NGOs. In the meantime, they are concentrating on repairs, operation, and maintenance of the Dili water supply, again with assistance from ICRC and others. WSA will form the basis for a new water supply and sanitation authority in East Timor, and is now planning for that transformation.

36. The United Nations International Children's Fund (UNICEF) has been involved in the emergency phase, supplying electric pumps and handpumps to peri-urban and rural areas in cooperation with NGOs. Activities based on their emergency funds from the European Community Humanitarian Organization will extend through until about November 2000. Thereafter, UNICEF has developed plans to encourage local entrepreneurs, to promote hygiene education at the village level to encourage development and proper use of improved water supply and sanitation facilities. They propose that the former system of Department of Health "sanitarians" be used as catalysts in this process. Funding for this activity is being sought.

2. Rehabilitation and Reconstruction

37. Japan is currently completing, at a cost of about \$2.0 million, asset mapping and water supply master planning in 15 district towns, including Dili. It has also allocated about US\$930,000 for a number of quick impact projects (e.g., repairs to the Manatuto transmission pipeline; leakage control in Dili; and rehabilitation of water supply systems in 10 schools). Additionally, the water-testing laboratory established during the master planning exercise has been donated to UNTAET's WSA. Further, the Japanese Government has proposed an allocation of some \$10 million for rehabilitation of the Dili water supply system. Japanese consultants will implement this work through United Nations Development Program (UNDP)-United Nations Office of Project Services (UNOPS). Dili water supply rehabilitation is planned for implementation over 2 years

commencing about June 2000. Japan is also reportedly considering funding rehabilitation of all 14 town water supplies (in addition to Dili) in three consecutive packages of 4-5 towns each, with the first package commencing in early 2001.

38. The Government of Portugal has committed US\$1.5 million in 2000 for repair and rehabilitation of the Baucau and Aileu town systems, and to provide technical back-up support for the organization and management of the proposed water authority for East Timor, as it affects areas in which Portugal is involved. The budget also covers preparation of a sanitation and drainage master plan and a solid waste management plan, principally for Dili. Implementation of this work has commenced through the auspices of UNDP-UNOPS.

39. AusAID is also involved in the WS&S sector. During the emergency period, AusAID supported local and international NGOs (e.g., Bia Hula, Oxfam, Care, etc.) and provided a facility through the Northern Territory Department of Power and Water by which equipment and materials were able to be procured quickly and technical assistance provided. AusAID is currently providing further technical assistance to WSA through staffing assistance and plans to continue supporting WSA and NGOs with technical assistance, training, and equipment. It has also expressed interest in participating in WS&S institutional development, capacity building, environmental health programs, and district WS&S implementation using the community participation approach. To this end, AusAID has allocated A\$ 5.5 million for FY 2001 for the WS&S sector. Specific activities will be developed by a design team mission to be fielded in July or August 2000.

3. Donor Coordination

40. The Project is fully coordinated with donors involved in restoration and rehabilitation support in the WS&S sector in East Timor. As restoration of the WS&S sector is essentially starting anew, it is imperative that a clear and recognized system for coordinating activities throughout East Timor be established as soon as possible. Consequently, one of the principal objectives of this Project is to facilitate establishment of an agreed program of work for repair, rehabilitation, and management of WS&S in East Timor. Such a program will then provide UNTAET and its development partners, including all donors and potential donors, with guidelines and a structure to coordinate their investments in the sector. WSA is the obvious focus for policy setting, planning, coordination, management, monitoring, and evaluation of all WS&S activities, and is already preparing itself for this task. This Project will support WSA in its management and coordination roles.

IV. THE REHABILITATION ASSISTANCE

A. Rationale

41. UNTAET is executing a program of humanitarian assistance in East Timor, part of which involves rehabilitation of WS&S facilities damaged during the September 1999 crisis. The challenge, however, is not just a matter of restoring the facilities to their precrisis status, but to make sure sustainability and cost recovery can be achieved in the postcrisis environment. All former WS&S institutions are now defunct; offices, stores, equipment, workshops, and records were removed, burned, or otherwise destroyed; and most managerial and administrative personnel have departed East Timor. Added to this is the fact that the standard of most precrisis water supply and sanitation facilities throughout the country, both urban and rural, was well below commonly accepted levels. UNTAET is faced not just with making some perfunctory repairs. It must (i) establish completely new institutional arrangements for WS&S; (ii) develop, from a low base, the human capacity to manage, operate, and maintain the systems; (iii)

rehabilitate and reconstruct WS&S facilities to acceptable standards and levels of service; and (iv) at the same time, prepare for transition to East Timorese self-government. The ADB mission estimated the total needs to rehabilitate the WS&S sector at US\$39.9 million; however, with current TFET funds being allocated across various sectors, an amount of only US\$4.5 million can be made available for the FY 2001. Discussions with UNTAET and the TFET trustee indicate that more funds may become available in FY 2002, in which case a follow-up project will be developed.

42. The Project's overall strategic goal is to provide the people of East Timor with adequate, affordable, and sustainable WS&S services using appropriate technology and good management systems. It will do this by (i) building local capacity and capability to effectively manage the WS&S sector; (ii) rehabilitating and reconstructing water supply and sanitation facilities in urban and rural communities; and (iii) promoting improved environmental health, hygiene, and community participatory practices.

B. Objectives

43. The Project will (i) develop a WS&S sector management and investment program, which includes the establishment of a PMU under UNTAET's WSA and the preparation of a detailed, budgeted PID for coordinated improvement of East Timor's WS&S sector; (ii) implement a capacity building and institutional development program that will identify and implement priority activities to support physical construction already under way or being planned, and to complement capacity and institutional development activities by other donors; and (iii) commence implementation of the WS&S implementation program that will include (a) a WSA WS&S Quick Response Facility, (b) complementary works for the Dili Water Supply Repair and Rehabilitation already underway by other donors, and (c) complementary works for the District Water Supply Repair and Rehabilitation already under way by other donors.

C. Scope

44. The Project has three components.

1. Component 1: WS&S Sector Management and Investment Program

45. The purpose of this component is to quickly establish an integrated WS&S sector management and investment program for East Timor. Preparatory arrangements, including tentative recruitment and logistical planning will be undertaken by UNTAET (WSA) to enable work to commence in East Timor on or about 1 September 2000. Component 1 comprises two parts. The first is to establish a PMU under UNTAET's WSA to assist with program implementation. The second part is to prepare a detailed work program to guide PMU activities over the next year and beyond. The work program will be prepared over three months between September and December 2000. Key activities of the work program will include infrastructure repair and rehabilitation, preparation of integrated plans for human resources development, institutional development, tariff proposals, asset management policies and procedures, WS&S standards, management and financial information system, legal and regulatory framework, community and gender development, environmental health and hygiene promotion, water resources protection, and the transition from UNTAET to East Timorese self-rule. The outcome will be a detailed, budgeted PID for coordinated improvement of East Timor's WS&S sector. These documents will guide WSA and the PMU in program implementation as well as overall coordination and management of the WS&S sector in East Timor.

2. Component 2: Capacity-Building and Institutional Development Program

46. The Project will, in coordination with WSA and relevant bilateral donors, identify and implement priority capacity building and institutional development activities. These activities will be specifically designed to support physical WS&S construction already completed, under way, or planned, and complement capacity-building and institutional development activities by donors. Details and priorities will be identified in the PID. Capacity-building and institutional development activities include support for the WS&S quick response facility (para. 47); rehabilitation of workshops, stores, generator sheds, and other infrastructure essential to WS operations; and procurement of supplies, equipment, communications, and other facilities fundamental to water and sanitation operation. Special attention will be given to the capacity-building and institutional development needs of Dili, Baucau, Aileu, and other priority towns.

3. Component 3: Water Supply and Sanitation Implementation Program

a. Component 3.1: WSA WS&S Quick Response Facility

47. The quick response facility will be utilized to support WSA in undertaking urgent, substantial repairs to, and rehabilitation of, water supplies across all 13 districts of East Timor. Because the use of the facility will be determined by need, it is designed to be sufficiently flexible to respond promptly to urgent needs as they emerge. This is vital in the postcrisis environment of East Timor, where the people's needs go beyond all developmental norms. In this unique setting, the Project has an obligation to ensure that its approach is designed not to exacerbate the social and human problems already faced by the East Timorese people. The ability to respond rapidly to the people's urgent water supply needs is seen as a positive expression of recognition, by the Project, of their dire situation. Likely activities which the facility will undertake include procurement of pipes, fittings, and other water supply componentry; local contracts to undertake substantial repairs and rehabilitation; and related procurement transport, earthmoving and excavation services. The key purpose of the facility is to provide WSA with the capacity to quickly respond to the East Timorese people's most urgent water supply repair and rehabilitation needs. Allowance has been made for the facility to operate for 10 months from 1 September 2000.

b. Component 3.2: Dili Water Supply Repair and Rehabilitation

48. The Japanese government has proposed to allocate US\$10 million for the Dili Water Supply & Sanitation Rehabilitation Design and Construction Project. Implementation of the water supply element will be by UNDP-UNOPS through a Japanese consulting firm. This work is expected to commence around mid-2000 and extend over two years. Works proposed include improving the main raw water source; strengthening the raw water transmission pipeline; expanding the water treatment plant at Bemós; and completing minor work on the treated water transmission main. TFET Project funding, among others, has been allocated for complementary works that include network rehabilitation and zoning near the transmission main from the Bemós water treatment plant; replacement of unserviceable asbestos-cement mains in central Dili where high leakage occurs, and associated/connecting pipework; and urban and periurban low-income works such as repairs and rehabilitation of public taps and other watering points. Actual works will be determined by WSA in conjunction with the Japanese-funded project managers to maximize the synergy of the respective works. The aim of this component is to build on the upstream works by Japan, by improving water service to customers and expanding the number of customers served as an essential prelude to system sustainability.

49. Additionally, there are other areas of Dili's water supply system outside the influence of the Japanese funded works that will benefit greatly from TFET funding. For example, in a number of instances, rehabilitation of deep bores and associated pumps and distribution systems would directly benefit some thousands of people. Such areas would be identified and, depending on WSA priorities, considered for TFET funding under component 3.2.

50. Allowance has been made for such complementary and supplementary rehabilitation works to be carried out over a nine months period from 1 October 2000.

c. Component 3.3: District Water Supply Repair and Rehabilitation

51. The district water supply and sanitation program is designed to address the needs of smaller urban and rural communities throughout the 13 districts of East Timor. While the system repair of major district towns can be implemented individually, if necessary, it is proposed that smaller town and village systems be managed as programs and implemented geographically as districts, or groups of districts. This approach will provide flexibility within the emerging governance and community capacity strategies currently being developed under the Community Empowerment and Local Governance Project and should make the logistics of implementation much easier. The opportunity also then exists for interested donors to undertake town and community WS&S development within one or more districts, to enhance logistics and improve donor coordination. Within each district, it is expected that a coordinated approach to addressing sustainable WS&S equitably between towns and villages will be developed utilizing processes of environmental health, gender awareness, and community participation and planning. Interested donors may package district WS&S programs to suit their circumstances, and implement them by managing agents working in partnership with local and international NGOs and community groups.

52. In support of this program, the Project has allowed funding to address the most urgent needs of a number of those districts, and those that are not receiving bilateral assistance. Exact priorities will need to be identified by UNTAET when donor intentions are firmer, but current indications from the East Timorese counterparts suggest that the border districts of Kova-Lima, Bobonaro, and Oecusse, where destruction was greatest, are of high priority for TFET or donor support. Liquica District too has been identified as an area of much need, where repair and rehabilitation works could yield quick and effective results. As an example, in Liquica township, the primary river intake and transmission pipeline is extensively damaged and is now unserviceable. A potential alternative to repairing the transmission main would be to rehabilitate existing (but non-operational) bores as a new raw water source. The PID will include a detailed and prioritized list for funding under component 3.3. Typically, works to be undertaken under component 3.3 include procurement and installation of pipes, fittings, pumps, motors, generators, and supply of construction materials; contracts for design services for small- and medium-scale water supply engineering works; hiring of construction equipment and transport; development of contracts for rehabilitation of water bores; rehabilitation of raw water intakes; and provision of support services such as water quality testing and groundwater pumping tests.

53. Allowance has been made for these complementary works to be carried out over nine months from 1 October 2000.

D. Cost Estimates

54. The total cost of the Project is estimated at US\$4.50 million equivalent, and includes all costs from September 2000 until the end of UNTAET's FY 2001. Table 3 provides a summary of the cost estimates for the Project, which are outlined in more detail in Appendix 5.

Table 3: Summary of Project Costs
(US\$ million)

Components	Total Cost
A. Base Costs	
1. WS&S Sector Management and Investment Program	0.633
2. Capacity Building and Institutional Development Program	0.556
3. Water Supply and Sanitation Implementation Program	
3.1 WSA WS&S Quick Response Facility	1.282
3.2 Dili Water Supply Repair & Rehabilitation Program	0.855
3.3 District WS&S Repair and Rehabilitation Program	0.520
Subtotal A	3.846
B. Contingencies^a	
1. Physical Contingency	0.562
2. Price Contingency	0.092
Subtotal B	0.654
Total	4.500

^a Physical (14.6%) and price (2.4%) contingencies are included to reflect base costs' high degree of uncertainty due to the prevailing operating conditions in East Timor (e.g., introduction of a new legislation, taxation, absence of insurance cover, private sector premiums)

Source: Staff estimates.

E. Financing Plan

55. The total cost of the Project will be financed on a grant basis out of the TFET. Contributions to the TFET do not include ADB resources.⁶

56. The joint assessment mission⁷ assessed that WS&S restoration over the three years 2000-2003, will cost US\$22.2 million. These estimates have been reassessed by the ADB mission and are now expected to cost US\$39.9 million, with approximately US\$12million-15 million coming from TFET funds and the remaining balance from other funding sources.

⁶ An amount of US\$ 4.5 million has been earmarked in the TFET budget for FY 2001 for the WS&S sector.

⁷ The mission was coordinated by the World Bank and undertook its fieldwork from 26 October to 12 November 1999. ADB participated in the mission, along with a number of other bilateral and multilateral aid agencies. East Timorese counterparts also participated in each of the mission's sector teams.

57. The Project only covers initial rehabilitation of the WS&S sector for 10-15 months, commencing 1 September 2000. It is expected that a broader TFET-funded WS&S rehabilitation project will be developed for the next two fiscal years (1 July 2001-30 June 2003) if more TFET funds become available in FY 2002 for this purpose.

F. Executing Agency

58. UNTAET will be the recipient of the grant from the TFET. It will establish a PMU within WSA that reports to the UNTAET Infrastructure Cabinet Member, through the head of public utilities via the head of WSA. The PMU will program, administer, and coordinate daily project activities. All activities will be done in close cooperation with WSA, multi- and bilateral donors, NGOs, community groups, and other stakeholders. In particular, works and activities funded out of the TFET will be fully integrated with donor-funded activities and projects. The PMU will be funded under the Project. The PMU will be headed by an East Timorese project manager (WS&S engineer) and comprise an East Timorese project accountant and one community development specialist. The selection of these will be subject to ADB approval. Two internationally recruited consultants will support the project manager: a chief technical adviser (CTA) and a community development specialist. Total international consulting comprises 37.5 person-months: 20 person-months for the PMU and 17.5 for preparation of the PID. The CTA will support the project manager in administering the Project and its contracts in accordance with ADB guidelines. The CTA and community development specialist, in coordination with WSA staff, will program and coordinate daily project activities, including design, supervision, procurement of goods and services, and management of civil works contracts. The international consultants will train East Timorese counterparts in their area of responsibility. An organization chart of the PMU, and terms of reference of the PMU and the consulting team for preparation of the PID are in Appendix 6. Under the organization framework of UNTAET, the PMU will be an integral part of WSA and be absorbed within it.

G. Implementation Arrangements

1. Technical Approach

59. Where possible, the works under the Project will incorporate labor-intensive, employment-generating methodologies. Least-cost methodologies will be adopted for the technical solutions. These include maximum use of local labor, materials, and contractors, and simple technologies contributing to sustainability of these works.

2. Steering Committee

60. UNTAET will establish a project steering committee involving broader stakeholder representation in project implementation. The steering committee will be convened prior to project implementation to inform the stakeholders of project activities. The steering committee will then meet monthly to discuss and resolve emerging project implementation, procurement, and community issues, and to review and comment on the project reports for submission to ADB.

3. Procurement of Goods and Services

61. All procurement under the Project will be conducted in accordance with ADB's *Guidelines for Procurement*. The proceeds of the Project will finance imports of goods and services, local purchases, and civil works identified under the Project. Under ADB Guidelines, these may be procured off the shelf, or through international shopping, local competitive bidding, or international

competitive bidding, as appropriate. The PMU and WSA will coordinate with the donor community to ensure, as far as possible, that materials and equipment are compatible and of appropriate technology and quality; that spare parts are readily available at a fair price; and that common standards and levels of service are used in all WS&S projects in East Timor. Consulting services will be selected in accordance with ADB's *Guidelines on the Use of Consultants*.

62. The term member countries under these guidelines for purposes of this Project will include ADB member countries, East Timor, and all donors and members of international organizations that have contributed funds to the TFET.⁸

4. Implementation Schedule

63. The project will be implemented over 10-15 months, commencing in September 2000 and finishing in June 2001. Every quarter, the PMU will prepare a detailed implementation schedule for project activities. Selection of project implementation consultants and contractors will commence in accordance with activity priorities in the implementation schedule, upon project approval, and when the Grant Agreement is signed. The concurrent first priorities are to establish the PMU and for the consulting team to prepare the PID. Significant advance preparation by WSA is planned to ensure these teams are fielded by September 2000. The consulting team will prepare a detailed PID with an updated implementation schedule, establish real and realistic priorities, and refine cost estimates. The PID will cover three years, 2000-2003, in detail. The initial project implementation schedule is shown in Appendix 7.

5. Rights-of-Way

64. UNTAET has stated that most of the works under the Project are within existing rights-of-way. UNTAET will, if needed, acquire or obtain rights to any land required on a timely basis in accordance with ADB's resettlement policy⁹ and provide compensation (including for crops), as required, in accordance with ADB's relevant guidelines. Detailed designs will minimize land acquisition. It is expected that the Project will not require any resettlement.

6. Disbursement Procedures

65. As agreed upon by IDA, disbursements for eligible expenditures will be made pursuant to ADB's disbursement guidelines set out in ADB's *Loan Disbursement Handbook* and may be made as direct payment or reimbursement, or through an imprest account. The imprest account will be replenished in accordance with the handbook. The CTA will be responsible for transactions, replenishments, and use of the imprest account. Payments under these agreements will be made by IDA, based on ADB's request.

7. Direct Payment

66. Under the direct purchase procedure, the PMU will ask ADB for a direct payment to be made to the supplier of goods and services. ADB will authorize the request and send it to IDA, which will pay the supplier directly. Payment will be requested using ADB's standard withdrawal

⁸ R74-00: *Joint Management Arrangements for the Trust Fund for East Timor*, 23 March 2000 – an arrangement for the TFET and an expansion of eligibility under ADB's procurement and consulting services guidelines to include member countries, East Timor, and all donors and members of international organizations that have provided contribution funds to the TFET.

⁹ ADB, 1989. *The Bank's Policy on Involuntary Resettlement*, Appendix 1 in Handbook on Resettlement. Manila.

application. The PMU will indicate in the withdrawal application the date on which payment becomes due to the supplier. A separate application should be filled out for each currency in which the payment is requested. The application should be submitted with supporting documents such as contracts, invoices, receipts, and vouchers. This procedure will be used for payment of (i) consultants' fees, and (ii) equipment and civil works contracts awarded on the basis of international competitive bidding. Copies of signed contracts will be forwarded to ADB as early as possible to facilitate timely payments.

8. Reimbursement Procedures

67. The reimbursement procedure will be used when eligible expenditures are paid from UNTAET's budget and reimbursement claimed through ADB from the TFET. Withdrawal applications with supporting documents and summary sheets of expenditures will be prepared by the PMU, and payments will be made to UNTAET by IDA based on ADB's authorization. The reimbursement procedure will be used for payment of (i) small purchases and (ii) short-term civil works contracts.

9. Imprest Fund

68. Under the imprest account fund procedure, ADB will ask IDA to advance funds to the PMU to meet subproject expenditures to prefinance payments to contractors and suppliers. The imprest account will be used for short-term civil works, small-scale design and supervision services, remuneration of East Timorese staff, and small purchases under all cost categories eligible for financing. ADB's statement of expenditure procedure will be used for reimbursement of expenditures and for the liquidation of the imprest account for payments with value equal to or below US\$10,000 each. The currency of the imprest account will be the US dollar and the maximum initial advance will be US\$450,000. The CTA supported by the PMU will be responsible for administrative and accounting tasks under the Project and will establish adequate internal control, accounting, and audit procedures to ensure efficient use of the imprest account and its operation. The imprest account will be established in Darwin, Australia or in Dili, East Timor, subject to ADB's approval.

10. Reporting

69. UNTAET, with the support of the PMU, will furnish ADB with quarterly progress reports concerning all aspects, including finances, procurement of services, equipment, and all civil works in the Project, including bilateral activities. The PMU will prepare quarterly expenditure budgets a month prior to the commencement of the following quarter. UNTAET, with the support of the PMU, will also provide quarterly reports on the use of the recurrent UNTAET water and sanitation budget, including activities and expenditures; and report progress in implementing policy initiatives, WS&S regulations, and organizational changes. The PMU will also prepare a final project completion report on all aspects of the Project in accordance with ADB's relevant guidelines one month prior to physical completion of the Project.

11. Accounts

70. The PMU will establish the necessary accounts in Dili, if possible, and in Darwin, Australia if required. These bank accounts will be under the control of the CTA. The PMU will establish and maintain separate accounts for all eligible expenditures under the Project, including its individual contracts and other project components. The PMU will furnish ADB with accounts and related financial statements prepared in accordance with international or other appropriate

accounting standards. Auditors acceptable to ADB will then audit these financial statements. The audited financial statements together with the auditor's report will be forwarded to ADB within six months of the end of each fiscal year. The PMU consultants will keep detailed records on the costing and expenditures of the project components and will assist with reporting.

12. Technical Midterm Review

71. In addition to a schedule of regular reviews to monitor project progress, a technical review of the Project will be carried out six months after mobilization. The focus of the review is to determine the need for any adjustment of the project design or implementation. The review will also assess adequacy of funds, cost overruns, need for reallocations, and other factors, if any, including assumptions and risks, that might constrain the satisfactory implementation of the Project and achievement of development objectives.

H. Environmental and Social Measures

1. Environmental Aspects

72. The Project has been classified as environmental Category B. An initial environmental examination was conducted and is reported in Appendix 8. The Project will only involve minor construction, and as such, transient environmental disturbances normally experienced during construction will be insignificant. Typical environmental disturbances related to water supply and sanitation will include minor excavations to replace pipes and fittings and repair drains; temporary road and street closures to allow pipe and drain replacement; minor clearing along short lengths of existing pipeline routes to allow repairs and rehabilitation; clearing of small areas (up to 20 square meters) for drill rig and truck access to bore sites; and minor short-term associated soil erosion if works are undertaken in high rainfall periods. Most of these disturbances will be on public land, and extend over only a day or two. Their impact will be generally limited to 10 to 100 square meters. Other works of significance include the proposed repair and rehabilitation of water supply-related structures such as workshops, stores, generator rooms, storage tanks, and borehole housing. All these works will be carried out on sites of existing (damaged) structures and no significant environmental effects are foreseen other than normal small building construction activities such as cartage of building materials and construction noise. Again any effects will be small and temporary, possibly lasting from a few days to a few weeks. The only significant adverse operational impact is that of potential increase in local discharge of wastewater because of improved water supplies. This will be ameliorated through repair and rehabilitation of drainage systems in problematic areas. Any other potential or identified adverse effects will be preempted or minimized by (i) improving water resource management and (ii) increasing promotion of environmental conservation through community participation and education activities. Thus, while there will be some minor and transient environmental impacts, the medium- and long-term impact of the Project is positive, especially in promoting economic and social development of East Timor and facilitating its reconstruction and development. A detailed environmental impact assessment is not required.

73. Due to the postconsultation destruction, the environmental conditions in urban areas of East Timor are quite poor. The damage to water supplies and sanitation is now endangering populations through pervasive waterborne diseases and lack of sanitation. People are spending excessive time collecting water, with the resulting inconvenience. The environmental costs of implementing the Project are minimal and transient, generally relating to the minor physical impacts expected when damaged pipes, buildings, and the like are repaired and rehabilitated. The

environmental and social benefits of the Project are, however, significant and include (i) providing the means for improved WS&S, and (ii) upgrading the quality of life for people in both urban and rural areas whose attempts to improve their status and health are continually impeded by the need to divert time, energy, and financial resources to acquire their daily water needs. The Project will generate employment through local labor, thus helping to create a stable social and economic environment. Although previous WS&S activities were generally undertaken with little regard for environmental procedures, nevertheless repair and rehabilitation works carried out under the Project will ensure that proper and appropriate environmental practices are observed. The Project will ensure adequate environmental procedures and monitoring mechanisms are established, and during works and construction, care will be taken to minimize disruption to the environment.

74. Environmental monitoring will be under the guidance of the PMU. In addition to regular inspections of works to ensure that all possible mitigation measures have been taken, the PMU will (i) measure the effectiveness of any environmental improvements needed, (ii) identify problems that may arise during the works and, if necessary, (iii) provide ecological audit information for future works of this nature. The proposed monitoring will be designed to quantify the benefits gained and any impacts sustained from repairing and rehabilitating town and community WS&S systems. Environmental parameters to be monitored will be defined by the PMU, and will include raw water quality, treated water quality, delivered water quality, need for and effectiveness of drainage systems, water pressure in piped systems, environmental conditions in river and spring catchments including pollution and land clearing, landslide and erosion problems affecting water supply and sanitation facilities, efficiency and effectiveness of sanitation facilities, and growth of algae in reservoirs. WSA will be responsible for all water quality testing (chemical and bacteriological) using the water-testing laboratory facility recently donated by the Government of Japan. They will also be responsible, in cooperation with local communities, for monitoring construction and postconstruction environmental aspects of the Project. The PMU will liaise with WSA and the Interim Health Authority to monitor environmental health statistics as part of the Project's focus on environmental health education and promotion of safe domestic hygiene practices.

75. Under UNTAET, Indonesian environmental laws remain valid, although their implementation capacity will need to be developed. UNTAET is presently reviewing environmental laws, regulations, and standards, and these may be applied to the Project in the future, although it is expected that this will not result in any adverse outcomes. Conversely, the PMU and WSA will compile project environmental reports, the information from which will be passed on to the relevant section of UNTAET for consideration when developing environmental standards and legislation.

2. Social Issues

76. The Project will rehabilitate impaired WS&S services. An initial social assessment has been prepared in accordance with ADB's *Guidelines for Social Dimensions of Infrastructure Projects* and is attached as Appendix 9. The Project is expected to have a significant positive social impact. The Project will involve no relocation or resettlement. The beneficiary consultations confirmed widespread support for the Project. The Project will improve the quality of life by providing the means for improved sanitation and reducing labor times for water fetching. Project construction activities will generate significant employment opportunities, and delivered services will free the labor force for more productive uses.

I. Project Justification

77. The Project will have a positive social impact on the East Timorese population, particularly the poor. It will provide safe water and sanitation to a large part of the population. Ready access to safe WS&S services will have significant long-term benefits in terms of reduction of waterborne diseases including diarrhea, dysentery, malaria, and skin diseases. It will also contribute to human capital development and reduce poverty through the ability to put labor used for water fetching to more productive uses. The Project will maximize the use of local contractors in its repair and rehabilitation works, thereby creating jobs at the local level. And it will help to develop sector policies and institutional frameworks in which WS&S are delivered so that they take account of the needs of the poor.

78. Following the complete destruction of all water-related infrastructure, it can be assumed that the net economic benefits will be positive, especially in the urban areas where it is expected that tariff schemes will eventually be introduced. In the rural areas, the freeing of labor for more productive economic uses and the reduction in health-related costs are expected to result in this Project being net economically positive.

79. A key lesson is that in all aspects of WS&S project design, construction, operation, and maintenance, the focus must be on striving for sustainable solutions. Experience in many countries over many years has shown that the traditional least-cost approach to planning water supply projects is inadequate to achieve sustainable resource use efficiency. What is required is an approach that integrates both supply- and demand-side concerns, and accounts for nonmarket costs and benefits. The extent to which benefits from water supply are likely to be sustained will depend upon greater recognition of the role that prices can play in managing water demand, expanding supply, and conserving the environment. The PID will address the establishment of, and improvement in, tariff levels and structures under this Project; this will ensure differential tariff regimes for different customer segments, some degree of cost recovery, and sustainability of services.

J. Impact on Extreme Poverty

80. Even before the 1999 destruction and displacement, East Timor was one of the poorest areas in Southeast Asia. Based on Indonesian statistics, prior to the upheaval, social indicators in East Timor already demonstrated a low level of human development, with some 50 percent of the population clustered around the poverty line. The situation has worsened dramatically since September 1999.

81. ADB's core development tenet is one of combating poverty. Its commitment in East Timor is to provide well-coordinated action to support reconstruction and long-term development planning, as well as humanitarian relief. This includes working to reduce poverty, with particular attention to ensuring quality basic service delivery; opportunities for productive sector development; and provision of associated infrastructure needs.

82. Prior to the upheaval, less than half the population had access to safe water and sanitation facilities. Sanitation practices, which were often unhygienic, were constrained by the absence of sufficient water. There were major health hazards caused by the lack of sanitation facilities in poorer rural and urban areas. Poor households were further disadvantaged by having limited access to basic health and education services. With almost the entire East Timor population suffering from the destruction, the need for repair and rehabilitation of water supplies and sanitation facilities is now even higher.

83. The Water Supply and Sanitation Rehabilitation Project directly addresses, and seeks to overcome, a number of factors that directly, or indirectly, contribute to poverty. The Project is designed to distribute its benefits in an equitable manner across East Timorese urban and rural communities, be responsive to communities' needs, contribute to sustainable development and operation in the WS&S sector, reduce poverty, and minimize environmental impacts. It will target communities where need is greatest and where poorer people live (rural villages and peri-urban areas). It will take account of the different needs of men and women and of the old and young. And where applicable it will adopt approaches to WS&S that counteract the problems faced by poor households because of service charges. In all areas, repair and rehabilitation of water supplies will free labor (both men and women) for more productive uses, thereby assisting in the fight against poverty. Improved sanitation facilities and practices, and the provision of clean water will have beneficial health effects, particularly for children and infants, and reduce the costs associated with disease and morbidity. This particularly benefits the poor for whom the costs of illness can be devastating.

V. APPROVAL

84. The President, acting under the authority delegated by the Board, has approved the provision and administration by ADB of a grant to the United Nations Transitional Administration in East Timor, in an amount not exceeding US\$4,500,000, to be financed by the Trust Fund for East Timor on a grant basis, for the Water Supply and Sanitation Rehabilitation Project, and hereby reports such action to the Board.

TADAO CHINO
PRESIDENT

31 July 2000

APPENDIXES

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PROJECT FRAMEWORK

Design Summary	Targets	Project Monitoring Mechanism	Risks/ Assumptions
<p>Sector Goal</p> <p>To provide the people of East Timor with adequate, affordable, and sustainable water supply and sanitation (WS&S) services, using appropriate technology and management systems</p>	<p>Reduced dependence on unsafe and inconvenient water sources</p> <p>Improved health through better access to clean water, appropriate sanitation, and improved environmental health knowledge</p>	<p>Project Monitoring Unit (PMU) monitoring & evaluation</p> <p>United Nations Transitional Administration in East Timor (UNTAET)'s Water and Sanitation Authority (WSA), health and education groups and non government organization (NGO) reports</p> <p>Consultations with communities and authorities</p>	<p>UNTAET continues to provide adequate budgetary and technical resources, and initiates appropriate recurrent cost financing systems.</p> <p>International funding agencies provide continued support.</p> <p>The transition to self-government is appropriate with sound sector recurrent cost financing systems.</p> <p>The Project will respond to needs from the communities as they emerge, and work with other donors whose scope and timing of activities in the sector are not yet clear.</p>
<p>Purpose/Objective</p> <p>Component 1.</p> <p>To build institutional and community capacities for effective WS&S sector management</p>	<p>Strategic and sustainable WSA; sustainable community management of smaller water supplies (establishment of the PMU by September 2000, preparation of the Project</p>	<p>Operating records and review missions</p>	<p>Resources are available and transition to self-government is smooth.</p> <p>Balance between sector institutional and community management is achieved.</p>

Design Summary	Targets	Project Monitoring Mechanism	Risks/ Assumptions
	(cont'd) Implementation Document (PID), completed by December 2000		
<p>Component 2. To repair and rehabilitate WS&S facilities in urban and rural areas.</p> <p>Component 3. To promote improved environmental health and community WS&S participatory practices</p>	<p>Repaired and rehabilitated WS&S facilities on the basis of priority need, works commencing September 2000, willingness to pay, and funds availability</p> <p>Improved community hygiene and self-help participatory practices, activities commencing September 2000</p>	<p>Completed systems, operating in a sustainable way</p> <p>Health and NGO reports; incidence of diseases reported in clinics</p>	<p>Rural and urban equity; inclusive participation</p> <p>Families have the resources (finances and time) to adopt messages and act on knowledge.</p>
<p>Outputs</p> <p>Component 1. WS&S sector management and implementation program</p> <p>1.1 Establishment of a PMU in UNTAET's WSA</p>	<p>Effective PMU; close coordination with WSA, donors, NGOs, and communities by September 2000</p> <p>Detailed WS&S implementation plan for FY 2003 completed by December 2000</p>	<p>Through benefit monitoring and evaluation (BME) of project outputs every 3 months</p> <p>Mission reviews; stakeholder approval of the PID</p>	<p>Dates stipulated in Components 1, 2 and 3 are affected by a high degree of uncertainty due to the nature of the Project and the dependence on the activities of the UNTAET and other donors in the sector.</p> <p>Trust Fund for East Timor (TFET) funds are available.</p> <p>PMU and PID activities commence around 1 September 2000.</p>

Design Summary	Targets	Project Monitoring Mechanism	Risks/ Assumptions
<p>1.2 Planning for the WS&S Sector: Preparation of Program Implementation Document (PID)</p>			<p>The PMU has the authority to manage and guide all project activities in close cooperation with WSA as sector coordinator</p> <p>Widespread commitment by stakeholders of WSA as sector coordinator; PID will be used by donors and other stakeholders as core plan for WS&S sector rehabilitation and development</p>
<p>Component 2. Capacity Building and Institutional Development Program</p> <p>2.1 Short-Term Support (priority activities in support of ongoing rehabilitation projects - as identified by WSA and the PID)</p>	<p>Repairs and fit-out to priority WS&S buildings (workshops, stores, generator buildings) in the main towns of each of 12 districts (excluding Dili), depending on other donors' activities and timing, commencing October/November 2000.</p> <p>Replacement of priority tools, equipment and materials in the main towns of each of 12 districts (excluding Dili), depending on other donors' activities and timing, commencing October/November 2000.</p>	<p>Designs and small-scale contracts and force account works</p> <p>Periodic project reports</p> <p>Project review missions</p> <p>WSA review</p> <p>Tripartite meetings</p>	<p>TFET funds are available.</p> <p>WSA and PMU adequately recognize needs and constraints.</p> <p>UNTAET funds and implements parallel human capacity-building program.</p> <p>Contracts are expedited.</p> <p>Project management is effective.</p>

Design Summary	Targets	Project Monitoring Mechanism	Risks/ Assumptions
	<p>Replacement of priority information technology and communications equipment in the main towns of each of 12 districts (excluding Dili), depending on other donors' activities and timing, commencing October/November 2000</p>		
<p>Component 3. WS&S Implementation Program</p> <p>3.1 WSA WS&S Quick Response Facility (comprising provision of resources sufficient to respond rapidly to urgent town and village WS&S repair and rehabilitation needs across East Timor)</p> <p>3.2 Dili Water Supply Repair & Rehabilitation Program (comprising provision of resources to repair & rehabilitate Dili water distribution network to complement upstream rehabilitation being</p>	<p>Emergency repairs and rehabilitation (approx. 30) to Dili water supply system through provision of (i) small local design and construction contracts, plant hire and cartage commencing October 2000; (ii) procurement of pipes, fittings, and materials commencing September 2000</p> <p>Repairs and rehabilitation (approx. 30) to Dili water supply system through provision of (i) small local design and construction contracts, plant hire and cartage commencing October 2000;</p>		<p>TFET funds are available.</p> <p>The facility is widely known and able to cope with demand.</p> <p>Contracts are expedited.</p> <p>Project management is effective, especially coordination between the PMU, WSA, United Nations Development Programme (UNDP), and the Japanese consultants engaged on the Dili water supply project.</p> <p>WSA provides associated technical assistance and UNTAET funds and implements parallel capacity-building program.</p>

Design Summary	Targets	Project Monitoring Mechanism	Risks/ Assumptions
(contd) undertaken by the Japanese Government)	(ii) procurement of pipes, fittings, and materials commencing September 2000; and (iii) construction contracts, e.g., deepwell drilling commencing October 2000.		WSA provides associated technical assistance. Contracts are expedited.
3.3 District Water Supply Repair & Rehabilitation Program (covering small towns and villages in selected priority districts using community participation & planning processes)	Repair and rehabilitation of priority small town water supplies and sanitation Repair and rehabilitation of priority village water supplies and sanitation Priorities and activities based on need, willingness to pay, and funds availability Three NGOs, each working in 1 district, on approx. 20 sites each, commencing in September 2000	Program/project designs and associated contracts Review missions every 4 months BME NGO and project performance reports every 2 months Tripartite meetings every 4 months	Appropriate community mechanisms are used in project implementation. NGO capacity is available to facilitate the program. Contracts are expedited. Project management is effective, especially coordination between PMU, WSA, and district administrations. Activities are coordinated with donor programs and community empowerment local governance project.
Inputs 1. International and domestic consulting services	Selection of international and domestic consulting services for project management by September 2000.		Deployment of competent consultants is timely. Tender processes are timely.

Design Summary	Targets	Project Monitoring Mechanism	Risks/ Assumptions
<p>2. Supply of materials</p>	<p>Prepare procurement lists for pipes, fittings, materials, tools, information technology and communications, and other equipment for capacity building and institutional development and WS&S implementation programs in accordance with needs determined by WSA and thePID</p> <p>Issue contracts as required under work program commencing September 2000.</p>		<p>Deployment of competent contractors is timely.</p> <p>Tender processes are timely.</p>
<p>3. Civil works</p>	<p>Prepare contract documents for design and construction for</p> <p>(i) building repair and fit-out under capacity building program;</p> <p>(ii) local contracts for repairs to water supplies under the quick response facility;</p> <p>(iii) local contracts for repair and construction works under the Dili WS repair and rehabilitation program; and</p>	<p>Project Reports</p>	<p>Timely deployment of competent contractors</p> <p>Timely tender processes</p>

Design Summary	Targets	Project Monitoring Mechanism	Risks/ Assumptions
	<p>(iv) local contracts for repair and construction works under the district WS&S repair and rehabilitation program; and implement the works as required under work program</p> <p>All activities commencing September/October 2000</p>		
4. NGO Services	<p>Selection and mobilization of international and local NGO services for implementation of district WS repair and rehabilitation program commencing September 2000.</p>	Project reports	<p>Deployment of competent NGOs is timely.</p> <p>Tender processes are timely.</p>

WATER SUPPLY AND SANITATION SECTOR PROFILE

**Table A2.1: Summary of PDAM, BDAM, IKK and PPSAB Piped Water Supply Systems in East Timor
(Prior to Popular Consultation of August 1999)**

No.	District / Town	Town Water Supply Status	Summary Details	IKK Water Supplies	Summary Details	PPSAB piped water supplies	Summary Details
1.	Aileu / Aileu	BPAM Aileu subdistrict (Comprehensive report see AusAID feasibility study team report on visit of 16 February 1999)	Source: Springs/gravity Capacity: 15 l/sec Operation: 24 hours House connections: 425 Public tanks: 14 Tank (truck filled): 4 Total population: 9,000 Population served: 4,950 Percentage served: 55% Infiltration gallery source reported to need booster pump.			Lau Lara PPSAB; system not completed	Source: Springs/gravity Capacity: 5 l/sec Operation: 24 hours House connections: 14 Public tanks: 3 Total population: 3,300 Population served: 1,100 Percentage served: 33%
						Remexio PPSAB; managed by BPAM	Source: Springs/gravity Capacity: 5 l/sec Operation: 24 hours House connections: 70 Public tanks: 2 Total population: 3,750 Population served: 1,500 Percentage served: 40%
2.	Ainaro / Ainaro	BPAM (Ainaro subdistrict)	Source: Springs/gravity Capacity: 10 l/sec Operation: 24 hours House connections: 300 Public tanks: 6 Total population: 11,940 Population served: 2,800 Percentage served: 24%	Maubisse (IKK)	Source: Springs/gravity Capacity: 5 l/sec Operation: 24 hours House connections: 60 Public tanks: 6 Total population: 4,800 Population served: 1,300 Percentage served: 27% Some areas of town require pumping.	Hato Hudo PPSAB; village supply	Source: Springs/gravity Capacity: 5 l/sec Operation: 24 hours House connections: 100 Public tanks: 5 Total population: 4,020 Population served: 1,390 Percentage served: 35%

Legend:

- AusAID - Australian Agency for International Development
- BPAM - *Badan Pengelola Air Minum* (District Water Board)
- IKK - *Ibu Kota Kecamatan* (main subdistrict town)
- PPSAB - *Proyek Penyediaan Saran Air Bersih* (Clean Water Facility Installation Project)

No.	District / Town	Town Water Supply Status	Summary Details	IKK Water Supplies	Summary Details	PPSAB piped water supplies	Summary Details
3.	Ambeno / Oecusse	BPAM (Pante Macassar subdistrict)	Source: Springs/gravity Capacity: 15 l/sec Operation: 24 hours House connections: 450 Public tanks: 12 Tank (truck filled): 4 Total population: 17,900 Population served: 6,300 Percentage served: 35% Four springs gravity feed system, one of which feeds the WRP at Oetulu. 25% houses have dug wells in yard				
4.	Baucau / Baucau	BPAM Bacau subdistrict)	Source: Springs/gravity Capacity: 27.5 l/sec Operation: 8 hours House connections: 1,600 Public tanks: 5 Tank (truck filled): 3 Total population: 97,800 Population served: 8,500 Percentage served: 9%	Laga (IKK)	Source: Spring/gravity Capacity: 5 l/sec Operation: 24 hours House connections: 45 Public tanks: 0 Total population: 4,300 Population served: 1,100 Percentage served: 25% 8 km gravity main, no treatment, 50 cubic meter reservoir in town. Most people obtain water from river and wells.	Baguia PPSAB; system not completed	Source: Springs/gravity Capacity: 5 l/sec Operation: 24 hours House connections: 0 Public tanks: 6 Total population: 3,250 Population served: 800 Percentage served: 25%

No.	District / Town	Town Water Supply Status	Summary Details	IKK Water Supplies	Summary Details	PPSAB piped water supplies	Summary Details
4.	(contd) Baucau / Baucau			Vemasse (IKK)	Source: Bore/pump Capacity: 2.5 l/sec Operation: 6 hours House connections: 76 Public tanks: 4 Total population: 3,800 Population served: 1,400 Percentage served: 37% Good quality water but hard causing encrustation, no treatment, 50 cubic meter RC elevated tank	Quelical PPSAB; Funded by BANGDES	Source: Springs/gravity Capacity: 2.5 l/sec Operation: 24 hours House connections: 0 Public tanks: 6 Total population: 3,200 Population served: 1,110 Percentage served: 35%
				Venilale (IKK)	Source: Springs/gravity Capacity: 5 l/sec Operation: 24 hours House connections: 96 Public tanks: 2 Total population: 3,500 Population served: 1,106 Percentage served: 32% 18 km transmission line, 2 No. BPTs, no treatment		

No.	District / Town	Town Water Supply Status	Summary Details	IKK Water Supplies	Summary Details	PPSAB piped water supplies	Summary Details
5.	Bobonaro / Maliana	BPAM (Maliana subdistrict) (Comprehensive report see AusAID feasibility study team report on visit of 11-12 February 1999)	Source: Springs/gravity Capacity: 20 l/sec Operation: 24 hours House connections: 470 Public tanks: 6 Tank (truck filled): 1 Total population: 13,070 Population served: 5,900 Percentage served: 45%	Cailaco (IKK)	Source: Springs/gravity Capacity: 5 l/sec Operation: 24 hours House Connections: 50 Public Tanks: 10? Total Population: 30,850 Population served: 6,150 Percentage served: 20% Reliable spring, 8 km transmission line poor condition	Bobanaro PPSAB; Funded by BANGDES	Source: Springs/gravity from Tapo village. Piped system serves 18 villages and 22,000 people in Bobonaro district. Operation: 3 hours/village, including Bobonaro town. The Tapo-Bobonaro pipeline was constructed by the Portuguese and is over 50 years old.
6.	Kova-Lima / Suai	BPAM (Suai Kota subdistrict) (Detailed report see AusAID ETWSS Report 0003 of May 1993)	Source: 2 Bores + 3 Springs/gravity Capacity: 15 l/sec Operation: 24 hours House connections: 600 Public tanks: 8 Tank (truck filled): 4 Total population: 14,300 Population served: 4,520 Percentage served: 32%	Selele (village) IKK, (Tilomar subdistrict)	Source: Bore House connections: 0 Public taps: 4 Total population: approx. 1,000	Fatu Fulic PPSAB; system not completed	Source: Springs/gravity Capacity: 2.5 l/sec Operation: 24 hours House connections: 0 Public tanks: 4 Total population: 3,800 Population served: 800 Percentage served: 21%
					(Formerly occupied by Balinese migrants, now departed)	Fatu Mean PPSAB; Funded by BANGDES	Source: Spring/gravity Capacity: 5 l/sec Operation: 24 hours House connections: 0 Public tanks: 4 Total population: 4,200 Population served: 782 Percentage served: 19%

Legend:
ETWSS - East Timor Water Supply and Sanitation

No.	District / Town	Town Water Supply Status	Summary Details	IKK Water Supplies	Summary Details	PPSAB piped water supplies	Summary Details
7.	Dili / Dili	PDAM (Dili Barat and Dili Timur subdistricts)	Source: River + bores Capacity: 245 l/sec Operation: 18 hours House connections: 6,900 Public tanks: 40 Public taps: 5 Tank (truck filled): 10 Total population: 179,600 Population served: 70,600 Percentage served: 39%	Metinaro (IKK)	Source: River/Springs 4km from town – good quality House Connections: 50 Public Tanks: 0 Total Population: 2,300	Atauro	
8.	Ermera / Gleno	BPAM (Ermera subdistrict) (Comprehensive report see AusAID feasibility study team report on visit of 9 February 1999)	Source: River + spring – gravity fed Capacity: 10-30 l/sec Operation: 3-4 hours House connections: 411? Public tanks: 12 Total population: 12,600 Population served: 4,250 Percentage served: 34% Gleno town was established in 1982-83, 5 km transmission to slow sand filter, poor supply due to disrepair and leakage	Atsabe (IKK)	Source: Spring/gravity Capacity: 5 l/sec Operation: 24 hours House connections: 100? Public tanks: 0? Total population: 4,750 Population served: 1,140 Percentage served: 24% Spring 4 km from town, 25 cubic meter reservoir in poor condition	Ermera PPSAB; village supply	Source: Spring + river – gravity 2 transmission mains, each 4 km

LEGEND:

PDAM - Perusahaan Daerah Air Minum (Local Government Water Enterprise)

No.	District/ Town	Town Water Supply Status	Summary Details	IKK Water Supplies	Summary Details	PPSAB piped water supplies	Summary Details
8	(contd) Emera/Gleno			Hatiola (IKK)	Source: Spring/gravity Capacity: 5 l/sec Operation: 24 hours House connections: 0 Public tanks: 6? Total population: 7,360 Population served: 2,070 Percentage served: 28% Small town, spring 1 km from town, BPT in transmission line, 50 cubic meter reservoir	Letefoho PPSAB; System not completed	Source: Spring/gravity Capacity: 5 l/sec Operation: 24 hours House connections: 0 Public tanks: 7 Total population: 4,650 Population served: 1,080 Percentage served: 23%
				Railaco (IKK)	Source: Spring/gravity Capacity: 5 l/sec Operation: 24 hours House connections: 50 Public tanks: 2 Total population: 3,825 Population served: 780 Percentage served: 20% Spring in good condition, 2 km from town, 50 cubic meter tank. Most people obtain water from river.	Poetete village (Emera sub-district) PPSAB; village supply	Source: Spring/gravity Capacity: 5 l/sec Operation: 24 hours House connections: 60 Public tanks: 7 Total population: 7,600 Population served: 1,460 Percentage served: 19%

No.	District / Town	Town Water Supply Status	Summary Details	IKK Water Supplies	Summary Details	PPSAB piped water supplies	Summary Details
9.	Lautem / Los Palos	BPAM (Los Palos subdistrict)	Source: Spring/gravity Capacity: 15 l/sec Operation: 24 hours House connections: 489 Public tanks: 5 Tank (truck filled): 4 Total population: 14,900 Population served: 4,560 Percentage served: 31%	Com (village) IKK, (Lautem subdistrict)	Source: Spring/gravity Capacity: 5 l/sec Operation: 24 hours House connections: 0? Public tanks: 4? Total population: 3,800 Population served: 954 Percentage served: 25% Good spring 2.6 km from town, 32 cubic meter reservoir needs repair.	Poetete village (Ermera subdistrict) PPSAB; village supply	Source: Spring/gravity Capacity: 5 l/sec Operation: 24 hours House connections: 60 Public tanks: 7 Total population: 7,600 Population served: 1,460 Percentage served: 19%
10.	Liquica / Liquica	BPAM (Liquica subdistrict) (Comprehensive report see AusAID feasibility study team report on visit of 15 February 1999)	Source: Spring + Bores Capacity: 15 l/sec Operation: 24 hours House connections: 652 Public tanks: 5 Tank (truck filled): 4 Total population: 13,800 Population served: 3,850 Percentage served: 28%				

No.	District / Town	Town Water Supply Status	Summary Details	IKK Water Supplies	Summary Details	PPSAB piped water supplies	Summary Details
11.	Manatuto/ Manatuto	BPAM (Manatuto subdistrict) (Comprehensive report see AusAID feasibility study team report on visit of 13 February 1999)	Source: River Capacity: 15 l/sec Operation: 24 hours House connections: 345 Public tanks: 12 Tank (truck filled): 4 Total population: 12,300 Population served: 3,915 Percentage served: 32%	Laclo (IKK)	Source: Spring/gravity Capacity: 5 l/sec Operation: 24 hours House connections: 160 Public tanks: 3 Total population: 3,550 Population served: 1,300 Percentage served: 37% Spring 5 km from town, 3" transmission line needs replacing, two adjacent villages	Soibada PPSAB; Funded by BANGDES	Source: Bore Capacity: 2.5 l/sec Operation: 24 hours House connections: 0 Public tanks: 3 Tank (truck filled): 4 Total population: 3,300 Population served: 500 Percentage served: 15%
				Laclubar (IKK)	Source: Spring/gravity Capacity: 2.5 l/sec Operation: 24 hours House connections: 24 Public tanks: 5 Total population: 4,020 Population served: 1,080 Percentage served: 27% Spring 11 km from and 2,000 m above town, transmission line has 2 BPTs and problems, 50 cubic meter reservoir	-	

No.	District / Town	Town Water Supply Status	Summary Details	IKK Water Supplies	Summary Details	PPSAB piped water supplies	Summary Details
12.	Manufahi / Same	BPAM (Same subdistrict)	Source: Spring/gravity Capacity: 15 l/sec Operation: 24 hours House connections: 150 Public tanks: 15 Tank (truck filled): 6 Total population: 13,250 Population served: 4,651 Percentage served: 35%	-	-	-	-
13.	Viqueque / Viqueque	BPAM (Viqueque sub-district)	Source: Spring/gravity Capacity: 15 l/sec Operation: 24 hours House connections: 300 Public tanks: 11 Tank (truck filled): 4 Total population: 11,250 Population served: 4,385 Percentage served: 39%	Laculuta (IKK)	Source: Spring/gravity Capacity: 5 l/sec Operation: 18 hours House connections: 50? Public tanks: 12 Total population: 9,650 Population served: 3,380 Percentage served: 35% Spring 3 km from town, reservoir unserviceable, 3 villages together, transmission main needs repair	Ossu PPSAB; System not completed	Source: Spring/gravity Capacity: 5 l/sec Operation: 18 hours House connections: 0 Public tanks: 5 Total population: 4,240 Population served: 1,230 Percentage served: 29%
				Uatolari (IKK)	Source: Spring/gravity Capacity: 5 l/sec Operation: 24 hours House connections: 75? Public tanks: 8? Total population: 4,850 Population served: 990 Percentage served: 20% Spring 8 km from town, 3" transmission line, distribution network needs repairs	Uato Carbau PPSAB System not completed	Source: Spring/gravity Capacity: 5 l/sec Operation: 24 hours House connections: 0 Public tanks: 5 Total population: 4,770 Population served: 1,085 Percentage served: 23%

Notes:

1. The information in this table was obtained from a number of sources, most of which are assessed to be of limited reliability. Reference should be made to reports cited to obtain a clearer picture of the precrisis situation of these piped water supply systems. Note that there were (and are) many other, community owned and operated piped systems in East Timor that are not included here. PDAM, BPAM, IKK, and PPSAB systems were all installed or operated by the Public Works Department. Tariffs were charged for PDAM, BPAM, and IKK supplies. No tariffs were charged for PPSAB systems, as these were the communities' responsibility.
2. Information from (i) Realisasi Program Air Bersih S/D TA 1998/1999, Propinsi Timor Timur, (ii) Salustiano Belo (formerly Head, BPAM, Baucau), and (iii) AusAID reports

**Table A2.2: Summary Profile of Town Piped Water Supply Systems in East Timor
(as at April 2000)**

No.	District	Sub-District	Population	Town	Former System Type	Current Situation and Needs
1	Aileu	Aileu	14,078	Aileu	BPAM	System 1 - Low-yielding borehole built from 1996 to 1998, not operating generator unserviceable; 150 mm x 3.5 km GI transmission main to 250 m ³ reservoir; 150 mm GI delivery main to service area. Repairs needed to generator, system leakage, and house connections. Tools and spare parts needed. New spring 10-12 km from town needs to be developed with new transmission main.
						System 2 - Spring-fed gravity system, operational, but low yielding. 75 mm x 5 km transmission line from spring to 96 m ³ reservoir in town; 100 mm GI pipe to service area. Repairs needed to spring (capping), pipe leakage, and replace valves.
						System 3 - Stream intake 5 km from town; 75 mm GI transmission main to 64 m ³ twin cell reservoir. Repairs needed to intake structure (infiltration gallery), valves need replacing, and chlorination system is required.
		Lau Lara	3,801	Lau Lara	PPSAB	
		Lequidoe	5,294			
		Remexio	9,052	Remexio	PPSAB	
			32,225			
2	Ainaro	Ainaro	10,889	Ainaro	BPAM	System 1 - Spring-fed gravity system, built in 1992, operational; source in mountain 1.5 km from town. Treatment comprises plain sedimentation, slow sand filter, and chlorination. This is now bypassed. 150 mm transmission line to 2 reservoirs: 120 m ³ and 48 m ³ , which are sound but dirty. Previously 470 house connections and 24 public taps. Previously 10 employees in BPAM. Repairs to house connections, raw water intake, tanks, WTP, and distribution leakage. Whole system needs redesign and reconstruction.

Legend:

BPAM - *Badan Pengelola Air Minum* (District Water Board)

PPSAB - *Proyek Penyediaan Sarana Air Bersih* (Clean Water Facility Installation Project)

No.	District	Sub-District	Population	Town	Former System Type	Current Situation and Needs
						System 2 - Spring source built in Portuguese time, failed in 1992 after construction of new WTP. Capacity 6 l/s, 3-4 l/s in dry season. Clean water EC 37 ms/m. Located 1 km from town. Pipes removed but previously connected to 8 m ³ chamber which leaks. May be a potential source.
		Hato Bulico	11,000			
		Hato Hudo	9,145	Hato Hudo	PPSAB	
		Maubisse	18,000	Maubisse	IKK	Source 1 - Spring-fed gravity system, 4 km from town. 50 mm GI pipe leads to 30 m ³ unprotected reservoir that is dry as transmission line damaged. Distribution system is GI. Rehabilitation and protection needed for spring, transmission main, distribution leakage. Tools and spare parts needed. New springs need to be developed and the system redesigned.
			49,034			Source 2 - Spring-fed gravity system, 1 km from town, that is unserviceable. Intake is damaged. The 100 mm transmission line connects directly into the distribution system. The spring intake and transmission line need to be repaired.
3	Ambeno	Nitibe	7,648			
		Oe Silo	11,486			
		Pante Macassar	19,734	Oecusse	BPAM	Spring (4 No.)-fed gravity system. One spring feeds a WTP at Oetula, the other 3 feed directly into the distribution system. The main spring is located about 2.4 km from the WTP which is in fair condition. It comprises chlorinator, sediment bath, sand filter, 240 m ³ storage tank, and a pump on the tank outlet. The WTP needs a thorough overhaul, as do the spring intakes, and the system generally (see also reports by OXFAM and Royal Australian Engineers).
		Passabe	4,357			
			43,225			

Legend:

IKK - Ibu Kota Kecamatan (main subdistrict town)

No.	District	Sub-District	Population	Town	Former System Type	Current Situation and Needs
4	Baucau	Baguia	8,123	Baguia	PPSAB	Two spring sources gravity feed to old town; pumping required for new town. The pumps are not working - no fuel or electricity. Population supplied by 1,067 house connections is 8,537; and 2,134 from 14 public taps. Repairs needed to pumping station, and construction of spring protection.
		Baucau	9,000	Bacau	BPAM	
		Laga	13,031	Laga	IKK	
		Quelicai	9,014	Quelicai	PPSAB	
		Vemasse	6,816	Vemasse	IKK	
		Venilale	17,517	Venilale	IKK	
			63,501			
5	Bobonaro	Atabai	6,900	Atabai		See Oxfam report dated 8 February 2000.
		Balibo	5,918	Balibo		See Oxfam report dated 28 February 2000.
		Bobonaro	22,400	Bobonaro		See Oxfam report dated 28 February 2000.
		Cailaco	8,039	Cailaco	IKK	See Oxfam report dated 1 March 2000.
		Lolotoi	6,550	Lolotoi		See Oxfam report dated 1 March 2000.
		Maliana	17,630	Maliana	BPAM	Town is gravity fed from 2 spring sources and a pumped river intake. The river intake is from an irrigation canal on the town outskirts where it is pumped into an adjacent WTP and again pumped to the distribution system. Production from the WTP is reported to be 160 cum/day. The spring intake are reported to be 6 km and 4 km from town. Water quality is understood to be problematic, leaving a black residue. 12 persons are employed by the DA to operate the system. Much rehabilitation and system redesign is considered to be required.
			67,437			
6	Kovo-Lima	Fatu Fulic	2,521	Fatu Fulic	PPSAB	
		Fatu Mean	2,501	Fatu Mean	PPSAB	See Oxfam report dated 25 February 2000.
		Fohorem	5,511	Fohorem		See Oxfam report dated 4 March 2000.
		Mape/ Zumulai	8,511	Zumulai		See Oxfam report dated 3 March 2000.

No.	District	Sub-District	Population	Town	Former System Type	Current Situation and Needs
		Muakatar	7,062			
		Suai Kota	16,127	Suai		There are two town water supply sources. The first is from river+spring sources (3 No.) located 4.5 and 5 km from town. The transmission lines were repaired in March 2000 and are supplying about 50% of the town supply. The balance comes from 2 boreholes located on the town margin. They too had been damaged and were repaired by Oxfam and the DA. The repairs are temporary and much more rehabilitation and restoration is required. (See also report on Suai WS by TAWSSAM Team, October 1999; and AusAID ETWSS report on Suai Water Resources and System Development, May 1993)
		Tilomar	6,513	Selele	IKK	See Oxfam Report dated 2 February 2000.
			48,746			
7	Dili	Atauro	7,750	Atauro		See WSA report on field visit dated 24 March 2000.
		Dili Barat	72,618	Dili	PDAM	See TAWSSAM detailed reports/working papers on Dili & Hera WS dated October 1999.
		Dili Timur	56,149	Dili	PDAM	See TAWSSAM detailed reports/working papers on Dili & Hera WS dated October 1999.
		Metinaro	2,260	Metinaro	IKK	
			138,777			
8	Ermera	Atsabe	10,535	Atsabe	IKK	
		Ermera	20,912	Gleno	BPAM	Source 1 - River source gravity feeding to 90 and 120 m ³ reservoirs through 5 km of 150 mm GI transmission pipe (badly damaged). Reticulation is via 150 mm (and down) GI pipe. Repair intake, transmission mains (150 & 100 mm), distribution system and replace filter media. (see also AusAID ETWSS report on Water Supply in Gleno, February 1999)

Legend:

ETWSS - East Timor Water Supply and Sanitation

TAWSSAM - Transitional Administration Water Supply and Sanitation Assessment Mission

No.	District	Sub-District	Population	Town	Former System Type	Current Situation and Needs
						Source 2 -Gravity-fed from a stream with no intake structure. Simple intake structure, including weir, collecting chamber, piper and valves needs to be constructed.
						Source 3 - Spring-fed gravity system located 1 km from town; 100 mm Gi pipe transmission.
		Ermera		Emera	PPSAB	Source 1 - Spring-fed gravity system, located 4 km from town. 200 mm GI pipe to a 30 m ³ storage tank in town from which is GI pipe reticulation. A new spring should be developed and the existing spring needs protection and a filter, transmission line needs protection, and repairs to leakage. Raw water disinfection required.
						Source 2 - River/stream source, 4 km from town, no treatment or disinfection. 100 mm GI pipe to 30 m ³ tank in town. The intake needs rehabilitation, protect transmission line, and repair leakage.
		Ermera		Poetete	PPSAB	
		Hatolia	22,050	Hatiola	IKK	
		Letefoho	15,475	Letefoho	PPSAB	
		Railaco	6,720	Railaco	IKK	
			75,692			
9	Lautem	Iliomar	8,880	Iliomar		6 villages, 40% of which have no toilet or water supply.
		Lautem/ Moro	14,058	Com	IKK	10 villages, 80% have no toilet or water supply.
		Los Palos	20,924	Los Palos	BPAM	1 - Pumped supply, nonoperational; 10 villages, 90% of which have no toilet or water supply
						2 -Spring-fed gravity system, operational, but pressure does not allow water to serve all areas
		Luro	6,682	Luro	PPSAB	6 villages, 70% of which have no toilet or water supply.
		Tutulala	3,216	Tutulala		Water source protection and pipeline in poor condition; 2 villages with no toilets or water supply
			53,760			

No.	District	Sub-District	Population	Town	Former System Type	Current Situation and Needs
10	Liquica	Bazar Tete	14,532	Bazar Tete		Source 1 - Gravity system built in Portuguese time - operational. Stream fed with constant flow in dry season, water is transmitted via 2" GI pipe to town and a 32 m ³ reservoir. Distribution is by GI pipe with some leakage. Tools, materials, and spare parts required. Repairs to transmission mains and rehabilitation of old system needed.
						Source 2 - Gravity scheme from stream built in Indonesian times. Dries up in dry season. Transmission line 3" GI pipe washed away in several locations. Reservoir 50 m ³ in good condition. Feeds same service area as Source 1.
		Liquica	17,636	Liquica	BPAM	System 1 - Operating gravity system from Goularlua River built in 1996. New spring source 4 km from town developed in January 2000, 2-3 l/s. Two transmission mains, 3" & 4" GI pipe from river, and 3" HDPE from spring. The line from the river bypasses 2 x 240 cum reservoirs, and the line from the spring feeds 2 x 80 m ³ reservoirs. Reticulation is GI pipe with many leaks. Needs: rehabilitation of reservoirs, transmission mains, and reticulation system. Treatment is required to reduce turbidity and disinfection, or a new source developed. (see also AusAID ETWSS report on Water Supply in Liquica, February 1999)
						System 2 - is a failed gravity system from M.A. Metagou River 11.5 km from town. 3" & 2" transmission pipe washed away. Reservoir 60 m ³ in town. GI pipe reticulation not working due to transmission failure. Repairs to transmission and reticulation needed.
		Maubara	6,435			System 1 - Stream-fed gravity system built in 1997 - operational. 5 l/s with two transmission lines, 3-4 km of 3" and 2" GI pipe leading to 72 m ³ reservoir. Reticulation is GI pipe with leakage. Rehabilitation of distribution system in western part of town needed and simple raw water treatment. Or develop new source.
			38,603			System 2 - Stream-fed gravity system- not operational. Built in Portuguese time, 5 l/s with one 3 km x 2" GI pipe transmission line - some parts washed away. GI pipe reticulation not working - 50 families live in area. Transmission line and water source need repair to supply water to east part of town.

No.	District	Sub-District	Population	Town	Former System Type	Current Situation and Needs
11	Manatuto	Barique	5,047			
		Laclo	6,072	Laclo	IKK	
		Laclubar	9,970	Laclubar	IKK	
		Laleia	3,290			
		Manatuto	9,223	Manatuto	BPAM	Gravity system from river - not operational. Flow 15 l/s, but only 7 l/s available for distribution. Transmission 13.7 km, 6" & 4" GI pipe flood damaged and leaking in several places. Reservoir 200 m ³ and 25 m ³ filtration plant. Distribution network is pvc. Rehabilitation of transmission main, construction of infiltration gallery and pump house needed. 461 house connections gave 25% coverage of the 1998 population of 12,214. There are 606 house connections now. (see also TAWSSAM report/working paper on Manatuto water supply dated October 1999; and AusAID ETWSS report on Water Supply in Manatuto, February 1999)
		Soibada	2,955	Soibada	PPSAB	
			36,557			
12	Manufahi	Alas	7,618			
		Fato Berliu	7,122			
		Same	20,381	Same	BPAM	Gravity-fed system from spring source. Population 18,600; previously 23,000. Need tools and spare parts to commence rehabilitation.
		Turiscail	5,604			
			40,725			
13	Viqueque	Lacluta	6,598	Lacluta	IKK	
		Lacluta		Dilor		Spring fed gravity system built in 1987 - operational. No treatment. Transmission line 3" GI pipe to 25 m ³ reservoir. Distribution system GI pipe, leakage. Population 900, 50 house connections. Need equipment, spare parts, and tools to effect repairs.

No.	District	Sub-District	Population	Town	Former System Type	Current Situation and Needs
		Ossu	15,982	Ossu	PPSAB	
		Uato Carbau	6,186	Uato Carbau	PPSAB	
		Uatolari	15,582	Uatolari	IKK	Operational spring-fed gravity system. No treatment. Transmission line 4" GI pipe, 7 km from intake to 72 m ³ reservoir - no leakage. Distribution of GI and pvc pipe, leakage. Population 500, 50 connections, 10 public taps. Need equipment, spare parts, and tools to effect repairs. Capacity of system needs to be reassessed.
		Viqueque	20,559	Viqueque	BPAM	Spring-fed gravity system built in 1998 - operational. No treatment. Transmission line 6" Gi pipe, 11 km from intake to reservoir - no leakage; and 4" GI pipe 3-4 km from reservoir to distribution - leakage. No materials to repair. Reservoir 250 m ³ no leaks. Distribution system GI pipe, leakage. Population 5,000 with 600 connections. 3 workers employed by DA. Need equipment, spare parts, materials, and tools to rehabilitate system. (see also TAWSSAM report/working paper on Viqueque water supply dated October 1999)
			<hr style="width: 50px; margin: 0 auto;"/> 64,907			

Notes:

1. The information in the above table was obtained largely from reports prepared by officers of the Water and Sanitation Authority (WSA) following field inspections from February to April 2000.
2. Data in the table should not be taken other than as a rough guide to the status of the systems. Field checking is mandatory.
3. Field reports of all available water supply study and inspection reports are held by WSA and should be consulted.

**WATER AND SANITATION AUTHORITY
DRAFT STRATEGIC PLAN AND ORGANIZATION STRUCTURE**

A. Strategic Plan

1. UNTAET's Water and Sanitation Authority (WSA) has prepared a draft strategic plan for establishment of a governmental water and sanitation institution for East Timor. Regulations covering various aspects of the WSA operations are gradually being developed and implemented. The guiding policies used in developing the plan are the internationally recognized "Dublin Water Principles," which in simple terms state: Water should be considered a scarce and limited resource; it is a public good, and has an economic value in all its competing uses; it should be managed at the lowest appropriate level in the community.

1. Stakeholders in the WS&S Sector

2. Stakeholders with an interest in water and sanitation in East Timor include all urban and rural communities (customers); future East Timor government institutions: WS&S; Health; Environment; Local Government; etc.; Conselho Nacional Resistencia Timorese (CNRT); UNTAET and its relevant offices; local and international nongovernment organizations (NGOs); international donors; and private sector organizations that will supply and service the sector.

2. Mission Statement and Key Result Areas

3. UNTAET has proposed the following mission statement and identified the following key result areas (KRAs) as the foundation for the draft strategic plan:

Mission Statement: To ensure the communities of East Timor have access to such water and sanitation services as are considered essential for public health, protection of the environment, and promotion of economic growth

4. The following are KRAs. These are areas which, if not managed appropriately by the new W&S institution, will lessen the institution's effectiveness, and diminish its service to customers: Policy and Planning, Water Resources, Public Water Supply, Community Water Supply, Sewage and Wastewater, Urban Drainage, Solid Waste Management.

3. Levels of Service

5. The plan identifies levels of service considered appropriate for each of the KRAs. For public water supplies, for example, service minimum pressure, peak demand level, water quality, and response time (to supply failure) have been defined. For community water supplies, it is proposed that individual communities will determine their own levels of service through a community participatory process involving public health considerations. For sewage, wastewater, and urban drainage, levels of service will be locally determined based on appropriate national regulations.

B. Organization Structure – Service Delivery

11. The location of the current WSA within UNTAET is shown in the attached organization charts. UNTAET's public utilities – water and power – are managed and coordinated by the head of public utilities, a position that sits in the infrastructure portfolio. The various departments under the Cabinet Infrastructure group are public works, energy, water and sanitation, transport and communications, and the National Institute of Cadaster and Geodesy.

12. Table A3.1 outlines the proposed number of civil servants required to adequately staff this organization structure.

Table A3.1: Proposed Staffing

<i>Level (UN)</i>	<i>Category (UN)</i>	<i>Number</i>
5	Senior Administrator	3
4	Administrator / Manager	10
3	Qualified / Professional	35
2	Semi-skilled	91
1	Unskilled	28
Total Staff		167

Source: UNTAET staff estimates.

C. Project Response to Draft Strategic Plan

13. Component 1.2 of the Project includes a reexamination of the draft strategic plan in conjunction with detailed studies of institutional development and capacity building and other key components of the WS&S sector in East Timor. This will be done in a fully participatory way involving all relevant stakeholders. Output from this work will constitute a solid plan for future management, development, and direction of the WS&S sector.

Figure A3.1: EAST TIMOR TRANSITIONAL GOVERNMENT

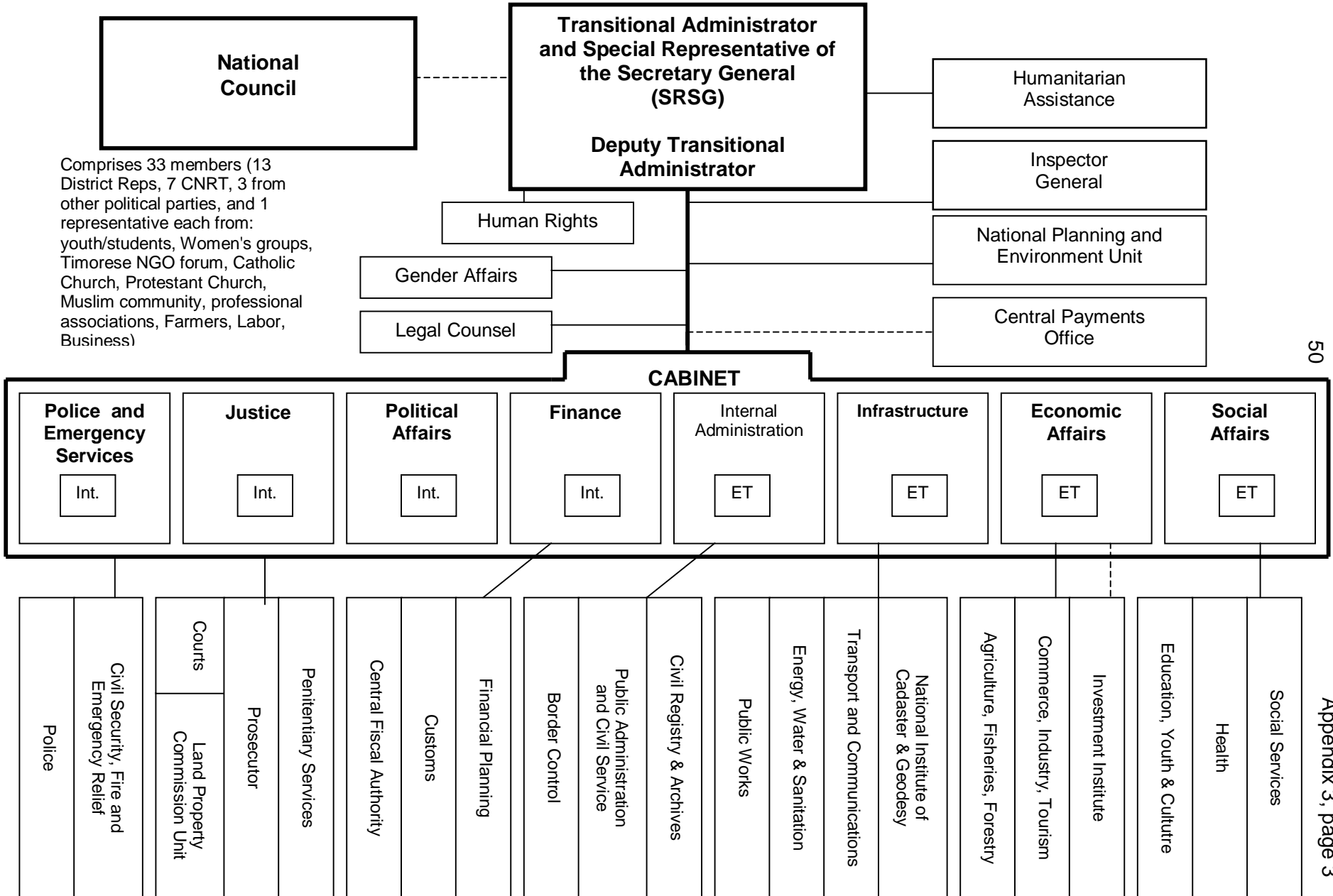
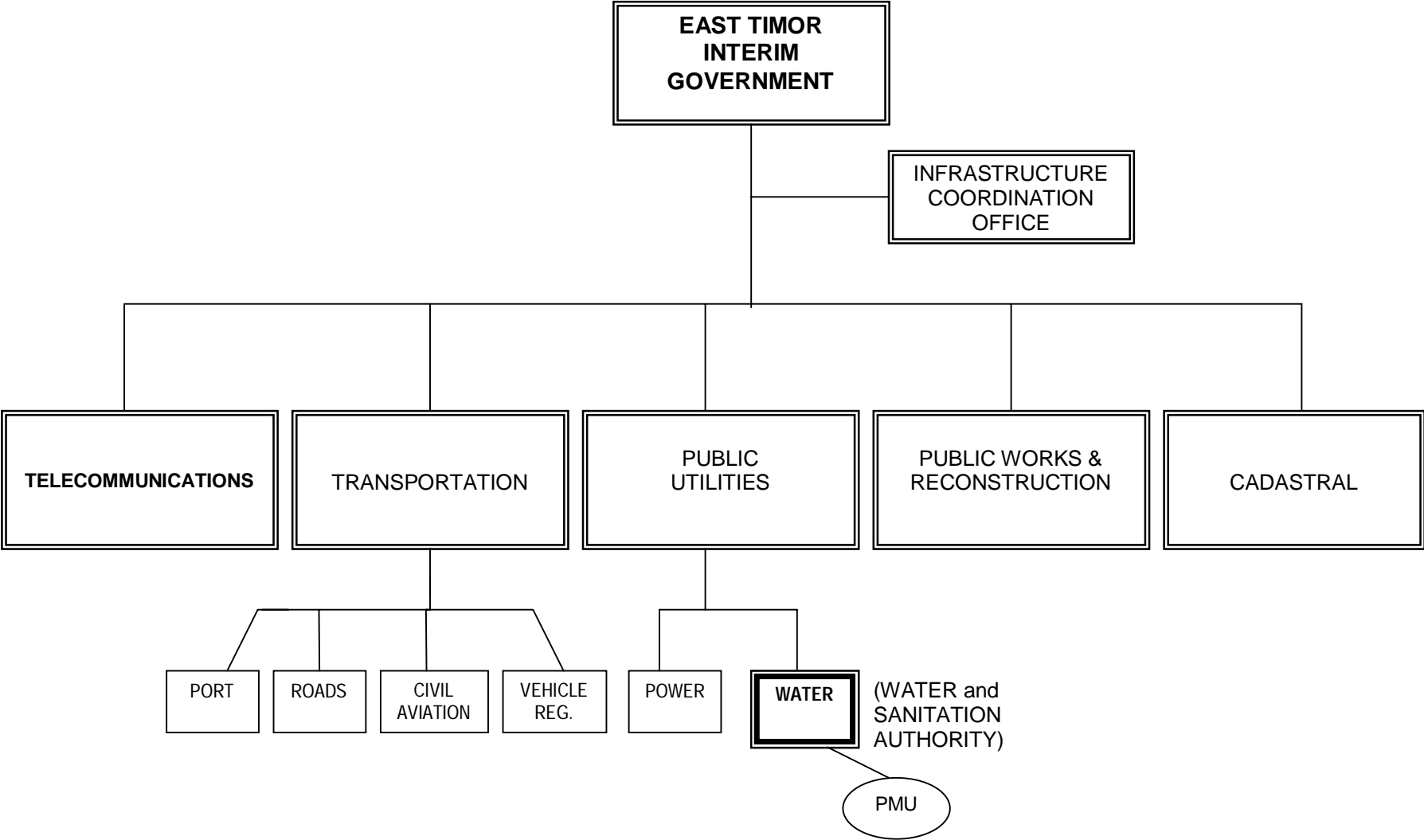


Figure A3.2: INFRASTRUCTURE ORGANIZATIONAL STRUCTURE



**EXTERNAL ASSISTANCE TO THE WATER SUPPLY AND SANITATION SECTOR IN EAST TIMOR
(AS OF MAY 2000)**

Table A4.1: List of Ongoing and Potential Assistance by Agency

Agency	Project	District	Subdistrict	Timing	Activity	Cost	Remarks
World Bank/ ADB/CAA	Water supply						Project proposal being prepared
World Bank/ ADB/AusAID	Urban water supply sector	Dili	Metinaro				Project proposal being prepared
Portugal (UNDP/UNOPS)	Baucau and Aileu water supply and sanitation (WS&S) rehabilitation	1. Baucau 2. Aileu	Baucau and Aileu	Commence May 2000; completed by December 2000	Preparation of plans and implementation of WS&S rehabilitation in Baucau and Aileu towns	US\$1 million	
Portugal (UNDP/UNOPS)	East Timor sanitation and drainage master plan	All districts but main focus on Dili town area		Commence May 2000; completed by December 2000	Preparation of a master plan for sanitation and drainage for East Timor	US\$500,000	Being undertaken by Portugese consultant through UNDP/UNOPS
GTZ	Urban water supply project	1. Viqueque 2. Baucau	i. Dilor ii. Viqueque iii. Ossu i. Venilale ii. Laga	March 2000 for around 2 years	Rehabilitation of gravity flow systems for five towns Baucau town is excluded		In the latter stage of the work, GTZ plans to cover sanitation also (mainly education)
Oxfam International	East Timor - Emergency environmental health program	1. Ambeno 2. Kova-Lima 3. Bobonaro 4. Liquica 5. Dili	i. Oecusse ii. Suai iii. Maliana iv. Liquica v. Dili	15 October 1999 to 15 July 2000	Working on water systems at district level, carrying out assessment at subdistrict level leading to water/sanitation short- term projects	US\$4.107m (indicative) Donors: OXFAM family, individual donors, government agencies (AusAID, DFID, Dutch Government, UN agencies)	Stabilize urban water supply Education, soap, and mosquito nets, toilets Dili: borehole rehabilitation with ICRC

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CAA - Community Aid Abroad

DFID - Department for International Development

GTZ - *Gesellschaft fuer Technische Zusammenarbeit* (Organization for Technical Cooperation)

Agency	Project	District	Subdistrict	Timing	Activity	Cost	Remarks
Timor aid with support from DFID (UK)	Rural water supply		Aileu		Repair generator/pipeline		
East Timor Sanitarian Association (ETSA) with support from UNICEF	Peri-urban and rural areas	Dili peri-urban			Rehabilitation of hand pumps in 7 villages		800 hand pumps installed; plan is for total of 1,000 pumps (cost US\$15/pump)
ACF with support from UNICEF	Town/peri-urban and rural areas	1. Manatuto 2. Ermera		February to September 2000	Urban water supply rehabilitation (Manatuto town completed); peri-urban and rural; hand pumps; dug wells; rainwater harvesting; well protection/rehabilitation	US\$173,681	
ACF with support from UNICEF	Rural water supply and sanitation	1. Baucau 2. Lautem 3. Viqueque 4. Manatuto	28 villages in 12 subdistricts; 39 villages in 13 subdistricts	Until end June 2000 Year 2000-2001	WS&S improvements in schools and households		WS&S project cost to UNICEF \$850,000; according to UNICEF, it is very difficult to implement due to lack of government and management difficulties; ET capacity building is first needed
Christian Children's Fund (CCF) with support from UNICEF	Hand pump installation in outskirts of Dili – for households	Dili	Fatumeta village Fatuhada village		44 hand pumps installed		
FOFMOR	Rural water supply	1. Los Palos 2. Same 3. Ainaro 4. Aileu 5. Oecusse					

Agency	Project	District	Subdistrict	Timing	Activity	Cost	Remarks
Bia Hula (local NGO) supported by AusAID from 1998 to April 2001; budget A\$350,000 over a 2-year period	Rural water supply	1. Dili 2. Bobonaro	i. East Dili ii. West Dili iii. Metinaro iv. Atauro Is i. Atabe ii. Bobonaro iii. Maliana iv. Lolotoe	3 months	Rehabilitation of pipeline Bia Hula has evaluated 8 villages in 4 subdistricts	Proposal to PLAN International for Rp350,000 Proposal to AusAID	Possible link with BAEDEP proposal
Care International	Rehabilitation of shallow wells	Kova-Lima	Fatumean Tilomar Salele Zumalia Fohorem Fatululik Kamanasa	January 2000-	January: survey of 93 wells February: survey of 300 wells Now planning for implementation: pumped out contaminated water; disinfection/protection Distribution of hygiene kits	Less than US\$300,000	Lack of sufficient funds for rehabilitating all pumps Wells contaminated; dead bodies, diesel, chemical contamination (arsenic, batteries, plants) Well water quality testing planned; Care will work together with Bia Hula in Suai
ICRC	Rural water supply	1. Baucau 2. Ermera 3. Aileu 4. Ainaro	33 villages	December 1999 to February 2000	Organize concerned communities for maintenance works of their piped systems; train local caretakers and community workers in pipe repair works; distribute spare parts and tools	US\$45,000	Technical and material assistance to rural communities for repair and maintenance of gravity-fed systems

Agency	Project	District	Subdistrict	Timing	Activity	Cost	Remarks
ICRC	Urban water supply program			November 1999 to February 2000	Restart of Lahane, Bemós, and Benamauk water treatment plants and borehole operations; transmission line repair, and restart of water quality	US\$160,000	
ICRC	Peri-urban water supply	Dili		September 1999 to June 2000	Repair of hand pumps, rehabilitation of community water schemes (tanks, pumps)		
WSA (UNTAET)	East Timor Water Supply	All	All	Operation and maintenance	Developing East Timor WS&S institution	UNTAET budget	Current focus on Dili; expanding to cover all districts
Japan (JICA)	Urgent improvement project for water supply in East Timor	15 district towns	See Table A4.2 below	Complete in December 2000	Asset mapping and water supply master planning in Dili and 14 district towns	US\$2 million Water testing equipment to be donated to UNTAET WSA	Being implemented by Tokyo Engineering Consultants and Pacific Consultants International on behalf of JICA
Japan (JICA)	Urgent improvement project for water supply in East Timor	Dili	Dili town	Complete in December 2000	Quick impact project Demand management and leakage control in Dili	US\$330,000	Being implemented by Tokyo Engineering Consultants and Pacific Consultants International on behalf of JICA
Japan (JICA)	Urgent improvement project for water supply in East Timor	Manatuto	Manatuto town	Complete in December 2000	Quick impact project Construction of infiltration gallery and repairs to transmission main	US\$550,000	Being implemented by Tokyo Engineering Consultants and Pacific Consultants International on behalf of JICA
Japan (JICA)	Urgent improvement project for water supply in East Timor	Various	Various	Complete in December 2000	Quick impact project WS&S improvement in 10 schools	US\$50,000	Being implemented by Tokyo Engineering Consultants and Pacific Consultants International on behalf of JICA

Agency	Project	District	Sub-district	Timing	Activity	Cost	Remarks
Japan (UNDP/UNOPS)	Dili WS&S rehabilitation	Dili	Dili town	Commence June 2000; complete June 2002	Rehabilitation of the Dili water supply system	US\$10 million	Capacity building, institutional development, sanitation, drainage, community development, low income works, and health and hygiene education not included
Japan	14 district towns WS&S rehabilitation project	All	Various	Possible commencement in March 2001	Rehabilitation and development of selected district town water supply systems	US\$12 million	Japan considering investing in this activity in three annual programs, but no commitment to date
AusAID	Institutional and capacity building support to WSA (UNTAET) Financial support to local and international NGOs (see above)			Ongoing	Provision of staff, technical assistance, materials, spares, equipment, and training		Providing support through its Staffing Assistance Program for East Timor and Capacity Building Project for East Timor AusAID has also expressed interest in supporting institutional development, capacity building, environmental health, programs, and district WS&S implementation using the community approach

Agency	Project	District	Sub-district	Timing	Activity	Cost	Remarks
FOFMOR	Rural water supply	1. Los Palos 2. Same 3. Ainaro 4. Aileu 5. Oecusse					
Bia Hula (local NGO) supported by AusAID from 1998 to April 2001; budget A\$350,000 over 2-year period.	Rural water supply	Dili Bobonaro	East Dili West Dili Metinaro Atauro Is Atabe Bobonaro Maliana Lolotoe	3 months	Rehabilitation of pipeline Bia Hula has evaluated 8 villages in 4 sub-districts	Proposal to PLAN International for Rp 350,000 Proposal to AusAID	Possible link with BAEDEP proposal
CARE International	Rehabilitation of shallow wells	Kova-Lima	Fatumean Tilomar Salele Zumalia Fohorem Fatululik Kamanasa	Jan 2000-?	-January: survey of 93 wells -February survey of 300 wells -Now planning for implementation: pumped out contaminated water; disinfection/protection; -Distribution of hygiene kits	Less than \$300,000	Lack of sufficient funds for rehabilitating all pumps Wells contaminated; dead bodies, diesel, chemical contamination, (arsenic, batteries, plants) Well water quality testing planned; CARE will work together with Bia Hula in Suai
ICRC	Rural water supply	1. Baucau 2. Ermera 3. Aileu 4. Ainaro	33 villages	Dec 1999 to Feb 2000	Organize concerned communities for maintenance works of their piped systems; train local caretakers and community workers in pipe repair works; distribute spare parts and tools	\$45,000	Technical and material assistance to rural communities for repair & maintenance of gravity-fed systems.

Agency	Project	District	Sub-district	Timing	Activity	Cost	Remarks
ICRC	Urban water supply program	Dili		Nov 1999 to Feb 2000	Re-start of Lahane, Bemós and Benamauk water treatment plants and borehole operations; transmission line repair, and re-start of water quality monitoring, financial and logistical support to PDAM	\$160,000	Highest impact on daily life of Dili's returning population
ICRC	Peri-urban water supply			Sep 1999 to June 2000	Repair of hand pumps, rehabilitation of community water schemes (tanks, pumps)	\$25,000	
WSA (UNTAET)	East Timor Water Supply	All	All	Operation and Maintenance	Developing East Timor W&S Institution	UNTAET Budget	Current focus on Dili; expanding to cover all Districts
Japan (JICA)	Urgent Improvement Project for Water Supply in East Timor	15 District Towns	See Table 2 below	Complete in December 2000	Asset Mapping and Water Supply Master Planning in Dili and 14 district towns	\$2 million. Water testing equipment to be donated to UNTAET WSA	Being implemented by Tokyo Engineering Consultants & Pacific Consultants International on behalf of JICA
Japan (JICA)	Urgent Improvement Project for Water Supply in East Timor	Dili	Dili Town	Complete in December 2000	Quick Impact Project Demand management and leakage control in Dili	\$330,000	Being implemented by Tokyo Engineering Consultants & Pacific Consultants International on behalf of JICA
Japan (JICA)	Urgent Improvement Project for Water Supply in East Timor	Manatuto	Manatuto Town	Complete in December 2000	Quick Impact Project Construction of infiltration gallery and repairs to transmission main	\$550,000	Being implemented by Tokyo Engineering Consultants & Pacific Consultants International on behalf of JICA

Agency	Project	District	Sub-district	Timing	Activity	Cost	Remarks
Japan (JICA)	Urgent Improvement Project for Water Supply in East Timor	Various	Various	Complete in December 2000	Quick Impact Project Water supply & sanitation improvement in 10 schools	\$50,000	Being implemented by Tokyo Engineering Consultants & Pacific Consultants International on behalf of JICA
Japan (UNDP/UNOPS)	Dili Water Supply & Sanitation Rehabilitation	Dili	Dili Town	Commence June 2000; complete June 2002	Rehabilitation and development of the Dili water supply system	\$10 million	Capacity building, institutional development, sanitation, drainage, community development, low income works and health & hygiene education not included To be carried out by Japanese consultant under UNDP/UNOPS direction
Japan	14 District Towns Water Supply and Sanitation Rehabilitation Project	All	Various	Possible commence March 2001	Rehabilitation and development of selected district town water supply systems	\$12 million	Japan considering investing in this activity in three annual programs, but no commitment to date.
AusAID	Institutional and capacity building support to WSA (UNTAET); Also financial support to local and international NGOs (see above)			Ongoing	Provision of staff, tech. assistance, material, spares, equipment, training, and		Providing support through its SAPET and CAPET Programs. AusAID has also expressed interest in supporting institutional development, capacity building, environmental health, programs and district WS&S implementation using the community approach.

Notes:

1. Much of the information in the above table was drawn from the March 2000 report for JICA entitled The Study on Urgent Improvement Project for Water Supply System in East Timor prepared by Tokyo Engineering Consultants and Pacific Consultants International.
2. By 3 April 2000, a number of NGOs were providing humanitarian assistance in the water and sanitation sector in East Timor: see Table A4.2 below.

Table A4.2: List of 15 Towns Being Studied Under Current Japanese and Portuguese Master Planning Projects (Project Components 3.3 and 3.1)

Town^a	District	Donor
Dili ^b	Dili	Japan
Atauro	Dili	Japan
Manatuto ^c	Manatuto	Japan
Baucau ^c	Baucau	Japan + Portugal
Los Palos ^c	Lautem	Japan
Viqueque ^c	Viqueque	Japan
Same ^c	Manufahi	Japan
Ainaro ^c	Ainaro	Japan
Aileu ^c	Aileu	Japan + Portugal
Maubisse	Ainaro	Japan
Gleno ^c	Ermera	Japan
Ermera	Ermera	Japan
Liquica ^c	Liquica	Japan
Suai ^c	Kova-Lima	Japan
Maliana ^c	Bobonaro	Japan

^a Dili water supply rehabilitation to be funded by Japan commencing in June 2000. Repairs to Baucau & Aileu water supplies funded by Portugal commenced in May 2000. Repair & rehabilitation of several other town water supplies and sanitation will commence in 2000/01 under bilateral funding – details yet to be determined.

^b Dili – former PDAM

^c Former BPAMs + Oecusse

Table A4.3: List of All Thirteen Districts of East Timor

Aileu	Dili	Manatuto
Ainaro	Ermera	Manufahi
Ambeno (Oecusse)	Kova-Lima	Viqueque
Baucau	Lautem	
Bobonaro	Liquica	

Note: Selected districts will be included in the proposed community-based District WS&S Program under Project Component 3.3.

Table A4.4: Towns with Former IKK Water Supply Systems

District	IKK Water Supply
Baucau	Laga, Vemasse, Venilale
Ainaro	Maubisse
Bobonaro	Cailaco
Kova-Lima	Selele Village, Tilomar Subdistrict
Dili	Metinaro
Ermera	Railaco, Hatolia, Atsabe
Lautem	Com
Manatuto	Laclubar, Lacro
Viqueque	Lacluta, Uatolari

Note: These towns had former IKK water supply systems. They were managed, operated, and repaired by the respective district PDAM or BPAM.

Table A4.5: NGOs and UN Agencies Involved in WS&S Sector
Humanitarian Assistance to East Timor
(as of 3 April 2000)

District	NGO
Aileu	ICRC, Forte, Bia Hula, Portugal, JICA
Ainaro	ICRC, Bia Hula, CARE, Forte, JICA
Ambeno (Oecusse)	OXFAM; PKF, CARE
Baucau	Forte, JICA, Portugal, SBSR
Bobonaro	UNICEF, JRS, Bia Hula, ICRC, OXFAM, JICA,
Dili	OXFAM, UNICEF, CCF, ICRC, Bia Hula, SBSR, JICA, PKF, Forte
Ermera	ACF, ICRC, Bia Hula, Forte, JICA,
Kova-Lima	UNICEF, CONCERN, OXFAM, CARE, Bia Hula, ICRC, PKF, JICA
Lautem	UNICEF, SBSR, JICA,, ICRC, HTO, Forte
Liquica	OXFAM, ICRC, JICA, Forte
Manatuto	ACF, ICRC, JICA, SBSR
Manufahi	ISRC, JICA, Forte
Viqueque	UNICEF, Forte, GTZ, HTO, SBSR, ICRC, JICA

Note: See WATSAN Coordinating Meeting minutes for up-to-date agency involvement in WS&S sector (available from WSA).

DETAILED COST ESTIMATES
(US\$ million)

Description	Cost
A. Base Costs	
1. Water Supply and Sanitation (WS&S) Sector Management and Investment Program	
Project Management Unit	0.222
Program Implementation Document preparation	0.411
Subtotal 1	0.633
2. Capacity Building & Institutional Development Program	
Building repairs and fit-out (workshops, stores, generator bldg)	0.256
Replacement tools, equipment and materials	0.200
Replacement of information technology and communications equipment	0.100
Subtotal 2	0.556
3. WS&S Implementation Program	
3.1 Water and Sanitation Authority WS&S	
Quick Response facility	
Small local contracts, plant hire and cartage	0.630
Procurement of pipes, fittings and materials	0.652
Subtotal 3.1	1.282
3.2 Dili Water Supply Repair & Rehabilitation Program	
Small local contracts, plant hire and cartage	0.123
Procurement of pipes, fittings and materials	0.252
Construction contracts, e.g., deepwell drilling	0.480
Subtotal 3.2	0.855
3.3 District Water Supply Repair & Rehabilitation	
Small local contracts, plant hire and cartage	0.120
Procurement of pipes, fittings and materials	0.120
Non government organizations service contracts	0.280
Subtotal 3.3	0.520
Subtotal A	3.846
B. Contingencies	
1. Physical Contingency	0.562
2. Price Contingency	0.092
Subtotal B	0.654
TOTAL	4.500

Note: Physical (14.6 percent) and price (2.4 percent) contingencies are included to reflect base costs' high degree of uncertainty due to the prevailing operating conditions in East Timor (e.g. introduction of a new legislation, taxation, absence of insurance cover, private sector premiums).

OUTLINE TERMS OF REFERENCE FOR SUPPORT TO THE EAST TIMOR WATER SUPPLY AND SANITATION REHABILITATION PROJECT

A. Project Management Unit

1. A project management unit (PMU) will be established within the UNTAET's Water and Sanitation Authority (WSA). It will manage, administer, monitor and undertake ongoing evaluation of the range of water supply, sanitation, and related project activities proposed. It will also assist WSA in its sectoral coordination and monitoring roles, and cooperate with other water supply and sanitation (WS&S) projects and activities funded by bilateral and multilateral donors.

2. The PMU will implement the Project and will be led by an East Timorese project manager (WS&S engineer), plus an East Timorese project accountant and a community development specialist. Their selection will be subject to Asian Development Bank (ADB)'s approval. International consulting services are required to support project implementation and to strengthen the PMU. Two individually appointed international consultants will provide these services through the positions of chief technical adviser (CTA) and community development specialist. The CTA will assume responsibility for project implementation and reporting to ADB, project funds, and the Project's imprest account.

3. The PMU will report to UNTAET's Infrastructure cabinet member, through the head of public utilities via the head of the WSA. Project monitoring will be strengthened by a steering committee comprising senior representatives of project stakeholder organizations in both the public and private sectors. WSA will establish the steering committee in conjunction with the Infrastructure Coordination Office. WSA staff in each district will collaborate with the PMU to monitor project activities, outputs, and outcomes in their respective district.

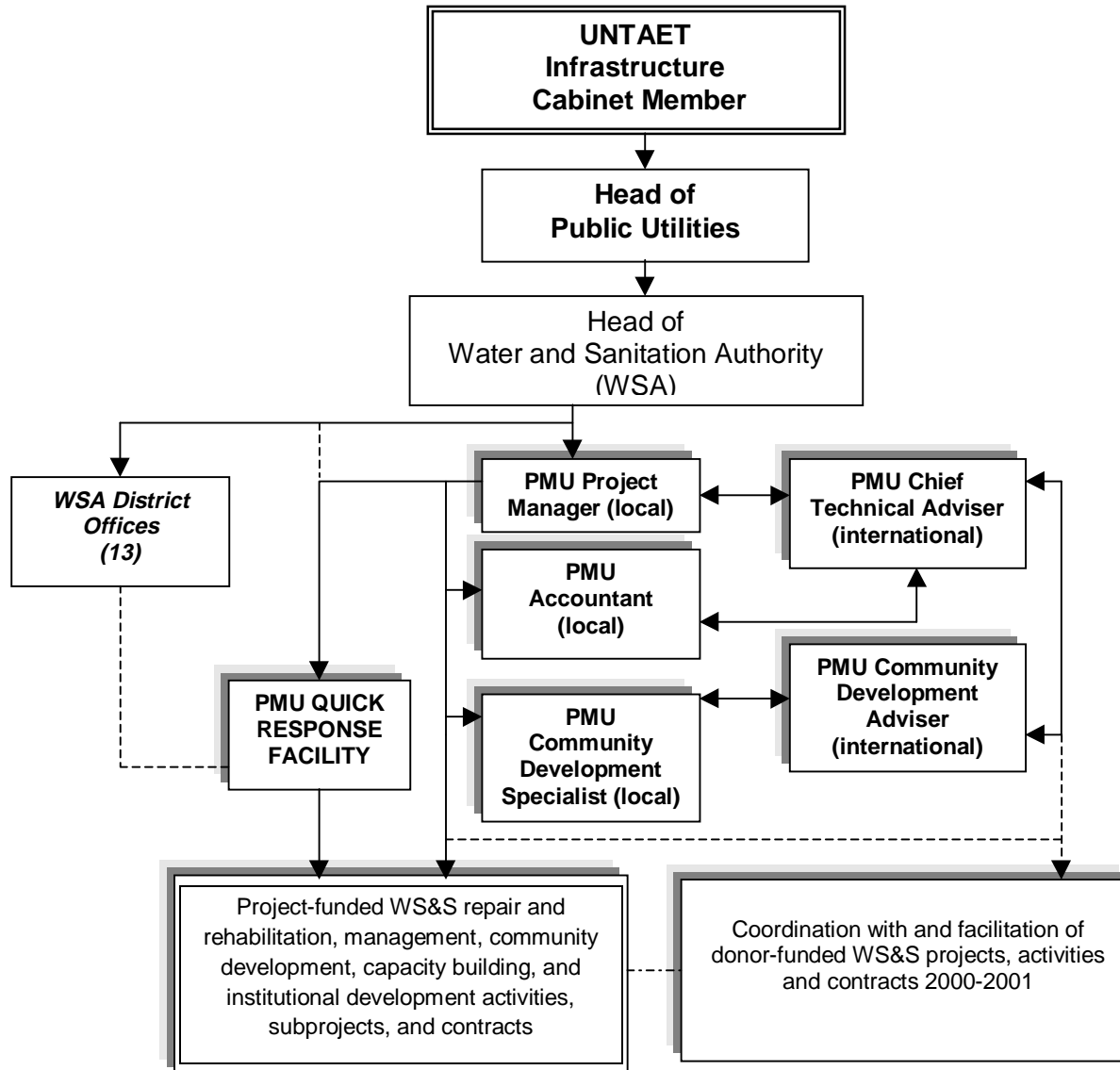
4. The PMU will prepare terms of reference for, engage, and manage the East Timorese staff under the PMU; provide terms of reference for design, procurement, construction, and supervision contracts, conduct tender process; manage project disbursements; report on all project activities to ADB and UNTAET; and be responsible (albeit not exclusively) for the following:

- (i) Ensure that the Project is implemented in accordance with ADB guidelines, these terms of reference, and the laws of East Timor and UNTAET regulations, exercising efficient, effective, and economic implementation methodologies.
- (ii) Repair, rehabilitate, manage, and coordinate WS&S in East Timor in accordance with the program implementation document (PID) to distribute project benefits in an equitable manner across East Timorese urban and rural communities, be responsive to communities' needs, contribute to sustainable development and operation in the WS&S sector, reduce poverty, and minimize environmental impacts.
- (iii) Open a project imprest account to facilitate disbursement of project funds in accordance with ADB *Guidelines on Disbursement*.

- (iv) Identify and engage appropriately qualified local staff for the Project (para. 2).
- (v) Administer the preparation of tender documents and conduct the tender process for all contracts for civil works; procurement of equipment and materials; and consulting (including non government organization (NGO)) services under the Project, in accordance with ADB *Guidelines for Procurement*. The PMU will administer, implement, and monitor international and local contracts for civil works, procurement, and consultant services under the Project.
- (vi) Monitor and administer the work under international and local contractors with budgets set by the PMU and account for the cash receipts available from the Trust Fund for East Timor (TFET). The PMU will manage the disbursement application process in accordance with ADB's disbursement guidelines.

5. The PMU will implement the Project in accordance with ADB's relevant guidelines. It will coordinate with WSA and donors implementing projects and activities in the WS&S sector. The PMU organization chart is shown in Figure A6.1.

Figure A6.1 PROJECT MANAGEMENT UNIT ORGANIZATION CHART



B. PMU Project Implementation and Advisory Consulting Services

6. International consulting services are required to support project implementation and to strengthen the PMU. Two consultants (see para. 2 above) will provide these services. Together, they will (i) assume overall responsibility for project implementation in accordance with ADB's guidelines and reporting requirements; (ii) facilitate procurement of equipment, works, and services as specified under the Project and evaluate, select, and award any contracts for repair and rehabilitation works, community development, institutional development, capacity building, and other WS&S related services; (iii) undertake design and documentation as needed to prepare contracts; (iv) supervise implementation of works under these contracts; (v) train, advise, and assist East Timorese PMU and WSA staff in their tasks; (vi) facilitate implementation of operational issues and establishment of effective sector management and operations; and (vii) liaise closely with all donors working in the sector and key stakeholders to ensure optimum coordination and integration of WS&S activities.

7. These services include on-the-job training for counterpart staff in project design and management; WS&S design; basic asset management; maintenance scheduling; contract management, including the tender process, bid evaluation, contract administration, formulation of community employment programs, contract supervision, and quality control; performance monitoring; and financial management. They also cover training in community development, capacity building, institutional development, and environmental health issues.

8. Twenty person-months of consulting services are required in project management, water supply and sanitation, cost estimation, contract documentation and management, quality control, work measurement and reporting, asset inventory and condition assessment, and community and environmental health development. The terms of reference and activities of the PMU will be fully coordinated with those of WSA, and strong linkages will be developed between them and bilateral and multilateral donors working in the sector. The PMU will implement the recommendations adopted by WSA to establish sustainable sector management systems and operations.

C. PMU Scope of Work

9. Support to the office of the project manager will include

- (i) assisting and advising on establishing the PMU and implementing its operating procedures;
- (ii) ensuring that the Project and its components are at all times implemented by the PMU in accordance with the relevant ADB guidelines
- (iii) assisting and advising on the preparation of subproject design and documentation for local competitive bidding contracts and the preparation of international competitive bidding documentation, if applicable;
- (iv) assisting and advising on civil works tender evaluation and contract award, and monitor application of ADB's *Guidelines on Procurement*, including drafting appropriate and timely advertisements for the appointment of contractors and the procurement of equipment and materials, technical evaluation, and contract negotiation and award;

- (v) supervising and ensuring proper supervision of all contracts awarded under the Project;
- (vi) assuming responsibility for transactions and activities under, and providing advice on the administration of, project trust accounts;
- (vii) in conjunction with the project accountant, overseeing and monitoring project activities, including contractors, consultants, and counterpart staff;
- (viii) assisting and advising WSA on establishing maintenance planning and implementation procedures;
- (ix) together with the head of WSA and the UNTAET head of Public Utilities, liaising with the project steering committee;
- (x) assisting the project manager and staff to carry out designs, and tender and administer the contracts necessary to implement annual WS&S programs; and
- (xi) keeping records on all expenditures under the Project.

D. PMU Individual Terms of Reference

1. Chief Technical Adviser

10. The duties of the chief technical adviser will include the following:
- (i) take responsibility for project implementation and reporting to ADB in accordance with relevant ADB guidelines.
 - (ii) support the project manager and the head of WSA in all matters relating to the Project.
 - (iii) provide management and leadership to the PMU and the team specialist advisers and counterparts, and prepare terms of reference of PMU staff including counterpart qualifications and tasks, and review terms of reference for international consultants.
 - (iv) facilitate coordination and cooperation between the Project and all bilateral and multilateral agencies contributing, or wishing to contribute, to WS&S rehabilitation, development, and management programs.
 - (v) support and advise the WSA.
 - (vi) help to identify and implement subprojects in the WS&S sector.
 - (vii) assist with management and superintendence of all subprojects executed by local competitive bidding.

- (viii) help evaluate and make recommendations for the award of all contracts carried out under the Project.
- (ix) approve and certify all payments due to contractors appointed under the Project.
- (x) assist the PMU to comply with all preconditions relating to the use of relevant ADB guidelines.
- (xi) prepare all documentation required by ADB for the Project; train the project manager in this task; prepare project budgets, implementation schedules, and their periodic updates; and prepare quarterly payments and disbursement requirement forecasts.
- (xii) assist the project manager with all duties and responsibilities, which will include monitoring, advising and assisting the community development specialist and projects accountant on all their duties.
- (xiii) ensure preparation and implementation of environmental mitigation action plans, and train counterparts accordingly.

2. Community Development Adviser

11. The community development adviser will train and assist the project manager and community development specialist in all community development, gender, and environmental health aspects of the Project. In particular, the scope of tasks will include the following:

- (i) assist the CTA with all community, gender, and health-related tasks integral to project administration and implementation. These will include urban and rural community mobilization and participation, capacity building, environmental health promotion, liaison with local and international NGOs, and NGO development.
- (ii) support the community development specialist and WSA in all community, gender, and environmental health matters relating to the Project, including assisting with developing programs for community awareness of environmental health and water conservation practices.
- (iii) help develop and implement appropriate and sustainable community development approaches within the water and sanitation sector under the Project and its components.
- (iv) ensure that all community, gender, and environmental health-related project financial records are accurate, complete, and up-to-date at all times.
- (v) help evaluate contract tenders, including community development and environmental health activities, and contribute to the preparation of tender evaluation reports.

- (vi) assist with the community aspects of consulting and construction tendering processes, ensuring that ADB's procurement guidelines are implemented.
- (vii) help to process payments on Project components that include community, gender, and environmental health-related activities, as required under the disbursement guidelines of ADB.

E. PMU Reporting

12. The consultants will support the PMU and WSA with the reporting requirements including the following:

- (i) A brief inception report will be submitted within four weeks of the start of the Project. It will outline, in accordance with the terms of reference, the consultants approach, methodology, and work plan, as well as cost implications for consulting services. The report will provide a bar chart of all activities under the Project.
- (ii) Within two months of mobilization, the PMU will prepare a project risk matrix report. This will clarify the potential project risks, assess the possible damage these risks could do, propose strategies to remove or ameliorate the risks, and nominate those responsible for managing the various risks. The risk matrix will be an integral part of project monitoring and ongoing evaluation, with updated results being presented to the steering committee on a regular basis.
- (iii) Within three months of mobilization, the PMU will prepare a report setting down a system for Project performance management and evaluation, in accordance with ADB guidelines. Project performance management and evaluation will be conducted by the PMU in association with WSA, using inputs from managing agents of donor-funded projects, NGOs, community organizations, and other related stakeholders. Apart from regular review reports, the PMU will produce special performance reports for the midterm review and the final report.
- (iv) Brief quarterly progress reports will inform UNTAET and ADB of achievements under the Project. They will identify any emerging difficulties in project implementation, and outline proposed solutions. The reports will provide, in clear graphical presentations, the status of project progress and performance, and plans for the next months' work, including budgets, and quarterly disbursement and payment forecasts provided a month prior to the commencement of the following quarter. The PMU will also include and provide, in consultation with UNTAET, the WSA recurrent resources for the WS&S sector including activities and expenditures, implementation of donor support, and progress in implementing WS&S policy initiatives, regulations, and organizational changes. These reports will adopt a uniform format facilitating project monitoring.
- (v) The PMU will contribute to the review report to be undertaken 12 months after mobilization. The focus of the review is to determine the need for any deviations from the project design or implementation.

- (vi) The draft final report, to be submitted no later than one month prior to completion of the Project, will summarize all project activities and recommendations; and will outline continuing training programs, programs for establishment, implementation, and strengthening of the relevant institutions, and recommendations for future support.
- (vii) The final report will be submitted by the consultants after receipt of the comments on the draft final report from ADB immediately prior to completion of the Project.

F. Terms of Reference for International Consulting Team for Project Component 1: Preparation of the Program Implementation Document

1. Team Composition, Timing, and Output

13. The eight-person design team will comprise the following international consultants: Team leader (WS&S planner and project design specialist), Institutional development and capacity building specialist, Community development and health promotion specialist, WS&S technologist, Economist and financial analyst, Management and financial information systems specialist, Legal adviser, and Water resources specialist.

14. The team will be based in Dili but undertake travel to other parts of East Timor as required. The team leader will mobilize early in September 2000 with other members following. Individual assignments vary from three months to one month. The work will be completed by early December 2000.

15. The output from the work will be the preparation of a PID, which will set down detailed project design and implementation procedures for the three-year project period 2000-2003. The PID and sector framework will be developed from, and integrate, the results and recommendations from the following series of plans and reports to be prepared by the team members: WS&S sector strategy, WS&S rehabilitation and development plan, institutional development plan, asset management plan, human resources plan, tariff strategy and plan, draft WS&S standards, water resources needs assessment, management information systems/financial information systems recommendations and plan, community and gender development plan, health promotion and education plan, legal issues - report with recommendations and action plan, transition plan (to East Timorese self-government), East Timor WS&S sector management and investment framework, and the PID.

2. Team Leader – WS&S Planner & Project Design Specialist (3 person-months: 1 September to 4 December 2000)

16. The team leader will have overall responsibility for the conduct of Project Component 1.2, and the timeliness and quality of all team reports. Specifically the team leader will (i) report to ADB and the PMU project manager, and liaise closely with the head of WSA, National Council (NC), donors, and other relevant stakeholders during the course of the assignment; (ii) using a participative approach, prepare a WS&S sector strategy, building on earlier work by WSA; (iii) in conjunction with other team members and WSA, prepare plans for water supply rehabilitation and development, asset management, and the transition plan; (iv) coordinate and assist other team members with preparation of their allocated reports; and (v) lead the

preparation of East Timor WS&S sector management and investment framework and PID reports. The team leader will also work with the PMU to arrange the logistical and administrative support for the team, including accommodation, transport, field visits, meetings and workshops, report preparation, and counterpart assistance. In developing the framework, the PID, and the transition plan, the team leader will be guided by ADB's *Draft East Timor Strategic Framework for Rehabilitation, Development and Management of the Water and Sanitation Sector – 2000 to 2003*¹ and other related documentation.

3. Institutional Development and Capacity Building Specialist

(2.5 person-months: 12 September to 25 November 2000)

17. The institutional development and capacity-building specialist will contribute to project design by preparing quality reports and plans on a timely basis, and by coordinating and cooperating with other team members and relevant stakeholders. Specifically the institutional development and capacity-building specialist will (i) report to the team leader and liaise closely with the PMU, WSA, NC, donors, and other relevant stakeholders during the course of the assignment; (ii) using a participative approach, carry out a needs analysis and prepare plans for institutional and human resources development that set the foundation for sustainable management, operation, and maintenance of WS&S in East Timor, and that build on earlier work by WSA; (iii) cooperate with other team members in preparing their allocated reports; and (iv) contribute to preparation of the East Timor WS&S sector management and investment framework, the PID, and the transition plan. In doing this work, the specialist will undertake field visits, attend meetings, hold workshops, and liaise with stakeholders as needed and agreed with the team leader.

4. Community Development and Health Promotion Specialist

(2.5 person-months: 12 September to 25 November 2000)

18. The community development and health promotion specialist will contribute to project design by preparing quality reports and plans on a timely basis, and coordinating and cooperating with other team members and relevant stakeholders. Specifically the community development and health education specialist will (i) report to the team leader and liaise closely with the PMU, WSA, NC, donors, and other relevant stakeholders during the course of the assignment; (ii) using a participative approach, carry out a needs analysis and prepare plans for community and gender development and health promotion and education, which set the community foundation for sustainable management, operation, and maintenance of WS&S in East Timor, (iii) cooperate with other team members in preparing their allocated reports; and (iv) contribute to the preparation of the East Timor WS&S sector management and investment framework, the PID, and the transition plan. In doing this work, the specialist will undertake field visits, attend meetings, hold workshops, and liaise with stakeholders as needed and agreed with the team leader.

5. WS&S Technologist

(2.5 person-months: 12 September to 25 November 2000)

19. The WS&S technologist will contribute to project design by preparing quality reports and plans on a timely basis, and by coordinating and cooperating with other team members and relevant stakeholders. Specifically the WS&S technologist will (i) report to the team leader and

¹ ADB, May 2000.

liaise closely with the PMU, WSA, NC, donors, and other relevant stakeholders during the course of the assignment; (ii) examine the range of current and potential water supply and sanitation technologies appropriate for East Timor, evaluate their applicability, and prepare a report with recommendations with a focus on sustainability; (iii) assist the team leader in preparation of the WS&S rehabilitation and development plan and the asset management plan; (iv) prepare a set of draft WS&S standards for East Timor in cooperation with WSA taking into account appropriate levels of service needed for public health, and to support environmental protection and economic growth ; (v) cooperate with other team members in preparing their allocated reports; and (vi) contribute to the preparation of the East Timor WS&S sector management and investment framework, the PID, and the transition plan. In doing this work, the consultant will undertake field visits, attend meetings, hold workshops, and liaise with stakeholders as needed and agreed with the team leader

6. Economist and Financial Analyst

(2 person-months: 27 September to 25 November 2000)

20. The economist-financial analyst will contribute to project design by preparing quality reports and plans on a timely basis, and by coordinating and cooperating with other team members and relevant stakeholders. Specifically the economist-financial analyst will (i) report to the team leader and liaise closely with the PMU, WSA, NC, donors, and other relevant stakeholders during the course of the assignment; (ii) using a participative approach, carry out a needs analysis, identify the key financial and economic issues with water supply and sanitation in East Timor, and prepare necessary reports including a tariff strategy and plan that sets the financial and economic foundation for sustainable management, operation, and maintenance of WS&S in East Timor; (iii) cooperate with other team members in preparing their allocated reports; and (iv) contribute to the preparation of the East Timor WS&S sector management and investment framework, the PID, and the transition plan. In doing this work, the specialist will undertake field visits, attend meetings, hold workshops, and liaise with stakeholders as needed and agreed with the team leader. It is important that the consultant address the issues of tariffs, cost recovery, and sustainability in consultation with senior UNTAET and NC representatives to develop appropriate and acceptable strategies for input to the PID and transition plan. In particular, the issue of institutional versus community management of water supplies must be examined from the viewpoint of recurrent cost financing and sustainability.

7. Management and Financial Information Systems Specialist

(2 person-months: 27 September to 25 November 2000)

21. The management-financial information systems specialist will contribute to project design by preparing quality reports and plans on a timely basis, and by coordinating and cooperating with other team members and relevant stakeholders. Specifically the management-financial information systems specialist will (i) report to the team leader and liaise closely with the PMU, WSA, NC, donors, and other relevant stakeholders during the course of the assignment; (ii) carry out a needs analysis, identify the key management and financial information systems issues with water supply and sanitation in East Timor, and prepare necessary reports including a statement of user requirements and financial and management information systems recommendations and plan; (iii) cooperate with other team members in preparing their allocated reports; and (iv) contribute to the preparation of the East Timor WS&S sector management and investment framework, the PID, and the transition plan. As part of the

assessment, the specialist will investigate and assess the availability and cost of proprietary, computer-based financial and management information systems which may be appropriate for the East Timorese environment. In carrying out this assignment, the specialist will undertake field visits, attend meetings, hold workshops, and liaise with stakeholders as needed and agreed with the team leader. The consultant will address the issues of management and financial information systems in consultation with senior UNTAET administration and budget personnel to ensure that systems introduced are appropriate and compatible with other areas of the administration. The specialist will, in particular, work in close cooperation with the institutional development and capacity building specialist.

8. Legal Adviser

(2 person-months: 27 September to 25 November 2000)

22. The legal adviser will contribute to project design by preparing quality reports and plans on a timely basis, and by coordinating and cooperating with other team members and relevant stakeholders. Specifically the legal adviser will (i) report to the team leader and liaise closely with the PMU, WSA, NC, donors, and other relevant stakeholders during the course of the assignment; (ii) examine the range of current and potential legal issues related to the construction, operation, maintenance, and management of WS&S systems in East Timor, including water resources (surface and groundwater) and rights of access, riparian rights, human rights, land acquisition, pollution by solid and liquid wastes, environmental protection, and other identified legal issues; (iii) evaluate the impact of these issues and make recommendations on appropriate approaches to reconciling the issues in the local context, and prepare an appropriate report with recommendations and an action plan; (iv) cooperate with other team members in preparing their allocated reports; and (v) contribute to the preparation of the East Timor WS&S sector management and investment framework, the PID, and the transition plan. In carrying out this work, the consultant will undertake field visits, attend meetings, hold workshops, and liaise with stakeholders as needed and agreed with the team leader. The consultant will address the legal issues in consultation with senior UNTAET administration and legal personnel to ensure that recommendations made are compatible with other areas of the administration.

8. Water Resources Specialist

(1 person-month: 27 September to 26 October 2000)

23. The water resources specialist will contribute to project design by preparing quality reports and plans on a timely basis, and by coordinating and cooperating with other team members and relevant stakeholders. Specifically the water resources specialist will (i) report to the team leader and liaise closely with the PMU, WSA, NC, donors, and other relevant stakeholders during the course of the assignment; (ii) make a broad assessment of the water resources of East Timor (surface and groundwater), bringing together available data and compiling a comprehensive report, including details of climate, rainfall, topography, and geology; (iii) compile the range of current surface and groundwater usage in East Timor, including domestic water supplies, irrigation, industrial supplies, springs, bores, wells, dams, weirs, and others, and relate these to available sources; (iv) relate water availability to water use, and identify problematic issues for future water resources development (including data availability and reliability) particularly as they relate to urban and rural domestic water supplies; prepare a report on future water resources needs in East Timor, covering institutional, human resources, availability, and constraints, and provide recommendations for future action;

(v) cooperate with other team members in preparing their allocated reports; and (vi) contribute to preparation of the East Timor WS&S sector management and investment framework, the PID, and the transition plan. In carrying out this work, the consultant will undertake field visits, attend meetings, hold workshops, and liaise with stakeholders as needed and agreed with the team leader.

G. Lessons Learned

24. A range of lessons learned in designing and implementing water supply and sanitation programs have been identified in the draft strategic framework document. The team should familiarize themselves with these issues and take them into account when designing the PID and sector management and investment plan.

H. Reporting

25. All individual consultants will submit their final reports to the team leader prior to completing their assignments and leaving Dili. The team leader will submit the draft water supply sector management and investment framework and PID reports, together with all supporting reports and plans, to ADB and UNTAET prior to completing work and departing Dili.

PROJECT IMPLEMENTATION SCHEDULE
East Timor Water Supply and Sanitation Repair and Rehabilitation

Task Name	2000												2001											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Preparatory Work																								
WSA Planning, Identifying Prospective Consultants, Preparation of Specifications, Etc.																								
Project																								
Component 1 - WSS Sector Management and Investment Program																								
1.1 Establish Project Mgt. Unit																								
1.2 Prepare Sector Program (PID)																								
Component 2 - Capacity Building and Institutional Development Program																								
2.1 Implementation as Required to Support Physical Works																								
Component 3 - Water Supply and Sanitation Implementation Program																								
3.1 WSS Quick Response Facility to Respond to Urgent Needs																								
3.2 Dili Water Supply Repair and Rehabilitation																								
3.3 District WSS Repair and Rehabilitation																								

SUMMARY INITIAL ENVIRONMENTAL EXAMINATION

A. Introduction

1. A summary initial environmental examination (SIEE) of the East Timor Water Supply and Sanitation Rehabilitation Project was carried out as part of the Asian Development Bank (ADB)-led Sector Fact-Finding Mission. The SIEE was prepared in accordance with ADB's *Environmental Guidelines for Selected Infrastructure Projects and its Environmental Assessment Requirements*. The SIEE reviewed all components of the Project to identify potential sources of environmental impacts. The Project's environmental impact is classified as category B: its potential impacts could be mitigated using established procedures.

B. Project Description

1. Rationale

2. In September 1999, East Timor experienced a campaign of destruction and terror over which three quarters of the population fled their homes and most of the country's infrastructure and private homes were destroyed. The widespread destruction included looting, burning, and damage to town and village water supplies and sanitation facilities throughout the country. Typically in towns with public water supply systems, vehicles, pumps, and motors were removed; water treatment plants damaged; offices, stores and other buildings burned; pipelines, tools and spare parts stolen; storage tanks ruptured; latrines and septic tanks damaged; and water sources impaired. And in the burning of houses, water connections, including meters, were completely destroyed. None of the former water supply or sanitation institutions now exist. Therefore it is essential to support physical repair and rehabilitation; and develop new institutions and systems for managing, operating, maintaining, and developing urban and rural water supplies in East Timor that are both appropriate and sustainable.

2. Objectives

3. The Project's goal is to provide the people of East Timor with adequate, affordable, and sustainable water supply and sanitation (WS&S) services using appropriate technology and good management systems. It will do this by (i) building local capacity to effectively manage the WS&S sector; (ii) rehabilitating and reconstructing water supply and sanitation facilities in urban and rural communities; and (iii) promoting improved environmental health, hygiene, and community participatory practices.

3. Description

4. The Project will (i) develop a WS&S sector management and investment program, which includes establishment of a project management unit (PMU) under UNTAET's Water and Sanitation Authority (WSA), and preparation of a detailed, budgeted program implementation document (PID) for coordinated improvement of East Timor's WS&S Sector, (ii) implement a capacity building and institutional development program which will identify and implement priority activities to support physical reconstruction already under way or being planned, and to complement capacity-building and institutional development activities by other donors, and (iii) commence a WS&S implementation program, comprising (a) WSA WS&S quick response facility, (b) complementary works or the Dili water supply repair and rehabilitation already

under way by other donors, and (c) complementary works for the district water supply repair and rehabilitation already under way by other donors.

5. The immediate benefits of the Project include (i) providing the means for improved WS&S and (ii) upgrading the quality of life for people in both urban and rural areas whose attempts to improve their status and health are continually impeded by the need to divert time, energy, and financial resources to acquire their daily water needs. The Project will generate employment through local labor, thus helping to create a stable social and economic environment. It is expected that the Project will directly or indirectly benefit most of the country's 800,000 population.

6. The Project is designed to distribute its benefits in an equitable manner across East Timorese urban and rural communities' needs, contributing to sustainable development and operation in the WS&S sector, and reducing poverty.

C. Description of the Environment

1. Physical Environment

7. East Timor comprises the eastern half of Timor Island. It has a contiguous area of 19,000 square kilometers (km²), with an additional 2,461 km² in the Oecusse-Ambeno enclave inside West Timor. Timor is the largest and eastern most island in the Lesser Sunda Archipelago.

8. The island is along the junction of the Australian and the Asian geological plates and is thus subject to frequent earthquakes. The rock formations are primarily sedimentary karst uplifted by the collision of the two plates. As the formation is quite recent, the karst is highly fractured and crumbles easily. Metamorphic rock from past volcanic activity is limited to northern and central sections of the island. The high erosion rate from the crumbling karst layers has resulted in the formation of alluvial plains and isolated fertile valleys.

9. The main geographic feature is the mountain range that runs east-west along the center of the island and that causes watercourses to flow either north to the Banda Sea or south to the Timor Sea. Mountain peaks reach up to 3,000 meters in elevation so watercourses are steep, fast flowing, and because of the extended dry season, generally ephemeral. The river systems are short, cutting deep ravines into the unstable rock, forming deep canyons in the highlands, and abruptly widening as they reach the flat alluvial plains. Often the rivers narrow as they approach the sea because of obstruction by sandbars and intertidal deposits. Countless littoral terraces of coral origin, and some extensive plateaus, also of coral origin, characterize the north side of the island (e.g., Baucau and Laga). A few alluvial areas occur between Lautem and Baucau and in Manatuto district. The main plains to the north occur at Batugade, Lois stream, Dili, Manatuto, and Com. The south coast comprises a wide plain that extends from the border east to Viqueque where it begins to narrow, through to Lore in Lautem district. The enclave of Oecusse-Ambeno is also very mountainous with a narrow coastal strip. Here all streams flow to the north. The volcanic island of Atauro rises steeply from the sea to a maximum elevation of 999 meters on Mount Mano Coco.

2. Climate and Water Resources

10. Situated in the equatorial region, Timor has basically two annual seasons (wet and dry) influenced variously by the monsoon regime, proximity to the Australian continent, and locally by the orographic effects of the mountainous topography. The wet season, which lasts from November to May, results from the northern monsoon. It is characterized by thunderstorms, high tropical rainfall and temperature, and concomitant humidity. During the dry season from June to October, winds from the south bring little rainfall and result in lower temperatures. Annual rainfall ranges from some 500 to 1500 mm in the lower lying coastal areas to over 3000 mm in the mountains. Depending on location, average wet season rainfall ranges from 70 percent (Kova-Lima) to 95 percent (Ambeno) of annual rainfall. Those districts along the northern coastline (Ambeno, Liquica, Dili, Manatuto, and Baucau) have the lowest rainfall, ranging from about 500 mm in Manatuto to 800 mm in Ambeno and Baucau, with over 90 percent generally falling in the wet season.

11. The hydrological regime is primarily dependent on the climatic conditions of the alternating wet and dry monsoon seasons. Rivers in the area are generally characterized by their relatively short length, steep gradient, short flood peaks, very high sediment load, and mobile beds. In many areas, river and stream crossings require frequent realignment and repair due to continual changes in river channels. Sediment tends to be very coarse, including boulders and large gravel. The mountainous topography and streamflow pattern makes the construction of dams and weirs problematic.

12. Because of the relatively high rainfall and abundance of springs and surface water, and the small population, there has not been the need in the past for significant groundwater investigation. Therefore knowledge of groundwater occurrence and quality is limited. Groundwater is accessed in the mountain areas mainly through springs, which are commonly tapped at their source with water gravity fed to towns and villages, through small diameter pipelines often many kilometers long. Villagers along the coastal alluvial plains usually rely on open, hand-dug, wells for their domestic supplies. In addition a number of towns in East Timor obtain at least part of their raw water from groundwater, via small diameter deep bores equipped with downhole pumps.

13. Typically, surface water, where available in the dry season, is of acceptable quality. In the wet season, however, turbidity is normally unacceptably high with consequent implications for water treatment. In general the quality of water from springs and groundwater sources is acceptable for most of the year, though often hard. In coastal areas communities can also have the additional problem of saltwater intrusion into wells. The generally unfavorable geology and steep topography in East Timor exacerbate the normal water resources difficulties faced during the dry season as rivers dry up and spring flows recede, often to very small flows. All this combines to produce a hydrological environment in which securing safe, and reliable, water sources for town and village supplies is difficult. Recurrent droughts exacerbate this problem.

3. Biological Environment

14. Timor is on the eastern side of the Wallace Line. The flora and fauna are similar to that of the tropical Australia-Pacific group. It has no large animals, but many small mammals, such as deer, and brightly colored birds. Timor was one of the first islands settled by Europeans

because of its proximity to the Spice Islands. A number of domesticated and feral animals have been introduced to the islands, such as horses, cattle, chicken, and pigs. During the last 10 years the deforestation was officially estimated at 70,000 hectares, with the unofficial estimate double this level. The central highlands are cultivated with coffee, mainly the robusta variety. East Timor coffee commands a high price in the world market because of its higher-than-normal alkaline properties. Rice, corn, sorghum, beans, and root crops are grown in the lowlands. Slash and burn agriculture is common even on the steep hillsides.

4. Sociocultural Environment

15. Most of the population is concentrated in the northern coastal towns and in fertile valleys in the interior. The coastal flat lands in the south are sparsely populated because of the harsh mountain terrain that divides the island. Sea travel from the north to the south is constrained by strong waves most of the year. The economy is based on agriculture, with coffee the major export crop. Surplus rice, corn, and other agricultural produce are consumed within the island. There is little industry or manufacturing. A number of potential mineral deposits have been identified, but their commercial potential has not been explored. The service industry was, during the Indonesian period, limited to the civil service and state-owned corporations, such as telecommunications, power and water, and oil and gas distribution. Trading and other commercial activities were limited to traditional marketplaces in small settlements. Banks, restaurants, hotels, and other businesses were mostly found in the two large centers: Dili and Baucau. Most formal businesses were burned down during the postconsultation destruction.

16. Almost 70 percent of the schools were destroyed during the post-consultation destruction. Although school reconstruction is progressing, at present many classes are conducted in open yards and damaged buildings. Tetum is the local language, with Bahasa Indonesia and Portuguese spoken by sizeable portions of the population. Almost 95 percent of the population are Roman Catholics, with a small Muslim and Protestant population.

D. Screening Potential Environmental Impacts and Mitigation Measures

1. Physical Environment

a. Project Activities

17. **Water Supplies.** The Project will repair and rehabilitate existing town piped water supply systems and domestic and community water supply schemes. Repair and rehabilitation of existing pipelines, pumping and distribution systems, and community-managed supplies will cause localized and temporary disruptions through such things as road openings, excavations, drilling, and associated traffic. As these will be relatively small undertakings, working in areas of existing facilities and services, they are not expected to result in significant or lasting environmental impacts.

18. **Building Repairs.** As part of its institutional development effort, a number of burned and otherwise damaged water supply-related buildings (stores, workshops, generator rooms, etc.) will be repaired. Works here will also have only a minor and temporary environmental impact through normal construction noise, associated traffic, and some small excavation. As these will be relatively small undertakings, working in areas of existing buildings, they are not expected to result in significant or lasting environmental impacts.

19. **Sanitation.** There are no communal or public sewerage systems in East Timor. Improved latrines, where they occur, rely on septic tanks or soakage pits for effluent disposal. It is expected that the Project will be called upon to rehabilitate or repair some damaged disposal facilities in the main towns. In these cases appropriate technology options will be utilized in all community programs. The result will be that effluent disposal practices will be improved with a positive impact on local environmental health status. No significant environmental impacts are expected from such rehabilitation.

20. **Drainage.** In those towns and villages where water supplies are improved, there will inevitably be some increase in wastewater. This occurs through increased septic tank effluent, increased household wastewater disposal, and general increased water usage by communities in their daily lives. In areas where this increased wastewater load is indicated to be problematic, the Project will rehabilitate selected, damaged, drainage works at appropriate locations. No significant environmental impacts are expected from rehabilitating these old drainage systems, rather the drainage works will improve the environmental situation by preventing the accumulation of wastewater and consequent pollution and environmental health problems.

b. Screening Parameters

i. Environmental Problems Due to Project Location

21. Exact project activities will be determined by need. Activities will mostly be small works comprising the repair and rehabilitation of existing facilities that were either deliberately damaged in the postconsultation period, or are otherwise unserviceable. Thus the project locations, which are likely to number around 200 scattered across East Timor, will be determined by circumstance. The Project will have little influence as to their locations. Consequently the Project will have to work within each of the numerous, different, environmental conditions that exist. And at each site, if there are any environmental problems, the Project will cope with them as conditions, good practice, and funding permit. However, it is expected that as the works will merely be replacing or repairing existing WS&S facilities, in localized areas and over short periods, (up to a few days) environmental problems due to project locations will be minor.

ii. Environmental Problems Related to Design

22. Similar comments apply as for para. 21. Designs for the repair and rehabilitation works will have to generally accord with the preexisting arrangements and thus there is little latitude for the Project to make significant changes to accommodate environmental problems that may be encountered. However, as for site location, if any problems are encountered that can be accommodated within the funding constraints, they will be dealt with using good environmental practices.

iii. Environmental Problems Associated with Construction Stage

23. The Project will only involve minor construction, and as such, transient environmental disturbances normally experienced during construction will be insignificant. Typical environmental disturbances related to WS&S will include minor excavations to replace pipes and fittings and repair drains, temporary road and street closures to allow pipe and drain replacement, minor clearing along short lengths of existing pipeline routes to allow repairs

and rehabilitation, clearing of small areas (up to 20 meters square) for drill rig and truck access to bore sites, and minor short-term associated soil erosion if works are undertaken in high rainfall periods. Most of these disturbances will be on public land, and extend over only a day or two. They will have an areal impact generally limited to 10 to 100 square meters. As most works will involve the repair or replacement of existing pipelines and other WS&S facilities, environmental effects will be no more, and probably less, than has already occurred. Other works of significance include the proposed repair and rehabilitation of water supply-related structures such as workshops, stores, generator rooms, storage tanks, and borehole housing. All these works will be carried out on sites of existing (damaged) structures and no significant environmental effects are foreseen other than normal small building construction activities such as cartage of building materials and construction noise. Again any effects will be small and temporary, possibly lasting from a few days to a few weeks.

iv. Environmental Problems Resulting from Project Operations

24. The only significant adverse operational impact is that of potential increase in local discharge of wastewater because of improved water supplies. This will be ameliorated by repairing and rehabilitating drainage systems in problematic areas. Any other potential or identified adverse effects will be preempted or minimized by (i) improving water resource management and (ii) increasing promotion of environmental conservation through community participation and education activities. The issue of sustainability of system operation is being addressed through capacity-building and institutional development activities under the Project's component 1 and through cooperation with WSA and donor partners active in the WS&S sector.

v. Potential Environmental Enhancement Measures

25. The Project's main contributions to environmentally sustainable development, as it relates to the sector, will be to undertake environmental monitoring under the guidance of the PMU. Monitoring will include (i) measuring the effectiveness of any environmental improvements needed, (ii) identifying problems that may arise during the works, and if necessary (iii) providing ecological audit information for future works of this nature. The proposed monitoring will be designed to quantify the benefits gained and any impacts sustained from repairing and rehabilitating town and community WS&S systems. Environmental parameters to be monitored will be defined by the PMU, but will include raw water quality, treated water quality, delivered water quality, need for and effectiveness of drainage systems, water pressure in piped systems, environmental conditions in river and spring catchments including pollution and land clearing, landslide and erosion problems affecting WS&S facilities, efficiency and effectiveness of sanitation facilities, and growth of algae in reservoirs. WSA will be responsible for all water quality testing (chemical and bacteriological) using the water-testing laboratory facility recently donated by the Government of Japan. They will also be responsible, in cooperation with local communities, for monitoring construction and post-construction environmental aspects of the Project. The PMU will liaise with WSA and the Interim Health Authority for the monitoring of environmental health statistics as part of the Project's focus on environmental health education and promotion of safe domestic hygiene practices. Under UNTAET, Indonesian environmental laws remain valid, although their implementation capacity will need to be developed. UNTAET is presently reviewing environmental laws, regulations, and standards, and these may be applied to the Project in the future, although it is expected that this will not result in any adverse outcomes. Conversely, the PMU and WSA will compile project

environmental reports, the information from which will be passed on to the relevant section of UNTAET for consideration when developing their environmental standards and legislation.

2. Biological Environment

26. The water supply, building, sanitation, and drainage works proposed under the Project all pertain to repair and rehabilitation of existing facilities. None of the proposed activities are of a scale large enough to have significant physical impact. As such, they are merely operating in areas that have already been disturbed by past works and therefore should have little or no impact on the biological environment.

3. Sociocultural Environment

27. The water supply, building, sanitation, and drainage repair and rehabilitation works proposed under the Project will be undertaken within existing roads and rights-of-way. No land acquisition or resettlement will be required. The Project is specifically designed to provide positive sociocultural impacts by improving WS&S, upgrading the quality of life for both urban and rural folk, improving environmental health standards, generating employment, and promoting community participatory processes for development. The Project is designed to distribute its benefits in an equitable manner across East Timorese urban and rural communities, contributing to sustainable development and operation in the WS&S sector, and reducing poverty. The overall sociocultural impact of the Project is assessed to be positive.

E. Institutional Requirements and Environmental Monitoring Program

28. Indonesian environmental laws and regulations remain in effect in East Timor. The personnel implementing and enforcing the environmental laws and regulations were mostly Indonesian nationals and are not expected to return to East Timor. UNTAET needs support in reviewing these regulations and developing capacity to undertake environmental assessments. ADB's technical assistance is proposed to assist in these areas.

29. In addition to regular inspections of works to ensure that all possible mitigation measures are taken, environmental monitoring will be undertaken under the guidance of the PMU. The Project will (i) measure the effectiveness of environmental improvements, (ii) identify problems that may arise during the works, and if necessary, (iii) provide ecological audit information for future works of this nature. The proposed monitoring is designed to quantify the benefits gained and new impacts sustained from rehabilitating sanitation facilities and town and community water supply systems.

F. Conclusions

30. Due to the postconsultation destruction, environmental conditions in some urban areas of East Timor are quite poor. This situation may now be endangering populations through pervasive waterborne diseases and lack of sanitation. Previously, WS&S activities were often undertaken without due regard for environmental procedures. The Project will, however, ensure that repairs and rehabilitation of water supplies, buildings, and sanitation facilities are undertaken with care for the environment. The Project will ensure adequate environmental

procedures and monitoring mechanisms are established. During the works and construction, care will be taken to minimize disruption to the physical, biological, and social environment.

31. Apart from the immediate beneficial impact of cleaning up, repairing, and rehabilitating WS&S infrastructure, the Project will encourage promotion of environmental health and hygiene education, ensuring correct health procedures and water conservation measures are undertaken.

32. On the whole, the impact of the Project is expected to be positive and will be monitored throughout implementation. This will be facilitated by institution building under the Project and through the PMU. Any potential negative environmental impacts are limited to construction activities that are temporary and reversible.

INITIAL SOCIAL ASSESSMENT

A. Benefits and Beneficiaries

1. In 1998, East Timor had an estimated population of under 0.9 million people, with over 50 percent having been displaced during the postconsultation violence. It is estimated that upward of 85 percent have returned to their homes since the end of 1999. It is estimated that 80-90 percent of the population live in rural areas, with the remainder living in the capital, Dili, and 12 main towns. These towns comprise formal urban dwellers, and an estimated 50 percent squatters, urban infill, and peri-urban populations.

2. Even before the 1999 destruction and displacement, East Timor was one of the poorest areas in south-east Asia, with severe problems of adult literacy (41 percent), life expectancy (56 years), malnutrition, malaria, and tuberculosis. Gross domestic product (GDP) per capita was estimated at under US\$395, and approximately 50 percent of households were clustered around the poverty line. Following the popular consultation and subsequent destruction, this situation has worsened dramatically, with GDP dropping an estimated 40 percent to US\$230, and a generally recognized poverty population of almost 100 percent. Within the rural sector, the destruction of their means of agricultural production, and the closure of banks, and loss of meager savings resulted in East Timor being estimated as one of the absolute poorest countries in the world.

3. Under most Timorese traditional systems, the role of women was severely restricted, with men dominating decision-making and leadership roles within the villages. These roles are changing as a result of the social disruption caused by the long-term struggle for independence in East Timor, with women participating fully in all aspects of the clandestine front and in the armed resistance. Women are gaining new skills and responsibilities, and are beginning to move into traditionally male-dominated income generation activities. It is imperative that this respect and newly acquired roles are maintained within the new East Timorese society.

B. Needs, Demands and Absorptive Capacity

4. Prior to the upheaval, less than half the population had access to safe water and sanitation facilities. Sanitation practices, which were often unhygienic, were constrained by the absence of sufficient water. Dry pit latrines are used extensively and were often located adjacent to water courses, or households. There were major health hazards caused by the lack of sanitation facilities in poorer rural and urban areas. Poor households were further disadvantaged with poor access to basic health and education services.

5. With the substantial damage to infrastructure and public utilities that resulted following the postconsultation violence, already degraded services ceased to function. Most communities now have access to water through traditional means or through some emergency reconstruction works. Although this may reduce substantially with the onset of the dry season, it is assumed that the ongoing emergency programs, supplemented by urgent works within the proposed water supply and sanitation (WS&S) program will suffice.

6. Within this environment, the immediate benefits of the water and sanitation program will be to ensure that a comprehensive and equitable water supply and sanitation program is established that will eventually provide adequate supplies and services at an appropriate level of service for all people in East Timor. It is important to implement these programs within the

constraints imposed by the community's commitments to other programs, restricted financial and institutional capacity, and other competing community and household objectives.

7. With almost the entire East Timor population suffering from the destruction, the need for reconstruction and rehabilitation of WS&S facilities is high, if disease is to be averted. In all areas, the rehabilitation and development of water supplies will free labor (both men and women) for more productive uses. Improved sanitation facilities and practices, and the provision of clean water will have beneficial health effects, particularly for children and infants, and reduce the costs associated with disease and morbidity.

C. Adverse Effects on Vulnerable Groups

8. The Project will not involve any land acquisition or resettlement. Project works will use the existing rights-of-way. The Project will not have negative impacts on any vulnerable group.

D. Social Dimensions in Project Design

1. Community Participation

9. The remoteness of many of the communities and the difficulty of access to the settlements made it almost impossible in the past for any effective services to be provided at the community level. It was observed, and recounted from discussions, that there had been a lack of community participation in the process of developing appropriate water supply systems and sanitation facilities. In a number of villages, where infrastructure such as WS&S existed, the residents did not know which agency the facilities came from. This resulted in a lack of ownership and lack of motivation for the community to manage, operate, or maintain the facilities and systems. When technical problems arose, the community took no action, but rather reverted to the previous methods of attaining water or disposing of feces. This situation is now prevalent throughout the majority of communities visited during the mission.

10. The communities have a very limited capacity to operate and maintain any facilities, primarily due to lack of funds, but also due to poor training; technical assistance; and simple manuals, tools, and repair equipment. The use of inappropriate technology in the past, made many systems difficult to maintain due to the difficulty of obtaining spare parts and the shortage of qualified and experienced technical staff to undertake the repairs. Some systems were also very expensive to operate and maintain due to the need for constant repair and replacement of parts that were of inferior quality or where poor workmanship and quality of design and/or construction had resulted in frequent breakages or failures. It is therefore especially important for communities to be able to plan, manage, and implement their own development. In situations where communities can operate and maintain their own facilities, there is a considerably greater chance that the systems will be sustainable, than for those systems that rely on government operation and maintenance.

11. The team acknowledges that the success of any development project involved in the WS&S sector is dependent upon the effective participatory involvement of the community, especially at the earliest stages of community project activities. The use of a methodology such as the participatory rural appraisal (PRA) is effective in social preparation, problem solving, awareness raising, informing choice and facilitating participation of the community at all stages. Another important lesson is the value of NGOs in facilitating participatory development. Their

closeness to the community assists in the process of participatory development and community mobilization, which creates ownership and therefore extends sustainability. Changes in knowledge, attitudes, and practices relating to water use, hygiene and sanitation is essential for achieving improvements in community health and well-being. Community participation and social preparation are critical in the process of hygiene and sanitation promotion. The installation of facilities such as water supply systems and latrines, does not in itself necessarily guarantee improved health of the people. The focus must be extended to the proper utilization and management of WS&S.

12. While the process of community participation within the WS&S sector is an ideal way to proceed, in East Timor the current situation is more complicated. There is already a community empowerment project¹ under way, and a few other similar programs being considered.² While there is an issue that these programs' goals and objectives may conflict, when combined with the wholesale, multisector reconstruction and development effort, the main result is instead an inordinate time and resource burden on recipient community members who are still struggling to rebuild their own personal lives. It is important that WS&S programs do not exceed this capacity threshold.

13. Therefore, all WS&S program components while still utilizing a community participation and ownership approach wherever possible, should take account of other community initiatives and a community's capacity to engage in such activities.

2. Gender

14. Under most Timorese traditional systems, the role of women was severely restricted, with men dominating decision-making and leadership roles within the villages. These roles are changing as a result of the social disruption caused by the long-term struggle for independence in East Timor, with women participating fully in all aspects of the clandestine front and in the armed resistance. Women are gaining new skills and responsibilities, and are beginning to move into traditionally male-dominated income generation activities. It is imperative that this respect and newly acquired roles are maintained within the new East Timorese society.

15. Women play important roles in the household as major contributors to household income through marketing agricultural produce and petty trading activities. In addition they are the primary caregivers and responsible for household work. Women report they have a say in decisions about household spending and have access to savings for spending as needed.

16. Although women reported fairly evenly divided responsibilities for water fetching, it was generally acknowledged that they bore the most burden and responsibility, especially as men were often working elsewhere. Most rural women reported times in excess of 1 hour a day for water carrying. Water was often not treated, due to a lack of knowledge, time, or resources. Women are also burdened with responsibility for the health of family members and for caring for sick family members, further reducing time and energy for both productive and personal activities. It is therefore women who are in most need of assistance in reducing the time and effort required to obtain water supplies and in caring for the health and welfare of family members.

¹ The Community Empowerment Program is a joint WB/ADB project that began in March 2000.

² For example, the United Nations Development Program Governance program.

17. Female survey respondents reported frequent skin and genital inflammations, indicative of poor water quality and sanitation practices. A lack of water for washing was a recurrent theme. While the rehabilitation and development of water supplies and improved sanitation will not change this situation substantially, especially in rural areas, nor empower women and children, it will allow women more time to pursue other opportunities, and provide a healthy environment for themselves and their families. It is expected that any WS&S program will work in conjunction with other initiatives in community development and empowerment.

18. Improving hygiene and sanitation, and the utilization of WS&S facilities by improving knowledge, attitudes, and practices of the whole community, will positively impact on women. The health of the family will improve, and the load borne by women as caretakers will correspondingly reduce. Due to their traditional roles in the sector, women have a particular need for improved access, management, and effective use of WS&S facilities.

3. Sustainability

19. At this early stage of reconstruction and development, it is difficult to say how sustainable the nation of East Timor can be, let alone the sustainability of the WS&S sector. There will certainly be a need for aid and support for many years to come, although the strength and perseverance of the East Timorese throughout and following the conflict are amazing and will provide a sound foundation for their nation.

a. Community Ownership

20. Within the WS&S sector, sustainability will be different between the urban and the rural systems. However, a common element to achieve sustainability will be a strong level of ownership of project activities by the target groups, whether through community management in the rural areas or cost recovery in the urban areas. It is recognized that issues of sustainability can be addressed through adequate involvement of target groups and participants early on in project activities.

b. Health and Hygiene Awareness

21. Another common element for sustainability is through health and hygiene awareness in water use and sanitation. It is essential that the community gain an understanding of the link between water and sanitation and health conditions of the community. The recognized importance of domestic and personal hygiene, proper water use, and appropriate sanitation will encourage communities to change their habits. These changes will ensure that developments implemented within the Project, such as improved WS&S and water management groups will be sustained by the people. An understanding of their importance to the health of the community will ensure this.

c. Institutions

22. While there will eventually be an East Timorese water authority (or similar) following the withdrawal of UNTAET, it will be necessary for the current WSA to consider the sustainability of the institutions within the sector. Issues for consideration include cost recovery, corporatization, and human resource capability. These issues will need to be considered early on in the WSA program, as their solutions (involving education, training, and institution building) take a long time to realize.

d. Cost Recovery

23. In the urban WS&S systems there will be the need, eventually, for full recovery of operation and maintenance costs, if systems are to be sustained. In the urban areas, particularly Dili, there will be a decided lack of community management in an everyday utility like water and sanitation, that is, it is taken for granted. Given this, it is essential that recipients are aware of the price implications of the substantial investments and operating costs involved. Other than sustaining the management and operations, tariffs also encourage users to utilize a resource more effectively, further increasing sustainability of the water resource itself.

e. Willingness and Ability to Pay

24. An essential component of cost recovery is the community's willingness and ability to pay or participate in management. Without due regard for these two issues, sustainability through cost recovery cannot be achieved. In the current climate, there is certainly a willingness by consumers to participate in the design and implementation process, and even pay (in the case of urban supplies), however their capacity (or ability) to do so cannot match this desire. As the economy progresses this situation will change (in varying degrees) and the WSA will need to monitor these changes to ensure the threshold is not broached.

f. Appropriate Technology

25. The importance of appropriate technology in sustainability was highlighted during the field visit. The team encountered problems with operation and maintenance in some of the emergency systems implemented by the United Nations and NGOs. By incorporating technology that is manageable by the community, within their financial capabilities and technical capacities, the extent to which the system will be sustainable will increase. Problems relating to the lack of spare parts and the absence of repairs are also a key concern relating to the transfer of technology to rural communities. Provision must be included within the program to train community members in the operation and maintenance of the facilities installed. In deciding appropriate technology mechanisms, consideration must also be made as to how accessible are spare parts. In relation to operation and maintenance, encouragement of the community to establish financial capabilities to sustain ongoing maintenance and repairs must also be considered. Appropriate technology also means utilization of the most cost-effective technical solutions.

4. Urban and Rural

26. Following the destruction, there has been a fear that rural groups will relocate to urban areas. There is no conclusive evidence to support this at this time. Conversely, with the cessation of Indonesian rule (and their relocation policies), both urban and rural populations are grappling with land title and occupation issues that impact upon their ability to recover from the crisis. In some cases, it is reported that families are being asked by original landowners, to relocate to their traditional homelands, or to seek opportunities in urban areas. Additionally, town and district borders are being redrawn, families are still returning, and there are sporadic militia activities within border districts. Overall, there is a sense of change that is still impacting people's decisions and practices, and will do so until some normality returns.

27. It is important, therefore, that all programs are seen to be equitable between urban and rural areas. While urban works will eventually need to show cost recovery, this would be due to the greater investment required. It is essential that this cost should not be borne, even indirectly,

by the rural population. Community water supplies may never be wholly economical, however their small investment costs, combined with linkage to other community development objectives (such as self management, empowerment, and community autonomy) may obviate the need for such criteria. Additionally, with the relocation of some families into urban areas, and the development of improved water and sanitation facilities in all communities, it is imperative that households' knowledge of appropriate water and hygienic practices is strengthened, averting wastage and misuse.

5. Non-government Organizations

28. There are over 150 international and local NGOs currently operating within East Timor. With their greater finances and support, the international NGOs, while doing great work and often working closely with local NGOs, are overshadowing the local organizations. It was expressed on many occasions by local groups, that they wanted to have more involvement and autonomy within the sector. Indeed, the team agreed that a more dynamic and larger group of local NGOs would be an asset for the sector, and that the WS&S program should facilitate their establishment, coordination, development, and participation in the sector.

29. It is important that both local and international NGOs be utilized by the program to ensure that the level of impact and ownership within communities is sustained. It is envisaged that a number of small local level NGOs will be encouraged to establish along subsector, district, or gender lines. Under the Project, it will be necessary to provide considerable support to fostering the establishment and initial training and support for these NGOs for them to undertake these tasks. In addition it will be necessary to provide a coordinating NGO, an East Timorese-based organization, that will be responsible for overseeing the establishment and development of other organizations. It is envisaged that the sectoral NGO, Bia Hula, may play this key role within the Project. The intention is to build local capacity of the East Timor NGOs to facilitate the sustainability of community work within the country.

6. Health

30. Poor health conditions related to water supply, sanitation, and hygiene practices exist widely throughout East Timor. While poor health in itself is a problem, high rates of morbidity adversely impact on poor communities. The increased burden of caring for sick family members, as well as a consequent reduction in productive activities, exacerbates the already poor socioeconomic status of the community.

7. Minority Groups

31. East Timor has no identified minority groups. Rural communities are the main beneficiaries of the water and sanitation works, especially those in the border districts that suffered, and continue to suffer the most interruption to normal activity. Nevertheless, the Project aims to ensure that there is equity across districts and between genders and urban and rural communities.

8. Resettlement

32. It is expected that the Project will not require any resettlement based on existing service levels. Within urban communities, there may be some land tenure and land acquisition issues that may require careful attention.

9. Stakeholder Participation

33. The Project framework was developed using a rapid consultative approach, whereby as many representative East Timorese and other stakeholders and decision makers were consulted, and participated, in the formation of the program objectives and components. While the time frame did not allow for full participation, the team did manage to speak to many men and women, and various community and political groups, at national, district, and community levels. Communities and both formal and informal women's groups were consulted extensively throughout the field visits.

34. It is essential that communities, local NGOs, and women's groups be involved in project design, implementation, and operation and maintenance of the program components. It is expected that there will be a significant community focus in all the water and sanitation implementation components, in addition to a separate overall public health and community development component.

35. The Project emphasizes the encouragement and strengthening of local water and sanitation NGOs as the catalyst for more comprehensive and response community participation initiatives.

D. Benefit Monitoring and Evaluation

36. The project management unit will supervise, monitor, and review the various contractors during implementation. It is expected that all sector activities will be implemented through the unit, which will in turn coordinate its activities with the ongoing program of emergency assistance from the United Nations.

37. A comprehensive benefit monitoring and evaluation (BME) program will be developed during the implementation of component 1, and in conjunction with data generated through other existing ADB and other International Funding Agency projects. The BME will be employed along with the conventional project performance monitoring systems approach. A set of predetermined criteria and indicators will be identified, based on the key information needs of the WSA in UNTAET and ADB. BME will be used to assess the progress and implementation of the use of funds and delivery of public works and infrastructure activities, and measure the impacts resulting from project implementation strategies. BME is important to identify and address priority needs of the intended beneficiaries, and ensure that indicators more accurately reflect local experiences.

38. Key areas for BME will include (i) technical and physical aspects, (ii) socioeconomic development, and (iii) human and institutional development. Impacts will be measured in terms of increased community participation, public accountability, transparency, better provision and coverage of basic services (especially for women and the poor), and opportunities and direct employment generation.

39. It is expected that the BME will be transferred to the new WSA following the exit of UNTAET, and that the process and outputs will form the basis of a more sustainable and strategic East Timor WSA.